Woodland Caribou & Over Snow Vehicle Use Summary

General Overview of Over Snow Vehicle Use Impacts to Caribou

The following excerpt is from the Biological Opinion on the Revised Forest Plan for the Idaho Panhandle National Forests (USFWS 2013):

"**Winter Recreation**

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

Simpson and Terry (2000) evaluated the effects of several forms of winter recreation on woodland caribou and found that snowmobiling represents the greatest perceived threat. Deep snow, open forests, and scenic vistas make late winter caribou habitat very attractive to recreational snowmobilers. The increasing popularity of snowmobiling and recent advances in snowmobile technology, combined with additional road systems, now allow recreationists easier access to high elevation caribou winter ranges (MCTAC 2002, pp. 18, 23, 60). However, because this habitat is particularly important to woodland caribou, their disturbance or displacement by snowmobilers, especially given the current fragmented nature of woodland caribou winter habitat, can have severe effects on woodland caribou (MCTAC 2002, pp. 18, 22).

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

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

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

Seip et al. (2007) evaluated the effects of snowmobile use on caribou winter range selection in central B.C. They conducted aerial censuses over 4 winters on 5 discrete mountain ranges within one herds'

winter range. They documented caribou use on the 4 mountain ranges with little or no snowmobile activity during each census and no caribou use on one mountain range that experienced extensive snowmobile activity during 3 of the 4 censuses. When caribou did use the mountain range with extensive snowmobile activity, the most-used areas were inaccessible by snowmobilers. Based on their evaluation, they concluded that intensive snowmobile activity had displaced caribou from known high quality winter habitat (Seip et al. 2007, pp. 1543-1544).

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

Powell (2004) studied the effects of recreational snowmobile use on caribou in the southern Yukon and found that: (1) caribou moved away from this disturbance; (2) maternal groups responded more than did male groups, being twice as likely to flee from an approaching snowmobile and spending more time moving and being vigilant after the disturbance; (3) caribou did not display habituation or sensitization to the disturbance; and (4) wolves frequently used snowmobile trails, possibly leading to increased predation on caribou. Especially in areas where suitable winter range is scarce, disturbance to caribou may cause them to shift into less preferred habitat, which increases the risk of mortality from malnutrition, predation, and avalanches. Snowmobile trails provide hard-packed travel corridors for predators to move into caribou habitat (Bloomfield 1979, Neumann and Merriam 1972, Robinson et al. 2010, p. 87). Wolf predation is often responsible for adult caribou mortality and low recruitment in caribou populations within Canada (Bergerud and Ballard 1988, Gasaway et al. 1983, Seip 1991, Stevenson and Hatler 1985)."

Relevant Forest Wide Goals

- GOAL-WL-01. The IPNF manages wildlife habitat through a variety of methods (e.g., vegetation alteration, prescribed burning, invasive species treatments, etc.) to promote the diversity of species and communities and to contribute toward the recovery of threatened and endangered terrestrial wildlife species.

Relevant Forest Wide Desired Conditions

- FW-DC-WL-07. Woodland Caribou find areas for movement on NFS lands within the recovery zone and connectivity with populations in Canada. Woodland caribou find areas with low levels of disturbance.

Relevant Forest Wide Guidelines

- FW-GDL-WL-04. Woodland Caribou. During the winter period of December 1 to April 30, disturbance from over-snow vehicle use should be avoided or minimized in areas known to be occupied by caribou.

Relevant Lower Kootenai Geographic Area Desired Conditions

- GA-DC-WL-LK-03. Low levels of human disturbance allows for denning activities of wide-ranging carnivores that are sensitive to human disturbance (e.g., grizzly bear) in the upper elevations of Northwest Peaks and the Selkirk Mountains. Areas in the Selkirk Mountain range with low levels of disturbance are used by mountain goat and woodland caribou during the winter.

Relevant Pend Oreille Geographic Area Desired Conditions

- GA-DC-WL-PO-03. The winter motorized trail system provides groomed routes and access to an array of off-trail areas while providing undisturbed wintering areas for woodland caribou in the Selkirk Mountain range.

Relevant Priest Geographic Area Desired Conditions

- GA-DC-WL-PR-01. NFS lands provide habitat conditions for wildlife movement, especially woodland caribou, throughout the Selkirk recovery zone.
- GA-DC-WL-PR-02. Low levels of human disturbance allows for denning activities of wide-ranging carnivores that are sensitive to human disturbance (e.g., grizzly bear). Areas with low levels of disturbance are available for use by woodland caribou throughout the year.
- GA-DC-WL-PR-03. Habitat conditions for wildlife movement on the divide between Idaho and Washington, from the Canadian border south are retained.
- GA-DC-WL-PR-04. The winter motorized trail system provides groomed routes and access to an array of off-trail areas while providing undisturbed wintering areas for woodland caribou in the Selkirk area.

Available GIS DATA

Woodland Caribou Recovery Zone - A specific area designated by the U.S. Fish and Wildlife Service which is managed for the recovery of the Southern Selkirk woodland caribou population per the 1994 Recovery Plan (USFWS 1994). The recovery area for the Selkirk Mountain population of caribou is comprised of approximately 1,477 square miles situated in northern Idaho, northeastern Washington and southern British Columbia.

Woodland Caribou Critical Habitat - Specific areas within the geographic area occupied by the species on which are found those physical and biological features that are essential to the conservation of the species and which may require special management considerations or protection.

Woodland Caribou Movement Corridors – Potential caribou movement corridors that were developed by Wakkinen and Slone (2010).

Additional Relevant Information

Available Habitat: Seasonal habitat selection by mountain caribou is characterized by changes in elevation which is largely driven by access to available forage and the influence of snow conditions (Stevenson et al. 2001).

Early Winter: Early winter is a period of rapid snow accumulation and generally extends from November to January 18. During this time caribou are often associated with landscapes dominated by mature and older spruce and subalpine fir stands with a forest canopy closure of at least 26-50 percent and dense canopies of 76--100 percent in old-growth western hemlock/ cedar forests with large, lichen bearing branches. Conifer canopy that intercepts snow and allows access to feeding sites is important until the snow pack consolidates and the caribou can move to higher elevations.

Late Winter: Late winter generally starts around mid-January and extends to about April 19. During this time, the snowpack is deep (up to 16 feet (or 5 meters) on ridge tops) and firm enough to support the animal's weight, which allows easier movement. These upper slopes and ridge tops are generally higher in elevation, support mature to old stands of subalpine fir and Engelmann spruce with preferred canopies similar to early winter at generally 26 to 50 percent cover and have high levels of arboreal lichen.

Linkages and Movement - Ensuring connectivity between existing woodland caribou core use areas in B.C. and suitable habitats in the United States is important for maintaining demographic stability, and ultimately achieving the recovery plan goal of having a herd or subpopulation in the United States. Identification of potential linkages must take into account both temporal and spatial aspects of caribou behavior.

"Established" travel corridors have never been formally identified for the Selkirk caribou population, although Freddy (1979) identified routes in British Columbia that south Selkirk woodland caribou used repeatedly. His research indicated that caribou "consistently followed specific travel routes between and within drainages…Routes commonly incorporated natural passes along ridges, frequently followed stream bottoms, invariably proceeded through forested areas, and generally connected feeding and resting areas used by caribou. Most routes were utilized during all seasons". In terms of movement across the international border, he documented caribou travel from Kootenay Pass (B.C.) southward to Snowy Top Mountain, as well as movement from Monk Creek and Nun Creek (B.C.) to Continental Mountain via the Upper Priest River/American Falls drainage at about 4,000 feet elevation, and presented likely movement routes based on historical information as well (Freddy 1974).

More recently, Wakkinen and Slone (2010) examined 20 years of Selkirk caribou radio telemetry data (1987 to 2006) in tandem with the landscape habitat model (Kinley and Apps 2007) to examine potential caribou movement corridors. They mapped 12 potential movement corridors from one area of high quality habitat to the next. Seven of these are located within the Action Area. Factors which may influence the overall effectiveness and utility of these modeled potential travel corridors by caribou movements include: (1) the presence of roads—particularly roads receiving frequent and high speed vehicular traffic which may influence caribou movements and survival year-round (i.e. B.C. Highway 3 through Stagleap Park and core caribou habitats)(Johnson 1976, Freddy 1979, Johnson 1985, USDI Fish and Wildlife Service 1994); (2) early seral vegetation conditions (due to timber harvest or large stand-replacing burns) which may impede movements across the landscape if the area is large enough and habitat quality is limited (Simpson et al. 1997, Heard and Vagt 1998) and associated higher rates of predation (Wittmer et al. 2007); (3) topographic features, including steep cliff faces and avalanche prone slopes (Scott and Servheen 1985, Servheen and Lyon 1989), and (4) recreational activities, including

snowmobile activity which may influence caribou movements during the winter season (Simpson 1987, Simpson and Terry 2000).