2014 Mountain Caribou Census

CENTRAL SELKIRK MOUNTAINS

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Summary

A complete census of mountain caribou within their known range in the Central Selkirk Mountains was conducted March 11 - 13, 2014.

Since 2005 the Central Selkirk caribou sub population has been divided into the Nakusp and Duncan blocks. Due to consistent observations of caribou that are not located in either block, we are returning to the convention of using the term "Central Selkirks" without further division into blocks.

Forty two adult caribou and eight calves were located for a total of 50 caribou. In addition there was one occasion where tracks were spotted but caribou could not be found. These tracks should account for 3 caribou. This would put the total population at 53 caribou. The previous census (2012) reported 88-89 caribou based on the count and tracks where caribou could not be found.

The sub population declined approximately 50% between 1999 and 2002, and then remained relatively stable for a decade. The results of this year's census indicate a 40% decline from the last census in 2012 and a 77% decline since comprehensive census work began in the mid 1990's. Calf recruitment was 16% within the 12 – 16% range generally thought to be required for a stable population.

Causes of this sudden decline are unknown. The adequate calf recruitment rate of 16% this year and 14% average since 1994 suggests a large increase in adult mortality subsequent to the last census in 2012.

The large increase in forestry no harvest zones in the Central Selkirk Mountains in the past few years should increase the probability that these caribou sub populations can be recovered in the long term. However displacement of caribou from preferred habitat by recreational activities remains a major concern. An altered predator / prey system largely due to past forest harvesting and other habitat changes is also a significant concern. This concern should diminish over the next several decades as the cutblocks regenerate. Meanwhile predator and alternate prey populations should be monitored and managed when and where necessary.

Introduction

Woodland caribou (*Rangifer tarandus caribou)* in southeastern British Columbia, northern Washington, and northern Idaho 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'. 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 the Committee on the Status of Endangered Wildlife in Canada (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 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, although in the 2010 and 2012 census reports they were included with the Nakusp block (DeGroot, 2010; DeGroot and Furk 2012). As of this report we are returning 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. For discussion purposes the Duncan and Nakusp blocks are drawn on Figure 1, which also depicts locations of two groups of caribou which are not in either block. These two groups consist of 25% of the total determined by this census.

Most of the caribou research in this area has occurred since 1992. Twenty three caribou were fitted with VHF radiocollars from 1992 – 2003 (Hamilton, 2008). Thirteen censuses have been conducted over the past 19 years, all in late winter when the caribou are consistently in the open forest at high elevations. The sub population declined from an estimate of 240 caribou in 1996 to an estimate of 88 in 2007 and then increased to an estimate of 122 in the 2008 census. 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 to the east north of Duncan Lake, to the south by Summit Lake, 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 owned by Highland Helicopters and piloted by Rob Andrews. Observers were Ross Clarke, Thomas Hill, and Leo DeGroot.

When caribou tracks were observed they were followed until the animals were observed. All caribou were classified as either adults or calves. Attempts were not made to classify adults by gender as it is difficult due to similarities between young males and adult females. In addition extended observation time often results in additional physiological stress on the animals. 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. If the caribou could not be found we estimated group size from the number of tracks and / or beds. Caribou tracks were only recorded if the caribou that made the tracks could not be found. 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 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.

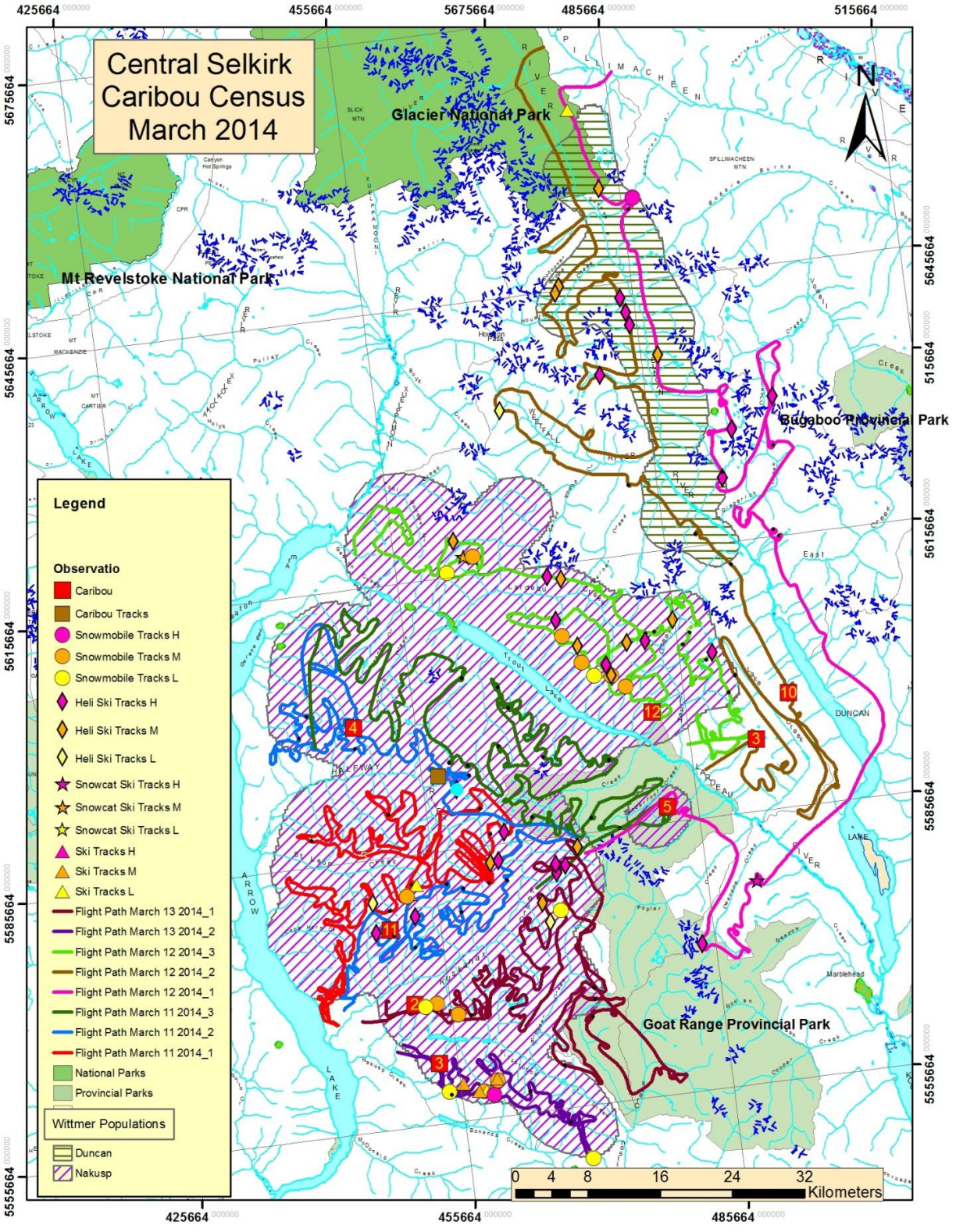

Figure 1. Flight lines, caribou sightings, and locations of snowmobile and ski tracks from the 2014 census. The groups of caribou are indicated by the red squares. The number of caribou in each group is indicated in the squares. The Nakusp and Duncan blocks as defined by Wittmer et. al (2005) are shown however due to consistent caribou sightings outside of the blocks we are returning to the previous convention of defining the area as the Central Selkirk caribou population without further division into blocks.

Results

A total of 50 caribou were spotted which included 8 calves. In addition tracks from 3 caribou were observed but caribou associated with these tracks could not be found. This would put the population at 53 caribou.

The census was conducted March 11, 12, and 13, 2014. During this time the weather was clear and calm except for some high cloud during the late afternoon of March 12 causing some diminished light quality. Temperatures at 2000 meters elevation ranged from -2 to -7 degrees Celsius. Significant snow fell on March 9 and 10 allowing separation of tracks formed before and after that date.

The helicopter was stationed in Nakusp for the survey. The flying time on March 11 was 7.5 hours of which 6.2 hours were on survey. The helicopter was refueled twice in Nakusp. On March 12 the flying time was 7.25 hours with 5.25 hours on survey. The helicopter was refueled once in Nakusp and once in Golden. The flying time on March 13 was 3.25 hours of which 3 hours were on survey. The helicopter was refueled once in Nakusp. Mean survey flying speed was approximately 130 km / hr. Total flying time was 18 hours of which 14.5 hrs were on survey.

As the temperatures remained below 0^{o} Celsius for the duration of the census the new snow remained in the trees resulting in a smooth snow surface and excellent track sighting conditions. Snow water equivalent at the nearest snow pillow sites, St. Leon Creek (1822 m elevation) and East Creek (2004 m elevation) were at 105% and 88% of the means respectively for those dates (BC Ministry of Environment, 2014).

There was extensive evidence of slab avalanche activity from a natural avalanche cycle in the few days preceding the census, especially in the southern half of the study area. The danger rating for the Columbia South Region during the census was considerable to high at treeline (Canadian Avalanche Centre). Snowmobile and heli-ski activities were abundant in many areas. In one location debris from a large Class 3 avalanche had run over fresh snowmobile tracks.

Recruitment

Eight calves were identified. Recruitment is estimated to be 16% (8 of 50 animals.)

Table 1. 2014 Central Selkirk caribou census results. Coordinates are given in UTM projection, Zone 11, NAD 83.

Date	Location	Caribou Sightings			Additional # Caribou based on tracks only	Easting	Northing	Comments
		Unclassified Adult Caribou	Calves	Total Caribou Observed				
11-Mar-14	Gardner Creek	10	1	11		450099	5598196	
11-Mar-14	Halfway River				3	459337	5592284	
11-Mar-14	Payne Creek	4	0	4		448870	5600450	
11-Mar-14	Tenderfoot Creek	5	0	5		482305	5587416	
12-Mar-14	Duncan Lake	8	2	10		497179	5598288	
12-Mar-14	Hope Creek	2	1	3		492997	5593621	
12-Mar-14	Gerard Cr – SilverCup Ridge	9	3	12		481947	5598049	
13-Mar-14	Kimbol Lake	2	0	2		451741	5569206	
13-Mar-14	Ranch Ridge	2	1	3		453650	5562369	
Total		**42**	**8**	**50**	**3**			

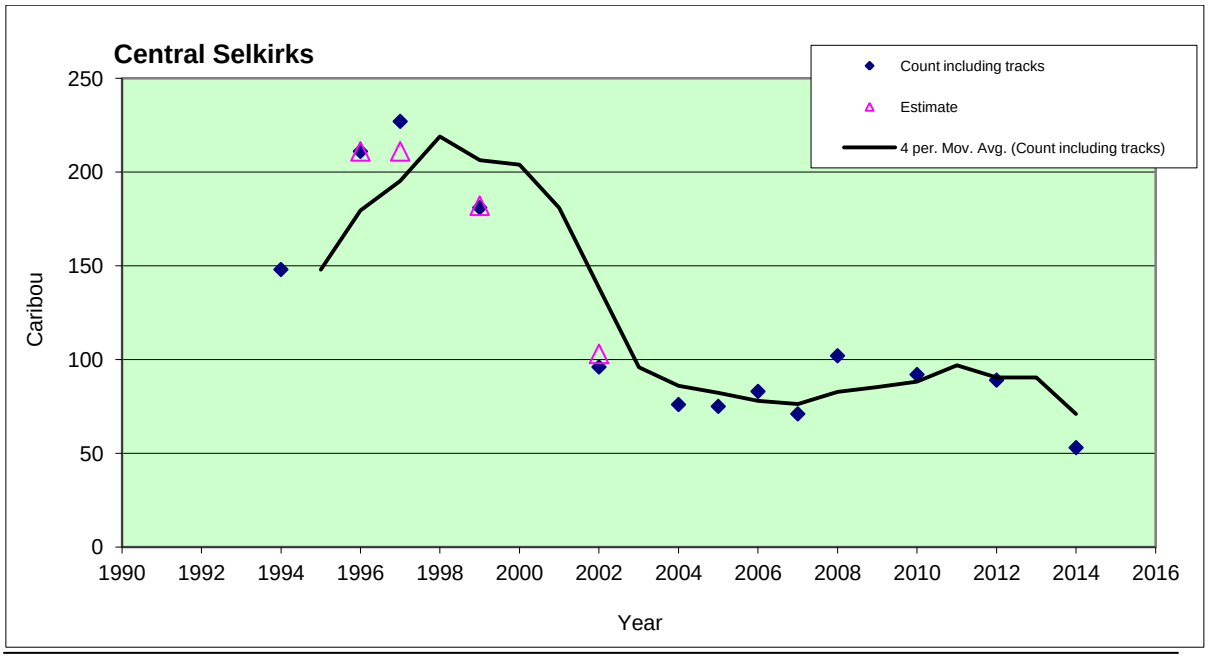

Figure 2. Central Selkirk census results from when census work began in 1994 to the present. Sufficient numbers of radio collared caribou from 1996 to 2002 allowed population estimates based on sightability, indicated by the purple triangles. Blue diamonds indicate the actual count plus an estimate of group size from tracks when caribou could not be found. The trendline is based on the count including tracks, averaged over several points.

Discussion

Without any radio collared caribou, specific sightability corrections cannot be made. 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. Excellent visibility and snow conditions made it less likely that caribou tracks on the flight routes were missed. Tracks from smaller animals such as hares and wolverines were readily visible. Therefore, we are fairly confident that all caribou tracks present at normal elevations in the census area were detected.

The result of 53 caribou is a 40% decline from the 89 - 92 caribou recorded during the two previous censuses (DeGroot, 2010) (DeGroot and Furk, 2012) and a 77% decline over the past two decades. There is the chance that some caribou could have been at lower elevations and would have been missed.

Calf recruitment at 16% is within the suggested 12% - 16% recruitment that is required for a stable population (Bergerud, 1996). The mean since 1994 is 14.1%. Adequate calf recruitment and a declining population suggests high adult mortality.

Displacement of caribou from preferred habitat by recreational disturbance has long been a concern in many areas. In particular, the Great Northern Mountain / Mohawk Creek area, the majority of Silvercup Ridge, and the Silent Pass area. These areas contain suitable but unused late winter habitat that is heavily used by snowmobilers and/or snowcat operators and / or heli ski operators. Ranch Ridge and the Kimbol Lake areas may be heading in the same direction, this year the group sizes in these locations were significantly reduced and in what appears to be marginal habitat instead of more optimum habitat nearby.

The increase in no harvest zones as per the Government Action Regulations in the Central Selkirk Mountains since 2008 should significantly increase the probability that these caribou sub populations can be recovered in the long term. However, an altered predator/prey system largely due to past forest harvesting and other habitat changes remains a significant concern. This concern should diminish as cutblocks regenerate over the next 20 – 30 years. Meanwhile, predator and alternate prey populations should be monitored and managed when and where necessary.

Acknowledgements

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