

Barren-Ground Caribou 2018/2019 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 by implementing a total allowable harvest of zero. The fall 2018 to winter 2019 harvest season saw the continued use of the Mobile Core Bathurst Caribou Management Zone to enforce the zero allowable harvest of the Bathurst herd.

In 2017 the Nunavut Wildlife Management Board established a bull only annual total allowable harvest (TAH) of 30 for Bathurst caribou. The Government of Nunavut issues the 30 tags to the Kitikmeot Regional Wildlife Board which in turn distributes them to Hunters and Trappers Organizations. The 30 tags have been used for subsistence and outfitted hunts in the vicinity of Contwoyto Lake (Kòk'èeti) and Pellat Lake in Nunavut. Estimated harvest is summarized in Table 1.

Bluenose-East caribou

Wildlife Management Boards in NT and Nunavut have held public hearings and made recommendations for reduced harvest of Bluenose-East caribou as a result of reduced population estimates. In June 2016, a TAH of 750 bulls was established in Wek'èezhìi for Bluenose-East caribou. A TAH for Bluenose-East caribou in the Sahtú region was set at 150 in the fall of 2016. A Nunavut Wildlife Management Board public hearing resulted in the establishment of a TAH of 340 in the fall of 2016 caribou for the Bluenose-East herd in Nunavut. Estimated harvest is summarized in Table 2.

2018/2019 – Harvest Season

Table 1: Bathurst Caribou Herd: Reported Harvest

Management Area	# Bulls	# Cows	# Calves	# Unknown	Total
NWT				49*	49*
Nunavut	30				30
TOTAL	30			49*	79**

*these were illegally harvested in the Mobile Core Bathurst Caribou Management Zone but not necessarily Bathurst

** not necessarily all Bathurst

Table 2: Bluenose-East Caribou Herd: Reported Harvest

Management Area	# Bulls	# Cows	# Calves	# Unknown	Total
North Slave Region	74				74
Sahtu Region	0				0
Deh Cho Region					Unknown
Nunavut				93	93
TOTAL	74			93	167

MONITORING ACTIVITIES

Bathurst Caribou

Fall Composition Survey

- A fall composition survey was conducted by helicopter on October 25, 2018.
- A total number of 1,697 caribou were classified, comprising 11 groups and with a median group size of 32.
- The analysis indicates a 46.1:100 bull:cow ratio (Figure 1) and a calf:cow ratio of 21.4:100 (Figure 2) for the Bathurst herd.
- The calf:cow ratio represents the number of calves per 100 cows that were born in the spring of 2018 and survived to the fall of 2018. Calf:cow ratios below 30:100, if sustained, suggest a declining natural trend.

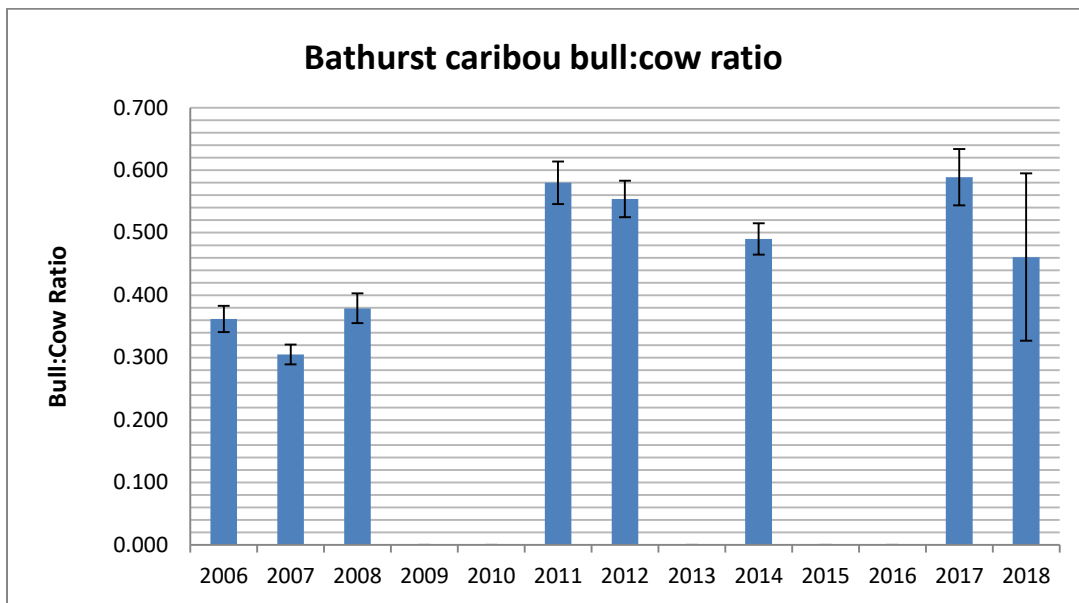


Figure 1: Bathurst caribou herd fall composition survey - bull:cow ratio. Error bars represent standard error.

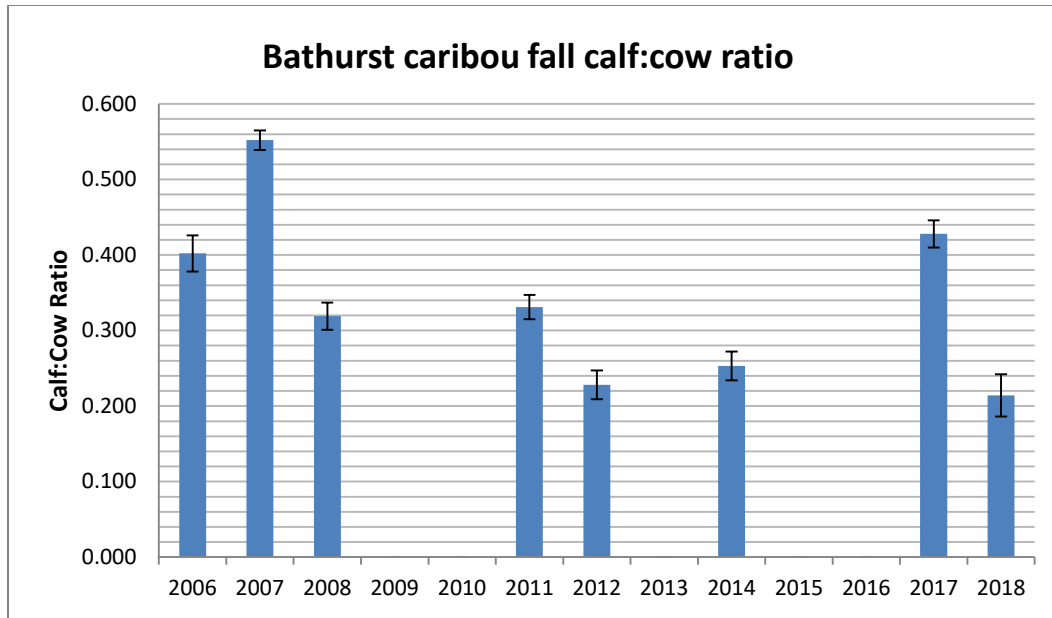


Figure 2: Bathurst caribou herd fall composition survey - calf:cow ratio. Error bars represent standard error.

Satellite Collars

- Target numbers of collars for the Bathurst herd in 2018/19 were 70 collars (50 cows and 20 bulls). This was an increase in the number of collars (from 50 collars) which was included in the Joint Proposal on Management Actions for the Bathurst Ekwò (Barren-ground caribou) Herd: 2019-2021.
- Between March 19 and April 3, 2019 an additional 33 cow collars and 14 bull collars were placed on adult caribou in the area where Bathurst caribou spent the winter. Herd assignments are made after an animal migrates to a calving ground in June, due to the herds mixing with Beverly and Bluenose-East caribou herds on their winter range, 12 of the collared cows and 3 collared bulls were classified as Bathurst caribou.
- Sufficient blood samples were taken from 11 of the 12 cow caribou captured during collaring activities to determine pregnancy rates for the Bathurst herd (Table 3).

Table 3: Bathurst Caribou Herd - Pregnancy Rates from Targeted Collared Caribou 2012 – 2019.*

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
2017	7	7	100
2018	9	9	100
2019	11	9	82

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

Spring Recruitment Survey

- There was no spring recruitment survey in 2019.
- Previous years spring recruitment survey results are shown in Figure 3.

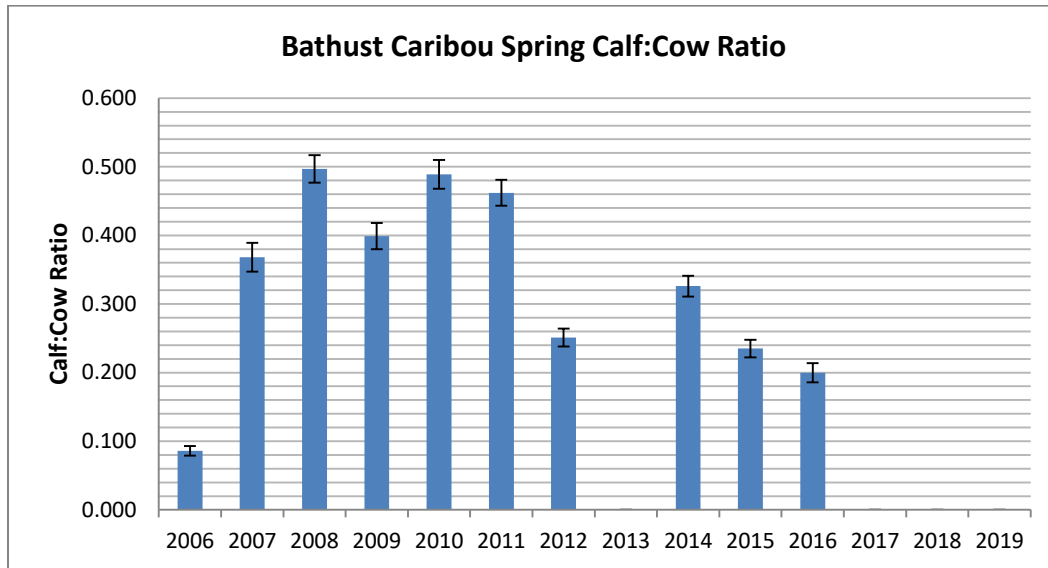


Figure 3: Bathurst caribou herd spring recruitment survey – calf:cow ratio. Error bars represent standard error.

Calving Ground Reconnaissance Surveys

- There was no calving ground reconnaissance survey in 2019
- In 2018, a calving ground photo survey in June gave an estimate of 3,636 +/- 505 breeding females on the calving ground (Figure 4) and estimated a total herd size of 8,207 +/- 1079 (Figure 5).

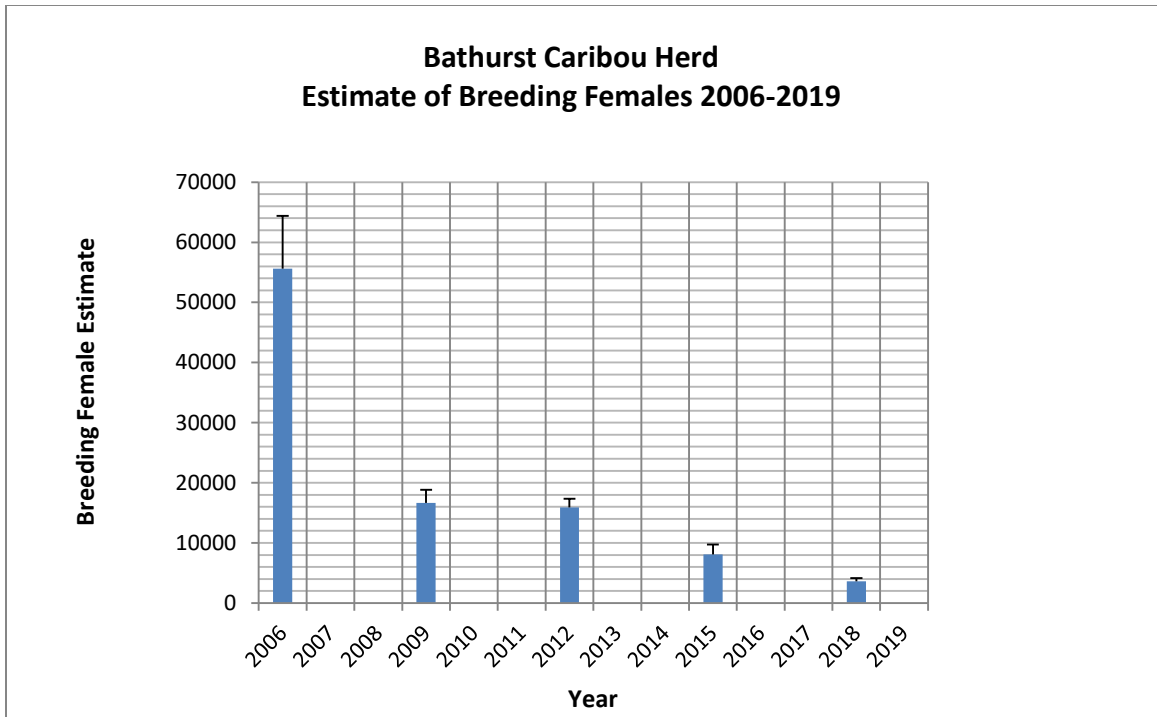


Figure 4: Bathurst caribou herd Breeding female estimates from calving ground survey, 2006 to 2019. Error bars represent standard error.

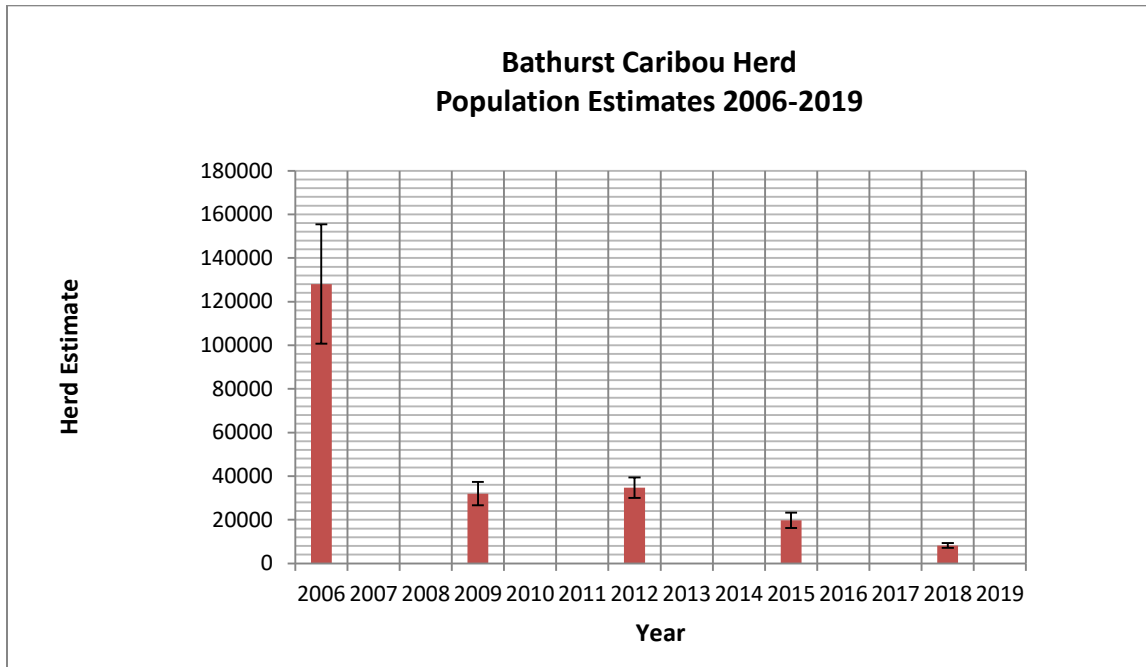


Figure 5: Bathurst caribou herd - Estimated herd size from calving ground survey, 2006 to 2019. Error bars represent standard error.

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.

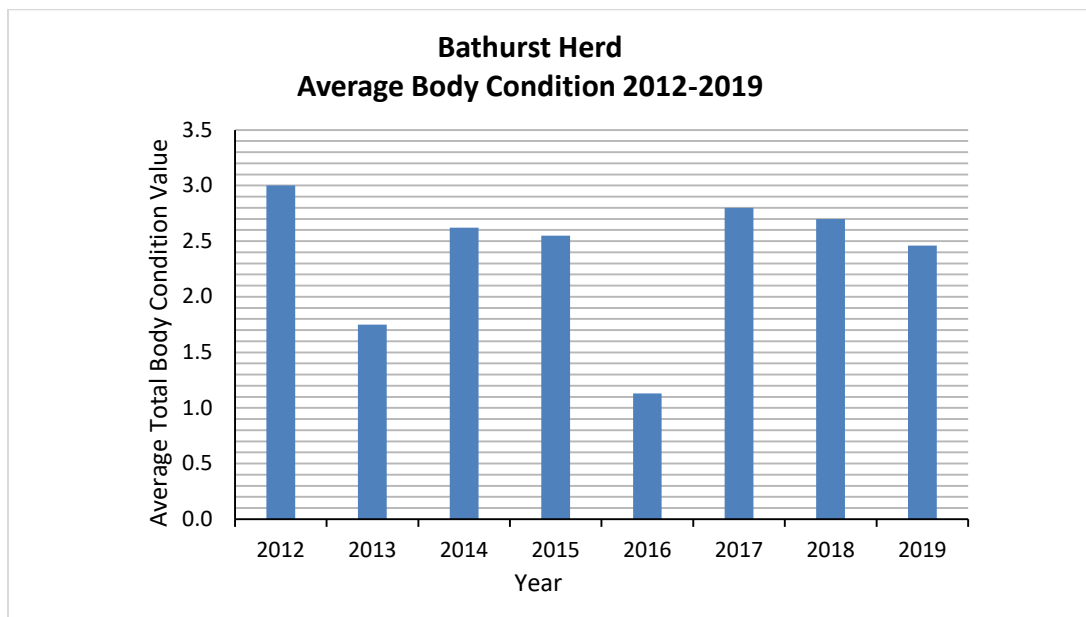


Figure 6: Bathurst caribou herd – Average body condition

- 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 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
2017	21	5	5	24	24
2018	13	0	0	0	0
2019	15	2	2	13	13

Bluenose-East Caribou Herd (BNE)

Fall Composition Survey

- Fall composition survey for the Bluenose-East caribou herd was conducted by helicopter on October 23 and 25 , 2018.
- A total of 2,525 caribou from 116 groups were classified with a mean group size 11.
- Results from the 2018 fall composition survey show a 38.0:100 bull:cow ratio (Figure 7) and a calf:cow ratio of 25.7:100 (Figure 8).
- 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.

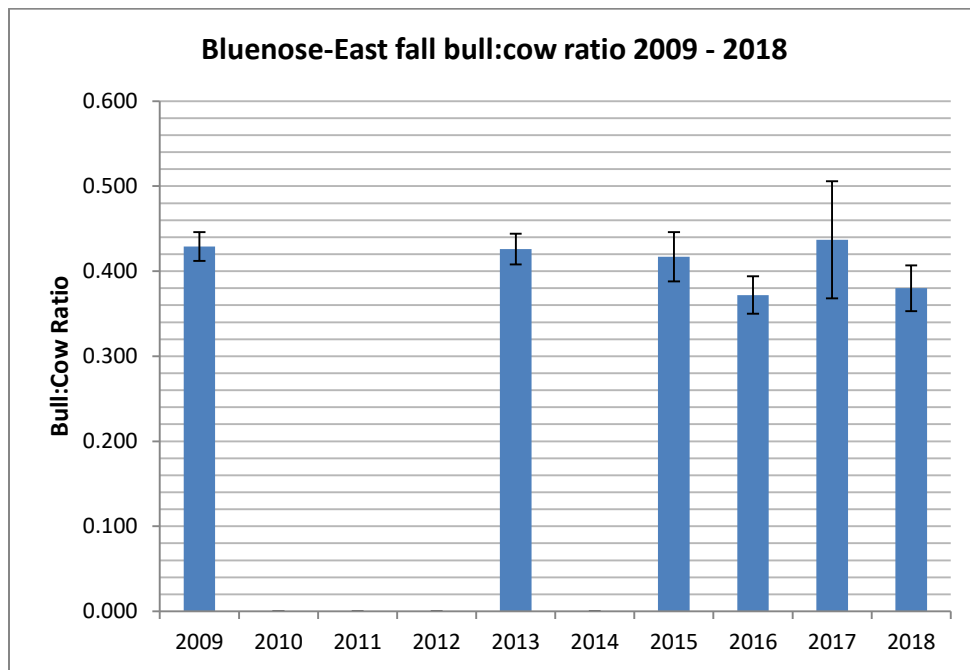


Figure 7: Bluenose-East caribou herd fall composition survey - bull:cow ratio. Error bars represent standard error.

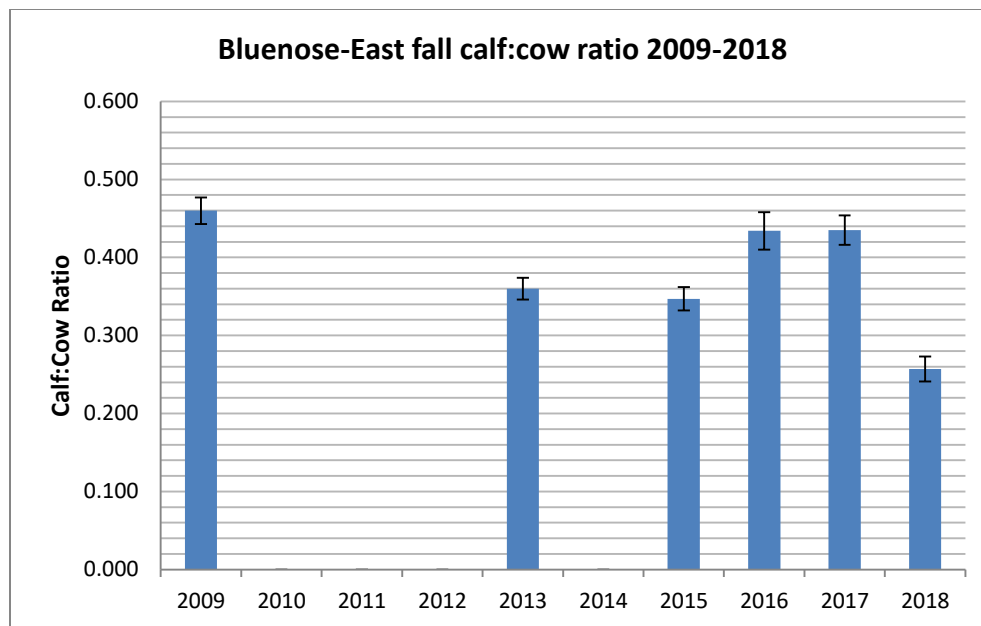


Figure 8: Bluenose-East caribou herd fall composition survey - calf:cow ratio. Error bars represent standard error.

Satellite Collars

- Our targets number of collars for 2018/19 were 50 collars (30 cows and 20 bulls). Between March 30 - April 2, an additional 6 GPS collars were placed on cows and 5 were placed on bulls in the area where Bluenose-East caribou spent the winter. Herd assignments are made after an animal migrates to a calving ground in June, due to herd mixing with Bathurst and Beverly caribou herds on their winter range it was determined that 12 cows and 5 bulls were classified as Bluenose-East caribou.
- Sufficient blood samples were taken from 9 of the 12 collared female caribou to determine pregnancy rates. The results indicate 6 out of the 9 caribou sampled (67%) were pregnant (Table 5).

Table 5: Bluenose-East caribou herd - Pregnancy Rates of Targeted Collared Caribou 2012 – 2019*

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
2017	5	5	100
2018	9	9	100
2019	9	6	67

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

Spring Recruitment Survey

- There was no spring recruitment survey in 2019.
- In 2018, a spring recruitment survey classified 2333 caribou in 48 groups with a mean group size of 36.
- The 2018 results indicate a calf:cow ratio of 37.5:100 (Figure 9).

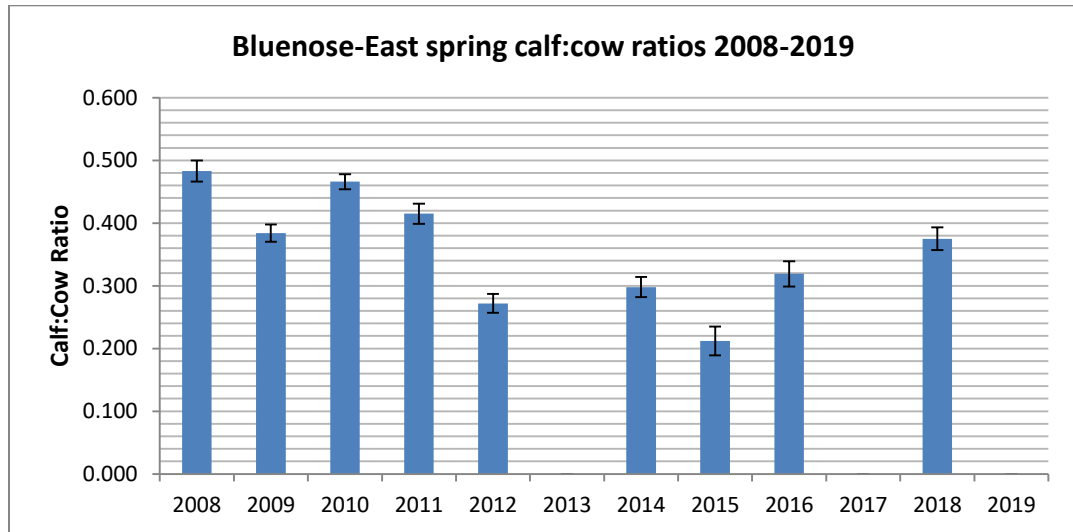


Figure 9: Bluenose East caribou herd spring recruitment survey – calf:cow ratio. Error bars represent standard error.

Calving Ground Reconnaissance Surveys

- There was no reconnaissance survey in 2019.
- In 2018, a calving ground photo survey was conducted on June 8, 2018 to estimate population size of the Bluenose-East caribou herd.
- The 2018 results estimated 11,675 +/- 904 breeding females on the calving ground (Figure 10) and estimated a total herd size of 19,294 +/- 1,475 (Figure 11).

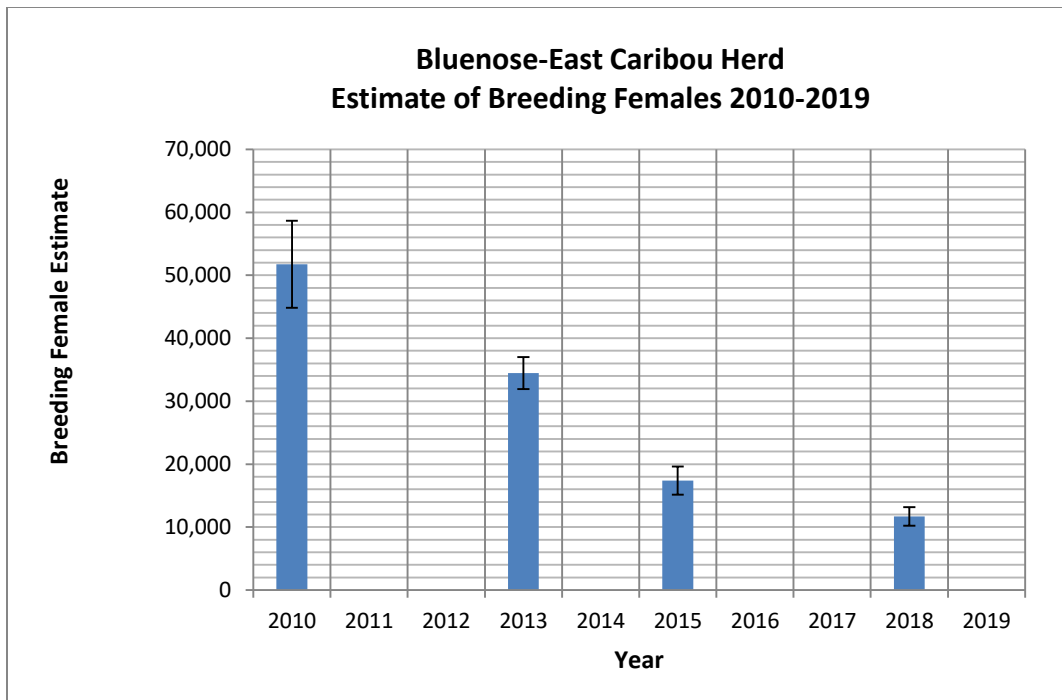


Figure 10: Bluenose-East caribou herd - Breeding female estimates from calving ground survey, 2010 to 2019. Error bars represent standard error.

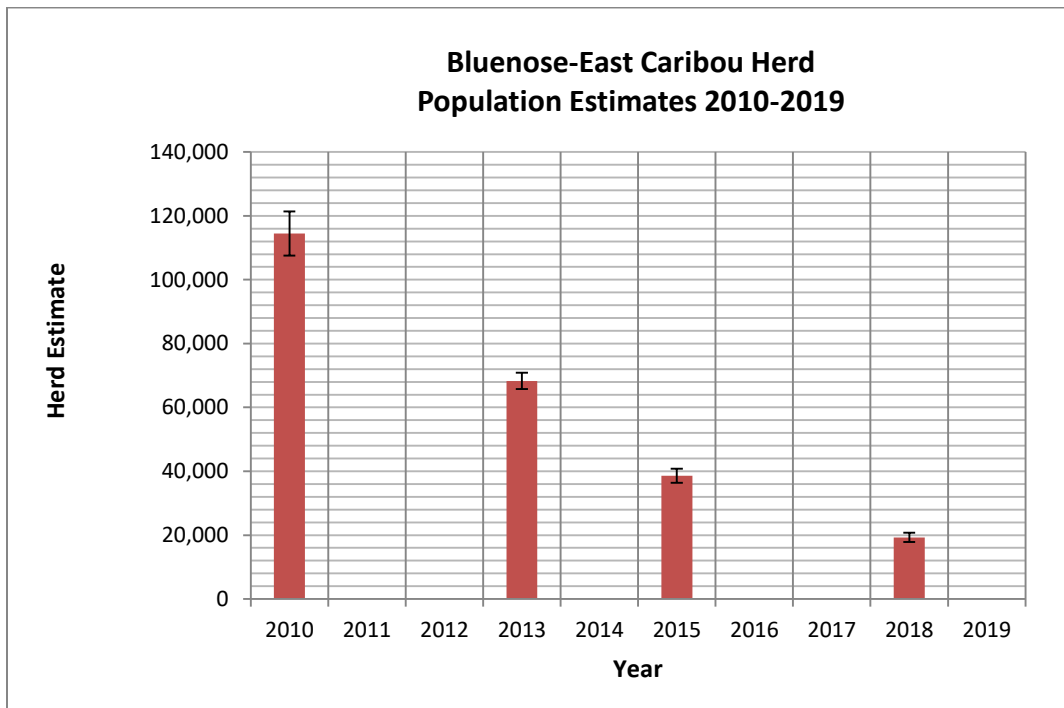


Figure 11: Bluenose-East caribou herd - Estimated herd size from calving ground survey, 2010 to 2019. Error bars represent standard error.

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.

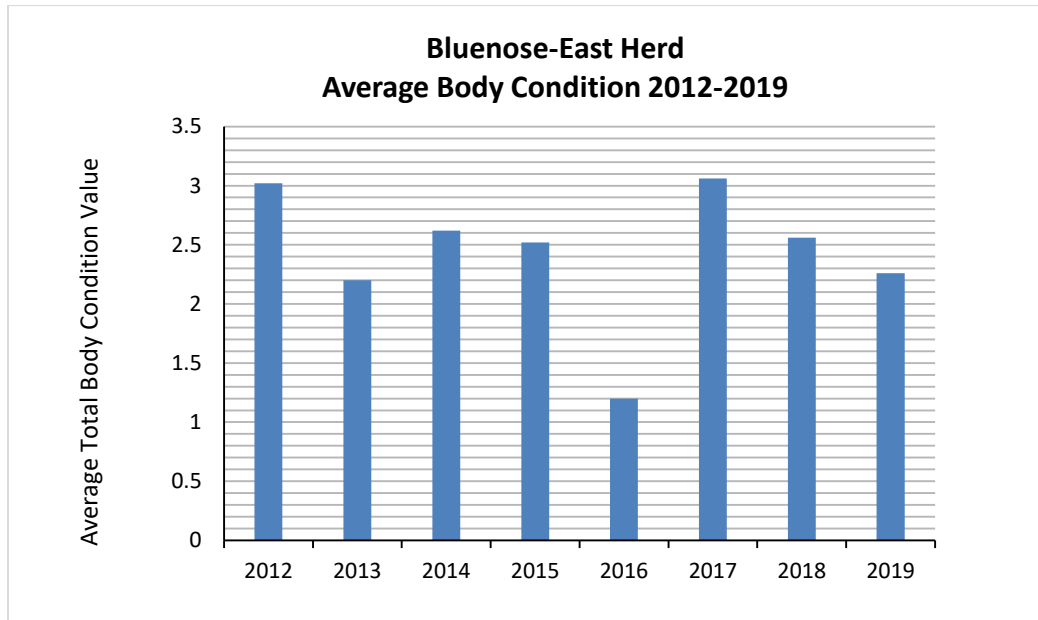


Figure 12: Bluenose-East caribou herd – Average body condition

- 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
2016	19	0	1	0	5
2017	15	4	4	27	27
2018	17	3	3	18	18
2019	17	3	3	18	18

Beverly Caribou Herd

Fall Composition Survey

- No survey was conducted in 2018.
- 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).

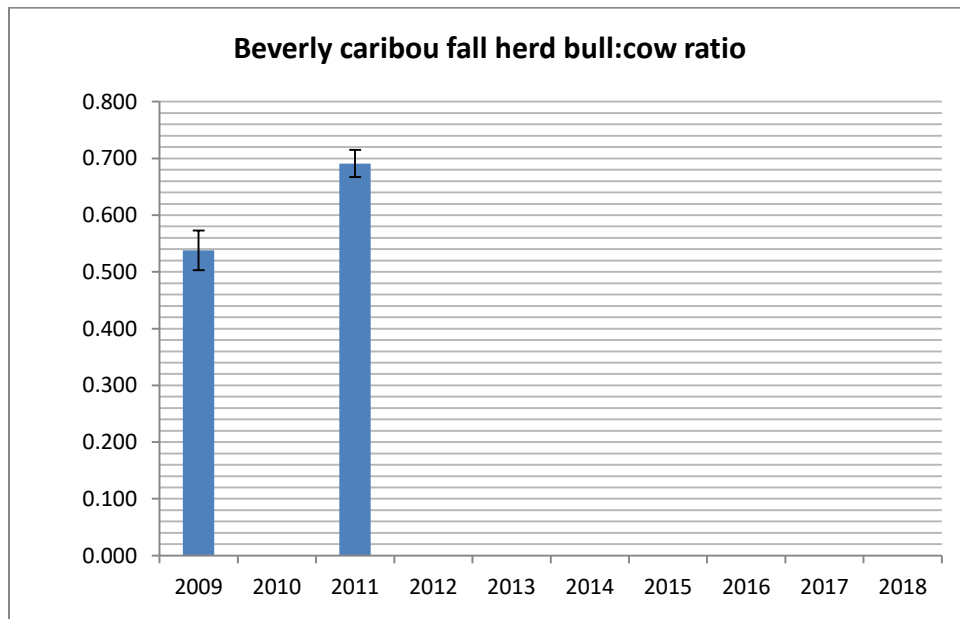


Figure 13: Beverly caribou herd fall composition survey - bull:cow ratio. Error bars represent standard error.

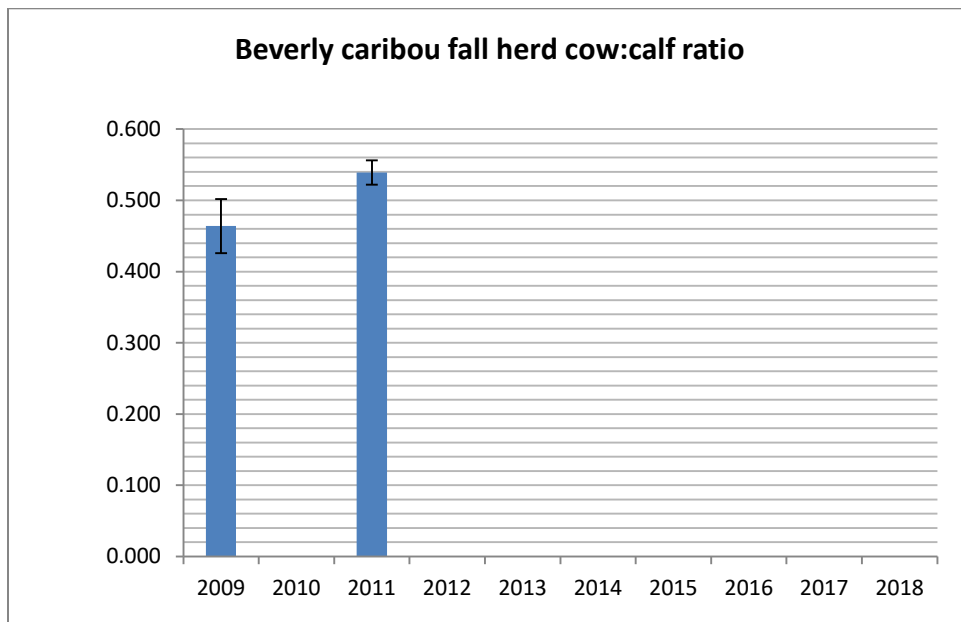


Figure 14: Beverly caribou herd fall composition survey - calf:cow ratio. Error bars are standard error.

Satellite Collars

- Target numbers for 2018/19 were 50 collars (30 cows and 20 bulls).
- During March 28 – April 2, 2019, an additional 4 cow collars and 4 bull collars were placed on adult caribou in the area where Beverly caribou spent the winter. Herd assignment is made after an animal migrates to a calving ground in June. Due to herds mixing with Bathurst and Bluenose-East caribou herds on their winter range, 13 of the collared cows and 9 of the bulls were classified as Beverly caribou.
- Sufficient blood samples were taken from all 13 of the cows captured during collaring activities to determine pregnancy rates for the Beverly caribou herd. The results indicate 9 out of the 13 caribou sampled (~69%) were pregnant (Table 7).

Table 7: Beverly caribou herd - Pregnancy Rates of Targeted Collared Caribou 2012 – 2019.*

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
2016	0	0	-
2017	11	11	100
2018	8	7	88
2019	13	9	69

* 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 2019.
- In 2017 there was a calf:cow ratio of 41.9:100 (Figure 15).

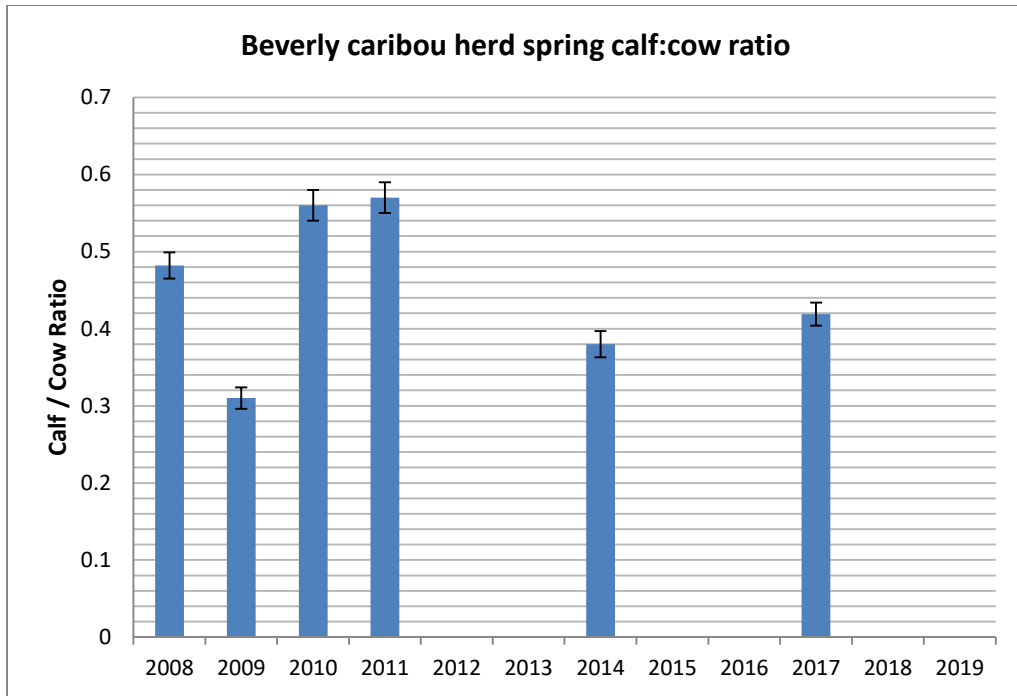


Figure 15: Beverly caribou herd spring recruitment survey – calf:cow ratio. Error bars represent standard error.

Calving Ground Surveys

- There was no calving ground survey in 2019.
- In 2018, the calving ground photographic survey took place on June 8.
- Results show an estimated 48,977 +/- 2,600.9 breeding females (Figure 16) and estimated a total herd size of 103,372 +/- 5,109.3 (Figure 17).

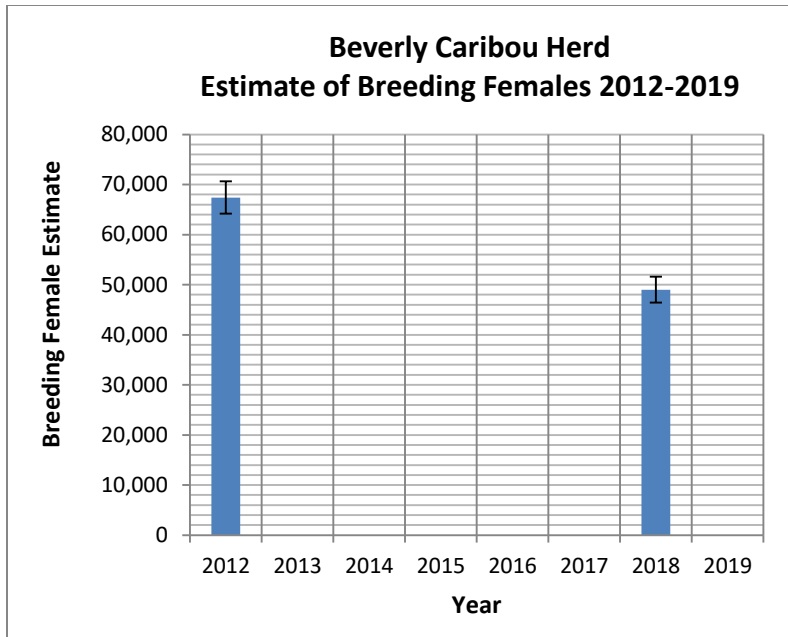


Figure 16: Beverly caribou herd – Breeding female estimates from calving ground survey, 2012-2018. Error bars represent standard error.

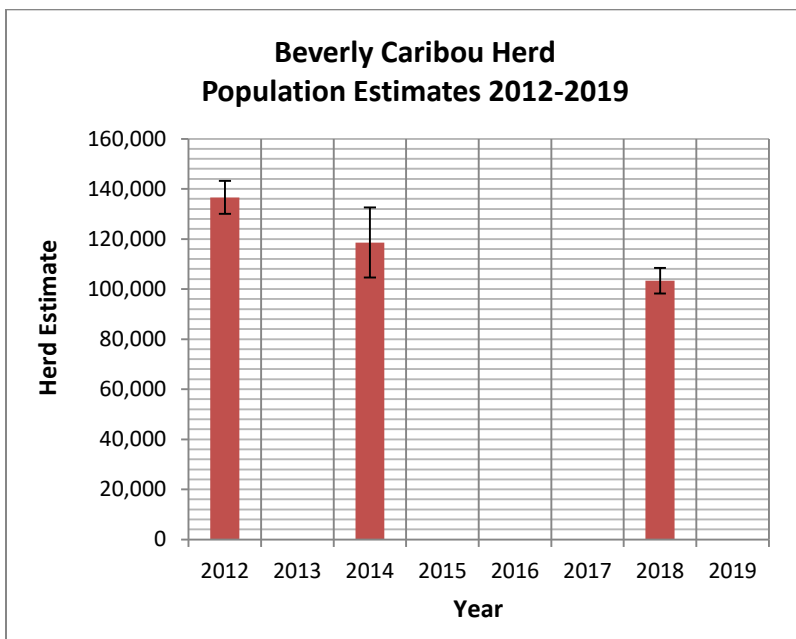


Figure 17: Beverly caribou herd – Estimated herd size from calving ground survey 2012-2018. Error bars represent standard error.

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 Beverly caribou from 2012 to 2019 is shown in Figure 18.

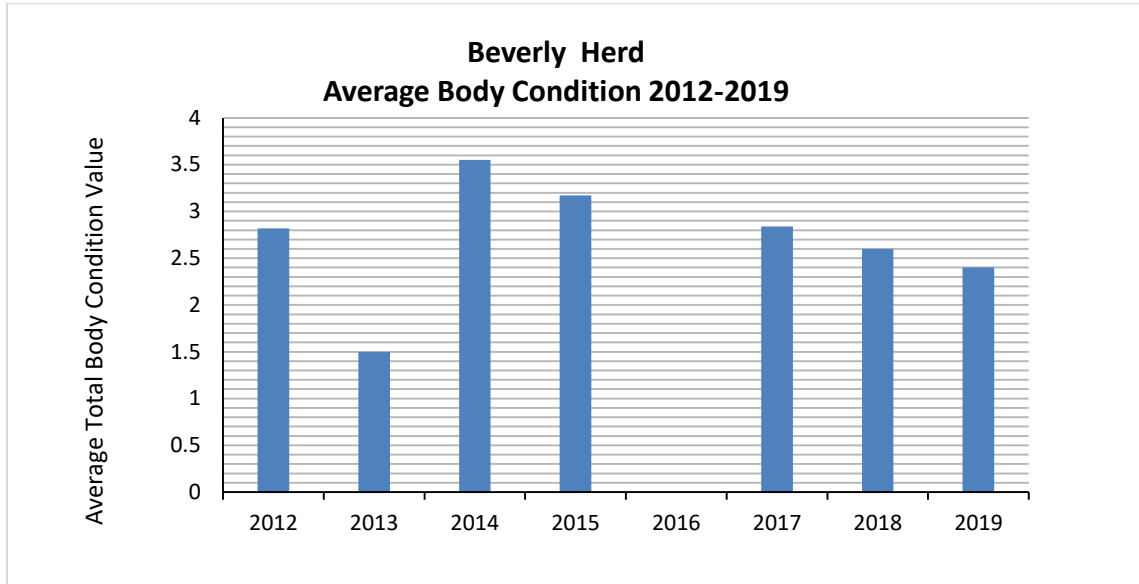


Figure 18: Beverly caribou herd – Average body condition

- 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 from 2014 to 2018.

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
2016	0				
2017	27	1	1	4	4
2018	15	2	2	13	13
2019	21	4	4	19	19

WOLF HARVEST

Wolf Carcass Collection/Necropsy

- The wolf carcass collection program in the North Slave Region (NSR) 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 garbage disposal areas 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.
- In 2015-16 the North Slave Region further increased its harvest incentive for wolves to \$200 per carcass (skinned or unskinned) in response to the 2015 calving ground survey results for the Bathurst and Bluenose-East caribou herds to aid in the herds recovery efforts.
- Following the 2018 calving ground photo-census, the continued decline of the Bathurst and Bluenose-East caribou herds created an additional harvest incentive area for caribou wolves (\$900 per wolf carcass). The new incentive area was established where the Bathurst and Bluenose-East caribou herds were expected to winter in 2018-19, and was available to all NWT residents.
- The total number of wolf carcasses submitted to the NSR in 2018-19 was 65 (43 male & 22 female and 5 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
2016-17	74	35:28
2017-18	13	4:4
2018-19	65	43:22

* 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.