

Barren-Ground Caribou 2014/2015 Harvest & Monitoring Summary

CARIBOU HARVEST

Bathurst caribou

Since winter 2010, a reduction in hunting of Bathurst caribou in the Northwest Territories (NT) has been an important management action to help the herd recover. The fall 2014 to winter 2015 harvest season was the fifth season of reduced caribou hunting within barren-ground caribou management zones R/BC/02 and R/BC/03.

In 2014, the annual harvest target for Bathurst caribou in the NWT was 300 caribou (240 bulls and 60 cows) for management zones R/BC/02 and R/BC/03. In January 2015, a mobile management zone was formally implemented for Bathurst caribou to also assist in the herd's recovery. Therefore, since Jan 2015 there is no annual harvest for Bathurst caribou in the Northwest Territories. There has been an annual allotment of 70 tags from Government of Nunavut to Kitkimeot Regional Wildlife Board which have been distributed to an outfitter within the vicinity of Contwoyto Lake (Kqk'èeti) and Pellatt Lake in Nunavut. In addition there is a small community harvest of this herd. Estimated harvest is summarized in Table 1.

Bluenose-East

There were no harvest restrictions on the Bluenose East herd during the 2014/15 harvest season. Estimated harvest is summarized in Table 2.

2014/2015 – Harvest Season

Table 1. Bathurst Caribou Herd: Reported Harvest

Management Area	# Bulls	# Cows	# Calves	# Unknown	Total
NWT*					0
Nunavut				~100	~100
TOTAL					~100

* The Mobile Core Bathurst Caribou Management Zone preventing harvest of Bathurst caribou in NWT came into effect January 2015.

Table 2. Bluenose-East Caribou Herd: Reported Harvest

Management Area	# Bulls	# Cows	# Calves	# Unknown	Total
North Slave Region					~315
Sahtú (Déljne)	~130	~180			~310
Location unknown		95			~95
Nunavut	0	0	0	~265	~265
TOTAL					~985

CARIBOU MONITORING ACTIVITIES

Bathurst Caribou

Fall Composition Survey

- The fall composition survey was conducted using a helicopter on October 22, 2014.
- 2,927 caribou from 30 groups were classified with a mean group size of 65.
- The analysis indicates a 49:100 bulls:cow ratio (Figure 2) and a calf:cow ratio of 25:100 (Figure 1) for the Bathurst herd.
- The calf:cow ratio represents the number of calves per 100 cows that were born in June and survived to the fall of the same year. Calf:cow ratios below 30:100, if sustained, suggest a declining trend.

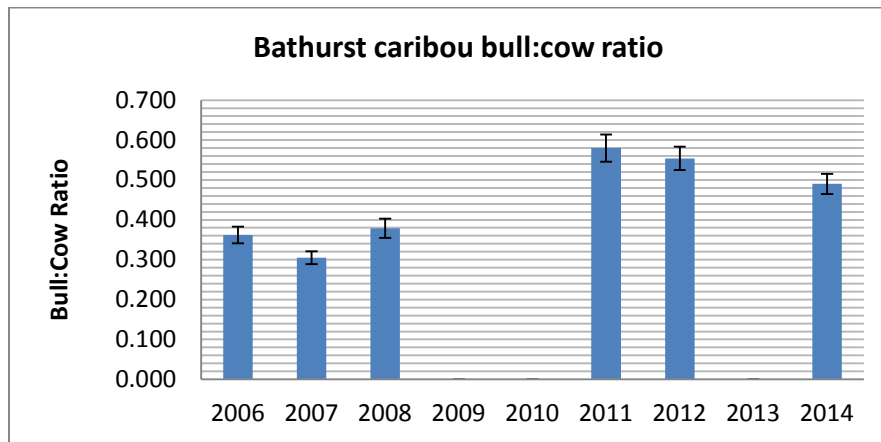


Figure 1: Bathurst caribou herd fall composition survey - bull:cow ratio. Error bars are standard error.

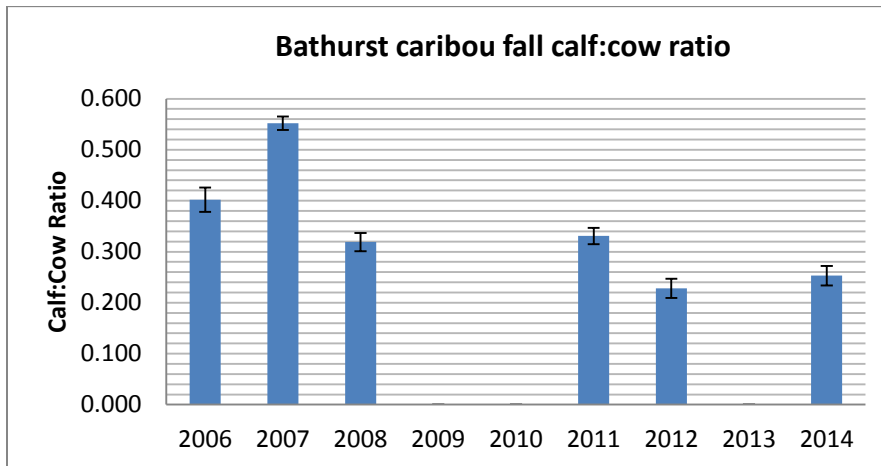


Figure 2: Bathurst caribou herd fall composition survey - calf:cow ratio. Error bars are standard error.

Satellite Collars

- Target number of collars for the Bathurst herd in 2014/15 was 50 collars (30 cows and 20 bulls). This was the first time Bathurst bulls were collared.
- A reconnaissance survey occurred from February 25-27 2015 to search for candidate sites for collar deployment.
- Between March 13-17 2015, 21 cow collars and 19 bull collars were placed on adult caribou in the area where Bathurst caribou spent the winter to retain the target collar numbers on the herd.
- Blood samples were taken from the female caribou captured during collaring activities to determine pregnancy (Table 3). Note these pregnancy rates are for the sampled caribou which may or may not belong to the Bathurst herd. Herd assignment is made after an animal migrates to a calving ground in June.

Table 3: Bathurst Caribou Herd - Pregnancy Rates from Targeted Collared Caribou 2012 – 2015.*

Year	Number of Cows Tested*	Number of Cows Pregnant	Percent Pregnant (%)
2012	12	12	100
2013	2	2	100
2014	13	9	69
2015	16	12	75

* Blood not always collected for all cows captures. All samples taken were tested for pregnancy

Spring Recruitment Survey

- The recruitment survey was conducted by helicopter between March 5 to 7, 2015.
- 2,742 caribou from 84 groups were classified with a mean group size of 20.
- The results of the spring recruitment survey indicated a calf:cow ratio of 23.5:100 (Figure 3). Ratios below 30:100, if sustained, suggest a declining natural trend.

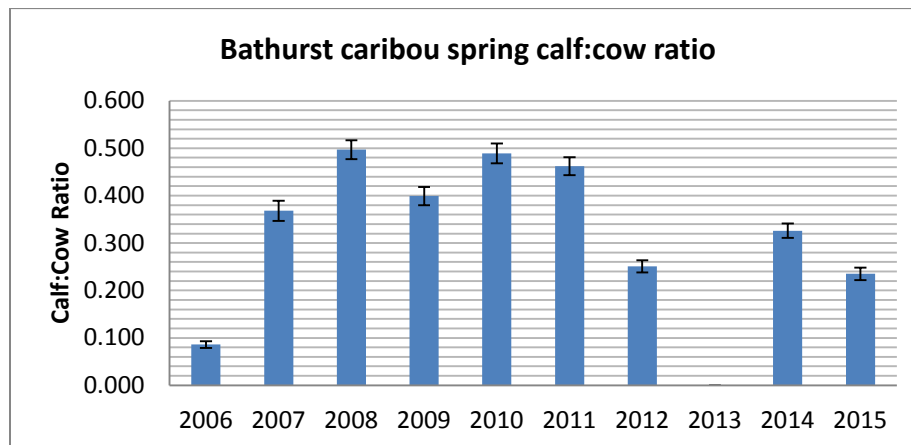


Figure 3: Bathurst caribou herd spring recruitment survey – calf:cow ratio. Error bars are standard error.

Calving Ground Surveys

- A photo survey was conducted June 2-9, 2015 to estimate population size of Bathurst caribou¹.
- The results estimated 8,075 ± 1650 breeding females (Figure 4) and estimated a total herd size of 19,769 ± 3531 (Figure 5).
- The composition survey conducted June 6, 8 and 9, 2015 as part of the calving ground photo-survey showed the proportion of calves to breeding adults was 58% suggesting that the survey occurred near the peak of calving.
- Counts of groups classified in each stratum revealed a relatively large number of non-breeding adult females. The estimate of adult females is 13,265 ± 2359.5 compared to the estimate of breeding females of 8,075 ± 1650.

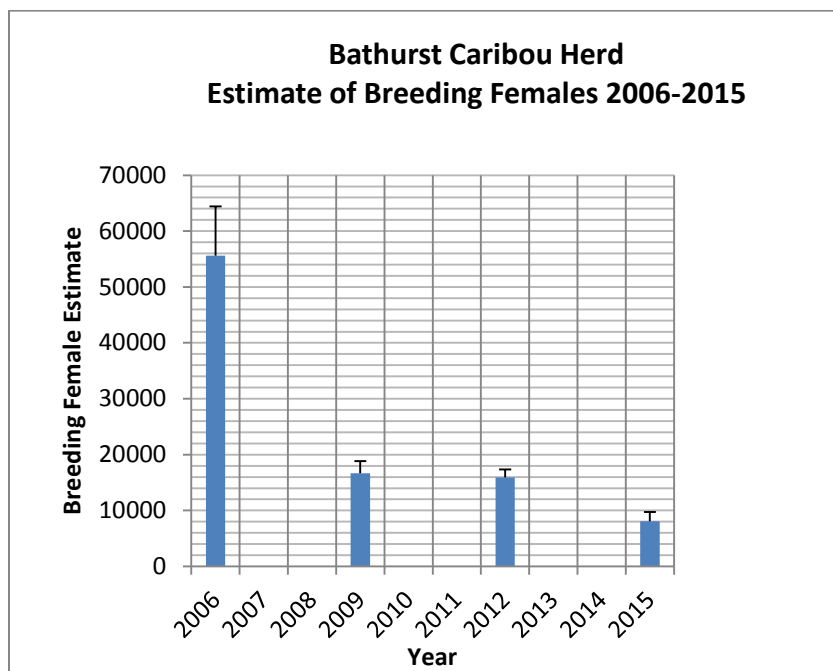


Figure 4: Trend in breeding females of Bathurst caribou herd based on calving ground photographic surveys. Error bars are standard error.

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https://www.enr.gov.nt.ca/sites/enr/files/resources/estimate_of_breeding_females_and_analyses_of_demographics_for_the_bathurst_herd.pdf

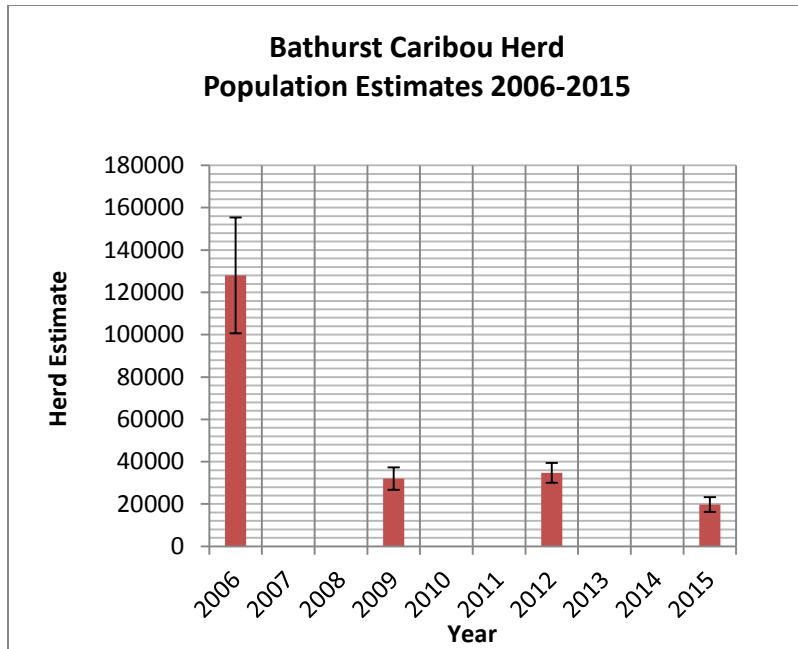


Figure 5: Trend in Bathurst caribou population size based on calving ground photographic surveys. Error bars are standard error.

Body Condition

- Body condition is evaluated by handlers during caribou collaring programs undertaken annually in March. The ranking system spans from 1 – 4 (skinny, not bad, fat, very fat).
- Average body condition for Bathurst caribou is shown in Figure 6.

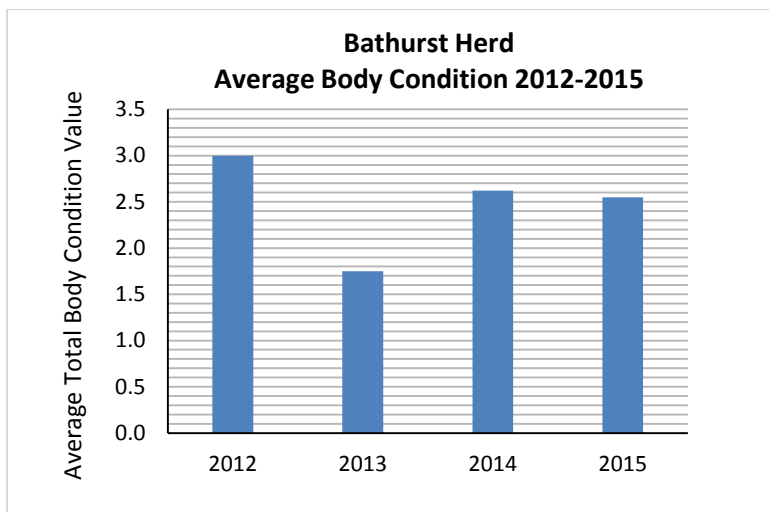


Figure 6: Bathurst caribou herd – Average body condition

- Besnoitia is a cyst-forming usually non-fatal disease that can cause sickness and infertility.

- The presence of *Besnoitia* in caribou is assessed by handlers during caribou collaring by examining the eyes. *Besnoitia* cysts look like grains of salt on the whites of the eyes.
- Table 4 shows presence of *Besnoitia* in sampled Bathurst caribou.

Table 4: Bathurst caribou - Presence of *Besnoitia* in caribou samples during annual collaring programs in March.

Year	Total Tested	Total with <i>Besnoitia</i> (R)	Total with <i>Besnoitia</i> (L)	Percent with <i>Besnoitia</i> R (%)	Percent with <i>Besnoitia</i> L (%)
2012	0				
2013	0				
2014	13	3	3	23	23
2015	52	11	10	21	19

Bluenose-East Caribou Herd (BNE)

Fall Composition Survey

- There was no fall composition survey in 2014. Figure 7 shows bull:cow ratios from previous years and Figure 8 shows calf:cow ratios from previous years.

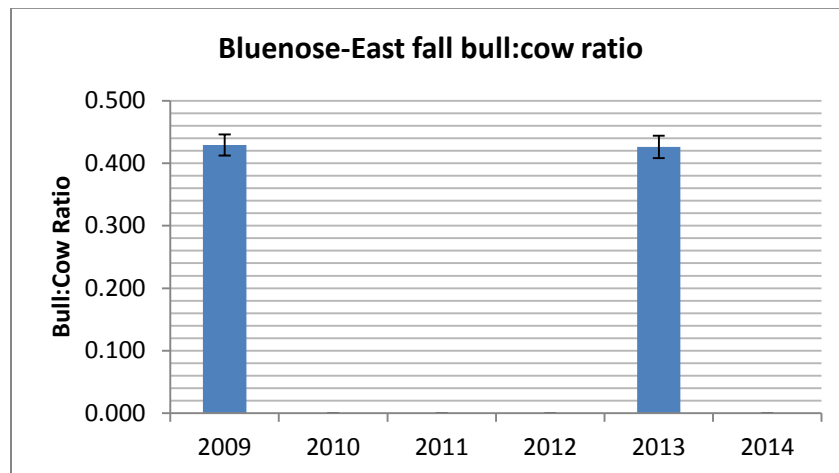


Figure 7. Bluenose-East caribou herd fall composition surveys - bull:cow Ratio. Error bars are standard error.

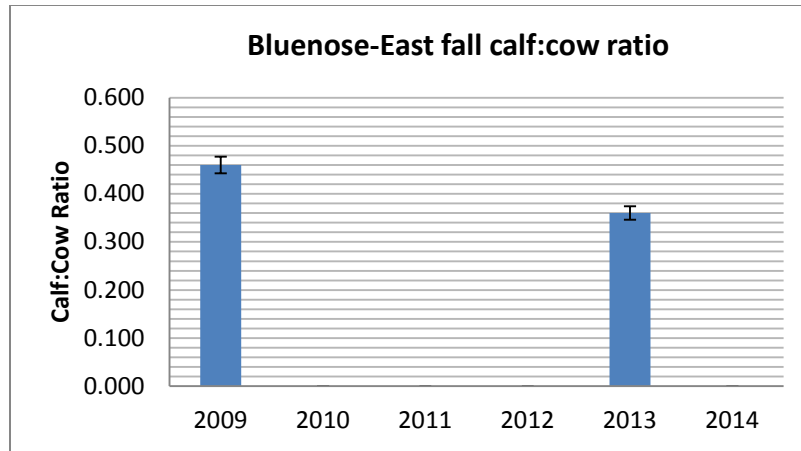


Figure 8. Bluenose-East caribou herd fall composition surveys - calf:cow ratio. Error bars are standard error.

Satellite Collars

- A reconnaissance survey occurred from February 23 to 25, 2015 to search for candidate sites for collar deployment. Existing collared Bluenose-East caribou helped direct survey coverage.
- Our targets for 2014/15 were 50 collars (30 cows and 20 bulls) and between March 17 to 20 2015, an additional 15 GPS collars were placed on cows and 16 were placed on bulls in the area where Bluenose-East caribou spent the winter.
- Blood samples were taken from the female caribou captured during collaring activities to determine pregnancy. The results indicate 13 out of the 14 caribou sampled (~93%) were pregnant. (Table 5). Note these pregnancy rates are for the sampled caribou which may or may not belong to the Bluenose-East caribou herd. Herd assignment is made after an animal migrates to a calving ground in June.

Table 5: Bluenose-East caribou herd - Pregnancy Rates of Targeted Collared Caribou 2012 – 2015.*

Year	Number of Cows Tested*	Number of Cows Pregnant	Percent Pregnant (%)
2012	35	27	77
2013	3	2	67
2014	8	7	88
2015	14	13	93

* Blood not always collected for all cows captures. All samples taken were tested for pregnancy

Spring Recruitment Survey

- The recruitment survey was conducted by helicopter between March 3 to 5, 2015.
- 1,131 caribou from 60 groups were classified with a mean group size of 13.
- The results of the spring recruitment survey indicated a calf:cow ratio of 21.2:100 (Figure 9). Ratios below 30:100, if sustained, suggest a declining natural trend.

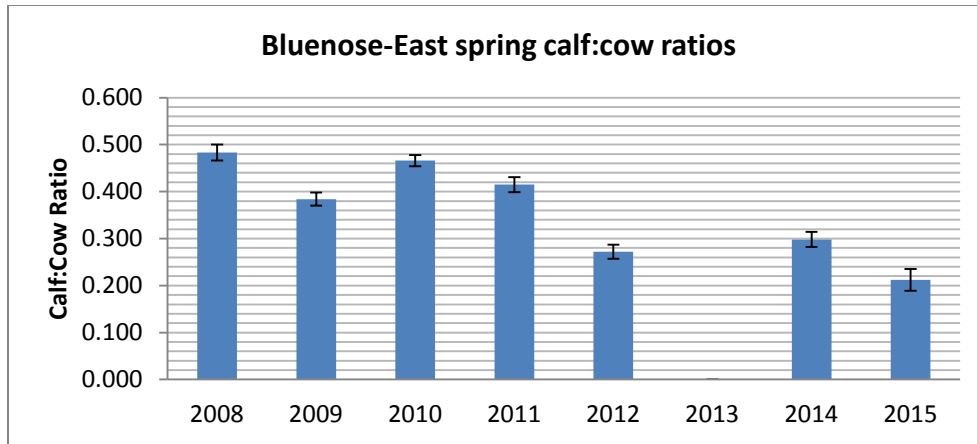


Figure 9: Bluenose East caribou herd spring recruitment survey – calf:cow ratio. Error bars are standard error.

Calving Ground Survey

- A calving ground photo survey was conducted in June 2-6, 2015 to estimate population size of the Bluenose-East caribou herd.
- The survey estimated $17,396 \pm 4616$ breeding females (Figure 10) and a total herd size of $38,592 \pm 4733$ (Figure 11).²
- Based on collar movements and observed proportions of calves, it was determined that the peak of calving would occur soon after June 5th. The photo plane survey was flown on June 5th.
- The pregnancy rate of females, as indexed by the proportion of adult females classified as breeding was lower in 2015 than the previous survey in 2013.

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https://www.researchgate.net/profile/John_Boulanger/publication/311537262_An_estimate_of_breeding_females_and_analyses_of_demographics_for_the_Bluenose-East_herd_of_barren-ground_caribou_2015_calving_ground_photographic_survey/links/584b2eeb08ae4bc8992ab16a/An-estimate-of-breeding-females-and-analyses-of-demographics-for-the-Bluenose-East-herd-of-barren-ground-caribou-2015-calving-ground-photographic-survey.pdf?origin=publication_detail

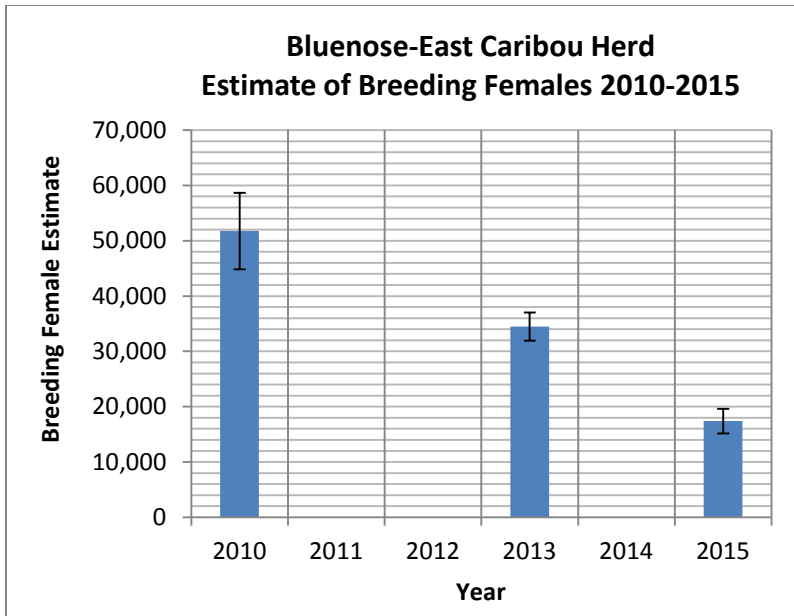


Figure 10: Trend in breeding females of Bluenose-East caribou herd based on calving ground photographic surveys. Error bars are standard error.

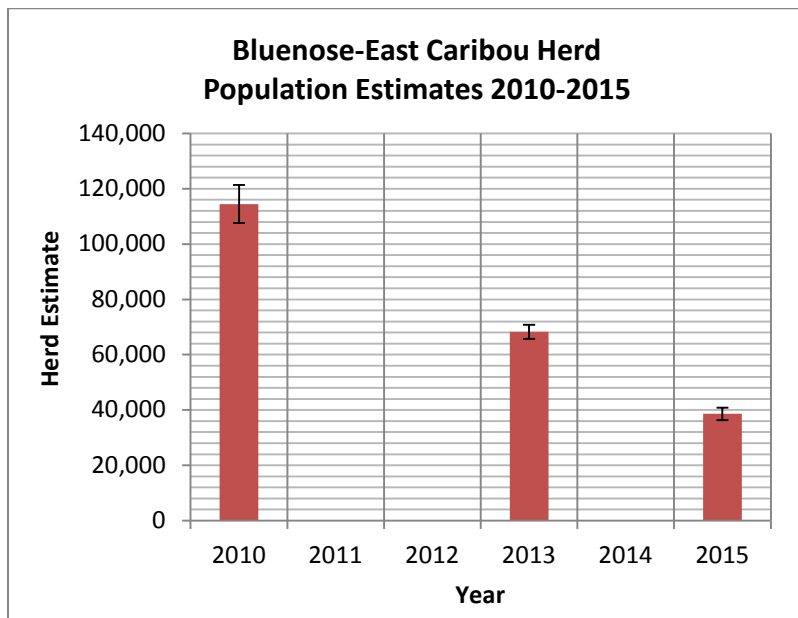


Figure 11: Trend in population size of Bluenose-East caribou herd based on calving ground photographic surveys. Error bars are standard error

Body Condition

- Body condition is evaluated by handlers during caribou collaring programs. The ranking system spans from 1 – 4 (skinny, not bad, fat, very fat).

- Average body condition for Bluenose-East caribou is shown in Figure 12

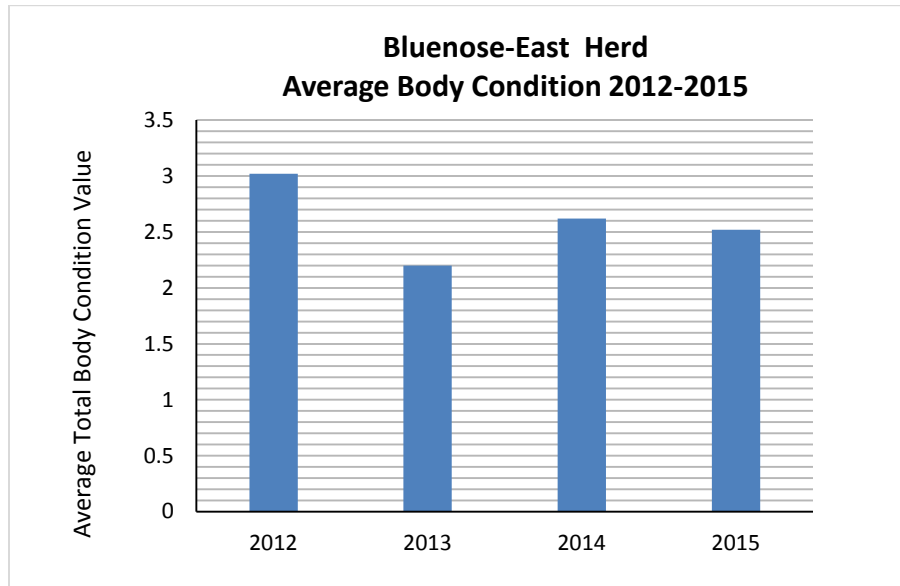


Figure 12: Bluenose-East caribou herd – Average body condition

- Besnoitia is a cyst-forming, usually non-fatal disease that can cause sickness and infertility.
- The presence of Besnoitia in caribou is assessed by handlers during caribou collaring by examining the eyes. Besnoitia cysts look like grains of salt on the whites of the eyes.
- Table 6 shows presence of Besnoitia in sampled Bluenose-East caribou.

Table 6: Bluenose-East caribou - Presence of Besnoitia in caribou samples during annual collaring programs in March.

Year	Total Tested	Total with Besnoitia (R)	Total with Besnoitia (L)	Percent with Besnoitia R (%)	Percent with Besnoitia L (%)
2012	0				
2013	0				
2014	13	1	1	8	8
2015	31	9	9	29	29

Beverly Caribou Herd

Fall Composition Survey

- No survey was conducted in 2014. No fall composition survey were conducted in 2013, or 2012.
- Previous years fall composition survey results indicated a bull:cow ratio of 69:100 (2011) and 54:100 (2009) (Figure 13), and a calf:cow ratio of 54:100 (2011) and 46:100 (2009) (Figure 14).

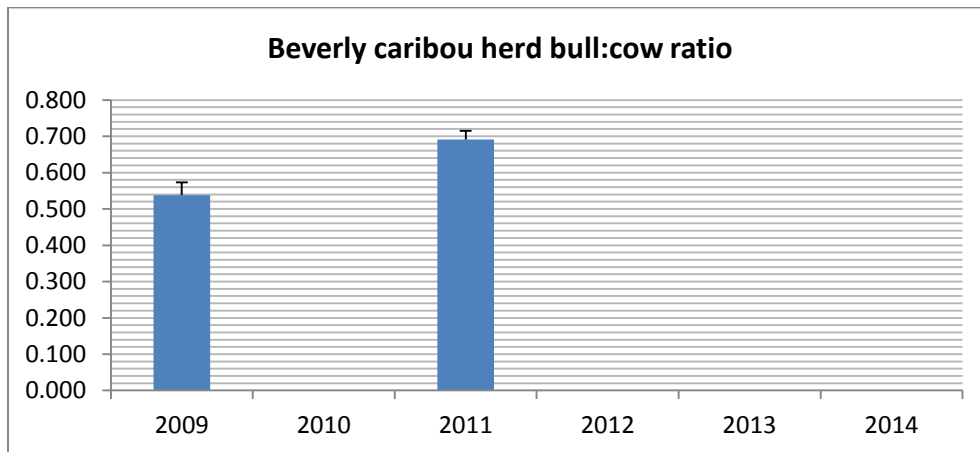


Figure 13: Beverly caribou herd fall composition survey - bull:cow ratio. Error bars are standard error.

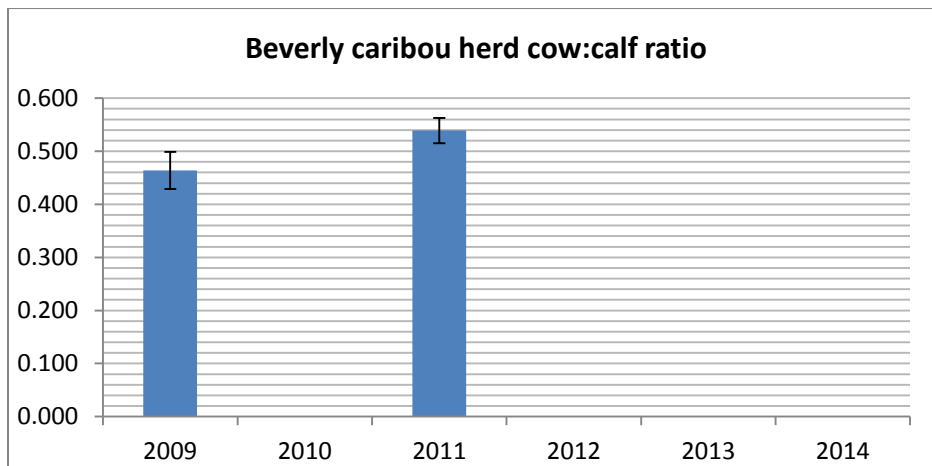


Figure 14: Beverly caribou herd fall composition survey -calf:cow ratio. Error bars are standard error.

Satellite Collars

- A reconnaissance survey occurred from March 11 to 23, 2015 to search for candidate sites for collar deployment.
- Our targets for 2015 were 50 collars (30 cows and 20 bulls) and between March 23 to 23, 2015, an additional 10 GPS collars were placed on adult female caribou and 15 were placed on adult male caribou in the area where Beverly caribou spent the winter.
- Blood samples were taken from the female caribou captured during collaring activities to determine pregnancy. The results indicate 3 out of the 8 caribou sampled (~38%) were pregnant (Table 7).

Table 7: Beverly caribou herd - Pregnancy Rates of Targeted Collared Caribou 2012 - 2015

Year	Number of Cows Tested*	Number of Cows Pregnant	Percent Pregnant (%)
2012	18	10	56
2013	1	1	100
2014	23	20	87
2015	8	3	38

* Blood not always collected for all cows captures. All samples taken were tested for pregnancy

Spring Recruitment Survey

- No spring recruitment survey was conducted in 2015. Figure 15 shows spring calf:cow ratios from previous years 2008-2014.

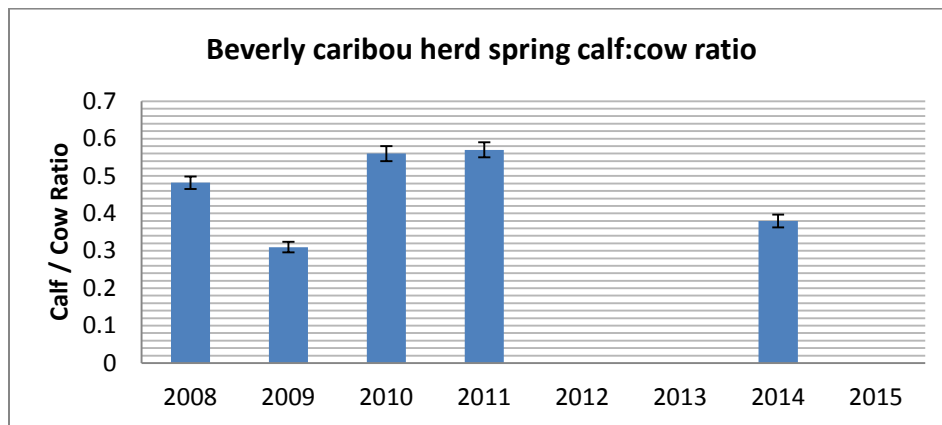


Figure 15: Beverly caribou herd Spring Recruitment Survey – calf:cow ratios. Error bars are standard error.

Calving Ground Survey

- There has been no calving ground photo survey conducted since 2011.³ At that time the herd was estimated at 124,189 with a standard error of 13,996. Since 2011 the survey results have been reworked taking into account caribou on the Adelaide Peninsula.⁴ The revised estimate for this herd in 2011 is 136,608 with a standard error of 6,603.

Body Condition

- Body condition is evaluated by handlers during caribou collaring programs. The ranking system spans from 1 – 4 (skinny, not bad, fat, very fat).
- Average body condition for Beverly caribou is shown in Figure 16

³Campbell et al. "Calving ground Abundance Estimates of the Beverly and Ahik Subpopulations of Barrenground Caribou (*Rangifer tarandus groenlandicus*) – June 2011" Government of Nunavut, Department of Environment, Technical Report Series – No:01-2013. April 23, 2014.

⁴ Campbell, M. D. Lee and J. Boulanger. 2019. Abundance Trends of the Beverly Mainland Migratory Subpopulation of Barren-Ground Caribou (*Rangifer tarandus groenlandicus*) June 2011 – June 2018. Government of Nunavut, Department of Environment Technical Report Series – No: 01-2018. May 30, 2019.

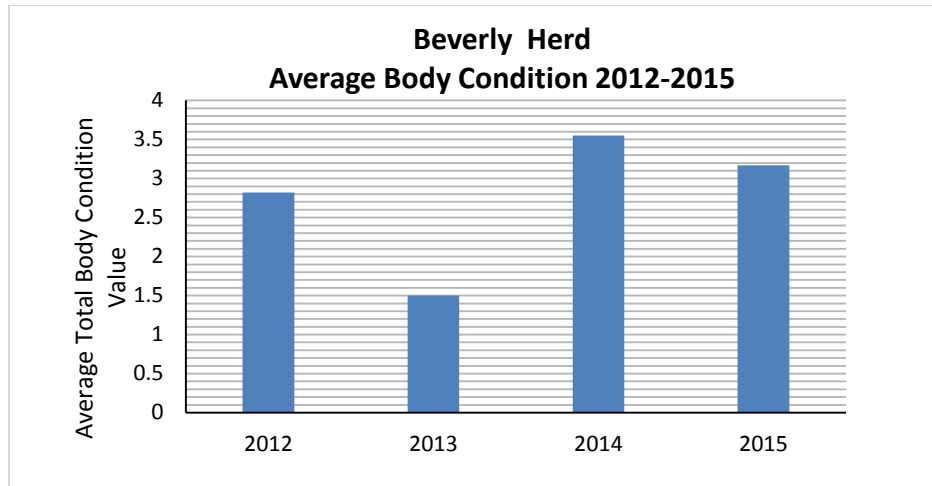


Figure 16: Beverly caribou herd – Average body condition

- Besnoitia is a cyst-forming, usually non-fatal disease that can cause sickness and infertility.
- The presence of Besnoitia in caribou is assessed by handlers during caribou collaring by examining the eyes. Besnoitia cysts look like grains of salt on the whites of the eyes.
- Table 8 shows presence of Besnoitia in sampled Beverly caribou.

Table 8: Beverly caribou - Presence of Besnoitia in caribou samples during annual collaring programs in March.

Year	Total Tested	Total with Besnoitia (R)	Total with Besnoitia (L)	Percent with Besnoitia R (%)	Percent with Besnoitia L (%)
2012	0				
2013	0				
2014	23	0	4	0	17
2015	24	4	3	17	13

WOLF HARVEST IN NORTH SLAVE REGION

Wolf Carcass / Skull Collection

- The wolf carcass collection program in the North Slave Region was intended to monitor the nutritional and reproductive condition of wolves. Incentives were introduced in 2010 to encourage an increase in wolf harvest to help the recovery of caribou.
- While an increase in wolf harvest occurred during the incentive program, many wolves (e.g., >25%) were killed near communities and dumps and did not target areas where barren-ground caribou recovery was desired.

- A wolf skull collection program replaced the carcass collection program, at \$50/skull, in the 2013/14 season. Collecting the skull from wolf hunters still allowed for collecting tissue samples for genetic and stable isotope analysis, skull morphology measurements, and a method of recording the wolf harvest both numerically and spatially.
- The total number of wolf skulls submitted in 2014-15 was 21 (11 male, 9 female and 1 unknown). Table 9 shows the number of carcasses and/or skulls and the sex breakdown over time.

Table 9: Wolf Carcass/Skulls Collection

Year [†]	Carcasses/Skulls	Male:Female
1987-88	34	18:16
1988-89	55	30:25
1989-90*	211	109:102
1990-91*	93	45:48
1991-92*	150	74:76
1992-93*	4	3:1
1993-94 to 2002-03	no collections	
2003-04	52	30:22
2004-05	17	8:9
2005-06	105	55:50
2006-07	5	3:2
2007-08	40	22:18
2008-09	25	10:12
2009-10	19	11:8
2010-11	41	23:17
2011-12	80	45:35
2012-13	55	26:29
2013-14**	24	16:8
2014-15	21	11:9

* Does not include wolf carcass collected in the Bathurst Inlet area

** Skull collection

† Harvest year is 01 July to 30 June

WOLF MONITORING ACTIVITIES

Wolf Den Survey

- The wolf den survey was terminated after 2012.
- In 2012, survey results were 4.43 active dens/1000km (2012), up from 3.55 active dens/1000km in 2011 and 4.01 active dens/1000km in 2010.