

Barren-Ground Caribou 2015/2016 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. In January 2015, a mobile management zone was formally implemented for Bathurst caribou to assist in the herd's recovery. The fall 2015 to winter 2016 harvest season saw the continued use of the Mobile Core Bathurst Caribou Management Zone to enforce the zero allowable harvest of the Bathurst herd.

There has been an annual allotment of 70 tags from Government of Nunavut to the Kitikmeot Regional Wildlife Board which distributes to Hunters and Trappers Organizations. The 70 tags have been used for subsistence and outfitted hunts in the vicinity of Contwoyto Lake (Kqk'èeti) and Pellat Lake in Nunavut. Estimated harvest is summarized in Table 1.

Bluenose-East caribou

There were no harvest restrictions on the Bluenose East herd during the 2015/16 harvest season. Estimated harvest is summarized in Table 2.

2015/16 – Harvest Season

Table 1: Bathurst Caribou Herd: Reported Harvest

Management Area	# Bulls	# Cows	# Calves	# Unknown	Total
Northwest Territories	0	0	0	0	0
Nunavut				~70	~70
TOTAL					~70

Table 2: Bluenose-East Caribou Herd: Reported Harvest

Management Area	# Bulls	# Cows	# Calves	# Unknown	Total
North Slave Region*					~375**
Sahtu Region					~150**
Other regions					(low)
Nunavut					~265
TOTAL					~790

*Harvest was limited due to the herd being remote.

** mostly bulls

CARIBOU MONITORING ACTIVITIES

Bathurst Caribou

Fall Composition Survey

- A fall composition survey was not done for the Bathurst herd in 2015.
- 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 natural trend.
- Previous results for bull:cow ratio and calf:cow ratios are shown in Figure 1 and Figure 2 below.

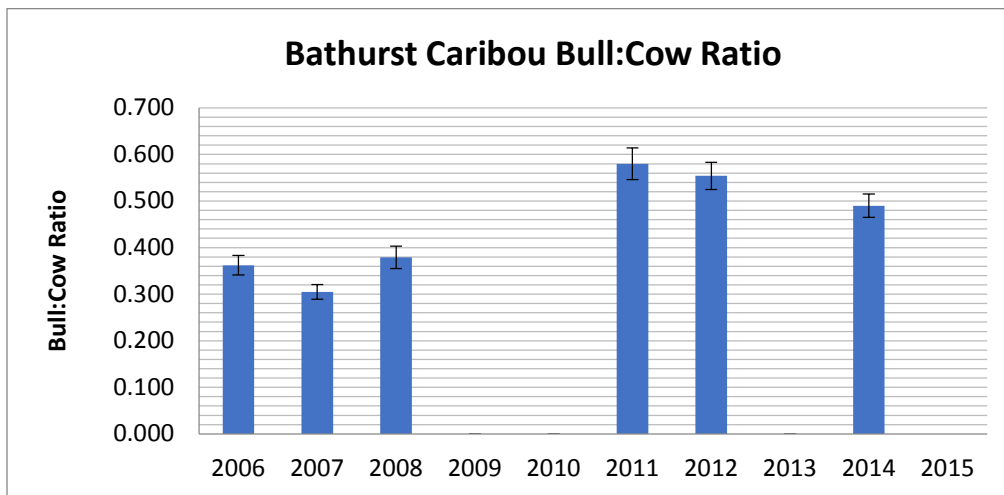


Figure 1: Bathurst caribou herd fall composition survey - bull:cow ratio. Error bars are standard error.

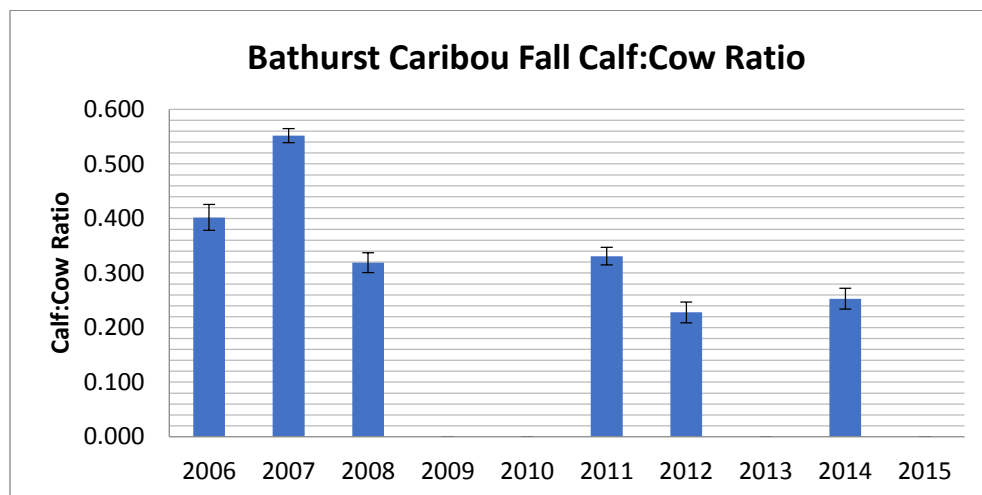


Figure 2: Bathurst caribou herd fall composition survey - calf:cow ratio. Error bars are standard error.

Satellite Collars

- Target numbers of collars for the Bathurst herd in 2015/16 were 50 collars (30 cows and 20 bulls).
- A reconnaissance survey occurred on 22 March 2016 to search for candidate sites for collar deployment.
- Between March 20 to 31, 2016, 9 cow collars and 11 bull collars were placed on adult caribou where Bathurst caribou spent the winter to retain target collar numbers for 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 – 2016.*

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
2016	5	5	100

* 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 on March 23, 24, and 28, 2016.
- 2,233 caribou from 38 groups were classified with a mean group size of 28.
- The results of the spring recruitment survey indicated a calf:cow ratio of 20:100 (Figure 3). Ratios below 30:100, if sustained, suggest a declining natural trend.

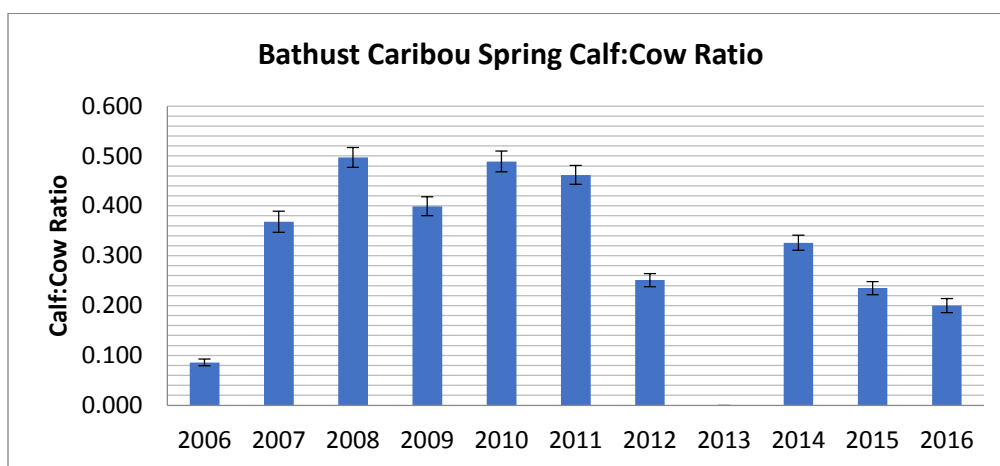


Figure 3: Bathurst caribou herd spring recruitment survey – calf:cow ratio. Error bars are standard error.

Calving Ground Reconnaissance Surveys

- A visual calving ground reconnaissance survey was flown by fixed-wing aircraft June 7-8, 2016.
- Results from the visual estimates of adult caribou in the core calving area in 2016 were 10,576 +/- 1969.6 animals at least one year old .

Calving Ground Photographic Survey

- No calving ground photo survey to estimate population size of the Bathurst caribou herd was conducted in 2016.

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 4.

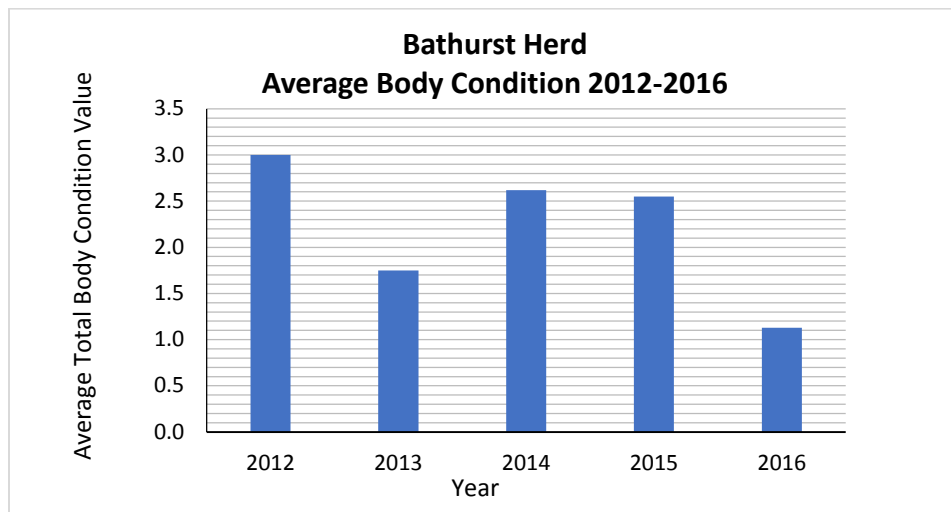


Figure 4: Bathurst caribou herd – Average body condition

- 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 Besnoitia (R)	Total with Besnoitia (L)	Percent with Besnoitia R (%)	Percent with Besnoitia L (%)
2012	0				
2013	0				
2014	13	3	3	23	23
2015	52	11	10	21	19
2016	12	3	1	25	8

Bluenose-East Caribou Herd (BNE)

Fall Composition Survey

- A fall composition survey for the Bluenose East caribou herd was conducted by helicopter on 28 and 30 October 2015.
- 4,190 caribou from 51 groups were classified with a mean group size 31.
- The analysis indicates a 41.7:100 bulls:cow ratio (Figure 5) and a calf:cow ratio of 34.7:100 (Figure 6) for the Bluenose-East 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 natural trend.

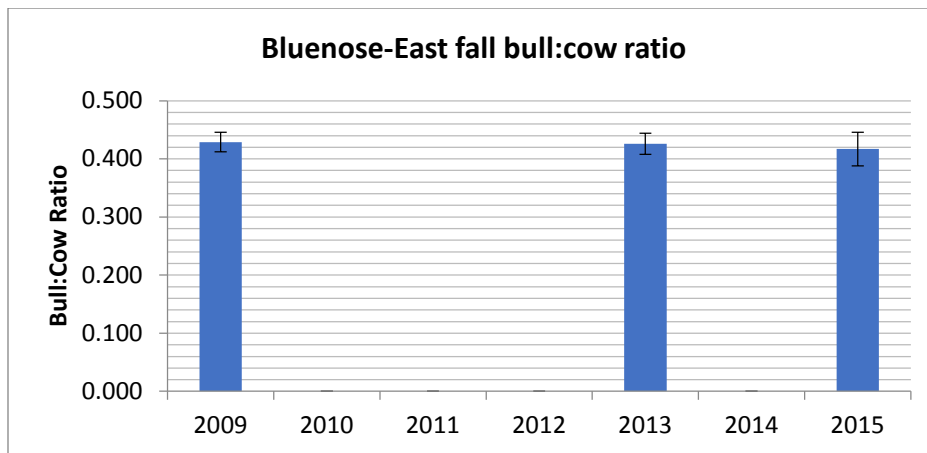


Figure 5: Bluenose-East caribou herd fall composition survey - bull:cow ratio. Error bars are standard error.

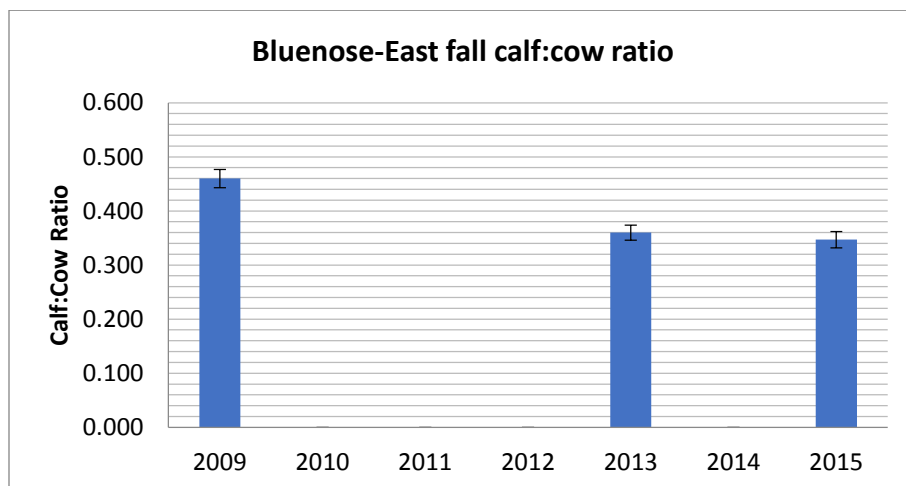


Figure 6: Bluenose-East caribou herd fall composition survey - calf:cow ratio. Error bars are standard error.

Satellite Collars

- A reconnaissance survey occurred on March 22, 2016 to search for candidate sites for collar deployment.
- Target numbers for 2015/16 were 50 collars (30 cows and 20 bulls) and between March 26 to 28, 2016 an additional 10 GPS collars were placed on adult female caribou and 3 were placed on adult male caribou 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 11 out of the 13 caribou sampled (~85%) 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 – 2016.*

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
2016	13	11	85

* 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 March 25 &26, 2016.
- 2,529 caribou from 77 groups were classified with a mean group size of 21.
- The results of the spring recruitment survey indicated a calf:cow ratio of 31.9:100 (Figure 7). Ratios below 30:100, if sustained, suggest a declining natural trend.

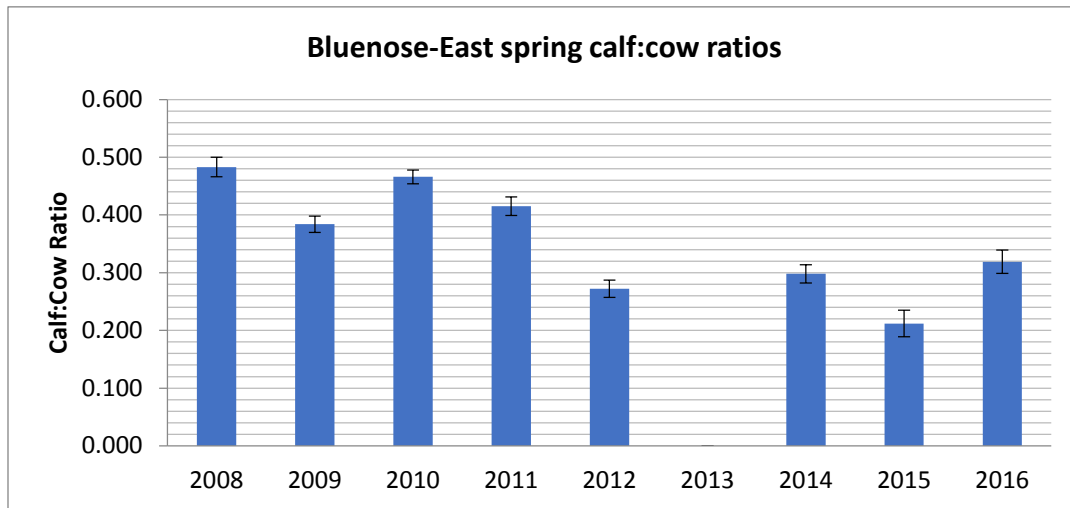


Figure 7: Bluenose East caribou herd spring recruitment survey – calf:cow ratio. Error bars are standard error.

Calving Ground Reconnaissance Surveys

- A visual calving ground reconnaissance survey was conducted by fixed-wing aircraft June 4-6, 2016.
- The results from the visual estimates of adult caribou in the core calving area were 18,536 ± 6,410.4 caribou at least 1 year-old.

Calving Ground Photographic Survey

- No calving ground photo survey to estimate population size of Bluenose-East caribou herd was conducted in 2016.

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 Bluenose-East caribou is shown in Figure 8.

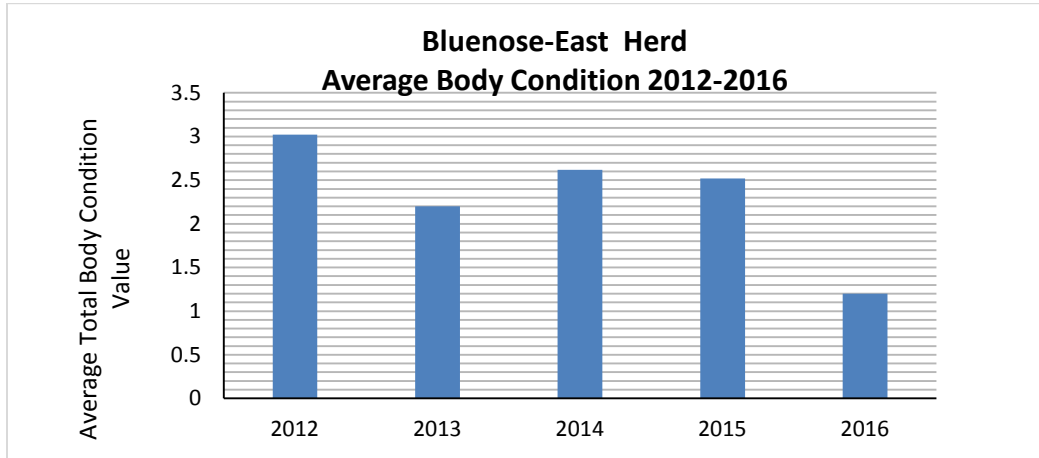


Figure 8: Bluenose-East caribou herd – Average body condition

- 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
2016	19	0	1	0	5

Beverly Caribou Herd

Fall Composition Survey

- No fall composition survey was conducted in 2015.
- Previous years fall composition survey results indicated a bull:cow ratio of 69:100 (2011) and 54:100 (2009) (Figure 9), and a calf:cow ratio of 54:100 (2011) and 46:100 (2009) (Figure 10).

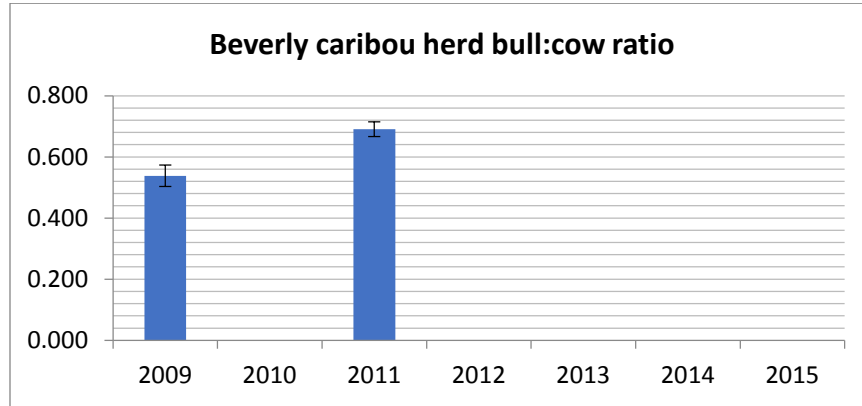


Figure 9: Beverly caribou herd fall composition survey - bull:cow ratio. Error bars are standard error.

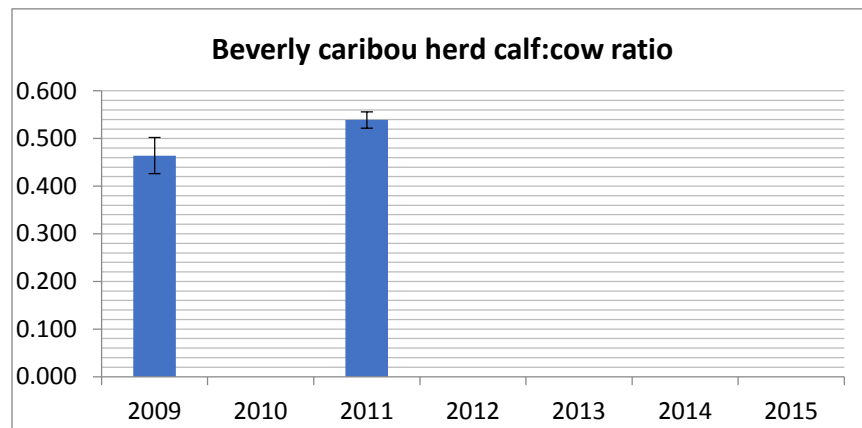


Figure 10: Beverly caribou herd fall composition survey -calf:cow ratio. Error bars are standard error.

Satellite Collars

- No collars were deployed on the Beverly herd in winter 2016.
- Blood samples from previous years show pregnancy rates (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 surveys were conducted in 2016. Figure 11 shows spring calf:cow ratios from previous years 2008-2014.

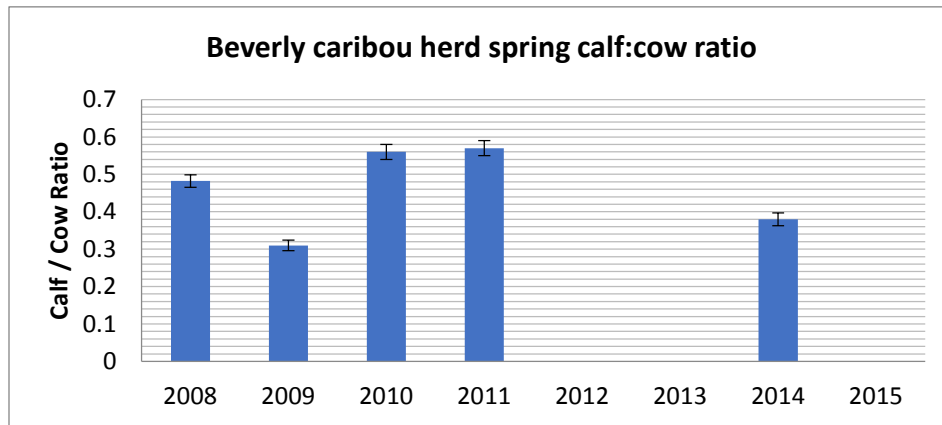


Figure 11: Beverly caribou herd Spring Recruitment Survey – calf:cow ratios. Error bars are standard error.

Calving Ground Survey

- There has been no calving ground photo survey conducted since 2011.¹ 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.² The revised estimate for this herd in 2011 is 136,608 with a standard error of 6,603.

Body Condition

- No health & body condition sampling took place in the 2015/16 season for the Beverly caribou herd.
- Average body condition for Beverly caribou from 2012 to 2015 is shown in Figure 12.

¹Campbell 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.

² 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.

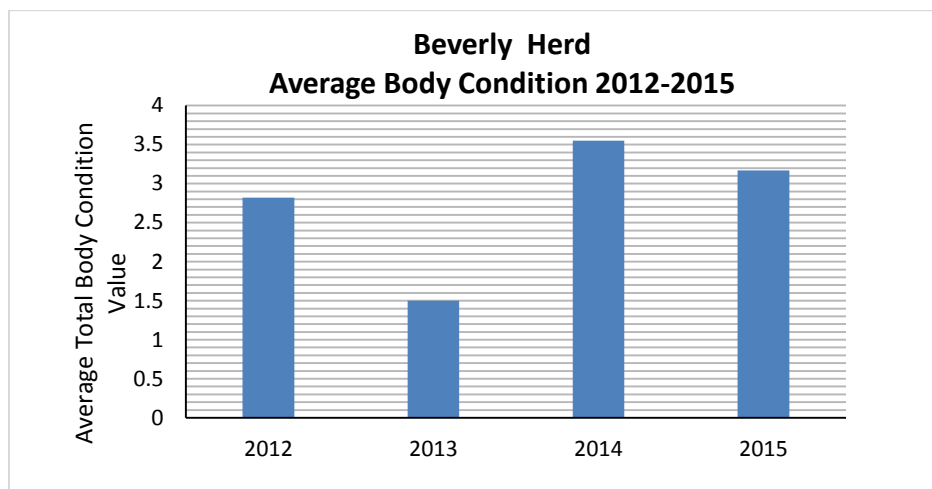


Figure 12: Beverly caribou herd – Average body condition

- No besnoitia sampling took place in the 2015/16 season. Table 8 shows presence of Besnoitia in sampled Beverly caribou from 2014 and 2015.

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 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 to in 2015-16 was 56 (16 male, 12 female, 28 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
2015-16	56	16:12

* 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

- Wolf den surveys were terminated after 2012
- In 2012, survey results were 4.43 dens/1000km (2012), 3.55 dens/1000km (2011, which was the lowest year recorded) and 4.01 active dens/1000km (2010).
- No further wolf monitoring activities have been initiated since 2014.