2006 POPULATION CENSUS OF MOUNTAIN CARIBOU IN THE CENTRAL SELKIRK MOUNTAINS OF SOUTHEASTERN BRITISH COLUMBIA

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Prepared for:
Pope & Talbot Ltd.
&
Canadian Mountain Holidays

Prepared by:
Dennis Hamilton[1], RPBio.

[1] Nanuq Consulting Ltd., Nelson, BC

Introduction

Mountain caribou (*Rangifer tarandus*) are a species at risk in British Columbia. There have been significant population declines in most southern herds in recent years and recovery planning is underway regionally and provincially.

In 1996 a multi-year inventory project was initiated for the Central Selkirks mountain caribou population. The study area is depicted in Figure 1. The purpose was to provide information on population distribution and abundance and habitat requirements necessary to effectively integrate the needs of caribou with strategic and operational planning. The study included caribou capture and radio-collaring, fixed-wing monitoring of collared caribou, population censuses, mortality investigations, and field studies of stand and landscape habitat elements and forest structural conditions important to caribou.

Both science- and expert-based caribou habitat models were developed from the caribou population and habitat information gathered during the study. Landscape and multi-scale resource selection models depicted caribou locations and habitat variables selected by collared caribou (Hamilton et al 1999, 2000). Ecosystem-based caribou habitat models provided detailed habitat ratings of current caribou habitat suitability (i.e., current condition) and inherent habitat capability (i.e., potential regardless of current condition; Hamilton and Wilson 2003). Cumulative effects analysis modelling of the simultaneous effects of industrial forestry and spatial relationship between backcountry recreation activities on caribou habitat use was also completed (Wilson and Hamilton 2003).

The inventory information, habitat models and expert knowledge gained during the caribou study was subsequently applied within a landscape unit planning framework to spatially integrate the habitat needs of caribou with old and mature forest retention requirements identified under the Kootenay-Boundary Higher Level Plan Order (HLPO 2002). The landscape unit plan was initially piloted on TFL 23 (LUPWG 2002) and then expanded to encompass the entire range of caribou in the Central Selkirks (Hamilton and Wilson 2003). The commercial backcountry heli-skiing and snowcat skiing industry applied the results of the cumulative effects work to improve their “best practices” for operating in caribou habitat.

Funding for the Central Selkirk mountain caribou census was provided by Pope & Talbot Ltd and Canadian Mountain Holidays, as part of their continuing commitment to management and monitoring of the population of mountain caribou in the Central Selkirks.

Methods

The caribou census was conducted in accordance with aerial-based inventory methods outlined by the Resource Inventory Standards Committee (RISC 2002). A helicopter survey was conducted for the core study area and was supplemented with a fixed wing reconnaissance flight of the periphery of the area. Flight paths were similar to those used in previous years (Hamilton and Wilson 2002).

Helicopter speed and altitude varied along established flight paths. When tracks or caribou were seen, the helicopter left the flight path until animals were located and counted. Animals counted were classified as adult or juvenile. If tracks were encountered but the animals were not located, the number of tracks was recorded. Each caribou group or individual observation was assigned an identity number and the location was recorded using onboard GPS.

A conscious effort was made during the flights to minimize stress to animals. Consequently, when following tracks failed to locate caribou (usually because animals had moved into forest), we did not attempt to "flush" animals from cover and simply recorded observations as "tracks."

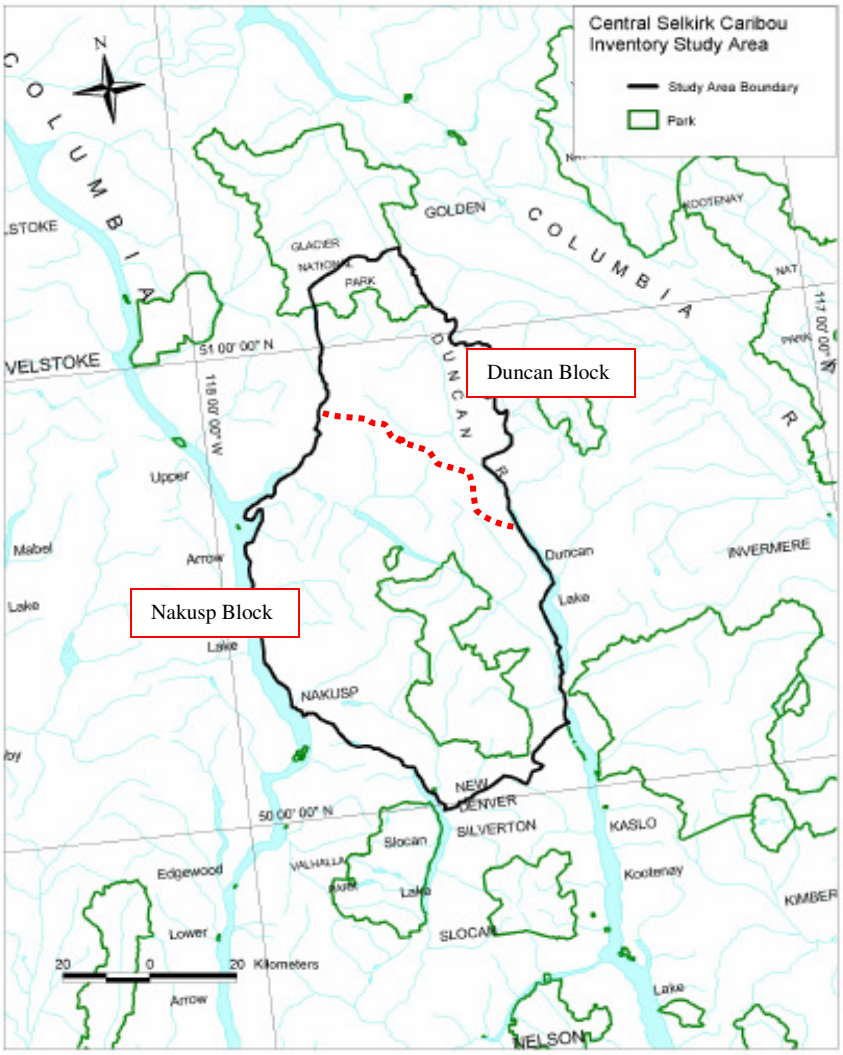

Figure 1: Duncan and Nakusp Census Blocks within the Central Selkirk mountain caribou study area

Results and Discussion

The helicopter census for both the Nakusp and Duncan survey blocks was completed on 18 April 2006. A total of 74 caribou were observed in the Nakusp survey block, with 4 caribou tracks recorded. No caribou were observed in the Duncan survey block, but 9 caribou tracks were recorded. The 19 April 2006 fixed-wing flight of the periphery of the study area did not detect additional caribou or caribou tracks. The surveys were completed 2 days following snowfall in upper elevations of the Central Selkirk Mountains study area. Table 1 summarizes the 2006 census results for the Nakusp and Duncan survey blocks.

Table 1: 2006 mountain caribou census for the Central Selkirk subpopulation.

Sighting	Adults	Calves	Total	Tracks only
Nakusp Census Block				
1	2		2	
2				1
3	1		1	
4				1
5	2	2	4	
6	4		4	
7	5	3	8	
8	3		3	
9	7	3	10	
10	4	2	6	
11	2		2	
12				2
13	6	3	9	
14	2	1	3	
15	9	3	12	
16	2		2	
17	3	3	6	
18	2		2	
Duncan Census Block				
19				2
20				1
21				2
22				2
23				2
	54	20	74	13

Table 2 summarize total count of caribou observed and tracks for all survey years, including population estimates based on mark-resight for census years in which there were active collars on caribou. There were no functioning collars remaining on caribou in the Central Selkirk study area beyond 2003. Population status from 2004 onwards was based on total count of caribou and tracks observed.

Over the term of the study, the total count of caribou ranged from 232 in 1997 to 87 in 2006 – a 63% decline (Figure 2). Mark-resight population estimates declined every year from 1996 to 1999; however, it was not until 2002 that the change was statistically significant (Hamilton and Wilson 2002). The 1999 to 2002 period saw a 51% decline in the total count for caribou. Censuses were not completed in 2000, 2001 or 2003 due to lack of funding.

Table 2: Central Selkirks Mountain caribou total count (with % calves), tracks counted, and mark-resight population estimates and confidence intervals

Year	Observed (%calves)	Tracks	Observed + Tracks	# Active Collars	# Collars Observed	Population Estimate	90%CI
1996	211(12)	19	230	12	13	268	230-354
1997	223 (8)	9	232	23	22	231	223-266
1999	181 (9)	17	198	17	14	213	190-266
2002	93 (22)	4	97	9	6	131	105-207
2004	72 (22)	16	88	-	-	-	-
2005	75 (27)	22	97	-	-	-	-
2006	74 (26)	13	87	-	-	-	-

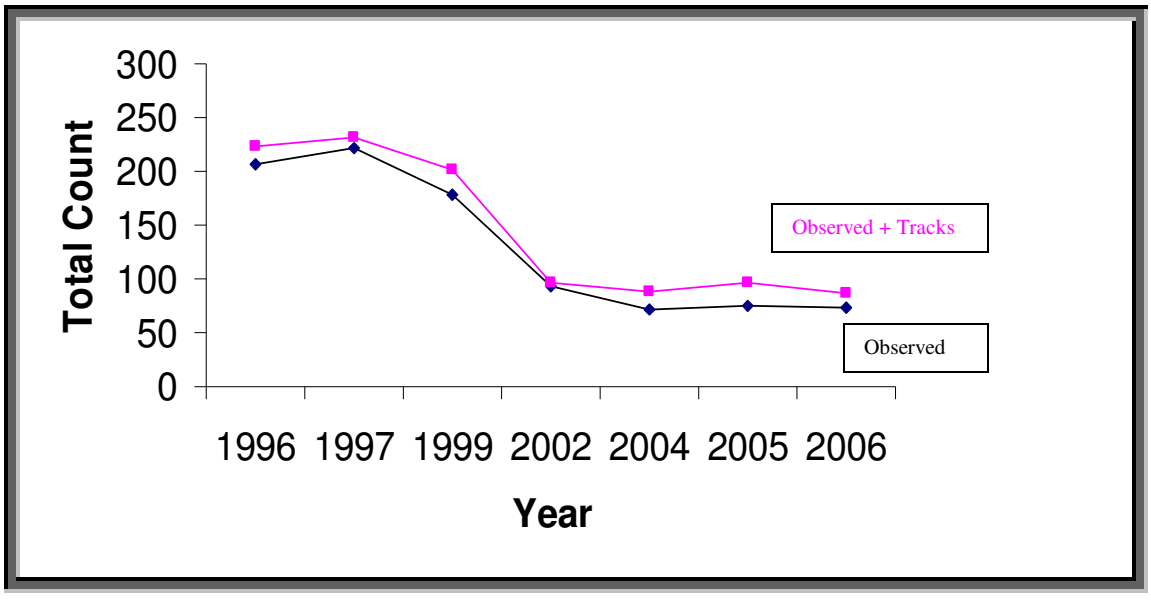

Figure 2: Total count of caribou observed and observed + tracks during censuses in the Central Selkirks from 1996-2006.

A concern related to population trend and potential recovery remains in regards to the number of calves observed as a percentage of the total population (Table 2). The Mountain Caribou Technical Advisory Committee (MCTAC; 2002) reported that calves generally make up 27-30% of the population at birth, but by recruitment age (1yr old) their proportion of the population is generally less than 20%. Unhunted populations are considered to be stable when calves make up about 15% of the local population in late winter.

For the Central Selkirk population, the proportion of calves as a percentage of the population was less than 10% for both 1997 and 1999 surveys; however, calf survival has been greater than 20% for surveys completed in 2002 (22%), 2004 (22%), 2005 (27%) and 2006 (26%). Calf recruitment over the past 4 years appears to support a stable or potentially recovering population (particularly calf survival through the summer season when predation is greatest), but without any corresponding increase in overall population size. Caution must therefore be taken regarding inferences of population stability and/or potential recovery at this time.

During censuses when functioning collars were available, 55 of 61 collared caribou were observed, a sightability of 90%. Hooge *et al.* (2004) reported an average sightability of 92% during all mountain caribou censuses conducted in the Columbia Forest District. This suggests that censuses on unmarked mountain caribou subpopulations can provide a reliable index of population size and trend.

Recommendations

A census should be conducted each year for at least the next 2-3 years to support provincial mountain caribou recovery planning efforts and ongoing operational planning and population trend monitoring at the local level. Continuation of partnership funding is encouraged.

Efforts to recover mountain caribou in the Central Selkirks should continue to involve collaborations between the forest industry, backcountry recreation users and government.

Literature Cited

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Addendum to:

Hamilton, D. 2006. Population census of mountain caribou in the Central Selkirk Mountains of southeastern British Columbia. Prepared for Pope & Talbot and Canadian Mountain Holidays, Nakusp, BC.

The following replaces page 4 and the map is to be added:

2006 Central Selkirk Mountain Caribou Population Census

Results and Discussion

The helicopter census of the core study area was completed on 18 April 2006. A total of 74 caribou were counted with 13 sets of caribou tracks recorded for a total count of 87 caribou. No caribou or caribou tracks were observed in the Duncan River watershed. The 19 April 2006 fixed-wing flight of the periphery of the study area did not detect additional caribou or caribou tracks. The surveys were completed 2 days following snowfall in upper elevations of the Central Selkirk Mountains study area. Table 1 summarizes the 2006 census results.

Table 3: 2006 mountain caribou census for the Central Selkirk subpopulation.

Sighting #	Adults	Calves	Total	Tracks only
1	2		2	
2				1
3	1		1	
4				1
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7	5	3	8	
8	3		3	
9	7	3	10	
10	4	2	6	
11	2		2	
12				2
13	6	3	9	
14	2	1	3	
15	9	3	12	
16	2		2	
17	3	3	6	
18	2		2	
19				2
20				1
21				2
22				2

23				2
Total	54	20	74	13

2006 Central Selkirk Mountain Caribou Population Census

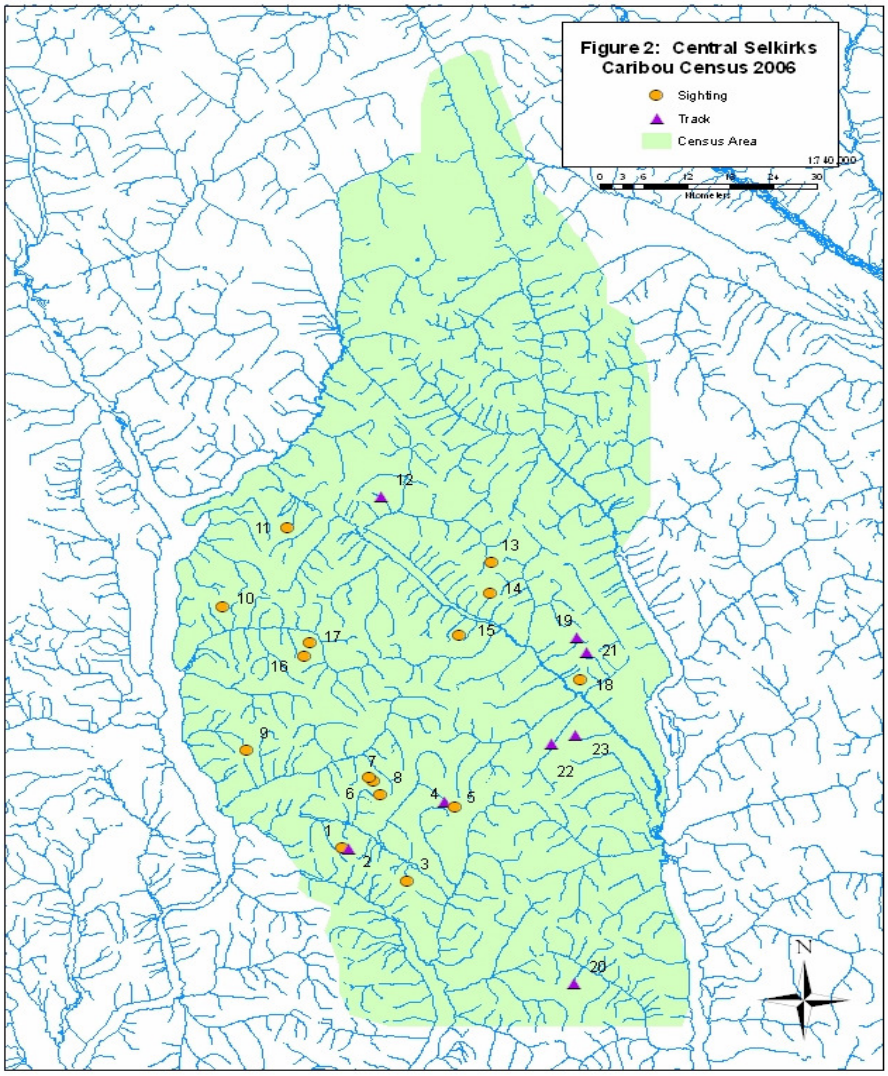

Figure 2: Central Selkirk 2006 caribou sighting and track count locations.