2021 Mountain Caribou Census

CENTRAL SELKIRK MOUNTAINS

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Summary

A census of the Central Selkirk caribou sub population was conducted on March 3rd and 4th, 2021. The survey conditions were favorable with significant snowfall, which erased old tracks, occurring 5 days prior.

The Duncan block of the Central Selkirk sub population was not included in this census. Caribou have not been observed in the Duncan since 2015 and therefore this portion of the study area was dropped from the census.

A total of 28 caribou were observed which included 26 adults and 2 calves. Despite 3 years of stability, the long-term trend in the Central Selkirk population is declining. The observed count from this census is 87% lower than the peak observed count of 1997 (222 – 28). Calf recruitment at 7.1% is below the suggested 12% - 16% recruitment required for a stable population.

Reasons for the declining population are numerous. Adult mortality from predation was the primary driver of population declines along with chronically low recruitment for the past decade. Low recruitment is likely related to predation but may also be influenced by backcountry recreation disturbance. Recent management actions have been implemented to reduce adult mortality and winter disturbance, but without increased recruitment this population remains 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 Monashee, 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 dramatically between 1997 and 2002 with estimates going from 254 to 139, respectively (Table 2). There was a period of stability from 2002 to 2012. Since 2012 the population has declined steadily to today's critically low numbers. Since 2017 we have maintained active GPS collars in the population. Most importantly, several key management actions have been implemented including predator control which is in its 2nd year and new recreation disturbance mitigation in the helicopter skiing and snowmobile sectors.

Study Area

The Central Selkirk sub population 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). However, during this census, only the Nakusp block was completed.

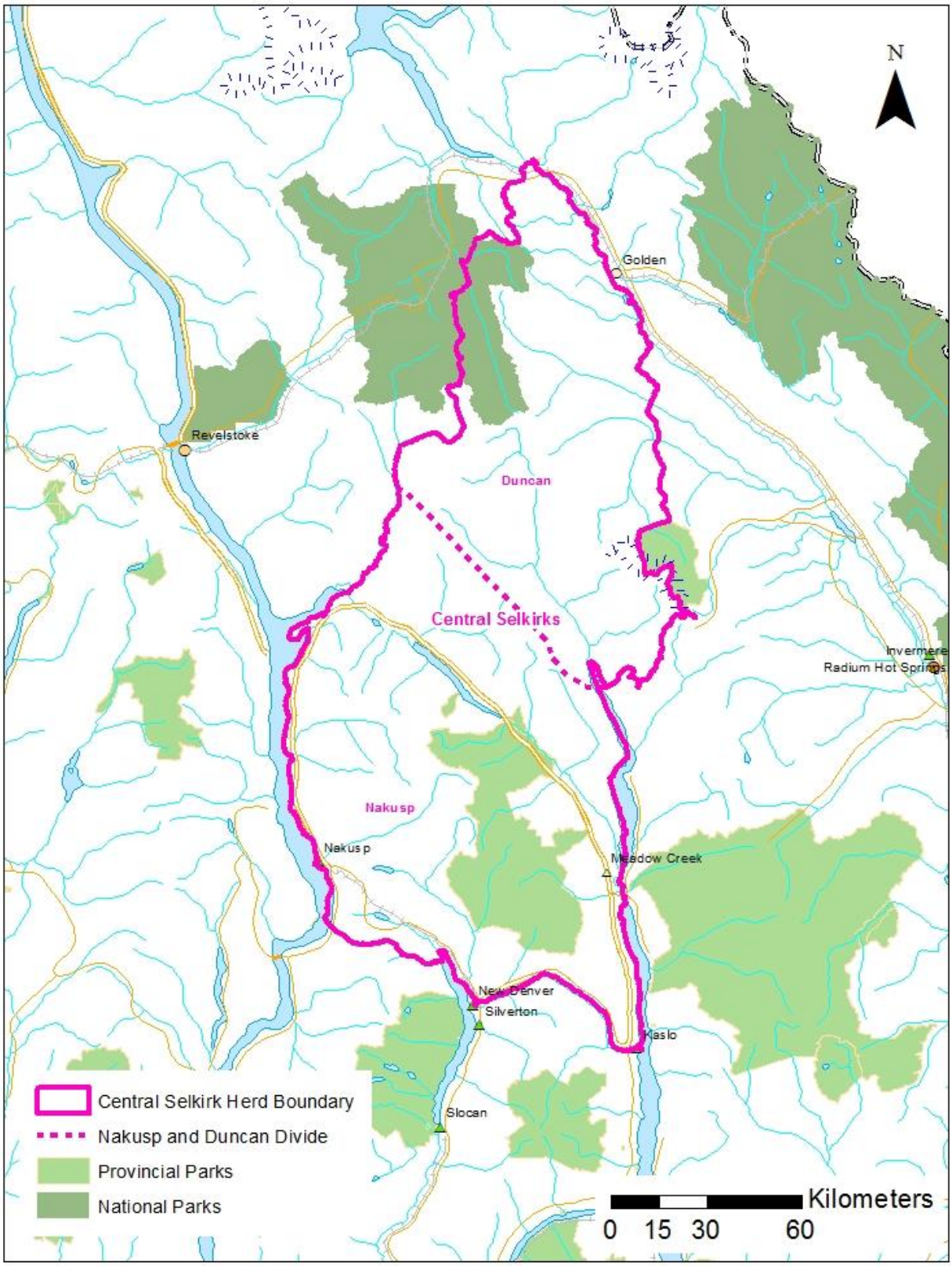

Figure 1. Central Selkirk sub population boundary as per Simpson et al. (1997). The divide reflects the Duncan and Nakusp blocks as described by Wittmer et al. (2005).

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 detected. 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.

Results

The census was conducted March 3rd and 4th, 2021. The survey conditions were favorable with significant snowfall, which erased old tracks, occurring 5 days prior followed by high overcast conditions with no precipitation.

A total of 28 caribou were observed, which included 26 adults and 2 calves (Table 1).

On March 3rd the total flying time was 6.6 hours including ferry to Nakusp from Nelson. On March 4th, the total flying time was 5.7 hours which included ferry from Nelson. The total flying time was 12.3 hours with approximately 7.6 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 112% of the mean for early-March (BC Ministry of Environment, 2021).

The commercial helicopter ski sector was not operating during the winter of 2020/2021 due to COVID 19 shutdowns. However, snowmobile, cat skiing and backcountry skiing activities were locally abundant (Figure 2).

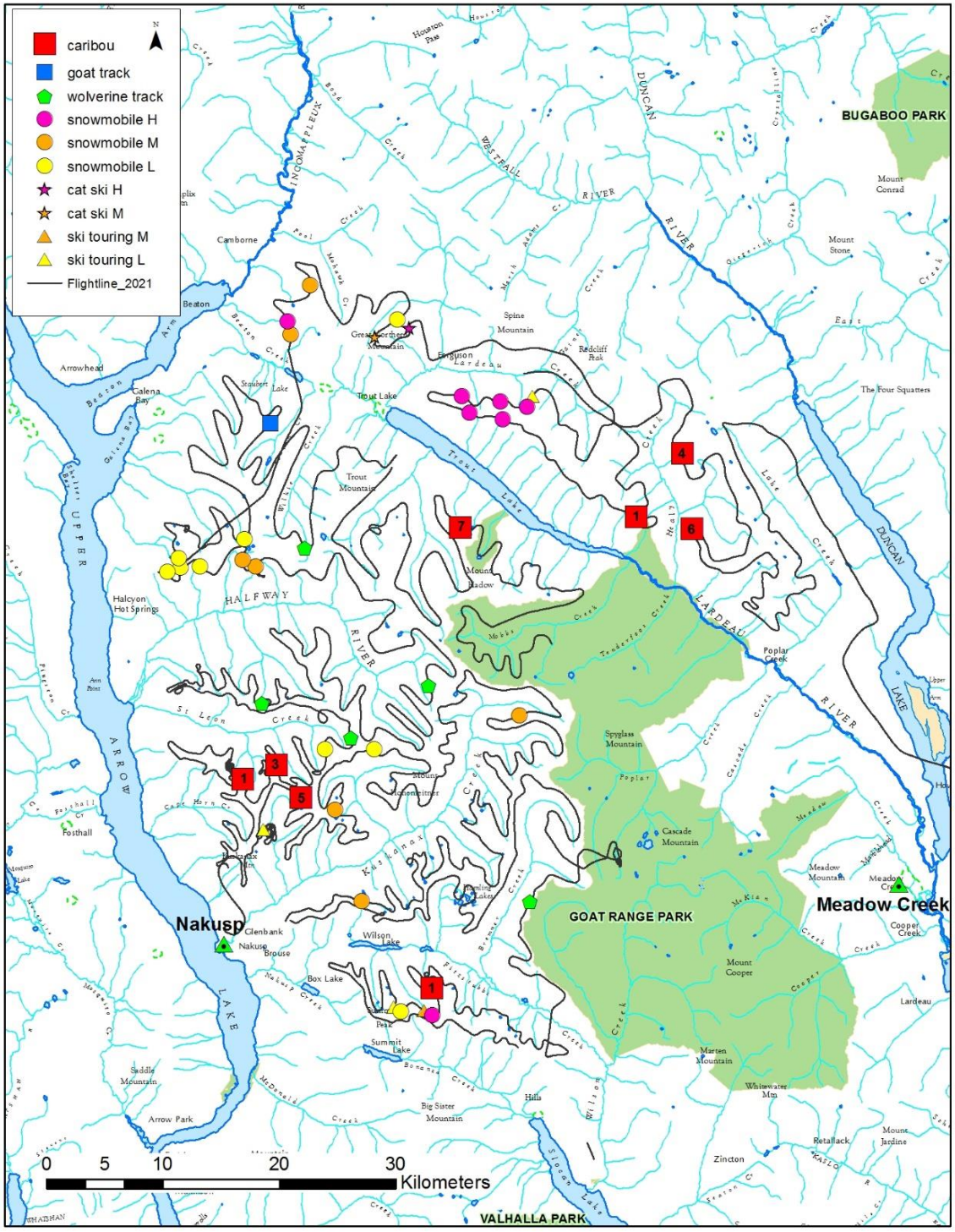

Figure 2. Flight lines, caribou sightings, and locations of snowmobile tracks, ski tracks, and tracks from other wildlife from the 2021 census. Regarding ski and snowmobile tracks, 1-5 tracks is classed as low, 6 – 10 as medium, and >10 as high.

Recruitment

Two calves were observed, with recruitment estimated at 7.1% (2 of 28 animals.)

Table 1. 2021 Central Selkirk caribou census results. Coordinates are given in UTM projection, Zone 11, NAD 83.

Date	Location	Caribou Observations			Easting	Northing
		Adult	Calves	Total		
03-Mar-21	Mount Ferrie	1	0	1	459278	5560779
03-Mar-21	Mount Leary	4	1	5	450172	5578398
03-Mar-21	Mount St. Leon	1	0	1	445417	5580607
03-Mar-21	St. Leon Creek	3	0	3	448428	5581487
04-Mar-21	Daney Creek	6	1	7	466664	5599647
04-Mar-21	Healy Creek	1	0	1	481826	5598640
04-Mar-21	Healy Creek	4	0	4	486399	5603532
04-Mar-21	Skinner Creek	6	0	6	486411	5597037

Table 2. Caribou census results for the Central Selkirk sub population from 1996 to 2021. Data source: https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/wildlife/wildlife-data-information 1974 – ongoing – Caribou – Population Assessment – Central Selkirks – Kootenay Region

Central Selkirk	Observed (+Tracks)	Calves (%)	Number Collared	Collars Observed	Calculated Estimate	95% CL
1996	208 (224)	11.1	13	12	225	209-293
1997	222 (231)	8.1	22	23	254	244-293
1999	177 (194)	7.3	17	14	214	187-289
2002	93 (97)	17.2	9	6	139	104-264
2004	70 (86)	18.6	0	0	NA	NA
2005	75 (94)	21.3	0	0	NA	NA
2006	74 (87)	27	0	0	NA	NA
2007	68 (88)	14.7	0	0	NA	NA
2008	96 (102)	13.5	0	0	NA	NA
2010	84 (92)	14.3	0	0	NA	NA
2012	87 (89)	10.3	0	0	NA	NA
2014	50 (53)	16	0	0	NA	NA
2015	44	11.4	0	0	NA	NA
2016	35	5.7	0	0	NA	NA
2017	29	6.9	0	0	NA	NA
2018	31	12.9	8	8	31	31-38
2019	25	4.2	5	5	NA	NA
2020	26[a]	NA	NA	NA	NA	NA
2021	28	7.1	9	9	NA	NA

[a] 2020 survey reports a minimum known number alive based on combining a partial census with capture observations (Reid 2020).

Discussion

All collared caribou were observed (n=9) during the census, suggesting 100% sightability. Visibility and snow conditions were favorable which 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. However, caribou could have been missed on the flight routes or were using areas not surveyed.

Caribou have not been sighted during census in the Duncan block since 2015. However, a sighting which included a photograph from summer 2020 of 3 caribou in the Silent Pass area on the east side of the Duncan River was reported. This sighting warranted a winter reconnaissance flight in March 2021. Unfortunately, we were unable locate these caribou. A portion of Argenta face where caribou tracks were observed in spring 2019 was also flown but there was also no evidence of caribou use in this area. Regardless of the Silent Pass observation, we decided to remove the Duncan block from the census to reduce census time and cost.

In March 2017, 9 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. In February 2019 an additional 6 GPS collars were deployed for a total of 9 active collars in the population. There has not been a collar mortality since July 2019.

Despite 3 years of stability, the long-term trend in the Central Selkirk population is declining. The observed count from this census is 87% lower than the peak observed count of 1997 (222 – 28). Calf recruitment at 7.1% is well below the suggested 12% - 16% recruitment required for a stable population (Bergerud, 1996). Since 2016, calf recruitment has averaged just 7.4%. In 2020, emergency management action was taken to mitigate adult mortality though predator reduction but without improving recruitment, recovery will not be possible. In 2021 a maternity pen was constructed in the Kuskanax Creek drainage. The pen did not operate due to budgeting and COVID 19 challenges; however, it is expected to operate winter 2021/2022. Currently, maternal penning may be the only available recovery tool for the Central Selkirk population to improve calf recruitment.

Acknowledgements

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