

# **Quesnel Highland Snowmobile-Mountain Caribou Monitoring Report Cariboo Region**

**December 2005 – April 2006**



Photo: Lara Roorda

**Prepared for:**

**Ministry of Environment,  
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## **Executive Summary**

Nine aerial fixed-wing flights were conducted to survey all caution areas within snowmobile zones A, C and D between January 8<sup>th</sup> and April 30<sup>th</sup>, 2006. Additional partial flights were also flown on three occasions in conjunction with wolf/caribou telemetry flights and provided useful supplemental data for the project. Locations of snowmobiles and snowmobile track in addition to caribou and caribou track sightings were recorded. A total of 367 snowmobile locations, 34 caribou and 3 goat locations were obtained during these flights. The greatest number of snowmobiles were observed in zone D (215), followed by zone A (130) and zone C (22). The greatest number of caribou and caribou tracks were observed in the Grain Creek (zone C) and Mica/Besig Mountain (Zone A) areas. On twelve occasions, caribou and snowmobile activity were observed within 3km of each other in the study area. This included 5 instances in Zone A, 4 in Zone C and 3 in Zone D. Although monitoring of closure zones was not a project objective this year, a total of 22 machines were observed in five separate closure zones.

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## Introduction

In 2000, mountain caribou became red-listed provincially and were nationally designated as 'threatened'. There are 13 mountain caribou sub-populations identified within British Columbia (Simpson 1997). The Cariboo Region includes the Barkerville, Wells Gray North and a portion of the North Cariboo Mountains sub-populations. Backcountry recreation activities, snowmobiling and heli-skiing in particular, are considered to be a major conservation concern due to the potential for displacement of caribou from their winter habitat.

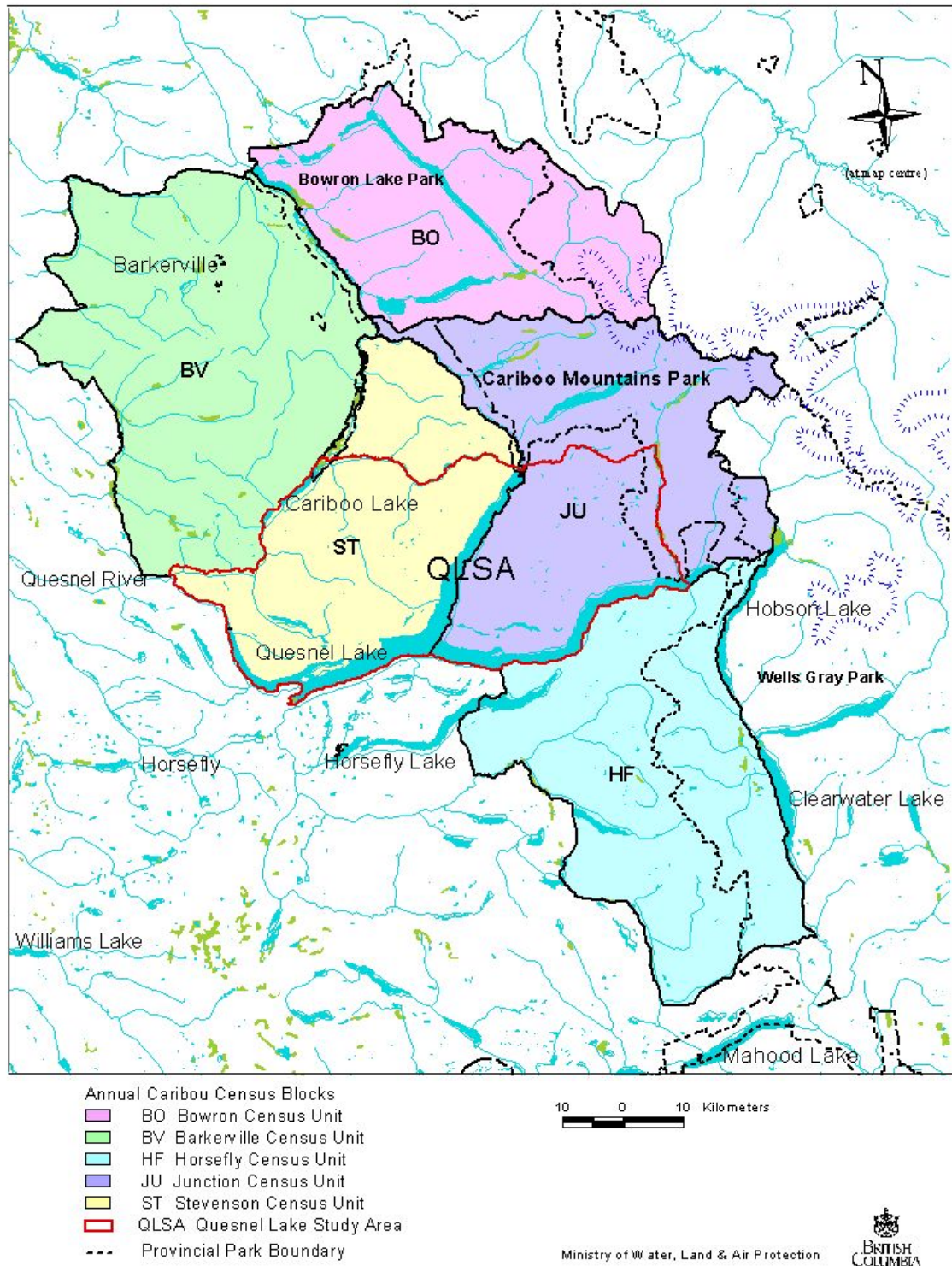
To address this issue, two subsequent voluntary multi-year agreements were entered into with the local snowmobile clubs from Quesnel, 100 Mile House and Williams Lake and the Ministry of Agriculture and Lands and the Ministry of Environment. A monitoring plan (beginning in the winter of 2002/2003) was included in this agreement to collect baseline data on snowmobile use in the *Voluntary Closure Zones* and *Caution Zones* as identified and mapped by the MSRM. Voluntary closure zones were defined as areas of critical caribou habitat and were to receive no snowmobile activity. Caution zones were defined as areas of sensitive caribou habitat that remained open to snow mobile activity. The first three years of this monitoring program focused on the compliance of back country recreationalists within the voluntary closure zones (Price 2003, Price 2004 and Price 2005). This fourth and final year of the program was directed towards monitoring use of both mountain caribou and snow machines in and around caution zones throughout the study area. Funding for all four years of this project was provided by the Habitat Conservation Trust Fund (HCTF).

Recovery strategies for Mountain caribou often incorporate a combination of recreational zoning, modified timber harvest strategies, access limitation and predator and moose management. The report produced by the Mountain Caribou Technical Advisory Committee (MWLAP 2002), information from the regional Recovery Implementation Group (RIG), and the establishment of the Provincial Species at Risk Co-ordination Office (SaRCO) in October 2004 have come together to initiate an aggressive, science-based process for developing mountain caribou recovery options. Detailed recovery options are to be delivered by SaRCO in fall 2006.

## Study Area

The snowmobile monitoring project study area covers the Wells Gray North and the Barkerville sub-populations of Mountain Caribou and includes four of the five caribou census blocks (Junction, Stevenson, Horsefly and Barkerville) (Figure 1). The study area excludes Wells Gray, Cariboo Mountains and Bowron Lake Park and covers the eastern portions of the 100 Mile, Central Cariboo and Quesnel Forest Districts. The zoned survey areas are consistent with areas identified by the Ministry of Environment as critical caribou winter habitat. The monitoring project study area was divided into four zones (Figure 2): Zone A covered the area from Spanish Creek north to the East Arm of Quesnel Lake (Horsefly census block); Zone B covered the area between the East Arm and North Arm of Quesnel Lake including Blue Lead Creek (Junction census block); Zone C covered the area from the North Arm of Quesnel Lake to the Cariboo River (Stevenson census block) and finally, Zone D covered the area from Cariboo Lake north to Two Sisters Mountain (Barkerville census block).

Wet climate and relatively high winter snow depths characterize this mountainous area, with winter snow depths exceeding 2 m in the mountains. Climatic moisture increases in an easterly direction and with elevation. Continuous, extensive high elevation caribou winter ranges occur on rounded sub-alpine mountain tops throughout the Quesnel Highland and Bowron Valley Ecosections. Within the higher and increased rugged terrain of the more easterly Cariboo Mountains, high elevation caribou winter ranges are present, but are more restricted and discontinuous in nature. The area is comprised of several biogeoclimatic zones including the Alpine Tundra (AT), Engelmann Spruce Sub alpine Fir (ESSF), Interior Cedar Hemlock (ICH) and Sub-Boreal Spruce (SBS) zones.



**Figure 1. Quesnel Highland Mountain Caribou Census Blocks.**



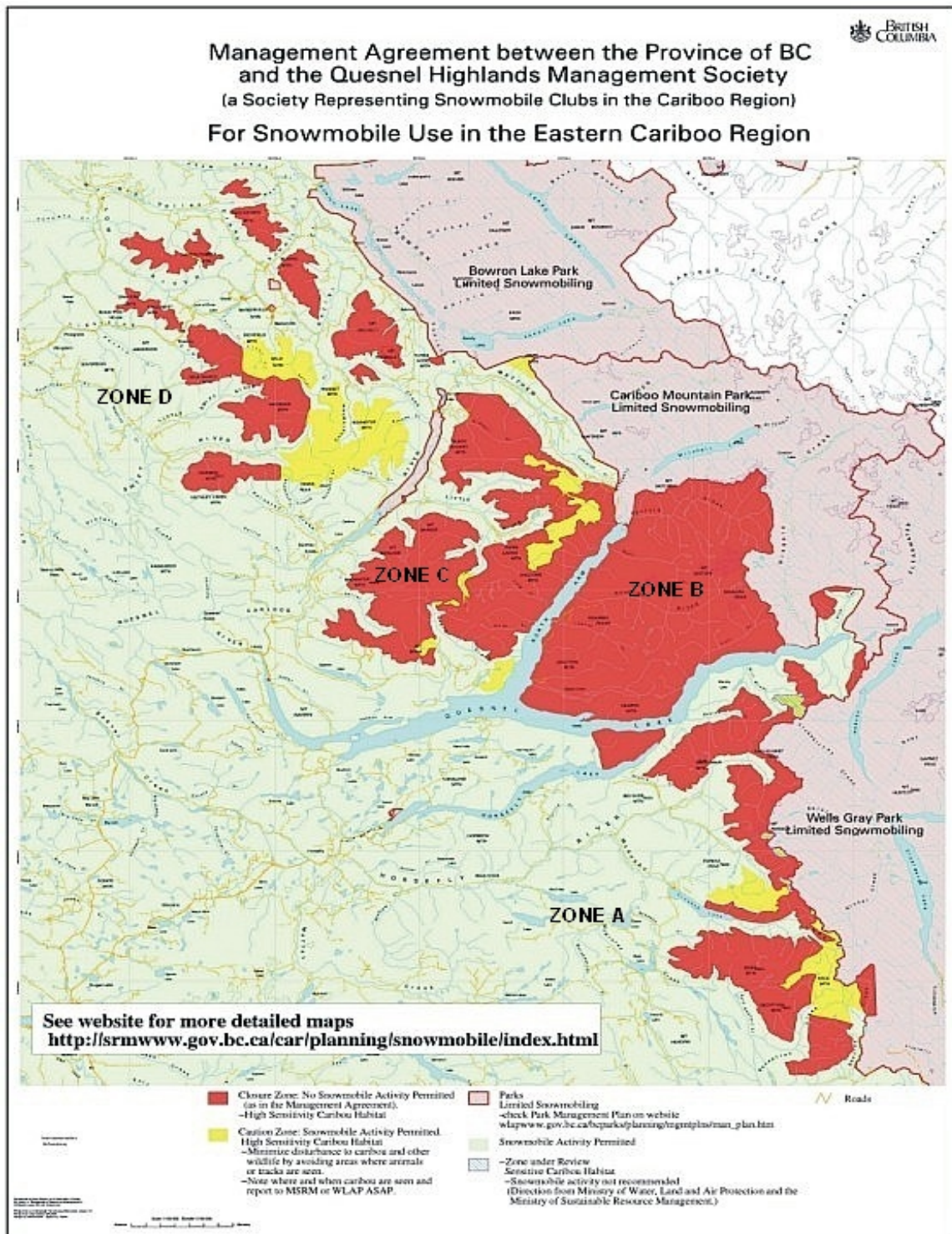


Figure 2. Map of the project study area indicating voluntary closure and caution zones.

## Methods

Flights were conducted on weekends to take advantage of peak snowmobile use periods and record intensity of use within caution zones. Whenever weather permitted, caution areas in all three zones, A, C and D were flown in one day. All flights originated from the Williams Lake Airport in a Cessna 182 fixed wing aircraft. Locations were taken with a Garmin 95 Global Positioning System (GPS) unit and were recorded on Snowmobile Monitoring Data Collection Forms (attached) in UTM's. Whenever possible, photographs were taken of habitat conflicts and snowmobile use within closure zones (Appendix 1).

To avoid biasing results, complete caution zones were surveyed rather than simply flying directly to known areas of snowmobile use. This also provided the opportunity to obtain locations of any caribou residing in or adjacent to the snowmobile caution zones. If radio-collared caribou were heard near the flight path, an effort was made to ascertain relocations of these animals. As caribou sign, snowmobiles or snowmobile tracks were sighted the GPS co-ordinates were recorded along with the geographic location, the number of snowmobiles, amount of usage and any relationship to caribou. These data points were then plotted on a map of the project area.

## Project Costs

From January to May 2006, project costs came to a total of \$13,003.22. A Cessna 182 aircraft was chartered for 35.1 hours amounting to \$11,000.97. Contractor labour, flight time, travel, mileage and report preparation totalled \$2002.25.

## Results

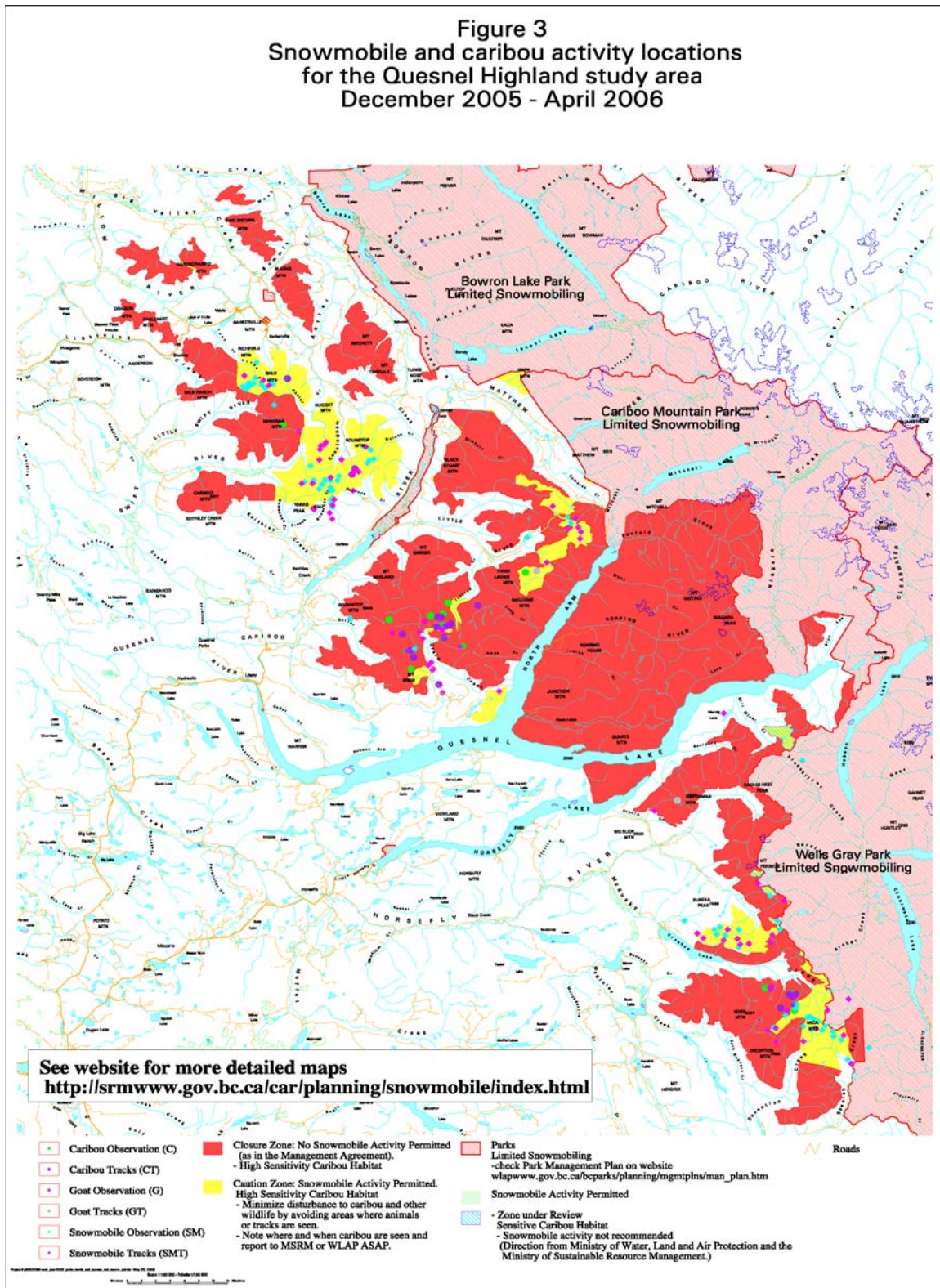
During monitoring flights (and supplemental wolf/caribou flights) a total of 367 snowmobile locations and 34 caribou locations were obtained from December 2005 to April 2006 (Table 1, Figure 3). Within, and adjacent to monitored closure and caution zones a total of 100 caribou were observed. An additional 115 caribou were estimated from track and bed counts.

**Table 1. Summary of observed snowmobile and caribou activity within snowmobile zones A, C and D for the Quesnel Highland survey area (December 2005 – April 2006).**

| <b>Snowmobile Zone</b> | <b># Snowmobiles observed</b> | <b># Additional Snowmobile track locations</b> | <b># Caribou observed</b> | <b>Caribou estimated from tracks/beds</b> |
|------------------------|-------------------------------|------------------------------------------------|---------------------------|-------------------------------------------|
| A                      | 130                           | 23                                             | 17                        | 23                                        |
| C                      | 22                            | 25                                             | 69                        | 85                                        |
| D                      | 215                           | 21                                             | 14                        | 7                                         |
| <b>Zone Totals</b>     | <b>367</b>                    | <b>69</b>                                      | <b>100</b>                | <b>114</b>                                |



Figure 3. Snowmobile and caribou activity locations for the Quesnel Highland study area December 2005 – April 2006.



Snowmobiles were observed on all flights with use peaking in the month of February when 203 snowmobiles were observed during three flights (Table 2). Caribou sightings within these high elevation habitats peaked in the month of March when a total of 58 animals were observed and an additional 68 animals were estimated present from track and bed counts.

**Table 2. Summary of observed snowmobile and caribou activity by month within and adjacent to caution zones for the Quesnel Highland survey area (January – April 2006)**

|                                         | January (1) | February (3) | March (3) | April (2) | Totals           |
|-----------------------------------------|-------------|--------------|-----------|-----------|------------------|
| # Snowmobiles observed                  | 22          | 203          | 101       | 41        | 367              |
| # Additional Snowmobile track locations | 11          | 23           | 17        | 14        | 65               |
| # Caribou observed                      | 0           | 27           | 58        | 15        | 100              |
| Caribou estimated from tracks/beds      | 0           | 26           | 68        | 17        | 111 <sup>1</sup> |

## **Habitat Conflicts**

### **Zone A**

On three separate survey days, caribou and snow machine activity were observed within 3km of each other in the northern portion of the Mica Mtn. area (Table 3). On these occasions caribou were from 2.5 to 3km away from the snowmobile activity. However, records of older caribou track indicate that during the week when there was no winter recreation, caribou utilized habitats approximately 500m from the area. No caribou sign was observed in the Eureka Mountain area during this study year.

**Table 3. Summary of instances where caribou and snowmachine activity were observed within 3km of each other in the Mica Mtn. area (Zone A) (January – April 2006).**

| Date      | #SM/Track | # Caribou/Track   | Distance apart | Time line               |
|-----------|-----------|-------------------|----------------|-------------------------|
| Mar-11-06 | 2 SM      | 2 Caribou         | 2.5 km         | present                 |
| Mar-19-06 | 11 SM     | Caribou Track (5) | 500 m          | 3 day old caribou track |
| Mar-19-06 | 11 SM     | Caribou Track (5) | 2 km           | Fresh caribou track     |
| Apr-30-06 | 7 SM      | Caribou Track (5) | 500 m          | 6 day old caribou track |
| Apr-30-06 | 7 SM      | Caribou Track (5) | 2 km           | Fresh caribou track     |

### **Zone C**

Within Zone C, use of similar areas by caribou and snow machines was observed on three occasions in Grain Creek and once on Cameron Ridge (Table 4). Upper Grain Creek was

<sup>1</sup> Track from three caribou were observed on a December wolf/caribou flight and are not included in this table.

heavily utilized by caribou from February to March 2006. Nine snow machines were observed in the Grain Creek area on February 25, 2006, utilizing both the caution zone and extensive “closed” areas. At this time snow machine tracks were observed within 100m of 11 fresh caribou track and beds. On two subsequent surveys caribou were observed both directly on old snow machine track and 2 km from it. On one occasion 5 caribou were observed 3km from fresh snow machine track on Cameron Ridge.

**Table 4. Summary of instances where caribou and snowmachine activity were observed within 3km of each other in Zone C (January – April 2006).**

| <b>Date</b> | <b>Location</b> | <b>#SM/Track</b> | <b># Caribou/Track</b>  | <b>Distance apart</b> | <b>Time line</b>         |
|-------------|-----------------|------------------|-------------------------|-----------------------|--------------------------|
| Feb-25-06   | Grain Creek     | SMT (9)          | Caribou Track (11)      | 100m                  | Both fresh               |
| Mar-03-06   | Grain Creek     | SM Track (9)     | 6 Caribou (estimate 20) | 2km                   | 1 week old SMT           |
| Mar-11-06   | Grain Creek     | SM Track (9)     | 2 Caribou               | 0 m                   | On top of 1 week old SMT |
| Mar-19-06   | Cameron Ridge   | SM Track (3)     | 5 Caribou               | 3 km                  | Fresh SMT                |

## Zone D

On December 19, 2006 a radio-collared caribou was relocated 5km from 2 day old snow machine track just east of Bald Mountain (Table 5). The 1 day old caribou track could be seen through the trees approximately 3km from the snow machine track on Bald Mountain, indicating that the caribou had moved away from the recreational activities. On March 19, 2006 two day old<sup>2</sup> caribou track could be seen adjacent to snow machine track up Harvey’s Creek near Roundtop Mountain. Fourteen caribou were bedded down over the ridge (3km) from 7 snow machines in the Meridian Mountain closure zone on March 19, 2006.

**Table 5. Summary of instances where caribou and snowmachine activity were observed within 3km of each other in Zone D (January – April 2006).**

| <b>Date</b> | <b>Location</b> | <b>#SM/Track</b> | <b># Caribou/Track</b> | <b>Distance apart</b> | <b>Time line</b>               |
|-------------|-----------------|------------------|------------------------|-----------------------|--------------------------------|
| Dec-19-06   | Bald Mtn.       | SMT              | Caribou Track (3-6)    | 3 km                  | 1 day old track, 2 day old SMT |
| Mar-19-06   | Roundtop Mtn.   | SMT              | Caribou Track (2)      | 0 m                   | 2 day old caribou track on SMT |
| Mar-19-06   | Meridian Mtn.   | 7 SM             | 14 Caribou             | 2.5 km                | present                        |

<sup>2</sup> Age of track was based on time since previous snowfall.

## Closure Zones

During monitoring flights this year a total of 36 snowmobiles were observed in closure zones (Table 6). These sightings were incidental, since closure zones were not being actively monitored this year. Photographs of some of these closure zone usages can be found in Appendix 1.

**Table 6. Incidental sightings of snowmachines and snowmachine track in closure zones in the Quesnel Highland survey area (December 2005 – April 2006).**

| Date              | Zone | Location       | # Snowmobiles | # Days SM activity observed in closure zone |
|-------------------|------|----------------|---------------|---------------------------------------------|
| March 19, 2006    | D    | Meridian Mtn.  | 7             | 1                                           |
| February 25, 2006 | C    | Grain Creek    | 9             | 4                                           |
| March 19, 2006    | C    | Cameron Ridge  | 4             | 3                                           |
| February 11, 2006 | A    | Eureka Mtn     | 7             | 3                                           |
| February 25, 2006 | A    | Eureka Mtn     | 2             |                                             |
| March 19, 2006    | A    | Eureka Mtn     | 2             |                                             |
| February 11, 2006 | A    | Deception Mtn. | 5             | 2                                           |
| <b>Totals</b>     |      |                | <b>36</b>     | <b>13</b>                                   |

## Discussion

Knowledge of the extent, intensity and variability of winter recreation within mountain caribou range can contribute to understanding the potential impacts to caribou. As most flights conducted during this survey year were complete and under good conditions, a simple analysis involving probability and intensity of recreational was possible (Table 7). For this analysis, *probability of activity* indicates the likelihood that an area would be visited by at least one snowmobile on any given weekend day during the peak use period of January 1<sup>st</sup> to March 31<sup>st</sup>, 2006. Average snow machines observed per day gives an indication of intensity of recreation within that area. Average number of snow machines observed per active day is also included to give a better indication of intensity on “prime” days when temperature and avalanche conditions are less likely to be issues.

**Table 7. Probability and intensity of snow machine use for the Quesnel Highland survey area from January to March 2006.**

| Zone | Area          | Probability of Activity | Av. SM/ Survey Day | Av. SM/ Active Day |
|------|---------------|-------------------------|--------------------|--------------------|
| A    | Mica Mtn.     | 80.0%                   | 10.6               | 13.25              |
| A    | Eureka Ridge  | 83.3%                   | 7.5                | 9.0                |
| C    | Cameron Ridge | 40.0%                   | 1.4                | 3.5                |
| C    | Grain Creek   | 16.7%                   | 1.5                | 9.0                |
| D    | Yanks Peak    | 100.0%                  | 13.0               | 13.0               |
| D    | Roundtop Mtn. | 83.3%                   | 4.8                | 6.4                |
| D    | Nuggett Mtn.  | 33.3%                   | 1.4                | 4.5                |
| D    | Bald Mtn.     | 100.0%                  | 15.6               | 15.6               |

## **Zone A**

The 2006 March mountain caribou survey observed 39 caribou inhabiting zone A. In the past these caribou have utilized high elevation habitat from the southern shore of Quesnel Lake down to the south side of Deception Mountain. However, recent telemetry and winter surveys indicate that these caribou utilize the Boss/Besig/Mica Mountain complex almost exclusively during the winter (Freeman and Stalberg 2006, Young and Freeman 2003). As winter recreationalists expand the play areas in a northern direction along Mica Mountain and the eastern slope of Mt. Besig the chances of displacing caribou from these shrinking habitats or inducing stress on these animals' increases.

## **Zone C**

The 2006 March survey observed 93 caribou within the Stevenson census block (Zone C) (Freeman and Stalberg 2006). The majority of these caribou were observed in the headwaters of Grain Creek. The small Grain Creek caution zone provides access to vast amounts of critical winter caribou habitat. The majority of this area is a voluntary closure zone, however the lack of appropriate signage and easy access to alpine areas make it impossible to enforce compliance. The consistent and combined number of caribou observed during snow mobile flights, caribou surveys and telemetry flights indicate plainly that this area is one of the most critical and important areas of caribou winter habitat for the Wells Gray North sub-population. Cameron Ridge and Grain Creek caution zones are generally utilized by snowmobiles to a lesser degree than caution zones in Zones A and D. This can likely be attributed to both the greater travel time involved to reach them and the lesser degree of historical use in Zone C.

## **Zone D**

Within the Barkerville census block, 44 caribou were observed during the March 2006 mountain caribou survey ((Freeman and Stalberg 2006). This zone has historically received the most recreational use within the Cariboo Region. Likely due to this duration and intensity of use, few caribou are now sighted within snowmobile zones and animals appear to be conditioned to avoid these areas of activity.

## **Recommendations**

- Work with the local snowmobile clubs on converting the Grain Creek snowmobile caution zone to a voluntary closure zone to reflect best efforts at caribou conservation.
- Work with the snowmobile clubs to ensure visible and annually maintained signage at all access points and that recreationists are aware of closure zone locations and caution zone etiquette.
- Maintain relationships with snowmobile clubs and their members and encourage “self-policing” within areas of caribou habitat.



- Increase awareness of caribou use in the NW corner of the Mica Mountain caution zone and consider additional signage on the ridge at the extent of the caution zone boundary.
- MOE should continue periodic monitoring of closure areas to confirm compliance.

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## Appendix 1. Photos

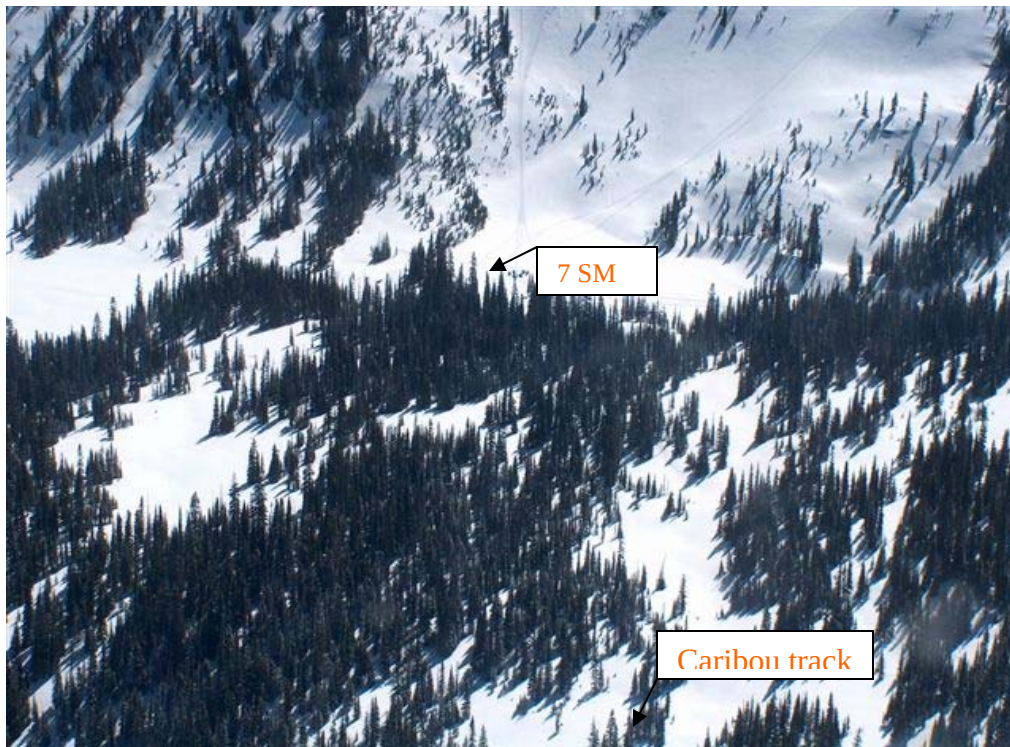


March 19, 2006 – Two day old caribou track next to snowmachine trail on Roundtop Mountain.



March 19, 2006 - Seven machines in the Meridian Mountain closure zone (14 caribou over the ridge 2.5km away).





April 30, 2006 – Seven snowmobiles on hill climb NW of Mica Mountain, 500m from 6 day old caribou track (2km from fresh caribou track).



March 19, 2006 – Fresh track from 3 snowmobiles on Cameron Ridge, 3km from 5 caribou.



March 11, 2006 – Grain Creek, fresh caribou track on top of 2 week old snowmobile track. Caribou also used this area on March 3<sup>rd</sup> and on the day when 9 snowmachines were observed (February 25<sup>th</sup>).



February 11, 2006 – Two snowmachines in closure zone on Deception Mountain.





March 19, 2006 – Seven snowmachines in Mica Mountain play area (caution zone)



February 11, 2006 – Seven snowmachines on Eureka ridge (caution zone).



April 30, 2006 – Eleven snowmachines at bottom of hill climb on Nuggett Mountain (caution zone).



February 5, 2006 – Cabin and tracks at Yanks Peak (caution zone).





February 5, 2006 – Snowmachines in high use area on Roundtop Mountain (caution zone).



March 19, 2006 – Eight caribou in Grain Creek closure zone.



February 2006 - Example of caribou eating arboreal lichen in high elevation ESSF zone (Mt. Beaman).





February 2006 – Caribou bedded and feeding on arboreal lichen in high ESSF zone (Penfold).