

# Management of Motorized Access in High Elevation Mountain Caribou Habitat

Omineca Region



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BRITISH  
COLUMBIA

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# **Management of Motorized Access in High Elevation Mountain Caribou Habitat**

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### **Purpose**

Proceeding from both public observations and professional investigations, it has become evident that snowmobiling and effective caribou habitat do not readily coexist. Mountain Caribou are provincially red-listed and federally identified as threatened. Threats to caribou survival must be met with effective management strategies to minimize the threat to this important, publicly-recognized species.

This paper will assemble the best currently available information on the relationship between Mountain Caribou and snowmobiles, then develop strategies to mitigate impacts on caribou. Current development pressures require clear guidance toward sustainable development, while avoiding undue compromise to Mountain Caribou.

As initiatives such as the Caribou Recovery Action Group provide recommendations or additional relevant information becomes available, amendments will be required. Implications and requirements of the federal Species At Risk Act may also provide direction for additional future revision.

### **Introduction**

This document contains an overview of Mountain Caribou vulnerability to habitat loss, predation, displacement and disturbance. Linkages to snowmobiling, heliskiing, and skiing are identified and prioritized. Recommendations are put forward.

### **Policy Direction and Conservation Status of Mountain Caribou**

Mountain Caribou numbers have declined from historical levels, and considerable historic range is no longer occupied (Spalding 2000). One estimate states that Mountain Caribou have been extirpated from 43% of their historic BC range (Hatter 2002). The 2002 estimate for Mountain Caribou in British Columbia is about 1900 animals in 13 local populations, with about 750 resident in Omineca Region. Attempts at population reconstruction suggest that Mountain Caribou populations have decreased over the short-term and the current trend continues down (Hatter 2002).

The British Columbia Conservation Data Centre (CDC) placed Mountain Caribou on the provincial Red List in 2000. The CDC Red List identifies species that are Threatened or Endangered provincially. The Committee on the Status of Wildlife in Canada (COSEWIC) designated caribou in the Southern Mountains National Ecological Area, including all Mountain Caribou, on their Threatened list in May 2000 and reaffirmed this designation in May 2002. The COSEWIC designation includes species that are candidates for formal national Threatened status under the new Species at Risk Act (SARA). **While SARA applies to federal lands, it includes a requirement for non-federal resource managers to effectively plan for and achieve recovery of Threatened species. Failure to achieve positive results may lead to the federal government imposing recovery plans.**

Numerous public interest groups have requested effective action to protect caribou and recover caribou population numbers. This support for caribou is evident in public land-use planning exercises (e.g. Prince George and Robson Valley Land and Resource Management Plans), in direct communication with government representatives, and with the media. This position has raised some controversy with affected interests, particularly the motorized recreation and the forestry sectors.

Mountain Caribou have considerable potential for direct economic impact on the BC timber industry, perhaps over an area far wider than the occurrence of the animals. With the marketplace moving toward selecting certified wood, there is a need to demonstrate effective environmental stewardship to meet certification requirements. This requirement to demonstrate good stewardship is being met in part by the forest sector through compliance with guidelines introduced to protect effective caribou habitat. Combinations of areas retained in mature or old timber and innovative harvest techniques applied in other areas are employed to retain habitat value. Decline in numbers of caribou have led some individuals and organizations to question the adequacy of these habitat management guidelines, and to request more restrictive guidelines. Biologists have been challenged to identify reasons for decline in numbers, and to propose management solutions.

## Life History of Mountain Caribou

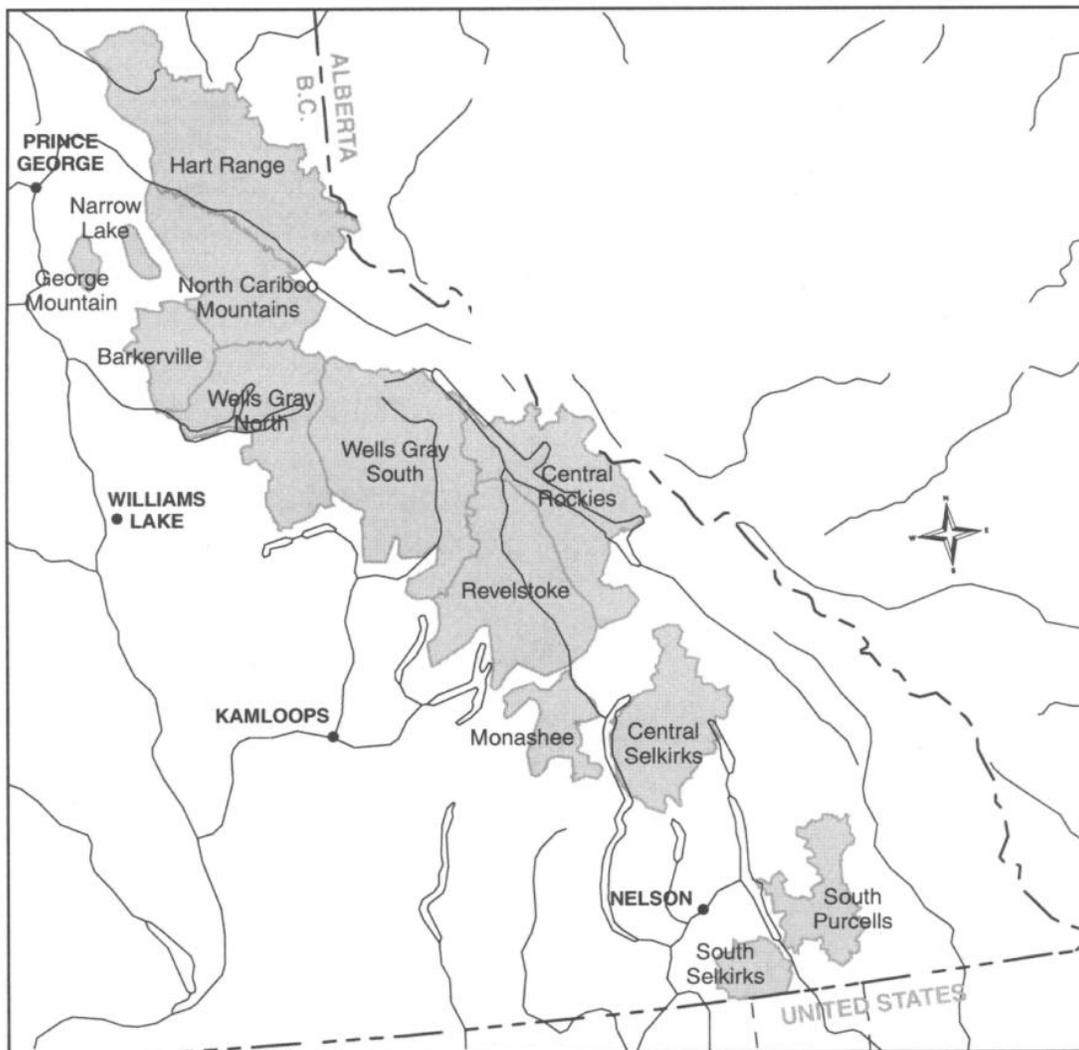
Mountain Caribou are an ecotype of Woodland Caribou (*Rangifer tarandus caribou*) adapted to survive in mountainous terrain with deep winter snowpack. These animals have large feet to distribute their weight on snow, and unique behavioural adaptations to survive where other ungulates cannot.

Mountain Caribou spend the late winter period (roughly Christmas to early spring) near tree-line, where they feed on arboreal lichen (*Bryoria sp.* and *Alectoria sp.*). This hair-like lichen becomes accessible to caribou as the accumulated snowpack settles, as the consolidated snowpack raises the caribou up to the lichen-bearing levels of the trees. Preferred habitat areas are located on gentle terrain, from the upper margins of continuous forest up through scattered tree islands into open alpine areas. Steep, avalanche-prone slopes are avoided. This unique winter strategy locates Mountain Caribou away from most other ungulates (deer, elk and moose) and the predators (wolves, cougar) associated with those ungulates. This behaviour lowers the predation risk for Mountain Caribou. These caribou have a much lower reproductive rate than deer, elk or moose. They cannot reproductively compensate for significant losses from

the population, hence effective predator avoidance is essential to the continuance of the ecotype.

With the onset of spring, Mountain Caribou descend into the lower elevation forest, to take advantage of fresh spring growth. Caribou cows select higher elevation areas to have their calves in late spring, in an apparent predator avoidance strategy. As summer progresses, the caribou follow the snowmelt back up in elevation, returning to upper-elevation forests and alpine areas. As fall gives way to early winter, the caribou again descend into the lower elevation forest, where they reside until high-elevation snowpack has accumulated and consolidated.

The entire world population of about 1900 Mountain Caribou lives in British Columbia, although about 35 of them also range into Idaho and Washington (Figure 1) (Hatter 2002). Distribution approximates the area of the interior wet-belt, where deep winter snow and mountain terrain coincide.



**Figure 1. Current distribution of Mountain Caribou in British Columbia (Hatter 2002)**

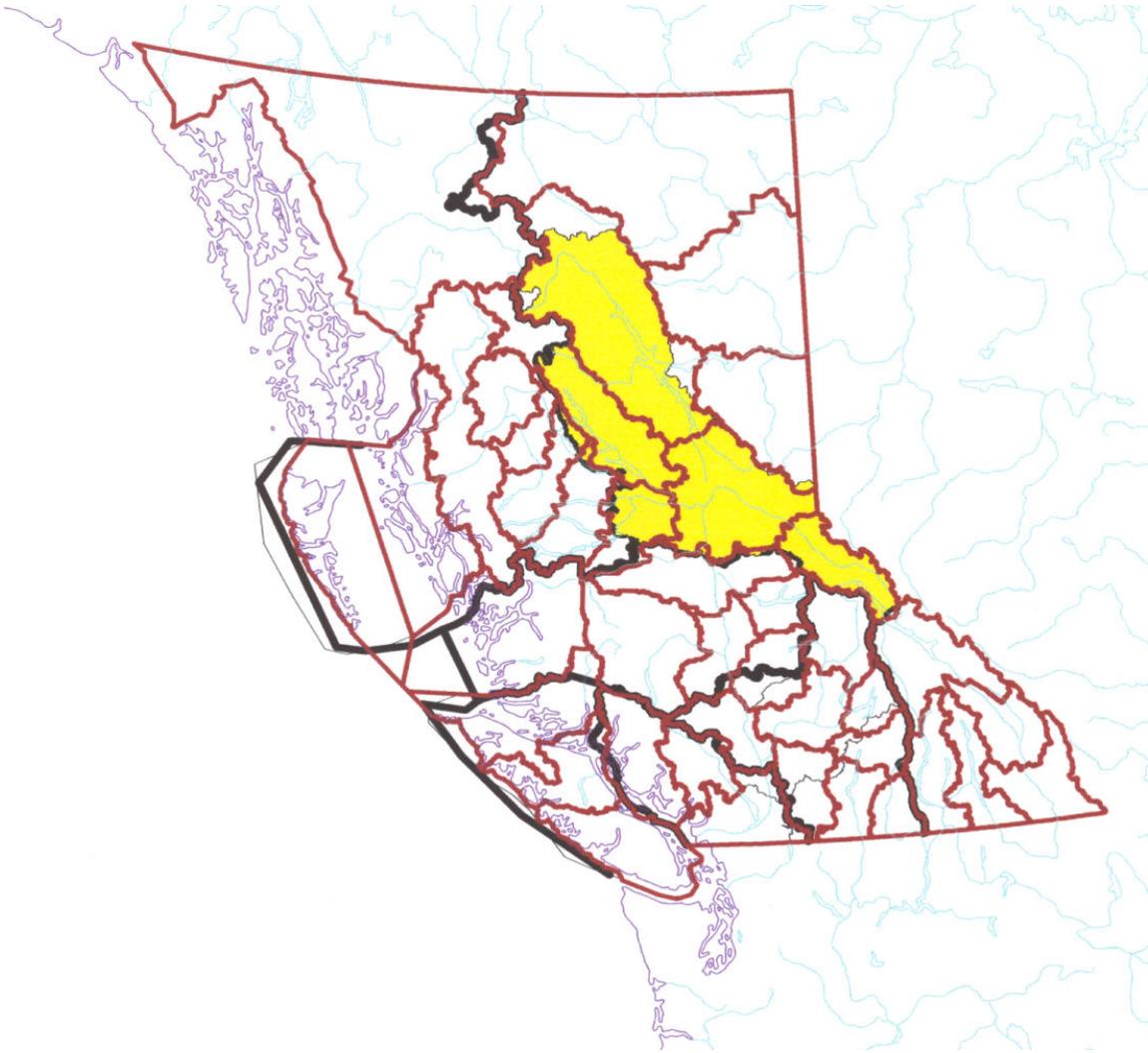
## Management Challenges

Mountain Caribou researchers have identified three primary challenges to maintaining healthy caribou numbers: habitat loss, predation effects, and displacement of caribou from human disturbance (McLellan 2002, pers. com).

Habitat loss occurs primarily from industrial logging, which converts mature or old forests into young forest. Mountain Caribou actively avoid young forests, believed due to the dense stocking and lack of open understory. Biologists have suggested that dense tree growth down to ground level is avoided due to lack of visual safety zone, since predators could be easily concealed (Simpson 1996, pers. com.). These young forests also do not support the caribou's main winter forage, lichen. This issue is effectively managed through application of habitat guidelines designed to protect habitat value in mapped caribou habitat.

Caribou populations appear to be more vulnerable to predators than other ungulates (McLellan and Flaa 1993). Seip (1990) has suggested that wolf and bear predation has limited mountain caribou to locations with rugged enough mountains to enable summer ranges to be above moose and wolves. Trevor Kinley (1997, pers. com.) found that cougar predation in areas where mule deer range overlapped caribou range was a major limiting factor for a small caribou population. Mountain Caribou may require substantial amounts of old growth forest as refugia from predators (McLellan and Flaa 1993). Predation effects are managed indirectly through management of alternate prey species. Predators tend to be located in proximity to their prey species. Wolves, cougar and bears prey primarily on deer, elk and moose. Management is aimed at not encouraging large numbers of these ungulates, and their attending predators, near Mountain Caribou habitat. Regulation of hunting seasons to achieve this end is a primary methodology. Some jurisdictions with Northern Caribou have applied both lethal and non-lethal (contraceptive treatment) direct control measures to wolves. These measures are controversial, and can be costly.

Displacement of Mountain Caribou from preferred habitat onto less suitable habitat (Paquet 2000, Kinley 1999) may result in higher energy expenditures, with resulting loss of vigour by late winter and lower calf birth weight. Harassment may have the same effect. Smaller caribou calves have an increased mortality rate, compared to heavier calves. Since caribou have a low reproductive rate compared to other ungulates, there is little margin to absorb any decrease in calf survival. There may also be increased direct mortality from displacement into less-suitable habitat. 'Accidental death' has been found to be a major cause of mortality. Accidental death has been defined as animals dying through such occurrences as being caught in an avalanche, becoming stuck (wedged) in a tree-well, or falling (McLellan 2002, Simpson and Woods 1987). These hazards are a much lower risk in the gentle terrain selected by Mountain Caribou when free of human-origin disturbance. Effective management of this displacement is currently lacking. This paper will develop displacement management practices for Mountain Caribou **late winter range** for Omineca Region.



**The Omineca Region of British Columbia**

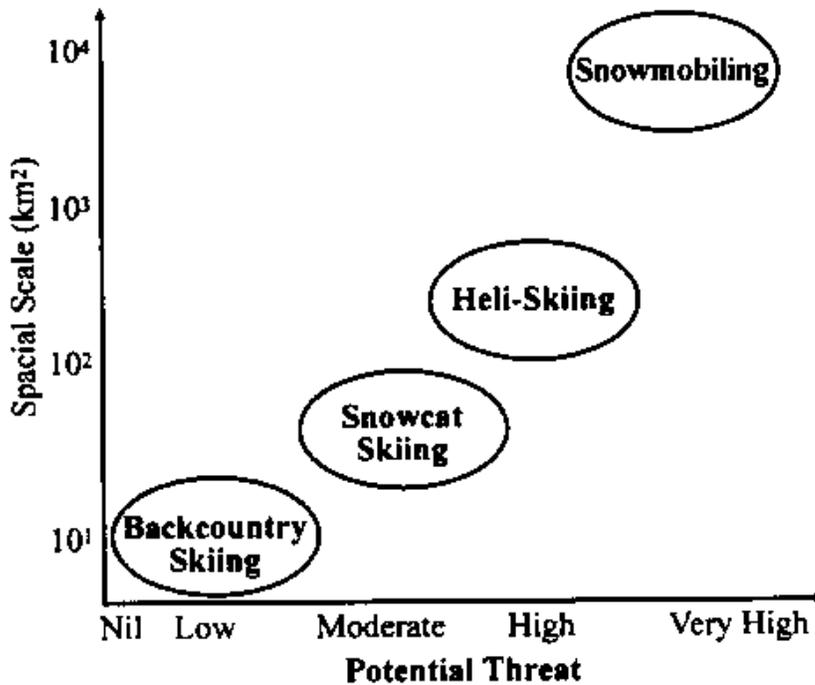
## **Sources of Disturbance and Displacement**

Considering the high-elevation forests and alpine locations favoured by Mountain Caribou in late winter, human activities occurring in or near occupied caribou habitat are few in number. Activities with potential to produce caribou displacement may be organized into non-mechanized and mechanized categories.

### **Non-Mechanized Activities:**

Non-mechanized activities are primarily the downhill skiing part of the heliski activity and backcountry ski touring. The actual skiing occurring through heliskiing occurs on steeper terrain than favoured by caribou. Generally, this downhill skiing is spatially separate from caribou. The accompanying helicopter activity leading to and from drop-off and pick-up locations will be treated separately from the actual skiing activity referred to here.

Likelihood of significant displacement of caribou by the downhill skiing portion of heliskiing is considered low (Simpson and Terry 2000). A concern associated with downhill skiing is management of the ski runs. These runs may be proposed for “glading”, to open up the ski runs. While usually performed at low intensity, unmanaged tree removal may negatively affect habitat quality. The non-motorized nature of ski-touring as well as the slow pace at which skiers travel suggest this activity likely has a relatively low impact on Mountain Caribou. Although the relative magnitude of impacts from ski touring will vary with the number of skiers and amount of use, in general this winter recreation activity poses significantly less threat than motorized activities (Simpson and Terry 2000).



**Potential Threat Matrix from Simpson and Terry 2000.**

**Mechanized Activities:**

Mechanized activities occurring in Mountain Caribou late winter habitat are primarily snowcat skiing, heliskiing, and snowmobiling.

Snowcat skiing is conducted by transporting skiers uphill in cat-tracked vehicles. The skiers then follow defined paths down the mountainside. Locations with steep (in terms of caribou preference) slopes are preferred. A relatively small area is likely to be affected, with use occurring in a repetitive fashion. Licensing of this commercial activity is conducted by Land and Water BC, where conditions of use may be attached to a license. There is little capacity to monitor compliance with license conditions.

Heliskiing is conducted by transporting skiers to the tops of skiable slopes by helicopter. Skiers descend down the slope, to be picked up by helicopter at the bottom. Slopes used are typically steeper than those favoured by caribou. Helicopters used typically range from Bell 206 and A-Star models (smaller helicopters carrying 4 to 6 people) to the

predominant Bell 204, 205 and 212 (“medium” class helicopters, carrying around 6 to 10 people). The “mechanized” portion of this activity is the helicopter transportation. Clients expect to complete multiple runs each day, measuring thousands of vertical feet/metres skied. This requires moving between runs for numerous drop-off then pick up cycles. Helicopter activity tends to blanket the usable runs in a given area, to minimize cycle time between runs. This leads to intense use over portions of the licensed area, exacerbated by the landing and take-off activity which brings low altitude flight. Drop-off and pick up points are located on gentler ground, and may be in Mountain Caribou habitat. Since mountain weather is often less than ideal in terms of visibility for flying, helicopter pilots often have to fly relatively low to maintain visual contact with the landscape. Low altitude flight creates maximum disturbance at the ground level from both sound and visual proximity of a large, fast-moving machine. Licensing of this commercial activity is conducted by Land and Water BC, where conditions of use may be attached to a license. As with snowcat skiing, there is little capacity to monitor compliance with license conditions.

Snowmobiling, as referred to in this paper, refers to mountain snowmobiling. This type of snowmobiling uses specialized snowmobiles with high-powered engines, tracks with deep cleats, and suspensions that raise the body of the machine for less drag in deep snow. Riders typically seek access to high-elevation open areas such as ridge tops and alpine meadows. With the high-powered machines designed for deep snow, long distances are easily travelled, or localized activity may produce intensive tracking in the area used: both extensive and intensive use patterns are found. Speeds easily reach 80 kph or more, under good conditions. In most instances, mountain snowmobilers travel in groups of two or more machines, as a safety measure. The result is multiple machines travelling fast with accompanying loud noise and human scent. Large areas are easily dominated with comparatively few snowmobiles. This activity occurs through organized commercial operations, through club-coordinated activities, and independently by individuals or groups. Snowmobiling is currently recognized as the most significant recreational cause of displacement (Simpson and Terry 2000).

Caribou response to disturbance may be to move a great distance in a 24 hour period. When there is a perception of disturbance; their initial response may not be one of immediate flight, and may even appear to be one of curiosity. Caribou have been known to eventually abandon habitats after being repeatedly disturbed. (Vanderstar 2003)

In addition to displacement, there is some risk of direct harassment. This may occur through snowmobilers trying to get closer to view the animals or to photograph them, or in a malicious manner. The noise from snowmobiles is substantial, and contributes to stress. Most researchers agree that noise can effect an animal’s physiology and behaviour, and if it becomes a chronic stress, noise can be injurious to an animal’s energy budget, reproductive success and long-term survival (Radle 2003). The stress and increased metabolic response may lead to a drop in the caribou’s fitness, with attendant increased risk of predation, low birth weight calves, and early death. While data concerning the frequency of harassment is lacking, hopefully this is a rare occurrence.

There has been considerable debate about increased predation effects on caribou populations if predators (wolves) expand their hunting range by using snowmobile tracks to travel on. If snow conditions will support a wolf without sinking, then there would be no

gain to wolves by travelling on snowmobile tracks. If snow conditions are sufficiently soft to hamper movement for wolves, they are less likely to succeed in catching caribou, even if they access increased areas on snowmobile trails. Normal snow conditions may well be in between these two extremes. At these times, wolves may extend their foraging range through use of snowmobile trails, and may also be able to catch caribou off the trails. It has been conclusively demonstrated that snowmobile tracks increase the foraging range for wolves (Oberg 2001).

## Existing Provincial Policy

Portions of the Prince George Land and Resource Management Plan (PGLRMP) which provide approved direction on this issue are listed in Appendix A. Portions of the Robson Valley Land and Resource Management Plan (RVL RMP) which provide approved direction on this issue are listed in Appendix B. Sources for the complete documents are listed in the Literature Cited section.

The **Prince George Land and Resource Management Plan** directs that BC Environment (now the Ministry of Water, Land and Air Protection [MWLAP]) or designate “will identify rare and uncommon habitats, plants and/or animal species and plant associations” and “consult with other users and resource agencies to develop and implement management plans to protect rare and uncommon habitats, plants and/or animal species and associations.” Additionally, BC Environment or designate is to “identify critical habitat for other wildlife species.” and “consult with other users to develop and implement wildlife management plans on a prioritized basis.” This direction needs to be considered alongside the Recreation and Tourism Objectives to “Encourage a variety of recreation and tourism opportunities that are compatible with other resource values and uses.’, which includes a strategy to “Discourage impacts from recreationalists on the environment (e.g., litter, damage to soil, vegetation, wildlife, livestock, pastures, etc.)” A wildlife planning goal is “to plan and manage the land so as to reduce conflicts between wildlife and human activities, while ensuring a variety of opportunities for the use and enjoyment of wild plants and animals.”, and “BC Environment will recommend constraints on recreation activities that are incompatible with caribou conservation:” **In summary, MWLAP is to define critical habitats and develop management strategies using a consultation approach, and recreational opportunity expansion is desirable, but not where it leads to environmental harm.**

The **Robson Valley Land and Resource Management Plan** directs that “Any commercial recreation will minimize conflicts with grizzly and caribou” and further directs that an “Interagency planning team will develop, with public participation, a recreational land use plan that allows integrated uses while minimizing impacts on wilderness and environmental values”. There is additional information included on an RMZ by RMZ basis (see Appendix B). In summary, as for the Prince George LRMP above, **MWLAP is to define critical habitats and develop management strategies using a consultation approach, and recreational opportunity expansion is desirable, but not where it leads to environmental harm.** The concerns, strategies, and values raised in the two LRMPs are similar, with additional site-specific direction in response to local conditions. Each LRMP contains objectives and strategies for management in caribou habitat.

The **Herrick Local Resource Use Plan** (January 1995) recommends a non-mechanized recreation area southwest of Knudsen Lake, but refrains from further addressing any access or mechanized recreation issues due to lack of representation from that sector on the planning group. Focus of the Herrick LRUP is on forest industry activities.

**Interim Wildlife Guidelines for Commercial Backcountry Recreation in British Columbia** (May 2002) provides biologically-based direction for managing interactions between wildlife and recreationists. For Mountain Caribou, **Identified Management Objectives**, Impact Mitigation Guidelines, and *Success Indicators* are:

### **1.0 Maintain the natural distribution of caribou**

1.1 Identify and map seasonal habitats which may be sensitive, including early and late winter ranges. Calving and rutting grounds should also be included in areas of the province where caribou concentrate for these activities. Assign ratings of high and moderate sensitivity. These ratings may vary for different activities for different areas.

*1.1.1 Habitats identified and maintained.*

### **2.0 Minimize stress caused by human disturbance**

2.1 While in the backcountry, stay at a distance which does not disturb or alarm caribou or cause them to leave the immediate area. This distance will be greatest for activities where people may startle caribou with sudden appearances or loud noises.

*2.1.1 Caribou activity continues unabated*

2.2 Seasonally close habitats designated as highly sensitive to off-highway vehicles (OHVs), snowmobiles, and other forms of transport deemed appropriate by WLAP staff.

*2.2.1 Snowmobile and OHV activity only in planned areas.*

2.3 Regulate snowmobile and OHV activity within designated habitats of moderate sensitivity as needed.

2.4 Seasonally close habitats designated as highly sensitive to pick-up and drop-off sites for helicopters. Where there is direct overlap of intensive helicopter use with caribou habitats then consideration should be given to horizontal no-fly zones over critical areas.

*2.4.1 Caribou not negatively affected by helicopter activity.*

2.5 Limit the frequency of helicopter and fixed-wing flights in habitats designated as highly or moderately sensitive. Ensure that overflying aircraft maintain an altitude above the ground which is higher than either 300 m or a distance determined by the WLAP Regional Manager.

2.6 In cooperation with WLAP staff, select particular routes, heli-ports, heli-pads, and heli-spots for all helicopter activities in the vicinity of designated caribou habitat.

2.7 Ensure that non-motorized access trails and caribou viewing areas are well screened from highly sensitive sites. Non-motorized trail users should stay on single trails and avoid wandering in highly sensitive areas.

2.8 Train staff and clients in responsible behaviour near caribou habitats which are designated as sensitive.

### **3.0 Maintain the functional integrity of caribou habitat**

3.1 Prevent facility development on or near caribou habitats designated as highly sensitive.

3.1.1 *Absence of facilities in key sensitive caribou habitats*

## Discussion

Mountain Caribou habitat in Omineca Region has been accurately mapped, and is currently managed in terms of forest harvest impacts. Caribou habitat requirements are well understood, resulting from considerable past research effort. Adequate policy guidance exists through land-use planning results and policy guidelines. Of the three major challenges considered critical to caribou survival (habitat loss, predation, and displacement), only management of human disturbance and displacement is currently lacking.

Snowmobiling is regarded as the most significant source of disturbance and displacement (Simpson and Terry 2000). Recent improvements in machines now give the capability to travel in high-elevation Mountain Caribou habitat. Provincial policy supports maintaining caribou populations. Federal law requires that risk factors be managed in a way to lower the risk for species (including Mountain Caribou) declared to be endangered (Species at Risk Act), as part of recovery planning. Accordingly, we must proceed to address snowmobiling in Mountain Caribou late winter habitat.

Tools available to manage conflict between caribou and snowmobiles include land-use zoning by location, by elevation, by activity, or by date. Area limitations, seasonal closures, or altitude restrictions may be combined with access corridors or finer-scale refinement. Provisions exist within the Wildlife Act for application of these measures. Other measures, such as possibly not improving access thus maintaining a low level of use, may be applied through agreement. Detailed analysis of site-specific conditions and snowmobile use may produce strategies such as the access corridor approach (e.g. Bourne Glacier, Kootenay Region) or use agreements addressing caribou needs while allowing defined snowmobile activity (eg. Frisby Ridge, Kootenay Region). The recommended approach accommodates the issue of compliance. Without resources to conduct ongoing compliance activities and any required enforcement follow-up, the zonation approach avoids the more intense monitoring and active management required by carrying-capacity methods. Additionally, definition of acceptable carrying capacity is currently scientifically unavailable. Any acceptable carrying capacity is likely to be so low as to be of little value to snowmobilers.

Development of access management tools for caribou habitat needs to be conducted in a consultative manner, with participation by snowmobilers and other recreational users who have in-depth knowledge of area snowmobile activities and potential. Recent history has included ongoing and escalating disputes over access to some areas, on an uncoordinated, case-by-case fashion. This approach has produced a maximum amount of conflict, with high costs to both snowmobile clubs and government ministries.

Snowmobiling is a rapidly-growing activity with important economic contribution to local economies. Focus for an access management exercise should be identification of snowmobile development areas, in addition to identification of caribou management

strategies and areas. A resulting zonation, with “green light” areas for snowmobile sport development, would support efficient approval of development proposals, while avoiding conflict with caribou habitat requirements. This approach would further support the snowmobile community in developing facilities in cooperation with private agencies, such as the recent financial support from Arctic Cat for the McGregor River snowmobile cabin. The perspective must be on conflict reduction while recognizing both recreational and wildlife values.

The BC Snowmobile Federation has a history of working toward effective management of access/wildlife issues:

*The provision of clear opportunities for snowmobile use is particularly important where use restrictions or closures may be required to protect other sensitive resource values. It is important to establish snowmobile trails in areas that are suitable to snowmobile users and benefit local communities and First Nations -- while at the same time minimizing impacts on other users and the environment, such as wildlife. This can be accomplished recognizing existing resource values and uses on the land base as a basis for informed decisions. RMD 2000*

and

*This discussion paper(RMD 2000) builds on the 1998 Final Report of the Provincial Backcountry Skiing - Snowmobiling Committee prepared by a variety of government and non-government organizations including: the Backcountry Hut and Lodge Operator's Association, the BC Snowmobile Federation, the BC Heli- and Snow-Cat Skiing Operator's Association, the Federation of Mountain Clubs of BC and the Outdoor Recreation Council of BC, the Ministry of Environment, Lands and Parks, the Ministry of Forests, and the Ministry of Small Business, Tourism and Culture.*

*Three key principles adopted in the 1998 report were:*

- *Snowmobiles are acceptable on most Crown land. Where restrictions on snowmobiles (and other motorized recreation) are applied, these should be balanced with assured or enhanced access in other areas.*
- *In some situations, motorized recreation should be restricted to maintain the character of areas that are particularly sensitive or important to other forms of recreation or due to environmental values such as wildlife.*
- *Snowmobiles should be registered with government and identifiable when in use on Crown land.*

Other potential sources of disturbance and displacement from motorized recreation include heli-skiing and snowcat skiing. These are licensed activities, and may be addressed using existing protocol through the licensing process. Direction is provided in [Interim Wildlife Guidelines for Commercial Backcountry Recreation in British Columbia](#). May, 2002 and should be applied through the licensing process.

Success will require application of strategies with cooperation from Land and Water BC and, to a lesser extent, the Ministry of Forests.

## Recommendations:

- Work with snowmobile clubs and/or the BC Snowmobile Federation to develop “green light” snowmobile development zones and caribou management zones with appropriate constraints on access. Employ a consultation approach.
- Support application of this zonation with Land and Water BC, the Ministry of Sustainable Resource Management, and the Ministry of Forests.
- Work toward a strategy that protects Mountain Caribou and their habitat with as little interference with other activities as is consistent with maintaining habitat effectiveness.
- Do not expect total support from all parties- retain focus and ownership of the final product- all things cannot happen in the same place at the same time in unlimited amounts, or the lowest expectation wins, at the cost of all others.
- Use legislative provisions of the Wildlife Act to manage recreational (including commercial recreational) access in Mountain Caribou habitat.
- Attempt to identify expansion zones for motorized recreation activities, as well as areas with limitations.
- Establish a timeline for achievement of effective access management in caribou habitat.
- Develop Best Management Practices or guidelines to assist developers and Land and Water BC in avoiding impact on caribou habitat.
- Consider expansion of zonation to include other recreational users (heli skiing, ski touring) to address impacts by these users on caribou and to address conflict between recreationists.

## **Appendix A - The Prince George Land and Resource Management Plan (LRMP) (March 1999):**

### **Planning Goals:**

**Biological diversity:** To maintain the diversity, distribution and abundance of native species and their natural habitats throughout the planning area and to increase the populations of native endangered, threatened and vulnerable plant, animal and fish species.

**Wildlife:** To plan and manage the land so as to reduce conflicts between wildlife and human activities, while ensuring a variety of opportunities for the use and enjoyment of wild plants and animals.

**Recreation:** To maintain and enhance recreational values of natural resource values.

**Access:** To manage access in a manner which recognizes and supports the need to explore and develop renewable and non-renewable resources while minimizing impacts to other resource values and users.

### **General Management Direction:**

**Objective: Rare and Uncommon** Maintain rare and uncommon habitats, plants and/or animal species.

#### **Strategies:**

- BC Environment or designate will identify rare and uncommon habitats, plants and/or animal species and plant associations.
- BC Environment or designate will consult with other users and resource agencies to develop and implement management plans to protect rare and uncommon habitats, plants and/or animal species and plant associations.

**Objective: Other Wildlife** Maintain other wildlife species.

#### **Strategies:**

- BC Environment or designate will identify critical habitat for other wildlife species.

**Objective: Recreation and Tourism** Encourage a variety of recreation and tourism opportunities.

#### **Strategies** (selected relevant strategies only):

- Discourage impacts from recreationists on the environment (e.g., litter, damage to soil, vegetation, wildlife, livestock, pastures etc.)
- BC government agencies will develop management plans that reduce conflicts between recreation users through a variety of means that may include: signing, education, consultation or zoning. Consider solutions developed in other planning

processes, such as the Provincial Back Country Skiing - Snowmobiling Committee Report.

*In landscape units with Mountain Caribou habitat, the LRMP direction is:*

**Objective:** Manage caribou habitat to provide opportunity for population levels to increase.

**Strategies:**

- No commercial timber harvesting in areas of high suitability caribou habitat until proven management strategies are developed in areas of medium caribou habitat, appropriate to the growth cycle of trees in the caribou habitat.
- BC Environment will recommend constraints on backcountry recreation activities that are incompatible with caribou conservation.

**Objective:** Maintain the integrity of alpine and sub-alpine ecosystems and habitats.

**Strategies:**

- Undertake resource development in alpine and sub-alpine habitats only in a cautious manner that considers the sensitivity to disturbance of these ecosystems and habitats.
- Limit commercial timber harvesting and silviculture in sub-alpine habitats in order to respect the sensitivity to disturbance of this habitat and to keep future options open until rehabilitation and reforestation have been successfully demonstrated in a cross section of higher elevation sites, typical of this region.
- Promote research to develop and assess methods to successfully reforest or rehabilitate sub-alpine sites and to determine the appropriate percentage of age class distribution to maintain sub-alpine ecosystems. Obtain a reasonable time line of data (probably at least 20 years) that demonstrates successful reforestation and rehabilitation.
- Plans lower in hierarchy will assess site specific requirements for access management and recommend measures to prevent unplanned motorized access and that could result in damage to alpine and sub-alpine habitat and resources or negative impacts to other users.
- Resource developers will take measures to prevent unplanned motorized access to sub-alpine and alpine environments, as a result of their developments.

## **Appendix B - The Robson Valley Land and resource Management Plan (LRMP) (April 1999)**

Under a General Biodiversity heading:

Objectives:

- Maintain or increase numbers, enhance populations and habitat
- Protect critical high elevation winter range habitat
- Improve understanding of the behaviour and biology of caribou populations and the effect of resource development on caribou habitat

Strategies

- Consider reintroduction of caribou where historical herds have been depleted or decreased, priority given to areas that have been disrupted by human activities
- Incorporate sensitive timber extraction in areas designated as Caribou Medium and upon further research and local public input consider incorporation of such practices in Caribou High areas
- Encourage unfragmented spatial separation between caribou and other ungulates to reduce predation by wolves
- Promote public education and awareness of the need to avoid interaction with caribou
- Undertake research or study of caribou populations and their use of habitat in the plan area
- Document historical and current distribution of caribou populations within the plan area to determine cause of local population variations
- Encourage cooperation between adjacent jurisdictions in research and management of caribou populations
- Undertake a research project that would:
  - e) evaluate the impact of current guidelines for timber harvesting in caribou habitat
  - f) identify habitats used by caribou and characterize key attributes of those habitat
  - g) review attributes required in movement corridors

Direction for the Holmes/McKale RMZ E:

- Wildlife Objective: Maintain and where necessary, enhance wildlife and habitat to ensure healthy populations, genetic variability and distribution
- Relevant Strategies: Heliski operations will design flight lines and activities to minimize contact with caribou

Direction for East Kinbasket RMZ G:

- Wildlife Objective: Maintain and where necessary, enhance wildlife and habitat to ensure healthy populations, genetic variability and distribution
- Relevant Strategies: Any commercial recreation use will minimize conflicts with grizzly, mountain goats and caribou

Direction from West Kinbasket RMZ H:

- Wildlife Objective: Maintain and where necessary, enhance wildlife and habitat to ensure healthy populations, genetic variability and distribution
- Relevant Strategies: Ensure heliskiing operations minimize conflicts with caribou in Foster and Howard Creek drainages

Direction from RMZ M:

- Wildlife Objective: Maintain and where necessary, enhance wildlife and habitat to ensure healthy populations, genetic variability and distribution
- Relevant Strategies:
  - Any commercial recreation use will minimize conflicts with grizzly, caribou and goats
  - Heliski operations will design flight lines and activities to minimize contact with caribou

Direction from Morkill RMZ D:

- Wildlife Objective: Maintain and where necessary, enhance wildlife and habitat to ensure healthy populations, genetic variability and distribution
- Relevant Strategies:
  - Through the Commercial Recreation Policy, any commercial recreation use will minimize conflicts with grizzly and caribou
  - Maintain critical habitat attributes by establishing guidelines for areas where winter range is identified.

Direction from Upper Canoe/Premier Range RMZ I:

- Wildlife Objective: Maintain and where necessary, enhance wildlife and habitat to ensure healthy populations, genetic variability and distribution
- Relevant Strategies:
  - Any commercial recreation use will minimize conflicts with grizzly, caribou and goats

Direction from Cariboo RMZ K:

- Access Objective: Maintain wilderness and public recreation values in this RMZ and adjacent park
- Relevant strategies:
  - Prioritize this area for Coordinated Access Management Plan (CAMP)
  - Coordinate CAMP agreement with road closure and gate location in the Goat RMZ
  - Motorized access beyond the gate will be allowed to government authorized (licences, permits etc.) users for land and resource use and management activities
- Wildlife Objective: Maintain and where necessary, enhance wildlife and habitat to ensure healthy populations, genetic variability and distribution
- Relevant Strategies:
  - Heliski operations will design flight lines and activities to minimize contact with caribou
  - Any commercial recreation use will minimize conflicts with grizzly and caribou

Direction from Goat River RMZ L:

- Wildlife Objective: Maintain and where necessary, enhance wildlife and habitat to ensure healthy populations, genetic variability and distribution
- Relevant Strategies:
  - Heliski operations will design flight lines and activities to minimize contact with caribou
  - Any commercial recreation use will minimize conflicts with grizzly and caribou

Direction from Rocky Mountain Trench RMZ B:

- Wildlife Objective: Maintain and where necessary, enhance wildlife and habitat to ensure healthy populations, genetic variability and distribution
- Relevant Strategies:
  - Through the Commercial Backcountry Recreation Policy, helihiking must be managed to avoid conflict with wildlife
  - Establish guidelines for critical habitat attributes for areas where ungulate winter range is identified
  - Heliski operations will design flight lines and activities to minimize contact with caribou
- Holliday/Baker Creek Subzone:
  - Objective: Heliski operations will design flight lines and activities to minimize contact with caribou
  - Establish the Holliday/Baker Creek drainage as non-motorized use areas, including heliskiing and helihiking, subject to honouring possible existing trapline motorized access
- Tete Creek Subzone:
  - Objective: manage for high wilderness values
  - Relevant Strategies:

From Boundary/Horse Creek RMZ F:

- Public Recreation Objective: Reduce conflicts between motorized and non-motorized recreational activities
  - Relevant Strategies:
    - Lower level interagency planning team will develop, with public participation, a recreational land use plan that allows integrated uses while minimizing impacts on wilderness and environmental values
    - Traditional snowmobile use areas will be maintained
    - Inventory high capability public recreation and wilderness values
    - Use inventory information to develop a management plan
- Wildlife Objective: Maintain and where necessary, enhance wildlife and habitat to ensure healthy populations, genetic variability and distribution
- Relevant Strategies:
  - Any commercial recreation use will minimize conflicts with grizzly, caribou and goats

From Upper Raush RMZ J:

- Wildlife Objective: Maintain and where necessary, enhance wildlife and habitat to ensure healthy populations, genetic variability and distribution
- Relevant Strategies:
  - Any commercial recreation use will minimize conflicts with grizzly and caribou

- Heliski operations will design flight lines and activities to minimize contact with caribou

From Settlement Agriculture RMZ A:

- Crown Land Plan Objective: Ensure the Crown Land Plan remains current to manage for a variety of land use and conservation purposes
  - Relevant Strategies:
    - Ensure important high value wildlife habitat and recreation areas on Crown Land are protected from further development
    - Ensure critical habitat is maintained for travel corridors through the Crown Land Plan
    - Through the Crown Land Plan, protect riparian areas and high value wildlife habitat areas
    - Complete a wildlife corridor along the Holmes River to the confluence at the Fraser River and across to Castle Creek where possible
  
- Wildlife Objective: Maintain and where necessary, enhance wildlife and habitat to ensure healthy populations, genetic variability and distribution
  - Relevant Strategies:
    - Maintain critical habitat attributes by establishing guidelines for areas where winter range is identified.

### Section 3.3 Overall Summary of Environmental Impacts

#### 3.3.7 Woodland Caribou

Similarly, access management strategies outlined in the Plan will benefit the small woodland caribou populations that occur in the Robson Valley. Although winter snowmobiling remains a potential risk factor, coordinated management strategies may reduce the potential adverse effects of harassment, and winter range displacement. Overall, the Plan provides increased certainty above the Base Case (i.e. TSR netdowns) that adequate habitat protection will occur. The majority of key caribou areas (e.g., West Twin) in the Plan are either proposed protected areas or specially managed improving the outlook for caribou in the short term. Areas of concern remain in the West Kinbasket Resource Development RMZ and Goat RMZ and subzone may provide suitable seral stage distributions for moose and wolves in close proximity to key caribou areas.

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