2019 Mountain Caribou Census

CENTRAL SELKIRK MOUNTAINS

March 2019

Aaron Reid

BRITISH COLUMBIA

Ministry of
Forests, Lands and
Natural Resource Operations

Summary

A complete census of the Central Selkirk caribou subpopulation was conducted on March 16, 17 and 18, 2019. The survey conditions were favorable with significant snowfall occurring 4 days prior which erased old tracks, followed by high pressure and clear sky with no precipitation.

A total of 24 caribou were observed which included 23 adults and 1 calf. One lone caribou track was also observed which confirms a minimum count of 25 caribou. The Central Selkirk population continues to decline with minimum counts now 89% fewer than those counted in 1997 (222 – 24). Calf recruitment at 4% is well below the suggested 12% - 16% recruitment required for a stable population.

Reasons for the declining population are numerous. Currently adult mortality from predation is high and recruitment has been consistently low over the past decade. Low recruitment is likely related to predation but may also be influenced by backcountry recreation disturbance. Without immediate management actions to minimize adult mortality and increase recruitment this population is at high risk of extirpation.

Introduction

Woodland caribou (*Rangifer tarandus caribou)* in southeastern British Columbia are a unique ecotype of caribou distinguished from other woodland caribou by their winter diet consisting almost exclusively of arboreal lichens. This trait allows them to inhabit the deep snow wet belt of the Columbia Mountains. These caribou are often referred to as "mountain caribou" and were classified by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as Designatable Unit 9 (DU-9) Southern Mountain Caribou (COSEWIC 2014). Due to their low, and over the longer term decreasing populations, and shrinking and fragmented distribution, these caribou are considered endangered in the United States. In Canada, they are listed as endangered by COSEWIC, threatened under the Federal Species at Risk Act (SARA) and are provincially red-listed (species at risk of extinction or extirpation) by the British Columbia Conservation Data Centre.

Caribou were once distributed in a contiguous fashion throughout the Selkirk and Purcell Mountains of southeastern British Columbia (Stevenson and Hatler, 1985; Spalding, 2000). In recent decades the distribution has declined to several sub populations, one spanning the Central Selkirk Mountains, the northwest Purcell Mountains, the Duncan Valley and the upper Beaver Valley of Glacier National Park. This grouping was called the Central Selkirk sub population by Simpson et al. (1997), one of 13 sub populations of mountain caribou within southern British Columbia. Based on telemetry data Wittmer et. al. (2005) revised this into 18 sub populations which included dividing the Central Selkirk sub population into the Nakusp and Duncan units. However since 2010 caribou have been consistently sighted in between the Duncan and Nakusp blocks and were not technically part of either. In the 2010 and 2012 census reports they were included with the Nakusp block (DeGroot, 2010; DeGroot and Furk 2012). As of the 2014 report

we have returned to the convention of Simpson et al. (1997) and using the term "Central Selkirks" for the sub population without division into the Duncan and Nakusp blocks (DeGroot, 2014).

Most of the caribou research in this area has occurred since 1992. Twenty three caribou were fitted with VHF radio collars from 1992 – 2003 (Hamilton, 2008). Eighteen censuses have been conducted over the past 21 years, all in late winter when the caribou are consistently in the open forest at high elevations. The sub population declined from approximately 230 caribou in 1996 to 71 in 2007 and then increased into the 90's for the 2008 – 2012 period. Numbers have been declining since.

Study Area

The study area boundaries are described as the area bordered to the west by Arrow Lake; to the east by Kootenay and Duncan Lakes but including all of the Duncan Valley and the upper ends of adjacent drainages in the Purcell Mountains north of Duncan Lake; to the south by the Nakusp – New Denver – Kaslo highway; and extending north to Glacier National Park (Figure 1).

Methods

Standard survey protocols for mountain caribou (Resources Inventory Committee, 2002) were followed. This involved flying by helicopter at an elevational contour near treeline (1900 – 2200 m elevation) over all suitable caribou habitat in the area mentioned above. Attempts were made to conduct flights within a few days of a new snowfall so that recent tracks are visible but older tracks are covered up.

The helicopter was a 206B Jet Ranger owned by High Terrain Helicopters and expertly piloted by Roman Sookorukoff. Observers were Dave Lewis, Thomas Hill and Aaron Reid.

When caribou tracks were observed they were followed until the animals were observed. High resolution (3000 X 2008 pixel) photos of the groups of caribou were taken with a Nikon D50 digital SLR camera with a Nikon 70 – 300 mm zoom telephoto vibration reduction lens. Photos were later analyzed on a computer monitor to verify classification. For this report classification is reported to adults and calves. Caribou tracks were only recorded if the caribou that made the tracks were not observed in the immediate area. Flight paths and caribou locations were recorded as Universal Transverse Mercator (UTM) coordinates using North American Datum 1983 (NAD83). Snowmobile, ski and other large mammal tracks including wolverine were also recorded. The ski and snowmobile track records were limited to one per upper basin, which are usually 1 – 2 km across at the flight elevations.

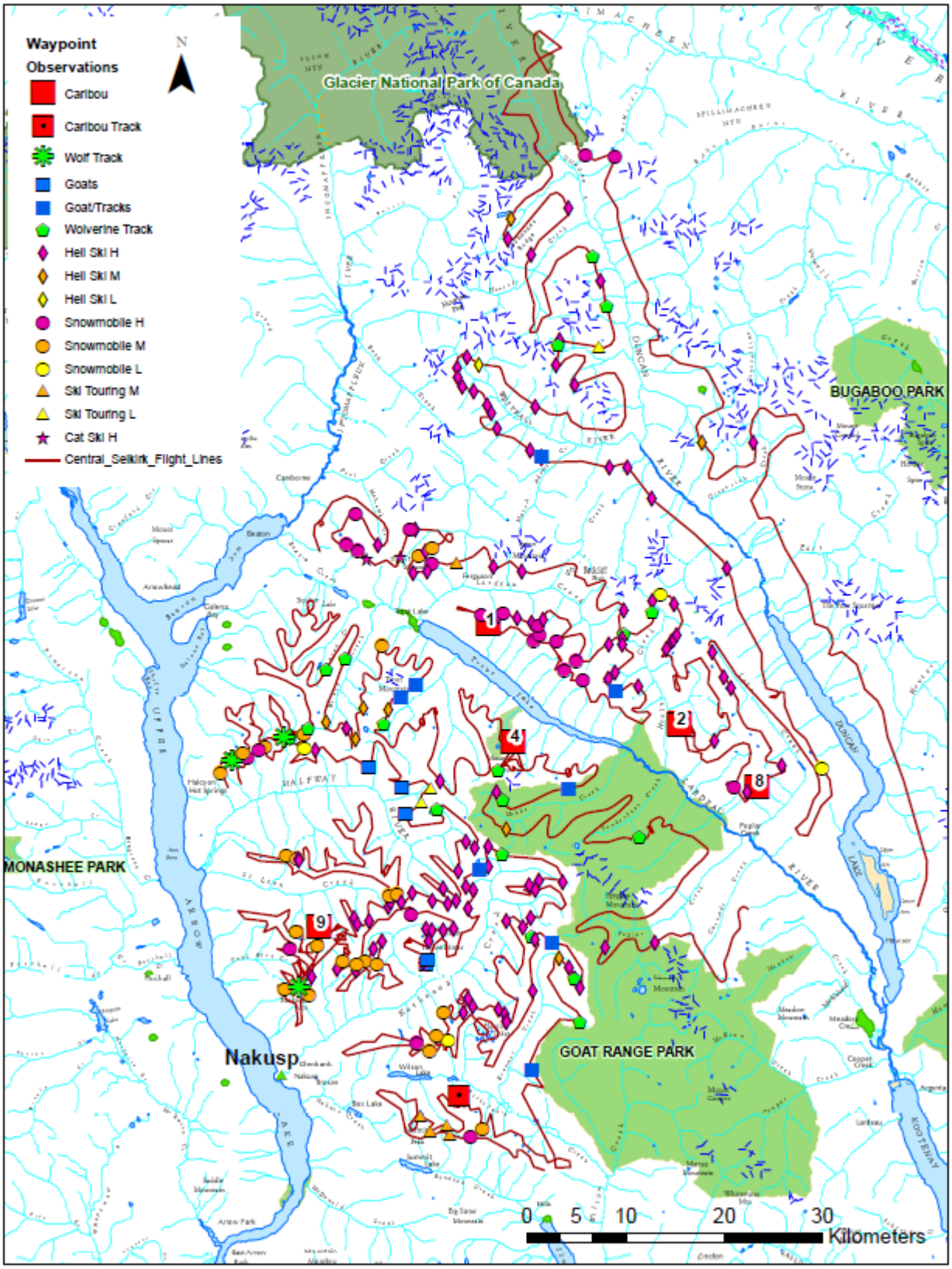

Figure 1. Flight lines, caribou sightings, and locations of snowmobile tracks, ski tracks, and tracks from other wildlife from the 2019 census. The groups of caribou are indicated by the red squares. The number of caribou in each group is indicated in the squares. Regarding ski and snowmobile tracks, 1-5 tracks is classed as low, 6 – 10 as medium, and >10 as high.

Results

The census was conducted March 16, 17 and 18, 2019. The survey conditions were favorable with significant snowfall occurring 4 days prior which erased old tracks, followed by high pressure clear sky with no precipitation.

A total of 24 caribou were observed which included 23 adults and 1 calf (Table 1). One lone caribou track was also observed which confirms a minimum count of 25 caribou.

Wolverine and porcupine tracks were abundant in some areas. To avoid overwhelming the map, these sightings are not displayed in Figure 1.

On March 16, the total flying time was 6.3 hours this included ferry from Nelson and refueling in Golden and Galena CHM Lodge. On March 17, the total flying time was 6.1 hours which included ferry from Nelson. On March 18 the flying time was 4.3 hours and included ferry. The total flying time was 16.7 hours with approximately 14.2 survey hours.

Snow water equivalent at the nearest snow pillow sites, St. Leon Creek (1822 m elevation) and East Creek (2004 m elevation) were at 88% of the mean for mid-March (BC Ministry of Environment, 2019).

The commercial heli and snowcat ski operators were very active during the census, skier and helicopter observations, snowcat tracks, ski tracks, and helicopter landing pads were observed in many locations. Evidence of snowmobile and backcountry skiing activity was also locally abundant (Figure 1). Within a 4 day window post snowfall observers collected 120 waypoints of heli ski runs and 51 waypoints of snowmobile tracks along the survey route.

Recruitment

One calf was observed and recruitment is estimated to be 4% (1 of 25 animals.)

Table 1. 2019 Central Selkirk caribou census results. Coordinates are given in UTM projection, Zone 11, NAD 83.

Date	Location	Caribou Observations			Easting	Northing
		Adult	Calves	Total		
16-Mar-19	Mout Johnston	7	1	8	493420	5589669
16-Mar-19	Skinner Creek	2	0	2	486420	5596948
16-Mar-19	Le Beau Creek	1	0	1	468500	5609483
18-Mar-19	Lew Creek	4	0	4	469471	5597272
17-Mar-19	Gardner Creek	9	0	9	447578	5581199

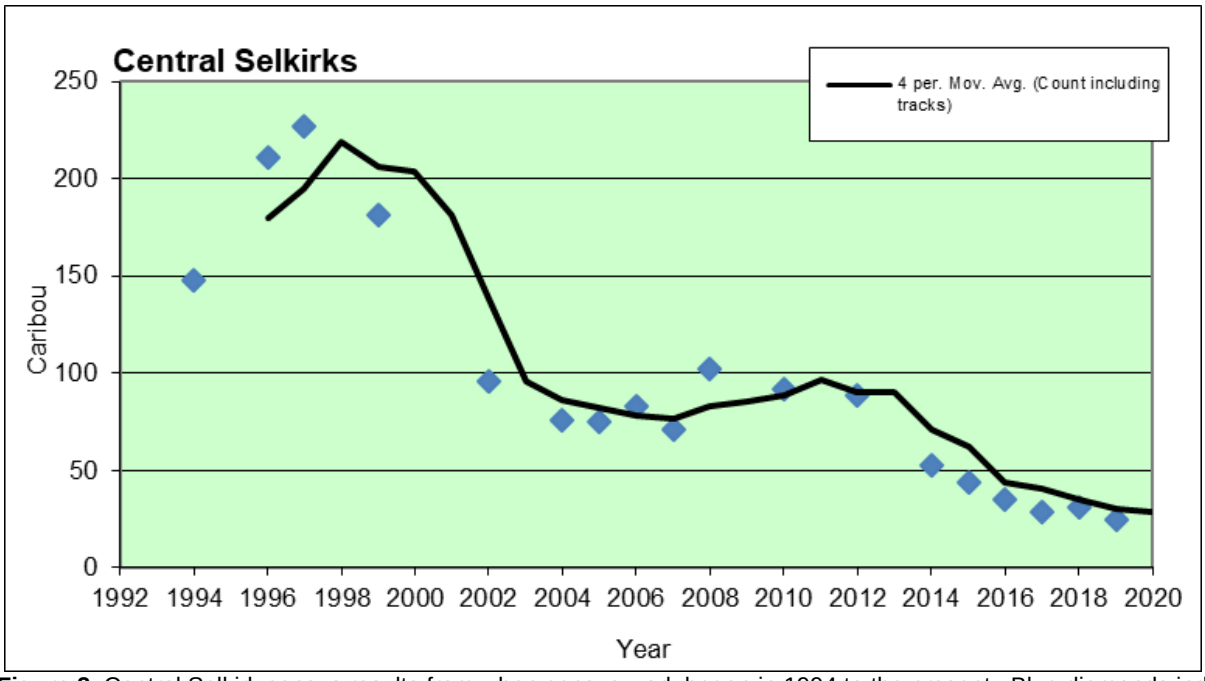

Figure 2. Central Selkirk census results from when census work began in 1994 to the present. Blue diamonds indicate the actual count plus an estimate of group size from tracks when caribou could not be found. The trendline is based on the count including tracks, each trendline point averaged over the previous four count points.

Discussion

All collared caribou were observed (n=5) during the survey, suggesting 100% sightability. However, caribou could have been missed on the flight routes or were using areas that we did not survey. We were however consistent with previous surveys where every drainage either used by radio collared caribou or detected on other census flights during the late winter season since research began in 1992 were surveyed. Periphery areas were not surveyed. Sufficient visibility and snow conditions made it less likely that caribou tracks on the flight routes were missed. Tracks from smaller animals such as porcupines and wolverines were readily visible. Therefore, we are fairly confident that all caribou tracks present at normal elevations in the census area were detected. Caribou have not been sighted in the Duncan portion of the survey since 2015 therefore this area will likely be dropped from the survey in 2020.

In March 2017, nine caribou were collared to monitor adult survival. Since the collars were deployed we investigated 3 cougar predation events on cows in summer of 2017, 2018 and 2019. In one case a month old calf was also found at the kill location.

The Central Selkirk population continues to decline with minimum counts now 89% fewer than those counted in 1997 (222 – 24). Calf recruitment at 4% is well below the suggested 12% - 16% recruitment required for a stable population (Bergerud, 1996). The five-year average has been below Berguerd suggested levels for stability at 8.2% recruitment. Without immediate management actions to minimize adult mortality and increase recruitment this population is at high risk of extirpation. Estimates from census photographs suggest there are as few as 13 cows remaining in this population.

Acknowledgements

This census was funded by Parks Canada and the Ministry of Forests, Lands, and Natural Resources and Rural Development. Observers were Dave Lewis, Thomas Hill and Aaron Reid. Roman Sookorukoff from High Terrain Helicopters was the pilot.

References

Bergerud, A.T. 1996. Evolving perspectives on caribou population dynamics, have we got it right yet? Rangifer Spec. Issue, **9**: 95–116.

BC Ministry of Environment, 2016. Kootenay snow survey data, British Columbia Ministry of Environment, Water Stewardship Division. http://www.env.gov.bc.ca/rfc/river_forecast/kootenay.html

DeGroot, L. 2010. 2010 Mountain caribou census, Central Selkirk Mountains. British Columbia Ministry of Environment, Nelson, British Columbia

DeGroot, L. 2014. 2014 Mountain caribou census, Central Selkirk Mountains. British Columbia Ministry of Forests, Lands, and Natural Resource Operations, Nelson, British Columbia

DeGroot, L and K. Furk. 2012. 2012 Mountain caribou census, Central Selkirk Mountains. British Columbia Ministry of Environment, Nelson, British Columbia

Flaa, J., and B. McLellan. 1999. Population characteristics of Lake Revelstoke caribou. Prepared for Biology and Management of Species at Risk Conference, Kamloops, BC

Hamilton, D. 2008. 2008 Population census of mountain caribou in the central Selkirk mountains of southeastern British Columbia. Prepared for BC Timber Sales, Pope and Talbot Ltd., and Canadian Mountain Holidays, Nelson and Nakusp, British Columbia

Hamilton, D., and S. Wilson. 2003. Central Selkirk mountain caribou habitat model. Prepared for Slocan Forest Products, Meadow Creek Cedar Company, BC Timber Sales, BC Ministry of Water, Land, and Air Protection. Kootenay Region, British Columbia

Kinley, T.A., T. Goward, B.N. McLellan, and R. Serrouya. 2007. The influence of variable snowpacks on habitat use by mountain caribou. Rangifer Special Issue 17: 93-102.

Resources Inventory Committee. 2002. Aerial-based inventory methods for selected ungulates: bison, mountain goat, mountain sheep, moose, elk, deer and caribou. Version 2.0 Standards for Components of British Columbia's Biodiversity No. 32, Ministry of Sustainable Resource Management, Victoria, British Columbia.

Simpson, K., E. Terry, and D. Hamilton. 1997. Toward a mountain caribou management strategy for British Columbia – habitat requirements and sub-population status. Wildlife Working Report No. WR-90, Ministry of Environment, Lands and Parks, Victoria, British Columbia.

Spalding, D. J. 2000. The early history of woodland caribou (*Rangifer tarandus caribou*) in British Columbia. Wildlife Bulletin No. B-100, Ministry of Environment, Lands and Parks, Victoria, British Columbia.

Stevenson, S. K., and D. F. Hatler. 1985. Woodland caribou and their habitat in southern and central British Columbia. Volume 1. Land Management Report Number 23, Ministry of Forests, Victoria, British Columbia

Wittmer, H. U., B. N. McLellan, D. R. Seip, J. A. Young, T. A. Kinley, G. S. Watts, and D. Hamilton. 2005. Population dynamics of the endangered mountain ecotype of woodland caribou (*Rangifer tarandus caribou*) in British Columbia, Canada. Canadian Journal of Zoology 83: 407-418.