



Dehcho Boreal Caribou Study Progress Report, April 2018

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Photo: GNWT/D. 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. 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 2004-2018 a total of 178 collars (mostly ARGOS DS or GPS) have been deployed on 168 adult female boreal caribou and ten adult male boreal caribou (Appendix 1, Figure 1). Males were first collared in 2017; their movements and locations during the rut being of particular interest. A more detailed background history of the program, the collars used, and the deployment procedures can be found in Larter and Allaire (2010).

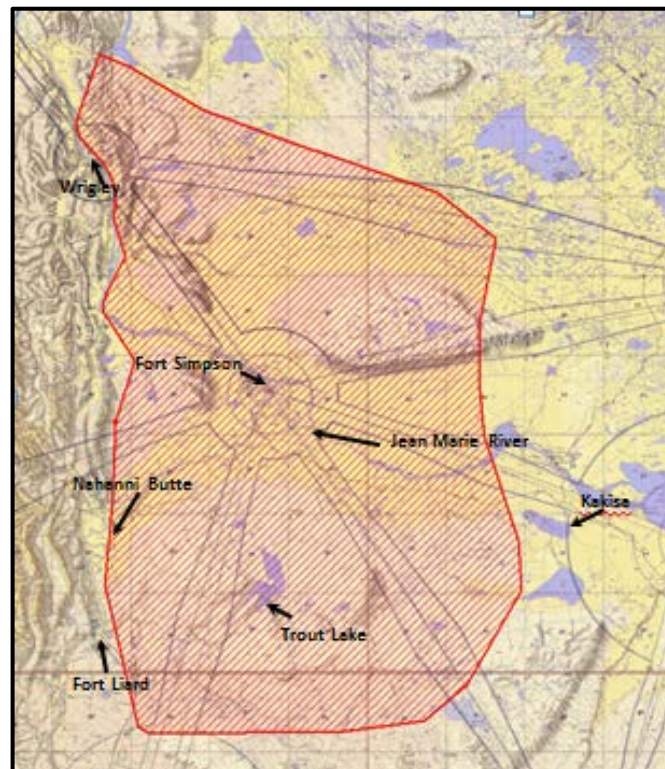


Figure 1. The Dehcho boreal caribou study area (97,782 km²), based upon the locations of satellite/GPS collared adult female and male boreal caribou.

Home Ranges

To date, 116 collared (DS or GPS) female caribou have provided locations for ≥ 12 months, with 78 providing locations for ≥ 24 months. We used all locations for these 116 caribou to calculate 100% minimum convex polygons (MCP) (Figure 2). The MCP is a line connecting all of the outside points where a specific caribou has been located and represents the cumulative range used by individual female caribou. Mean range size was 3,118.70 km² (median 2,810.12 km²; range 260.6-14,419.9 km²). The lone collared male caribou providing locations for ≥ 12 months had a home range of 1,958.93 km². For one female caribou, originally collared in the Cameron Hills (Johnson 2007) and recaptured near Trainor Lake in February 2007, we calculated her home range only from post-recapture locations.

The largest home range is from a female collared for about 28 months from 2010-2013. She was collared north of Trout Lake but ranged across an area as far east as Redknife River and as far west as Netla River. She reared three calves in three successive years. Home range sizes we report are similar to those reported for females in other study areas in the Northwest Territories (NWT) including the Cameron Hills and Hay River Lowlands (Kelly and Cox 2011) and Gwich'in study areas (means of *ca.* 3,000 km²; Nagy 2011). Twelve caribou crossed into northeastern British Columbia (NEBC) and one into northwestern Alberta (AB) (Figure 2). As many as nine caribou collared in NEBC have crossed the border south of Trout Lake (Brad Culling personal communication).

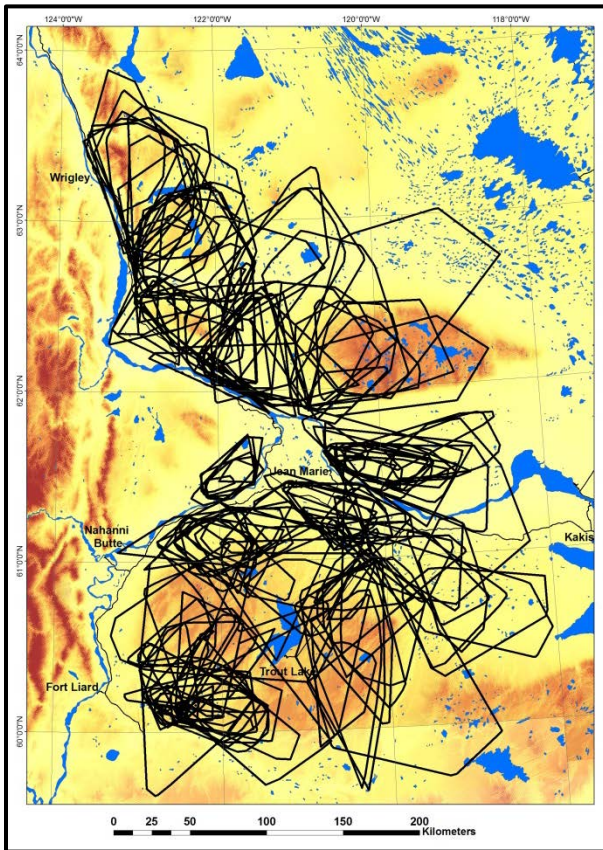


Figure 2. Cumulative ranges (100% MCP) of 116 collared female boreal caribou.

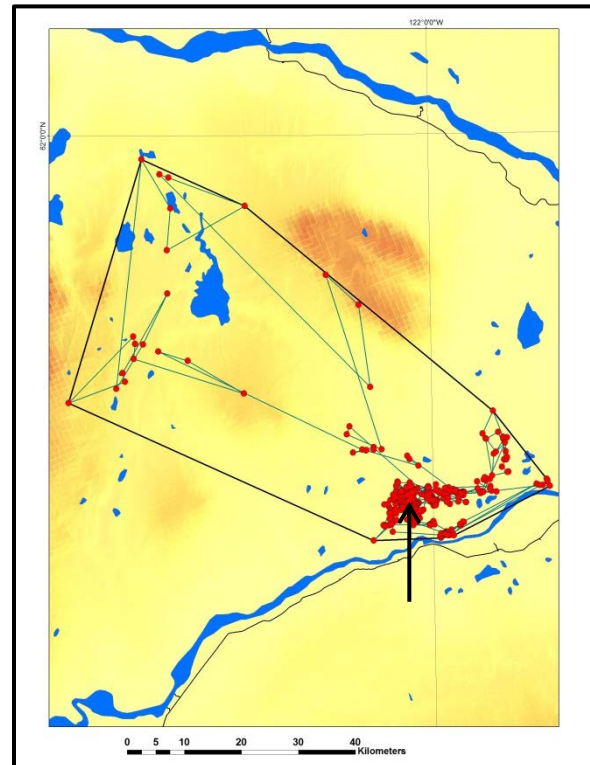


Figure 3. Locations of female 248 showing extensive pre-calving movements (11-19 May, 2017) to west. Calving location, 20 May, 2017, indicated by arrow.

For the first time a female collared in the Antoine Lake area moved west to the Sibbeston Lake area. Local residents find caribou in this area during late-winter. Female 248 made pre-calving movements (11-19 May, 2017) to an area west of Sibbeston Lake near the Mackenzie Mountains, eventually calving south of Antoine Lake (Figure 3). Unfortunately, her collar stopped transmitting satellite locations in late July, one of the rare collar malfunctions in our study. The VHF transmitter is functioning and we located her during the March 2018 classification survey about 8 km from where she had originally been collared.

Calving and Calving Events

Boreal caribou, like other deer, have a high probability of conceiving after reaching maturity at two to three years old. Based upon the level of progesterone in blood serum, 92% (155 of 168) of collared females were pregnant; eight (4.7%) not pregnant and the remaining five borderline (Table 1). For 2018, 15 out of 17 captured females tested positive for pregnancy. Similarly high levels of pregnancy based upon blood progesterone have been found in boreal caribou females residing in the South Slave (Kelly and Cox 2013; Ashley McLaren personal communication). The high number of births and pregnancies from collared females implies that capture and wearing a collar has not prevented females from becoming pregnant nor bearing calves.

Table 1. The number of blood samples indicating pregnant, borderline, and not pregnant for collared boreal caribou females 2004-2018. Pregnancy determination based upon progesterone levels in blood serum. No collaring occurred in 2011.

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

	2013	2014	2015	2016	2017	2018	Totals
Pregnant	10	12	11	8	8	13	155
Borderline	0	0	0	1	0	0	5
Not Pregnant	0	0	0	0	0	2	8
Total	10	12	11	9	8	15	168

Female boreal caribou spread out during the calving period, likely to avoid predation (Figure 4). Daily movement rates drop dramatically from *ca.* 6 km/day two days prior to calving, to *ca.* 0.2 km/day on the day of calving, and remain at ≤ 1 km/day for about a week post-calving (Nagy 2011). We can analyze daily movement patterns of collared female caribou to determine when and where a female boreal caribou calved or not; a reliable non-invasive way to monitor calving (Nagy 2011, Demars et al. 2013). Using movement data instead of flying aerial survey(s)



reduces disturbance during the calving period, and does not risk surveying before calves are born or after newborn calves may have died, thus getting a more accurate assessment of calf production. Based upon 341 calving events, the peak of calving in our study area is 15 May \pm 7 days.

Using movement data, we determined the potential calving events for all collared caribou (2004-2017) where we had location data from 1 May to 1 June. Of 363 potential calving events (from 140 females), there were 341 births (94%) and 17 times (5%) when a caribou did not give birth. In five cases calving or not could not be determined.

In May 2017, 27 of 28 collared females calved. No calving event could be determined for caribou 226. Calves were born from 7-25 May with 67% born by 15 May.

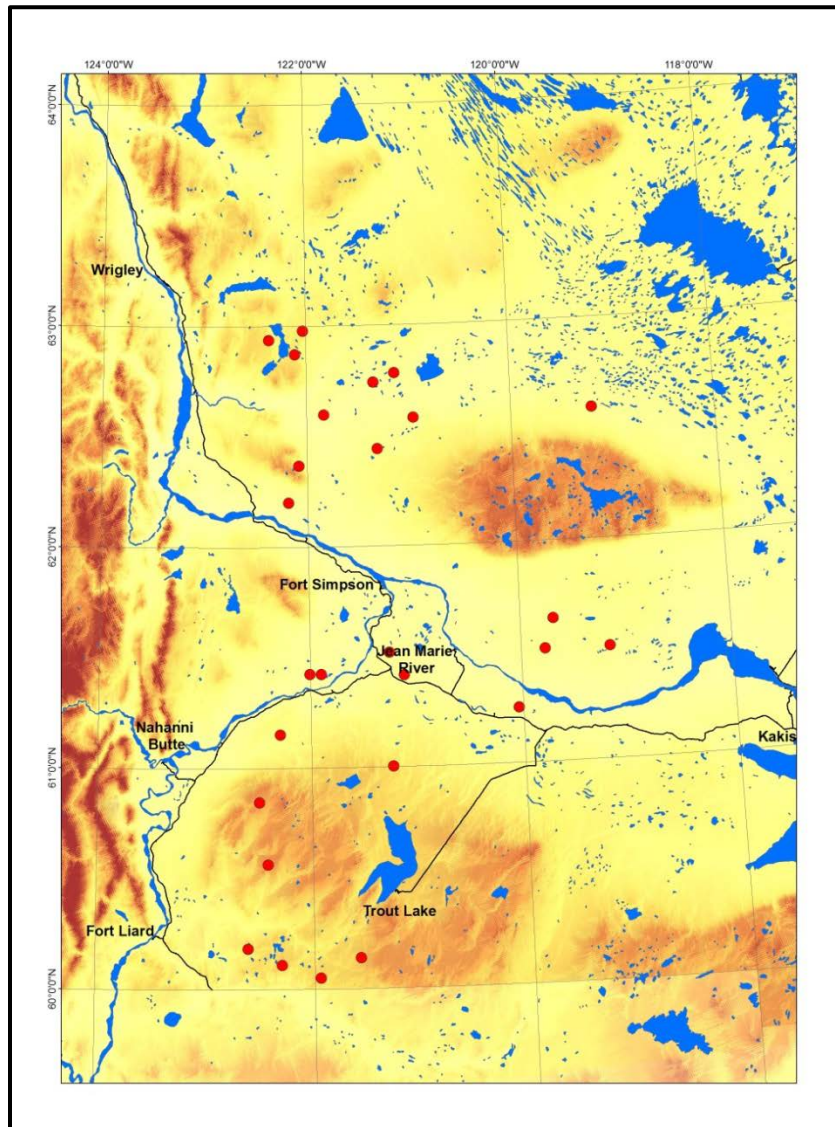


Figure 4. Calving locations of collared boreal caribou • during 7-25 May, 2017. Note the wide dispersal throughout the range.

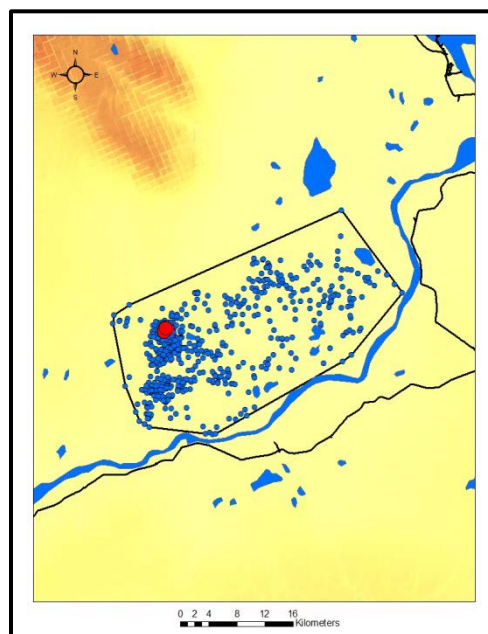
Timing and Fidelity of Calving

Individual females have remarkable consistency in calving dates. Of two females that calved successfully for six consecutive years, one had all of her calves within a four day period. Thirty-four females have calved successfully for four consecutive years: two females had three calves born on the same date and five females had all of their calves born within a four-day span. In most years as many as five calves are born to collared caribou 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 22 years, have a calf as early as two years and as late as 21 years, and have an average home range of *ca.* 3,100 km². We have four consecutive calving events for 34 females and six consecutive calving events for two females. This provides information for only up to about one-quarter of a potential maximum 19 calving events in a lifetime. However, fidelity to an area for calving for four to six six-year period may have implications related to disturbance mitigation.

Some females calve in the same general area while others do not. For the 34 females that calved successfully for four consecutive years, we measured the distance between each successive and all calving event. Six females had successive calving locations <300 m distant (Figure 5); 12 females <1,300 m distant. The average distance between four calving locations for one female was <500 m and for nine other females <6 km. Contrastingly, for six females the average distance between four calving locations was >30 km.

Figure 5. Locations (blue dots), four calving events (enlarged red dots) and home range of female 159.



Breeding Season and Male Caribou

One key reason we collared male caribou was to investigate their whereabouts and movement patterns during the breeding season. Nagy (2011) used movement rates of satellite collared boreal caribou to determine eight activity periods. The breeding period was from 13 September to 20 October with the peak being 20 September to 4 October for boreal caribou in the southern NWT. Four collared males provided us with our first year of location data. Interestingly, these males moved very little during the peak of breeding. Based upon 31-45 locations/male the average range used was 285 km² (Table 2; Figure 6). These preliminary data may imply that large breeding males stay in small areas waiting for females to come to them for breeding. Individual females get bred on a remarkably consistent date year after year, based upon consistency of calving dates.

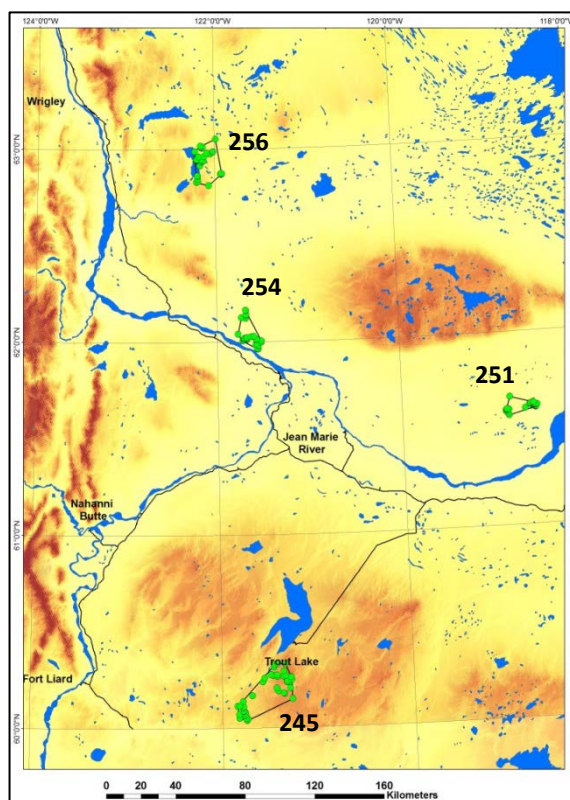


Table 2. The areas used (km²) by males 245, 251, 254, and 256 during the peak breeding season (20 September to 4 October) and the number of locations used to calculate the area.

	245	251	254	256
Locations	45	31	33	45
Area (km ²)	573	109	157	300

Figure 6. The locations (green dots) and areas used by four collared male boreal caribou during the peak of the breeding season 20 September to 4 October 2017.

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. Photographs of caribou groups are used to verify classification and the presence of calves. We assume that calves of the year observed in this survey are recruited into the population.

The survey was flown 4-6 March, 2018. Conditions for the survey were ideal, a heavy snowfall immediately prior to the survey and sunny conditions made fresh tracks highly visible for most of the survey. Collared caribou were widely dispersed throughout the Dehcho, from Bulmer Lake to NEBC. We needed our longest flight line of the study (*ca.* 2,941 km) to complete the 2018 survey, observing 318 boreal caribou, 13 moose, two wolves and 20 bison (Table 3). Of the 13 surveys we have done, this was the second most caribou classified, and the 5th survey that wolves were observed.

Caribou collared as part of the Dehcho and South Slave studies move back and forth between study areas. As in the last five years, the Dehcho survey was conducted immediately prior to the South Slave survey and used some of the same observers for consistency in classification. For survey efficiency we relocated two South Slave-collared caribou during our survey (Table 3).

Table 3. The total number of caribou classified, and other wildlife observed, during sex/age classification surveys conducted in February-March, 2006-2018.

	2006	2007	2008	2009	2010	2011	2012
# of active collars	24	33	35	37	39 ¹	24 ²	30
Total # of caribou observed	170	216	241	291	235	161	197
# of groups observed	30	39	42	41	47	33	46
# of females (≥ 32 mo.)	94	114	145	160	128	74	104
# of calves (8-10 mo.)	27	26	34	50	45	33	40
# of yearlings (20-22 mo.)	13	6	1	1	1	2	1
# of males (≥ 32 mo.)	35	70	61	80	61	50	52
# unknown sex/age caribou	1	0	0	0	0	2	0
# of calves per 100 females	28.7	22.8	23.4	31.3	35.2	44.6	38.5
# of moose observed	18	38	15	31	23	22	25
# of wolves observed	2	1	0	0	0	0	0
Flight line length (km)	1,200	1,600	1,700	2,000	1,750	1,655	1,900

	2013	2014	2015	2016	2017	2018
# of active collars	35 ²	32 ²	39 ¹	34	30 ¹	48 ²
Total # of caribou observed	282	196	303	213	337	318
# of groups observed	46	42	44	46	56	67
# of females (≥ 32 mo.)	153	106	139	119	150	172
# of calves (8-10 mo.)	43	29	63	37	62	56
# of yearlings (20-22 mo.)	2	1	2	2	1	0
# of males (≥ 32 mo.)	84	59	99	53	117	90
# unknown sex/age caribou	0	1	0	2	7	0
# of calves per 100 females	28.1	27.4	45.3	31.1	41.3	32.6
# of moose observed	18	23	11	17	20	13
# of wolves observed	0	2	0	13	0	2
Flight line length (km)	1,865	1,787	2,242	1,966	2,845	2,941

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

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

Eleven of 39 collared females were observed with calves, estimating 28.2 calves per 100 adult females. Using all females observed in classification survey the estimate was slightly higher at 32.6 (Table 3). The ratios we report are strikingly similar to those reported from both the South Slave and North Slave surveys this March (Ashley McLaren personal communication; James Hodson personal communication). Despite annual variation in the number of calves per 100 adult females and the number of collared females, estimates of annual calves per 100 adult females has been similar over the course of the study (Appendix 3).

Calf Survival/Recruitment

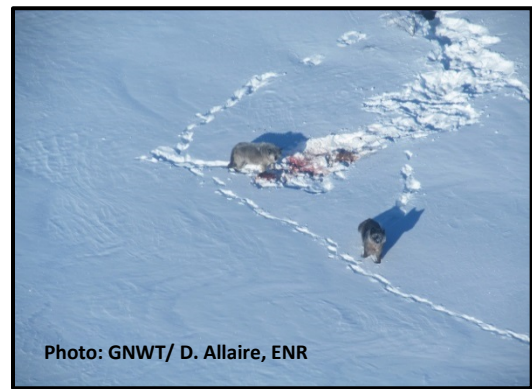
Larter et al. (2017) used the estimated number of calves per 100 adult females from all caribou observed on surveys (Table 3) to investigate whether the depth of snow in late winter had a significant effect on recruitment over 12 years (2006-2017). They found

no significant effect over snow cover ranging from 41-89 cm. They found a similar result when using the estimated number of calves per 100 adult females based upon only collared animals (Appendix 3).

Twenty-four of the collared females that calved in May 2017 were relocated in the March 2018 classification survey (the collars on three females with calves released during summer). Of these 24 females, eight were accompanied by calves resulting in an estimated 33% survival. This years' survival was slightly below average mirroring the below average cow:calf ratio from the classification survey.

Caribou Deaths

Since the start of the study (March 2004), 79 collared caribou have died (77 females and two males). Most female caribou deaths occur between late-March and mid-July (73%; n=56). We have visited 57 death sites successfully retrieving collars. Based on death site visits, suspected wolf predation (n=43; 75%) has been the greatest mortality factor. Seven caribou were harvested (12%), five died of natural causes associated with malnutrition (9%), and one was black bear predation (Table 4). The two male deaths occurred in April and December, both of unknown causes. For a variety of reasons (i.e., cost, aircraft availability, and location of death site), we were able to visit only three death sites in summer/fall 2016 and 2017. Collars will provide VHF transmissions at 12 death sites through summer 2018 and potentially could be retrieved this year.



We have age at death for 28 of the 79 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 7). June 1 has historically been used as the birth date for caribou (Matson 1981). Some boreal caribou in our study area live very long lives. One of the oldest caribou aged in North America is from this study, a 22 year-old female that had calves at 20 and 21 years of age (Larter and Allaire 2016). Seven other caribou have died as teenagers in our study (age range 4-22, mean 10.3, median 10 years; Figure 7).

Wolves have greater access to boreal caribou habitat by using seismic lines (Neufeld 2006), and increased access has resulted in more caribou mortalities (McLoughlin et al. 2003). Nagy (2011) reported that boreal caribou in the NWT use areas ≤ 400 m from anthropogenic linear features less than other areas, and travel faster when they encounter linear features. In this study the remains of 17 of 44 (39%) caribou preyed by wolves or black bears were located ≤ 400 m from anthropogenic linear features.

Table 4. The number of collared caribou deaths and the suspected cause for each year of the study. Yearly percentages are reported in parentheses. The maximum number of collared animals for each calendar year is indicated.

April-March Year	Max Collars	Total Deaths	Suspect Wolf (%)	Suspect Bear (%)	Harvest (%)	Natural Causes ¹ (%)	Unknown ² (%)
04/05	10	2	2 (100)	0	0	0	0
05/06	21	8	7 (87.5)	0	0	1 (12.5)	0
06/07	27	8	7 (87.5)	0	0	1 (12.5)	0
07/08	35	4	2 (50)	1 (25)	1 (25)	0	0
08/09	36	5	2 (40)	0	2 (40)	0	1 (20)
09/10	39	7	5 (71)	0	2 (29)	0	0
10/11	40	5	3 (60)	0	0	0	2 (40)
11/12	26	5	2 (40)	0	1 (20)	0	2 (40)
12/13	33	4	3 (75)	0	0	0	1 (25)
13/14	37	8	1 (12.5)	0	0	3 (37.5)	4 (50)
14/15	32	1	1 (100)	0	0	0	0
15/16	43	10	7 (70)	0	0	0	3 (30)
16/17	45	8	1 (12.5)	0	0	0	7 (87.5)
17/18	52	4	0	0	1 (25)	0	3 (75)
TOTAL		79	43	1	7	5	23

¹ This includes five caribou suspected of succumbing to malnourishment.

² The vast majority of these death sites have never been investigated.

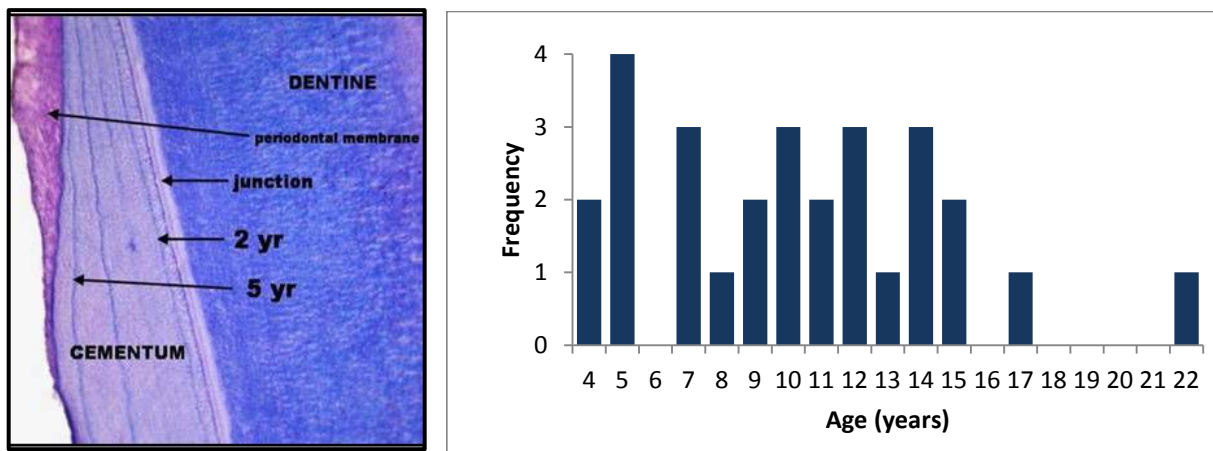


Figure 7. *Left:* The stained section of a tooth root. The dark blue lines are stained cementum. *Right:* The frequency of age at death for 28 female boreal caribou. Age was determined by counting cementum annuli.

Released Collars

To date, 48 of 168 collars have remained on female caribou until their scheduled date of release (none of the ten collars deployed in 2004 had release mechanisms). Collars often release in isolated locations, far from communities, and inaccessible even by

helicopter. We have retrieved only 13 of the 48 released collars. None of the three that released this year were retrieved; they are no longer transmitting. Retrieved collars are refurbished if possible.

Adult Female Survival

Annual adult female survival of collared females was based upon 24 females that were alive with functioning collars on 1 April 2017 and had functioning collars on 31 March 2018, and an additional collared female harvested during this time period. We followed Kaplan and Meier (1958) and Pollock et al. (1989). Three collars released in summer and two collars had poor transmission during the winter and were not included in the analysis. Annual adult female survival estimated for 2017/18 was 92.0% (Table 5); higher than in all but one of the previous 12 years (Figure 8; range 62-100%, average 80%). We did not include the estimates from 2004/2005 due to a small sample size (n=10) and the restricted area of deployment. Estimated annual adult female survival rates we report are similar to those reported for the Cameron Hills (81% average from five years; Kelly and Cox 2011), but lower than those 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 AB (range 78-91%; Hervieux et al. 2013). Low adult female survival reduces the population rate of increase.

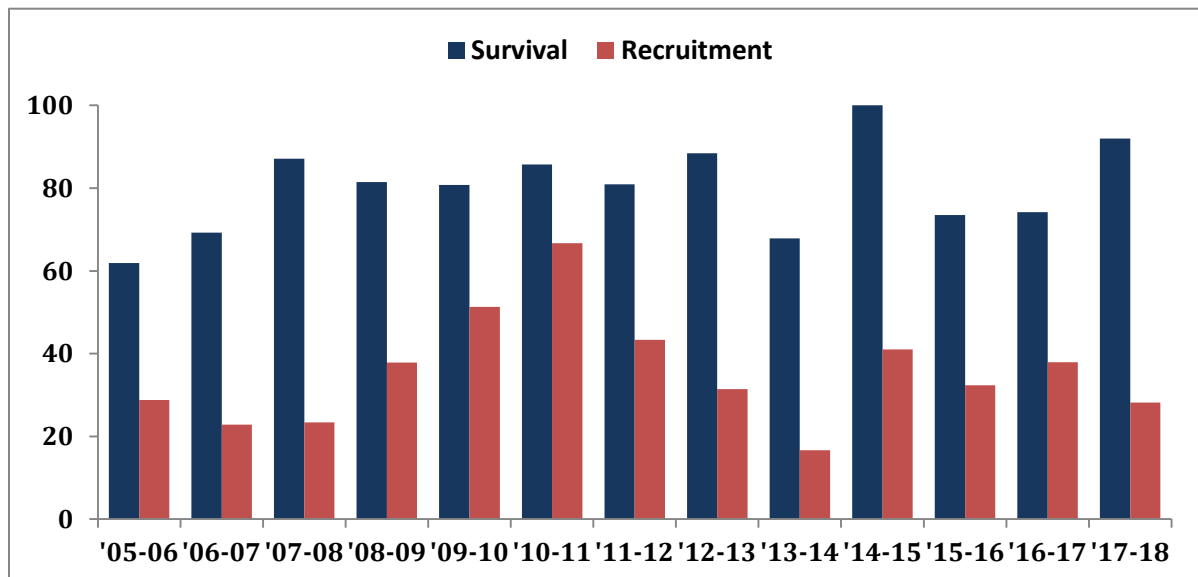


Figure 8. Adult female survival (%) and calves:100 adult females in March (recruitment) for the Dehcho study area from 2005-06 to 2017-18 based on radio collared female caribou.

Adult Male Survival

This was the first full year we had adult males collared. Sample size was small (n=5) so the results must bear this in mind. The estimated annual adult male survival was 50%; two collared males died, two collared males survived, and the other male had a collar

that provided sporadic transmissions and was not included in the analysis. Five more collars were deployed on males in February 2018.

Estimated Population Rate of Increase

Previous reports provided estimates of population rate of increase (λ), adult survival; and recruitment broken down by north and south of the Mackenzie River. Over the past 13 years rate measures for north and south have become quite similar (Appendix 4). Starting with this report we there will be not partition. We report estimated λ values, measured from April 1 to March 31, for the Dehcho based upon cow:calf determined from just collared animals and from all animals surveyed. We based the λ estimate on annual female survival and 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.

Table 5. The estimated annual population rate of increase (λ) for 13 successive years. ¹Ratio and λ determined from collared caribou only. ²Ratio and λ determined from all caribou surveyed. * Due to small sample size of collared animals ratio determined from all caribou surveyed.

Year	Female Survival Rate	Calf:100 Females ¹	Calf:100 Females ²	Rate of Increase (λ) ¹	Rate of Increase (λ) ²
2005-2006*	0.6191	28.81	28.81	0.7232	0.7232
2006-2007*	0.6923	22.86	22.86	0.7817	0.7817
2007-2008*	0.8710	23.35	23.35	0.9861	0.9861
2008-2009	0.8148	37.83	31.25	1.0049	0.9657
2009-2010	0.8077	51.28	35.16	1.0862	0.9800
2010-2011	0.8571	66.67	44.59	1.2857	1.1031
2011-2012	0.8095	43.33	38.46	1.0334	1.0023
2012-2013	0.8846	31.43	28.11	1.0496	1.0293
2013-2014	0.6786	16.67	27.36	0.7403	0.7861
2014-2015	1.0000	41.03	45.32	1.2581	1.2930
2015-2016	0.7353	32.35	31.09	0.8772	0.8706
2016-2017	0.7419	37.93	41.33	0.9156	0.9352
2017-2018	0.9200	28.21	32.56	1.0711	1.0989

Even with relatively high estimated annual rates of increase during some years, the average estimated rate of increase over the past 13 years remains <1 ($\lambda = 0.97$) (Table 5). Although the average λ is close to 1, if we had started in 2004 with a population of 1,000 adult female caribou and applied our estimated annual λ , we would currently have a population of only 687 (95% CI 608-747) adult females (Figure 9). Figure 9 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 2017-2018, the combination of a above average adult survival balanced low recruitment resulting in an estimated annual $\lambda > 1$ (1.07; Table 5).

The population rate of increase we report ($\lambda = 0.97$ geometric mean over 13 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 AB (Hervieux et al. 2013).

Adult female survival is higher in HRL, CH, and most populations in AB, but calf recruitment in these areas is generally much lower than in the Dehcho. Low calf recruitment may be a factor in reducing λ for HRL, CH, and AB boreal caribou populations regardless, of $>80\%$ adult female survival. The past two years have seen increased recruitment in the HRL which should have a positive influence on λ for that study area. The population rate of increase reported for the Gwich'in areas in the Lower Mackenzie over two to three years was $\lambda = 1.08-1.20$ (Nagy 2011); here both female survival and late winter calf:cow were higher.

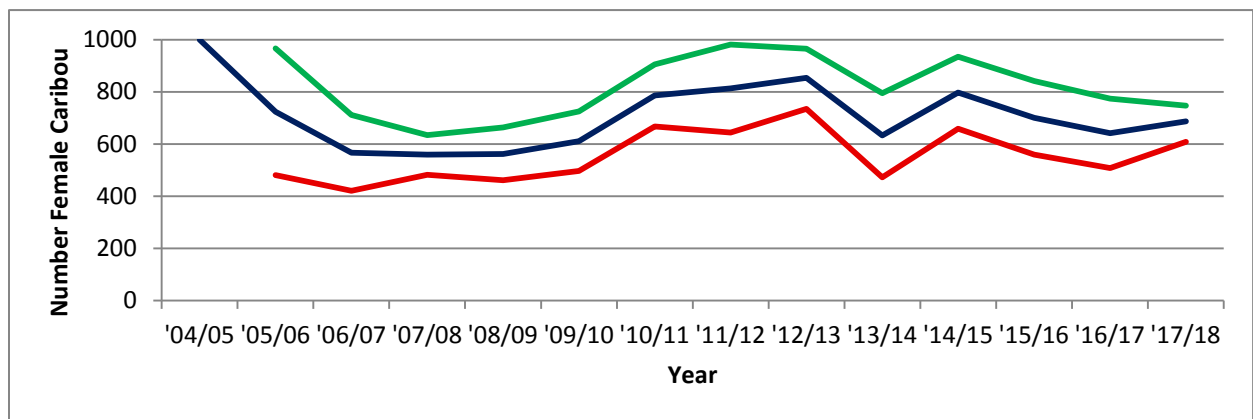


Figure 9. The estimated number of female caribou in each year of the study starting with a population of 1,000 and using the annual rates of increase (λ) calculated for the 13 successive years. The **green** and **red** lines represent the upper and lower 95% confidence intervals.

Animal Fatness

For the fourth consecutive year we (and the South Slave) collected ultrasound measurements to measure the layer of rump fat on captured caribou. This measure is used to estimate the ingesta-free body fat following Cook and Cook (2017a). Late-winter body fat levels of boreal caribou in both the Dehcho and South Slave remain consistently high and stable over the four years of measurements. Females that entered the winter in relatively good condition exited the winter in relatively good condition. These findings suggest that caribou are surprisingly resilient to the winter weather conditions they have experienced. Fatter caribou are more likely to become pregnant and have calves. Pregnancy rates of caribou in the Dehcho remain high (Table 1).

Measuring animal fatness is part of a larger study on the nutritional condition of boreal caribou (Cook and Cook 2017b; see Deliverables).

Disease and Parasites

A previous study of boreal caribou in the Dehcho found them to be relatively disease and parasite free with low numbers of parasites and disease antibodies; none were a cause of concern (Johnson et al. 2010). Analysis of the 20 fecal samples from the February 2018 capture reported no positives for *Giardia* spp. or *Cryptosporidium* spp. and limited occurrence of *Eimeria* spp. and a trichostrongyle. The prevalence of common diseases and parasites remains low.

More recently a bacterium *Erysipelothrix rhusiopathiae* has been reported in boreal caribou populations in NEBC. This bacterium has the potential to adversely affect survival and reproduction (Schwantje et al. 2014). We had 73 serum samples from caribou captured in 2010, 2012-2015 tested for this disease. At least seven samples show exposure to the bacterium (Bryan Macbeth personal communication). Blood serum from caribou captured 2016-2018 (n=42) have recently been forwarded to the University of Calgary for testing for exposure to *E. rhusiopathiae*.

Winter ticks (*Dermacentor albipictus*) were first documented on captured boreal caribou in the Dehcho and South Slave regions in 2015 (Brad Culling personal communication). During the February 2018 capture ticks were found on thirteen caribou: four of five males and nine of fifteen females. Tick prevalence



was higher than in previous years. Ticks from 14 captured caribou (four from 2017 capture and ten from 2018 capture) have been collected and forwarded to a lab to verify species. Hair loss associated with infestations of winter ticks could play a role in limiting the ability of caribou to thermoregulate during the cold winter months. The photo at left shows hair loss on the shoulder of female caribou 267. Ticks were collected from this female.



Present and Future of the Study

We continue to work collaboratively with other researchers conducting boreal caribou studies, see Deliverables. Data from this study have been incorporated into various territorial-wide analyses, and used as part of a Master's program at the University of AB. Data are being used by ENR in the development of Range Management Plans for Boreal Caribou. The boreal caribou program was endorsed by delegates of the 8th biannual regional wildlife workshop, in October 2016, and will be a topic for discussion at the upcoming workshop in October 2018. Delegates support the continued monitoring of boreal caribou in the region by maintaining an adequate number of collared female and male boreal caribou. Program results will be updated and the program critiqued at the 9th biannual Dehcho regional wildlife workshop, in Fort Simpson, October, 2018.

We continue to make every attempt to retrieve collars so they can be refurbished for re-deployment. We hope to visit as many death sites as possible this summer and fall. We will continue to deploy only GPS collars on both female and male caribou.

Deliverables

ENR provides this annual progress report to its First Nations partners, to the Western Northwest Territories Biophysical Study, and to the Cumulative Impacts Monitoring Program. 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. Unfortunately due to the high demand of work related duties this year, a map from September 2017 – March 2018 was provided to First Nations. ENR will be providing quarterly maps to its First Nations partners in the future.

Dehcho caribou data are being used by Environment and Climate Change Canada to conduct further meta-analyses at a national scale to better understand the relationship between habitat disturbance and population response by boreal caribou to support range planning and action planning:

www.registrelep-sararegistry.gc.ca/virtual_sara/files/Enhanced%20analysis%20to%20support%20regional%20caribou%20range%20and%20action%20planning.pdf

One scientific paper from the study is currently being revised for resubmission.

Jung, T.S., N.C. Larter and D.G. Allaire. Winter group size and composition in a northern population of boreal woodland caribou (*Rangifer tarandus caribou*): does snow depth matter? Can. J. Zool. In revision.

Collaborative use of boreal caribou location data was included in the Final Report “Sensitivity of estimates of range condition and integrated assessments of self-sustainability to variation in woodland caribou local population range delineation” Prepared for Tolko Industries Ltd. by S. Wilson, G. Sutherland and T. Nudds. Results are going to be presented at the 17th North American Caribou Workshop.

We continue our collaborative work on nutritional condition of boreal caribou in western Canada with the South Slave and the National Council for Air and Stream Improvement (NCASI). In summer 2016, NCASI personnel collected 341 vegetation samples of 23 different plant and lichen species from seven different habitat types in the Dehcho in order to determine the nutritional quality of these plants and estimate the quantity of them in the seven habitats. In January, 2018 these vegetation samples were sent to the Habitat Analysis Lab at Washington State University to be analyzed for their nutritional quality. A poster of the results of the body fat part of the study was presented at the South Slave Wildlife Workshop, November 2017.

We continue our collaborative work with the South Slave and Trent University to look at the genetic structure of boreal caribou and the genetic diversity of boreal caribou across the southern Northwest Territories.

Acknowledgements

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

Ashley McLaren provided comparative data from the South Slave region. James Hodson provided comparative data from the North Slave. Brad and Diane Culling provided comparative data from northeastern British Columbia. Forest Management, Department of Environment and Natural Resources (ENR), Fort Simpson, provided access to helicopter fuel for collar deployment and the March survey. Woods Hole Groups, A CLS Company (formerly CLS America), Metocean Telematics (formerly JouBeth) 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 for the March classification survey and collar retrievals. Diversified Environmental deployed collars. Funding for the past year came from Wildlife Division, ENR, and the Western Northwest Territories Biophysical Study (GNWT). Bonnie Fournier and Neba Funwi-Gabga from the Wildlife Management Information System (WMIS) team for helping to get all new and historic caribou collar location data into the WMIS system for future collaborative work. James Hodson and Brett Elkin commented on earlier drafts.

Personal Communications

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James Hodson, ENR Wildlife, Yellowknife, NT
Bryan Macbeth, DVM, PhD., University of Calgary, Calgary, AB
Ashley McLaren, ENR, Fort Smith, NT

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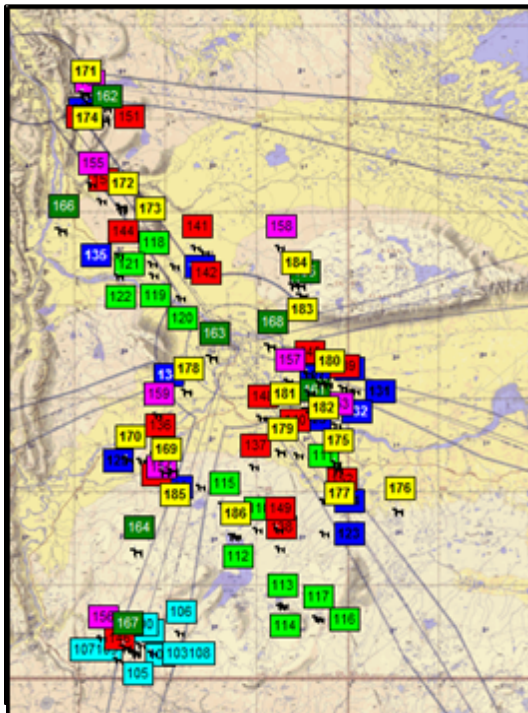
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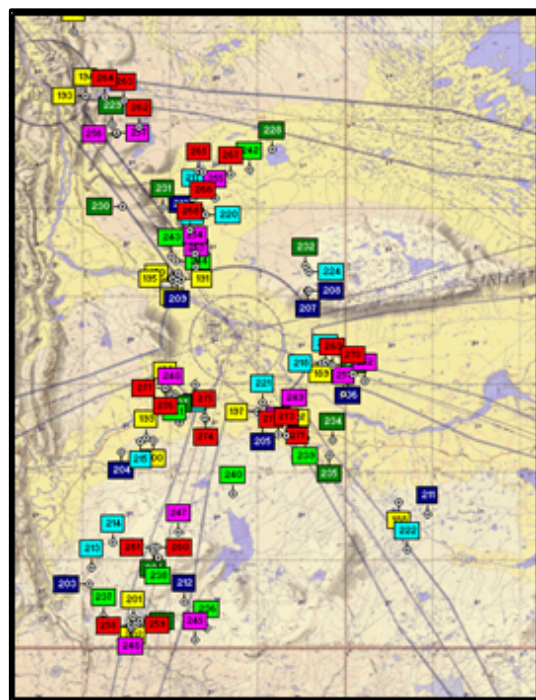


Appendix 1. The number and type of collars deployed on adult females during the study are shown in the table. Note that all Recon 4660-3 and 4660-4 collars were deployed on adult males. The locations where collars were deployed on individual caribou during the study are shown in the figures.

Date caribou collared	Satellite (ST-20-3610 or TAW-4610H)	GPS (TGW-3680 or TGW-4680)	GPS (TGW-4670) Iridium	VHF (Mod 600)	Vectronic GPS-PLUS 2	Recon (4660-3-4) males	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
February 2016		5	3		1		9
February 2017			8			5	13
February 2018		4	11			5	20
TOTAL	57	81	22	4	4	10	178



Locations of 87 female boreal caribou collared in 2004, 2005, 2006, 2007, 2008, 2009, 2010 (see colour for locations).



Locations of 91 female boreal caribou collared in 2012, 2013, 2014, 2015, 2016, 2017, 2018 (see colour for locations).

Appendix 2. Collar retrievals during the past year.

- 11 May, 2017 helicopter near Deep Lake retrieved male caribou collar #250.
- 3 October, 2017 helicopter south of Antoine Lake. Attempted to retrieve female caribou collar #248 after locations did not differ. Collar VHF transmissions were not heard in the vicinity either from the ground or air. In February and March 2018 VHF transmissions were heard and the collared female was seen.

Appendix 3. Annual estimates of cow:calf derived from only collared females and from all caribou classified in spring air surveys and a weighted average over all surveys. n/a indicates no value calculated because of small sample size (n<12).

Year	05/06	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14
Collars	n/a	n/a	n/a	37.83	51.28	66.67	43.33	31.43	16.67
All	28.81	22.86	23.35	31.25	35.16	44.59	38.46	28.11	27.36

Year	14/15	15/16	16/17	17/18	Avg.
Collars	41.03	32.35	37.93	28.21	38.21
All	45.32	31.09	41.33	32.56	32.87

Appendix 4. The estimated annual population rate of increase (λ) for 13 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. Ca:100 Females derived from collared females only.

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	0.9412	25.84	1.0808
2008-2009	0.9333	39.13	1.1604
2009-2010	0.9375	45.83	1.2162
2010-2011	0.7333	58.33	1.0353
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
2015-2016	0.6875	23.53	0.7792
2016-2017	0.7647	33.33	0.9176
2017-2018	0.8181	16.67	0.8926

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	0.7857	19.64	0.8713
2008-2009	0.6667	35.71	0.8116
2009-2010	0.6000	60.00	0.8571
2010-2011	1.0000	75.00	1.6000
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
2015-2016	0.7778	41.18	0.9794
2016-2017	0.7143	42.86	0.9091
2017-2018	1.0000	38.10	1.2353

Appendix 5. 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. **Orange font** indicates collars of known dead caribou where death was natural causes which included being related to malnutrition. **Purple** indicates collars of known harvested caribou.

Caribou #277 (GPS, Iridium)

- 8 Feb/18 collared
- 5 Mar/18 seen in group of 8 without calf

Caribou #276 (GPS, Recon, male)

- 8 Feb/18 collared
- 5 Mar/18 seen in group of 2

Caribou #275 (GPS, Iridium)

- 7 Feb/18 collared
- 5 Mar/18 seen in group of 11 with #274 without calf

Caribou #274 (GPS, Iridium)

- 7 Feb/18 collared
- 5 Mar/18 seen in group of 11 with #275 without calf

Caribou #273 (GPS, Recon, male)

- 7 Feb/18 collared

- 6 Mar/18 seen in group of 6

Caribou #272 (GPS, Iridium)

- 7 Feb/18 collared
- 6 Mar/18 seen in group of 8 without calf

Caribou #271 (GPS, Iridium)

- 7 Feb/18 collared
- 6 Mar/18 seen in group of 8 with calf

Caribou #270 (GPS, Iridium)

- 7 Feb/18 collared
- 5 Mar/18 seen in group of 7 without calf

Caribou #269 (GPS, Argos)

- 7 Feb/18 collared
- 5 Mar/18 seen in group of 7 without calf

Caribou #268 (GPS, Iridium)

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

Caribou #267 (GPS, Iridium)

- 6 Feb/18 collared
- 4 Mar/18 seen in group of 8 without calf

Caribou #266 (GPS, Argos)

- 6 Feb/18 collared
- 4 Mar/18 seen in group of 9 without calf

Caribou #265 (GPS, Recon, male)

- 6 Feb/18 collared
- 4 Mar/18 seen in group of 9

Caribou #264 (GPS, Iridium)

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

Caribou #263 (GPS, Argos)

- 6 Feb/18 collared
- 4 Mar/18 seen in group of 6 without calf

Caribou #262 (GPS, Recon, male)

- 6 Feb/18 collared
- 4 Mar/18 seen in group of 3

Caribou #261 (GPS, Argos)

- 5 Feb/18 collared
- 6 Mar/18 seen in group of 6 without calf

Caribou #260 (GPS, Iridium)

- 5 Feb/18 collared
- 6 Mar/18 seen in group of 7 without calf

Caribou #259 (GPS, Iridium)

- 5 Feb/18 collared
- 6 Mar/18 seen in group of 4 without calf

Caribou #258 (GPS, Recon, male)

- 5 Feb/18 collared
- 6 Mar/18 seen in group of 2

Caribou #257 (GPS, Iridium)

- 8 Feb/17 collared
- 27 Feb/17 seen in group of 2 with calf
- 4 Mar/18 seen in group of 6 without calf

Caribou #256 (GPS, Recon, male, unknown)

- 8 Feb/17 collared
- 27 Feb/17 seen in group of 4
- No location since 19 Nov/17

Caribou #255 (GPS, Iridium)

- 7 Feb/17 collared
- 27 Feb/17 seen in group of 5 without calf
- 4 Mar/18 seen in group of 8 with calf

Caribou #254 (GPS, Recon, male, died)

- 7 Feb/17 collared
- 27 Feb/17 seen in group of 7
- Died 21 Dec/17

Caribou #253 (GPS, Iridium)

- 7 Feb/17 collared
- 27 Feb/17 seen in group of 7 without calf
- 4 Mar/18 seen in group of 5 without calf

Caribou #252 (GPS, Iridium)

- 7 Feb/17 collared
- 27 Feb/17 seen in group of 8 with calf
- 5 Mar/18 seen in group of 4 without calf

Caribou #251 (GPS, Recon, male)

- 7 Feb/17 collared
- 27 Feb/17 seen in group of 3

- 5 Mar/18 seen in group of 6

Caribou #250 (GPS, Recon, male, died)

- 7 Feb/17 collared
- 1 Mar/17 seen in group of 3
- Died 23 April/17
- 11 May/17 collared retrieved

Caribou #249 (GPS, Iridium)

- 7 Feb/17 collared
- 1 Mar/17 tried locating caribou, no luck, thought it was a mortality, but movement proved otherwise
- 6 Mar/18 seen in group of 3 without calf

Caribou #248 (GPS, Iridium, unknown)

- 6 Feb/17 collared
- 26 Feb/17 seen in group of 10 without calf
- No satellite locations since 26 Jul/17
- 5 Mar/18 seen in group of 7 with #216 without calf

Caribou #247 (GPS, Iridium, died)

- 6 Feb/17 collared
- 28 Feb/17 seen in group of 3 without calf
- Died 23 Dec/17

Caribou #246 (GPS, Iridium)

- 6 Feb/17 collared
- 28 Feb/17 seen in group of 8 without calf
- 6 Mar/18 seen in group of 5 without calf

Caribou #245 (GPS, Recon, male)

- 6 Feb/17 collared
- 28 Feb/17 seen in group of 3
- 6 Mar/18 seen in group of 2

Caribou #244 (GPS, died)

- 15 Feb/16 collared
- 29 Feb/16 seen in group of 7 with calf
- Died 16 Oct/16

Caribou #243 (GPS, Iridium)

- 15 Feb/16 collared
- 29 Feb/16 seen in group of 2 with calf
- 27 Feb/17 seen in group of 10 with calf
- 4 Mar/18 seen in group of 4 without calf

Caribou #242 (GPS, Iridium)

- 15 Feb/16 collared
- 29 Feb/16 seen in group of 3 with calf
- 27 Feb/17 seen in group of 2 without calf
- 4 Mar/18 seen in group of 2 without calf

Caribou #241 (GPS, Iridium)

- 9 Feb/16 collared
- 1 Mar/16 seen in group of 12 with calf
- 26 Feb/17 seen in group of 7 without calf
- 5 Mar/18 seen in group of 3 without calf

Caribou #240 (GPS)

- 9 Feb/16 collared
- 1 Mar/16 seen in group of 11 with calf
- 27 Feb/17 seen in group of 6 with calf
- 5 Mar/18 seen in group of 3 with calf

Caribou #239 (GPS-PLUS 2)

- 9 Feb/16 collared
- 2 Mar/16 seen in group of 4 with #221 without calf

- 1 Mar/17 seen in group of 2 without calf
- 5 Mar/18 seen in group of 2 with calf

Caribou #238 (GPS, died)

- 8 Feb/16 collared
- 1 Mar/16 seen in group of 4 without calf
- Died 20 April/16

Caribou #237 (GPS)

- 8 Feb/16 collared
- 1 Mar/16 seen in group of 9 with #212 without calf
- 28 Feb/17 seen in group of 7 without calf
- 6 Mar/18 seen in group of 5 without calf

Caribou #236 (GPS)

- 8 Feb/16 collared
- 1 Mar/16 seen in group of 2 without calf
- 28 Feb/17 seen in group of 2 without calf
- 6 Mar/18 seen in group of 1 without calf

Caribou #235 (GPS-PLUS 2, died)

- 20 Feb/15 collared
- 4 Mar/15 seen in group of 6 without calf
- Died 30 Jun/15 at age 8 years
- 18 Aug/15 collar retrieved, five wolves still at kill site

Caribou #234 (GPS, died)

- 20 Feb/15 collared
- 4 Mar/15 seen in group of 3 with calf
- Died 15 Jul/15 at age 7 years
- 18 Aug/15 collar retrieved

Caribou #233 (GPS-PLUS 2)

- 20 Feb/15 collared

- 3 Mar/15 seen in group of 8 with #218, #223 without calf
- 2 Mar/16 seen in group of 4 with calf
- Died 25 May/16

Caribou #232 (GPS)

- 19 Feb/15 collared
- 3 Mar/15 seen in group of 3 without calf
- 29 Feb/16 seen in group of 6 with calf
- 1 Mar/17 seen in group of 9 without calf
- 5 Mar/18 seen in group of 2 with calf

Caribou #231 (GPS)

- 19 Feb/15 collared
- 2 Mar/15 seen in group of 6 with calf
- 29 Feb/16 seen in group of 4 with calf
- 27 Feb/17 seen in group of 5 with calf
- 4 Mar/18 seen in group of 6 without calf

Caribou #230 (GPS)

- 19 Feb/15 collared
- 2 Mar/15 seen in group of 13 without calf
- 29 Feb/16 seen in group of 4 without calf
- 27 Feb/17 seen in group of 14 without calf
- 4 Mar/18 seen in group of 9 with calf

Caribou #229 (GPS, died)

- 19 Feb/15 collared
- 2 Mar/15 seen in group of 10 without calf
- 29 Feb/16 seen in group of 7 without calf
- Died 16 Nov/16

Caribou #228 (GPS)

- 19 Feb/15 collared
- 2 Mar/15 seen in group of 15 without calf
- 2 Mar/16 seen alone without calf
- 26 Feb/17 seen in group of 14 without calf
- 5 Mar/18 seen in group of 5 without calf

Caribou #227 (GPS, harvested)

- 18 Feb/15 collared
- 3 Mar/15 seen in group of 2 with calf
- 1 Mar/16 seen in group of 10 without calf
- Died 11 Apr/17, was harvested by TL harvester, shot with 5 other caribou; age 4 years.
- 13 Apr/17 collar retrieved

Caribou #226 (GPS, unknown)

- 18 Feb/15 collared
- 3 Mar/15 seen in group of 6 with calf
- 1 Mar/16 seen in group of 8 without calf
- Unable to locate during 2017 survey, no GPS locations
- Unable to locate during 2018 survey, no GPS locations

Caribou #225 (GPS, died)

- 18 Feb/15 collared
- 3 Mar/15 seen in group of 10 with calf
- 1 Mar/16 seen alone without calf
- Died 12 July/16

Caribou #224 (GPS, died)

- 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

- Died 31 May/15 at 15 years
- 21 Aug/15 collar retrieved

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
- 2 Mar/16 seen in group of 4 without calf
- 27 Feb/17 seen in group of 4 without calf
- 5 Mar/18 seen in group of 4 with calf

Caribou #222 (GPS, died)

- 8 Feb/14 collared
- 5 Mar/14 seen in group of 3 without calf
- 4 Mar/15 seen in group of 8 without calf
- 2 Mar/16 seen in group of 6 without calf
- Died 10 Apr/16

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
- 2 Mar/16 seen in group of 6 with #239 without calf
- 1 Mar/17 seen in group of 3 without calf
- 6 Mar/18 seen in group of 1 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
- 29 Feb/16 seen in group of 3 without calf

- 27 Feb/17 seen in group of 9 with calf
- 4 Mar/18 seen in group of 12 with calf

Caribou #219 (GPS, died)

- 8 Feb/14 collared
- 3 Mar/14 seen in group of 5 without calf
- 2 Mar/15 seen in group of 5 with calf
- Died 28 Apr/15 at age 7 years
- 19 Aug/15 collar retrieved

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
- 2 Mar/16 seen in group of 2 with calf
- 27 Feb/17 seen in group of 7 with calf
- 5 Mar/18 seen in group of 5 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
- 29 Feb/16 seen alone without calf
- 1 Mar/17 seen in group of 4 without calf
- 4 Mar/18 seen in group of 14 with calf

Caribou #216 (GPS, VHF Only)

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

- 1 Mar/16 seen in group of 4 without calf
- 26 Feb/17 seen in group of 8 with calf
- 5 Mar/18 seen in group of 7 with #248 without calf

Caribou #215 (GPS, died)

- 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
- Died 21 May/15
- 9 Sep/15 collar retrieved

Caribou #214 (GPS, died)

- 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
- 1 Mar/16 seen in group of 2 without calf
- Died 29 Apr/16

Caribou #213 (GPS, unknown)

- 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
- 1 Mar/16 seen in group of 4 without calf
- 28 Feb/17 seen in group of 5 with calf
- No locations since 19 Oct/17

Caribou #212 (GPS, released)

- 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

- 1 Mar/16 seen in group of 9 with #237 with calf
- 28 Feb/17 seen in group of 4 with calf
- 15 Jun/17 collar released

Caribou #211 (Sat, died)

- 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
- Died 18 Aug/15

Caribou #210 (GPS, died)

- 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
- Died 27 Jun/15

Caribou #209 (GPS-PLUS 2, died)

- 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
- 29 Feb/16 seen in group of 3 without calf
- Died 7 Oct/16 at age 10 years

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

- 12 Feb/13 collared
- 5 Mar/13 seen in group of 8 without calf
- Died 30 Jun/13 at age 12 years, death related to malnutrition
- 11 Sep/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, died)

- 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
- Died 17 Jul/15 at age 22 years
- 18 Aug/15 collar retrieved

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

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

Caribou #204 (GPS, released)

- 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
- 1 Mar/16 seen in group of 6 with calf
- 28 Feb/17 seen in group of 5 without calf
- 15 Jun/17 collar released

Caribou #203 (GPS, released)

- 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
- 1 Mar/16 seen in group of 2 without calf

- 28 Feb/17 seen in group of 6 with calf
- 15 Jun/17 collar released

Caribou #202 (GPS, no visual, released)

- 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
- 1 Jul/16 collar released

Caribou #201 (GPS, no visual, released)

- 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
- GPS locations restart in April
- 1 Jul/16 collar released

Caribou #200 (GPS, died)

- 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
- Died 17 Mar/15

Caribou #199 (Sat, no visual, released)

- 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
- Unable to relocate 2 Mar/16, no GPS locations during survey
- 15 Jun/16 collar released

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 at age 12 years
- 21 Oct/13 collar retrieved

Caribou #197 (GPS, died)

- 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
- Died 9 Sep/15

Caribou #196 (GPS, released)

- 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
- 29 Feb/16 seen in group of 4 without calf
- 1 Jul/16 collar released
-

Caribou #195 (GPS, unknown status, released)

- 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
- 1 Jul/16 collar released

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, released)

- 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
- 29 Feb/16 seen in group of 3 without calf
- 1 Jul/16 collar released

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, released)

- 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
- 29 Feb/16 seen in group of 4 without calf
- 1 Jul/16 collar released

Caribou #190 (GPS, died)

- 15 Feb/12 collared
- 29 Feb/12 seen in group of 3 with calf
- Died 25 Mar/12 at age 11 years
- 19 Jun/13 collar retrieved

Caribou #189 (GPS, VHF only, released)

- 15 Feb/12 collared
- 1 Mar/12 could not relocate in area
- 15 Mar/12 relocated in fixed-wing weak VHF signal
- 21 Jun/12 no satellite location
- 1 Jul/16 collar released

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 Jun/13 at age 13 years, death related to malnutrition
- 11 Sep/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 Jul/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 Jun/13 released
- 11 Sep/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 Sep/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 Jun/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
- 15 Jun/15 released

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 at age 4 years
- 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 Jul/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 Jun/13 released
- 11 Sep/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 at age 10 years
- 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 Jun/13 released
- 11 Sep/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 at age 9 years
- 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
- 15 Jun/15 released

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
- 15 Jun/15 released

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 Jun/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 Jun/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 Jun/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 Jul/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 at age 5 years
- 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 Jul/09 at age 9 years
- 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 Jul/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 Jul/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 at age 5 years, 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 at age 5 years
- 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 at age 7 years
- 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 at age 12 years
- 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

- 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 Apr/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 at age 10 years 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 seen 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 transmission 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 at age 15 years, 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 at 17 years, 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 at age 14 years, 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 age 11 years, a 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 at age 5 years, 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 at age 14 years, 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 ceased

