Telkwa Caribou Collaring and survey: February/March 2013

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Executive Summary

During the months of February and March 2013 we captured and collared four caribou from the Telkwa caribou herd with satellite GPS collars. Two females and two males were collared, all of which appeared to be in very good health. We searched the majority of alpine areas in the main Telkwa Range and the Howson Range within the Telkwa caribou recovery area and found two groups of caribou each time. In February in the Telkwa Range we found 8 caribou (2 calves, 4 females, 2 males) and in the Howson Range we found 4 caribou (1 calf, 2 cows, 1 bull). We collared one female in each of the groups we found in February. In March we found the same individuals in the same groupings and the same general geographic locations, however there was one less male in the Telkwa Range group. We collared two males, one from each group, in March. Existing VHF collars were still active on all remaining adult females. Two collars that had been deployed in March 2012 were detected in mortality mode, but site investigations were not conducted.

Incidental to the caribou sightings we counted 55 and 74 goats in February and March, respectively. One wolverine was seen in the vicinity of one of the mortality collars from 2012. Snowmobile tracks were observed within and outside the area designated for voluntary motorized use.

Funding has been secured to investigate the role of wolf predation and motorized recreational access in the Telkwa caribou recovery area. The Telkwa caribou are at risk of extirpation if steps to protect their habitat and reduce predation are not taken.

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1.0 Introduction

1.1 Background

The Telkwa caribou herd have been the focus of conservation concern since the late 1960's when mining and helicopter hunting were occurring in the Telkwa mountains. Since that time other threats, such as low elevation logging and snowmobile access to the alpine, have put additional pressures on the herd and conservation concerns continue. Since 1949 the maximum number of caribou known to be in the Telkwa herd was 271 animals counted in 1965. Since that time no more than 100 caribou have been observed and current numbers are believed to be below 30 animals (Figure 1). Throughout the history of Telkwa caribou monitoring and management there have been several attempts to protect the conditions necessary to maintain the herd. In 1973 all licensed hunting of caribou in the Telkwa Mountains was ended. In 1977 an ecological reserve was proposed, but not implemented, to maintain the relatively pristine nature of the Telkwa mountains (Theberge & Oosenbrug 1977). A proposal for a Telkwa Wildlife Management Area was put forward in 1986 suggesting closures to hunting of big game, but no restrictions on industrial development (BC Ministry of Environment 1986). Over a decade later a herd recovery plan was written and population augmentation was conducted (BC Ministry of Environment, Lands, and Parks 1998). As part of the recovery plan habitat management was recommended, but never implemented. Recreationists and government representatives worked together to create a Voluntary Recreational Access Management Plan which specified locations and timing of motorized and non-motorized access into the Telkwa mountains in the late 2000's. In 2013 the Telkwa caribou are again near extirpation and management actions to reverse that trend are necessary.

The legal designations of the Telkwa herd vary between the provincial and federal governments. The herd are classified as northern ecotype and blue listed (of special concern) by the British Columbia government. However, the federal government list the Telkwa herd as threatened under COSEWIC as they exist in the southern mountain ecological area (COSEWIC 2002). The federal status may change in the future as the designatable units for caribou in Canada are implemented and the Telkwa herd are classified as part of the Northern Mountain Designatable Unit (COSEWIC 2011).

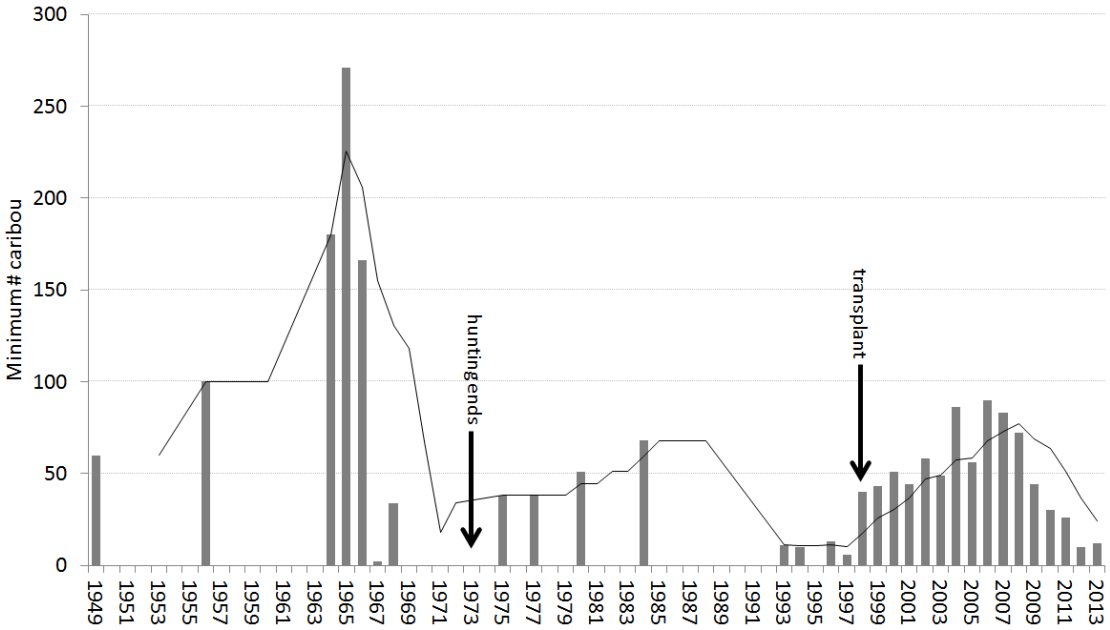

Figure 1 Minimum number of caribou known alive in the Telkwa mountains British Columbia from 1949 to 2013. Trend line is 5-year moving average.

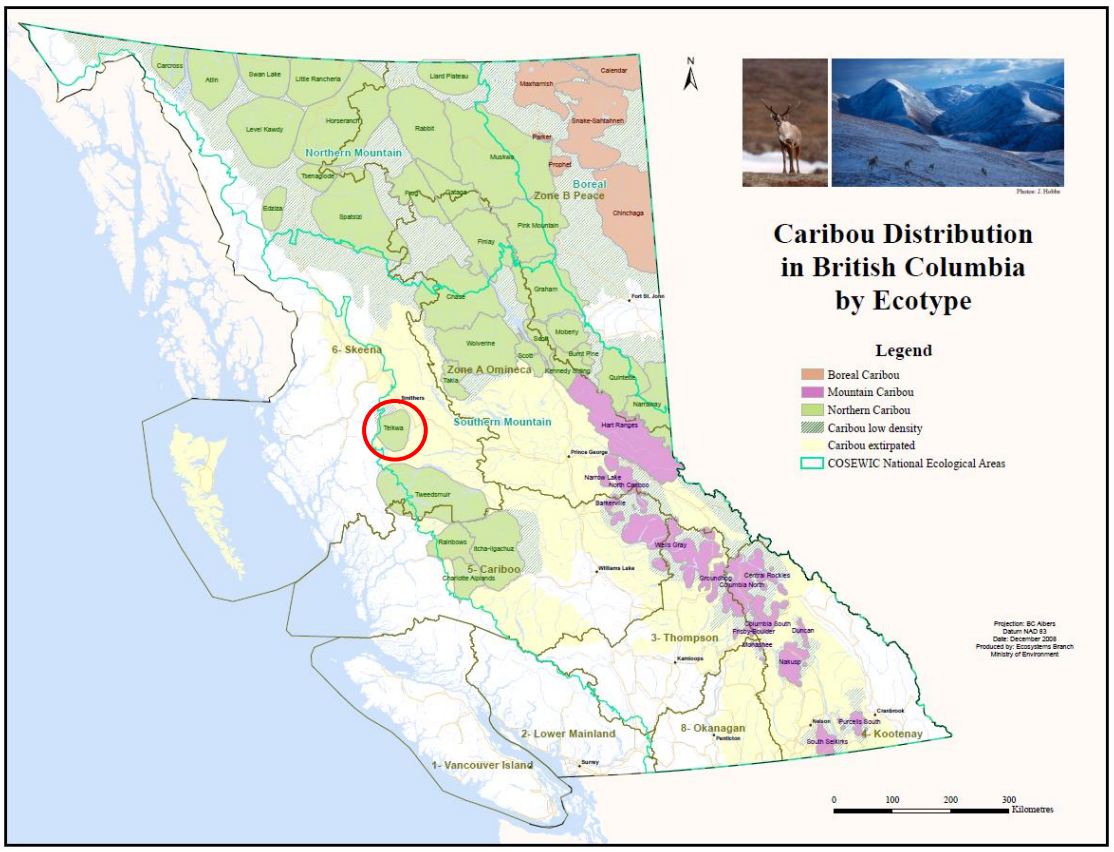

Figure 2 Caribou distribution by ecotype in British Columbia. Red circle indicates the location of the Telkwa herd.

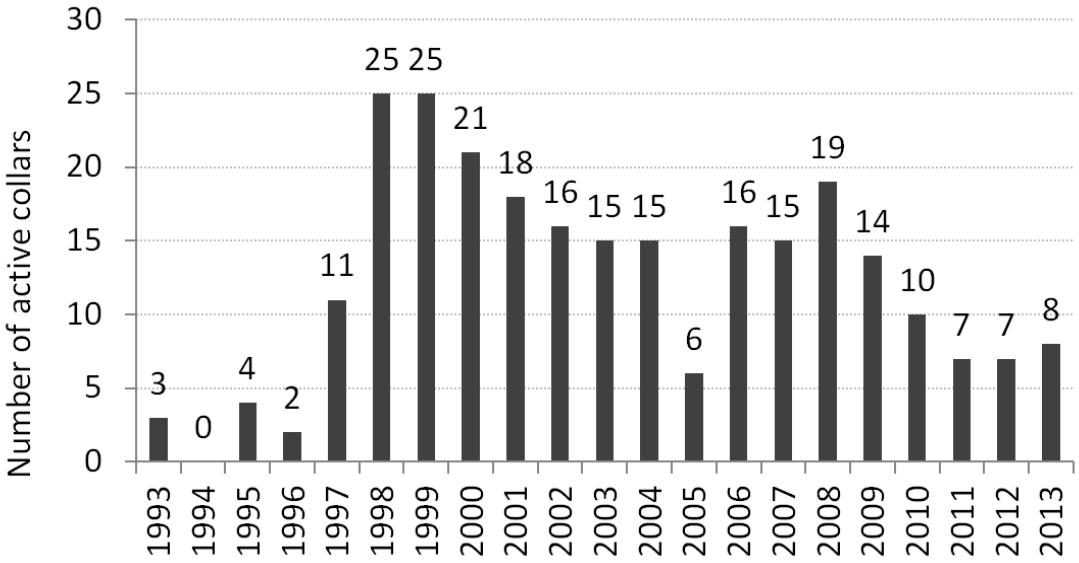

Figure 3 Number of active collars on caribou in the Telkwa Mountains from 1993 to 2013.

1.2 Study Area

The Telkwa caribou recovery area is located in west-central British Columbia approximately 30 km south of Smithers and 20 km west of Houston (Figure 3). The mountain ranges are characterized by high relief, rugged, glacially sculptured peaks separated by broad floored U-shaped valleys (van Drimmelin 1985). Elevation ranges from 505 meters to the tallest peak at 2300 meters above sea level.

1.3 Objectives

The objectives of the survey, in order of importance, were to:

- Capture and collar adult caribou with 4 Iridium GPS collars;
- Capture and collar female caribou with VHF collars (up to 8);
- Count and classify caribou groups sighted;
- Record and map snowmobile and other recreational activities;
- Count incidental species sighted.

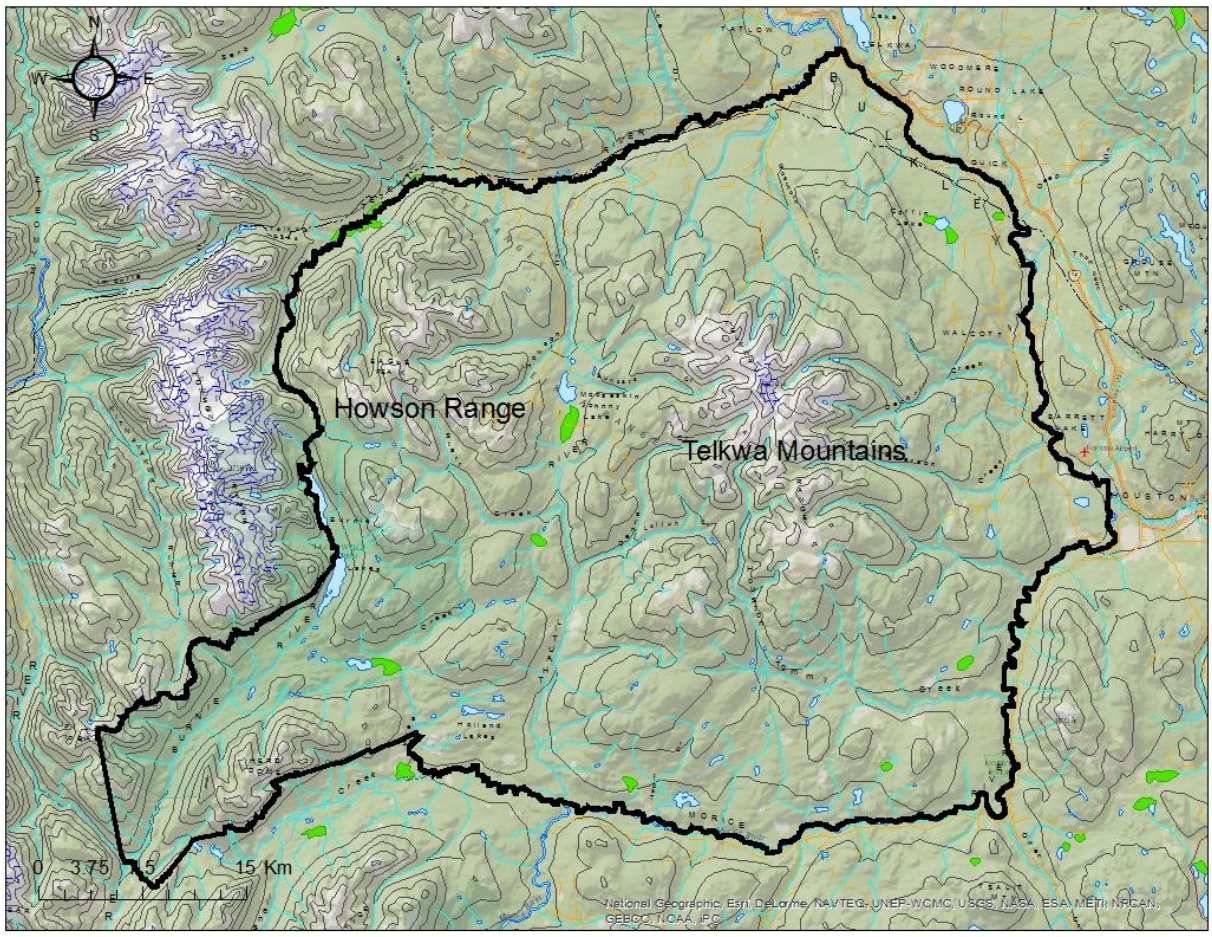

Figure 4 The Telkwa caribou recovery area (thick black line) and location of the Telkwa Mountains and Howson Range within the area.

2.0 Methods

2.1 Capture and collaring

To increase efficiency of search time we focussed our search efforts on locating groups of caribou with previously collared animals. In areas with no collared animals only open habitats above or near treeline were searched. While the Telkwa caribou utilize low elevation pine forests during winter, they are difficult to spot in those locations and may be far from a suitable capture location, so no searching of those areas occurred.

Caribou were captured using a 4 barrel Coda net gun fired from a Bell 206L Long Ranger helicopter with an experienced capture pilot and net-gunner. Animals were physically restrained using hobbles and 2-3 people. GPS collars were fitted on all animals captured and hair, blood and scat samples were collected. We deployed ATS (Advanced Telemetry Systems, Insanti, MN) Iridium G2210E GPS collars that were programmed to collect 6 locations per day during winter and calving and 4 per day the rest of the year.

2.2 Survey

Weather conditions were monitored prior to the survey to select a timing window that would ensure the appropriate snow cover, temperature, and flying conditions during the survey. The survey crew was based out of Smithers and consisted of a Bell 206L Long Ranger helicopter outfitted with rear bubble windows. The crew consisted of a pilot, navigator/observer/telemeter (left front seat), data recorder/observer (rear right seat), and an observer (rear left seat).

We navigated using iPads (Apple Inc.) mounted to the helicopter instrument panel with RAM mounts (National Products Inc.) and running the application GIS Kit (Garafa). Background maps were Google Earth (Google Inc.) satellite images overlaid with the block boundaries. Real-time visualization of the track lines was possible for both the navigator and the pilot, greatly increasing the amount of time the navigator was able to allocate to searching for caribou versus navigating. Hand-held GPS units were used to record the flight path and locations of all animals sighted. Alpine areas were searched by flying contours around mountains in a counter-clockwise direction.

Caribou were classified as calf (males and females < 1 year old), adult female (females >1 year old), and adult males (males >1 year old). Females were identified by the presence of a black vulval patch, and males by the absence of a patch or, in some cases, the presence of large antlers. Snowmobile tracks were recorded when encountered. Incidental species (moose and mountain goats) were recorded, but not classified by sex or age.

2.3 Data analysis

The survey was designed to gather a minimum number known alive, so no statistical analysis of the population was completed.

3.0 Results

3.1 Survey conditions and effort

The surveys occurred on February 13 and March 28, 2013. Snow cover was complete below treeline, but some alpine slopes were wind scoured and only partially snow covered. Lighting conditions were optimal for sighting tracks in the snow. Skies were clear, but some high elevation portions of the northern end of the Starr Creek range were obscured by cloud during the February flight.

We spent 4.7 and 5.4 hours of flight time during the surveys in February and March, respectively. The majority, but the not the entirety, of high elevation habitat was flown during both surveys (Figures 5 and 6).

3.2 Capture and collaring

We deployed 4 GPS collars (no VHF collars were deployed) on adult caribou in the winter of 2012/13. On February 13 two female caribou were captured and collared from separate groups. The first female (TC001) was captured in the alpine on a tributary of Dockrill Creek in the Telkwa Range and outfitted with a collar (S/N: 30508). She was with 7 other caribou (Table 1). She was eartagged in the right ear with a yellow eartag. She appeared to be 2-3 years old at time of capture. The second female caribou (TC002) was found with 3 other caribou (Table 1) and captured in the alpine at the northern end of the Starr Creek range near Elliot Creek and collared (S/N: 30500). She was an adult at the time of capture and eartagged in the left ear with an orange eartag. Both females were in good to very good body condition. No other uncollared, adult females were seen, so no further collars were deployed.

On March 28 no adult female caribou were sighted that had not previously been collared, so available collars were deployed on males. The first male (TC008) was found in the Glacis Creek drainage with the group of caribou found in Dockrill Creek during the previous flight (Table 2). He was collared (S/N: 30459) and a blue ear tag with no number was placed in his left ear. The second male (TC009) was found north west of Swan Creek with the group of caribou found in Elliot Creek during the February flight (Table 2). He was collared (S/N: 30495) and we placed a pink ear tag number 9 in his left ear. Both males were 3-4 years old at the time of collaring.

3.3 Survey

Two groups of caribou (n = 12 caribou) were sighted during the February survey (Table 1). The composition of the sighted caribou was 25% calves, 50% cows and 25% bulls. The calf from the Elliot Creek group was a male. During the March survey the same two groups of caribou were found as the February survey, except the Elliot Creek group had one fewer male than previously observed (Table 2).

Table 1 Caribou sightings during the February 13, 2013 capture effort for Telkwa caribou.

Location	Total	Males	Females	Calves	Caribou (unique identifier)
Dockrill Creek	8	2	4	2	TC004*, TC003*, TC001**, TC006***
Elliott Creek	4	1	2	1	TC005*, TC002**
Total	12	3	6	3	

* collars deployed March 30, 2012;
** collars deployed February 13, 2013;
*** collar deployed in 2008

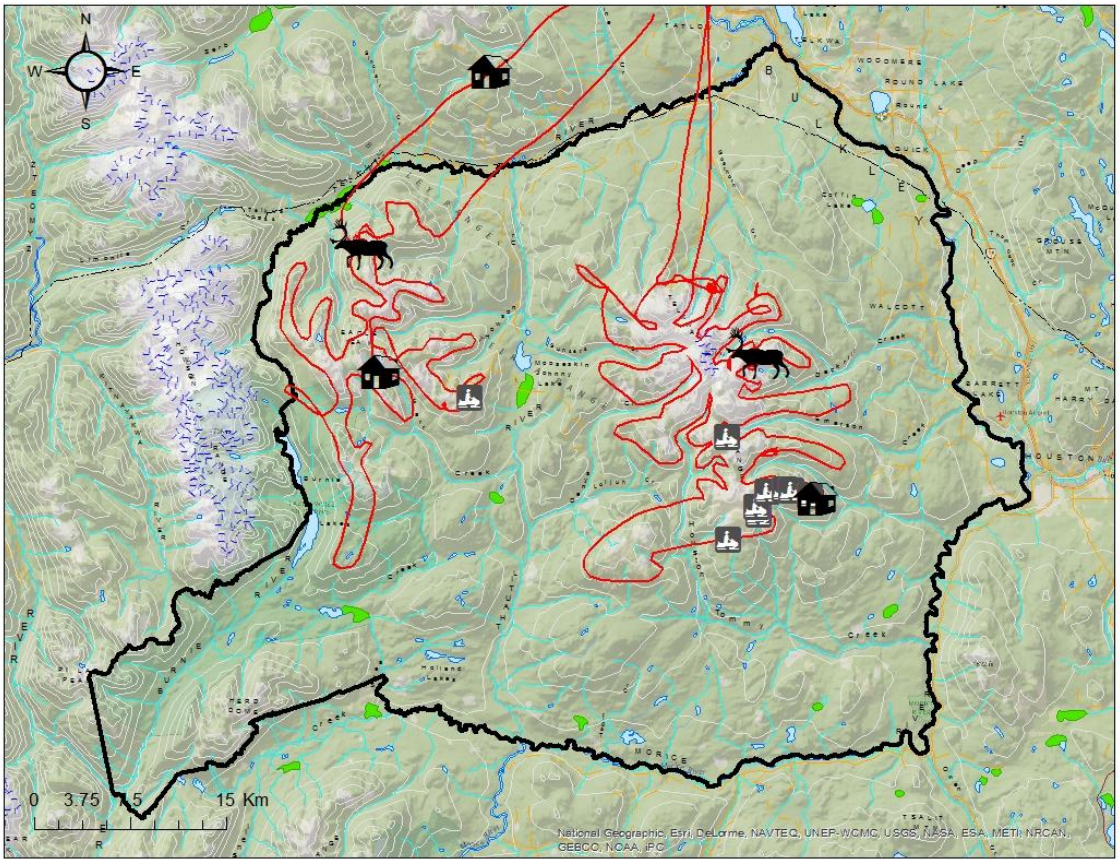

Figure 5 Flight lines (red line) and observations from February 13, 2013 survey and capture flight for the Telkwa caribou herd. Thick black polygon is the Telkwa caribou recovery area.

Table 2 Caribou sightings during the March 28, 2013 capture effort for Telkwa caribou.

Location	Total	Males	Females	Calves	Caribou (unique identifier)
Glacis Creek	7	1	4	2	TC004*, TC003*, TC001**, TC006***, TC008****
Elliott Creek	4	1	2	1	TC005*, TC002**, TC009****
Total	11	2	6	3	

* collars deployed March 30, 2012;
** collars deployed February 13, 2013;
*** collar deployed in 2008
**** collars deployed March 28, 2013

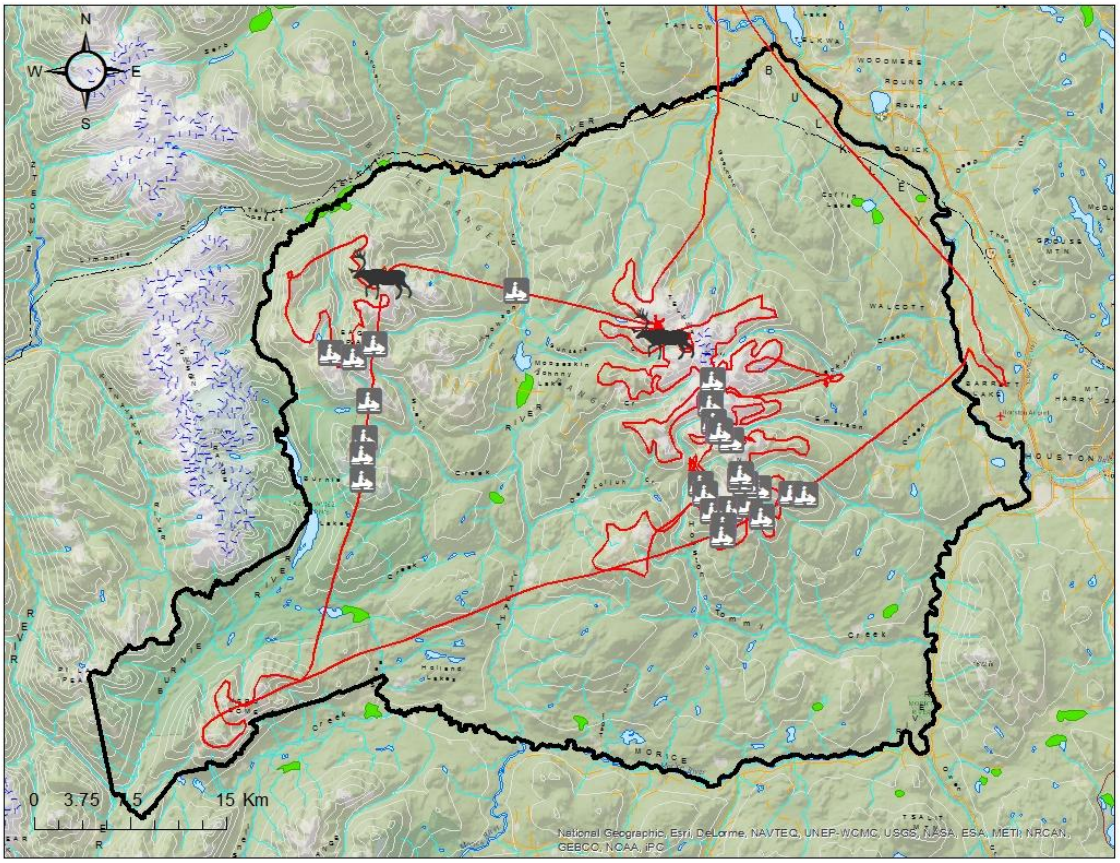

Figure 6 Flight lines (red line) and observations from March 28, 2013 survey and capture flight for the Telkwa caribou herd. Thick black polygon is the Telkwa caribou recovery area.

3.4 Collared caribou mortalities

Two collars deployed in March 2012 were discovered in mortality mode during the February and March flights in 2013. VHF collar 148.099 was deployed on a female caribou estimated to be 6 – 8 years old at capture. The collar was located on mortality mode in a forested area between Webster Creek and the Hankin Plateau during the February 2013 flight (Figure 6). No tracks were seen in the snow near the collar, so time of death was some time prior to the previous snow fall. The site was not investigated and the collar was not retrieved. VHF collar 148.129 was deployed on a male caribou approximately two years old at the time of capture. During the March 2013 flight the collar was emitting a mortality signal. The collar was located on a steep slope along Houston Tommy Creek (Figure 7). A wolverine was seen in close proximity to the presumed mortality site, but there is no evidence it was involved with the death of the caribou. The mortality site was not accessed on the ground and the collar was not retrieved at the time of the flight, so cause of death was not determined.

3.5 Incidental observations

During the February survey we counted 55 mountain goats, of which 39 were seen in the Telkwa Range and 16 were seen in the Starr/Elliott Creek range. Snowmobile tracks were recorded primarily in the winter motorized area, but tracks were also seen in the non-motorized area near the Starr Creek cabin and north of the winter motorized area (Figure 7). During the March survey we counted 60 mountain goats in the Telkwa Range, 7 in the Starr/Elliot Creek range and 7 on Herd Dome, for a total of 74 goats seen. A wolverine was sighted near Houston Tommy Creek north of the winter motorized area. More snowmobile tracks were seen in March than February and they traversed most of the winter motorized area and extended north into the non-motorized area and more extensively around Starr Creek (Figure 8).

Figure 7 Location of caribou 149.099 mortality site near Webster Creek in the Telkwa Mountains during the February 2013 flight.

Figure 8 Location of caribou 148.129 mortality on Houston Tommy Creek in the Telkwa Mountains in March 2013.

4.0 Discussion

The minimum number of caribou known to be alive in the Telkwa caribou herd for the winter of 2012/13 was 12, however our survey did not include lower elevation, forested winter habitat which is also used by the Telkwa herd (Roberts 2003, Aecom Canada Ltd. 2009, BC Ministry of FLNRO unpublished data). The winter of 2012/13 had low snow accumulations which may have made low elevation habitats attractive to caribou, and any caribou using these habitats would have gone undetected during our survey. The two surveys described in this report should be considered minimum counts for the herd and not used as a population estimate.

The presence of snowmobile activity within the areas designated as non-motorized through the Voluntary Recreation Access Restrictions was concerning. Presence of snowmobiles in the recovery area can impact caribou in two ways: disturbance/displacement and facilitating wolf access in to the alpine. The distribution of caribou during the winter of 2012/13 relative to the distribution of snowmobile trails sighted during the survey suggest that caribou were avoiding areas frequented by snowmobiles (Figure 9). Canid predators will utilize packed snowmobile trails to decrease energy expenditure when travelling and to access deep snow areas (Crete & Lariviere 2003, Bunnell et al. 2006). The snowmobile tracks leading from low elevation where wolves are more abundant into alpine areas could facilitate wolf travel into areas occupied in winter by the collared caribou. We currently have no evidence of wolves using snowmobile trails to access the alpine areas of the Telkwa mountains but will investigate this further with the Habitat Conservation Trust Fund support in 2013 – 2017.

Following the transplant from the Sustut herd in 1997/98 the Telkwa herd increased in number to at least 90 animals in 2006. While there was no calf recruitment data collected prior to 2001, it appears as though recruitment rates (late winter calf/100 cow ratios) were at high levels and increasing from 2001 to 2003. Recruitment steadily declined from the high in 2003 to a low of 14 calves/100 cows in 2009 (Figure 10). The population size began a decline in 2007 three years after the calf recruitment decline began. The three previous years have had good calf recruitment, however with the small population size any increases in adult mortality may compensate for recruitment. While adult mortality rates (determined from collared animal survival) were generally low after augmentation, 2005 was abnormally high (47%) and from 2009 onwards adult mortality was mostly greater than 20% (Figure 11). The combination of a small population size, low calf recruitment, and high adult mortality has led to a population that is at risk of extirpation if steps to reverse these trends are not taken. Small populations can be very sensitive to stochastic processes and these impacts may occur in unexpected ways increasing the need for a multi-faceted approach to recovering the Telkwa herd (Lacy 2000).

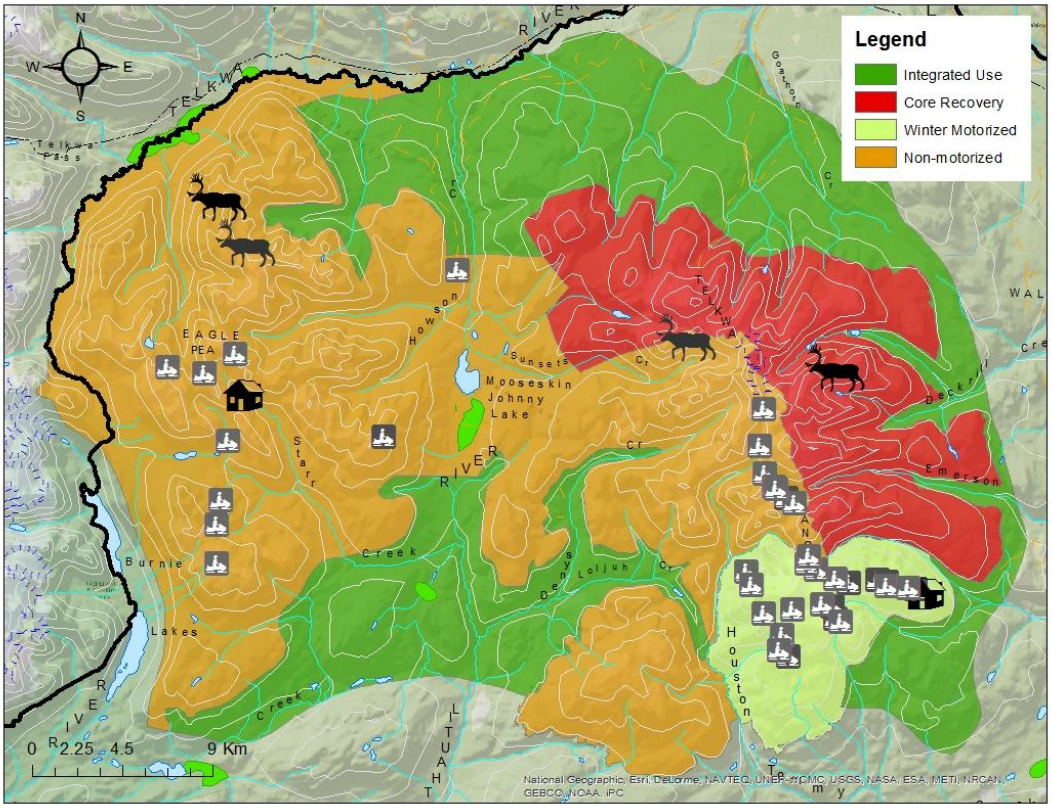

Figure 9 Cumulative locations of caribou and snowmobile activity from the February 13 and March 28, 2013 flights relative to the Voluntary Recreation Access Restrictions.

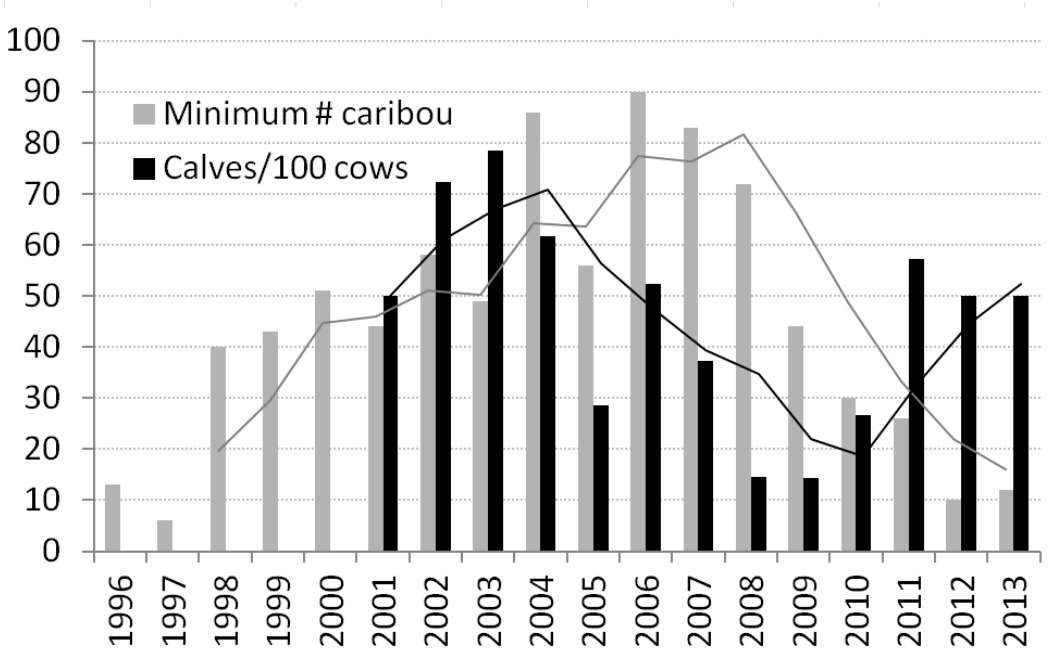

Figure 10 Population size (minimum number known alive) and calf/cow ratio from the Telkwa caribou herd in British Columbia after population augmentation in 1998. Trend lines are 3 year moving averages.

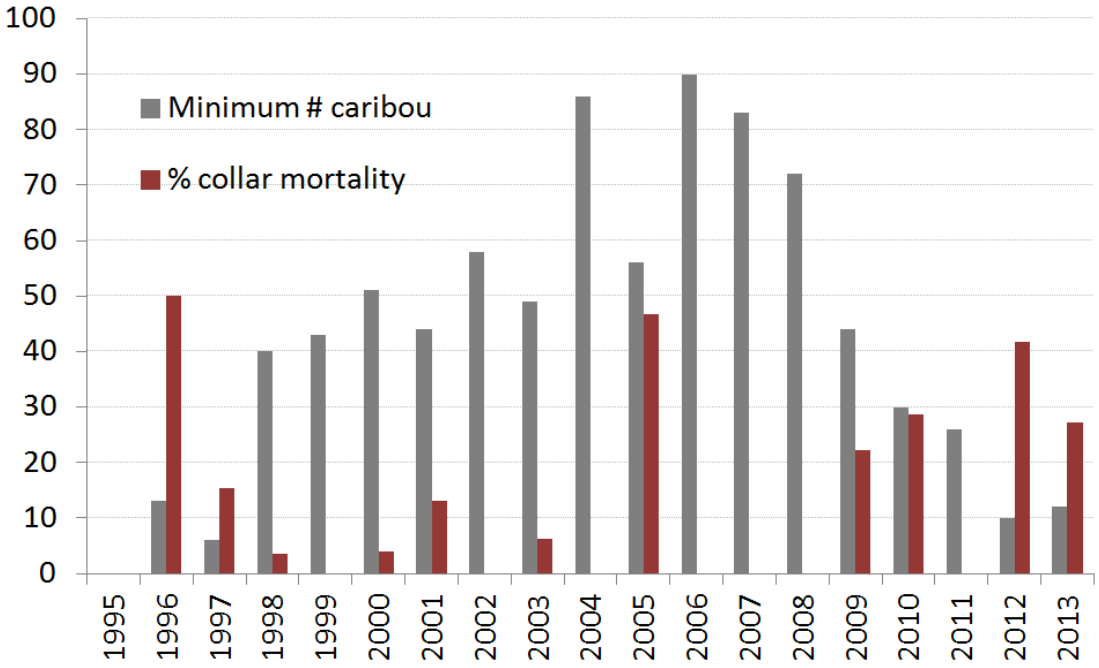

Figure 11 Population size (minimum number known alive) and percentage of radio collared adults that died during the calendar year from the Telkwa caribou herd in British Columbia after population augmentation in 1998.

5.0 Recommendations

Following the late winter survey and capture effort in the Telkwa mountains in 2013 we recommend the following actions for further monitoring:

- Conduct a fall rut survey in 2014 to obtain a more accurate population estimate;
- Locate additional female caribou and deploy GPS collars, as per the 2013 – 2017 Habitat Conservation Trust Foundation project;
- Deploy GPS collars on wolves, as per the 2013 – 2017 HCTF project;
- Implement management actions to prevent extirpation and promote the recovery of the Telkwa herd.

6.0 Acknowledgements

Many people have put in considerable time and effort to better the situation for the Telkwa caribou herd and the results of this report, and going forward, will rely on their hard work. Chief among them was George Schultze who spent many hours in the air, at public meetings, and writing reports to further our understanding of the herd and to ensure their continued existence.

Tom Brooks from Canadian Helicopters in Smithers provided safe and skilled flying during the survey and capture work. The author, Bill Jex, and Krystal Kerckhoff were spotters during the survey and the capture crew.

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