

Telkwa Mountains Caribou Herd Recovery Plan

Wildlife Branch
Ministry of Environment, Lands and Parks
Skeena Region, Smithers, BC
August, 1998

1.0 INTRODUCTION

1.1 Why is a Recovery Plan needed?

Recent evidence suggests that without management action, the Telkwa Caribou Herd (TCH) is in danger of extinction.

This Recovery Plan is supported by language in the Bulkley Land and Resource Management Plan to produce a “comprehensive plan to enhance and sustain a viable caribou population” (page 68, Bulkley LRMP) within the Telkwa Mountains. This document summarizes available information on population size, annual movements, distribution, and habitat associations of the TCH, outlines relative “liabilities” that may have influenced, or are expected to influence the population ecology of the TCH, and proposes management actions designed to 1) reverse recent declines in size of the TCH, 2) increase understanding of factors influencing growth rates of the population, and 3) protect caribou habitat, by modifying industrial activities and reducing disturbance to caribou from increasing human access and recreational use of the Telkwa Mountains.

The goal of this Recovery Plan is to meet public demands and BC Environment mandated responsibilities for wildlife management, by working towards enhancing and sustaining a genetically viable population of caribou in the Telkwa Mountains.

1.2 Why Conserve the Telkwa Caribou Herd?

Maintaining the distribution and abundance of indigenous species of wildlife falls within the mandate of the Wildlife Branch of the Ministry of Environment, Lands and Parks. The Wildlife Branch recognizes the inherent value of all wildlife populations in British Columbia, but recognizes that the TCH represents a particularly valuable resource to the people of British Columbia for several reasons.

The Telkwa Mountains comprise prime woodland caribou (*Rangifer tarandus*) and goat habitat only 15 km from the major transportation corridor of Highway 16 and close to the urban centres of Smithers, Telkwa and Houston. The proximity of caribou and goat populations to those centres makes those wildlife resources and their associated habitats extremely valuable for recreational use. A large and increasing proportion of the economy of the Bulkley Valley is derived from tourism. A self-sustaining caribou population in the Telkwa Mountains would enhance the image of the Bulkley Valley as a destination with high natural beauty and wildlife values. Opportunities for viewing caribou would increase if the herd increased in size and used more of its previously occupied range. Opportunities for legal harvest of caribou will also be considered if the TCH increased sufficiently in size where some harvest was sustainable.

The Telkwa caribou herd also provides a valuable opportunity to increase understanding of factors that influence population processes in small, isolated caribou populations. That information will become

increasingly important as caribou herds throughout southern and central British Columbia become increasingly isolated due to land alienation and infrastructure developments and as urban developments and forest practices fragment remaining habitat.

Protecting the TCH is also important because residents of the Bulkley Valley have indicated that they feel it is important to maintain a caribou population in the Telkwa Mountains. This direction was provided through recently completed public planning processes and consultation associated with this Recovery Plan, and reflects the value people place on maintaining wildlife populations in the face of increasing pressures on natural resources in the Bulkley Valley and throughout British Columbia.

2.0 ECOLOGY OF THE TELKWA CARIBOU HERD

2.1 Historic Distribution and Movements.

Based on historic reports and the presence of cast antlers, caribou (*Rangifer tarandus*) were once widely distributed throughout most mountainous areas surrounding the Bulkley Valley. Elders of the Wet'suwet'en First Nation report that Smithers is built on an area formerly used by caribou for calving, and that caribou migrated seasonally across the Bulkley Valley and through the Hazelton Mountains (M. George, pers. comm.). Caribou using alpine areas around Smithers may have formed part of a larger herd whose range extended south into Tweedsmuir Park.

Historical sightings of caribou, summarized from BC Environment files, are consistent with reports that caribou were once found throughout the area (Figure 1). A higher frequency of sightings in the Telkwa Mountains supports the suggestion that the Telkwas represent an important area of caribou habitat.

Movements of caribou from the Tweedsmuir Park area to the Bulkley Valley may have been greatly reduced after the 1950's, when the Kemano Reservoir was filled (M. George, pers. comm.).

2.2 Recent Information on Seasonal Movements, Distribution and Habitat Associations.

In January 1977, the Wildlife Branch put a radio-collar on one cow caribou. That caribou was relocated weekly until the end of April 1977. Caribou associated with the collared caribou and two other groups of caribou were observed using forested areas throughout March and early April. By mid-April the caribou had moved back up onto alpine plateau areas (Hodson, 1977).

Four female caribou were fitted with radio-collars in March 1985. Each cow was relocated on 14 occasions between March 1985 and April 1986. Radio location data were summarized by van Drimmelen (1986), and indicated caribou were located primarily in the alpine from March to July 1985, subalpine forest in September 1985, and alpine habitats until December 1985 when they descended into relatively low elevation spruce-fir forest to feed on arboreal and terrestrial lichens. Caribou remained in that forest until March 1986 when they returned to the alpine. The 1985-86 data were consistent with data obtained in 1977 and showed that TCH caribou spent most of their time at or above treeline, but used forested areas in response to winter snow glazing and crusting in alpine areas.

No further data are available until 1996, when monitoring flights provided data that are consistent with information from previous telemetry flights and opportunistic observations. The 1996 observations indicated that Telkwa caribou frequently winter in high elevation alpine and sub-alpine habitats. Observations of little cratering activity in 1996 are consistent with previous suggestions that the Telkwa caribou rely to a large extent on arboreal lichens during some winters. During other

winters, caribou have foraged on terrestrial lichens occupying steep, wind-blown alpine slopes in late-winter range areas.

A lichen abundance study was completed over the summer of 1996 to evaluate the biomass of lichens in areas proposed for habitat protection measures. Results were summarized in the form of maps of the distribution and abundance of arboreal and terrestrial lichens in forested portions of TCH range.

2.2 Population Estimates

The earliest estimate of the size of the TCH was obtained in 1949 when a two-week horseback survey provided the basis for an estimate of 60 caribou (Figure 2). However, it is difficult to relate a ground-based inventory to subsequent aerial surveys that covered larger areas over shorter periods of time. The 1949 estimate was based on actual observations of only 18 caribou and 33 tracks counted (L. Cox, unpubl. rep.).

A survey in 1956 estimated the TCH at over 100 animals. In 1964, 1965, 1966, 1967, and 1968 counts of 180, 271, 166, 2, and 34, respectively, were made (Hodson, 1977). A total of 38 caribou were counted in 1975, and again in 1977 (Hodson, 1977). In 1980, 51 caribou were counted (van Drimmelen, 1986).

There were no further counts until 1984, when an aerial survey provided a minimum count of 68 caribou (van Drimmelen, 1986).

van Drimmelen (1986) suggested that the TCH has increased at an annual rate of 3% after being nearly extirpated in 1966 and 1967. After 1984 it was thought that the herd was increasing at a slow rate (van Drimmelen, 1986). However, when the herd was next counted in 1993, only 11 caribou were found (T. Smith, pers. comm.). Monitoring flights in June 1994 and March 1996 resulted in total counts of 10 and 13 caribou respectively. The last flight in June 1997 yielded a total count of 6 adult caribou and no calves.

2.3 Potential Causes of Population Decline

In the 1960's, an increase in forestry and mineral exploration activities in central British Columbia led to increased availability of helicopters in the Smithers area. At that time, it was legal to use helicopters to place hunters near wildlife and to transport wildlife with helicopters.

Les Cox, the Conservation Officer based in Smithers at the time, reported that hunters used helicopters to access caribou and goat populations in the Telkwa Mountains in the fall of 1965. In October 1965 he witnessed a bull caribou being unloaded from a helicopter by a hunter from Kamloops (L. Cox, unpubl.). L. Cox concluded that game laws that resulted in overhunting, especially by hunters using helicopters, led to a severe decline in caribou population size in 1965 and 1966.

Recent inventory data suggest that the herd has not recovered to 1965 levels despite a complete closure on hunting after 1973. Causes of the apparent decline after 1984 are unknown, but may include high mortality rates of adult caribou and/or chronic poor recruitment of calves due to predation (van Drimmelen, 1986), movements of caribou out of the area, and/or range abandonment due to disturbance from human activities.

To evaluate possible causes of the long-term decline of the TCH, establish priorities for management action and focus on the factors expected to limit growth of the TCH, BCE staff identified "liabilities" that are summarized in Appendix 1.

The greatest liabilities to herd growth in the near future are low population size, and impacts associated with increasing recreational access and predation. The TCH Recovery Plan addresses all major liabilities by 1) augmenting the TCH with caribou from other populations to assist in overcoming the liability of low population size, 2) recommending a recreational access management plan, and 3) intensive monitoring to obtain better information on the timing, causes and impact of predation.

3.0 DIRECTION FROM PUBLIC PLANNING PROCESSES.

3.1 Bulkley Land and Resource Management Planning Process

In May 1996, the Bulkley Valley Community Resources Board (BVCRB) completed a 4 1/2 year process of extensive public planning in the Bulkley Forest District. The BVCRB produced a Consensus Management Direction (CMD), intended to provide management directions that will ensure the health of the community, the resources and all natural systems within the Bulkley Forest District (Bulkley Valley Community Resources Board, May 1996).

The CMD recommends land use zones, identifies land use priorities and provides guidelines for how land within each zone is to be managed, providing a framework for the Bulkley Land and Resource Management Plan (LRMP). The Bulkley LRMP in turn provides direction for the management of Crown lands and resources within the Bulkley portion of the Bulkley/Cassiar Forest District.

The Bulkley LRMP identified Special Resource Management zones (see Figure 3) where all industrial activities except mineral exploration and mining will be excluded (Howson Range and Hankin Plateau Special Management 1 zones) and where the primary objective is to maintain caribou and goat habitat. The Bulkley LRMP also identified a zone where sensitive logging and mining exploration and development are allowed, but subject to constraints that give priority to maintaining the aquatic environment and caribou habitat (Moose Skin Johnny Lake Special Management 2 zone - Bulkley Valley Community Resources Board, May 1996). The Bulkley LRMP directed BC Environment (BCE), as the government agency responsible for the management of wildlife in the Telkwa Mountains, to produce a “comprehensive plan to enhance and sustain a viable caribou population” within the Telkwa planning unit (page 68, Bulkley LRMP).

An implementation requirement of the Bulkley LRMP was for the Bulkley District of the Ministry of Forests (MOF) to co-ordinate public input into a Recreational Access Management Plan (RAMP) for the Bulkley portion of the Bulkley/Cassiar Forest District. The Bulkley RAMP recommended that, due to overriding environmental concerns (primarily protection of caribou and goat habitat), planning for access management into the Telkwa Mountains be developed in a future process. That future process would be led by the agency with the mandate to manage for the identified values (in this case, BCE), and that agency would develop associated management directions.

3.2 Recreational Access Management Plan Process

The Bulkley RAMP recommended that, due to overriding environmental concerns (primarily protection of caribou and goat habitat), planning for access management into the Telkwa Mountains be developed in a future process led by BCE. The Bulkley RAMP document clarified that where recreational values are secondary to the resource values identified by the LRMP, and where management of recreation may be required to protect the resource, then management guidelines proposed by the agency override recreational considerations.

In September, 1997 BCE staff initiated a public consultation process regarding the Recovery Plan. Information was distributed through local media outlets (newspaper, radio) and open houses in Smithers, Telkwa and Houston. Additional opportunities were provided for the public to make their views known through public meetings, submissions, questionnaires, and direct meetings with stakeholder groups. A summary of public responses is provided in Appendix 3.

While some individuals expressed concerns about the public consultation process, aspects of the recovery plan, or concerns about how the proposed access restrictions would impact their personal use of the Telkwa Mountains, representatives of recreational organizations (Bulkley Valley Naturalists, Bulkley Valley Cross Country Ski Club and Bulkley Valley Rod and Gun Club) expressed support for the objectives of the Recovery Plan, and a willingness to comply with the proposed restrictions over the initial stages of recovery efforts. The Wet'suwet'en First Nation has expressed strong support for the objectives of the Recovery Plan.

Consistent with the Bulkley RAMP document, public and stakeholder input from the consultation process was incorporated into a plan to manage recreational access into the Telkwa Mountains through designation of zones (Figure 4). Zone descriptions are provided in Appendix 2.

The Houston Snowmobile Association and Smithers Snowmobile Club have indicated a willingness to comply with winter motorized/summer non-motorized restrictions in zones 4 and 5. At this time (May 1998), neither club has indicated that they support restrictions on motorized access into the Starr Basin area.

BCE is currently requesting that the public voluntarily comply with the zones, including the non-motorized zone around Starr Basin. Voluntary compliance with access restrictions is preferable to legislated closures because voluntary compliance increases the level of acceptance and involvement by stakeholders in recovery efforts, and reduces costs associated with enforcing legislated closures.

BC Environment staff is also working with local helicopter charter companies to ensure that the companies are aware of, and take measures to reduce, the potential disturbance to caribou associated with low-level helicopter overflights. Some measures that may reduce helicopter disturbance to caribou include maintaining minimum altitudes over wildlife, scheduling flights at times of year when caribou are less sensitive to disturbance, and working with BCE staff to select particular routes to the ski cabin in Starr Basin.

Staff from BCE will continue to meet with user groups to consider future opportunities for recreational access into the TCH Recovery Area that are compatible with long-term objectives of the Recovery Plan.

This plan will be reviewed annually by BC Environment staff as information on voluntary compliance with the access management plan, caribou movements, and habitat use and causes of mortality becomes available. Results will be discussed with stakeholder groups. A complete review and evaluation of the plan will be conducted after 5 years of monitoring data are available.

3.3 Protected Areas Strategy Planning Process

The BC Provincial Protected Areas Strategy (PAS) has also recognized the importance of protecting the Telkwa Mountains and Burnie Lakes areas (see Figure 3) to maintain high wildlife and conservation values, including caribou habitat. In the Morice Forest District, these areas were identified as Official Study Areas, and are subject to interim management guidelines that restrict or prevent industrial activities. The final status of those areas will be determined through a future land planning process in the Morice Forest District.

4.0 RECOVERY PLAN FOR THE TELKWA MOUNTAIN CARIBOU HERD

This Recovery Plan proposes management actions designed to 1) reverse recent declines in size of the TCH by augmenting the population with caribou from other populations, 2) increase understanding of factors influencing population growth rates by frequent monitoring of radio-collared caribou, and 3) protect caribou habitat by modifying industrial activities, and reducing potential disturbance to caribou arising from increasing human access into and recreational use of the Telkwa Mountains.

This plan is dynamic. Management actions, access management and habitat protection measures may change over time as we better understand the population ecology of the TCH, obtain better information on the seasonal movements, distribution, and habitat use of TCH, obtain better information on how caribou respond to various human activities, and better comprehend the long-term impacts on caribou habitat of current forest practices.

4.1 Population Augmentation and Monitoring.

Monitoring flights since 1993 indicated that the TCH appeared to have declined in size from 16 caribou in 1993 to a minimum of 6 adults in June 1997. To avoid imminent extinction of the TCH, BCE staff recommended that caribou be translocated to the Telkwa Mountains while there remain TCH caribou with knowledge of the movements, forage and antipredator strategies required to survive in that area.

In October 1997, BCE produced a transplant plan that considered options available for, and implications of, augmenting the TCH with caribou from other populations. The Transplant Plan evaluated potential risks of introducing parasites or diseases, alteration of the genetic composition of the existing herd, increased competition with existing wildlife or livestock, and potential damage to habitat. The Transplant Plan concluded that the potential risks were insignificant relative to the potential for the herd to be lost without immediate action. The Transplant Plan recommended that approximately 40 caribou (20 caribou in 1997 and 20 in 1998) be transplanted to the Telkwa Mountains as soon as possible, based on research that has shown the chances of a translocation being successful do not increase greatly after 40 animals (Griffith et al. 1989).

Two release sites in the core recovery zone (see Habitat Protection section) were chosen based on the observation of caribou and/or fresh caribou sign near the release site. With the assistance of a professional wildlife capture crew and wildlife veterinarians from the Calgary Zoo and Banff National Park, BCE biologists transplanted 12 caribou (11 females and 1 male) from the Sustut-Chase herd to the Telkwa Mountains on November 24 and 25, 1997. Budget constraints and logistical difficulties precluded transplanting more than 12 caribou at that time.

The caribou were netted, sedated and transported inside helicopters to the Telkwa Mountains. The caribou were fitted with radio collars and ear tags.

Since the release date, BC Environment staff has been monitoring the transplanted caribou with approximately weekly fixed-wing telemetry flights. Within a few days of release, all of the transplanted animals had mixed with resident animals. The transplanted caribou initially stayed near the release sites (higher elevation) then moved to lower elevations, along with the resident caribou. One of the transplanted caribou died in March 1998 due to unknown causes that led to severe malnutrition.

BC Environment staff will continue to regularly monitor the radio collared caribou to determine the timing and cause of any mortalities, and annual movements and habitat use patterns of the caribou. Information from monitoring flights will allow biologists to evaluate the importance of predation as a possible cause of the recent decline in herd size, and as a potential limiting factor to future herd growth. That data will also allow for an evaluation of whether or not further caribou transplants are required and justified. Any transplants beyond those proposed for the winter of 1998/99 would only be considered if available data indicated a high probability of survival of the transplanted caribou.

Monitoring data will also provide information needed to better design and implement habitat protection measures required to ensure sufficient habitat remains to support a viable caribou population.

4.2 Habitat Protection Measures

This Recovery Plan outlines habitat protection measures that will ensure sufficient habitat exists to sustain a genetically viable herd of caribou while also providing recreational opportunities to the public and maintaining economic opportunities for other stakeholders, such as the local guide outfitters, mineral explorationists and forest licensees, consistent with direction from the Bulkley LRMP.

Efforts by the Recovery Team to provide habitat protection have focused on the development of a map that identifies management and habitat protection zones within the overall Telkwa Recovery Area (Figure 4). The zones incorporate available information on seasonal movements and distribution of the TCH, habitat capability mapping, and results of a lichen abundance study completed in the summer of 1996. The zones reflect recommendations as to areas within which forest practices will be modified in consideration of caribou values, and access and hunting restrictions will be implemented as part of an overall access management plan. A detailed description of the zones is provided in Appendix 2.

4.2.1 Habitat Protection Measures Related to Logging Activities

A genetically viable, self-sustaining population of caribou in the Telkwa Mountains will require large undisturbed areas of mature and old seral-stage forests with access to both arboreal and terrestrial lichens. Arboreal lichens are primarily found in mature and old seral Engelmann Spruce-Subalpine Fir (ESSF) stands in the Telkwa Mountains. Alpine slopes with low snow pack are used in the winter months for terrestrial lichen foraging. TCH caribou also use herbaceous vegetation forage at certain times of the year, notably spring and early summer.

TCH caribou also require access to seasonal habitats, including alpine areas for calving in late-May and early June, valley bottoms (often including riparian habitats) used in spring and early summer, alpine and subalpine habitats during the summer, and high elevation forested stands containing arboreal lichens or alpine slopes with low snow pack during the winter, depending on snow conditions.

Within the TCH Recovery Area, the Bulkley LRMP identified three types of zones that impact logging to different degrees (see Figure 3). Higher elevation areas, including the portion of the Howson Range that falls within the Bulkley Forest District, and Hankin Plateau were zoned Special Resource Management 1 zones where all industrial activities except exploration and mining will be excluded, and where the primary objective is to maintain caribou and goat habitat. The high elevation area around Mooseskin Johnny Lake was zoned Special Management 2, where sensitive logging and mining exploration and development are allowed, subject to constraints that give priority to maintaining the aquatic environment and caribou habitat. Lower elevations along the Telkwa Range, south of the Telkwa

River were zoned Integrated Resource Management, where industrial developments may proceed subject to consideration of all resource values, including environmental values.

The Ministry of Forests (MOF), is mandated to ensure forest developments on Crown Land proceed in a manner consistent with the Forest Practices Code Act. Regional and District MOF staff are co-ordinating workshops with Forest Licencees in the Bulkley and Morice Forest Districts to incorporate environmental values important to caribou into Landscape Unit Plans to be applied consistently among the two Forest Districts. With input from Licencees and BCE staff, guidelines are being developed as to how forest practices should be conducted in the Telkwa Mountains to protect caribou habitat.

4.2.2 Habitat Protection Measures Related to Mineral Extraction Activities

The geology underlying most of the Recovery Area has high metallic mineral values. Much of the TCH Recovery Area has been explored since early in the century (M. Malott, pers. comm.) and valid mineral tenures are still scattered throughout the plan area (Figure 5). The majority of these tenures lie within the “Core” area.

There are 61 mineral occurrences within the TCH Recovery Plan area, 13 of which lie within the “Core Area”. Of the mineral occurrences in the “Core Area”, 3 are past producing mines which were accessed by a road along Goathorn Creek. One Developed Prospect (a mineral deposit with delineated reserves) is also located within the “Core Area”.

Eighty-three mineral exploration programs were recorded for assessment between 1966 and 1995 in the plan area. Of these programs, 19 were conducted in the “Core Area”.

Additionally the Telkwa coal deposit and licences lie on the northeasterly edge of the plan area within the Integrated Resource zone.

This Recovery Plan is consistent with direction provided by the Bulkley LRMP in that all existing mineral tenures are respected, and there is nothing in this plan that would impede access to, or the ability to explore, stake or develop existing and new tenures. The Bulkley LRMP emphasized that mining exploration and development can proceed in the Special Resource Management zones in the Telkwa Mountains, so long as those activities are “controlled to protect wildlife populations”. Allowing mineral extraction activities to continue in special management zones recognizes that those activities can be compatible with wildlife conservation and recreation values. The Bulkley LRMP called for industrial developments to be implemented in a co-operative and co-ordinated manner so that neither the non-industrial nor industrial values are unduly impacted.

BCE has contacted existing mineral tenure holders to inform them of the management objectives of the TCH Recovery Plan and to request meetings to discuss how exploration activities may proceed in a manner that reduces potential disturbance to the TCH and the population of goats in the Telkwa Mountains. By working with tenure holders, BC Environment hopes to achieve objectives of the Recovery Plan while maintaining opportunities for mineral exploration and development activities.

5.0 SUMMARY

The Telkwa Mountains Caribou Herd represents a particularly valuable resource to the people of British Columbia due to its proximity to the urban centres of Smithers, Telkwa and Houston and because of the importance of maintaining genetically viable populations of caribou in the face of increasing urban development and habitat fragmentation. Through public planning processes, residents of the Bulkley

Valley have provided clear direction that it is important to maintain a caribou population in the Telkwa Mountains.

This Recovery Plan proposes management actions designed to 1) reverse recent declines in size of the TCH by augmenting the population with caribou from other populations, 2) increase understanding of factors influencing growth rates of the population by frequent monitoring of radio-collared caribou, and 3) protect caribou habitat, by modifying industrial activities and reducing disturbance to caribou from increasing human access to, and recreational use of the Telkwa Mountains.

Recent data indicate that the Telkwa Caribou Herd continues to decline in numbers despite a complete closure on hunting after 1973. To avoid imminent extinction of the TCH, BCE staff transplanted 12 caribou (11 females and 1 male) from the Sustut-Chase herd to the Telkwa Mountains on November 24 and 25, 1997. BC Environment staff will continue to regularly monitor the radio collared caribou to determine annual movements and habitat use patterns of the caribou and the timing and cause of mortalities. We recommend that a second transplant take place in the winter of 1998/99 to further augment the TCH.

With input from BCE staff, guidelines will be developed as part of the Landscape Unit Planning process, as to how forest practices should be conducted in the Telkwa Mountains to protect caribou habitat.

This Recovery Plan is consistent with direction provided by the Bulkley LRMP in that all existing and future mineral tenures are respected, and there is nothing in this plan that would impede access or the ability to explore, stake or develop new tenures.

Figure 1. Historical sightings of caribou.

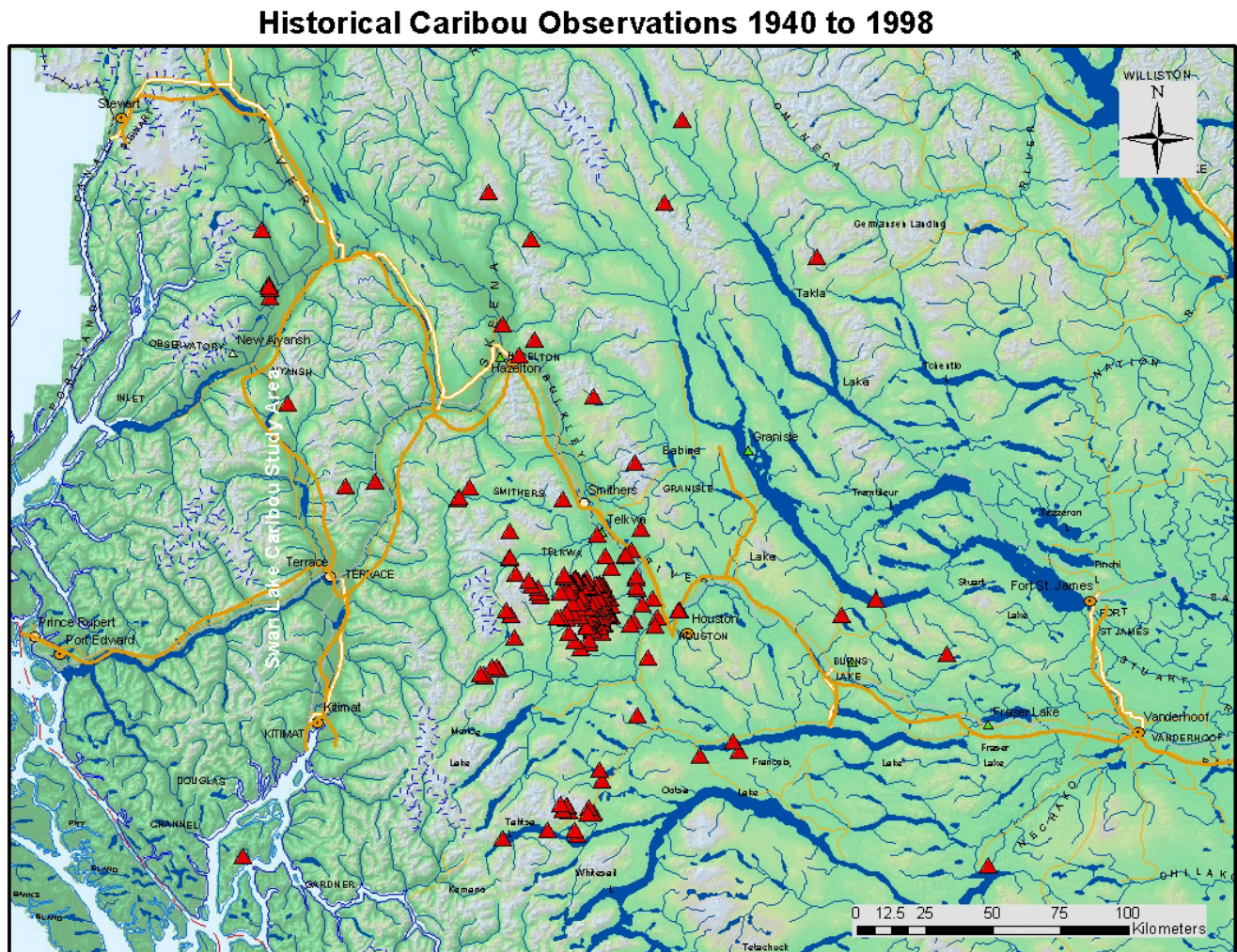


Figure 2. Estimates of the size of the Telkwa Caribou Herd.

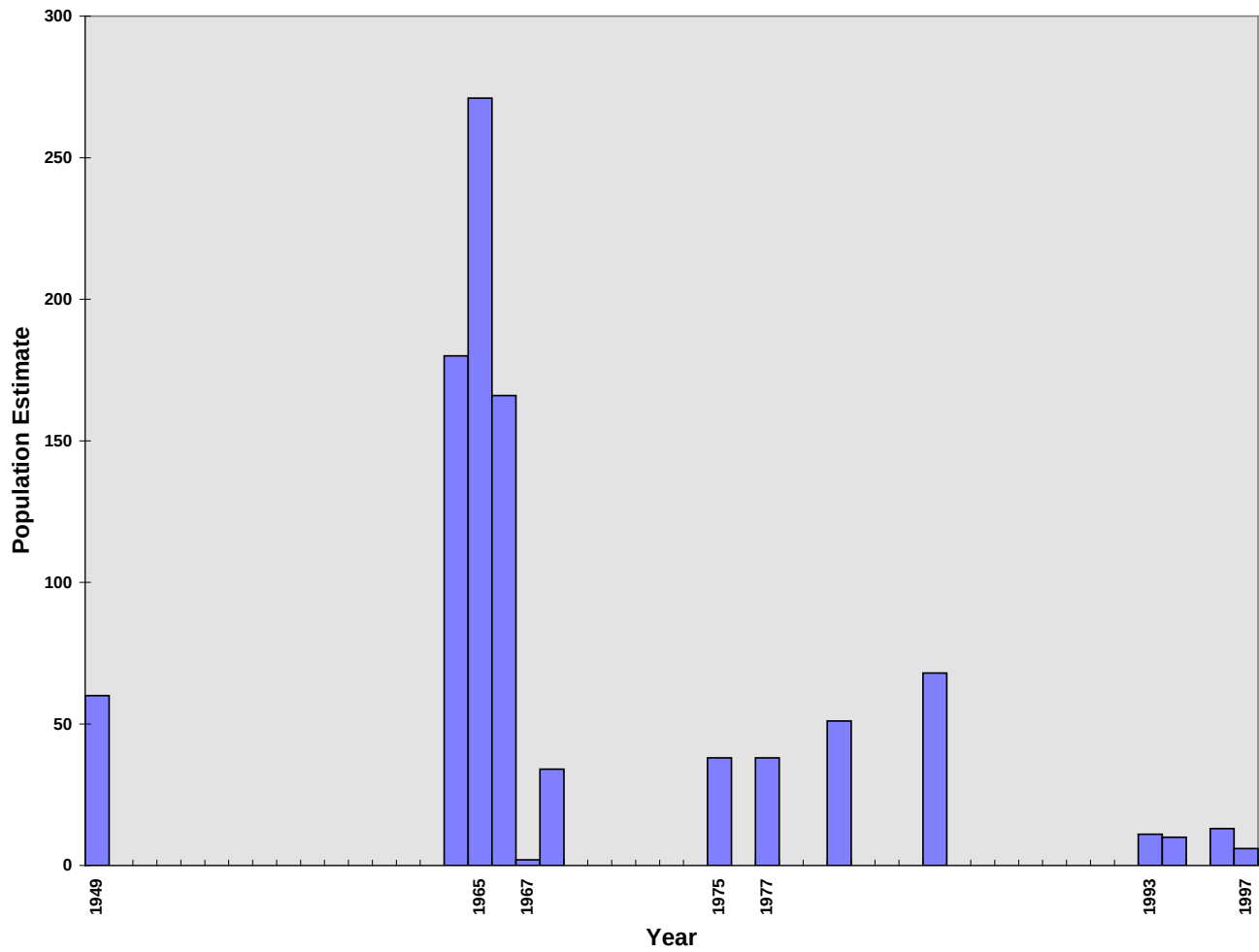


Figure 3. Map showing land use zonations, including Special Management zones, from the Bulkley Land and Resource Management Plan.

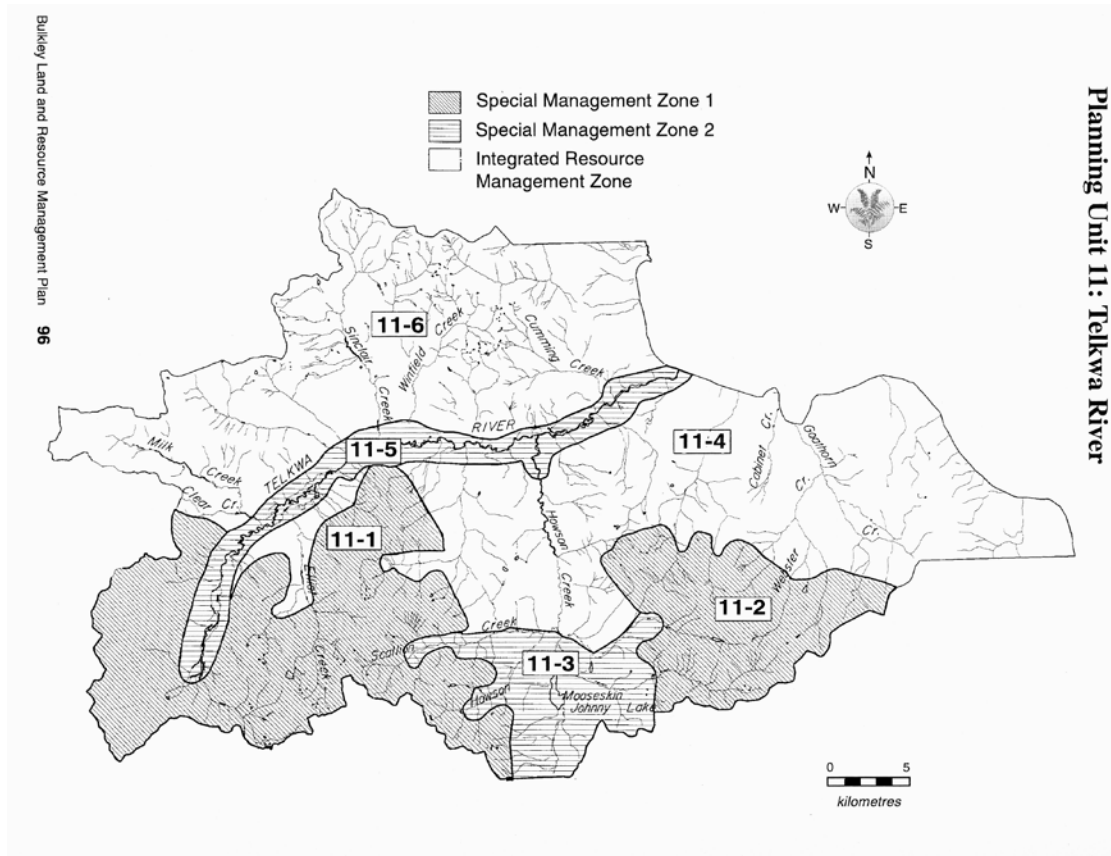


Figure 4. Map showing area of Telkwa Caribou Recovery Area and management and habitat protection zones.

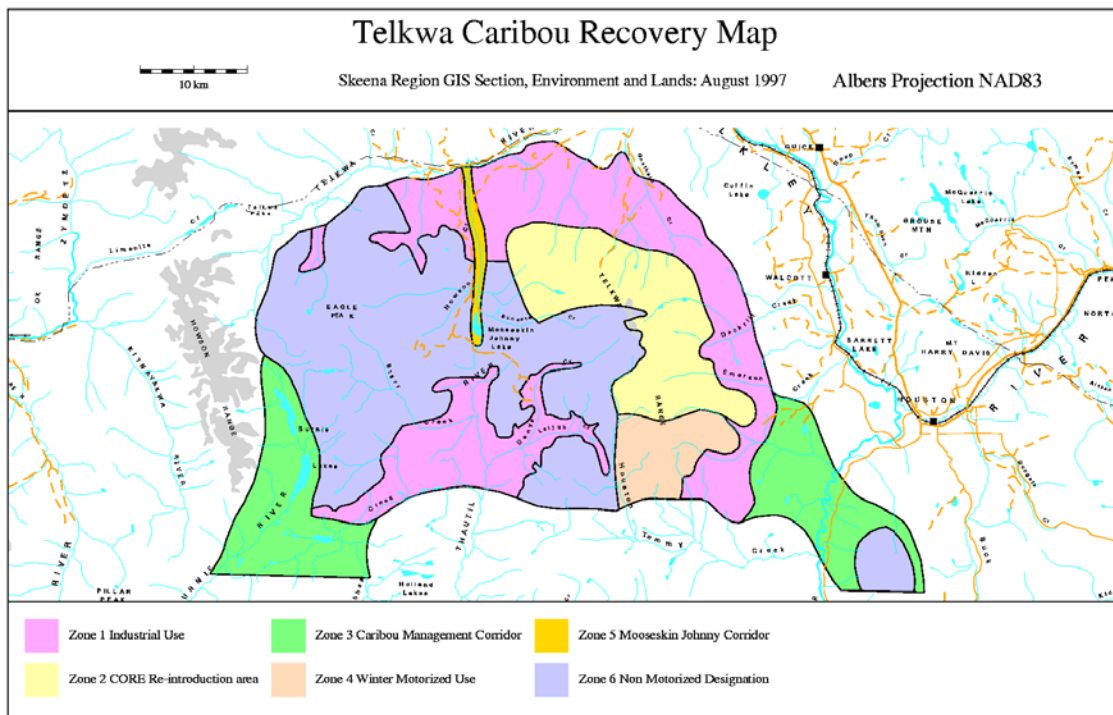
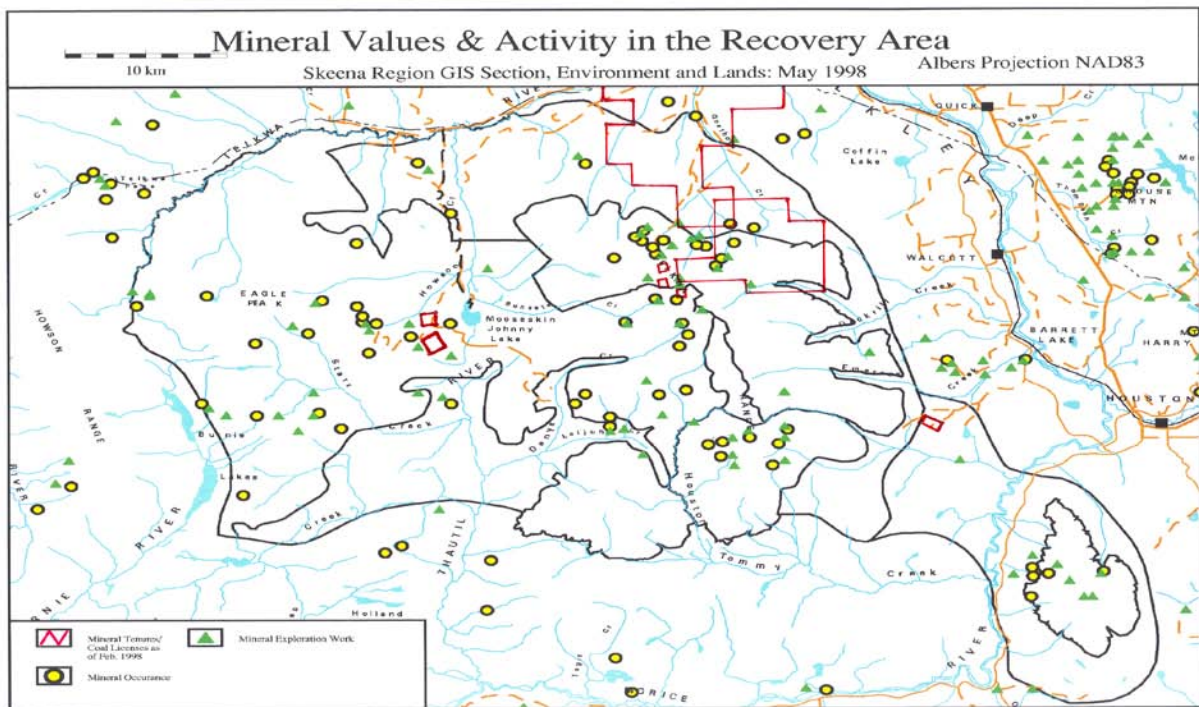


Figure 5. Mineral Values and Exploration Activity in the Recovery Area.



Literature Cited and Personal Communications

- Bulkley Valley Community Resources Board. 1996. Bulkley Land and Resource Management Plan. Vol. 1: Consensus Management Direction. Province of British Columbia, May 1996. 90 pp.
- Cox, L. unpublished. An isolated caribou herd in the midst of a developing area. BC Environment, Fish and Wildlife Branch. unpublished report.
- George, M. pers. comm. Lands and Resources Forestry Manager. Office of the Wet'suwet'en Hereditary Chiefs. Hagwilget.
- Griffith, B.J., J.M. Scott, J.W. Carpenter and C. Reed. 1989. Translocation as a species conservation tool: status and strategy. Science. Vol. 245. pp. 477-480.
- Hodson, K. 1977. A winter population and habitat survey in the Telkwa Mountains of the Mountain Caribou (*Rangifer tarandus montanus*) Jan-April 1977. BC Environment, Fish and Wildlife Branch, Smithers. 19 pp.
- Malott, M. pers. comm. Mineral Lands Planner, Ministry of Employment , Northwest Regional Office, Smithers.
- van Drimmelen, B. 1986. Telkwa Mountains caribou telemetry project. Progress Report #2. BC Environment, Wildlife Branch, Smithers. 18 pp.

Appendix 1. Relative “liabilities” to population growth of the Telkwa Caribou Herd

Predation

a) Wolf Predation

Predation of caribou by wolves has the potential to extirpate the TCH given that current wolf numbers may be largely determined by densities of moose and goats, and that the TCH is currently at a very low population level. Caribou calves are extremely vulnerable to wolf predation throughout the summer, and all age and sex classes of caribou are vulnerable to wolf predation throughout the year.

b) Bear Predation

Bears (both black and grizzly) are potential predators of TCH caribou, but bear predation represents less of a concern than wolf predation because 1) caribou calves are probably most vulnerable to bear predation in June and July after which calves are probably able to outrun bears, 2) the density of bears is low, and 3) the impact of bear predation is seasonal because bears are not active throughout the winter.

c) Predation from other sources

Wolverines have been observed in the Telkwa Mountains and are potential predators of caribou. Wolverine predation represents less of a liability than wolf and bear predation because 1) wolverine densities are low and 2) calves are vulnerable to wolverine predation over a relatively short period after calving. However, recent studies in the Wolverine Mountains have shown that a significant portion of winter caribou mortality has been caused by wolverine predation. One, and possibly two of the last five mortalities in the TCH may have been a result of wolverine predation. Wolverine predation may be most significant in late-winter when a crust on the snow allows wolverines to move rapidly over the snow while caribou break through.

Golden eagles, coyotes and lynx have also been documented as predators on caribou. All are present in the Telkwa Mountains at low densities.

Illegal Hunting (Poaching)

There has been a complete closure on caribou hunting in the Telkwa Mountains since 1973. However, there are unconfirmed reports of some illegal hunting (poaching) occurring in the Telkwa Mountains right into the 1990's. Poaching is unlikely to result in a significant degree of adult mortality unless access to alpine areas improves and the level of human activity increases, but given the current population level of caribou, any poaching could seriously jeopardize the recovery effort.

Access

a) Winter Motorized Access

The use of snowmachines in the Telkwa Mountains represents a serious "liability" in that:

- 1) snowmachine use has the potential to impact large areas of winter range, particularly alpine areas;
- 2) direct disturbance to animals may result in harassment, energy loss at a time of negative energy balance (winter), and the potential for injury.
- 3) disturbance may also result in winter range abandonment, which may be particularly critical if snow depth and/or snow crusting limit lichen availability in other areas of winter range;
- 4) trail establishment (snow compaction) has the potential to increase the mobility of wolves and improve their access to subalpine and alpine areas in winter, thereby increasing predation rates on caribou.

b) Winter Non-Motorized Access

Skiers have the potential to cause many of the potential impacts described above for motorized access, but generally skiers cover less area and there is less potential for direct disturbance to animals.

c) Summer Motorized Access

Use of All Terrain Vehicles (ATV's) and motorized dirt-bikes has the potential to impact caribou in ways similar to those described for winter motorized access. ATV's and dirt-bikes potentially can cover large areas, (especially in alpine areas) and have the potential to cause both direct disturbance to caribou and range abandonment.

d) Summer Non-Motorized Access

Hikers and their dogs may result in both direct disturbance to caribou and range abandonment, particularly if dogs are allowed to chase adult caribou and calves. However, there is less potential to impact large areas. Three areas that are popular for summer hiking activities, that are also within the TCH Recovery Zone, include Hunter Basin/Camel Humps, and Webster and Hankin Plateau.

Habitat Change

a) Habitat Fragmentation

Land alienation from urban development and agricultural encroachment have fragmented forested areas of the TCH range. Forest harvesting practices contribute significantly to habitat fragmentation unless carefully planned and conducted, and in accordance with a sustainable watershed based perspective. Timber extraction and associated road developments can lead to further habitat fragmentation and increased public access. Support by the forest industry for access management measures and having caribou protection measures incorporated into harvesting plans will reduce the relative liability associated with forest harvesting.

b) Habitat Loss and Degradation due to Industrial Activities

Direct loss of habitat could result if a proposal to develop a coal mine south of the Telkwa River receives approval, and mining proceeds.

c) Changes in Patterns of Natural Forest Succession

The policy of extinguishing all natural fires and recent forest harvesting practices with minimal consideration to mimicking natural disturbance patterns and rates have changed the natural pattern of forest succession with unknown long-term impacts on the TCH. However, the impact of changes in natural succession patterns are probably minor at the present time relative to habitat fragmentation and degradation.

Aerial Harassment

Potential impacts of aerial harassment associated with low-level over-flights for ecotourism, access to winter skiing areas, helicopter pilot training in the Telkwa Mountains, and survey and radio collaring programs are similar to those described for activities associated with motorized access. Aerial harassment from low-level overflights, notably from helicopters (more intrusive than fix-wing) can cause direct harassment leading to increased energy expenditure, and the potential to cause injury and range abandonment. Although the potential for aerial harassment to impact large areas of the Telkwa Mountains is great, the current low level of aircraft activity and lack of impact on snow compaction reduces the relative liability below that of activities associated with winter and summer motorized access.

Low Numbers of Caribou

With increasing habitat fragmentation, degradation and alienation, the potential for interchange between TCH caribou and the nearest population of caribou in Tweedsmuir Park is reduced and the potential for genetic effects to affect the long-term sustainability of the Telkwa caribou herd is increased.

In general, the long-term impacts on genetic viability of small, isolated populations of caribou throughout British Columbia are poorly understood. However, studies elsewhere have documented that the likelihood that small, isolated populations of vertebrates will persist over the long-term is reduced as a function of the size of the gene pool and distance from other populations, which affects rates of gene flow. Small populations are vulnerable to fluctuations in habitat conditions and random mortality events such as environmental catastrophes. Small populations are also vulnerable to reduced productivity and recruitment, resulting from chance variations in age and sex ratios and genetic deterioration from inbreeding and random drift in gene frequencies.

Appendix 2. Telkwa Caribou Recovery Management and Habitat Protection Zones

ZONE 1. INTEGRATED USE.

Areas within Zone 1 consist of caribou habitat in which industrial activity is expected to occur, consistent with direction provided by the Bulkley LRMP. Caribou habitat areas were mapped using information from Biophysical Classification for Wildlife (ungulate) Capability Maps, 1996 lichen transect surveys, radio-telemetry locations of TCH caribou, and locations of confirmed caribou sightings. Primary industrial activity is expected to be modified forest harvesting and silviculture activities. Mineral exploration and extraction activities are expected to play a lesser role.

Higher elevation boundaries for Zone 1 were determined from the best approximation of forest harvest operability lines. Habitat capability, caribou distribution data and natural physical barriers formed lower zone boundaries. The upper Mooseskin Johnny Lake area was not included in zone 1 as forest harvesting is not slated for that area during the next five year time period. Future forest harvesting strategies for this area will depend on values incorporated in the Landscape Unit Planning process (maintaining visual quality, habitat connectivity, protection of wetlands around Mooseskin Johnny Lake).

Management within Zone 1 areas will involve adoption of forest harvesting strategies that integrate caribou values with management of public access through forest road and block deactivation planning. Area or specific road closures will be legislated through the Forest Practices Code of British Columbia Act or the Wildlife Act where necessary.

ZONE 2. “CORE” RE-INTRODUCTION AREA

Transplanted caribou were placed within this zone in November 1997 and additional caribou may be released in this zone over the winter of 1998/99. Area designation was based on historic and current use by TCH caribou and delineation of the area rated to have the highest capability for caribou.

All access will be restricted within this zone on a voluntary basis, especially during the first critical years of caribou recovery, when it is important to minimize the potential for disturbance to cause recently introduced caribou to leave the recovery area.

ZONE 3. CARIBOU MOVEMENT CORRIDOR TO MORICE MOUNTAIN.

To maintain the potential for genetic interchange between TCH animals and caribou in Tweedsmuir Park, and to allow caribou to access habitat within their historic range, caribou must be allowed to move between the Telkwa Mountains and areas to the south, including Morice Mountain and Tweedsmuir Park. In the Morice Mountain corridor, current and future harvest plans will be reviewed to ensure that cutting plans are designed to maintain habitat connectivity, permitting movement and security cover between harvest blocks and lowland valley development.

A corridor to Morice Mountain was identified because there were confirmed sightings of caribou on Morice Mountain in both 1996 and 1997. The Tweedsmuir corridor was removed from the initial draft of the Telkwa Caribou Recovery Zone map because of a lack of proposed forest harvest plans for that area.

ZONE 4. WINTER MOTORIZED/SUMMER NON-MOTORIZED.

Zone 4 was identified to permit continued recreational snowmobile use, recognizing the importance of that area to the Houston snowmobile club, and consistent with the intent of the Recovery Plan to provide public recreational opportunities so long as they are consistent with habitat protection measures that will ensure sufficient habitat exists to sustain a viable caribou herd. The boundaries of this area were determined through discussion and negotiation with representatives of the Smithers Snowmobile Club and Houston Snowmobile Association.

BCE staff felt that winter snowmobile use could continue on a trial basis given available information and caribou distribution that shows TCH caribou mainly use this area in early spring and over the summer. Therefore this area is designated non-motorized for summer periods.

Management actions in the Recovery Plan call for frequent monitoring of translocated caribou to determine annual movements, distribution and habitat use. That data will be used in future considerations of the importance of this zone to TCH caribou and whether winter motorized use is compatible with caribou winter range requirements.

ZONE 5. INTERIM WINTER MOTORIZED/SUMMER NON-MOTORIZED.

This zone (Meat Cache Trail) was designated, and the boundaries determined after discussion and negotiation with representatives of the Smithers Snowmobile Club and Houston Snowmobile Associations. This designation is in place for one year, to be evaluated at the end of the 1997/98 snowmobiling season. BCE was willing to consider continued motorized access to this area on a trial basis because most motorized use of the area occurs over a relatively short period of time in the spring (March - May) before caribou move up into higher elevation area to calve, and because there exists natural physical barriers to motorized access to the areas (Emerson Ridge) currently used as late-winter range by the TCH.

This zone extends to the height of land on the east at which there is a natural, physical barrier to snowmachines onto Emerson Ridge. The north-western boundary has been extended up into a corridor through the “Meat Cache” area. The area to the west of the corridor is non-motorized and snowmobile access is prohibited. The area to the east is the “Core” introduction area and snowmobile access is also prohibited in that area. This corridor ends at the height of land prior to “the small lake”. The small lake is in the “Core” area, and motorized access is not permitted.

These restrictions will be communicated to the public through signs placed at the trail head by the parking lot, and at the natural topographic funnel at “the top of the meat cache, before the hole”. Additional signs will be located as necessary along the boundaries of the corridor area.

This zone also includes Morice Mountain. Members of the Houston Snowmobile Association will monitor caribou activity on Morice Mountain, and have agreed to refrain from using Morice Mountain if caribou are present.

BCE and the Smithers and Houston Snowmobile Associations will monitor voluntary compliance with the motorized restrictions in this zone over the winter of 1997/98 and will discuss the effectiveness of the restrictions at the end of the 1997/98 snowmobile season.

ZONE 6. NON-MOTORIZED RECREATION

Zone 6 consists of caribou habitat located above forest harvest operability lines. The intent is to restrict all motorized use within those areas to minimize potential direct and indirect impacts on TCH caribou, and to maintain the opportunity for caribou to use all areas of potential winter range.

Appendix 3. Summary of Public Responses

The public review process included a mail-out to interest groups in the Bulkley Valley, open houses that were held in Smithers, Telkwa and Houston. Displays with information about the project were set up at the Forest District Offices in Smithers, Houston and Burns Lake, at the Regional Ministry of Environment, Lands and Parks Office in Smithers and at Paradise Sports in Houston. After this initial release, the consultation process was continued with meetings with user groups and individuals, upon request. Meetings were held with the city and town councils, the snowmobile clubs, the backpackers etc.

Approximately 120 questionnaires were returned. The majority of people found out about the project via the newspaper articles. Word of mouth was the next most common response. Despite the phone survey and mail-out to over 60 user groups/individuals, only 20 questionnaires identified this as a source. Some initially heard about the project via the radio and TV.

While a wide range of users responded to the questionnaire, the majority of responses were received from recreational users, both motorized and non-motorized, summer and winter users. Response from industry was limited to a handful of respondents. This is most likely due to the fact that MELP was dealing directly with the Ministry of Forests, Forest Licensees and staff at the Energy and Minerals Division at the Ministry of Employment and Investment.

Purpose and Structure of This Report

During the public review process, BC Environment made a commitment to report back to the public what was heard across the Bulkley Valley about the Recovery Project. This report summarizes the contributions from the questionnaires.

The responses have been organized into theme areas and summarized in this report in four main parts. These parts are as follows:

- Section 1. Responses Related to the Objectives of the TCHRP.
- Section 2. Responses Related to the Background of the Plan.
- Section 3. Responses Related to the Access Management portion of the Plan.
- Section 4. Responses Related to other issues around the TCHRP.

Each Section includes comments and questions found in the questionnaires. Wherever required, responses to the comments or questions have been included. The responses are italicized and immediately follow the comment to which it is addressing.

Readers should keep in mind that what is contained here is a summary only. It is a presentation of the range of opinions offered by the public. It is intended to be a description of content, and not an analysis.

Section 1. Responses related to the objectives of the TCHRP

Over 95% of the questionnaire respondents supported the objective of establishing a viable herd of caribou in the Telkwa Mountains. Many had concerns related to portions of the plan.

- A viable herd would be a great asset to this valley.
- While the establishment of a viable herd is a admirable objective, this must not be done at all costs. The causes of the decline may be irreparable, and if this is the case, it may be necessary to let nature take its course.
- BC Environment must be committed to abandoning this project if in 5 years the recovery plan is not successful. *(BC Environment will continue with this project, only as long as there is a good possibility of success.)*
- Why has BCE waited until the herd is in danger of extirpation before doing something about the problem? *(BC Environment has been working on the Telkwa Caribou herd for more than 20 years. Other attempts in the past to provide protection through Wildlife Management Areas were unsuccessful. Previous research projects were subjected to funding cuts. Today, we know that the herd is in very real danger of disappearing. It is imperative that something happens now, instead of addressing failures in the past. In the early 1980's several years of monitoring showed that the herd was increasing. During the decade that followed, the herd declined and it was discovered in 1993 when a Habitat Conservation Trust Fund project allowed BC Environment to resume monitoring. That funding was clawed back and it wasn't until 1996 that funding was available.)*
- This project is occurring too late and should not proceed.
- This area is located too close to human population centres to maintain a viable herd without creating a gigantic park. *(The biologists at BC Environment have completed habitat studies and feel that lack of habitat is not a limiting factor for the Telkwa Caribou Herd.)*
- Should this herd be re-established considering the high values the area has for other users? *(Direction received from the Bulkley LRMP indicates that this herd is indeed a priority for the local communities in the Bulkley Forest District.)*
- Herd should be managed so that in the future there will be opportunity for hunting by legal licensed residents, not only aboriginal harvest.
- Money spent on the transplant and monitoring would be better spent on things such as health and education.
- A large number of users are paying a heavy price to recover a herd which has diminished through no fault of the users. *(Cause(s) for the decline has not been determined. As monitoring data is collected, BC Environment will be better able to identify the factors currently limiting herd growth and the potential for successful establishment of a viable herd.)*
- We support our tax dollars being used for this project.
- User groups that are putting their own self interests above the long range objectives of the project are disappointing.
- Human use should be non-invasive and wildlife populations should not suffer due to human 'recreation'. It is time for us to learn to share with, and respect, other life forms.

Section 2. Responses related to the background of the plan

This section includes comments related to the information and data on which the recovery plan was based. It reflects comments about causes of the decline in size of the TCH and liabilities to herd growth.

- This area is a prime recreational area and must be maintained as such.
- Winter motorized use does not effect the caribou in any way. Snowmobilers do not chase caribou, and in fact, rarely see caribou.
- The Recovery Plan is based on hearsay and not fact. *(The TCHRP Team has identified different causes of disturbance based on a knowledge of caribou biology, professional experience and studies conducted both in the Telkwa Mountains and elsewhere in the country. In an attempt to reduce all possible disturbance during the critical years of the recovery, that is the next 3 - 5 years, restrictions on human use has been considered as outlined in the access management plan. BCE staff feels that is important to minimize all potential negative effects during this critical time, to give the herd the best possible chance at recovery. The Recovery Plan reflects an attempt to accommodate the interests of different recreational users, without compromising objectives of the Recovery Plan.)*
- Burning, logging, mining exploration and other degradation of caribou habitat should be abolished.
- The railroad is the cause of the decline.
- Has population changes in response to climatic changes, disease, parasites, inbreeding, etc. been considered? *(These things have been considered, and have been deemed to have negligible short-term impacts.)*
- No consideration is being given to the liability of the native hunt.
- Problem is poaching and native hunting out of season.
- Logging drives caribou up into higher elevations causing a conflict with snowmobiling.
- Logging will be the cause of herd extinction, not recreation users.
- Kill all the wolves.
- The bait idea will attract predators into the caribou range. *(This comment is in response to a suggestion in the initial draft of the Recovery Plan that diversionary feeding of predators was one option to be considered if predation was found to be significant. Diversionary feeding would only be conducted for a couple of weeks at the critical calving time. This method of predator control has in some instances been used successfully, while in other instances it has failed.)*
- Winter recreation activities create movement corridors for predators to access alpine. Without predator control, winter recreation will compromise the caribou.
- Wolf control is a vital component of this project. A common feeling is that wolf predation is a limiting factor in the growth of this herd, and that in order for the recovery to be successful, wolf control is required. Views on wolf control range from eradication to temporary (ie 2 - 3 years) reductions in wolf populations. *(It would be irresponsible for BC Environment to embark on a wolf control program without any knowledge of the significance of predation in limiting herd growth. Numerous predators kill caribou, and there is no reason to assume that wolves are indeed the cause for the decline of the caribou herd. If continued monitoring shows that wolf predation is an important factor, options to reduce the impact of wolf predation would be considered.)*
- More research to determine causes of population decline, and habitat use in area is required. Some feel this should be completed before access measures are taken, others feel all access should be denied until this data is gathered. *(The Recovery Plan has recommended a compromise in regards*

to this issue. Certain areas are unrestricted access while others are limited access, and some areas are no access.)

Section 3. Responses related to the access management portion of the TCHRP.

- Access restrictions are not acceptable.
- Stick to your guns regarding no access until the project has either succeeded or failed in re-establishing the herd.
- For each recreational activity, the Bulkley Valley is large enough to accommodate many alternatives areas. This is particularly true for a time-limited plan.
- This project can only be successful if all users groups sacrifice. Motorized recreation users and industry will also have to agree to honour the recommendations of the TCHRP.
- This area should not be protected for 'back-country, non-motorized' use. A multi-use plan involving motorized users should be developed. *(The Recovery Plan is a multi-use plan involving motorized and non-motorized users.)*
- Maintaining recreational opportunities for snowmobilers, but restricting hikers and skiers from the best trails in the ranges is not acceptable.
- The caribou herd should be viable before access to the area for other uses is permitted.
- As non-motorized users, we would be happy to restrict our activities to help the herd recover.
- Any motorized access will jeopardize the project.
- Whole range should be non-motorized if it can be shown that motorized vehicles adversely impact the caribou.
- Wolves do not hang around where there is snowmobilers, therefore the snowmobilers should not be restricted.
- Once you start closing areas where will it stop? You cannot close all areas to recreation. *(The Telkwa Ranges represent a small percentage of historic caribou habitat in the Bulkley Valley.)*
- Non-motorized users will have little impact due to the slow method of travel.
- A permit system for non-motorized use in the CORE area should be considered.
- Closure of the area, until the herd recovers, is a must.
- Winter motorized vehicles should be eliminated for 5 years until some research has been completed.
- A non-motorized zone, including a no-fly zone, should be established.
- How will access management directions impact mineral tenure holders? *(The Recovery Plan will not impact mineral tenure holders. Please see the Recovery Plan for more details.)*
- Motorized access has the most impact on wildlife, and it should not be allowed.
- Snowmobiles do not negatively impact caribou or other wildlife and as such should not be restricted.
- Closing areas to snowmobiling will have no effect on the population as the caribou do not use the alpine areas in winter. *(While this is true for some populations of caribou, this particular population does use the alpine throughout the winter, depending on snow conditions. The Telkwa Ranges, with the rolling alpine, and windblown slopes provides excellent alpine winter range.)*

- Closing the mountain to snowmobilers is not the right answer, there has to be a reasonable compromise. *(The Recovery Plan has identified a significant portion of the most commonly used snowmobile areas as winter motorized use.)*
- A balance between the needs of the caribou and human users of the Telkwas must be reached.
- How will access be controlled? *(Access will be controlled on a voluntary basis. Different user groups have agreed to respect the recommendations of the recovery plan, and will self monitor their activities. In the future, if users do not recognize the voluntary restrictions, further measures under the Wildlife Act will be considered.)*
- Will air access into Starr Basin (for skiers) be allowed, as it is in the non-motorized zone? *(Helicopter use will be permitted. To reduce the impact on the caribou, designated flight paths, minimum altitudes and the avoidance of unnecessary touring will be addressed.)*
- It does not make sense to have the "Winter Motorized Use' zone adjacent to the Core Re-introduction area.
- Signs should be posted at all access points to inform people of the program, and the restrictions. *(This is being done.)*
- Dogs should not be permitted in the area.
- If motorized users are not willing to do their bit for this project, they should be totally banned from the area.
- While willing to voluntarily stop using the area, I do not understand why low impact, non-motorized activities are being restricted, while massive clear-cuts are ringing the area, diminishing the habitat. *(Logging practices in the Telkwa Ranges area are being addressed with the Ministry of Forests, the licencees and BC Environment staff.)*
- The success of this plan hinges on convincing motorized users to severely restrict or refrain from using the area. It is not their 'right' to this area.
- We have to do something NOW. No access into the area should be permitted.
- There is more territory available to us than we can see in a lifetime. A small area closed, to afford an opportunity to another species is a small sacrifice.
- Would it be possible to permit non-motorized use in the CORE area if it is restricted to late summer, after the calving season, and no dogs are permitted. *(For the initial years, BC Environment feels that no use would be the best option for a successful recovery. Once the herd is more stable, this type of use will be considered.)*
- Opposition to this plan is self-centred and immoral and should be entirely ignored, regardless of how many people complain. This is an issue of a minor inconvenience to recreation versus the extinction of a population that has at least as much right to be here as we do.

Section 4. Responses Related to Other Issues Surrounding the TCHRP

- Closing areas to recreation will have a negative impact on our local economies as recreationists support our local hotels, restaurants, gas stations and stores.
- This area has a multitude of characteristics that are of great value but not necessarily measurable in economic terms.

- Is there any legislative powers available to restrict activities deemed to be detrimental to the herd? *(Under the Wildlife Act access restrictions can be put in place if it is deemed necessary to protect a wildlife population.)*
- Are funding sources secure so that this project will be able to continue? *(Multi-year funding is approved in principle by FRBC. This is as secure as funding gets in government.)*
- There was a lack of consultation, especially in the Morice district, which does not have a higher level plan. *(The initial draft of the Recovery Plan was completed in August of 1997. Consultation on the plan began in September of 1997. All interest groups and stakeholders in the Telkwa Ranges received a copy of the plan, and an open invitation to set up a meeting with BC Environment to discuss the draft, and to address any concerns they had with the draft. BC Environment met with all groups that requested meetings, both in the Bulkley and Morice districts.)*
- When the Morice LRMP begins, a special subcommittee of the Bulkley and Morice Community Resources Boards should address the issue of status and management of the entire Telkwa Ranges.
- Public should be updated on the project on a regular basis.
- Compatibility of human activities with the caribou recovery are unknown personally and subject to advice and direction of BCE and further monitoring results.
- This Recovery project should not just focus on the Telkwa Ranges.
- This wildlife project requires high priority beyond recreational use!
- This is an innovative and important plan.
- It is important for the community to make recreational concessions in order to re-establish the herd.