2007 POPULATION CENSUS OF MOUNTAIN CARIBOU IN THE CENTRAL SELKIRK MOUNTAINS OF SOUTHEASTERN BRITISH COLUMBIA

Version 2.0

Prepared for:
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&
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Introduction

The Committee on the Status of Endangered Wildlife (COSEWIC) has identified several national populations of woodland caribou as *Threatened* or *Endangered* under the federal *Species at Risk Act* (SARA). The national population of woodland caribou inhabiting the Southern Mountains National Ecological Area (SMNEA), which covers most of the southern and central interior of British Columbia, is listed as *Threatened*.

The provincial Conservation Data Centre considers mountain caribou, a Woodland caribou ecotype, to be *Endangered or Threatened* (i.e., Red-listed). In 2006, the estimated population of mountain caribou was approximately 1900 animals (Hatter 2006), and many subpopulations have experienced declines of over 50% during the past 10 years (Mountain Caribou Science Team 2005). The Species at Risk Recovery Office (SARCO) is currently spearheading mountain caribou recovery planning in BC.

The Central Selkirk population experienced a 53% population decline from 1996-2002 (Hamilton and Wilson 2003). Population censuses have been completed in 5 of the last 6 years for the Central Selkirk caribou population.

Methods

In April 2007, we conducted a population census for the Central Selkirk mountain caribou study area in accordance with aerial-based inventory methods outlined by the Resource Inventory Standards Committee (RISC 2002). The census involved a helicopter census of the core of the study area and a fixed wing reconnaissance flight of the periphery of the study area. Flight paths were similar to those used in previous years (Hamilton and Wilson 2003). The census was completed over 3 days by 3 experienced spotters plus the pilot.

Since 1995, the census area has been divided into separate Duncan and Nakusp census units (Figure 1), each taking 1 day to survey by helicopter (Miller 1996). Wittmer et al. (2005) analyzed 1992-2003 radio-telemetry data (n=1942 locations) and concluded that caribou in the Nakusp and Duncan portions of the Central Selkirk range constituted two separate subpopulations. These subpopulations were subsequently adopted by SARCO (2006) for recovery planning. Recognizing the distinction between caribou census unit and caribou subpopulations areas is important to avoid misinterpretation of results.

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. Observed animals 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 census flights to minimize stress to animals. Consequently, when following tracks failed to result in a visual location (usually because animals had moved into forest), we did not attempt to "flush" animals from cover and simply recorded observations as "tracks."

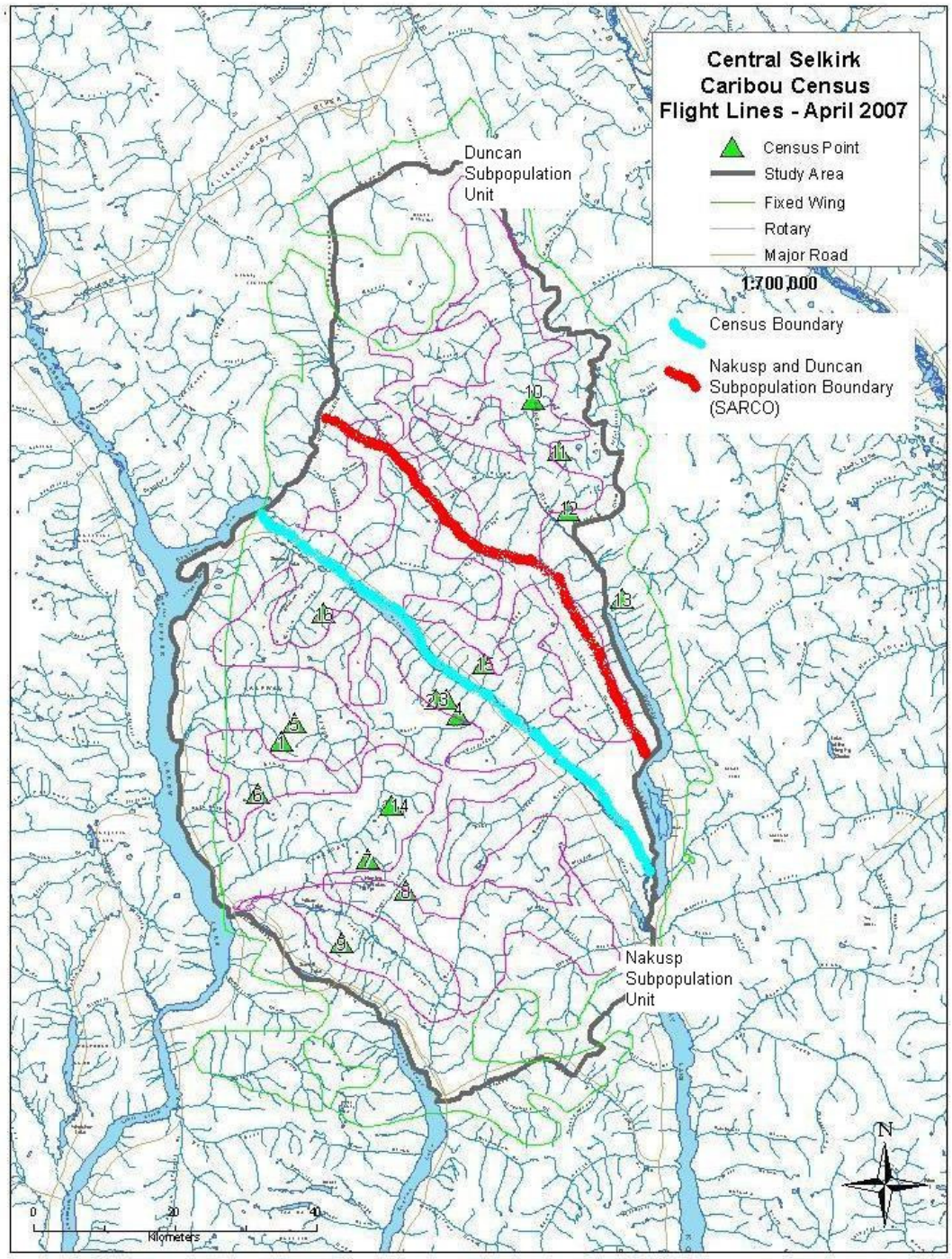


Figure 1: Nakusp and Duncan census unit and Subpopulation Boundaries for the Central Selkirk mountain caribou study area.

Results and Discussion

A fixed-wing reconnaissance flight of the peripheral of the study area was completed on April 7, 2007. The flight coverage was expanded this year to include the Caribou, Goatcanyon, Shannon, Wragge and Slewiskin areas to the southwest and McMurdo and upper Spillimacheen to the northeast of the study area. The flight also served to confirm caribou presence in their higher elevation late winter habitats, prior to proceeding with the helicopter census. It also snowed following the fixed-wing flight, covering old caribou tracks and providing favourable conditions for the helicopter census, which was completed on April 11th and 12th. Skies were clear with good visibility for all census days. The sighting locations of caribou and caribou tracks observed during the 2007 aerial census of the Central Selkirk caribou population is illustrated in Figure 1.

Table 1 summarizes population estimates based on census data from 1996 to 2007, including both total counts (all years) and mark-resight population estimates with 90% confidence intervals for years when collared caribou were sighted (White 1996). For 2007, the total caribou count for the Central Selkirk population was 88 (68 observed and 20 tracks). In the Nakusp subpopulation unit 76 caribou were counted (59 observed and 17 tracks). For the Duncan unit 12 animals were counted (9 observed and 3 tracks).

Table 1: Total and adult-only population estimates for the Central Selkirk Caribou Study Area and Nakusp and Duncan Sub-populations

Study area	All age classes				Adults only		
Year	Minimum	Estimate	90% CI		Minimum	Estimate	90% CI
1996	211	268	230-354		189	246	208-332
1997	223	231	223-266		206	214	206-239
1999	181	213	190-266		167	199	176-252
2002	96	131	105-207		80	115	89-191
2004	72	88	-		72	-	-
2005	75	94	-		59	-	-
2006	73	86	-		67	-	-
2007	68	88	-		58	-	-
Nakusp only							
1996	186	211	191-264		167	192	172-245
1997	203	211	203-236		186	194	186-219
1999	155	182	162-226		143	170	150-214
2002	76	103	83-162		64	91	71-150
2004	72	83	-		59	-	-
2005	70	81	-		59	-	-
2006	73	85	-		54	-	-
2007	59	76	-		50	-	-
Duncan only							
1996	25	-	-		22	-	-
1997	24	-	-		20	-	-
1999	26	-	-		24	-	-
2002	20	-	-		16	-	-
2004	0	-	-		0	-	-
2005	5	-	-		5	-	-
2006	0	-	-		0	-	-
2007	9	12	-		8	-	-

Nine groups of caribou were observed. Four groups were of 10 or more animals, two groups consisted of 6 and 7 animals, and three observations were of 1-3 caribou. No additional caribou were spotted during the fixed wing reconnaissance flight of the periphery of the range.

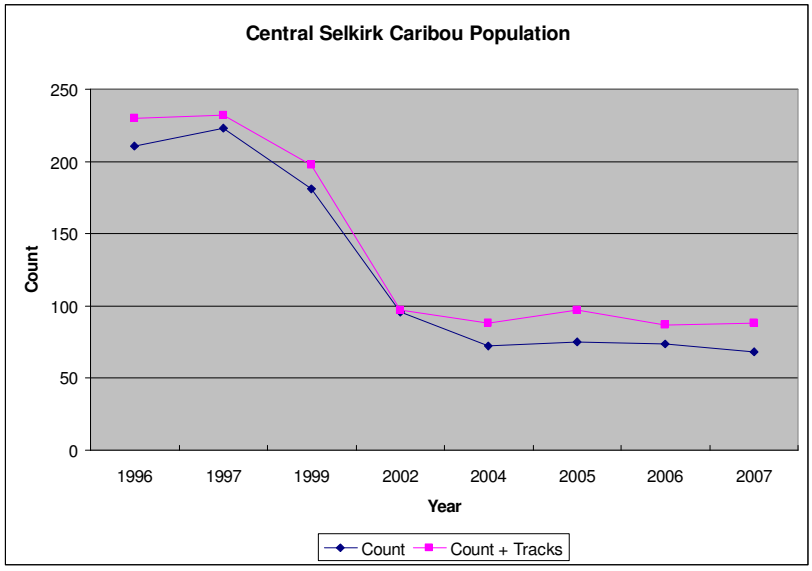


Figure 2: Central Selkirk mountain caribou population census status and trends from 1996 to 2007 (Nakusp and Duncan subpopulations)

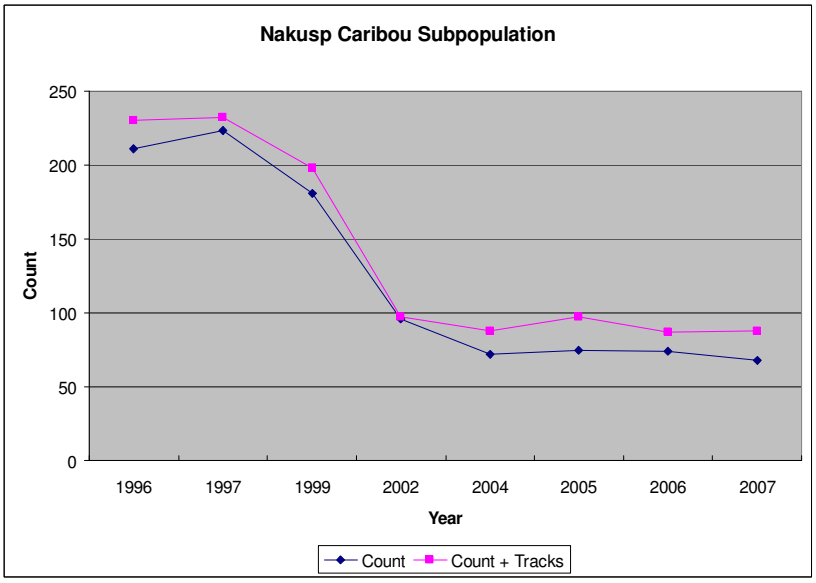
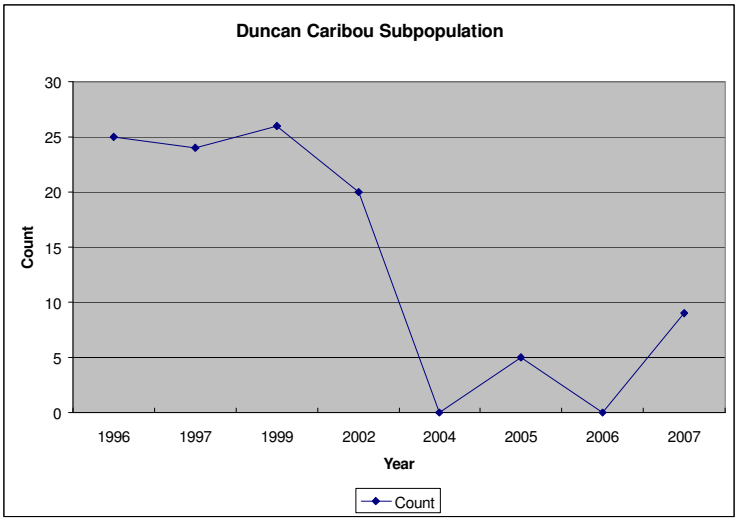


Figure 3: Nakusp subpopulation census status and trends from 1996 to 2007

Figure 2 illustrates caribou total count, population estimates and population trend for the Central Selkirk caribou population for all census years. After a 53% population decline reported between 1997 and 2002 (Hamilton and Wilson 2002), the Central Selkirk overall population has remained relatively stable.

The Nakusp and Duncan subpopulation census results are presented in Figures 3 and 4 respectively. No caribou were observed during either the 2004 or 2006 census of the Duncan subpopulation unit area (Hamilton 2006); however, caribou were counted in the Duncan each year until 2004, and again in 2005 (5) and in 2007 (9 animals and 3 tracks).

During census years when functioning collars were available, 55 of 61 collared caribou were observed, representing a sightability of 90%.



This result and other studies (Hooge et al 2004, Hatter 2006) suggest that censuses on unmarked caribou populations can provide a reliable index of population size and trend. There are no known radio collars still functioning in the Central Selkirk study area.

Figure 4: Duncan subpopulation census status and trends from 1996 to 2007

As in previous years, effort was made to classify adults and calves. For 2007, we classified 10 calves out of 68 caribou counted; however, one group of 11 animals was spread out within forested habitat and no attempt was made to classify adults and calves for this group. Notwithstanding, this suggests a minimum 15% calf ratio for 2007, with calf ratios >20% for surveys completed since 2002. Calf ratios were lowest in 1997 (8%) and 1999 (9%) when evidence of a downward population trend became evident, although 2002 was the first year such a trend was statistically significant (Hamilton and Wilson 2003). Although a significant number of calves have been spotted on every survey since 2002, there is no evidence that the population is increasing.

Table 2: Central Selkirks Mountain caribou total count (with % calves)

Year	1996	1997	1999	2002	2004	2005	2006	2007
Observed (% calves)	211(12)	223(8)	181(9)	93(22)	72(22)	75(27)	74(26)	58(>15)

Other wildlife observed during the caribou census included 5 grizzly bear at 3 locations (1 adult with 2 cubs and 2 other adults), including 2 grizzly bear den sites. The UTM locations were recorded and provided to Ministry of Environment in Nelson. During the flight we also noted evidence of caribou movements (old tracks) downslope and return travel upslope to the hotsprings in the Halfway River. Caribou use of hotsprings at Halcyon, Halfway and St. Leon has been observed throughout the duration of the study, predominately during late spring but during other seasons as well.

One noted difference this year over previous-year censuses was an apparent reduction in the behavioural response of caribou to the presence of the helicopter. The reason for this is unknown. Possible explanations include: 1) that helicopter netgun capture/collaring of caribou has not occurred in the Central Selkirks since spring of 2002; and 2) that local heliskiing companies have implemented more robust strategies to avoid caribou.

Acknowledgements

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Central Selkirk Caribou Census Form

Date: April 11, 2007 Pilot: Mark Homis

Surveyors: DH/PS/WA Aircraft: Highland Long Ranger III

Start Time: 10:05 Finish Time: 16:00

Weather: Sunny

Sighting	UTMS		ADULT	CALF	TOTAL	TRACKS	Comments
	Northing	Easting					
1	5588498	451163	1		1		Valley bottom in Deep Creek
	5587844	449179				4	Old tracks[3] north of Grady Lake
	5599634	442284				4-5	Old tracks on top of Halcyon Ridge
2	5594482	473106				2	Fresh tracks going into trees
3	5594518	474569				2	Fresh tracks going into trees
4	5592305	476103	10	2	12		Top of Mobbs Creek
5	5591062	453100	10	2	12		Above Halfway Hotsprings
	5594982	453560					Old tracks around Halfway hotsprings
	5590082	454799				2	Old tracks
GB den	5586487	464360					Grizzly Bear den back of Halfway River
6	5581097	447780	5	1	6		Top of ridge between Cape Horn and St. Leon
7	5571802	463479	11		11		In trees North of Hamling Lakes. No cow/calf ratio. Animals in timber
8	5567406	468761				3	Fresh tracks in thick timber in Bremner Creek
9	5559910	459723				1	Fresh track above Harlow cabin

[3] Old tracks = > 3days old (last snowfall)

Central Selkirk Caribou Census Form

Date: April 12, 2007 Pilot: Mark Homis
Surveyors: BR/PS/WA Aircraft: Highland Long Ranger III
Start Time: 08:30 Finish Time: 17:15
Weather: Sunny

Sighting	UTMS		ADULT	CALF	TOTAL	TRACKS	Comments
	Northing	Easting					
Gbear den	5627925	484558					3 Grizzlies and bear den
10	5636953	486740				3	Fresh tracks moving down from the top. Caribou feeding on blow down in thick timber
Gbear	5632896	488110					1 Grizzly
11	5629631	490485	6	1	7		Moving down from the top to the valley bottom
12	5621114	491689	2		2	2	Fresh tracks moving down from the top to the valley bottom
13	5608686	499369				2	Fresh tracks moving down from the top to the valley bottom into thick timber
14	5579490	466788	2	1	3		Rogers Creek
	5589639	478356				6-7	Old tracks in thick timber. Tenderfoot Creek
15	5599508	479821	11	3	14		American Creek
16	5606720	457193				5	Fresh tracks in burn above Roca Mine