

Dehcho Boreal Caribou Study Progress Report, April 2015

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Photo Credit Danny Allaire – ENR



The Dehcho boreal caribou study was initiated in 2004 with the deployment of ten satellite collars on adult female caribou at the request of, and after consultation with Smbaa K'e Dene Band (SKDB) of Trout Lake. Extensive consultations in response to requests from other First Nations since have increased the study area and number of First Nations partners in this study. From 2004-2015 a total of 136 collars (mostly ARGOS DS or GPS) have been deployed on adult female boreal caribou (Appendix 1, Figure 1). A more detailed background history of the program, the collars used, and the deployment procedures can be found in Larter and Allaire (2010). This report provides updated results and new information from another year of data.

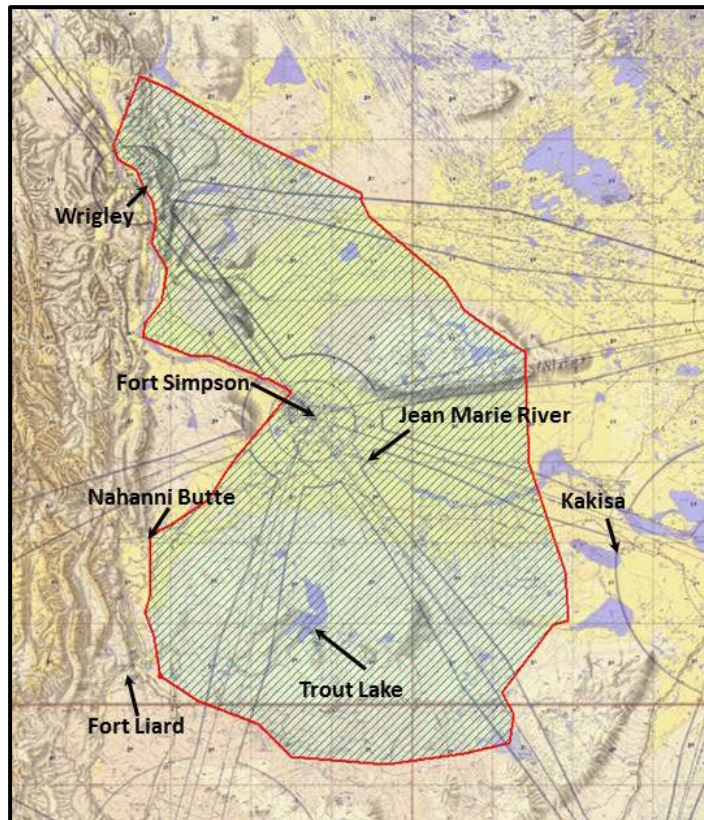


Figure 1. The Dehcho boreal caribou study area, based upon the locations of satellite/GPS collared adult female boreal caribou.

Home Ranges

We calculated the 100% minimum convex polygon (MCP) for all caribou with satellite (DS) or GPS collars that had provided locations for ≥ 12 months ($n=94$). The MCP is a line connecting all of the outside points where a specific caribou was located and represents the range used by that individual female caribou. For 57 of the 94 collared females we had locations for ≥ 24 months. We used all locations to calculate a cumulative range used by each individual female (Figure 2). The mean range size was 2919.40km^2 (range $260.6\text{--}14,419.9\text{km}^2$; median 2357.11km^2). Seven caribou have wandered into northeastern British Columbia (NEBC) and one into northwestern Alberta (Figure 2). Six caribou collared in a NEBC study have wandered to southeast of Trout Lake (Brad Culling pers. comm.). A caribou originally collared in the Cameron Hills (Johnson 2007), was re-captured near Trainor Lake and collared in February

2007; this collar released in June 2010. We calculated her home range based solely on locations after it was re-collared. A caribou collared north of Trout Lake in February 2010 has the largest range. She moved south of Trout Lake, east towards the Redknife River, and more recently west towards the Netla River and the Liard Highway. Home range sizes we report are similar to those reported for other study areas in the Northwest Territories including the Cameron Hills and Hay River Lowlands (Kelly and Cox 2011) and Gwich'in study areas (means of ca. 3000km^2 ; Nagy 2011).

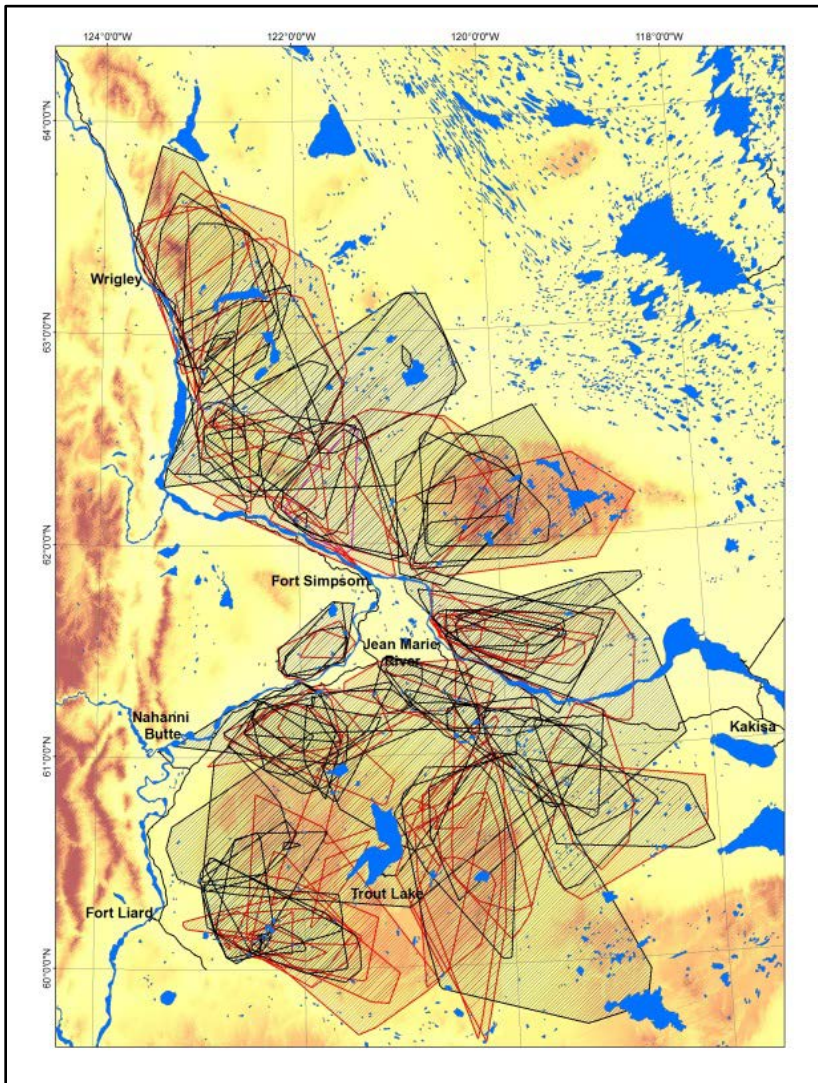


Figure 2. Cumulative ranges (100% MCP) of 94 collared female boreal caribou. Red, females with ARGOS DS collars, black, females with ARGOS GPS collars, and purple, females with Vectronic Iridium GPS collars.

Calving and Calving Events

Female boreal caribou spread out during the calving period, likely to avoid predation (Figure 3). Daily movement rates drop dramatically from ca. 6km/day two days prior to calving, to ca. 0.2km/day on the day of calving, and remain at ≤ 1 km/day for about a week post-calving (Nagy 2011). By analyzing the daily movement patterns of collared female caribou, we can determine when and where a female boreal caribou calved or not. This technique is a reliable non-invasive way to monitor calving (Nagy 2011; Demars et al. 2013). Based upon 251 calving events, the peak of calving in our study area is 16 May \pm 7 days. By using movement data, we no longer have to fly survey(s) during the calving period, thus reducing disturbance, and we get a more accurate assessment of the number of calves born because we do not risk surveying before calves are born or after newborn calves may have died.

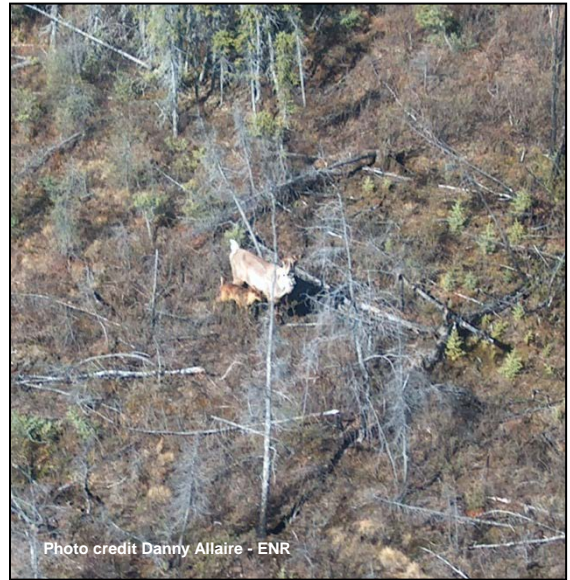


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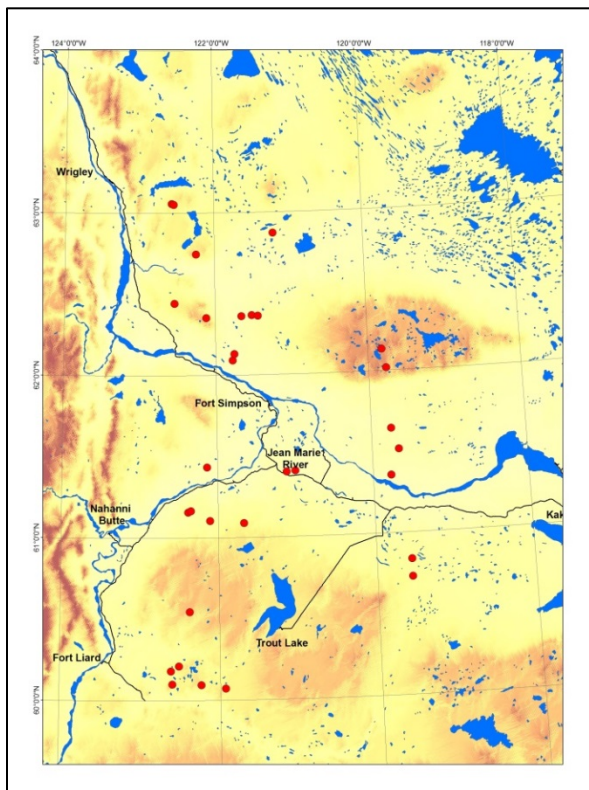


Figure 3. Calving locations of collared boreal caribou ● during 8-28 May, 2014. Note the wide dispersal throughout the range.

We determined all potential calving events, based upon movement data, for all collared caribou from 2004 to 2014 where there was location data from 1 May to 1 June. Of the 267 potential calving events, from 111 different females, there were only three instances where the presence or absence of a calf could not be determined by the analysis of movement data. There were 251 (95%) births and 13 instances when a caribou did not give birth. This finding is consistent with the high level of pregnancy of captured females based upon serum progesterone (93%) (Table 1). The high number of births and pregnancies from collared females implies that capture and wearing a collar has not prevented females from becoming pregnant and bearing calves.

Based upon analyzing daily movements, all 31 collared females calved in May 2014; two lost their calves shortly after giving birth. Calves were born from 8-28 May with 50% born by 16 May.

Timing and Fidelity of Calving

Individual females have remarkable consistency in calving dates. Two females had calves each year for five consecutive years. One of these females had all of her calves within a 3 day period. Of 21 females that had calves each year for four consecutive years, two had three of four calves born on the same date and another four had all of their calves born within a 4-day span each year. Since the 2007 calving season there have generally been a minimum of 20 calving events. In five of those seven years >5 caribou calves were born on the same day.

Whether or not collared caribou show fidelity to calving location is a topic of great debate. From this study we know that female caribou can live to 17 years, have a calf as early as two years and as late as 16 years, and have an average home range of ca. 3000km². We have locations of five consecutive calving events for 2 different females and four consecutive calving events for 21 different females. Although this is only up to one-third of a potential maximum 15 calving events in a lifetime, fidelity to an area for calving for a 3-4 year period may have implications related to disturbance mitigation. We measured the distance between each successive and all calving events for the 21 females that calved for four successive years. Some females calved in the same general area while others did not. Eleven females had successive calving locations <1300m distant; four females <300m distant. The average distance between four calving locations for one female was <500m. The average distance between four calving locations for four females was <6km. Contrastingly, the average distance between four calving locations was >30km for five other females.

Calf Survival

Calves were born over an extended period this year. Based upon movement data, we suspect that two females had calves that did not survive more than a week after birth. Calf survival this year (41%) was above average and substantially higher than in the past two years (see Figure 5 recruitment). Local harvesters commented that the 2014-15 winter was relatively mild, with temperatures rarely reaching -40°C, and minimal snow cover through February. The calf survival estimate included one collared female (#202) where technical difficulties with the collar precluded us from observing her during the classification survey, but analysis of movement data clearly indicated that she had calved in May and later lost her calf.

Boreal caribou, like other deer, have a high probability of conceiving after reaching maturity at 2-3 years old. Based upon the level of progesterone in blood serum from the collared females, 93% (126 of 136) were pregnant; six (4.0%) were not pregnant and the remaining four were borderline (Table 1).



Photo credit Danny Allaire - ENR

Table 1. The number of blood samples indicating pregnant, borderline, and not pregnant for collared boreal caribou females over time. Pregnancy determination based upon progesterone levels in blood serum. No collaring occurred in 2011.

	2004	2005	2006	2007	2008	2009	2010	2012	2013	2014	2015
Pregnant	10	12	10	16	7	7	17	14	10	12	11
Borderline	0	0	2	1	0	0	1	0	0	0	0
Not Pregnant	0	1	1	0	1	1	0	2	0	0	0
Total	10	13	13	17	8	8	18	16	10	12	11

February/March Classification Survey

This survey is conducted with a helicopter because we need to see all collared caribou and determine the sex/age class of all other caribou we see. Caribou are classified into calves (9-10 months old), yearlings (21-22 months old), females (≥ 32 months old), and males (≥ 32 months old), based upon antler size and shape, and animal size. There is the potential for some yearlings to be mistakenly classified as females or males ≥ 32 months old. We take photographs of caribou groups to verify classification and the presence of calves. We assume that calves of the year observed in this survey are recruited into the population. Other wildlife observed are also reported (Table 2). The survey was flown 2-4 March, 2015; 303 boreal caribou were classified over a flight line of ca. 2241km (Table 2). This is the longest flight line and greatest number of caribou observed of any classification survey since they began in 2006.



Location data showed that caribou did not become sedentary for extended periods of time during January and February as in most years. Local harvesters attributed this to the lack of snow which allowed both caribou and wolves to easily move around. Conditions for the survey were ideal, a large snowfall immediately prior to the survey and sunny conditions made fresh tracks highly visible. Caribou were in larger groups than in other years; we saw 11 groups of ≥ 10 caribou, with the largest group numbering 23.

Seventeen of 39 collared females (43.6%) were observed with calves. Based upon the total number of females and calves observed during the survey, we estimated 45.3 calves per 100 adult females from all 303 caribou observed, the highest ratio reported from all classification surveys (Table 2). A similar percentage of collared females (45%) with calves and ratio of calves per 100 adult females (38.0) was estimated from the 359 caribou observed in surveys conducted in the adjacent Hay River Lowlands – Pine Point – Mackenzie Bison Sanctuary areas (A. McLaren pers. comm.).

Table 2. The total number of caribou classified, and other wildlife observed, during sex/age classification surveys conducted in February-March, 2006-2015.

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
#of active collars	24	33	35	37	39 ¹	24 ²	30	35 ²	32 ²	39 ¹
Total # of caribou observed	170	216	241	291	235	161	197	282	196	303
# of females (≥32 mo.)	94	114	145	160	128	74	104	153	106	139
# of calves (8-10 mo.)	27	26	34	50	45	33	40	43	29	63
# of yearlings (20-22 mo.)	13	6	1	1	1	2	1	2	1	2
# of males (≥32 mo.)	35	70	61	80	61	50	52	84	59	99
# unknown sex/age caribou	1	0	0	0	0	2	0	0	1	0
# of calves per 100 females	28.7	22.8	23.4	31.3	35.2	44.6	38.5	28.1	27.4	45.3
# of moose observed	18	38	15	31	23	22	25	18	23	11
# of wolves observed	2	1	0	0	0	0	0	0	2	0
Flight line length (km)	1200	1600	1700	2000	1750	1655	1900	1865	1787	2242

¹ One collared animal located during the South Slave classification survey.

² Two collared animals located during the South Slave classification survey.

For a third year, a sex/age classification survey was conducted in the adjacent South Slave study areas following our survey. Caribou collared as part of the Dehcho and South Slave studies move back and forth across the arbitrary boundary between them. For survey efficiency we relocated one South Slave-collared caribou in our survey and the South Slave relocated two Dehcho-collared caribou in their survey (Table 2).

Released Collars and Caribou Deaths

Programmed release mechanisms have been standard on all collars deployed since March 2005. Release dates are usually from mid-June to mid-July, shortly after the calving period. The VHF is duty cycled so it continues to transmit for up to six months after release, providing a time window for retrieval. No collars released this year (no collars were deployed in 2011), but one collar was retrieved. To date, 11 of the 34 collars released have been retrieved. Collars often release in isolated locations, far from communities, and inaccessible by helicopter. Five downed collars, with active VHF transmissions, remain in the field. Retrieved collars are refurbished if possible.

Since the start of the study in March 2004, 57 collared caribou have died. Predation has been the main cause of death. There is strong evidence that 35 caribou (61%) were killed by wolves and one was killed by a black bear. Six (11%) caribou were harvested and, five died of causes likely associated with malnutrition. Six death sites we were unable to visit before the VHF ceased transmitting. VHF transmissions will continue through this summer (or longer) at four death sites from 2013. Generally, deaths occur between late-March and mid-July in any year (n=37; 65%).

Seismic lines allow wolves greater access to caribou habitat (Neufeld 2006). This access has resulted in more caribou mortalities in many areas (McLoughlin *et al.* 2003). In the Northwest Territories boreal caribou use areas ≤400m from anthropogenic linear features less than other areas, and travel faster when they encounter them (Nagy 2011). The remains of 14 of 35 (40%) caribou predated by wolves and the one caribou predated by a black bear were ≤400m from anthropogenic linear features.

We have age at death for 20 of the 57 caribou that have died during the study. Age at death is determined by counting stained cementum annuli on teeth (preferably the incisor), similar to counting the rings of a tree (Figure 4). June 1 has historically been used as the birth date for caribou (Matson 1981). Age at death for female boreal caribou in our study area ranged from 4 to 17 years (mean and median 10.5 years; Figure 4).

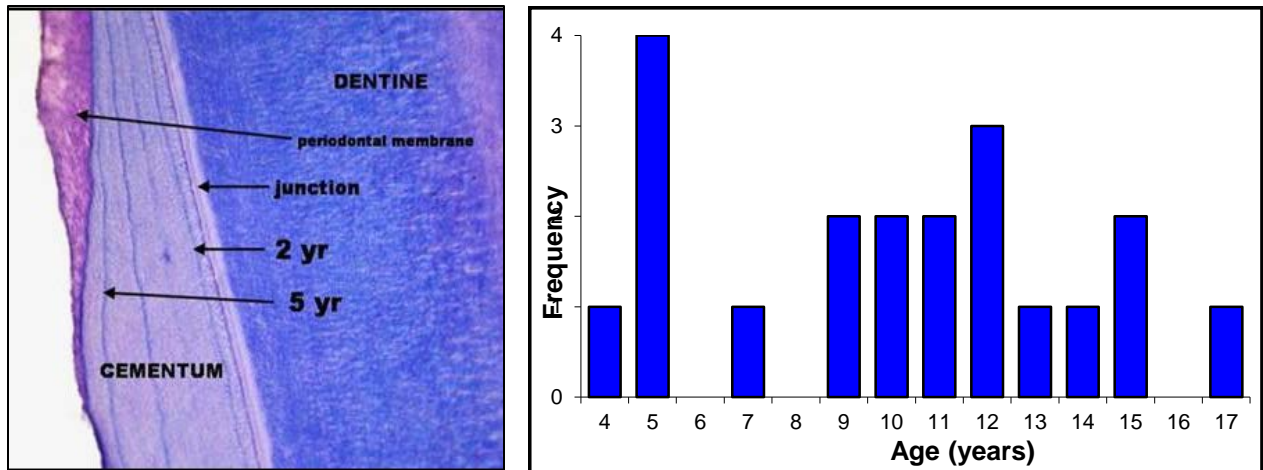


Figure 4. Left - The stained section of a tooth root. The dark blue lines are stained cementum; Right - The frequency of age at death for 20 female boreal caribou. Age was determined by counting cementum annuli.

Adult Female Survival

Annual adult female survival of collared females was determined following Kaplan and Meier (1958) and Pollock et al. (1989). Our best estimate (geometric mean) of adult female survival over the past ten years is 80%. We did not include the estimates from 2004-05 due to a small sample size (ten collars) and the restricted area of deployment. The annual estimate of survival for 2014-15 was 100%, as all females with active collars survived. It is unrealistic to believe no females in the Dehcho died over the past year but all 30 females we could monitor did survive. (Table 3; Figure 5). Estimated adult female survival rate we report is similar to that reported for the Cameron Hills (81% average from five years; Kelly and Cox 2011), but lower than that reported for the Hay River Lowlands (86% average from seven years; Kelly and Cox 2011), the Gwich'in ($\geq 95\%$ average from three years; Nagy 2011) areas of the Lower Mackenzie, and for most populations in Alberta (range 78-91%; Hervieux et al. 2013). Low adult female survival reduces the population rate of increase.

Nagy (2011) found that boreal caribou populations were more viable in areas with fewer seismic lines, and where there were larger patches of secure unburned habitat. There is some evidence supporting this from the Dehcho, as female survival is somewhat higher for females collared in the north (82%) versus the south (78%) Dehcho. There are fewer seismic lines, and more, larger patches of unburned habitat in the north versus the south Dehcho.

Table 3. The estimated annual population rate of increase (λ) for 10 successive years. Rates for the south Dehcho are calculated for caribou collared south of the Mackenzie River, rates for the north Dehcho for caribou collared north of the Mackenzie River.

South Dehcho

Year	Female Survival Rate	Calf:100 Females	Rate of Increase (λ)
2005-2006	0.6250	25.87	0.7179
2006-2007	0.6429	26.16	0.7396
2007-2008	0.9375	25.58	1.0750
2008-2009	0.7391	44.44	0.9503
2009-2010	0.8500	46.67	1.1087
2010-2011	0.7143	55.55	0.9890
2011-2012	0.8750	24.43	0.9968
2012-2013	0.9231	55.55	1.2781
2013-2014	0.6429	20.00	0.7143
2014-2015	1.0000	42.11	1.2667

North Dehcho

Year	Female Survival Rate	Calf:100 Females	Rate of Increase (λ)
2005-2006	0.6000	33.18	0.7193
2006-2007	0.7500	19.99	0.8333
2007-2008	0.8235	19.37	0.9118
2008-2009	1.0000	33.33	1.2000
2009-2010	0.8235	66.67	1.2353
2010-2011	1.0000	73.33	1.5789
2011-2012	0.7692	62.50	1.1189
2012-2013	0.8462	5.88	0.8718
2013-2014	0.7143	13.33	0.7653
2014-2015	1.0000	40.00	1.2500

Dehcho Combined

Year	Female Survival Rate	Calf:100 Females	Rate of Increase (λ)
2005-2006	0.6191	28.81	0.7232
2006-2007	0.6923	22.86	0.7817
2007-2008	0.8788	23.35	0.9949
2008-2009	0.8000	36.11	0.9763
2009-2010	0.8378	52.38	1.1351
2010-2011	0.8571	66.67	1.2857
2011-2012	0.8095	43.33	1.0334
2012-2013	0.8846	31.43	1.0496
2013-2014	0.6786	16.67	0.7403
2014-2015	1.0000	41.03	1.2581

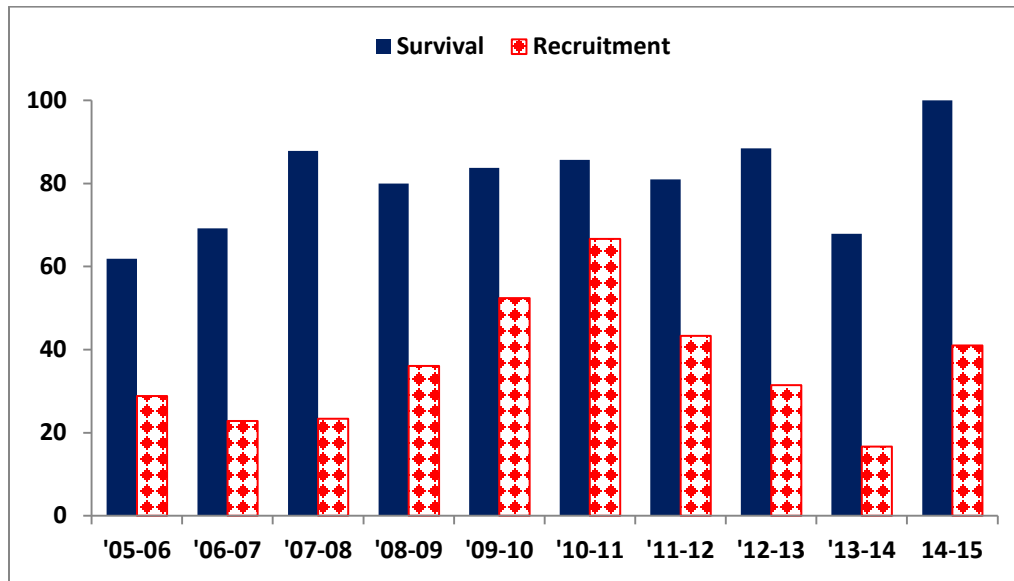


Figure 5. Adult female survival (%) and calves:100 adult females in March (recruitment) for the Dehcho study area from 2005-06 to 2014-15, based on radio-collared female caribou.

Estimated Population Rate of Increase

We estimated the population rate of increase (λ) measured from April 1 to March 31 for 10 successive years for all caribou collared throughout the entire study area. We made separate estimates for caribou collared north and south of the Mackenzie River (Table 3). We based the λ estimate on annual female survival and the ratio of calves per 100 adult females (calf:cow) reported in March (Hatter and Bergerud 1991). Of note is that prior to 2009, the March ratio of calf:cow was estimated from all animals observed during the classification surveys. From 2009 to present, we had a larger sample size of collared and therefore known females. Because it is collared females that are used to estimate adult survival, and adult females are harvested, we estimated calf:cow solely from the collared females. We feel this is the most appropriate estimation of recruitment assuming that the collared females are a representative sample of all females. A rate of increase, or λ , of one indicates population stability, <1 indicates population decrease, and >1 indicates population increase. Small sample sizes affect the confidence of the estimate.

Even with high estimated annual rates of increase from 2008-09 to 2012-13 and in 2014-15, the average estimated rate of increase over the past 10 years still remains <1 ($\lambda = 0.98$). If we had started with a population of 1000 adult female caribou in 2004, and used our estimated annual population rates of increase there would be 816 adult females today (Figure 6). Figure 6 also demonstrates how a single year with a combination of both low adult female survival and low recruitment, or conversely, high adult female survival and high recruitment, can have a major impact on annual population rates of increase. For 2014-15, the relatively high calf recruitment and high adult survival, resulted in an estimated annual λ substantially >1 (1.26; Table 3).

The population rate of increase we report ($\lambda = 0.98$ mean over 10 years) is similar to the Hay River Lowlands (HRL; $\lambda = 0.96$ mean over seven years) but greater than the

Cameron Hills (CH; $\lambda = 0.87$ mean over five years) study areas, (Kelly and Cox 2011) and greater than most boreal caribou populations in Alberta (Hervieux et al. 2013).

Adult female survival is higher in HRL, CH, and most populations in Alberta, but calf recruitment in these areas is generally much lower than in the Dehcho. Low calf recruitment appears to be reducing λ in HRL, CH, and in Alberta boreal caribou populations regardless, of >80% adult female survival. The population rate of increase reported for the Gwich'in areas in the Lower Mackenzie over two to three years was $\lambda = 1.08$ to 1.20 (Nagy 2011); here both female survival and late winter calf:cow are higher.

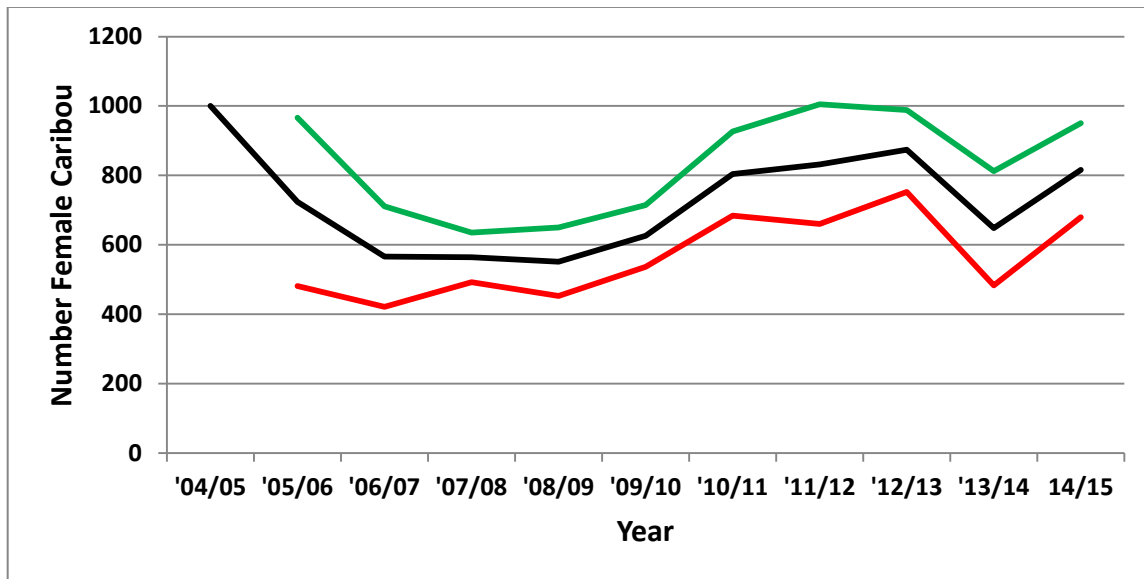


Figure 6. The estimated number of female caribou in each year of the study starting with a population of 1000 and using the annual rates of increase (λ) calculated for the 10 successive years. The green and red lines represent the upper and lower 95% confidence intervals.

Disease and Parasites

Baseline data collected from the Dehcho, and South Slave study areas from 2003-2007 indicated that boreal caribou were relatively disease and parasite free. Low numbers of parasites and antibodies to disease were reported; none were a cause for concern. More details can be found in Johnson *et al.* (2010). However, recent studies of boreal caribou populations in northeastern British Columbia have reported the presence of a pathogenic bacterium *Erysipelothrix rhusiopathiae*, which has the potential to adversely affect survival and reproduction (Schwantje *et al.* 2014). In order to determine if *E. rhusiopathiae* is present in boreal caribou in the Dehcho, ENR provided serum samples from 56 caribou for testing. We are still awaiting the results of the full analysis, but evidence of exposure to the bacterium has been found in at least one of the samples (Bryan Macbeth pers. comm.). Fecal samples from 11 collared females in February 2015 showed a low incidence (3 of 11) of common parasites. Two female caribou captured in the Hay River Lowlands February 2015 had winter tick (*Dermacentor albipictus*) present. This brings the

incidence to three in the HRL over the past 2 years. Winter ticks have yet to be documented for caribou in the Dehcho study, but have been documented for caribou in the South Slave and North Slave regions of the Northwest Territories.

Present and Future of the Study

We continue to work co-operatively with other researchers conducting boreal caribou studies. Nic Larter is a member of the Dehcho Boreal Caribou Working Group. Data from this study have been incorporated into a territorial-wide analysis. Data from this study are being used in a Master's program at the University of Alberta, which should be completed next year, and are being used for the development of boreal caribou range plans. During capture operations this year we measured animal fatness with a portable ultrasound unit. We are awaiting the ultrasound results to determine if this is a measure we will continue to collect this measure in future capture operations. Continued monitoring of the Dehcho boreal caribou program using collars has been endorsed by the Dehcho Boreal Caribou Working Group, and delegates attending the 7th biannual regional wildlife workshop, Fort Simpson, October 2014.

We continue to make every attempt to retrieve collars so they can be refurbished for re-deployment. We hope to visit more mortality sites this summer. We deploy only GPS collars, the majority Telonics ARGOS with a few GPS-PLUS from Vectronics Aerospace. There continues to be support from our First Nations partners for annual deployment of collars to maintain a minimum of 30 active collars on females throughout the study area during the calving period.

Deliverables

ENR provides this annual progress report to its First Nations partners and to the Western Northwest Territories Biophysical Study. The report is posted on the ENR website. ENR provides quarterly maps to its First Nations partners. The maps show the ranges used by individual collared female caribou over the previous three months.

Presentations were made to the Dehcho Boreal Caribou Working Group. A poster presentation of this program was made at the 15th North American Caribou Workshop in Whitehorse, 12-15 May, 2014. Program results were presented at the 7th biannual Dehcho regional wildlife workshop, in Fort Simpson, 21-22 October, 2014.

Acknowledgements

We thank our First Nations partners for their continued and ongoing support of this study: Sambaa K'e Dene Band (Trout Lake), Fort Simpson Métis Local, The Denendeh Harvesters Committee of Lı́ıdlı́ Kue First Nation (Fort Simpson), Jean Marie River First Nation, Pehdzeh Ki First Nation (Wrigley), Nahanni Butte Dene Band, Acho Dene Koe Band (Fort Liard), and Ka'a'gee Tu First Nation (Kakisa).

Ashley McLaren and Karl Cox provided comparative data from the South Slave region. Brad and Diane Culling provided comparative data from northeastern British Columbia. Forest Management, ENR, Fort Simpson, provided access to helicopter fuel for collar deployment and the March survey. CLS America and Vectronics Aerospace provide satellite location data. Telonics and Vectronics Aerospace

provided GPS collars. Matson's Lab aged caribou teeth. Great Slave Helicopters provided aircraft and skillful piloting for the March classification survey. Diversified Environmental deployed collars. The Dehcho Land Use Planning Board provided digital linear feature data. Funding for the past year came from Wildlife Division, ENR, and the Western Northwest Territories Biophysical Study (GNWT).

Personal Communications

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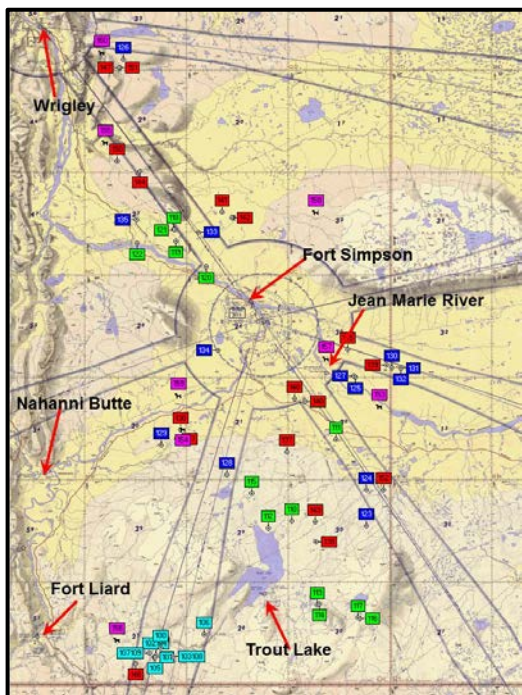


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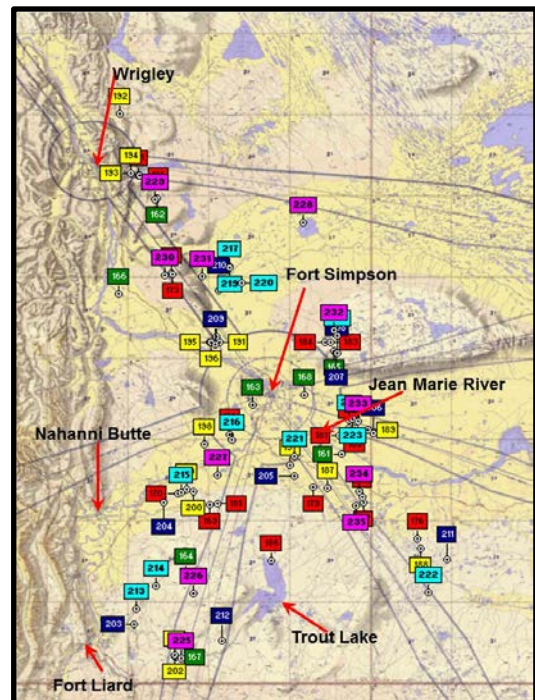
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Appendix 1. The number and type of collars deployed on adult females throughout the course of the study (Table) and deployment locations for each year (Figures).

Date caribou collared	Satellite (ST-20-3610 or TAW-4610H)	GPS (TGW-3680 or TGW-4680)	VHF (Mod 600)	Vectronic GPS-PLUS 2	Totals
March 2004	10				10
March 2005	13				13
January 2006	9		4		13
January 2007	8	9			17
February 2008	4	4			8
February 2009	1	7			8
February 2010	9	9			18
February 2012	2	14			16
February 2013	1	8		1	10
February 2014		12			12
February 2015		9		2	11
TOTAL	57	72	4	3	136



Locations of 61 female boreal caribou collared in 2004, 2005, 2006, 2007, 2008 (see colour for locations).



Locations of 75 female boreal caribou collared in 2009, 2010, 2012, 2013, 2014, 2015 (see colour for locations).

Appendix 2. Collar retrievals during the past year.

- 9 October, helicopter south of the Mackenzie Highway. South Slave staff retrieved collar from caribou #205 carcass south of Ried Lake; suspected malnutrition-related death 30 June, 2013.

Appendix 3. A timeline of each collared caribou since 2004. The collar type (GPS, Sat = Satellite, VHF) is noted as well as whether most recently only VHF signals are being received. **Black** font indicates currently active collars on caribou. **Blue** font indicates released caribou collars. **Green** font indicates unknown status/no release mechanisms on caribou collars. **Red** font indicates collars of known dead caribou. **Yellow** font indicates collars of known dead caribou where death was related to malnutrition. **Purple** indicates collars of known harvested caribou.

Caribou #235 (GPS-PLUS 2)

- 20 Feb/15 collared
- 4 Mar/15 seen in group of 6 without calf

Caribou #234 (GPS)

- 20 Feb/15 collared
- 4 Mar/15 seen in group of 3 with calf

Caribou #233 (GPS-PLUS 2)

- 20 Feb/15 collared
- 3 Mar/15 seen in group of 8 with #218, #223 without calf

Caribou #232 (GPS)

- 19 Feb/15 collared
- 3 Mar/15 seen in group of 3 without calf

Caribou #231 (GPS)

- 19 Feb/15 collared
- 2 Mar/15 seen in group of 6 with calf

Caribou #230 (GPS)

- 19 Feb/15 collared
- 2 Mar/15 seen in group of 13 without calf

Caribou #229 (GPS)

- 19 Feb/15 collared
- 2 Mar/15 seen in group of 10 without calf

Caribou #228 (GPS)

- 19 Feb/15 collared
- 2 Mar/15 seen in group of 15 without calf

Caribou #227 (GPS)

- 18 Feb/15 collared
- 3 Mar/15 seen in group of 2 with calf

Caribou #226 (GPS)

- 18 Feb/15 collared
- 3 Mar/15 seen in group of 6 with calf

Caribou #225 (GPS)

- 18 Feb/15 collared
- 3 Mar/15 seen in group of 10 with calf

Caribou #224 (GPS, no visual)

- 10 Feb/14 collared
- Unable to relocate 3 Mar/14, GPS didn't initialize properly during deployment
- Received transmissions in April
- Unable to relocate 3 Mar/15, no VHF signal at waypoint

Caribou #223 (GPS)

- 10 Feb/14 collared
- 5 Mar/14 seen in group of 2 with #206 without calf
- 3 Mar/15 seen in group of 8 with #218, #233 without calf

Caribou #222 (GPS)

- 8 Feb/14 collared
- 5 Mar/14 seen in group of 3 without calf
- 4 Mar/15 seen in group of 8 without calf

Caribou #221 (GPS)

- 8 Feb/14 collared

- 4 Mar/14 seen in group of 2 without calf
- 3 Mar/15 seen in group of 4 without calf

Caribou #220 (GPS)

- 8 Feb/14 collared
- 3 Mar/14 seen in group of 3 without calf
- 2 Mar/15 seen in group of 7 with calf

Caribou #219 (GPS)

- 8 Feb/14 collared
- 3 Mar/14 seen in group of 5 without calf
- 2 Mar/15 seen in group of 5 with calf

Caribou #218 (GPS)

- 7 Feb/14 collared
- 5 Mar/14 seen in group of 5 without calf
- 3 Mar/15 seen in group of 8 with #223, #233 without calf

Caribou #217 (GPS)

- 7 Feb/14 collared
- 3 Mar/14 seen in group of 4 without calf
- 2 Mar/15 seen in group of 8 without calf

Caribou #216 (GPS)

- 6 Feb/14 collared
- 3 Mar/14 seen in group of 12 without calf
- 3 Mar/15 seen in group of 12 with calf

Caribou #215 (GPS)

- 6 Feb/14 collared
- 4 Mar/14 seen in group of 9 with #204 without calf
- 3 Mar/15 seen in group of 3 with #204 without calf

Caribou #214 (GPS)

- 6 Feb/14 collared
- 4 Mar/14 seen in group of 6 with #202 without calf
- 3 Mar/15 seen in group of 3 without calf

Caribou #213 (GPS)

- 6 Feb/14 collared
- 4 Mar/14 seen in group of 3 without calf
- 3 Mar/15 seen in group of 10 with #212 without calf

Caribou #212 (GPS)

- 27 Feb/13 collared
- 5 Mar/13 seen in group of 7 with calf
- 4 Mar/14 seen in group of 5 without calf
- 3 Mar/15 seen in group of 10 with #213 without calf

Caribou #211 (Sat)

- 14 Feb/13 collared
- 6 Mar/13 seen in group of 5 with calf
- 5 Mar/14 seen in group of 6 without calf
- 4 Mar/15 seen in group of 12 without calf

Caribou #210 (GPS)

- 12 Feb/13 collared
- 4 Mar/13 seen in group of 16 without calf
- 3 Mar/14 seen alone without calf
- 2 Mar/15 seen alone without calf

Caribou #209 (GPS-PLUS 2)

- 12 Feb/13 collared
- 4 Mar/13 seen in group of 6 with #196 without calf
- 3 Mar/14 seen in group of 2 with calf

- 4 Mar/15 seen in group of 23 without calf

Caribou #208 (GPS, died, non-predation)

- 12 Feb/13 collared
- 5 Mar/13 seen in group of 8 without calf
- Died 30 June/13, death related to malnutrition
- 11 Sept/13 collar retrieved

Caribou #207 (GPS, died)

- 12 Feb/13 collared
- 4 Mar/13 seen alone without calf
- Died 15 Nov/13

Caribou #206 (GPS)

- 12 Feb/13 collared
- 5 Mar/13 seen in group of 4 without calf
- 5 Mar/14 seen in group of 2 with #223 without calf
- 3 Mar/15 seen in group of 2 with calf

Caribou #205 (GPS, died, non-predation)

- 11 Feb/13 collared
- 5 Mar/13 seen in group of 5 without calf
- Died 30 June/13
- 9 Oct/14 collar retrieval

Caribou #204 (GPS)

- 11 Feb/13 collared
- 5 Mar/13 seen in group of 10 with #169, #170 with calf
- 4 Mar/14 seen in group of 9 with #215 with calf
- 3 Mar/15 seen in group of 3 with #215 with calf

Caribou #203 (GPS)

- 11 Feb/13 collared
- 5 Mar/13 seen in group of 7 without calf
- 4 Mar/14 seen in group of 7 with calf
- 3 Mar/15 seen in group of 3 with calf

Caribou #202 (GPS, no visual)

- 14 Mar/12 collared
- Did not relocate in 2012, was collared after survey
- 5 Mar/13 seen in group of 6 without calf
- 4 Mar/14 seen in group of 6 with #214 without calf
- Unable to relocate 3 Mar/15, waypoint was older, no VHF signal

Caribou #201 (GPS, no visual)

- 14 Mar/12 collared
- Did not relocate in 2012, was collared after survey
- 5 Mar/13 seen in group of 11 without calf
- 4 Mar/14 seen in group of 6 with calf
- Unable to relocate 3 Mar/15, no GPS locations during survey
- Active GPS in April

Caribou #200 (GPS)

- 17 Feb/12 collared
- 2 Mar/12 seen with #199 but without calf
- 5 Mar/13 seen in group of 4 with calf
- 4 Mar/14 seen alone without calf
- 3 Mar/15 seen in group of 2 with calf

Caribou #199 (Sat)

- 17 Feb/12 collared
- 2 Mar/12 seen with #200 but without calf

- 5 Mar/13 seen in group of 13 without calf
- 4 Mar/14 seen in group of 4 without calf
- 3 Mar/15 seen in group of 5 without calf

Caribou #198 (GPS, died)

- 17 Feb/12 collared
- 2 Mar/12 seen in group of 4 without calf
- 5 Mar/13 seen in group of 13 with calf
- Died 14 July/13
- 21 Oct/13 collar retrieved

Caribou #197 (GPS)

- 17 Feb/12 collared
- 1 Mar/12 seen in group of 6 without calf
- 5 Mar/13 seen in group of 2 with calf
- 4 Mar/14 seen alone without calf
- 3 Mar/15 seen alone without calf

Caribou #196 (GPS)

- 16 Feb/12 collared
- 29 Feb/12 seen in group of 4 with calf
- 4 Mar/13 seen in group of 6 with #209 without calf
- 3 Mar/14 seen in group of 2 with calf
- 2 Mar/15 seen in group of 7 with calf

Caribou #195 (GPS, unknown status)

- 16 Feb/12 collared
- 29 Feb/12 seen in group of 7 without calf
- 4 Mar/13 seen in group of 4 without calf
- 3 Mar/14 seen in group of 8 without calf
- No GPS locations last 6 months

Caribou #194 (Sat, died)

- 16 Feb/12 collared
- 29 Feb/12 seen in group of 4 without calf
- 4 Mar/13 seen in group of 3 without calf
- Died 20-22 Dec/13

Caribou #193 (GPS)

- 16 Feb/12 collared
- 29 Feb/12 seen in group of 7 with calf
- 4 Mar/13 seen in group of 4 without calf
- 3 Mar/14 seen in group of 5 without calf
- 2 Mar/15 seen in group of 5 with calf

Caribou #192 (GPS, died)

- 16 Feb/12 collared
- 29 Feb/12 seen alone
- 4 Mar/13 seen in group of 5 without calf
- Died 11 Jan/14
- 14 Jan/14 collar retrieved by trapper

Caribou #191 (GPS)

- 15 Feb/12 collared
- 29 Feb/12 seen in group of 4 with calf
- 4 Mar/13 seen in group of 5 without calf
- 3 Mar/14 seen in group of 7 without calf
- 2 Mar/15 seen in group of 19 without calf

Caribou #190 (GPS, died)

- 15 Feb/12 collared
- 29 Feb/12 seen in group of 3 with calf
- Died 25 Mar/12
- 19 June/13 collar retrieved

Caribou #189 (GPS, VHF only)

- 15 Feb/12 collared

- 1 Mar/12 could not relocate in area
- 15 Mar/12 relocated in fixed-wing weak VHF signal
- 21 June/12 no satellite locations

Caribou #188 (GPS, died, non-predation)

- 15 Feb/12 collared
- 1 Mar/12 seen in group of 3 without calf
- 6 Mar/13 seen in group of 3 with #151.790 without calf
- Died 27 June/13, death related to malnutrition
- 11 Sept/13 collar retrieved

Caribou #187 (GPS, died)

- 15 Feb/12 collared
- 1 Mar/12 seen in group of 4 without calf
- 6 Mar/13 seen in group of 4 with #151.980 without calf
- Died 10 July/13

Caribou #186 (GPS, released)

- 27 Feb/10 collared
- 2 Mar/10 seen with calf
- 2 Mar/11 seen in group of 5 with calf
- 2 Mar/12 seen in group of 4 with calf
- 5 Mar/13 seen in group of 13 without calf
- 15 June/13 released
- 11 Sept/13 collar retrieved

Caribou #185 (GPS, died)

- 27 Feb/10 collared
- 2 Mar/10 seen alone, collar is resetting
- 3 Aug/10 located, no visual
- 2 Mar/11 seen in group of 4 with calf
- Died 22 Apr/11
- 24 Aug/12 unsuccessful retrieval attempt

- 11 Sept/13 collar retrieved

Caribou #184 (GPS, released)

- 26 Feb/10 collared
- 1 Mar/10 seen in group of 6 with calf
- 1 Mar/11 seen in group of 7 with calf
- 1 Mar/12 seen in group of 4 with calf
- 4 Mar/13 seen in group of 4 without calf
- 15 June/13 released

Caribou #183 (Sat)

- 26 Feb/10 collared
- 1 Mar/10 seen in group of 6 without calf
- 1 Mar/11 seen in group of 13 without calf
- 29 Feb/12 seen in group of 2 without calf
- 4 Mar/13 seen in group of 5 without calf
- 3 Mar/14 seen alone without calf
- 3 Mar/15 seen in group of 9 without calf

Caribou #182 (GPS, died)

- 26 Feb/10 collared
- 1 Mar/10 seen with cow
- 1 Mar/11 seen in group of 7 with calf
- 1 Mar/12 seen in group of 3 with calf
- Died 5 Aug/12
- 2 Oct/12 collar retrieved

Caribou #181 (Sat, died)

- 26 Feb/10 collared
- 1 Mar/10 seen in group of 3 without calf
- 1 Mar/11 seen in group of 4 with calf
- Died 25 Apr/11

Caribou #180 (Sat, died)

- 26 Feb/10 collared
- 1 Mar/10 seen in group of 8 with calf
- 1 Mar/11 seen in group of 5 with calf
- 29 Feb/12 seen in group of 3 without calf
- Died 12 July/12

Caribou #179 (GPS, died)

- 25 Feb/10 collared
- 2 Mar/10 seen in group of 11 with calf
- Died 25 Nov/10
- 22 Feb/11 collar retrieved on Trout Lake

Caribou #178 (Sat, died)

- 25 Feb/10 collared
- 1 Mar/10 seen in group of 3 with calf
- Died 8 Oct/10
- 1 Mar/11 no signal at location

Caribou #177 (GPS, released)

- 25 Feb/10 collared
- 2 Mar/10 seen alone
- 25 Feb/11 seen with calf
- 1 Mar/12 seen in group of 9 without calf
- 6 Mar/13 seen in group of 2 with calf
- 15 June/13 released
- 11 Sept/13 collar retrieved

Caribou #176 (Sat, died)

- 25 Feb/10 collared
- 2 Mar/10 seen in group of 3 without calf
- 25 Feb/11 seen in group of 7 without calf
- 1 Mar/12 seen with calf
- Died 13 Aug/12
- 2 Oct/12 collar retrieved

Caribou #175 (Sat, died)

- 25 Feb/10 collared

- 2 Mar/10 seen in group of 5 without calf
- Died 6 Sep/10
- 23 Nov/10 no caribou at signal location - inaccessible

Caribou #174 (GPS, released)

- 24 Feb/10 collared
- 1 Mar/10 seen with cow
- 1 Mar/11 seen in group of 5 with calf
- 29 Feb/12 seen in group of 8 with calf
- 4 Mar/13 seen in group of 11 without calf
- 15 June/13 released
- 11 Sept/13 collar retrieved

Caribou #173 (GPS, died)

- 24 Feb/10 collared
- 1 Mar/10 seen in group of 8 with calf
- 1 Mar/11 seen in group of 5 without calf
- Died 16 Apr/11
- 24 Apr/12 collar retrieved

Caribou #172 (Sat)

- 24 Feb/10 collared
- 1 Mar/10 seen with calf
- 1 Mar/11 seen in group of 3 with calf
- 29 Feb/12 seen in group of 4 without calf
- 4 Mar/13 seen in group of 15 without calf
- 3 Mar/14 seen in group of 2 without calf
- 2 Mar/15 seen in group of 5 with calf

Caribou #171 (Sat)

- 24 Feb/10 collared
- 1 Mar/10 seen in group of 13 with #160 with calf
- 1 Mar/11 seen in group of 7 with calf

- 29 Feb/12 seen in group of 5 with calf
- 4 Mar/13 seen in group of 3 with calf
- 3 Mar/14 seen in group of 4 without calf
- 2 Mar/15 seen in group of 5 with calf

Caribou #170 (Sat, died)

- 23 Feb/10 collared
- 2 Mar/10 seen in group of 7 with #137 with calf
- 2 Mar/11 seen in group of 7 without calf
- 2 Mar/12 seen in group of 4 with #169 but without calf
- 5 Mar/13 seen in group of 10 with #169, #204 with calf
- 5 Mar/13 seen in group of 10 with #169, #204 with calf
- Died 29-31 Oct/13

Caribou #169 (GPS, released)

- 23 Feb/10 collared
- 2 Mar/10 seen alone
- 2 Mar/11 seen with calf
- 2 Mar/12 seen in group of 4 with #170 but without calf
- 5 Mar/13 seen in group of 10 with #170, #204 with calf
- 15 June/13 released

Caribou #168 (GPS, released)

- 19 Feb/09 collared
- 2 Mar/09 seen in group of 5 without calf
- 1 Mar/10 seen in group of 4 with calf
- 1 Mar/11 seen in group of 9 with calf
- 1 Jan/12 ceased satellite transmissions
- 29 Feb/12 seen in group of 4 with calf
- 10 June/12 released

Caribou #167 (GPS, died)

- 18 Feb/09 collared
- 3 Mar/09 seen in group of 7 without calf
- Died 22 Mar/09
- 5 Jun/09 collar retrieved

Caribou #166 (GPS, died)

- 19 Feb/09 collared
- 2 Mar/09 seen in group of 10 with #155 but without calf
- 1 Mar/10 seen in group of 4 without calf
- 1 Mar/11 seen alone
- Died 30 Oct/11

Caribou #165 (GPS, released)

- 19 Feb/09 collared with calf
- 2 Mar/09 seen in group of 14 with calf
- 1 Mar/10 seen in group of 10 with calf
- 1 Mar/11 seen in group of 9 with calf
- 29 Feb/12 seen with calf
- 10 June/12 released

Caribou #164 (GPS, released)

- 18 Feb/09 collared
- 3 Mar/09 seen in group of 4 without calf
- 2 Mar/10 seen in group of 3 without calf
- 2 Mar/11 seen with calf
- 2 Mar/12 seen in group of 6 without calf
- 10 June/12 released

Caribou #163 (GPS, died)

- 19 Feb/09 collared
- 3 Mar/09 seen in group of 9 without calf
- 1 Mar/10 seen with calf
- Died 15 April/10
- 14 Jun/10 signal from under ice on Liard River
- 3 Aug/10 collar unfrozen, ice has melted

- 5 Aug/10 collar retrieved

Caribou #162 (GPS, harvested)

- 19 Feb/09 collared
- 2 Mar/09 seen in group of 11 without calf
- 3 May/09 shot by harvester
- 24 May/09 collar retrieved

Caribou #161 (Sat, released)

- 18 Feb/09 collared
- 2 Mar/09 seen in group of 5 without calf
- 2 Mar/10 seen with cow
- 12 Nov/10 satellite transmission ceased
- 2 Jun/11 released

Caribou #160 (Sat, released)

- 17 Feb/08 collared with calf
- 3 Mar/08 seen in group of 5 with calf
- 28 May/08 no visual
- 2 Mar/09 seen in group of 14 without calf
- 1 Mar/10 seen in group of 13 with #171 and with calf
- 1 Mar/11 seen alone
- 29 Feb/12 seen in group of 6 with calf
- 4 Mar/13 seen in group of 4 without calf
- 7 Mar/13 released

Caribou #159 (Sat, released)

- 16 Feb/08 collared
- 4 Mar/08 seen in group of 24 without calf
- 21 Apr/08 located with 134
- 28 May/08 seen without calf
- 3 Mar/09 seen in group of 8 without calf
- 1 Mar/10 seen in group of 10 without calf
- 2 Mar/11 seen in group of 16 with #134 but without calf
- 2 Mar/12 seen in group of 7 without calf

- 5 Mar/13 seen in group of 8 with calf
- 7 Mar/13 released

Caribou #158 (Sat, died)

- 17 Feb/08 collared
- 3 Mar/08 seen with cow
- 28 May/08 seen with calf
- 2 Mar/09 seen in group of 6 with calf
- Died 2 June/09, couldn't find death date, was underwater
- 2 Jun/09 collar retrieved

Caribou #157 (Sat, released)

- 17 Feb/08 collared
- 3 Mar/08 seen in group of 5 without calf
- 23 May/08 lost satellite signal
- 29 May/08 seen in group of 3 with calf
- 2 Mar/09 seen in group of 5 with calf
- 1 Mar/10 seen in group of 5 without calf
- 30 Sep/10 collar released

Caribou #156 (GPS, died)

- 18 Feb/08 collared with calf
- 4 Mar/08 seen in group of 4 with calf
- 29 May/08 seen without calf
- 3 Mar/09 seen in group of 14 with calf
- Died 14 Apr/09
- 13 Jul/09 collar retrieved

Caribou #155 (GPS, harvested)

- 17 Feb/08 collared
- 3 Mar/08 seen in group of 6 without calf
- 28 May/08 seen with calf
- 2 Mar/09 seen in group of 10 with #166 but without calf
- Died 29 Jul/09 shot by harvester
- 21 Sep/09 collar retrieved

Caribou #154 (GPS, released)

- 17 Feb/08 collared
- 5 Mar/08 seen in group of 19 without calf
- 29 May/08 seen with calf
- 4 Mar/09 seen in group of 5 with calf
- 2 Mar/10 seen in group of 7 with calf
- 2 Mar/11 seen with calf
- 1 Jul/11 collar released

Caribou #153 (GPS, released)

- 16 Feb/08 collared with calf
- 4 Mar/08 seen in group of 4 without calf
- 29 May/08 seen without calf
- 2 Mar/09 seen in group of 5 with calf
- 2 Mar/10 seen in group of 4 with calf
- 2 Mar/11 seen in group of 6 without calf
- 1 Jul/11 collar released

Caribou #152 (GPS, died)

- 23 Jan/07 collared
- 27 Feb/07 seen in group of 6 without calf
- 30 May/07 seen with calf
- 4 Mar/08 seen with cow
- 30 May/08 seen with calf
- 3 Mar/09 seen in group of 10 without calf
- 2 Mar/10 seen in group of 9 with calf
- Died 25 Mar/10
- 21 May/10 tried to relocate by helicopter, too much water
- 22 Feb/11 ground relocation attempt but no signal
- 28 Aug/12 collar retrieved, VHF stopped working

Caribou #151 (GPS, harvested)

- 22 Jan/07 collared
- 26 Feb/07 seen in group of 6 without calf

- 29 May/07 seen with calf
- 3 Mar/08 seen in group of 8 without calf
- 28 May/08 seen with calf
- Died 9 Aug/08 by Fish Lake likely shot by harvester
- 2 Jun/09 collar retrieved

Caribou #150 (GPS, harvested)

- 22 Jan/07 collared
- 26 Feb/07 seen in group of 2 without calf
- 29 May/07 seen with calf
- 3 Mar/08 seen with cow
- Died 15 May/08 likely shot by harvester
- 17 Jun/08 collar retrieved

Caribou #149 (GPS, released)

- 24 Feb/07 collared
- 27 Feb/07 seen in group of 7 without calf
- 30 May/07 seen with calf
- 4 Mar/08 seen in group of 10 without calf
- 29 May/08 seen with calf
- 3 Mar/09 seen in group of 9 with calf
- 3 Mar/10 seen in group of 12 without calf
- 2 Jun/10 collar released
- 8 Oct/10 collar retrieved

Caribou #148 (Sat, released)

- 24 Jan/07 collared
- 26 Feb/07 seen in group of 12 without calf
- 30 May/07 seen without calf
- 4 Mar/08 seen with calf
- 29 May/08 seen with calf
- 2 Mar/09 seen in group of 3 without calf
- 30 Sep/09 collar released
- 2 Mar/10 collar located from air in inaccessible area

Caribou #147 (Sat, died)

- 22 Jan/07 collared

- 26 Feb/07 seen in group of 8 without calf
- 30 May/07 seen without calf
- 3 Mar/08 seen in group of 9 without calf
- 28 May/08 seen with calf
- Died 17 July/08
- 17 Aug/09 collar retrieved

Caribou #146 (Sat, released)

- 21 Jan/07 collared
- 27 Feb/07 see in group of 11 with calf
- 30 May/07 seen with calf
- 4 Mar/08 seen in group of 4 with calf
- 29 May/08 seen without calf
- 2 Jul/08 lost satellite signal
- 3 Mar/09 seen in group of 3 with #108 but without calf
- 2 Mar/10 seen in group of 4 with calf
- 30 Sep/10 collar released

Caribou #145 (Sat, released)

- 21 Jan/07 collared
- 27 Feb/07 seen in group of 3 without calf
- 30 May/07 seen without calf
- 3 Mar/08 seen in group of 4 with calf
- 29 May/08 seen with calf
- 2 Jul/08 lost satellite signal
- 2 Mar/09 seen in group of 5 with calf
- 1 Mar/10 seen in group of 4 with calf
- 30 Sep/10 collar released

Caribou #144 (Sat, harvested)

- 23 Jan/07 collared
- 26 Feb/07 seen in group of 10 without calf
- Died 4 Apr/07 shot by harvester
- 12 Apr/07 collar retrieved

Caribou #143 (Sat, released)

- 21 Jan/07 collared

- 26 Feb/07 seen in group of 6 without calf
- 29 May/07 seen with calf
- 20 Nov/07 seen in group of 4
- 04 Sep/07 lost satellite transmission
- 4 Mar/08 seen in group of 6 without calf
- 26 Mar/08 located, no visual
- 21 Apr/08 located, no visual
- 29 May/08 not located, no signal
- 3 Mar/09 seen in group of 2 without calf
- 14 May/09 located, no visual
- 1 Jun/09 seen with calf
- 9 Jul/09 located, no visual
- 12 Aug/09 located, no visual
- 2 Sept/09 located, no visual
- 28 Oct/09 located, no visual
- 22 Nov/09 located, no visual
- 22 Feb/10 located, no visual
- 2 Mar/10 seen in group of 4 without calf
- 3 Aug/10 located, no visual
- 30 Sep/10 collar released
- 23 Nov/10 no caribou at collar location
- 31 Jan/11 no caribou at signal location

Caribou #142 (Sat, unknown status)

- 22 Jan/07 collared
- 26 Feb/07 seen in group of 10 without calf
- 29 May/07 seen with calf
- 3 Mar/08 seen in group of 4 without calf
- Died before 9 May/08
- 28 May/08 no VHF signal from last known satellite location, collar likely underwater

Caribou #141 (Sat, died)

- 23 Jan/07 collared
- 26 Feb/07 seen in group of 2 without calf
- Died 16 Apr/07

- 13 Jul/07 collar retrieved

Caribou #140 (GPS, died)

- 24 Jan/07 collared
- 26 Feb/07 seen in group of 3 without calf
- 30 May/07 seen without calf
- Died 28 Oct/07
- 25 Apr/08 collar retrieved

Caribou #139 (GPS, died)

- 21 Jan/07 collared
- 27 Feb/07 seen in group of 6 without calf
- 30 May/07 seen in group of 4 with calf
- 3 Mar/08 seen with calf
- 29 May/08 seen with calf
- 2 Mar/09 seen in group of 3 without calf
- Died 7 July/09
- 10 Aug/09 collar retrieved

Caribou #138 (GPS, released)

- 23 Jan/07 collared
- 27 Feb/07 seen in group of 4 without calf
- 30 May/07 seen without calf
- 4 Mar/08 seen in group of 8 without calf
- 29 May/08 seen with calf
- 3 Mar/09 seen in group of 17 without calf
- 2 Mar/10 seen in group of 3 without calf
- 2 Jun/10 collar released

Caribou #137 (GPS, released)

- 23 Jan/07 collared
- 27 Feb/07 seen in group of 5 without calf
- 29 May/07 seen with calf
- 5 Mar/08 seen with calf
- 29 May/08 seen in group of 3 with calf
- 3 Mar/09 seen in group of 13 with calf

- 2 Mar/10 seen in group of 7 with #170 with calf
- 2 Jun/10 collar released
- 3 Aug/10 no caribou at signal location
- 23 Nov/10 no caribou at signal location

Caribou #136 (GPS, released)

- 23 Jan/07 collared
- 26 Feb/07 seen in group of 5 without calf
- 29 May/07 seen without calf
- 5 Mar/08 seen in group of 19 without calf
- 29 May/08 seen with calf
- 7 Mar/09 seen in group of 7 without calf
- 2 Mar/10 seen in group of 3 without calf
- 2 Jun/10 collar released
- 3 Aug/10 no caribou at signal location

Caribou #135 (VHF, died)

- 21 Jan/06 collared
- 1 Mar/06 seen in group of 4 without calf
- 30 May/06 without calf
- 28 Sep/06 no visual
- 23 Feb/07 seen in group of 6 without calf
- Died 23-28 May/07
- 31 May/07 collar retrieved

Caribou #134 (VHF, released)

- 21 Jan/06 collared
- 1 Mar/06 seen in group of 3
- 29 May/06 seen with calf
- 16 Sep/06 seen in group of 4
- 26 Feb/07 seen in group of 2 without calf
- 29 May/07 seen without calf
- 15 Feb/08 seen in group of 13 without calf
- 4 Mar/08 seen in group of 24 without calf
- 26 Mar/08 located, no visual

- 21 Apr/08 located with #159
- 28 May/08 seen with calf
- 3 Mar/09 seen in group of 9 with calf
- 14 May/09 located, no visual
- 1 Jun/09 seen with calf
- 9 Jul/09 located, no visual
- 12 Aug/09 located, no visual
- 2 Sep/09 located, no visual
- 28 Oct/09 located, no visual
- 22 Nov/09 located, no visual
- 22 Feb/10 located, no visual
- 1 Mar/10 seen in group of 3 with calf
- 14 Jun/10 located, no visual
- 3 Aug/10 located, no visual
- 23 Nov/10 located, no visual
- 31 Jan/11 located, no visual
- 1 Mar/11 seen in group of 16 including #159 and with calf
- 4 July/11 collar released

Caribou #133 (VHF, unknown status)

- 21 Jan/06 collared
- 1 Mar/06 seen with calf
- 30 May/06 seen with calf
- 23 Jan/07 seen in group of 10 without calf
- 26 Feb/07 seen in group of 3 without calf
- 29 May/07 seen with calf
- Unable to relocate since Dec/07
- 4 July/11 collar released

Caribou #132 (VHF, released)

- 22 Jan/06 collared
- 1 Mar/06 seen in group of 9 with calf
- 29 May/06 approx. location not pregnant
- 16 Sep/06 seen in group of 2 without calf
- 26 Feb/07 seen in group of 3 without calf
- 30 May/07 seen with calf
- 15 Feb/08 seen in group of 5 without calf

- 4 Mar/08 seen in group of 5 without calf
- 26 Mar/08 located, no visual
- 21 Apr/08 located, no visual
- 29 May/08 not located
- 1 Mar/09 collar released
- 2 Mar/09 located collar in mortality mode, no caribou at signal location

Caribou #131 (Sat, released)

- 22 Jan/06 collared
- 1 Mar/06 seen with calf
- 29 May/06 without calf
- 16 Sep/06 seen in group of 3 cows without calf
- 21 Jan/07 seen in group of 5 with calf
- 27 Feb/07 seen in group of 5 without calf
- 30 May/07 seen with calf
- 03 Mar/08 seen in group of 8 with calf
- 29 May/08 seen with calf
- 2 Mar/09 seen in group of 4 with calf
- 15 Apr/09 collar released

Caribou #130 (Sat, died, non-predation)

- 22 Jan/06 collared
- 1 Mar/06 seen in group of 7 without calf
- 29 May/06 without calf
- Died 5 Jul/06, death related to malnutrition
- 23 Aug/06 collar retrieved

Caribou #129 (Sat, died)

- 20 Jan/06 collared
- 1 Mar/06 seen in group of 6 without calf
- 30 May/06 seen with calf
- 16 Sep/06 with calf
- 21 Jan/07 seen in group of 4 with calf

- 26 Feb/07 seen in group of 10 with calf
- 29 May/07 seen with calf
- 05 Mar/08 seen without calf
- Died 27 May/08
- 29 May/08 collar retrieved

Caribou #128 (Sat, released)

- 20 Jan/06 collared
- 2 Mar/06 seen in group of 5 without calf
- 30 May/06 seen in group of 4 with calf
- 16 Sep/06 seen in group of 3 without calf
- 27 Feb/07 seen in group of 5 without calf
- 29 May/07 seen with calf
- 04 Mar/08 seen in group of 10 with calf
- 29 May/08 seen with calf
- 22 Oct/08 collar finished transmitting
- 3 Mar/09 seen in group of 3 with calf
- 2 Mar/10 seen in group of 7 without calf
- 3 Mar/10 collar released

Caribou #127 (Sat, died)

- 22 Jan/06 collared
- 1 Mar/06 seen in group of 7 with calf
- 29 May/06 seen with calf
- Died 21 Jul/06
- 16 Sep/06 confirm wolf predation
- 23 Oct/06 collar retrieved

Caribou #126 (Sat, died)

- 21 Jan/06 collared
- 1 Mar/06 seen in group of 5 with yearling
- 30 May/06 seen with calf
- 26 Feb/07 seen in group of 13 without calf
- 29 May/07 seen without calf

- 03 Mar/08 seen in group of 14 without calf
- 28 May/08 seen with calf
- 2 Mar/09 seen in group of 5 without calf
- Died 28 Apr/09
- 8 Jun/10 collar retrieved

Caribou #125 (Sat, died)

- 22 Jan/06 collared
- 1 Mar/06 seen in group of 16 with yearling
- 29 May/06 seen with small calf
- Died 12-15 Jul/06, likely wolf predation
- 16 Sep/06 no visual
- 23 Oct/06 collar retrieved

Caribou #124 (Sat, died)

- 20 Jan/06 collared
- 2 Mar/06 seen in group of 7 without calf
- Died 10 April/06, likely wolf predation
- 23 Aug/06 collar retrieved

Caribou #123 (Sat, died)

- 20 Jan/06 collared
- 2 Mar/06 seen in group of 4 with calf
- 29 May/06 without calf
- 16 Sep/06 seen in group of 3
- Died 5 Nov/06 on Trainor Lake
- 15 Feb/07 locate collar in ice
- 27 Feb/07 collar retrieved

Caribou # 122 (Sat, harvested)

- 4 Mar/05 collared
- 21 Mar/05 seen in group of 3
- 30 Mar/05 seen in group of 3
- 1 Jun/05 seen alone without calf
- 4 Jun/05 no visual
- 23 Sep/05 no visual
- 10 Oct/05 no visual
- 31 Nov/05 no satellite signal
- 4 Apr/05 got satellite signal back

- 30 May/05 seen without calf
- 24 Nov/06 no satellite signal
- 15 Jun/07 collar went off air finishing transmissions
- 14 Apr/14 caribou shot by harvester
- 15 Apr/11 collar handed in by harvester

Caribou #121 (Sat, died)

- 4 Mar/05 collared
- 21 Mar/05 seen in group of 3
- Died 26-27 Mar/05 predated by wolves
- 30 Mar/05 collar retrieved

Caribou #120 (Sat, released)

- 4 Mar/05 collared
- 21 Mar/05 seen in group of 13
- 30 Mar/05 seen in group of 3
- 1 Jun/05 no visual
- 4 Jun/05 seen alone without calf
- 23 Sep/05 seen in group of 14
- 10 Oct/05 no visual
- 16 Jan/06 seen in group of 3
- 1 Mar/06 seen in group of 5
- 30 May/06 without calf
- 26 Feb/07 seen in group of 10 without calf
- 30 May/07 seen without calf
- 7 Dec/07 seen in group of 4 without calf
- 3 Mar/08 seen in group of 4 without calf
- 28 May/08 seen with calf
- 7 Oct/08 transmissions from collar ceased
- 2 Mar/09 see in group of 6 without calf
- 3 Mar/09 collar released
- 29 Aug/09 collar retrieved

Caribou # 119 (Sat, released)

- 4 Mar/05 collared
- 21 Mar/05 seen in group of ≥ 8
- 30 Mar/05 no visual

- 1 Jun/05 seen alone without calf
- 23 Sep/05 no visual
- 10 Oct/05 no visual
- 16 Jan/06 in group of 5 without calf
- 1 Mar/06 in group of 4
- 30 May/06 with calf
- 22 Jan/07 in group of 3 with calf
- 26 Feb/07 in group of 11 with calf
- 29 May/07 seen without calf
- 3 Mar/08 seen with cow
- 28 May/08 seen with calf
- 10 Sep/08 satellite transmissions ceased
- 2 Mar/09 seen in group of 5 without calf
- 3 Mar/09 collar released
- 2 Jun/09 collar retrieved

Caribou # 118 (Sat, died)

- 4 Mar/05 collared
- 21 Mar/05 seen in group of 10
- 30 Mar/05 seen in group of 9
- 1 Jun/05 no visual
- 4 Jun/05 no visual
- Died 13 Jun/05, likely wolf predation
- 6 Sep/05 collar retrieved

Caribou #117 (Sat, died)

- 3 Mar/05 collared
- 31 May/05 seen alone without calf
- 10 Jun/05 seen in thick brush
- 23 Sep/05 seen in group of at least 4
- 26 Jan/06 seen in group of 4 with calf
- 2 Mar/06 seen in group of 5 with calf
- Died 18 Apr/06
- 23 Aug/06 collar retrieved

Caribou #116 (Sat, released)

- 3 Mar/05 collared

- 31 May/05 seen alone without calf
- 10 Jun/05 no visual
- 23 Sep/05 seen in group of 3
- 26 Jan/06 seen in group of 7 with calf
- 2 Mar/06 seen in group of 4 with calf
- 29 May/06 seen with calf
- 16 Sep/06 seen in group of 2 without calf
- 23 Jan/07 seen in group of 12 without calf
- 27 Feb/07 seen in group of 6 without calf
- 30 May/07 seen in group of 3 with calf
- 4 Mar/08 seen with bull
- 29 May/08 seen with calf
- 13 Oct/08 satellite transmission ceased
- 3 Mar/09 seen in group of 17 without calf
- 3 Mar/09 collar released
- 7 Jul/09 collar retrieved

Caribou #115 (Sat, released)

- 3 Mar/05 collared
- 10 Apr/05 seen in group of 3
- 31 May/05 seen alone without calf
- 23 Sep/05 no visual
- 5 Oct/05 seen in group of 2 without calf
- 2 Mar/06 seen in group of 9 without calf
- 30 May/06 seen in group of 2 without calf
- 16 Sep/06 seen in group of 4 without calf
- 27 Feb/07 seen in group of 4 without calf
- 29 May/07 seen with calf
- 04 Mar/08 seen with 2 cows
- 30 May/08 seen with calf
- 1 Oct/08 satellite transmissions ceased

- 4 Mar/09 seen in group of 3 with calf
- 3 Mar/09 collar released
- 10 Aug/09 collar retrieved

Caribou #114 (Sat, released)

- 3 Mar/05 collared
- 10 Apr/05 seen in group of 9
- 31 May/05 no visual
- 10 Jun/05 seen alone without calf
- 23 Sep/05 no visual
- 2 Mar/06 seen in group of 6 without calf
- 29 May/06 seen in group of 3 without calf
- 16 Sep/06 seen in group of 3 without calf
- 27 Feb/07 seen in group of 6 without calf
- 30 May/07 seen with without calf
- 4 Mar/08 seen in group of 7 without calf
- 29 May/08 seen with calf
- 3 Jul/09 satellite transmissions ceased
- 3 Mar/09 seen in group of 13 with calf
- 3 Mar/09 collar released
- 1 Jun/09 collar retrieved

Caribou #113 (Sat, died)

- 3 Mar/05 collared
- 10 Apr/05 seen in group of 4
- 31 May/05 no visual
- 10 Jun/05 seen alone without calf
- Died 10 Sep/05 likely wolf predation
- 5 Oct/05 collar retrieved

Caribou #112 (Sat, released)

- 3 Mar/05 collared
- 10 Apr/05 seen with calf
- 31 May/05 seen with calf
- 10 Jun/05 seen with calf
- 23 Sep/05 no visual

- 1 Mar/06 seen in group of 6 with calf
- 30 May/06 seen in group of 4 with calf
- 16 Sep/06 seen with calf
- 27 Feb/07 seen in group of 5 with calf
- 29 May/07 seen with calf
- 5 Mar/08 seen with 2 bulls
- 30 Jun/08 located, no visual
- 22 Oct/08 satellite transmission ceased
- 3 Mar/09 collar released
- 6 Jul/09 collar retrieved

Caribou #111 (Sat, released)

- 3 Mar/05 collared
- 5 May/05 seen in group of 2
- 31 May/05 seen with calf
- 23 Sep/05 seen in group of 5 with calf
- 1 Mar/06 seen in group of 9 without calf
- 29 May/06 seen with calf
- 16 Sep/06 seen in group of 3
- 24 Jan/07 seen in group of 14
- 27 Feb/07 seen in group of 4 with calf
- 30 May/07 seen with calf
- 4 Mar/08 seen in group of 8 with calf
- 28 May/08 seen with calf
- 11 Nov/08 satellite transmission ceased
- 3 Mar/09 seen in group of 11 with calf
- 3 Mar/09 collar released
- 10 Jul/09 collar retrieved

Caribou #110 (Sat, died)

- 5 Mar/05 collared
- 5 May/05 seen alone without calf
- 31 May/05 seen alone without calf
- Died 2 Jun/05 likely wolf predation
- 29 Jul/05 collar retrieved

Caribou #109 (Sat, died)

- 1 Apr/04 collared
- 29 May/04 no visual
- 22 Sep/04 seen in group of 4 without calf
- 31 May/05 seen with calf
- 19 Jun/05 seen with calf
- 23 Sep/05 no visual
- 5 Oct/05 seen in group of 3 with calf
- Died 22 Apr/06, likely wolf predation
- 23 Aug/06 collar retrieved

Caribou #108 (Sat, observed alive, no Sat or VHF active)

- 1 Apr/04 collared
- 29 May/04 seen alone without calf
- 3 Jun/04 no visual
- 22 Sep/04 seen in group of 3 without calf
- 25 Jan/05 seen in group of 4 without calf
- 31 May/05 no visual
- 10 Jun/05 no visual
- 19 Jun/05 seen with calf
- 23 Sep/05 no visual
- 5 Oct/05 seen in group of 5 with calf
- 2 Mar/06 seen in group of 3 with yearling
- 30 May/06 seen with calf
- 23 Jan/06 seen in group of 5 with calf
- 27 Feb/07 seen in group of 11 with calf
- 30 May/07 seen in group of 3 with calf
- 15 Jun/07 satellite transmissions ceased
- 3 Mar/09 seen in group of 3 with #146, no VHF transmissions

Caribou #107 (Sat, died)

- 1 Apr/04 collared
- 29 May/04 no visual

- 22 Sep/04 seen in group of 3 with calf
- Died 22 Apr/05 likely wolf predation
- 4 May/05 collar retrieved

Caribou #106 (Sat, died)

- 30 Mar/04 collared
- 29 May/04 no visual
- 3 Jun/04 seen in group of 2 with calf
- 22 Sep/04 seen in group of 7 without calf
- 25 Jan/05 seen in group of 5 without calf
- 31 May/05 seen alone without calf
- 23 Sep/05 seen in group of 2 without calf
- Died 12 Nov/05, likely wolf predation
- 30 May/06 collar retrieved

Caribou #105 (Sat, died)

- 30 Mar/04 collared
- 29 May seen in group of 3 with calf
- 22 Sep/04 no visual
- 25 Jan/05 seen in group of 3 without calf
- 31 May/05 seen alone without calf
- 19 Jun/05 seen alone without calf
- 23 Sep/05 no visual
- 2 Mar/06 seen in group of 11 without calf
- Died 13 May/06, likely wolf predation
- 23 Aug/06 collar retrieved

Caribou #104 (Sat, died, non-predation)

- 29 Mar/04 collared
- 29 May/04 seen in group of 3 without calf

- 3 Jun/04 seen in group of 3 without calf
- 22 Sep/04 no visual
- Died 13 Apr/05, death related to malnutrition
- 4 May/05 collar retrieved

Caribou #103 (Sat, died)

- 1 Apr/04 collared
- 29 May/04 seen in group of 3 with calf
- 22 Sep/04 no visual
- Died 16 Apr/05, likely wolf predation
- 4 May/05 collar retrieved

Caribou #102 (Sat, died)

- 29 Mar/04 collared
- Died 5 May/04, wolf predation
- 3 Jun/04 collar retrieved

Caribou # 101 (Sat, died)

- 30 Mar/04 collared
- Died 5 May/04, likely wolf predation
- 9 Aug/04 collar retrieved

Caribou # 100 (Sat, no Sat or VHF active)

- 29 Mar/04 collared
- 29 May/04 seen in group of 3 without calf
- 3 Jun/04 seen alone without calf
- 22 Sep/04 no visual
- 25 Jan/05 seen in group of 11, without calf
- 31 May/05 seen in group of 3 with calf
- 19 Jun/05 seen alone without calf
- 23 Sep/05 problems with VHF transmission
- 30 Oct/06 problems with satellite transmission
- 6 Feb/06 no satellite/VHF signal

- 27 Feb/07 no visual
- 30 May/07 no visual
- 15 Jun/07 satellite transmission
cease