

CHAPTER IV: SELKIRK MOUNTAINS WOODLAND CARIBOU

A. Status of the Species

1. Listing History

In 1980, the Service received two petitions to list the Selkirk Mountains population of caribou as endangered under the Act: one from the IDFG and one from Dean Carrier, 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). The IDFG petition noted that the agency had been working on the conservation and management of the Selkirk Mountains caribou population under the guidance of the IMCTC since 1971. The IDFG petition also stated that this “is the only known caribou population in the continental United States and with the extremely low numbers it is essential everything possible be done to prevent this species from becoming extinct in the United States.” They urged immediate action on the petition to ensure the long-term survival of the caribou (IDFG 1980). Similarly, Mr. Carrier’s petition urged prompt action, noting the “precarious state” of the population, the ongoing threats to habitat, and concern that the last remaining caribou population in the coterminous U.S. would soon be extirpated (Carrier 1980).

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 British Columbia (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 “red-listed” (considered to be threatened or endangered) and listed as threatened under Canada’s Species at Risk Act.

2. Description of the Species

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 woodland 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 (Service 1994).

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 population 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 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, mountain caribou make seasonal elevational movements in response to factors such as snow level, food availability, and predator avoidance.

3. Life History and Habitat Requirements

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).

Mountain caribou are closely tied to old-growth coniferous forests of the Interior Wet-belt ecosystem of B.C. and the United States. Their survival depends on their ability to spread out over large areas of suitable habitat where it is difficult for predators to find them. Suitable habitat is defined as old-growth forests (at least 150 years old) which support abundant arboreal lichens, the key winter food source of mountain caribou (Stevenson et al. 2001).

Old-growth forests are essential to maintaining a caribou population. Arboreal lichens, specifically *Bryoria* spp., comprise a critical winter food source, as the caribou diet is almost entirely lichen at this time of the year (USFS 2004). These lichens are extremely slow-growing, occurring in abundance typically in mature/old-growth forests 150 years or older. 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 (Service 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). During the spring and summer, woodland caribou forage on succulent forbs and graminoids in subalpine meadows, and on huckleberry leaves.

Selkirk Mountains woodland caribou habitat is typically represented by a combination of two vegetation zones: the cedar/hemlock zone at lower elevations, the subalpine fir/Engelmann spruce zone at higher elevations, and the transition zone between these two vegetation zones. Seasonal habitats consist of early winter, late winter, spring, calving, and summer habitats primarily within these two vegetation zones. 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 woodland caribou recovery area in the *Status and Distribution* section below).

Caribou habitat can be further differentiated as capable habitat and suitable habitat. Capable habitat refers to the inherent potential of a site to produce the essential habitat requirements of a species. Vegetation on the site may not be currently suitable for a given species because of variable stand attributes such as seral stage, cover type, or stand density. Capable habitat is defined on the basis of fixed attributes such as slope, elevation, and habitat type. Capable habitat, while not in target condition, can still be utilized by caribou for travel between suitable feeding sites, movement within the ecosystem, and as lower quality feeding sites. Suitable caribou habitat currently has both the fixed (noted above) and variable stand attributes. Variable attributes change over time and may include seral stage, cover type, and overstory canopy cover. Table 12 displays the relative suitability of the various seasonal habitats within the caribou recovery area. In this table, habitat acreages designated as high or moderate would typically be considered currently suitable, while those acreages designated as low would typically be considered as capable. As displayed in Table 12, 41%, 43%, and 35% of the capable summer, early winter, and late winter habitat, respectively, within the Selkirk recovery area is currently suitable.

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. Early winter is a period of rapid snow accumulation and generally extends from November through January. During this period, caribou seek out these more closed timber stands where they feed on a combination of arboreal lichens and shrubs until the snow pack consolidates and the caribou can move to higher elevations (USFS 2004). Components such as a high degree of overstory canopy cover, the presence of arboreal lichens and an understory shrub component are very important. The early winter period is generally identified as a period of rapid snow accumulation. Caribou seek out these stands during this period before the snow pack consolidates and they are able to move more freely atop the snow pack.

Late winter habitat consists of subalpine fir and Engelmann spruce forests on the upper portion of ridge systems. Suitable habitat consists of immature to mature stands of subalpine fir and Engelmann spruce that are relatively open canopied (10 to 50 percent overstory canopy) and have high levels of arboreal lichen. The late winter period extends from the end of early winter in January until April or May (USFS 2004).

The overall quantity of habitat within the recovery area is not currently considered to be limiting to caribou in terms of food because of the low number of caribou presently occupying the area. However, the patchy distribution of the habitat on the landscape likely presents other issues, such as compromising the caribou's ability to avoid predators.

4. Status and Distribution

Historically, caribou were widely distributed throughout the northern tier of the coterminous United States from Washington to Maine, as well as throughout Canada. In the northwestern U.S., mountain 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 (Service 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% (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 (Service 1984). Today, mountain 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 mountain caribou occurs within B.C., Idaho, and Washington (Figure 5).

When the Selkirk caribou population was first listed in 1983, the population consisted of less than 30 individuals whose distribution centered primarily around Stagleap Provincial Park in British Columbia. The Selkirk population has fluctuated over the last two decades, but has shown modest increases (7%) in the last five years. These increases have been attributed, in part, to more effective predator management efforts in the Selkirk ecosystem. The Selkirk population, based on the most recent 2008 survey, is the highest it's been in almost a decade (Wakkinen and Johnson 2008). The population is now estimated at 46 animals (Wakkinen and Johnson 2008), most of which typically occupy habitat in the B.C. portion of the recovery area (Wakkinen and Johnson 2006). A small number of woodland caribou occur within the U.S. portion of the recovery area, and there is continual movement of animals back and forth across the U.S./B.C. border.

The recovery area for the Selkirk Mountains caribou population encompasses a total of 959,923 acres across the U.S. and Canada (Figure 6): 319,860 acres in Idaho (33%), 138,229 acres in Washington (15%) and 501,166 acres in B.C. (52%). As currently delineated, the recovery area includes lands above 4,000 feet in elevation within B.C. and on the Colville National forest, and lands above 4,500 feet on the IPNF and on areas administered by the Idaho Department of Lands (Service 1994). Some lands below 4,500 feet in elevation on the IPNF are included within the recovery area based on caribou utilization, target stand condition and habitat connectivity. Conservation and recovery efforts for the Selkirk Mountains population of woodland caribou in the B.C. portion of the recovery area compliment efforts taken in the U.S., and vice versa.

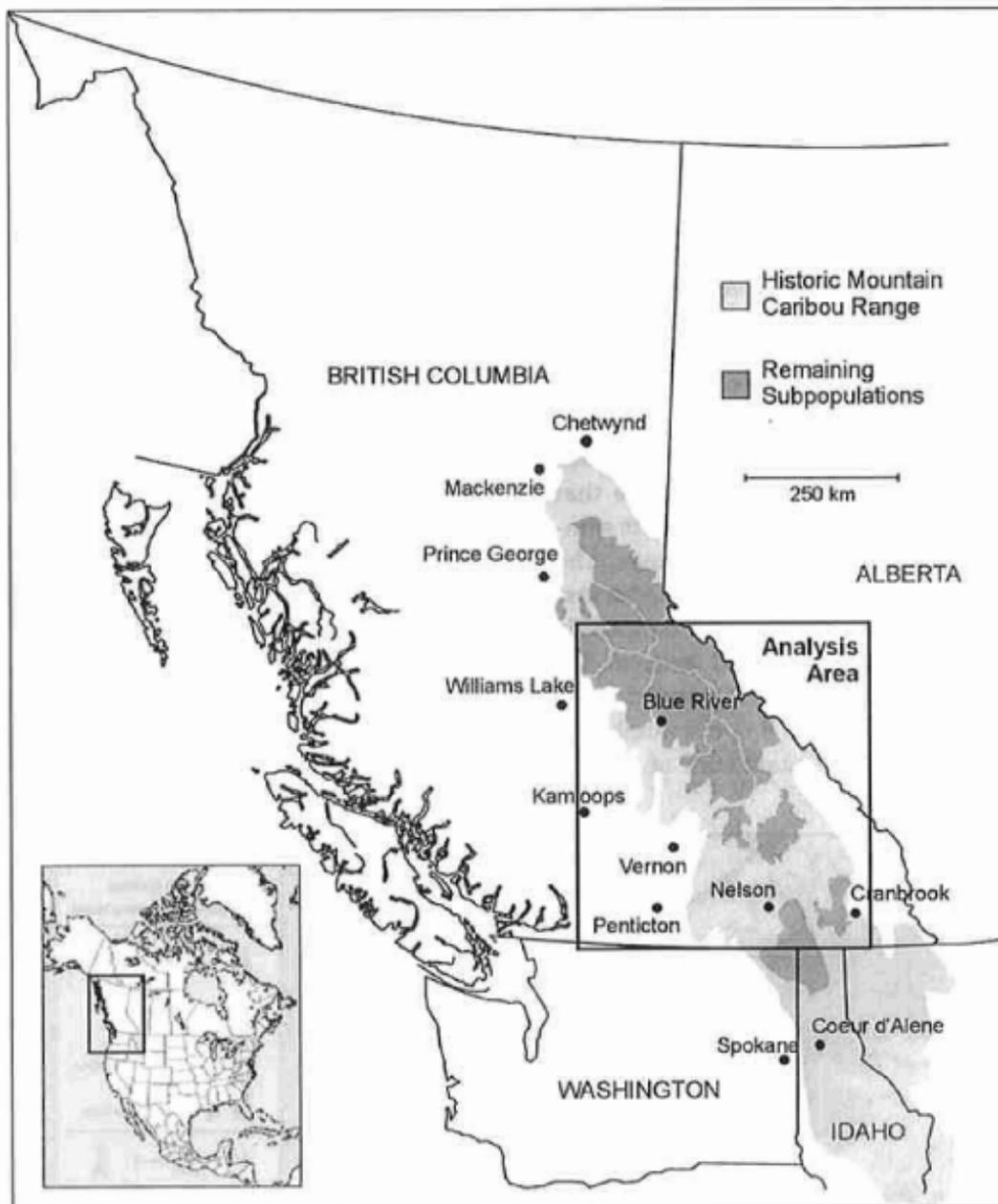


Figure 5. Historic and current range of mountain caribou in British Columbia and the U.S. (Apps and McLellan 2006).

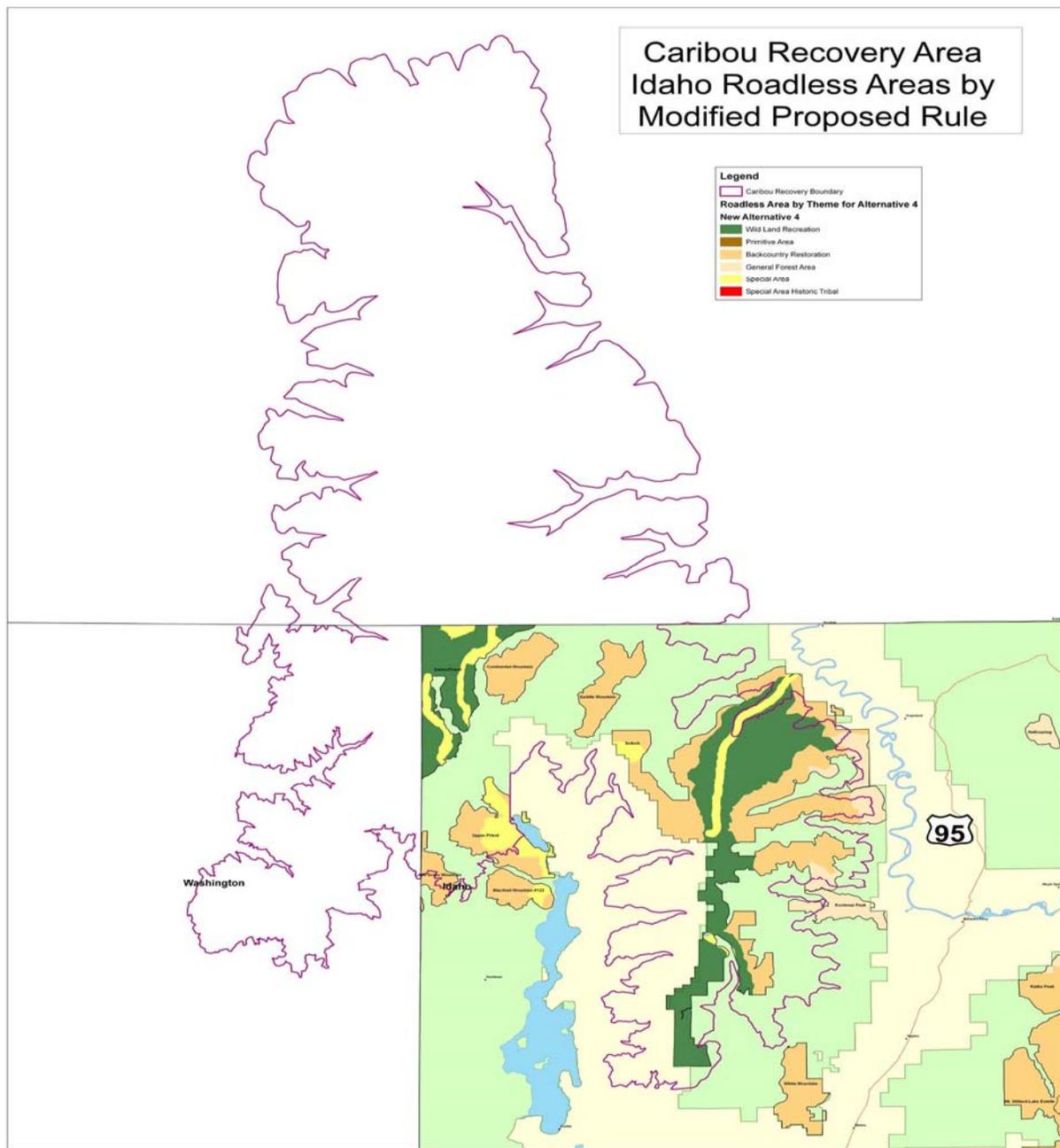


Figure 6. Overlap between the caribou recovery area and Idaho Roadless Areas.

5. Factors Influencing the Current Condition of Caribou

Habitat Loss/Fragmentation

As discussed above, mountain caribou are closely tied to old-growth coniferous forests of the Interior Wet-belt ecosystem in B.C. and the United States. Their survival depends on their ability to spread out over large areas of suitable habitat where it is difficult for predators to find them. Suitable habitat is defined as old-growth forests (at least 150 years old) that support abundant arboreal lichens, which are their key winter food source (Stevenson et al. 2001).

The primary long-term threat to mountain 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). Mountain caribou habitat requirements for extensive stands of old-growth timber place them in direct competition with most current forest management practices. Timber harvesting within the range of the mountain caribou has been a concern for over 25 years (Stevenson et al. 2001). In 2002, the MCTAC estimated a 38% reduction in caribou habitat suitability from historic levels.

As noted above, the range of mountain caribou in B.C. and the U.S. has declined by approximately 60%, primarily as a result of the loss, alteration, and fragmentation of old-growth forests due to a combination of human and natural causes (MCTAC 2002). Habitat loss or modification 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).

Wildfires are a natural phenomenon within the range of mountain caribou that represent another threat to caribou habitat. Historically, caribou were able to tolerate this natural adverse impact because there were other non-fragmented stands 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 fires are more likely to change the configuration and availability of caribou-occupied forested stands in a manner that reduces the cover and security these stands provide to caribou from predators, human disturbance, and extreme weather conditions (Courtois et al. 2007, Shepherd et al. 2007).

Predation

Predation has become an increasing threat to caribou populations and is considered to be a proximal cause of most mountain caribou mortalities (Paquet 1997, Simpson et al. 1997, COSEWIC 2002, MCTAC 2002, Cichowski et al. 2004). Wittmer et al. (2005) evaluated the role of predation in the decline of mountain caribou and found that the primary cause of mortalities in 11 of 13 caribou subpopulations was predation. He suggested that the loss of

mature forests within the mountain caribou range may compromise their predator avoidance strategy.

As discussed above, the ultimate cause of increased predation pressure is thought to be related to the high degree of habitat modification and fragmentation within the ecosystem, which has led to an altered predator/prey dynamic (COSEWIC 2002, MCTAC 2002, Cichowski et al. 2004). 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.
- Restricting caribou to remaining old-growth habitat patches may increase the search efficiency of predators. As discussed above, one of the survival strategies of mountain 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.
- Increased road densities caused by timber-harvesting activities facilitate the movement of predators, such as wolves and cougars, into the caribou's range. Similarly, snowmobile trails may also facilitate predator access to caribou habitat.

Land Management Planning

Since the caribou was listed, the IPNF adopted a LRMP that included general standards some of which pertain 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 that are not likely to adversely affect the caribou. Although certain caribou relevant LRMP components are outdated to a varying extent based on available information developed since the LRMP was adopted, 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 2008b) (See Appendix B).

Relative to human access within caribou habitat, the IPNF's LRMP currently includes generic standards calling for 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 LRMP (USFS 1987). There is growing evidence that increasing levels of winter recreation activities (e.g., snowmobiling, heli-skiing, snow-cat skiing, etc.) within caribou winter range represent a significant threat to mountain caribou (Simpson and Terry 2000, COSEWIC 2002, MCTAC 2002, Cichowski et al. 2004, Powell 2004, Seip et al. 2007). The IPNF is working on development of a winter travel plan to address snowmobile activities in the Selkirk Mountains. However, there is currently no plan in place to address this issue 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 portions of the caribou recovery area until the travel plan is finalized and any appropriate ESA consultation completed.

A significant amount of State and private lands (approximately 79,000 acres) occurs within the caribou's range as well (Service 1994). The Idaho Department of Lands (IDL) administers approximately 51,000 acres within range of the mountain caribou. These lands are managed primarily for timber harvest, which, as discussed above, has significant impacts on caribou and their habitat. A recent habitat assessment of IDL lands within the Selkirk ecosystem indicated that one of the largest blocks of high priority caribou habitat in the Selkirk Ecosystem 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). For several years, the IDL has been working on a Habitat Conservation Plan (HCP) to protect caribou and other listed species on their lands. However, development of this HCP is still in the preliminary information gathering stage and has not yet resulted in any definitive conservation measures for caribou and their habitat.

Caribou habitat on lands owned and managed by the States of Idaho and Washington remains at risk of further degradation and/or fragmentation due to inadequate regulatory mechanisms to address timber management on these lands. 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 addressing caribou habitat management/protection in place for these lands to protect suitable caribou habitat, except as the take prohibitions under section 9 of the Act may apply.

In B.C., caribou habitat management direction is contained in Land and Resource 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, BCMoE, pers. com. 2007).

Human Disturbance

A growing threat to mountain 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). Increasing road densities in caribou habitat may facilitate poaching opportunities, movement of predators within the caribou's range, and road kills. For instance, 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. Two studies of caribou in Alberta have

reported that caribou avoid habitats near linear features and human activity such as roads, seismic lines, and drilling sites (MCTAC 2002, Cichowski et al. 2004).

As discussed above, 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 mountain caribou. Winter recreation can increase the stress levels of caribou, displace them from suitable winter habitat, or preclude them from using such habitat (Simpson and Terry 2000, COSEWIC 2002, MCTAC 2002, Cichowski et al. 2004, Powell 2004, Seip et al. 2007).

Simpson and Terry (2000) evaluated several different forms of winter recreation relative to their effects on mountain caribou and found that snowmobiling represents the greatest perceived threat. Although caribou appear able to tolerate some level of motorized winter recreation within their range, the rising interest in recreational snowmobiling, combined with better access via roads to high elevation caribou habitats and improved snowmobile technology that has produced more powerful machines that can travel through mountain caribou habitat, have created a significant threat to some mountain caribou populations (MCTAC 2002). Deep snow, open forests, and scenic vistas make caribou late winter habitat very attractive to recreational snowmobilers. However, because this habitat is critically important to mountain caribou, their disturbance or displacement from such habitats by snowmobilers, especially given the current fragmented nature of mountain caribou habitat, can have severe effects on affected animals (MCTAC 2002).

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 as cited in USFS 2004a), and an effective loss of habitat availability temporarily, and potentially in the long-term where caribou abandon areas characterized by chronic disturbance. Short-term reindeer or caribou displacement due to direct snowmobile approaches has been reported by Tyler (1991) and Mahoney et al. (2001).

Simpson (1987) concluded that large groups of fast-moving snowmobile machines in combination with human scent caused mountain caribou to abandon an area previously used as winter habitat. Areas of high quality winter habitat in the Quesnel Highland, such as the Mica Mountain and Yanks Peak areas receive minimal use by caribou during late winter when heavy use by snowmachines becomes an almost daily occurrence.

Kinley (2003) noted that during the period in which snowmobile activity has increased in extent and intensity within the range of the mountain caribou, caribou have clearly abandoned or been extirpated from some formerly used areas, and declined in numbers within some areas that are still occupied. 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 & Merriam 1972). Wolf predation is often responsible for adult caribou mortality and low recruitment in caribou populations within Canada (Bergerud &

Ballard 1988, Gasaway et al 1983, Seip 1991, Stevenson & Hatler 1985). Although there is normally minimal overlap between wolf and caribou winter ranges, these trail networks allow easy access to alpine and forested winter range areas, potentially increasing predation rates on caribou and upsetting the delicate predator/prey relationship so critically relevant to conservation strategies for woodland caribou” (excerpted from USFS 2004, pg. 26).

Seip et al. (2007) evaluated caribou and snowmobile use on 6 mountain ranges of similar habitat quality in B.C. over a 3-year period. They found caribou use on all 5 mountain ranges with little or no snowmobile activity and no caribou use of the sixth mountain range that had intensive snowmobile activity. Based on their evaluation, they concluded that intensive snowmobile activity had displaced caribou from suitable habitat and recommended that snowmobiling be restricted from all or most high quality caribou habitat.

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.

Other Factors

Climate change is another potential threat to mountain caribou. 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 mountain caribou is so closely tied to changing snow depths, changes in snow levels may also have significant effects on caribou. However, because of the uncertainty associated with climate change modeling, it is impossible to reliably predict the potential impacts of climate change on mountain caribou at this time (Utzig 2005).

Finally, the contracting range of the Selkirk population, the small number of animals in the population, and the limited genetic exchange between the Selkirk population and adjacent populations threaten population viability (Hatter 2000).

6. Previously Consulted-on Effects to the Caribou within the Action Area

The IPNF’s 1987 LRMP underwent consultation when it was developed (USFS 1987). This LRMP provides programmatic guidance and direction for activities occurring on the IPNF. Goals, objectives, standards, and guidelines were incorporated into the 1987 LRMP to minimize adverse effects to threatened, endangered, proposed, and sensitive species resulting from Forest activities such as timber management, fire management, and recreation. The LRMP outlined 19 management areas on the IPNF, each with different management goals, resource potential and limitations.

At the Forestwide scale, the IPNF's goal for federally listed species is to provide for recovery as outlined in species recovery or management plans. To address this goal for woodland caribou, the IPNF has committed to cooperating in implementation of the Selkirk Mountain Caribou Management/Recovery Plan. This commitment is provided in the form of a Forestwide LRMP standard, to be applicable to projects regardless of management area. The IPNF LRMP outlines additional general standards that may also benefit caribou as they emphasize management for ESA listed species and retention of old-growth forests, a habitat type of particular importance to caribou.

With respect to caribou, the 1987 LRMP specifically identified Management Area (MA) 7 (117,200 acres) as being designated for caribou management and included specific goals and standards to contribute to the recovery of caribou. Additionally, portions of several other management areas were identified as containing caribou habitat and also included goals and standards to manage for caribou in these areas. At the programmatic level, these measures, although relatively general, provide the overarching direction to reduce impacts to woodland caribou and contribute to their recovery. For example, management area standards include, but are not limited to measures such as:

- Seasonal closures motorized vehicles where necessary to reduce disturbance to caribou;
- Control or containment of fire to reduce further loss of caribou habitat;
- Maintenance of caribou travel corridors in mature timber;
- Management of roads and other human travel corridors to minimize impacts to woodland caribou, where possible;
- Cooperate in implementation of the Selkirk Mountain Caribou Management Plan/Recovery Plan.

At the programmatic level, the Service reached a finding that the USFS's adoption of the LRMP is not likely to jeopardize the continued existence of the Selkirk Mountains woodland caribou (Service 1986).

In 2001, the Service issued an Amended Biological Opinion for the 1987 LRMP (Service 2001) that also concluded no jeopardy for the caribou. The primary purpose of this amended Opinion was to provide an Incidental Take Statement. The amended Opinion included mandatory Terms and Conditions intended to minimize the impacts of harm and harassment on the woodland caribou caused by the adoption of plan standards and guidelines for the IPNF. However, as a result of recent litigation regarding snowmobile activities on the IPNF, the Service withdrew the portion of this amended Opinion addressing winter recreation activities; that withdrawal occurred on March 3, 2006 (USFS 2006a). As a result, there are currently no terms and conditions or incidental take coverage in place on the IPNF for take of caribou caused by snowmobile activities. The USFS has reinitiated consultation on the management of winter recreation. Until an IPNF winter travel plan is completed, a Court injunction on snowmobile activities within the IPNF portion of the caribou recovery area is in place.

7. Conservation Needs

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

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.

8. Recovery Plan

The Selkirk Mountain Woodland Caribou recovery plan was first approved in 1985 and revised in 1994 (Service 1994). Recovery objectives outlined in this plan include managing for an increasing caribou population that is well distributed throughout the recovery area, and for securing and enhancing sufficient caribou habitat in the Selkirk ecosystem to support a self-sustaining caribou population. The recovery strategy includes addressing the impacts of road-related mortalities, reducing the impacts of timber management, and reducing or eliminating the impacts of recreational activities on caribou and their habitat. Although the recovery plan is somewhat dated, the threats and conservation needs outlined in the plan are fully supportive of those discussed above.

9. Critical Habitat

No critical habitat is currently designated for caribou; therefore none will be affected by the MIRR.

B. Environmental Baseline

1. Status of the Species in the Action Area

Census efforts for the Selkirk Mountains caribou population were initiated in 1991 under the lead of Idaho Department of Fish and Game. 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. The most recent

winter census of the Selkirk Mountains caribou subpopulation yielded an estimated minimum of 46 individuals in 2008, three of which were detected as a group in the United States portion of the recovery area (Wakkinnen and Johnson 2008). Table 9 presents caribou survey results since 1999. The results of the last five years of surveys reflect an increasing trend in individuals detected (Wakkinnen and Johnson 2008). It is important to note that these surveys represent a point-in-time approach to documenting occurrences and distribution. Consequently, they provide good evidence for presence in certain locations during winter, but not necessarily presence or distribution during other seasons throughout the year.

Table 9. Results of winter censuses of the Selkirk Mountains woodland caribou: 1999-2008.¹

Year	Area	# Adults US/BC	# Calves US/BC	% Calves	Area Total US/BC	Grand Total
1999a	U.S.	---	---	---	6	48
	B.C.	---	---	---	6/42	
2000	U.S.	2	1	33	3	34
	B.C.	26	5	16	31	
2001	No census conducted due to low snowpack conditions.					
2002	U.S.	2	0	0	2	34
	B.C.	23	9	28	32	
2003	U.S.	1	0	0	1	41
	B.C.	27b	3b	10b	40	
2004	U.S.	3	0	0	3	33
	B.C.	28b	2b	7b	30	
2005	U.S.	--	--	--	2	35c
	B.C.	--	--	--	33	
2006	U.S.	---	---	---	1e	34-37e
	B.C.	---	---	---	33e	
	B.C.-heli	24d	5d	17d		
2007	U.S.	---	---	---	2e	43-44e
	B.C.	---	---	---	42-43e	
	B.C.-heli	39d	4d	9d		
2008	U.S.	3	0	0	3d	46d
	B.C.	38	5	11	43d	

¹ Excerpted in full from Wakkinnen and Johnson 2008.

a 11 animals released in late winter 1998.

b Classification flight did not include a total count.

c Not a complete census. Must be considered a minimum population estimate.

d Based on helicopter count in B.C. portion of ecosystem.

In addition to the above census results, which reflect caribou locations during a period within the late winter season, there are periodic anecdotal reports of caribou throughout the U.S. portion of the recovery area throughout the year. Table 10 below presents some of the more recent sightings. A number of these sightings were in or near IRAs.

Table 10. Anecdotal caribou reports within the U.S. portion of the recovery area since 2000.

Date	Season	Year	Observer	Location	Comments
	Spring	2000	Loyd Renfro (IDL)	Squawman Mtn; Wigwams Gate (IDL)	Dead caribou found behind gate, female?
	Spring	2000	Ed Wingard	Lookout Mtn. (IDL)	Found dead male caribou (Rob has antlers) Dead female caribou with radio collar also found by IDFG in area when investigating
4/21/2000	Spring	2000	Kevin Davis	Pack River	Tracks northeast of Silver Dollar Peak
3/8/2000	Spring	2000	Lucas Wingart	Two Mouth drainage	Tracks seen at Standard Lakes
10/15/2000	Fall	2000	Kevin Davis	Two mouth Lake	Tracks seen between both lakes.
10/28/2001	Fall	2001	Unknown (CDC)	Lime Creek	Tracks along road and Creek
5/1/2001	Spring	2001	John Doot	Kalispell Basin	One animal seen 1.3 miles north of Ranger Station
	Winter	2002	Ed Wingard	Standard Lakes (IDL)	2 caribou seen when skiing within area.
	Summer	2004	Luke Peterson	Two Mouth Lake	Tracks of 1 to 2 caribou, reliable but unconfirmed
11/1/2005	Winter	2005	Hunters	Gypsy Meadows (Sullivan Creek)	Three hunters reported seeing a caribou just below Gypsy Meadows this morning. They figured out it was a caribou from the silhouettes posted on some informational signs nearby. They thought it was a bull but sounded less sure when they found out that the females also have antlers. They described it as very "rangy" and odd looking. They were very excited.
10/31/2005	Fall	2005	Mark Koboush	Upper Priest Lake	Animals see on shore from boat north of Plowboy campground. No antlers on animal.
	Winter	2005	Sam Cushman	Smith Creek	Track of 1 to 2 caribou, Reliable
	Winter	2005	Member of local snowmobile Group	Chimney Rock Area (IPNF)	Reported seeing single animal while snowmobiling
	Spring	2005	Recreational ist	Chimney Rock Area (IPNF)	Female caribou seen at trailhead lading to Chimney rock.
	Spring	2006	Mike Sudnikovich	Mosquito Bay (Priest Lake)	Two animals reported with Mosquito Bay around cabins, report relayed by Mike Sudnikovich.
	Summer	2006	Ed Wingard	Standard Lakes (IDL)	Dead caribou found along edge of lake by IDL employee, Melting out of snow. Follow up a few weeks later only found a few bones. Carcass evidently fed on by possibly bears.

7/25/2007	Summer	2007	Khanh Tran	Salmo Mtn. Trailhead (Salmo Mountain)	Khanh Tran of Portland who was doing a boreal bird tour of our area. He says he saw a caribou fairly close to the Salmo trailhead.
10/29/2007	Fall	2007	Dan Debernardi	Pass Creek Road (CNF)	Potential caribou observation from a Dan Debernardi on the Pass Creek Pass Road in T38, R44, Sec. 2 or thereabouts. This was a single animal with smaller antlers (female?) that crossed the road in front of him. He was certain it was not an elk or a deer and said it looked like the photos of caribou showed him. The light colored rump, small size in relation an elk, and "weird" antlers stood out to him. It did not have a collar or ear tags.
8/6/2008	Summer	2008	Todd Randall	Upper Priest River	Single animal identified as caribou (no antlers) likely a female along Upper Priest River. Animals seen crossing road (RD1013 near junction with RD655). Sighting on 8/6/200 16:00. Close to where sighting of recent wolf activity. Sighting is low in elevation for this time of year. Showed observers photos of caribou and they became more sure that what they saw was a caribou.

Approximately 255,456 acres of the Selkirk Ecosystem caribou recovery area (27%) fall on the IPNF, of which 131,813 acres (~14% of the recovery area) are in IRAs. Seven IRAs fall within or overlap the caribou recovery area: (1) Continental Mountain; (2) Kootenai Peak; (3) Little Grass Mountain; (4) Saddle Mountain; (5) Salmo/Priest; (6) Selkirk; and (7) Upper Priest (Table 11).

Table 11. Idaho Roadless Areas that overlap the South Selkirk Ecosystem caribou recovery area.

Roadless Name	#	Acres overlapping caribou recovery area	% overlap with caribou recovery area
Continental Mountain	004	7,525	100%
Kootenai Peak	126	943	18.87%
Little Grass Mountain	121	2,319	59.46%
Saddle Mountain	154	7,766	100%
Salmo/Priest	981	20,021	100%
Selkirk	125	84,569	86.30%
Upper Priest	123	8,669	68.26%
Total		131,813	

Efforts to map the distribution and condition of caribou habitat within the Selkirk Ecosystem caribou recovery area were initiated in 1997 as a cooperative project between the B.C. Ministry of Environment, the Colville National Forest, Washington Department of Fish and Wildlife, IDFG, and the IPNF. Recent habitat modeling by Kinley and Apps (2007) builds upon early cooperative efforts and further classified the relative suitability of seasonal habitats. Based on habitat suitability scores applied to seasonal habitats, high or moderate categories encompass those areas that are currently considered ‘suitable’; those habitats categorized as ‘low’ are those capable of providing for caribou, but are not currently ‘suitable’ (J. Almack, USFS, pers. com. 2008). An estimated 14% of caribou habitat (all seasons) in the Selkirk Mountains Ecosystem recovery area (in both B.C. and the U.S.) overlaps IRAs (Table 12). In general, caribou habitat for all seasons is fairly coincident with the boundaries of the recovery area, which is to be expected based on environmental criteria used to delineate the current recovery area. Although all potential seasonal habitats for the caribou have been mapped, a focus is placed on the recovery area boundaries to generally represent the distribution of caribou and its habitat.

Movement corridors for woodland caribou were mapped based on historical information on movement corridors, topographic features, caribou habitat, and recent observations and telemetered locations of caribou (See USFS 2004, pg. 22 for detailed description of methods). Primary corridors were those that connected local herd groups whereas secondary corridors represented seasonal movement patterns. Approximately 28 miles of primary corridor and 62 miles of secondary corridor intersect IRAs, including the Salmo-Priest, Continental Mountain, Saddle Mountain, Selkirk, Kootenai Peak, and Upper Priest IRAs (Figure 7).

As discussed above, recent surveys conducted for woodland caribou have detected a number of individuals within the U.S. In 2007, the winter census identified two caribou in Idaho that appear to have been in or within close proximity to two IRAs: the Salmo-Priest Roadless Area and the Selkirk Roadless Area (Wakkinnen and Johnson 2008).

Telemetry locations of radio-collared caribou provide an additional record of caribou occurrence within IRAs. Over the past 20 years, over 2,500 caribou telemetry points have been documented within IRAs. As with the winter census information, these points reflect caribou locations at a single point in time, but do provide useful information on the relative use of these areas by caribou. Of all the IRAs within the caribou recovery area, caribou occurrence was highest in the Selkirk and Salmo/Priest roadless areas (Table 13).

Table 12. Caribou seasonal habitats¹ within the South Selkirk Ecosystem caribou recovery area.

	Total in recovery area	Overlap with IRA (acres)	% of total habitat in IRA
Calving			
High	78,791	12,729	16.16%
Moderate	324,559	56,203	17.32%
Low	505,788	59,259	11.72%
<i>Total</i>	<i>909,138</i>	<i>128,191</i>	<i>14.10%</i>
Summer			

High	59,656	11,310	18.96%
Moderate	314,878	58,589	18.61%
Low	534,709	58,705	10.98%
<i>Total</i>	<i>909,243</i>	<i>128,604</i>	<i>14.14%</i>
Spring			
High	81,108	17,220	21.23%
Moderate	384,132	66,454	17.30%
Low	434,820	41,499	9.54%
<i>Total</i>	<i>900,060</i>	<i>125,174</i>	<i>13.91%</i>
Early Winter			
High	72,116	10,155	14.08%
Moderate	324,229	54,598	16.84%
Low	513,880	64,422	12.54%
<i>Total</i>	<i>910,224</i>	<i>129,174</i>	<i>14.19%</i>
Late Winter			
High	74,157.37	11,883.08	16.02%
Moderate	210,488.27	39,412.85	18.72%
Low	524,486.81	67,181.27	12.81%
<i>Total</i>	<i>809,132.45</i>	<i>118,477.20</i>	<i>14.64%</i>

¹Habitat suitability based on HSI scores: Low = 0-.29, Moderate = .30-.69, High = .70-1.00.

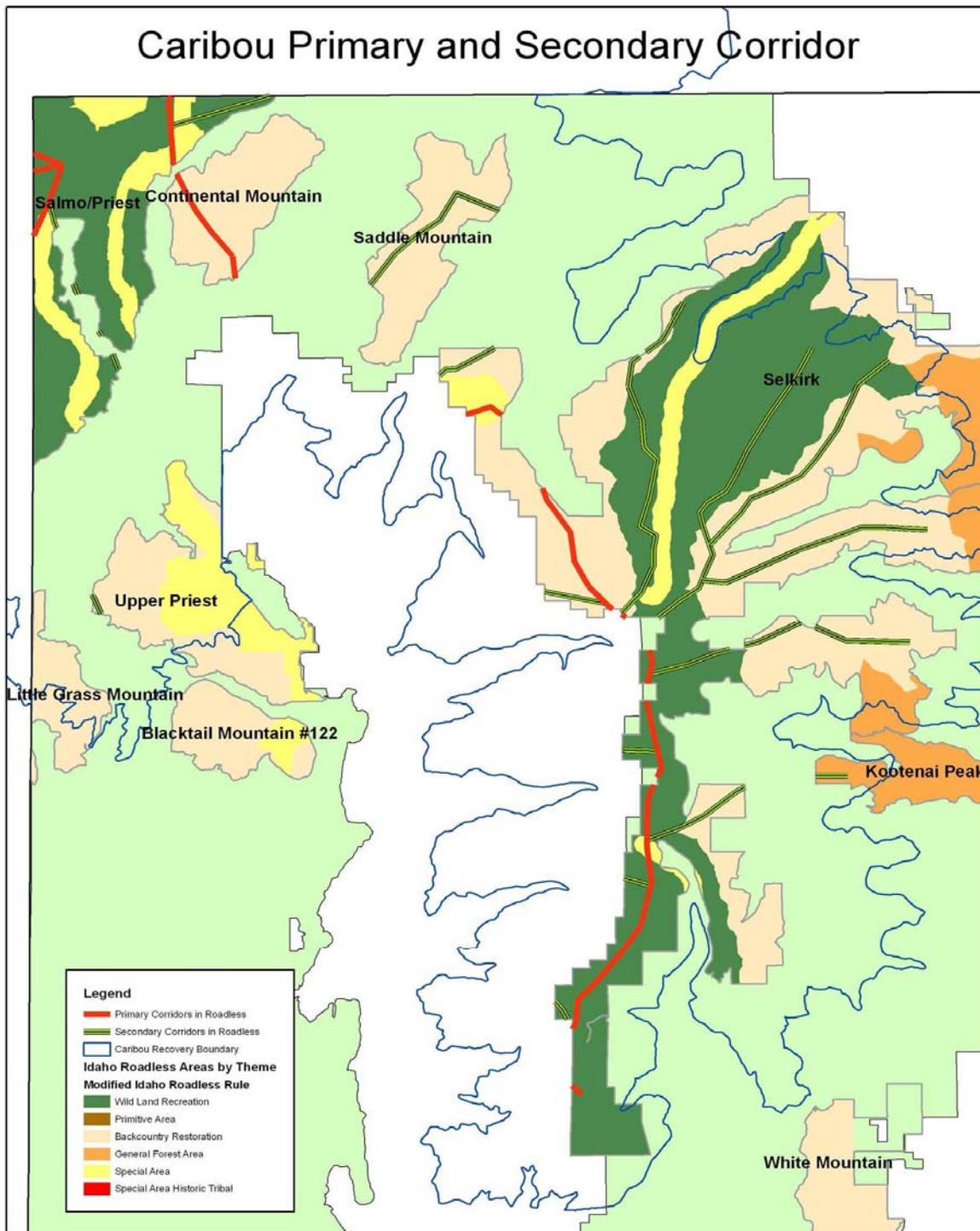


Figure 7. Primary and secondary caribou movement corridors in northern Idaho.

Table 13. Documented woodland caribou telemetry points in Idaho Roadless Areas by theme.

Roadless Name	#	# of woodland caribou telemetry points in IRA	Roadless area theme assigned to IRA within caribou recovery area
Blacktail Mountain #122	122	1	Backcountry Restoration
Blacktail Mountain #122	122	1	Backcountry Restoration CPZ
Blacktail Mountain #122	122	5	Special Area
Continental Mountain	004	19 (>1%)	Backcountry Restoration
Kootenai Peak	126	4	General Forest
Little Grass Mountain	121	3	Backcountry Restoration
Saddle Mountain	154	42 (2%)	Backcountry Restoration
White Mountain	127	1	Backcountry Restoration
Salmo/Priest	981	19	Special Area
Salmo/Priest	981	183	Wild Land Recreation
Selkirk	125	1,136 (45%)	Backcountry Restoration
Selkirk	125	1	General Forest
Selkirk	125	110 (4%)	Special Area
Selkirk	122	988 (39%)	Wild Land Recreation
Upper Priest	122	4	Backcountry Restoration
Upper Priest	122	1	Backcountry Restoration CPZ
Upper Priest	122	5	Special Area
Total Telemetry Points		2523	

2. Factors Affecting the Caribou in the Action Area

The conservation of the Selkirk Mountains woodland caribou population continues to be threatened by ongoing as well as new emerging threats. Current threats to the woodland caribou include habitat loss and degradation due to timber harvest and fire, predation, and human access (Service 1994, IDFG 2005).

Habitat Loss/Fragmentation

As previously discussed under the “Status of the Species” section, the primary long-term threat to mountain caribou is the ongoing loss and fragmentation of contiguous old-growth forests due to timber harvesting, wildfires, and other human activities (MCTAC 2002, Cichowski et al. 2004, Wittmer 2004, Apps and McLellan 2006). A substantial amount of caribou habitat within the recovery area has been harvested, roaded, and/or burned by wildfires in the past, leaving habitat within the recovery area fragmented. Habitat loss has the following effects on caribou: (1) it reduces the amount of useable space available for caribou, which limits the ecological carrying capacity of remaining habitat for the caribou; (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). Given the mountain caribou's strong ties to extensive stands of mature and old-growth forests, these fragmented habitat conditions adversely affect the Selkirk caribou population.

Much (289,000 acres out of approximately 458,000) of the caribou habitat within the U.S. is managed by the USFS. While caribou habitat has been heavily modified and fragmented in the past, most current timber management on federal lands within the caribou recovery area occurs in unsuitable or low quality caribou habitat with the objective of bringing the habitat into a condition of suitable caribou habitat more quickly (Layser, USFS, pers. comm. 2007).

Past wildfires have affected large amounts of Selkirk Mountains woodland caribou habitat within the action area. For example, the 1967 Sundance, Kaniksu Mountain, and Trapper Peak fires in the Selkirk Mountains destroyed almost 80,000 acres of caribou habitat (Layser 1974). As stated earlier, historically, caribou were able to tolerate this natural adverse impact by moving into adjacent unfragmented stands of old-growth forest; this option is less likely today due to the cumulative effects of logging, road building, and wildfires that have eliminated a significant amount of historic caribou habitat.

Predation

Predation has become an increasing threat to caribou populations and is considered to be a proximal cause of most mountain caribou population declines (Paquet 1997, Simpson et al. 1997, COSEWIC 2002, MCTAC 2002, Cichowski et al. 2004). For example, in the Selkirk population, 63 caribou mortalities were reported between 1987 and 2001. Of these 63 mortalities, 14 were documented as predator kills, and many of an additional 28 mortalities of unknown cause were attributed to possible predation (Wakkinen et al. 1992, Almack 2002). As suggested above, the ultimate cause of increased predation pressure is thought to be related to the high degree of habitat modification and fragmentation within the ecosystem, which has led to an altered predator/prey dynamic (COSEWIC 2002, MCTAC 2002, Cichowski et al. 2004).

Human Access

As previously discussed, a growing threat to mountain caribou is increasing human access into their habitat and the associated disturbance (Paquet 1997, Simpson and Terry 2000, Stevenson et al. 2001, COSEWIC 2002, MCTAC 2002, Cichowski et al. 2004, Seip et al. 2007). Increasing road densities in caribou habitat could facilitate poaching opportunities, movement of predators within caribou range, and road kills. For example, 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.

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). 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. 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.

There is growing evidence that increasing levels of winter recreation activities (e.g., snowmobiling, heli-skiing, snow-cat skiing, etc.) within caribou winter range represent a significant threat to mountain caribou. Winter is a particularly stressful time for caribou. Their mobility is restricted by deep snow, and, since they feed entirely on arboreal lichen during this period, nutritional intake is seriously limited. Additional stress at this time of year can significantly affect their normal behavior, including feeding, breeding, and sheltering, and could ultimately affect their survival capability.

Recent literature, as discussed above, provides evidence that winter recreation can increase the stress levels of caribou, displace them from suitable winter habitat, or preclude them from using such habitat (Simpson and Terry 2000, COSEWIC 2002, MCTAC 2002, Cichowski et al. 2004, Powell 2004, Seip et al. 2007). The potential to displace caribou from suitable habitat can result in additional energy expenditure by caribou when they vacate an area to avoid disturbance (Tyler 1991 as cited in USFS 2004).

The numbers and distribution of recreational snowmobilers within the caribou recovery area has increased over the last 10-15 years, due in part to improved snowmobile technology and the increasing popularity of the sport (Wakkinen and Johnson 2008). In the early 1990s, there were several instances in which snowmobile activity in the IPNF portion of the Selkirk recovery area resulted in harassment and displacement of caribou from occupied habitat. As a result of these instances, an area snowmobile closure was implemented on the IPNF along the Selkirk Crest in 1994. However, snowmobile use within the recovery area continued to grow, and in August 2005, a number of environmental groups filed suit against the Forest Service and the Service. As a result of this litigation, there is currently a Court injunction on snowmobile activities within the IPNF portion of the caribou recovery area. While this injunction does not entirely prohibit snowmobile use, it limits the locations and timing of such activities in an effort to minimize impacts to caribou. This injunction remains in place until the IPNF develops a winter travel plan to address the issue and completes consultation with the Service on this plan.

Other Factors

As noted previously, climate change is an ongoing factor which represents potentially serious threats to caribou within the action area as well as rangewide. Additionally, the contracting range of the Selkirk caribou population, the small number of animals in the population, and the limited genetic exchange between the Selkirk population and adjacent populations threaten population viability (Hatter 2000).

C. Effects of the Proposed Action

The previous section presented factors and activities that can affect the species in the action area, some of which (particularly road construction, road reconstruction, timber cutting and discretionary mining) may also result from future actions undertaken as allowed by the MIRR.

To minimize duplication, these potential effects are not reiterated in their entirety below. The analysis of the MIRR does not include an analysis of project implementation and resulting direct effects; it is an analysis of implementing a rule and the indirect and cumulative effects that could occur from actions that might occur under the rule. It is an analysis of what is allowed under the rule versus an analysis of on the ground activities, and therefore has no direct effects (USFS 2008a).

The MIRR establishes prohibitions and permissions on road construction/reconstruction, timber cutting, and discretionary mining activities across IRAs, based on management area ‘themes’. These are not the same management areas identified in the 1987 LRMP. This section begins with a general discussion of the potential effects that these management activities can have on woodland caribou, describes existing IPNF LRMP conservation direction for caribou intended to minimize the effects of these activities on the caribou, and then explores the effects of the management area themes proposed by the MIRR on the species. Use of prescribed fire is not prohibited or permitted by the MIRR. However, this activity is typically paired with timber cutting activities intended to reduce fuels, which is addressed by the MIRR. Consequently, prescribed fire is considered interrelated and interdependent to timber cutting, and thus we also consider its impacts on woodland caribou. We do not discuss the impacts of phosphate mining on woodland caribou as none may occur within the range of the species as a result of the MIRR – all phosphate mining within IRAs will be restricted to known phosphate lease areas on the Caribou portion of the Caribou-Targhee National Forest in southeastern Idaho under the MIRR (Abing 2008).

1. General Discussion of Effects

Timber Harvest

As discussed in previous sections, timber harvest can have the following effects on caribou: (1) it reduces the amount of useable space available for caribou, limiting the ecological carrying capacity of the habitat for the caribou; (2) it reduces the arboreal lichen supply, affecting the caribou’s key winter food source; (3) it can affect caribou movement patterns; (4) it can 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).

Timber harvest can affect caribou habitat at both the stand and landscape scales. At the stand level, 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. Given the currently low caribou population level, forage is not currently considered to be a limiting factor for caribou. 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, timber harvesting may fragment caribou habitat, resulting in a patchwork of early seral and mature forest which can have several different adverse 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 survival. 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). Given the caribou's requirement for extensive stands of mature and old-growth forest (150 years +), timber harvest can result in long-term adverse effects to caribou because of the length of time required for the habitat to regain old-growth characteristics.

Road Construction

In general, woodland caribou appear relatively sensitive to the effects of roads, particularly the activities they facilitate. Roads contribute to changes in habitat quality and availability by fragmenting habitats in previously intact landscapes. Even temporary roads create a long-term impact, given the caribou's need for large expanses of mature and old-growth forest. Once a temporary road has been constructed, it will take years for the fragmented habitat in the area to regenerate to a suitable mature/old-growth forest condition. As road densities increase, edge habitats increase and interior patches decrease, reducing habitat available to species requiring interior habitats. As fragmentation increases, patches of remaining habitat may become sufficiently small in size and/or isolated to the point that they are no longer be used by caribou, thus resulting in effective habitat loss. This has been demonstrated in numerous species, including woodland caribou (Joly et al. 2006).

Reduced use of habitat in response to roads has been exhibited in numerous ungulate species, including the woodland caribou. 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). Caribou in Alberta avoided habitats near linear features and human activity such as roads, seismic lines, and drilling sites (MCTAC 2002, Cichowski et al. 2004). 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. 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.

The effect of winter recreation, particularly snowmobiling, on woodland caribou is a concern. Although these activities are typically addressed through travel management and planning on National Forests and are not the subject of prohibitions or permissions outlined in the MIRR, their impacts on the caribou are discussed in relation to the construction or reconstruction of new roads which, as outlined in the MIRR, may facilitate such activities.

As mentioned previously, there is growing evidence that increasing levels of snowmobiling within caribou winter range represent a significant threat to mountain caribou. Much of that discussion is incorporated here by reference (Simpson and Terry 2000, COSEWIC 2002, MCTAC 2002, Kinley 2003, Cichowski et al. 2004, Powell 2004, Seip et al. 2007). Winter

recreation can increase the stress levels of caribou, displace them from suitable winter habitat, or preclude them from using such habitat. Snowmobile activity in caribou winter range increases the amount of energy expended as the animals react to avoid close contact with machines and riders. The amount of energy expended depends on many factors including the following: the degree of previous harassment; animal activity prior to disturbance; snow depth and compaction; visibility; wind speed and direction; and topographical features. Hard running in deep snow for extended periods of time not only leaves caribou in an exhausted state, susceptible to predation, but also contributes to a loss in body fat crucial for winter survival (USFS 2004).

To the extent that new and/or reconstructed roads under the MIRR facilitate the encroachment of snowmobiles into caribou habitat, the indirect adverse effects of these activities (as discussed above) can be significant for caribou. There is some evidence that caribou can tolerate a low level of snowmobile use within their habitat (Simpson and Terry 2000), but increasing levels of use, including dispersed use throughout the Selkirk recovery area are a concern.

Discretionary Mining

Discretionary mining activities would be allowed under the MIRR. However, new road construction and reconstruction associated with development of geothermal, oil, or gas reserves is prohibited in roadless areas under the MIRR regardless of theme. Surface use and occupancy in the BCR and GFRG themes would be permitted if allowed in the LRMP. There are no known oil and gas deposits on the IPNF, and geothermal energy potential is very low. As such, little commercial interest in leasing for such resources is anticipated as development would essentially be precluded in the absence of new roads and there is low potential for the resource. Activities related to phosphate leasing in IRAs would be restricted to areas in and adjacent to specific Known Phosphate Leasing Areas (KPLAs) on the Caribou portion of the Caribou-Targhee National Forest. Consequently, the likelihood that discretionary mining activities will take place in IRAs related to discretionary mining on the IPNF is exceptionally low.

As stated previously, the MIRR provides direction for activities associated with discretionary mining in IRAs. Mineral resources are typically classified into three categories: locatable minerals, leaseable minerals, and salable minerals (Abing 2008). Development of locatable minerals (e.g., gold, silver, uranium, etc.) is subject to the General Mining Law of 1872. Although future development of locatable minerals on NFS lands, including IRAs, would require environmental analysis and approval of a plan of operations, the Forest Service's discretion to restrict access to mining claims is limited. Consequently, activities related to development of locatable minerals are not included as part of the proposed action, and their effects on Federally-listed terrestrial species are not addressed in this document.

Development of salable or common variety minerals (e.g., sand, stone, gravel, soil, clay, etc.) in IRAs is expected to be very limited given that the volume of these resources extracted from roadless areas historically has been very small even under more permissive authorities (Abing 2008). Further, such development would only be allowed in GFRG and in BCR (see Chapter II of the Assessment) where it is in conjunction with another allowable activity. Within these two themes, we can not predict in place or time where these minerals might be used. Therefore, we acknowledge that there is the very small potential for impacts on the terrestrial environment, and

thus listed terrestrial species, but do not describe species-specific effects. The remainder of this section addresses the potential effects of leasable minerals.

Although it varies by commodity, surface use associated with the exploration and development of leasable minerals requires access and haul roads, open pits, facilities, power lines, pipelines, and communication sites, all of which can impact habitats for terrestrial species. For example, development of geothermal energy includes the following: exploratory drilling (some ground disturbance, road to access if not already there); if exploratory is favorable, a well pad is constructed (about 3 acres), a power plant is needed within one to two miles, as well as pipelines which are above ground (Abing 2008). Development of oil, coal and gas plants require similar intra-structure components. Physical disturbance associated with mining or oil and gas exploration, such as roads, drilling sites, and seismic lines can result in caribou avoidance of the affected habitat (Cichowski 2004).

Generally, the impacts of discretionary mining on terrestrial wildlife species, including woodland caribou, result from the habitat loss and degradation from the footprint of the mine, required infrastructure (e.g., road construction and development), and human disturbance where individuals are displaced from key habitats, as discussed in previous sections of this document.

No impacts of phosphate mining are anticipated on the woodland caribou as a result of the MIRR because all phosphate mining within IRAs will be restricted to known phosphate lease areas on the Caribou-Targhee National Forest in southeastern Idaho (Abing 2008).

Interrelated and Interdependent Actions - Prescribed Fire

Use of prescribed fire in forested ecosystems has the potential to affect woodland 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. Impacts of wildfire on caribou habitat have been identified as a concern in the Caribou Recovery Plan (Service 1994). To avoid such impacts, prescribed fire, in combination with mechanical treatments, might assist in protecting and/or restoring caribou habitat in the long-term with the understanding that short-term impacts to forage availability may occur.

2. Applicable IPNF LRMP Components for Caribou

As referenced earlier, goals, objectives, standards, and guidelines have been incorporated into the IPNF LRMP (see Appendix B, Table B-4 of the Assessment for a comprehensive list of applicable plan components) to minimize adverse effects to threatened, endangered, proposed, and sensitive species. The management themes proposed by the MIRR shall take precedence over any inconsistent land management plan component. Land management plan components that are not inconsistent with this rule will continue to provide guidance for projects and activities within IRAs. The USFS reviewed all existing management direction for threatened and endangered species outlined in LRMPs, including that relevant for woodland caribou, and has determined it is not inconsistent with the MIRR; therefore such direction will be applied at the project level under MIRR (USFS 2008a, pg. 17).

For woodland caribou, the primary effects anticipated under the MIRR are increased human disturbance in caribou habitat facilitated by road construction or reconstruction and changes to the quality, quantity, and/or distribution of caribou habitat resulting from vegetation management and/or roads; a general discussion of how human disturbance and timber harvest affect the caribou is presented above. Below we describe specific Forestwide and Management Area (MA) standards from the IPNF LRMP that have, and will continue to minimize these types of effects, including those that could occur as allowed by the MIRR.

IPNF LRMP Standards addressing Human Disturbance:

- Management of habitat and security needs for threatened and endangered (T & E) species will be given priority in identified habitat (Forestwide);
- Roads should be planned to avoid old-growth management stands to maintain unit size criteria (Forestwide);
- Road use will be based on needs identified in project level planning. Additional restrictions and seasonal vehicle closures as needed to assure grizzly bear habitat (MA-2 [lands designated for timber production within grizzly bear habitat], 3 [lands designated for timber production within grizzly bear habitat and big game winter range], see also MA-4 [lands designated for timber production within big game winter range]);
- Manage for roaded natural, and, where possible toward semi-primitive motorized and non-motorized recreation. Restrict motorized use when needed to protect caribou (MA-7 [lands designated for caribou management]);
- Seasonal closures of some or all uses may be needed to protect caribou or grizzly bears (MA-7);
- 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 caribou management unit. Additional seasonal closures as needed to protect caribou (MA-7);
- Within grizzly bear and caribou habitat, recreational use may be restricted to provided needed wildlife security during periods of use (MA-10 [lands designated as high value for semi-primitive recreation] and 11 [lands designated as existing and proposed wilderness areas]).

In addition to these standards, the IPNF is also completing a strategy for managing winter recreation in caribou habitat (USFS 2006a) which is intended to reduce snowmobiling impacts on caribou. The IPNFs' *2004 Situation Summary and Management Strategy for Mountain Caribou and Winter Recreation on the IPNF* lays the groundwork for development of this strategy (USFS 2004). While such a strategy could help minimize some of the effects road construction and reconstruction can have on caribou (e.g., facilitation of human access) in the future, the Service is not relying on this strategy as part of its section 7(a)(2) analysis for this consultation. Until an acceptable strategy is developed and undergoes section 7 consultation, a Court injunction on snowmobile activities within the caribou recovery area remains in place.

IPNF LRMP Standards Addressing Impacts on Caribou Habitat

- Consider cumulative effects when evaluating activities within identified [caribou] habitat (Forestwide);
- Maintain at least 10 percent of the forested portion of the IPNF as old growth (Forestwide);
- Roads should be planned to avoid old-growth management stands to maintain unit size criteria (Forestwide);
- Maintain approximately 25,000 acres to support viable populations of old-growth dependent species (MA-1 [lands designated for timber production]);
- Maintain approximately 6,000 acres to support viable populations of old-growth dependent species (MA-2);
- Retain and manage established caribou travel corridors that occur in mature timber (MA-7);
- Provide seasonal habitat requirements in accordance with the Caribou Habitat Management Guidelines (Appendix N in 1987 LRMP) and approved recovery plans (MA-7);
- Timber management regimes will be based on site-specific analysis of caribou habitat needs. Existing all-aged old-growth cedar/hemlock stands are to be retained (MA-7).

As mentioned above, the IPNF LRMP includes caribou habitat management guidelines (USFS 1987, Appendix N), which provide descriptions of seasonal habitat, desired conditions for these habitats, and specific management prescriptions designed to improve habitat conditions with the Caribou Recovery Area. These guidelines, as written in the IPNF LRMP, are outdated. New scientific data on how caribou use their habitat resulted in a revised habitat analysis procedure as noted in the 2005-2006 IPNF monitoring report (USFS 2006b). As of 2008, the IPNF considers Apps and Kinley (2007) to be the best available science on caribou habitat needs. Individual project level planning and analysis will continue to consider the best available science, providing a mechanism through which updated and emerging information can be incorporated (USFS 2008a and b).

Under the IPNF LRMP, the Forest has committed to considering cumulative effects in its evaluation of activities proposed in caribou habitat (see Forestwide standard above). The LRMP references Appendix HH in association with this standard, which consists of a Cumulative Effects Model (CEM). This standard does not necessitate use of this model, but rather includes it in the Appendix as an analytic tool for use in conducting such evaluations. This model currently is considered outdated; certain components, such as the disturbance submodel, are incomplete and, to the Service's knowledge, the model has not been validated as recommended by the Caribou Recovery Plan. Notwithstanding these potential limitations, the IPNF uses the qualitative factors and concepts contained in the CEM, as well as the best available science on caribou, to conduct analyses of cumulative effects on caribou at the project level (USFS 2008a and b).

Although not explicitly stated as a standard in the LRMP, currently the IPNF does not conduct timber harvest that removes allocated old growth stands (USFS 2006b). This practice was

discontinued by 2000. The IPNF LRMP calls for maintaining 10 percent of the forested portion of the IPNF (or 231,000 acres) as old growth (Forestwide standard). To date, the IPNF has identified and allocated approximately 283,727 acres of forest stands to be retained as old growth (12.3% of IPNF forested acres), which includes 241,390 acres of allocated field identified stands that fully meet old growth minimum criteria (as described in USFS 2006b), in addition to allocated potential old growth. There are currently over 60,000 acres of allocated old growth habitat within the caribou recovery area (USFS 2008b). To ensure that all management actions are designed based upon current old growth conditions, whenever any management activity is being considered that could possibly impact old growth, the IPNF examines old growth allocations within the project area. The IPNF's intent is to maintain and manage old growth stands that are suitable caribou habitat within the caribou recovery area (USFS 2008a and b). This practice avoids or minimizes effects to old growth that could result from Forest management which in turn should reduce impacts to caribou on the IPNF.

As noted previously, at the programmatic level, the Service determined in a 2001 Biological Opinion that continued implementation of the LRMP is not likely to jeopardize the continued existence of the woodland caribou, while noting that certain actions implemented under the LRMP could have adverse effects on caribou (Service 2001). These findings were based on a broader set of permissions than the MIRR because part of the Caribou Recovery Area is outside of IRAs.

It is important to note that since 2001, the IPNF, in considering caribou relevant LRMP components, has not proposed any vegetation management projects that were 'likely to adversely affect' the caribou (USFS 2008a). Based on: (1) this history of applying caribou relevant LRMP components, which will still apply to project development with implementation of the proposed action, and (2) the IPNF's stated intent of continuing to use the best available science to maintain and manage old growth stands that are suitable caribou habitat within the caribou recovery area (USFS 2008a and 2008b), it is reasonable to expect that projects proposed under the MIRR are likely to continue to shape vegetation management activities in a manner that considers the needs of the caribou.

3. Implications of the MIRR Themes on Woodland Caribou

Over 131,000 acres (14%) of the South Selkirk Ecosystem recovery area and seasonal caribou habitats overlap IRAs (Tables 14 and 15). As such, it is possible that caribou and/or their habitat could be exposed to management activities, such as road construction and/or reconstruction and timber cutting, within IRAs. Conditions under which road construction/reconstruction and timber cutting could occur within IRAs vary with themes proposed by the MIRR. Generally, these themes rank in restrictiveness as follows (from most restrictive to least): WLR, PRIM, SAHTS, BCR, BC-CPZ), and lastly GFRG. Approximately 1,000 acres of timber harvest (i.e., removal of a commercial product) and 3.3 miles of road construction are projected in IRAs per year across the entire state under the MIRR. Most of these activities are likely to occur within the GFRG theme. Only 1.1 percent (4,545 acres) of all GFRG (405,900 acres) overlaps the caribou recovery area and the seasonal habitats it encompasses; consequently, the likelihood that timber harvest and road construction/reconstruction would occur within caribou habitat under this theme is relatively low. However, because we cannot predict the exact locations of future

projects undertaken as allowed under the MIRR, we cannot discount the potential for adverse effects to caribou. The implications of these themes and projections relative to their effects on the woodland caribou are discussed below. Again, any projects proposed pursuant to the MIRR would be subject to applicable LRMP components, including those relevant to caribou, that should serve to avoid and/or minimize adverse effects to the caribou as described above under *Applicable IPNF LRMP Components for Caribou*.

Table 14. Overlap of the South Selkirk Ecosystem caribou recovery area with the MIRR themes.

	Recovery area (acres)	% of total
Wild Land Recreation	54,507	5.68%
Primitive	0	0%
Backcountry Restoration	58,507	6.10%
Backcountry Restoration - CPZ	0	0%
General Forest, Rangeland, Grassland	4,545	0.47%
Special Areas of Historical and Tribal Significance	0	0%
Other Forest Plan Special Areas ¹	14,243	1.48%
Total in IRA	131,802	13.73%
Total South Selkirk Ecosystem Recovery Area	959,923	

¹These are roadless areas that are already part of other land classification systems; they are not addressed by in the Modified Idaho Roadless Rule. They are only included here for sake of completeness.

Wild Land Recreation

As stated in the Assessment (USFS 2008a), the IRAs within the WLR theme overlap 54,507 acres (5.68%) of the South Selkirk Ecosystem caribou recovery area (Table 14) and caribou seasonal habitats (Table 15): 14,315 acres in the Salmo/Priest IRA and 40,192 acres in the Selkirk IRA. Further, 15.80 miles and 24.69 miles of primary and secondary caribou movement corridors, respectively, intersect this theme (Table 16).

Lands placed in WLR were identified during the forest planning process as recommended for wilderness designation. Consequently, road construction and reconstruction and timber cutting, sale, or removal is generally prohibited with very few exceptions. Activities related to leasable mineral extraction are also prohibited under this theme. Consequently, adverse effects to woodland caribou or its habitat resulting from roads, timber cutting, and discretionary mining as addressed under the MIRR are not anticipated in IRAs managed as WLR. Further, woodland caribou will benefit from prohibitions, particularly on road construction and reconstruction, as such restrictions should help in maintaining habitats that are relatively unfragmented and free from human disturbance. The IPNF has stated that 24,464 acres within the caribou recovery area

have been placed under the more restrictive WLR theme under the MIRR compared to the 1987 LRMP, providing further protection for caribou habitat (Dekome, USFS, September 8, 2008).

Table 15. Overlap of the MIRR ‘themes’ with caribou seasonal habitats within the South Selkirk Ecosystem caribou recovery area.

	Total in recovery area	WLR	BCR	GFRG	SAHTS
Calving					
High	78,791	6,734	5,416	112	467
Moderate	324,559	21,545	31,477	1,512	1,668
Low	505,788	23,723	20,743	2,855	11,938
Total	909,138	52,002	57,636	4,479	14,073
Summer					
High	59,656	5,454	5610	5	241
Moderate	314,878	23,966	30,361	1,668	2,594
Low	534,709	23,175	21,347	2,627	11,556
Total	909,243	52,595	57,318	4,300	14,391
Spring					
High	81,108	7,368	9,261	311	280
Moderate	384,132	26,284	31,922	2,319	5,930
Low	434,820	18,308	13,768	1,696	7,726
Total	900,060	51,960	54,951	4,326	13,936
Early Winter					
High	72,116	3,993	5,919	0	244
Moderate	324,229	18,518	30,791	938	4,351
Low	513,880	30,038	20,911	3,607	9,865
Total	910,224	52,549	57,621	4,545	14,460
Late Winter					
High	74,157	4,526	6,960	2	395
Moderate	210,488	16,218	20,888	486	1,820
Low	524,487	25,906	28,385	3,084	9,806
Total	809,132	46,650	56,233	3,572	12,021

Table 16. Overlap of primary and secondary caribou corridors with the MIRR themes.

	Primary corridor (miles)	Secondary corridor (miles)
Wild Land Recreation	15.80	24.69
Primitive	0	0
Backcountry Restoration	8.90	33.90
Backcountry Restoration - CPZ	0	0
General Forest, Rangeland, Grassland	0	0.91
Special Areas of Historical and Tribal Significance	0	0
Other Forest Plan Special Areas ¹	3.12	1.57
Total in IRA	27.82	61.93

¹These are roadless areas that are already part of other land classification systems; they are not addressed by in the MIRR. They are only included here for sake of completeness.

Primitive and SAHTS

As stated in the Assessment (USFS 2008a), there is no overlap of these IRA management themes with the Selkirk caribou recovery area, caribou habitat, or movement corridors.

Backcountry Restoration

The following five paragraphs, excerpted from the Assessment (USFS 2008a), describe activities allowed under the BCR theme:

“58,507 acres (6.10%) of the South Selkirk Ecosystem caribou recovery area [and the seasonal habitats they contain (Table 16)] overlap BCR (Table V-14) in the following IRAs: Continental Mountain (7,525 acres), Little Grass (2,319 acres), Saddle Mountain (7,766 acres), Selkirk (36,578 acres), and the Upper Priest (4,044 acres). Approximately 8.9 miles and 33.90 miles of primary and secondary caribou movement corridors, respectively, intersect this theme (Table V-15). 1,206 telemetry locations (approximately 48%) for caribou were detected within BCR. No CPZs overlap the recovery area, but two telemetry points were detected within BCR/CPZ.

Within BCR, construction/reconstruction of temporary roads would be permitted (see Chapter II for more details) under certain circumstances. Temporary roads could be constructed within the CPZ to facilitate hazardous fuel reduction projects. However as stated above, there is no overlap of habitat in the Caribou Recovery area and BCR-CPZ. Temporary roads could also be constructed outside the CPZ where needed to reduce significant adverse effects of wildland fire on at-risk communities or municipal water supply systems. If these purposes applied, activities would be further subject to certain conditions for implementation (See Chapter II for more details) which would likely reduce the likelihood that temporary roads would be constructed.

Similarly, timber cutting activities from existing roads or using aerial systems are permitted in BCR to improve TEPS habitat, restore or maintain characteristics of ecosystem composition and structure, and to reduce the risk of uncharacteristic wildland fire effects. Under the MIRR, 1,000 acres of timber harvest (i.e., removal of a commercial product) and 3.3 miles of road are projected in IRAs per year over the next 15 years based on historic trends for developing roadless areas over the past 20 years. Most of these activities are expected to occur within the 405,900 acres of GFRG. However, there is the potential for timber harvest and cutting and road construction/reconstruction (restricted to temporary roads) within BCR, albeit the circumstances under which it would occur are few. Limited construction of temporary roads in caribou habitat could subject caribou to increased levels of human activities, adversely affecting caribou where they are displaced from important habitats. Such temporary roads may also remove vegetation and fragment forested landscapes in the short-term. Although temporary roads could be decommissioned, the effect of constructing a road through caribou habitat may have long lasting effects.

Temporary road construction and timber cutting outside BCR-CPZ must maintain or improve one or more of the roadless area characteristics over the long-term. One roadless area characteristic is to provide habitat for threatened and endangered species. Based on the applicable land management direction, projects in caribou habitat that overlap BCR theme would be designed to maintain or improve caribou habitat.

The South Selkirk Ecosystem contains some municipal water supply systems (Figure 3). Timber cutting activities intended to reduce fuels around these public resources could take place to reduce significant risk from wildland fire effects. However, timber cutting in BCR outside of CPZ must maximize the retention of large trees, applicable to the forest type to the extent the trees promote fire-resilient stands. In addition, management direction specific to old-growth forests would apply (i.e. forest-wide direction and MA 7 (Caribou habitat) direction (Appendix B, Table B-4).”

Temporary roads constructed in BCR may only be used for the specified purpose (i.e. timber cutting, sale, or removal) and not for general public use. In addition, all temporary roads are required to be decommissioned following project completion. However, decommissioning, as defined in the Assessment, does not necessarily equate to recontouring the road back to the original slope and revegetating the area. A temporary road which is simply barricaded and stabilized (i.e. culverts pulled) will remain on the landscape far longer than one that has been fully obliterated, and the resulting potential long-term effects on caribou may be quite different.

The Assessment states that to ensure that all management actions are designed based upon current old-growth conditions, whenever any management activity is being considered that could possibly impact old-growth, the IPNF examines old-growth allocations within the project area. The IPNF has stated that they do not implement timber harvest that removes allocated old growth. Furthermore, they have stated their intent to follow LRMP standards and guidelines and use the best available science to maintain and manage old growth stands that are suitable caribou habitat within the caribou recovery area (USFS 2008a and b). These efforts assist in avoiding impacts to old-growth caribou habitat that could result from Forest management, which should assist in minimizing adverse impacts to the caribou.

Road construction or reconstruction related to discretionary mining is not permitted within the BCR theme. However, surface occupancy to facilitate extraction of leaseable minerals (e.g., oil and gas, geothermal) would be allowed where it is consistent with applicable LRMP components. The likelihood of new leases for oil, gas, coal or geothermal development in IRAs, particularly outside of the Caribou-Targhee National Forest, is exceptionally low (Abing 2008). This likelihood is further reduced under this theme without the ability to build new roads for such mining activities. However, as this theme does not prohibit surface occupancy for new mines that use existing road systems, there is a small potential for mining-related impacts on woodland caribou via habitat loss, degradation, and disturbance where future activities overlap the range of the caribou.

The Assessment outlines a number of roadless area characteristics and indicates that timber harvest and road construction/reconstruction proposed within several of the MIRR management area themes must maintain at least one of these characteristics. One of these roadless area characteristics is: “Habitat for threatened, endangered, proposed, candidate, and sensitive species and for those species dependent on large, undisturbed areas of land.” According to the Assessment, based on the applicable land management direction, projects in caribou habitat that overlap BCR theme would be designed to maintain or improve caribou habitat (USFS 2008a).

General Forest, Rangeland, or Grassland

According to the Assessment (USFS 2008a), there are 4,545 acres (0.47%) of the Selkirk caribou recovery area that overlap the GFRG management theme (Table 14) in the following IRAs: Kootenai Peak (943 acres) and Selkirk (3,602 acres). Approximately 0.91 miles of secondary caribou movement corridors intersect this theme (Table 16). Only 5 of 2,523 telemetry points gathered on caribou within IRAs – or 0.20 percent – were within GFRG, suggesting relatively low use of areas proposed as GFRG in comparison to use documented in BCR and WLR (see Table 13).

Both permanent and temporary roads can be constructed, reconstructed and/or maintained in accordance with the GFRG theme for purposes of timber-cutting, under other exceptions and/or in association with certain phosphate deposits in the IRA on the Caribou-Targhee National Forest, but such roads are not permitted to access other types of mineral leasing such as oil and gas or geothermal. Surface occupancy to facilitate extraction of leaseable minerals (e.g., oil and gas, geothermal) would be allowed where it is consistent with applicable LRMP components. As indicated above, the likelihood of new leases for oil, gas, coal or geothermal development in IRAs, particularly outside of the Caribou-Targhee National Forest, is exceptionally low (Abing 2008) based on a low potential for occurrence (i.e., oil and gas), lack of industry interest, and difficulties associated with transportation. This likelihood is further reduced by the limitations for road construction/reconstruction associated with mineral activities under the proposed GFRG theme. However, as GFRG does not prohibit surface occupancy for new mines that use existing road systems, there is a small potential for mining related impacts on woodland caribou via habitat loss, degradation, and human access where future activities overlap the range of this species.

All activities that take place in accordance with the GFRG theme would be subject to applicable LRMP components as well as to specific conditions promulgated by the MIRR [See Chapter II of the Assessment (USFS 2008a) for a description of these conditions].

Road construction/reconstruction (3.3 miles/year) and timber cutting (1000 acres/year) projected in IRAs over the next 15 years are most likely to occur within areas subject to the GFRG theme. Given the permissions allotted in GFRG for road construction/reconstruction and timber cutting activities, there is the potential for woodland caribou to be adversely affected in areas subject to the GFRG theme via habitat loss/modification, and human disturbance facilitated by roads. The potential modification of 4,545 acres of caribou habitat, given the existing degree of habitat fragmentation within the Selkirk recovery area and the consideration of habitat fragmentation as a primary threat to caribou, could result in significant adverse effects to the caribou. Most of the potentially affected acres (3,602) fall within the Selkirk IRA, which contains the most caribou habitat of any of the IRAs, and most of the caribou telemetry points (Table 13).

However, as displayed in Table 13, only 0.2 percent (5 points) of all caribou telemetry points documented in roadless areas, and 0.47 percent of the entire caribou recovery area overlap the GFRG theme. Acreages under the GFRG theme within the caribou recovery area are located along the periphery of the recovery area, which may not be used as heavily by caribou (as corroborated by the relative lack of documented telemetry locations in GFRG). Additionally, the Selkirk IRA, which contains the highest number of caribou telemetry points, encompasses the site of the first caribou augmentation effort in the late 1980s, which could explain, to some extent, the higher number of telemetry points in this IRA.

Due to the exceptionally low likelihood of surface occupancy for new energy developments (e.g., oil, gas, geothermal), we do not anticipate effects to caribou from these activities. Additionally, it is unlikely that timber harvesting and road construction allowed in GFRG statewide would be focused within caribou habitat, therefore, the likelihood of potential impacts from these types of actions to caribou and/or their habitat is relatively low. However, given that exact locations of future projects are not known nor are there restrictions on the distribution of effects spatially or temporally, the possibility of adverse effects to caribou cannot be discounted. Although only 0.47 percent of the entire caribou recovery area could be impacted by activities associated with the GFRG theme, as noted above, most of the potentially affected acres (3,602) fall within the Selkirk IRA, which contains the most caribou habitat of any of the IRAs, and most of the caribou telemetry points. The impact of timber-cutting, road construction, and recreation (all recognized threats to the caribou as discussed above under the Status of the Species section) on the caribou is magnified due to the extremely small size of the Selkirk Mountains woodland caribou population. However, as noted above, these areas occur along the periphery of the caribou recovery area, therefore, caribou may not be as likely to occur in these areas, as corroborated by telemetry data on caribou which documented only 5 points (0.2%) of 2,523 points in GFRG. Moreover, the USFS has stated that MIRR-related projects proposed within caribou habitat would incorporate the LRMP standards and guidelines specific to caribou and would be designed to maintain or enhance caribou habitat requirements, as demonstrated by the recent history of projects proposed within caribou habitat on the IPNF (USFS 2008a).

4. Species Response to the Proposed Action

As discussed above in the Environmental Baseline section, although the number of caribou in the recovery area is increasing, the number of caribou occurring in the U.S. portion of the Selkirk Mountains recovery area is currently thought to be relatively low. Recent winter population censuses have located between one and three animals in the U.S. during the winter survey periods over the last few years. Nevertheless, given the mobility of caribou, the Service considers the entire recovery area to be occupied habitat. Additionally, a number of anecdotal caribou sighting reports in various seasons have occurred throughout the U.S. portion of the recovery area since 2000, further demonstrating the likelihood for caribou to occur throughout this area. Given the low number of caribou, the potential for activities allowed by the MIRR to adversely affect individual caribou in the near future is considered to be low. However, given the extremely small size of the Selkirk Mountains woodland caribou population, any adverse effects to individual caribou caused by Federal or non-Federal actions are likely to be significant.

As discussed above in the “Status of the Species” section, habitat loss and fragmentation is one of the factors influencing the current conditions of caribou. Habitat loss/fragmentation has the following effects on caribou: (1) it reduces the amount of space available for caribou, limiting the ecological carrying capacity; (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).

There are 4,545 acres of caribou habitat that are potentially subject to the most permissive GFRG management theme. An additional 58,507 acres of caribou habitat are also subject to some level of temporary roading and timber cutting or harvest under the more restrictive BCR outside of CPZ theme, albeit the circumstances under which these activities might occur are few. This amounts to approximately 6.6 percent of the Selkirk recovery area that could be affected by these activities. Although this is a relatively small percentage of the overall Selkirk recovery area, the existing level of habitat fragmentation throughout the recovery area makes even small increases in habitat fragmentation a significant adverse effect on the caribou.

As discussed above, projects allowed under the MIRR will be subject to LRMP standards that address caribou needs, as well as Act requirements. Although these standards are general, the IPNF has assured the Service of its intent to use the best available science, in consultation with the Service, to maintain and manage caribou habitat. It is important to note, as discussed above, that the IPNF’s compliance with these standards has, since 2001, resulted in all vegetation management projects being designed in a manner that is not likely to adversely affect the caribou.

Based on considering the applicable LRMP components, the prohibitions and permissions associated with the MIRR, the IPNF’s record since 2001 of designing vegetation management projects that are not likely to adversely affect the caribou, and their stated intent to continue to use the best available science, in consultation with the Service, to maintain and manage caribou habitat, the Service has determined that vegetation management projects proposed within

caribou habitat pursuant to the proposed action are likely to be designed in a manner that maintains or improves the habitat to meet caribou needs.

Summary of Effects of the Action

- The overlap between the South Selkirk caribou recovery area, totaling 959,923 acres, and the MIRR IRAs is 131,813 acres (14% of the total recovery area). Of these 131,813 acres, 68,750 acres (52%) will be assigned the Wild Land Recreation or Forest Plan Special Areas themes with no road construction or timber cutting permitted under the MIRR. This includes 24,464 acres more than under the existing LRMP.
- The BCR theme that allows for some timber cutting and temporary road construction is assigned to 58,507 acres (6%) of the Selkirk caribou recovery area. However, LRMP standards and guidelines that are protective of caribou and their habitat will be applied to site-specific projects in these areas.
- The GFRG theme that allows for timber harvest and permanent and temporary road construction is assigned to 4,545 acres (0.47%) of the Selkirk recovery area. These acres are located at the periphery of the caribou recovery area where they overlap municipal water supply systems. Again, LRMP standards and guidelines that are protective of caribou and their habitat will be applied to site-specific projects in these areas.
- Of the 4,545 acres that is assigned to the GFRG theme, 3602 acres are located in the Selkirk IRA. Approximately 89% of the woodland caribou telemetry points are located within this IRA. However, only 0.2 percent of the telemetry points occur within the GFRG theme. Additionally, the Selkirk IRA encompasses the site of the first caribou augmentation, which could help explain the higher number of telemetry points that have been documented over the last 20 years.
- Despite having 2,235 telemetry points for woodland caribou documented within the last 15-20 years in the Selkirk IRA alone, the number of woodland caribou thought to occur in the United States portion of the South Selkirk Mountain recovery area remains low.
- Site-specific project proposals developed in association with the MIRR must be consistent with IPNF LRMP standards and guidelines to protect woodland caribou.

As stated above, while the potential exists for activities allowed under the MIRR, including timber cutting and harvest, road construction or reconstruction, and discretionary mining within caribou habitat, the likelihood is low, given the size of the action area (i.e., all IRAs within the state of Idaho). Additionally, the implementation of LRMP standards and guidelines in the design of projects proposed under any of the MIRR themes provides further assurance that caribou habitat requirements will be maintained and that the likelihood of disturbance to caribou would be low. Furthermore, the recent history of projects proposed within the caribou recovery area demonstrates that the IPNF has not proposed any projects likely to adversely affect caribou. The most permissive MIRR theme (GFRG) represents a relatively small portion of the caribou recovery area and occurs along the periphery of the recovery area, where caribou may be less likely to occur. The USFS has stated that any temporary roads constructed in caribou habitat would be gated and restricted to the public and would be decommissioned upon completion of the project. The Service expects that any such road restrictions would be carefully enforced by the IPNF to preclude their use by snowmobilers or other members of the public that could increase the risk of disturbance to caribou.

D. Cumulative Effects

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA.

We do not anticipate cumulative effects to the Selkirk Mountains woodland caribou resulting from state, Tribal, and local government actions for the following reasons:

- The action area for the MIRR consists of IRAs (see definition in Section II of the Assessment), most of which are unlikely to contain significant inholdings given their current roadless character and thus effects on such intervening non-Federal lands are unlikely;
- Given the broad scope of this Federal Action, it is not possible to determine specific state, private or local government legislation, administrative rules, or policy initiatives that would be reasonably certain to occur in IRAs.

E. Conclusion

After reviewing the current status of the Selkirk Mountains woodland caribou population, the environmental baseline for the action area, the effects of the MIRR, and the cumulative effects, it is the Service's biological opinion that the MIRR, as proposed, is not likely to jeopardize the continued existence of the Selkirk mountain caribou population. No critical habitat has been designated for this species; therefore, none will be affected. We reached this conclusion based on the following rationale.

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 can be summarized as follows:

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.

Under the MIRR, there will be an additional 24,464 acres of caribou habitat managed under a WLR theme (54,507 acres total), compared to the 1987 LRMP. Under this theme, timber harvest, road construction/reconstruction, and leasable mineral extraction are generally prohibited, therefore, the MIRR should result in a beneficial effect to the caribou in WLR areas that is responsive to the above caribou conservation needs.

Considering the applicable LRMP components, the prohibitions and permissions associated with the MIRR, the IPNF's record since 2001 of designing vegetation management projects that are not likely to adversely affect the caribou, and their assurance that future projects will use the best available science to maintain and manage caribou habitat, the Service has determined that vegetation management projects proposed within caribou habitat allowed by the proposed action are likely to be designed in a manner that maintains or improves the habitat to meet caribou needs, and protects and maintains existing old growth habitat within the caribou's range on the IPNF.

The USFS has reviewed the management direction provided for each species described in the Assessment and have determined that it is not inconsistent with the MIRR. The species management direction provides design criteria to minimize or reduce adverse effects on a species from specific activities; therefore it would be applied during project specific development.

Under the proposed action, roads constructed in caribou habitat will be barricaded, restricted roads, closed to the public to prevent further disturbance of caribou and their habitat. Temporary roads are to be decommissioned following project completion, which will help to minimize the adverse effects of increased habitat fragmentation and human disturbance on the caribou. These aspects of the proposed action are also responsive to the above survival and recovery needs of the caribou.

F. Incidental Take Statement

Due to the general nature of the proposed action, the *Effects of the Action* section of this document does not analytically support a finding that incidental take of the Selkirk Mountains woodland caribou is likely to occur as a result of the proposed action. For that reason, any appropriate take exemption is deferred to the results of future section 7 analysis of individual or batched actions taken. The mere potential for take is not a legitimate basis for providing such an exemption. Subsequent consultation, as appropriate, on specific actions allowed under the MIRR and relevant provisions of LRMPs will serve as the basis for determining if take is likely to occur and 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 woodland caribou in accordance with 50 CFR 402.14(i).

G. Conservation Recommendations

Section 7(a)(1) of the Act directs Federal agencies to utilize 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 a management plan for each Caribou Management Unit (CMU), as called for in the Caribou Recovery Plan, to provide for habitat protection and improvement. Such plans/standards are in place for grizzly bear management units (BMU) and lynx analysis units (LAU), clearly outlining the needs and requirements for habitat protection and management at the BMU or LAU scale. Similar direction is needed for caribou habitat management at the CMU scale. The CMU direction would describe the existing conditions of each CMU, clearly define what (if anything) is needed to improve habitat within these CMUs and connectivity between CMUs, and what activities are compatible with the needs of caribou within each. Analysis at this smaller scale helps ensure adequate distribution of suitable habitat across the recovery area and facilitates cumulative effects analyses.
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. Complete a winter travel plan as soon as possible that is protective of the needs of listed and sensitive species in the Selkirk Ecosystem.

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