

Barren-Ground Caribou

2019/2020 Harvest & Monitoring Summary

CARIBOU HARVEST

Bathurst caribou

Since winter 2010, a reduction in hunting of Bathurst caribou in the Northwest Territories (NWT) has been an important management action to help the herd recover. In January 2015, a mobile harvest 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 2019 to winter 2020 harvest season saw the continued use of the Mobile Core Bathurst Caribou Management Zone to enforce the Wek'èezhii Renewable Resource Board's determination of zero total allowable harvest (TAH) of the Bathurst herd in the NWT.

In 2017 the Nunavut Wildlife Management Board established a bull only annual 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 the Omingmaktok Hunters and Trappers Organization (Bay Chimo), Burnside Hunters and Trappers Organization (Bathurst Inlet), and Kugluktuk Angoniatit Association. The 30 tags have been used for subsistence and outfitted hunts in the vicinity of Contwoyto Lake (Kòk'èetì) and Pellat Lake in Nunavut (NU). Estimated harvest is summarized in Table 1.

Bluenose-East caribou

Wildlife Management Boards in the NWT and NU have held public hearings and made recommendations for reduced harvest of Bluenose-East caribou as a result of reduced population estimates. In 2019, a TAH of 750 bulls was reduced to 193 bulls in Wek'èezhii for Bluenose-East caribou. The results from the 2018 population estimate survey showed a continued decline in the herd estimates. 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.

2019/2020 – Harvest Season

Table 1: Bathurst Caribou Herd: Reported Harvest

Management Area	# Bulls	# Cows	# Calves	# Unknown	Total
NWT				39*	39*
Nunavut	30				30
TOTAL	30			39*	69**

*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	76				76
Sahtú Region	0				0
Dehcho Region					Unknown
Nunavut				197	197
TOTAL	76			197	273

MONITORING ACTIVITIES

Bathurst Caribou

Fall Composition Survey

- A fall composition survey was conducted by helicopter from November 5-6, 2019.
- A total number of 2,009 caribou were classified, comprising 43 groups and with a median group size of 25.
- The analysis indicated a 34.7:100 bull:cow ratio (Figure 1 and Table 3) and a calf:cow ratio of 32.0:100 (Figure 2 and Table 3) for the Bathurst herd.
- The calf:cow ratio represents the number of calves per 100 cows that were born in the spring of 2019 and survived to the fall of 2019. Calf:cow ratios below 30:100, if sustained, suggest a declining natural trend.

Table 3: Summary table of Bathurst caribou fall composition results.

Year	Calf:Cow Ratio	Standard Error	Lower Confidence Limit (95%)	Upper Confidence Limit (95%)	Bulls:Cow Ratio	Standard Error	Lower Confidence Limit (95%)	Upper Confidence Limit (95%)
2006	0.402	0.024	0.360	0.451	0.362	0.021	0.323	0.404
2007	0.552	0.013	0.526	0.577	0.305	0.016	0.275	0.337
2008	0.319	0.018	0.288	0.356	0.379	0.024	0.331	0.427
2009	--	--	--	--	--	--	--	--
2010	--	--	--	--	--	--	--	--
2011	0.331	0.016	0.298	0.359	0.580	0.034	0.524	0.653
2012	0.228	0.019	0.195	0.266	0.554	0.029	0.498	0.613
2013	--	--	--	--	--	--	--	--
2014	0.253	0.019	0.213	0.287	0.490	0.025	0.444	0.540
2015	--	--	--	--	--	--	--	--
2016	--	--	--	--	--	--	--	--
2017	0.428	0.018	0.397	0.467	0.589	0.045	0.502	0.679
2018	0.214	0.028	0.176	0.274	0.461	0.134	0.431	0.590
2019	0.320	0.015	0.289	0.349	0.347	0.043	0.265	0.432

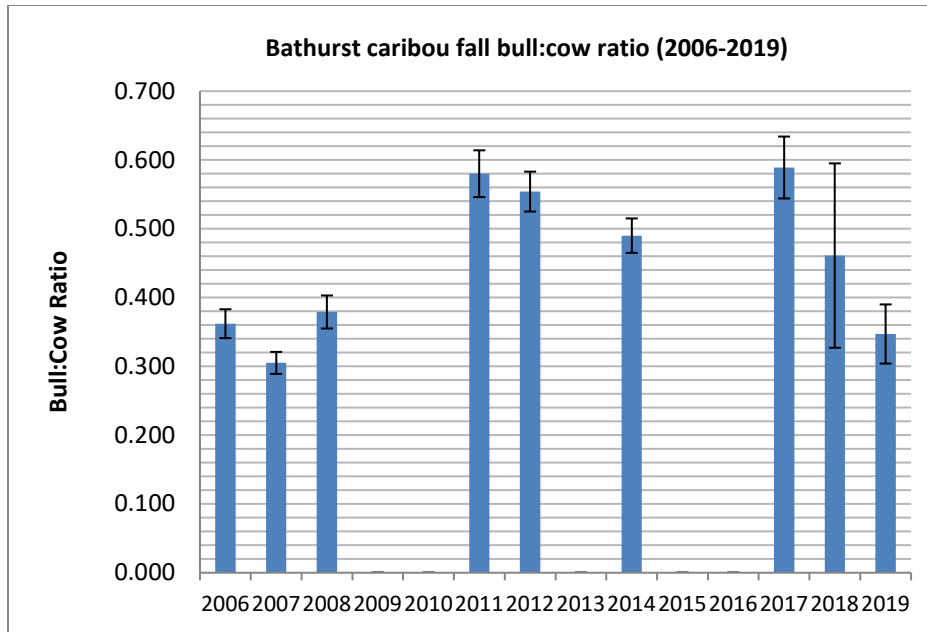


Figure 1: Bathurst caribou herd fall composition survey - bull:cow ratio. Error bars represent standard error.

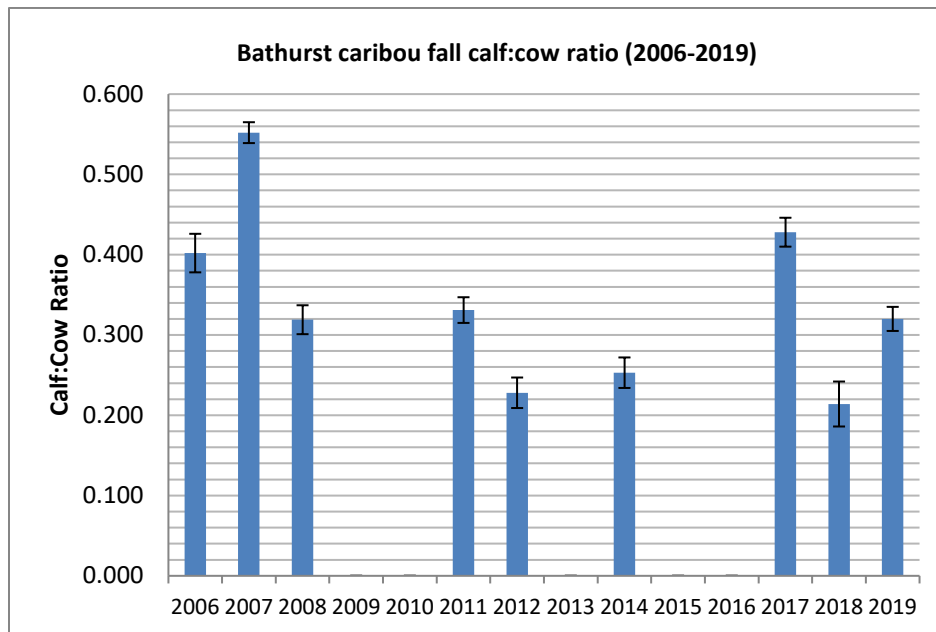


Figure 2: Bathurst caribou herd fall composition survey - calf:cow ratio. Error bars represent standard error.

Satellite Collars

- Target numbers of collars for the Bathurst herd in 2019/20 was 70 (50 cows and 20 bulls). This was increased from 50 collars (30 cows, 20 bulls) in 2018/19, and the target of 70 collars was included in the Joint Proposal on Management Actions for the Bathurst Ekwò (Barren-ground caribou) Herd: 2019-2021.
- Collaring activities took place on February 1, and between March 10 and April 1, 2020, an additional 34 cow collars and 20 bull collars were placed on adult caribou in the area where Bathurst caribou spent the winter.
- Herd assignments for new collars are made after an animal migrates to a calving ground in June. This is done based on the high degree of fidelity cows have to a herd's calving grounds, and to avoid periods of herd mixing when the Bathurst, Beverly and Bluenose-East caribou on the winter range. Thirty-three (33) of the collared cows and 14 collared bulls deployed in 2020 were classified as Bathurst caribou.
- Blood samples were taken from 30 of the 31 cows captured during collaring activities to determine pregnancy rates for the Bathurst herd (Table 4).

Table 4: Bathurst caribou herd - Pregnancy rates from targeted collared caribou 2012-2020.*

Year	Collars Deployed on Cows	Number of Cows Blood Tested	Number of Cows Pregnant	Percent of Cows Pregnant (%)
2012	13	12	12	100
2013	2	2	2	100
2014	13	13	9	69
2015	18	16	12	75
2016	6	5	5	100
2017	11	7	7	100
2018	11	9	9	100
2019	12	11	9	82
2020	33	31	30	97

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

Spring Recruitment Survey

- The spring recruitment survey occurred March 8-13, 2020. 1,384 animals were classified for a total of 55 groups with a median group size of 14 animals.
- The analysis indicated a calf:cow ratio of 30.4:100 (Table 5 and Figure 3) for the Bathurst herd.

Table 5: Summary of Bathurst caribou spring composition results with confidence limits

Year	Calf:Cow Ratio	Standard Error	Lower Confidence Limit (95%)	Upper Confidence Limit (95%)
2006	0.086	0.007	0.072	0.102
2007	0.368	0.021	0.327	0.409
2008	0.497	0.020	0.458	0.538
2009	0.399	0.019	0.363	0.438
2010	0.489	0.021	0.449	0.532
2011	0.462	0.019	0.426	0.499
2012	0.251	0.013	0.227	0.276
2013	--	--	--	--
2014	0.326	0.015	0.298	0.355
2015	0.235	0.013	0.211	0.260
2016	0.200	0.014	0.168	0.221
2017	--	--	--	--
2018	--	--	--	--
2019	--	--	--	--
2020	0.304	0.023	0.262	0.035

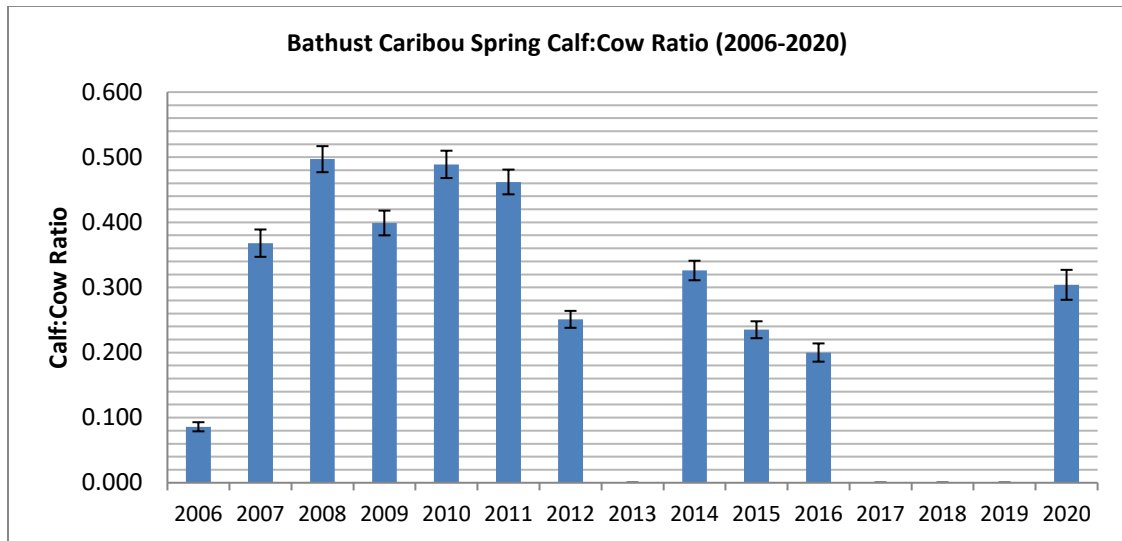


Figure 3: Bathurst caribou herd spring recruitment survey – calf:cow ratio. Error bars represent standard error.

Calving Ground Surveys

- There was no calving ground survey conducted in 2020 due to restrictions put in place for the COVID-19 pandemic.
- In June of 2018, a calving ground photo survey 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).

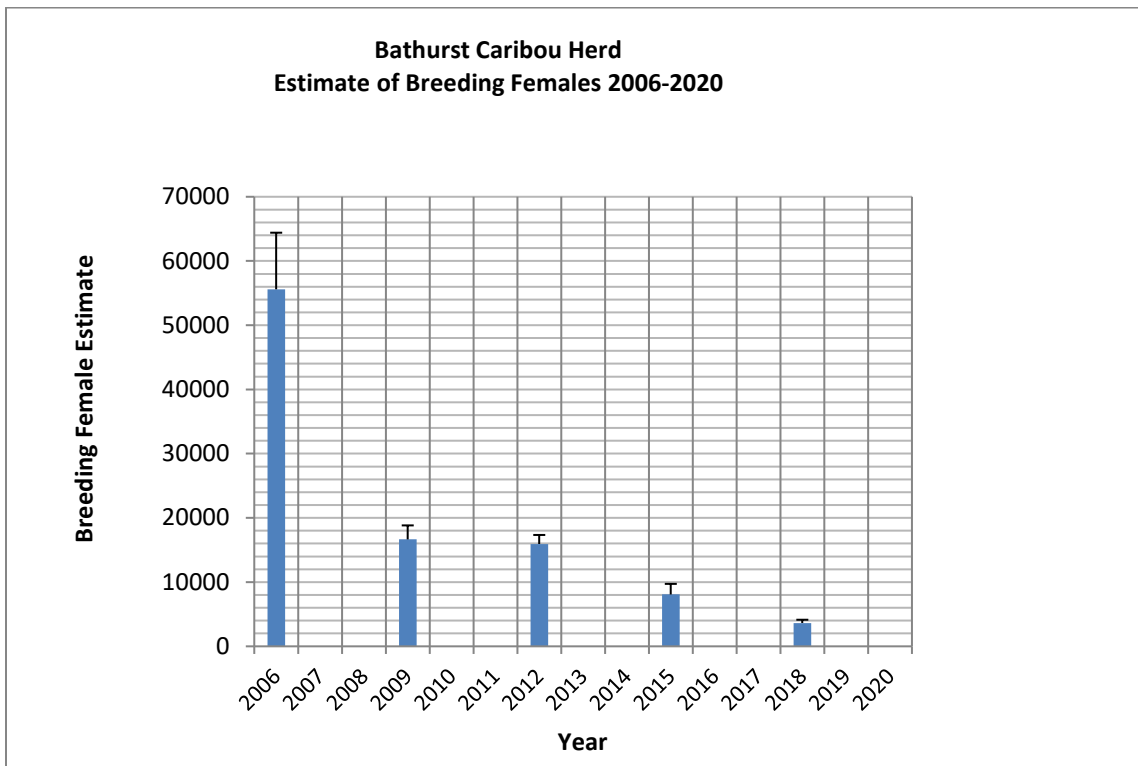


Figure 4: Bathurst caribou herd breeding female estimates from calving ground survey, 2006 to 2020. Error bars represent standard error.

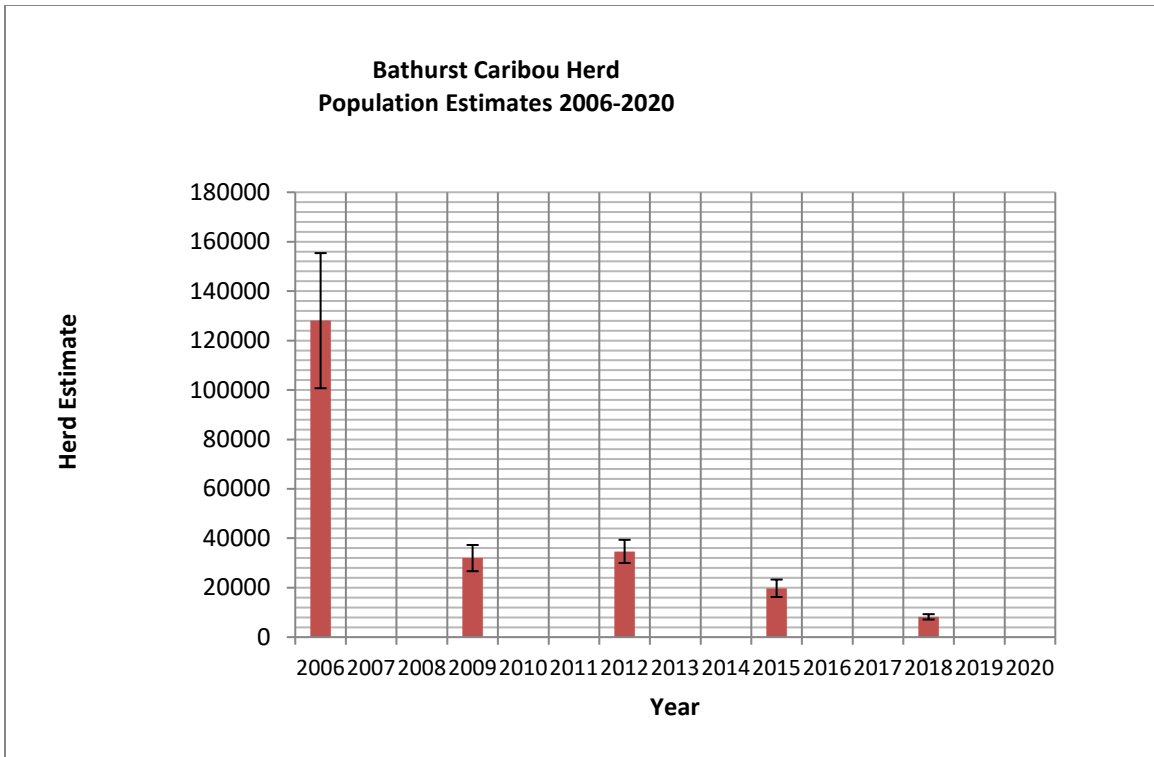


Figure 5: Bathurst caribou herd - Estimated herd size from calving ground survey, 2006 to 2020. Error bars represent standard error.

Body Condition

- Body condition is evaluated by handlers during caribou collaring programs undertaken annually (normally 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; 47 Bathurst caribou were examined in 2020 for body condition during captures.

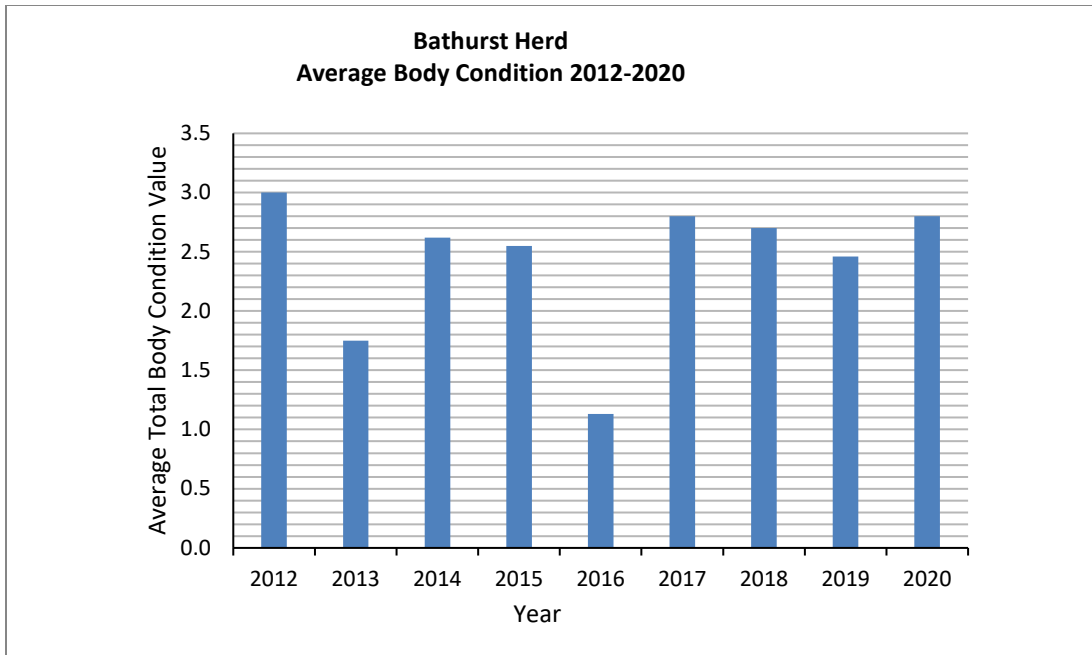


Figure 6: Bathurst collared caribou – Average body condition.

- 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 Bathurst caribou.

Table 6: Bathurst caribou - Presence of *Besnoitia* in caribou during annual March collaring programs.

Year	Total Examined	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
2016	12	3	1	25	8
2017	21	5	5	24	24
2018	13	0	0	0	0
2019	15	2	2	13	13
2020	47	3	3	6	6

Bluenose-East Caribou Herd

Fall Composition Survey

- Fall composition survey for the Bluenose-East caribou herd was conducted by helicopter on November 3-5, 2019.
- A total of 3,436 caribou from 144 groups were classified with a mean group size of 12.
- Results from the 2019 fall composition survey show a 35.3:100 bull:cow ratio (Table 7 and Figure 7)Table 7 and a calf:cow ratio of 37.8:100 (Table 7 and 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.

Table 7: Summary of Bluenose-East caribou fall composition results with confidence limits.

Year	Calf: Cow Ratio	Standard Error	Lower Confidence Limit	Upper Confidence Limit	Bull: Cow	Standard Error	Lower Confidence Limit	Upper Confidence Limit
2009	0.460	0.017	0.427	0.495	0.429	0.017	0.396	0.463
2010	--	--	--	--	--	--	--	--
2011	--	--	--	--	--	--	--	--
2012	--	--	--	--	--	--	--	--
2013	0.360	0.014	0.334	0.388	0.426	0.018	0.390	0.461
2014	--	--	--	--	--	--	--	--
2015	0.347	0.015	0.318	0.376	0.417	0.029	0.367	0.479
2016	0.434	0.024	0.389	0.481	0.372	0.022	0.328	0.413
2017	0.435	0.019	0.401	0.475	0.437	0.069	0.317	0.590
2018	0.257	0.016	0.229	0.291	0.380	0.027	0.332	0.437
2019	0.378	0.019	0.342	0.417	0.353	0.025	0.309	0.408

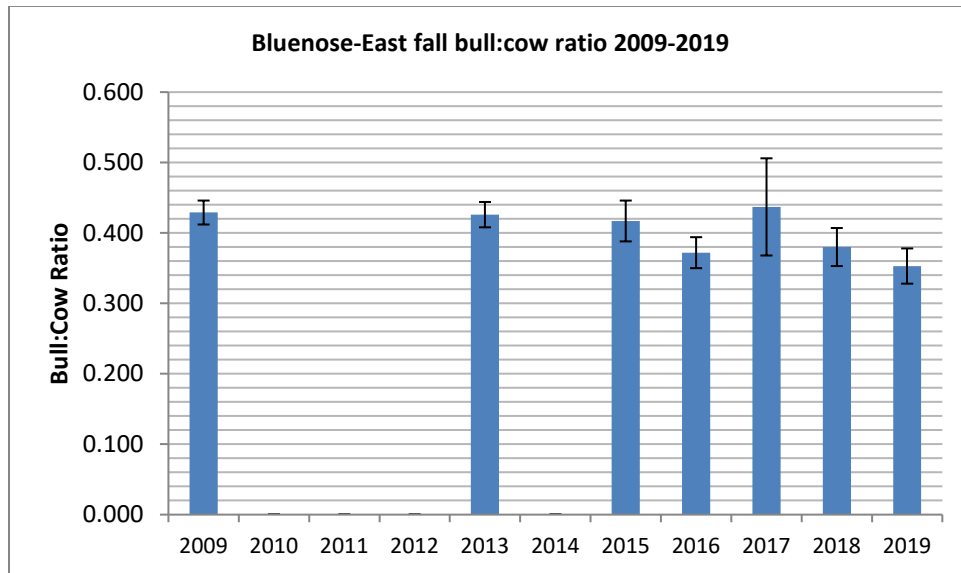


Figure 7: Bluenose-East caribou herd fall composition survey - bull:cow ratio. Error bars represent standard error.

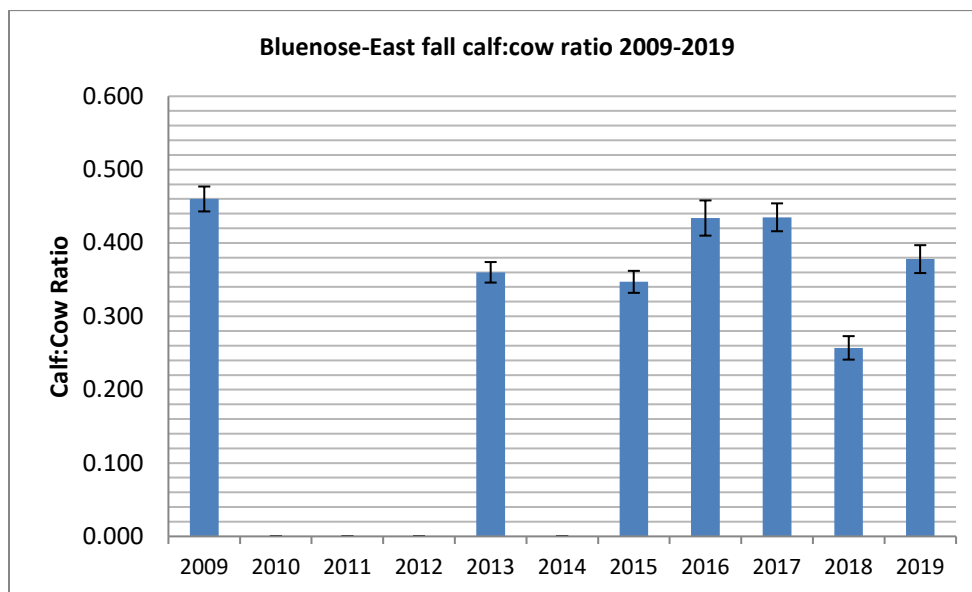


Figure 8: Bluenose-East caribou herd fall composition survey - calf:cow ratio. Error bars represent standard error.

Satellite Collars

- Our targets number of collars for 2019/20 increased from 50 collars (2018/19) (30 cows and 20 bulls) to 70 collars (50 cows and 20 bulls).
- Between March 13-19, 2020, an additional 24 GPS collars were placed on cows and 14 were placed on bulls in the area where Bluenose-East caribou spent the winter.

Barren-ground Caribou Technical Working Group

- Herd assignments for new collars are made after an animal migrates to a calving ground in June. This is done based on the high degree of fidelity cows have to a herd's calving grounds, and to avoid periods of herd mixing when the Bathurst, Beverly and Bluenose-East caribou herds can be overlapped on their winter range. It was determined that 20 cows and 16 bulls were classified as collared Bluenose-East caribou.
- Blood samples were taken from 18 of the 20 collared female caribou to determine pregnancy rates. The results indicate 18 out of the 18 caribou sampled (100%) were pregnant (Table 8).

Table 8: Bluenose-East caribou herd - Pregnancy rates of targeted collared caribou 2012-2020*

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
2020	18	18	100

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

Spring Recruitment Survey

- The spring recruitment survey occurred on March 10, 2020.
- The survey classified 2,133 caribou in 74 groups with a mean group size of 17.
- The 2020 results indicated a calf:cow ratio of 41.8:100 (Table 9 and Figure 9).

Table 9: Summary of Bluenose-East caribou spring composition results with confidence limits.

Year	Calf:Cow Ratio	Standard Error	Lower Confidence Limit (95%)	Upper Confidence Limit (95%)
2006	--	--	--	--
2007	--	--	--	--
2008	0.483	0.017	0.451	0.517
2009	0.384	0.014	0.356	0.412
2010	0.466	0.012	0.444	0.489
2011	0.415	0.016	0.385	0.449
2012	0.272	0.015	0.245	0.303
2013	--	--	--	--
2014	0.298	0.016	0.270	0.332
2015	0.212	0.023	0.168	0.258
2016	0.319	0.020	0.284	0.363
2017	--	--	--	--
2018	0.375	0.018	0.350	0.399
2019	--	--	--	--
2020	0.418	0.017	0.386	0.452

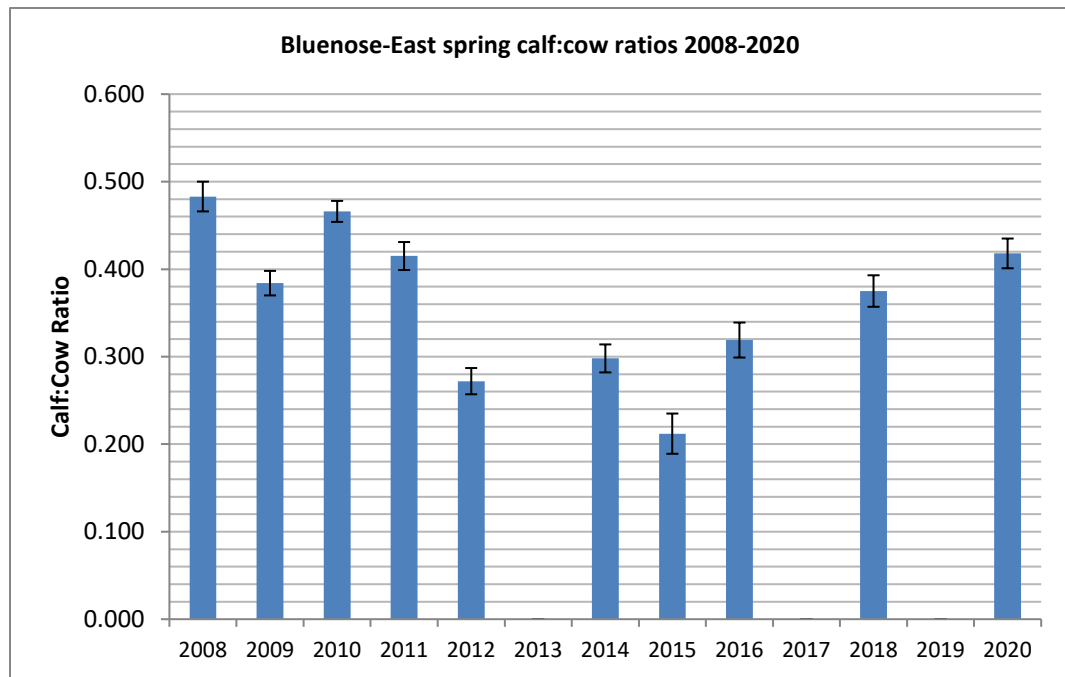


Figure 9: Bluenose East caribou herd spring recruitment survey – calf:cow ratio. Error bars represent standard error.

Calving Ground Surveys

- There was no calving ground survey conducted in 2020 due to restrictions put in place for Covid-19 pandemic.
- 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).

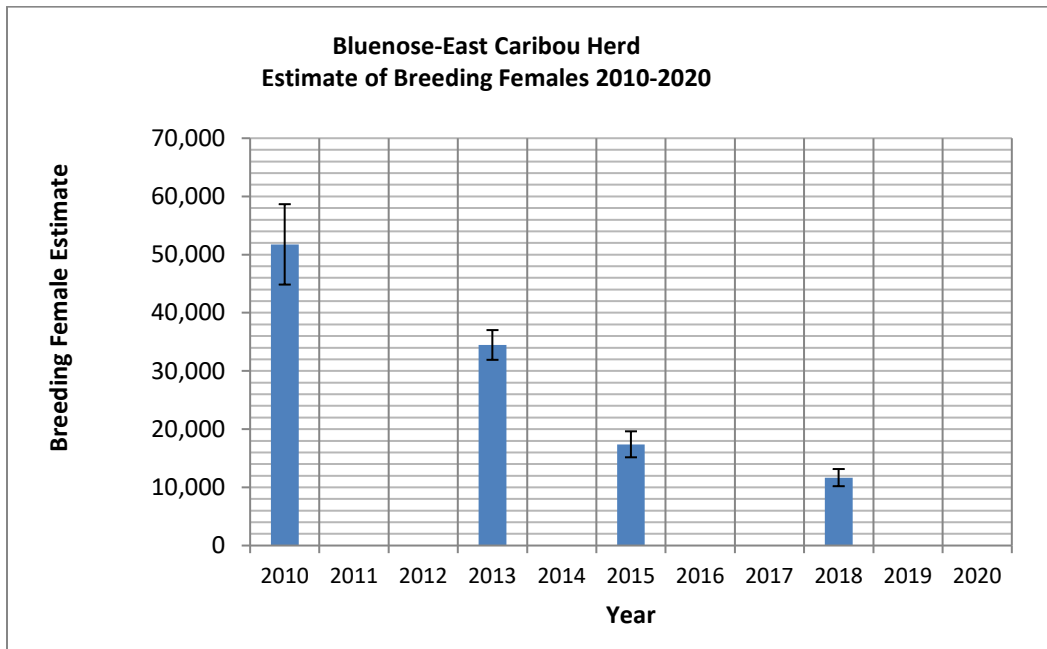


Figure 10: Bluenose-East caribou herd - Breeding female estimates from calving ground survey, 2010 to 2020. Error bars represent standard error.

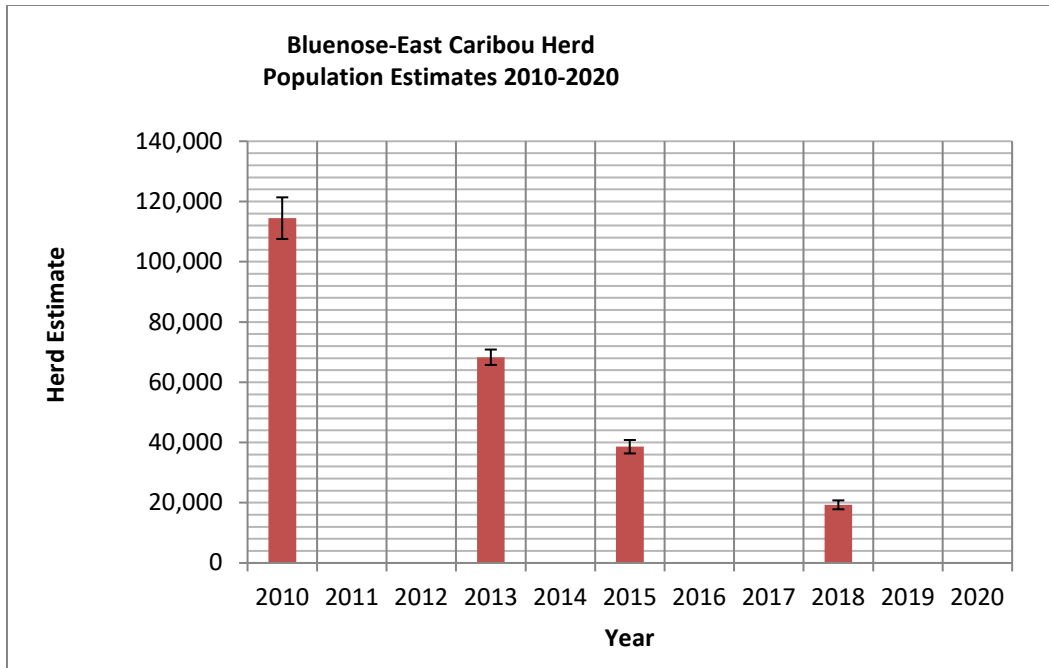


Figure 11: Bluenose-East caribou herd - Estimated herd size from calving ground survey, 2010 to 2020. Error bars represent standard error.

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; 36 Bluenose-East caribou were examined for body condition in 2020 during captures.

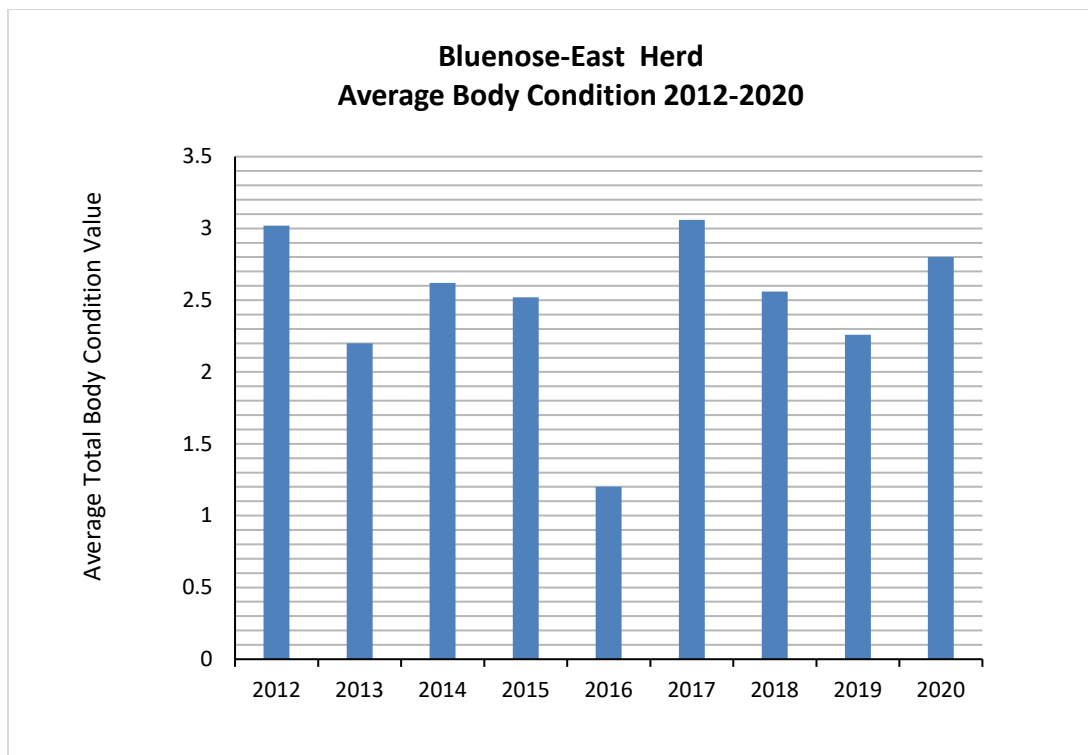


Figure 12: Bluenose-East collared caribou – Average body condition.

- 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 10 shows presence of Besnoitia in examined Bluenose-East caribou.

Table 10: Bluenose-East caribou - Presence of Besnoitia in caribou during annual collaring programs.

Year	Total Examined	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
2020	36	3	4	8	11

Beverly Caribou Herd

Fall Composition Survey

- No survey was conducted in 2019, as in years past the main herd was logistically too remote to survey.
- Previous years fall composition survey results indicated a bull:cow ratio of 69.1:100 (2011) and 53.8:100 (2009) (Table 11 and Figure 13), and a calf:cow ratio of 53.9:100 (2011) and 46.4:100 (2009) (Table 11 and Figure 14).

Table 11: Summary of Beverly caribou fall composition results with confidence limits.

Year	Calf:Cow Ratio	Standard Error	Lower Confidence Limit	Upper Confidence Limit	Bull:Cow	Standard Error	Lower Confidence Limit	Upper Confidence Limit
2006	--	--	--	--	--	--	--	--
2007	--	--	--	--	--	--	--	--
2008	--	--	--	--	--	--	--	--
2009	0.464	0.038	0.401	0.549	0.538	0.035	0.478	0.616
2010	--	--	--	--	--	--	--	--
2011	0.539	0.017	0.505	0.572	0.691	0.024	0.646	0.741
2012	--	--	--	--	--	--	--	--
2013	--	--	--	--	--	--	--	--
2014	--	--	--	--	--	--	--	--
2015	--	--	--	--	--	--	--	--
2016	--	--	--	--	--	--	--	--
2017	--	--	--	--	--	--	--	--
2018	--	--	--	--	--	--	--	--
2019	--	--	--	--	--	--	--	--

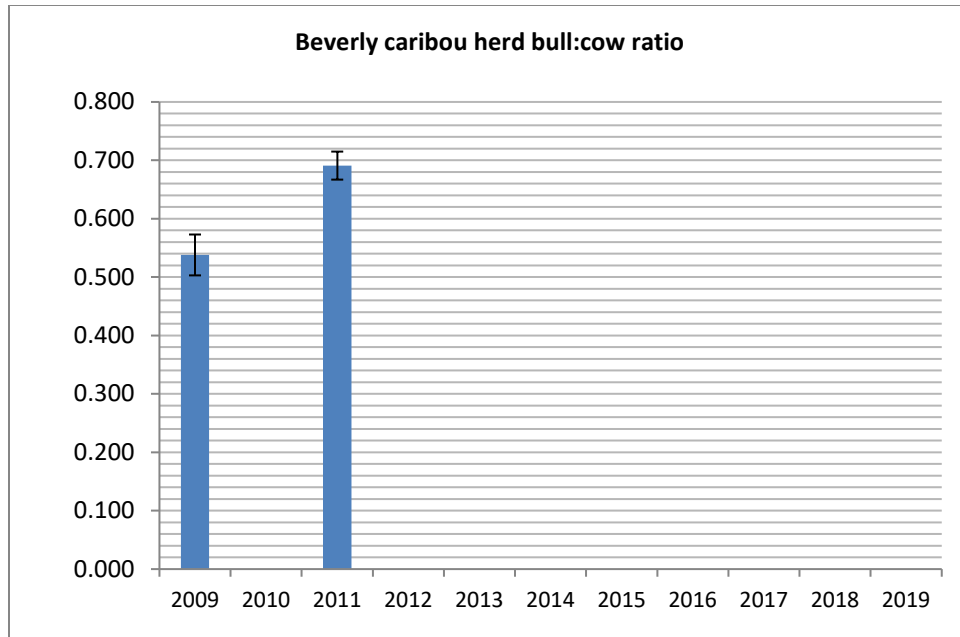


Figure 13: Beverly caribou herd fall composition survey - bull:cow ratio. Error bars represent standard error.

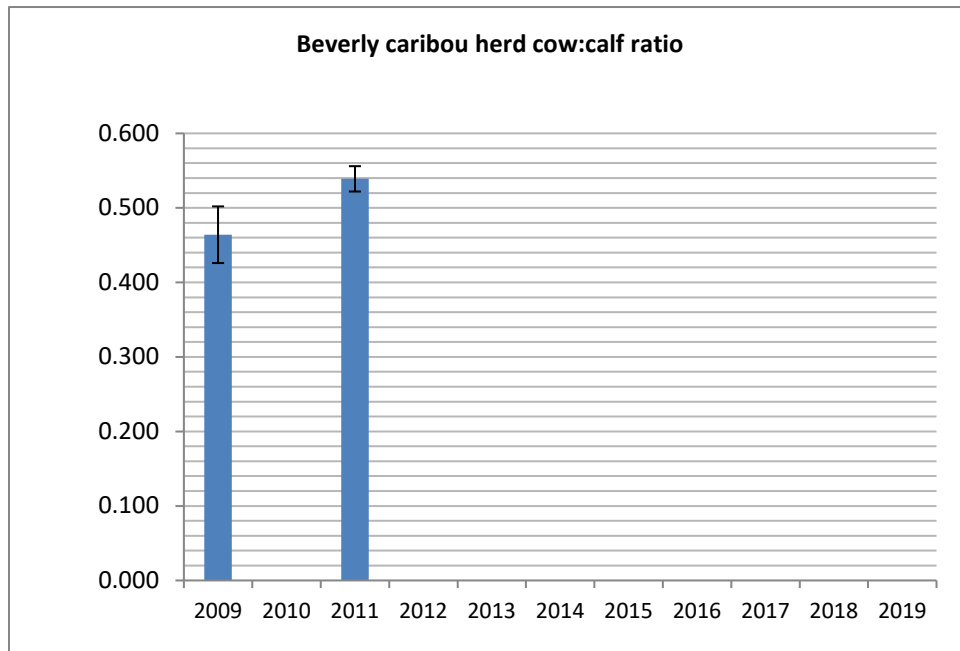


Figure 14: Beverly caribou herd fall composition survey - calf:cow ratio. Error bars are standard error.

Satellite Collars

- Target numbers for 2019/20 were 50 collars (30 cows and 20 bulls).
- Due to travel restrictions put in place during the Covid-19 pandemic, no Beverly caribou were targeted for collaring.

Barren-ground Caribou Technical Working Group

- Herd assignments for new collars are made after an animal migrates to a calving ground in June. This is done based on the high degree of fidelity cows have to a herd’s calving grounds, and to avoid periods of mixing with Bathurst and Bluenose-East caribou herds on their winter range. It was determined that zero cows and 3 bulls were classified as collared Beverly caribou.
- No Beverly cows were captured, therefore there are no 2020 blood samples available to determine pregnancy rates for the Beverly caribou herd. In 2019, results indicate 9 out of the 13 caribou sampled (~69%) were pregnant (Table 12).

Table 12: Beverly caribou herd - Pregnancy rates of targeted collared caribou 2012-2020.*

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
2020	0	0	-

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

Spring Recruitment Survey

- Spring recruitment survey was conducted on March 8-13, 2020.
- 3,611 caribou were classified in 47 groups with a median group size of 43.
- The results were a calf:cow ratio of 45.4:100 (Table 13 and Figure 15).

Table 13: Summary of Beverly caribou spring composition results with confidence limits

Year	Calf:Cow Ratio	Standard Error	Lower Confidence Limit (95%)	Upper Confidence Limit (95%)
2007	--	--	--	--
2008	0.482	0.017	0.449	0.515
2009	0.31	0.014	0.283	0.337
2010	0.56	0.020	0.521	0.599
2011	0.57	0.020	0.531	0.609
2012	--	--	--	--
2013	--	--	--	--
2014	0.38	0.017	0.347	0.413
2015	--	--	--	--
2016	--	--	--	--
2017	0.419	0.015	0.389	0.450
2018	--	--	--	--
2019	--	--	--	--
2020	0.454	0.017	0.421	0.487

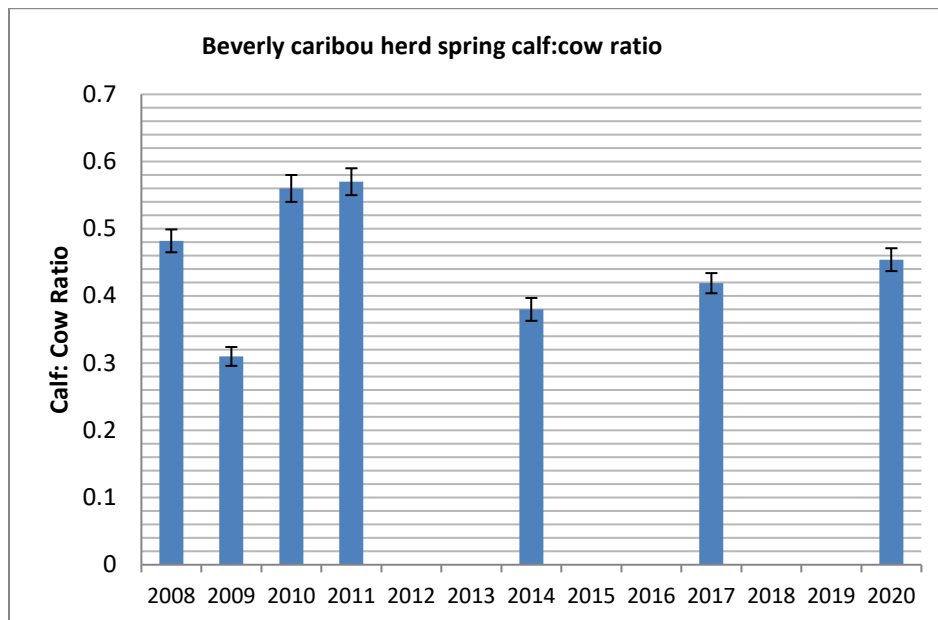


Figure 15: Beverly caribou herd spring recruitment survey – calf:cow ratio. Error bars represent standard error.

Calving Ground Surveys

- There was no calving ground survey in 2020.
- 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).

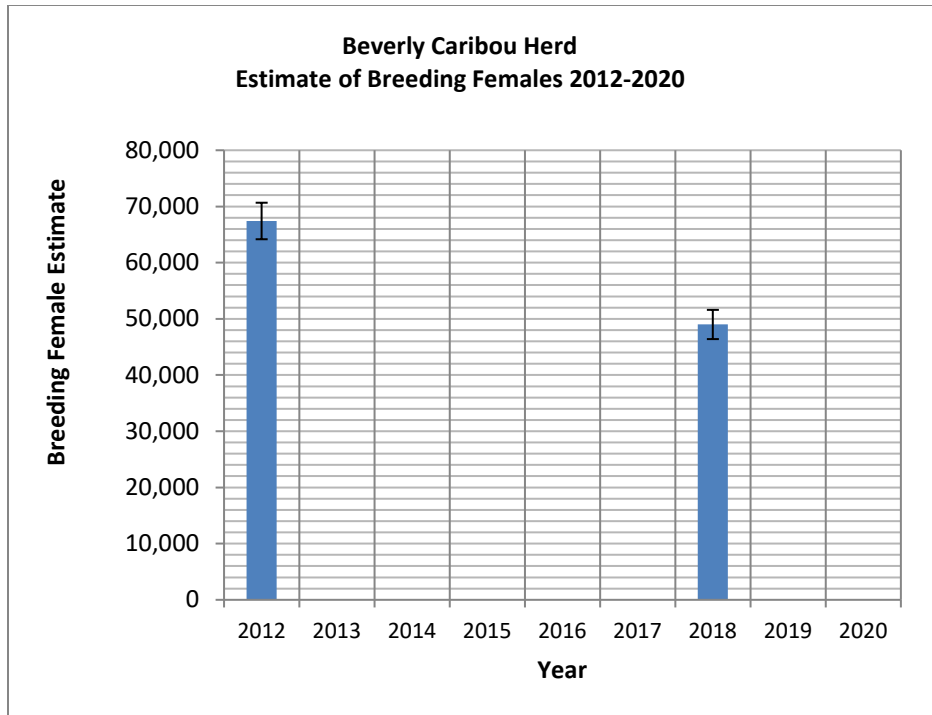


Figure 16: Beverly caribou herd – Breeding female estimates from calving ground survey, 2012-2020. Error bars represent standard error.

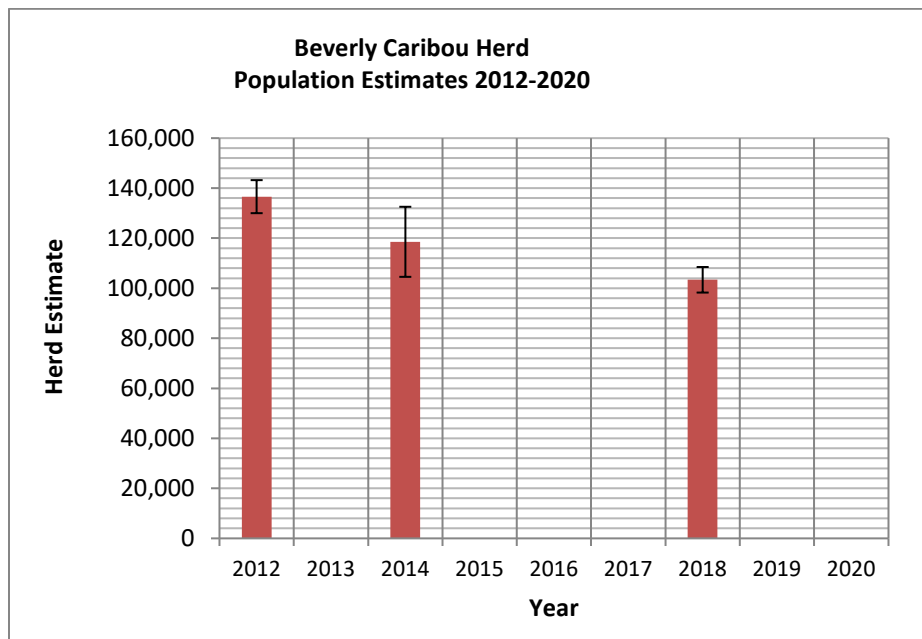


Figure 17: Beverly caribou herd – Estimated herd size from calving ground survey 2012-2020. Error bars represent standard error.

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 2020 is shown in Figure 18, in 2020 only 3 Beverly caribou were examined for body condition.

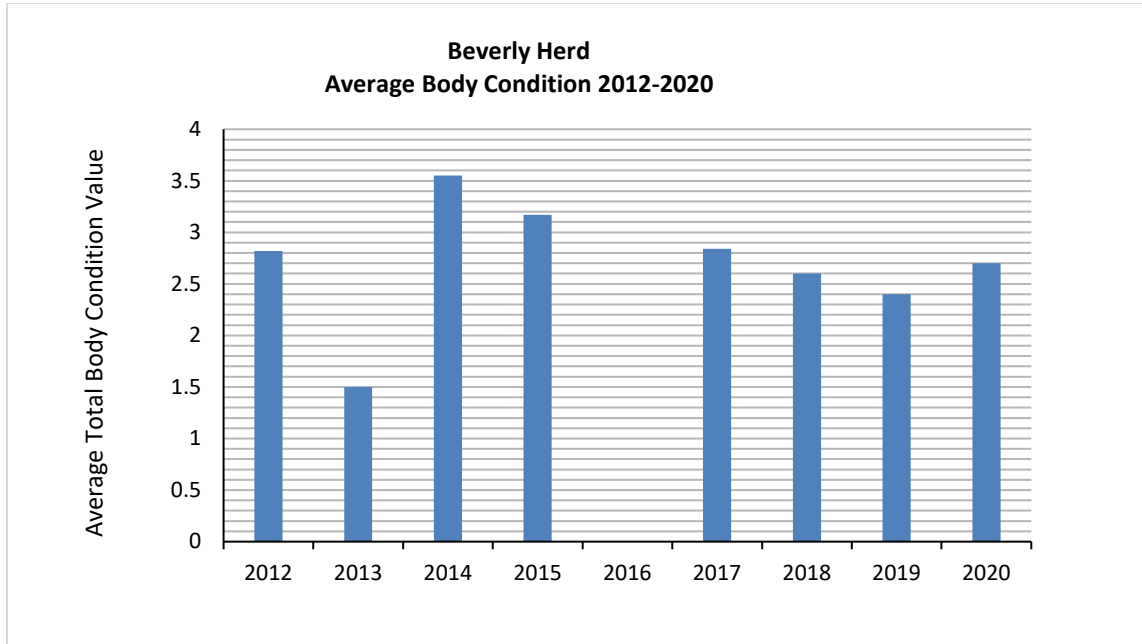


Figure 18: Beverly collared caribou – Average body condition.

- 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 14 shows presence of Besnoitia during collaring of Beverly caribou from 2014 to 2020.

Table 14: Beverly caribou - Presence of *Besnoitia* in collared caribou during annual collaring programs.

Year	Total Examined	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	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
2020	3	0	0	0	0

Wolf Monitoring and Harvest

https://www.wrrb.ca/sites/default/files/2020%20Wolf%20Management%20Pilot%20Program%20Technical%20Report%2021Aug2020_0.pdf
