FINAL

Barren-Ground Caribou
2013/14 Harvest & Monitoring Summary

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 2013 to winter 2014 harvest season was the fourth season of reduced caribou hunting within barren-ground caribou management zones R/BC/02 and R/BC/03 *(Figure 1).* Environment and Natural Resources (ENR) Officers, Tłı̨chǫ community monitors, and Yellowknives Dene First Nation (YKDFN) wildlife monitors observed the caribou harvest within the North Slave Region during the 2013/14 fall and winter hunting seasons[1] and the reported harvests are summarized in Tables 1 and 2. For comparison, the reported harvest of caribou during the 2011/2012 and 2012/2013 harvest season are summarized in Tables 3 and 4.

The annual harvest target for Bathurst caribou in the Northwest Territories in 2013/14 was 300 caribou (240 bulls and 60 cows) and was established for management zones R/BC/02 and R/BC/03. In addition to the harvest target of 300 Bathurst caribou in NT, there is an annual allotment of 70 commercial tags from Government of Nunavut to an outfitter within the vicinity of Contwoyto and Pellat Lakes in Nunavut.

HARVEST

2013/2014 – Harvest Season

Table 1. Bathurst Caribou Herd: Reported Harvest

Management Area	# Bulls	# Cows	# Calves	# Unknown	Total
R/BC/02 and R/BC/03	63	78	2	24	167
Nunavut *	67	0	0	0	67
TOTAL	**130**	**78**	**2**	**24**	**234**

* There is an annual allotment of 70 commercial tags for Bathurst caribou that are provided to Adventure Northwest from the Government of Nunavut. The actual harvest was reported as 67 in the 2013/2014 harvest season.

Table 2. Bluenose-East Caribou Herd: Reported Harvest

Management Area	# Bulls	# Cows	# Calves	# Unknown	Total
R/BC/01	446	984	0	44	1474
Sahtu Region	123	394	0	0	517
Deh Cho Region	7	7	0	11	25
Nunavut	0	0	0	1000*	1000
TOTAL	**576**	**1385**	**0**	**1055**	**3016**

***Nunavut reported harvest is not available, number represents an estimate from Kugluktuk biologists and wildlife officers.

2012/2013 – Harvest Season

Table 1. Bathurst Caribou Herd: Reported Harvest

Management Area	# Bulls	# Cows	# Calves	# Unknown	Total
R/BC/02 and R/BC/03	79	57	5	25	166
Nunavut *	36	0	0	0	36
TOTAL	**115**	**57**	**5**	**25**	**202**

* There is an annual allotment of 70 commercial tags for Bathurst caribou that are provided to Adventure Northwest from the Government of Nunavut. The actual harvest was reported as 36 in the 2012/2013 harvest season.

Table 2. Bluenose-East Caribou Herd: Reported Harvest

Management Area	# Bulls	# Cows	# Calves	# Unknown	Total
R/BC/01	787	582	0	123	1492
Sahtu Region	173	192	0	0	365
Nunavut	0	0	0	705	705
TOTAL	**960**	**774**	**0**	**828**	**2562**

[1] The 2013/2014 harvest season occurs between August 1, 2013 to July 31, 2014

2011/2012 – Harvest Season

Table 3. Bathurst Caribou Herd: Reported Harvest

Management Area	# Bulls	# Cows	# Calves	# Unknown	Total
R/BC/02 and R/BC/03	110	25	0	0	135
Nunavut *	35	0	0	0	35
TOTAL	**145**	**25**	**0**	**0**	**170**

* There is an annual allotment of 70 commercial tags for Bathurst caribou that are provided to Adventure Northwest from the Government of Nunavut. The actual harvest was reported as 35 in the 2011/2012 harvest season.

Table 4. Bluenose-East Caribou Herd: Reported Harvest

Management Area	# Bulls	# Cows	# Calves	# Unknown	Total
R/BC/01	470	674	0	172	1316
Sahtu Region	9	110	0	181	300
Nunavut	0	0	0	150	150
TOTAL	**479**	**784**	**0**	**503**	**1766**

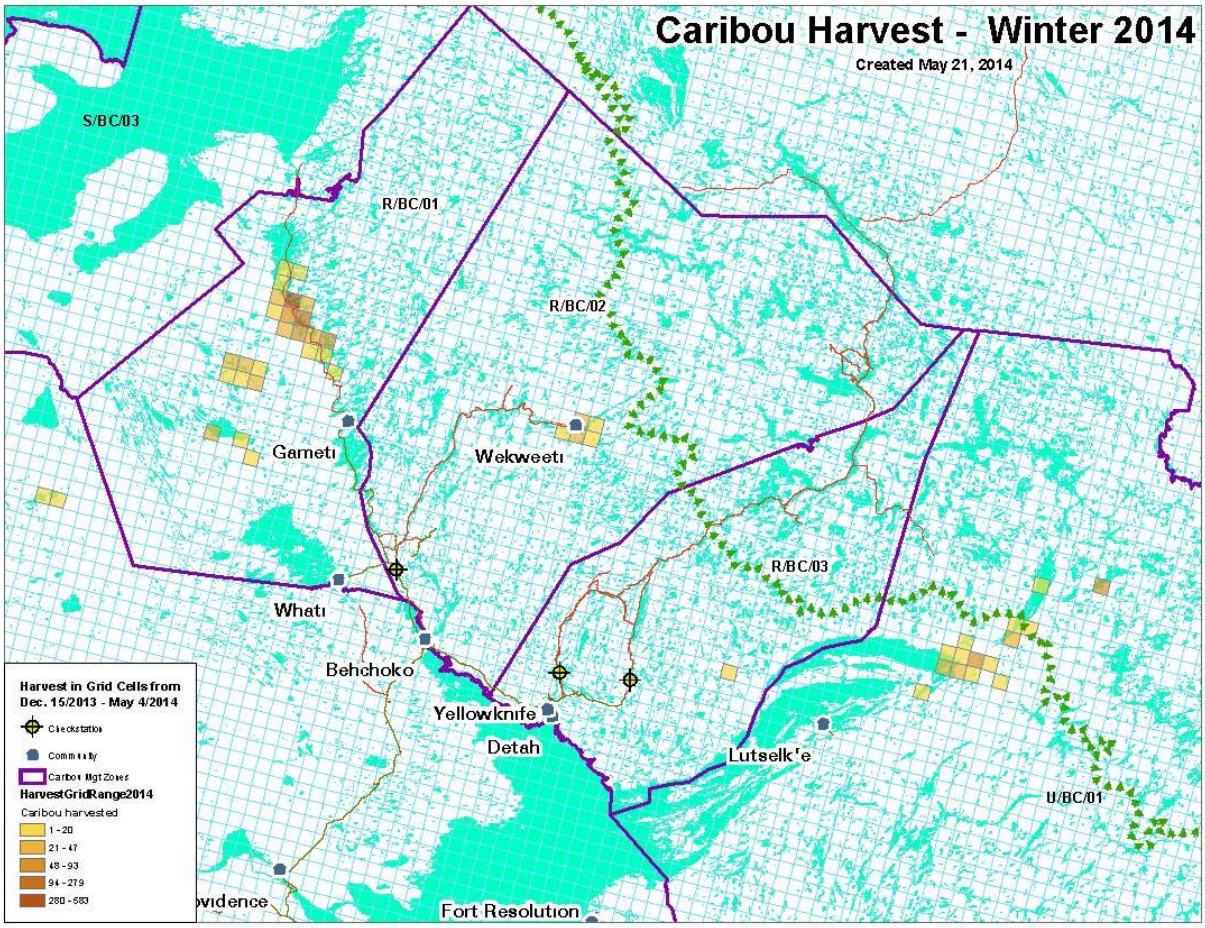

Figure 1: Bluenose-East & Bathurst Caribou Herd Total Reported Harvest – 2013/2014

MONITORING ACTIVITIES

Bathurst Caribou

Fall Composition Survey

- No fall composition survey was conducted in the fall of 2013 due to poor weather conditions.
  - The 2012 fall composition survey indicated a 57:100 bull/cow ratio and a calf:cow ratio of 24:100 for the Bathurst herd, indicating the number of calves recruited into the herd is below normal.
  - The 2011 fall composition survey indicated a 58:100 bull/cow ratio and a calf:cow ratio of 33:100 for the Bathurst herd, indicating the number of calves recruited into the herd is below normal.

Satellite Collars

- Between March 11-16, 2014, an additional 13 collars were placed on adult female caribou in the area where Bathurst caribou spent the winter, bringing the total up to 20 collars.
- Blood samples were taken from the female caribou captured during collaring to determine pregnancy. The results indicate 9 out of the 13 caribou sampled (~69%) were pregnant. *(Figure 2)*
  - Results in March 2013 indicated 12 out of the 13 caribou sampled (~92%) were pregnant.
  - Results in March 2012 indicated 13 out of the 14 caribou sampled (~93%) were pregnant.

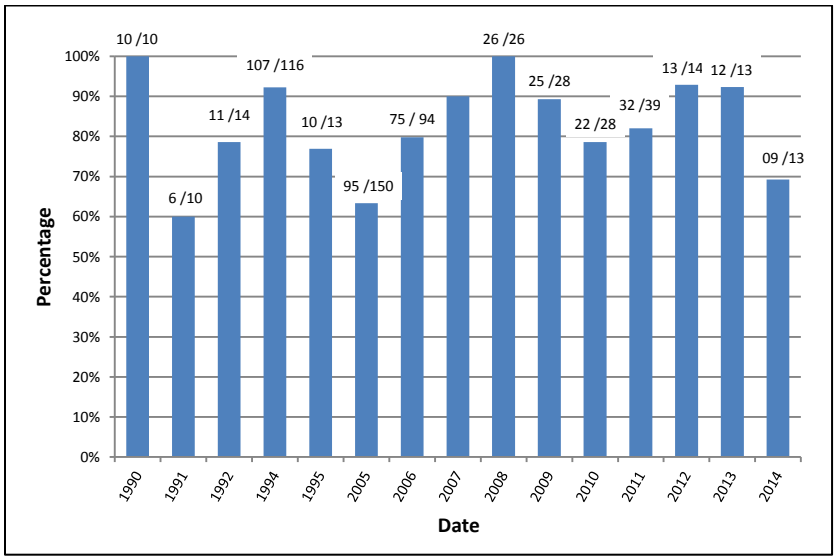

Figure 2: Bathurst caribou herd - Pregnancy Rates – 2014

Recruitment Survey (March)

- The preliminary results of the 2014 spring recruitment survey indicated a calf/cow ratio of 33:100 *(Figure 3).* Ratios below 30:100, if sustained, suggest a declining natural trend.

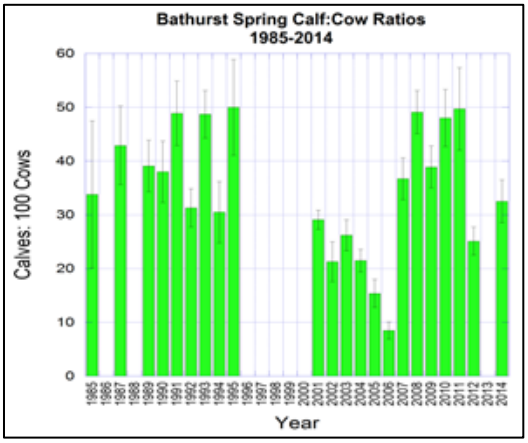

Figure 3: Bathurst caribou herd - Spring recruitment survey –calf:cow ratio - 2014

- There was no spring 2013 recruitment survey conducted because there was substantial overlap between collared caribou of the Bluenose East and Bathurst herds, which indicated that caribou from the two herds were mixed and it would not have been possible to estimate calf recruitment for a specific herd. However, results would be expected to be low due to the ratio estimated during the fall 2012 composition survey, which indicted a cow: calf ratio of 24:100.
- Previous years spring survey results indicated a calf/cow ratio of 25:100 (2012), 46:100 (2011) and 49:100 (2010). Ratios below 30:100, if sustained, suggest a declining natural trend.

Calving Ground Reconnaissance Surveys

- The reconnaissance survey was flown between June 8th and 9th, 2014 near the peak of calving, with very good weather conditions. The preliminary results indicate an estimate of about 3,594 caribou (± 2,133 CI) animals at least one year old in the annual calving ground compared to 14,390 caribou (± 6,109 CI) in June 2012 (*Figure 4).*
  - A systematic reconnaissance distribution survey was conducted on June 13, 2013 after a previous attempt on June 9, 2013 was cancelled due to poor weather conditions. However, the June 13th, 2013 survey may have coincided with post-calving aggregation of the herd therefore the results may not be directly comparable to survey results from previous years which is done around the peak of calving.

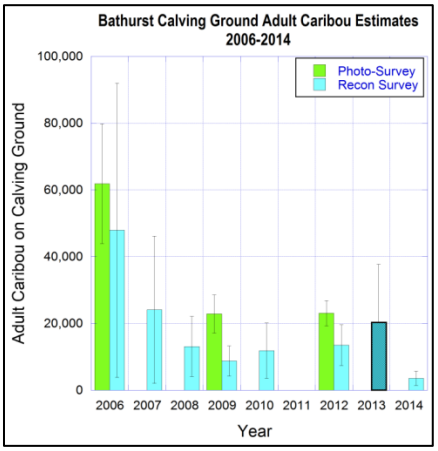

Figure 4: Bathurst caribou herd - Estimates of 1+-year old (Adult) caribou from reconnaissance surveys and photographic surveys of annual calving grounds in June, 2006 to 2014

Calving Ground Photographic & Composition Surveys (June)

- Was conducted between June 3 to 8, 2012 and the results were released in November 2012 which estimated 15,935 caribou (±2926 CI) breeding females *(Figure 5)* and a total herd size of 34,690 caribou (±9,755 CI) *(Figure 6).*
- Next survey is scheduled for summer 2015.

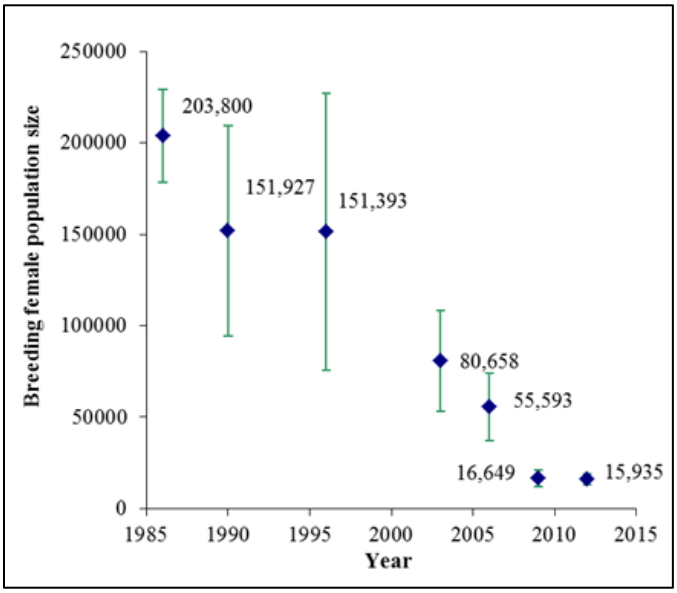

Figure 5: Trend in breeding females of Bathurst caribou herd based on June calving ground photographic surveys

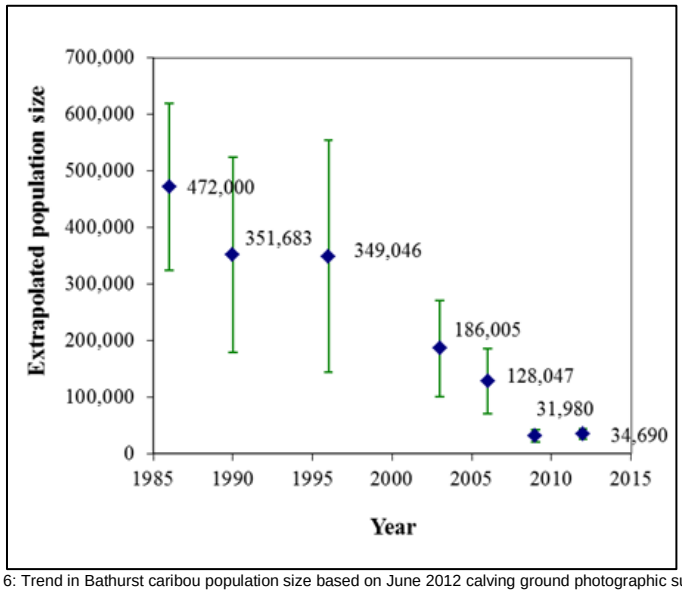

Figure 6: Trend in Bathurst caribou population size based on June 2012 calving ground photographic surveys.

Health & Body Condition Sampling

- There were no health & body condition samples submitted for the Bathurst herd in 2014.

Bluenose-East Caribou Herd (BNE)

Fall Composition Survey

- The 2013 fall composition survey indicated a 43:100 bull/cow ratio and a calf:cow ratio of 36:100 for the Bluenose East herd, indicating the number of calves recruited into the herd is below normal.
    - No fall composition survey was conducted in the fall of 2012, 2011, 2010 for the Bluenose East herd.
    - The 2009 fall composition survey indicated a 43:100 bull/cow ratio and a calf:cow ratio of 46:100 for the Bluenose East herd, indicating the number of calves recruited into the herd is below normal.

Satellite Collars

- A reconnaissance survey occurred from March 4-7, 2014 to search for candidate sites for collar deployment.
- Between March 11-16 2014, an additional 8 GPS collars were placed on adult female caribou and 7 were placed on adult males in the area where BNE caribou spent the winter bringing the total number of collars up to 39 (12 bulls and 27 females).

Recruitment Survey (Spring)

- Preliminary results of the March 2014 recruitment survey indicated a calf/cow ratio of 30:100 *(Figure 7).* Ratios below 30:100, if sustained, suggest a declining natural trend.
    - There was no recruitment survey conducted in 2013 due to high herd mixing during that time.
    - A recruitment survey was conducted in March 2012 with a calf/cow ratio of 27:100.

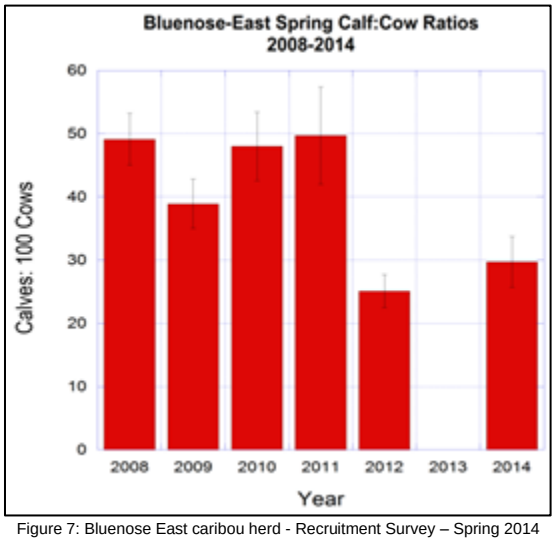

Figure 7: Bluenose East caribou herd - Recruitment Survey – Spring 2014

Calving Ground Reconnaissance Surveys

- The reconnaissance survey was flown over the BNE calving area between June 6 and 7th, 2014 and the preliminary results indicate that the total number of caribou at least one year old was estimated at 20,900 caribou (±7527 CI) at least one year old in the annual calving ground (*Figure 8*).
  - A reconnaissance survey was flown between June 3 and 4th, 2013. The preliminary results estimated 29,443 caribou (±10,144 CI) at least one year old on the annual calving ground.
  - No surveys were conducted in 2012 or 2011 due to poor weather conditions.
    A reconnaissance survey was flown between June 3rd and 7th, 2010. The preliminary results estimated 51,320 (±19,882 CI) at least one year old in the annual calving ground.

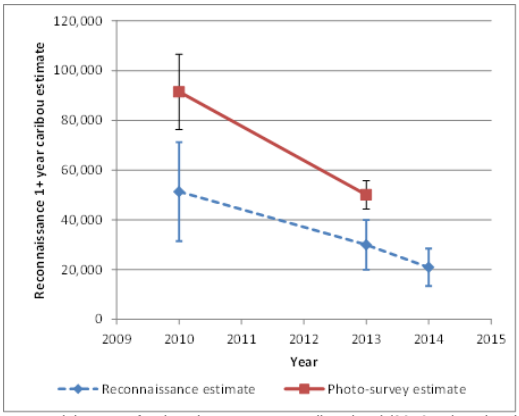

Figure 8: Comparison of estimates of caribou in the core calving area for the Bluenose East caribou herd (2010-14) and estimates from the photo plane surveys (2010 & 2013)

Calving Ground Photographic Survey (Extrapolated herd size)

- No photo survey was conducted in 2014, the next survey is scheduled for summer of 2015.
  - Photo survey was last conducted between May 30 to June 10, 2013, survey results indicate a decline in herd size to an estimated 68,295 (±18,040 CI) and the number of breeding females for the herd is 34,472 (± 3757 CI) *(Figure 9 & 10).*
  - In 2010, the calving ground photographic survey estimated a population of 102,704 (±39,964 CI) and the number of breeding females for the BNE herd was 51,757 (±11,092 CI) *(Figure 9 & 10).*

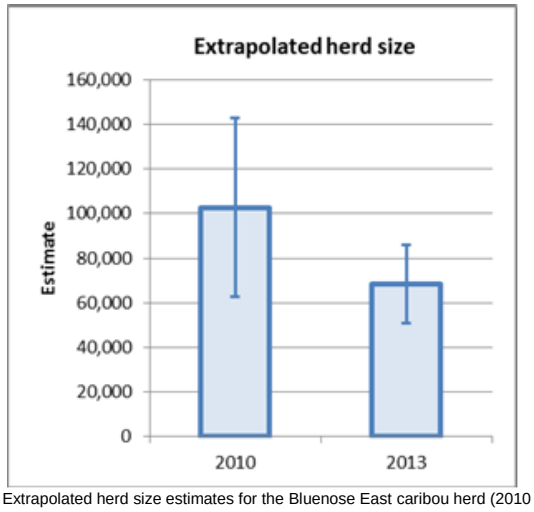

Figure 9: Extrapolated herd size estimates for the Bluenose East caribou herd (2010 & 2013)

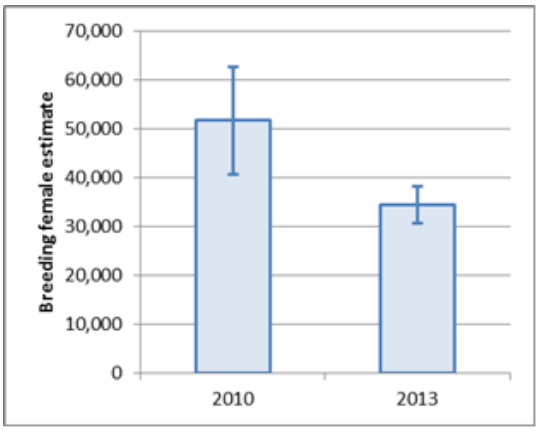

Figure 10: Estimated number of breeding females for the Bluenose East caribou herd (2010 & 2013)

Health & Body Condition Sampling

- Health & body condition sampling was conducted collaboratively by ENR and Tlicho Government during the 2014 winter harvest season by hunters and there were 70 samples taken (55 female, 5 males and 10 unidentified). All caribou were harvested between March 30 – April 1, 2014 in the Hottah Lake area.

    - Total caribou sample kits submitted in 2013 from hunters: 50
    - 50 harvested between March 22-23, 2013, (Hottah Lake)
    - Sex composition of harvest: 20 females, 6 males, 24 not identified

    - Total caribou sample kits submitted in 2012 from hunters: 40
    - 32 harvested between on February 23, 2012, (Grandin River, Grandin Lake)
    - 8 harvested March 4-5, 2012 (Location not specified)
    - Sex composition of harvest: 31 females, 6 males, 3 not identified

- In 2014, preliminary analysis of 8 blood samples from collared female caribou in March 2014 indicated 7/8 (~88%) were pregnant. Preliminary analysis of hunter-killed caribou indicated 88% pregnancy rate, based on presence of fetuses in 44 of 50 hunter-killed caribou (*Figure 11).*

    - In March 2013, preliminary analysis indicated ~81% pregnancy rate, based on presence of fetuses in 17 of 21 hunter-killed caribou.
    - Preliminary analysis of 37 blood samples from collared female caribou in March 2012 indicated 27/37 (~73%) were pregnant. The preliminary analysis indicated ~76% pregnancy rate based on presence of fetuses in 22 of 29 hunter-killed caribou in March 2012.

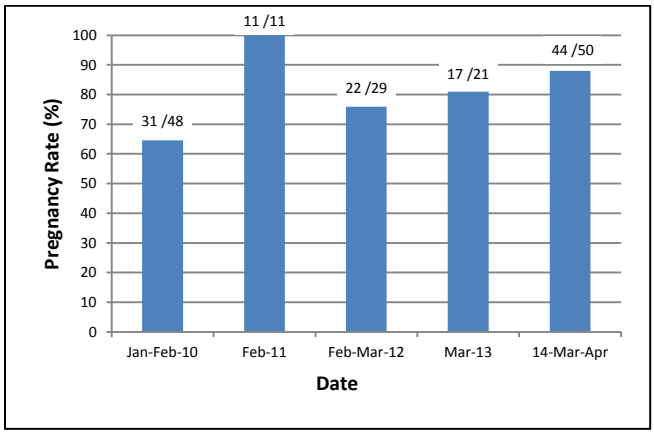

Figure 11: Bluenose East caribou herd- Pregnancy Rates – Winter 2014

- Preliminary analysis indicates an average back fat of 6.10 (mm) in adult females (*Figure 12)* and an average of 1.40 (mm) in adult males (*Figure 13*) for the BNE herd in winter 2014. However, sample sizes varied and there was a range in the measurements taken, and results should be interpreted with this in mind. For example, though adult female back fat measurements in 2014 averaged 6.10mm, the range was 0-35mm and the sample size 44. By comparison the male average of 1.40 mm was obtained from a sample size of 5, with a range of 0-3mm.

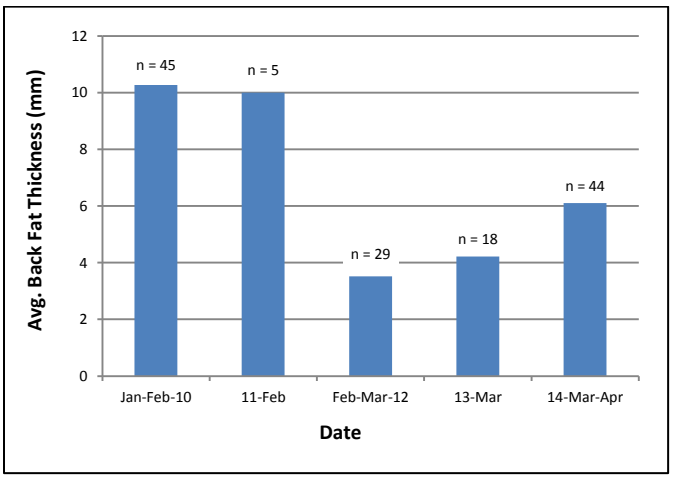

Figure 12 : Bluenose East caribou herd – Adult Female – Back Fat - Winter 2014

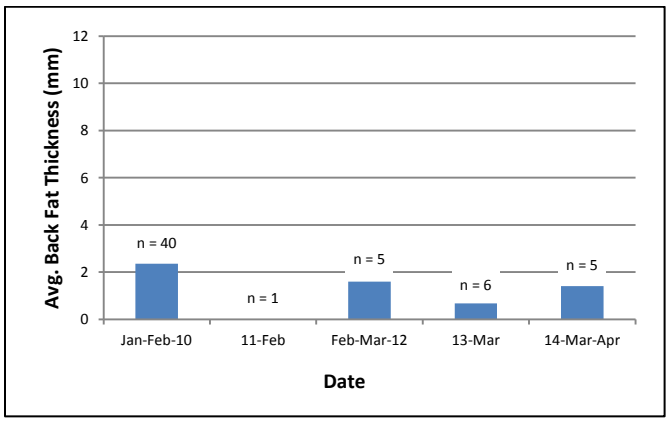

Figure 13: Bluenose East caribou herd – Adult Male – Back Fat - Winter 2014

- Preliminary analysis indicates an average kidney fat index of 62.0% in adult females (*Figure 14)* and an average of 44.0% in adult males (*Figure 15*) for the BNE herd in winter 2013. However, sample sizes varied and there was a range in the measurements taken, and results should be interpreted with this in mind. For example, though adult female kidney fat index in 2014 averaged 62.0%, the range was 13 – 129% and the sample size 49. By comparison the male index of 44.0% was obtained from a sample size of 5, with a range of 25 – 74%.

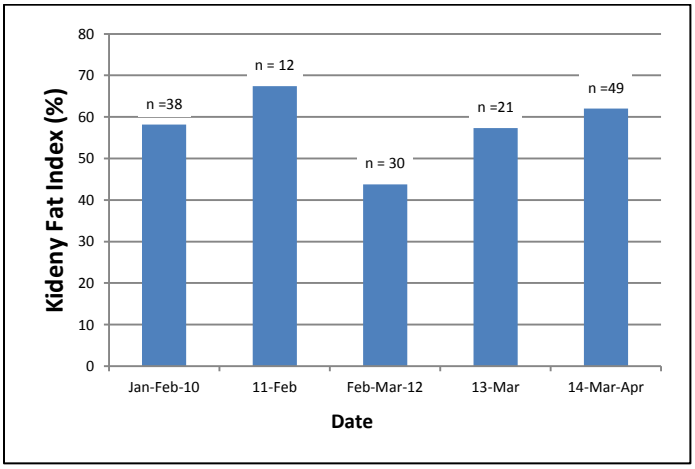

Figure 14: Bluenose East caribou herd – Adult Female – Kidney Fat - Winter 2014

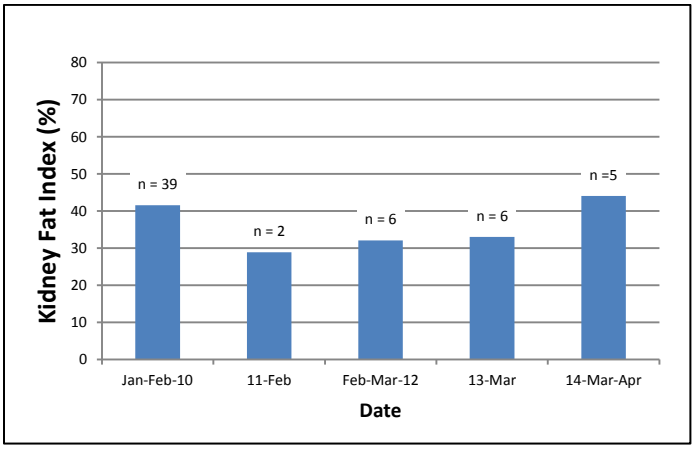

Figure 15: Bluenose East caribou herd – Adult Male – Kidney Fat - Winter 2014

Beverly and Ahiak Caribou Herds

Satellite Collars

- There were 26 new collars were put out on the herd in April 2014. A total of 34 collars remain on the herd.

Fall Composition Survey

- There was no survey conducted for fall 2012 or 2013.

2011

- Survey was conducted from October 25 to 29, 2011.

- Preliminary analysis indicates a 69:100 bulls/cow ratio and a 54:100 calf/cow ratio for the Beverly and Ahiak herds.

2009

- Survey was conducted from October 28 to 30, 2009.
- Preliminary analysis indicates a 54:100 bulls/cow ratio and a 46:100 calf/cow ratio for the Beverly and Ahiak herds.

Calving Ground Abundance Survey

- No survey was conducted in 2013 or 2014.
- Systematic Reconnaissance Survey for the Queen Maud Gulf was conducted in June 2013 by Nunavut.
    - Preliminary results of the survey appear to be similar to 2011. Campbell et al. *"Calving ground Abundance Estimates of the Beverly and Ahiak Subpopulations of Barrenground Caribou (Rangifer tarandus groenlandicus) – June 2011" Government of Nunavut, Department of Environment, Technical Report Series – No:01-2013. April 23, 2014.*

Health & Body Condition Sampling

- Health & body condition sampling was conducted between April 1 – April 4, 2014 winter harvest season, including age estimate, field assessment (hunters), and pregnancy rates. A total of 40 samples were collected (37 females, 2 males, and 1 unidentified).
- In 2014, preliminary analysis of 26 blood samples from collared female caribou in March 2014 indicated 23 (~88%) were pregnant. preliminary analysis indicated 70% pregnancy rate, based on presence of fetuses in 26 of 37 hunter-killed caribou (*Figure 16).*
    - Preliminary analysis indicated ~83% pregnancy rate based on presence of fetuses in 5 of 6 hunter-killed caribou in March 2013.
    - Preliminary analysis of 26 blood samples from collared female caribou in March 2012 indicated 16 (~62%) were pregnant. The preliminary analysis indicated 62% pregnancy rate based on presence of fetuses in 8 of 13 hunter-killed caribou in March 2012.

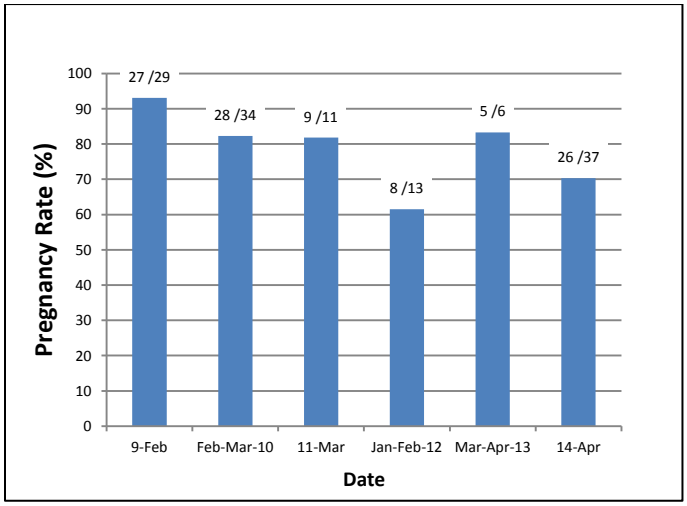

Figure 16: Beverly and Ahiak caribou herd – Pregnancy Rate – 2014

Preliminary analysis indicates an average back fat of 1.65 (mm) in adult females (*Figure 17).* An average was not available for adult males for the winter 2014. However, sample sizes varied and there was a range in the measurements taken, and results should be interpreted with this in mind. For example, though adult female back fat measurements in 2014 averaged 1.65mm, the range was 0-15mm and the sample size 31.

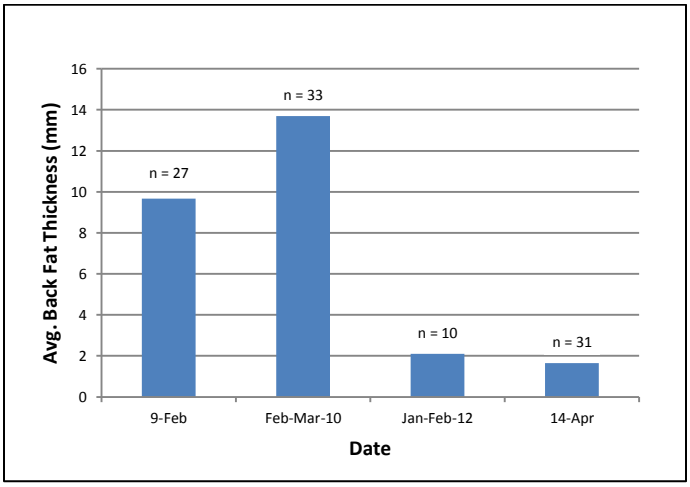

Figure 17: Beverly and Ahiak caribou herds – Adult Female – Back Fat - Winter 2014

- Back fat thickness (mm) results are not available for 2013 or 2011 for females. There have been no results for males since 2010 for the Beverly and Ahiak herds.

- The preliminary analysis indicates an average kidney fat index of 28.0% in adult females (*Figure 18)* and an average of 49.0% in adult males (*Figure 19*) for the Ahiak and Beverly herds in winter 2014. However, sample sizes varied and there was a range in the measurements taken, and results should be interpreted with this in mind. For example, though adult female kidney fat index in 2014 averaged 28.0%, the range was 6 – 63% and the sample size 31. By comparison the male index of 49.0% was obtained from a sample size of 1, no range was available.

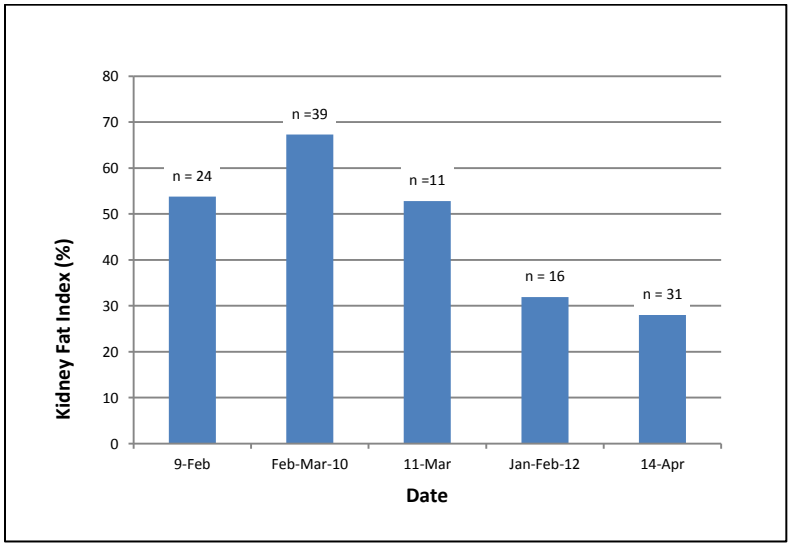

Figure 18: Beverly and Ahiak caribou herds Average Adult Female Kidney Fat Index (%) - Winter 2014

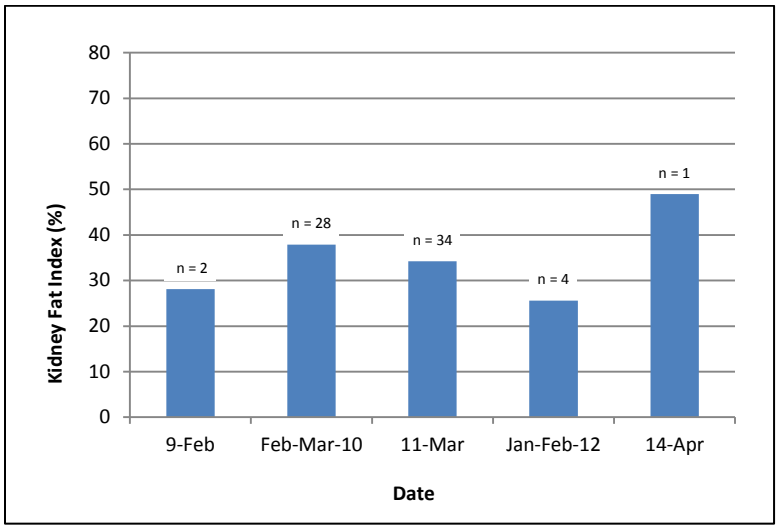

Figure 19: Beverly and Ahiak caribou herds Average Adult Male Kidney Fat Index (%) - Winter 2014

- Kidney fat index (%) results are not available for 2013.

WOLF HARVEST

Wolf Carcass Collection/Necropsy

- The total number of wolf skulls submitted to ENR in 2013- 2014 was 24 (16 male & 8 female).

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

* Does not include wolf carcass collected in the Bathurst Inlet area
** Skull collection
† Harvest year is 01 July to 30 June

- The wolf carcass collection program was intended to monitor the nutritional and reproductive condition of wolves, while at the same time encourage an increase in their 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. While some information on nutritional condition of non-dump wolves was obtained, sample sizes were still low because of the scattered locations of "non-dump" wolves killed and the need to consider gender differences (i.e., males vs females). The objective to obtain more information on reproductive condition was not achieved because most wolves were killed prior to mid-March when the wolf breeding season begins. The few wolves killed after mid-March were mostly males or young, non-breeding females.

- A wolf skull collection program replaced the carcass collection program, at $50/skull for 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.
    - 11 skulls were collected at the Behchoko office - 10 were from community landfill and 1 from the Hottah Lake area.
    - 13 skulls were collected at the Yellowknife office – 4 from Wekweeti (possibly landfill areas) and 9 were collected from within the caribou range (e.g. T2C winter road)

- Wolf carcass collections in the North Slave Region consisted of a single trapper involvement up to the 2007-08 hunting year inclusive. A North Slave Region-wide wolf carcass collection was introduced for 2009-09 and 2009-10 harvest years and wolf carcass collections became NWT-wide (all regions) in 2010-11, 2012-13 and 2013-14.

WOLF MONITORING ACTIVITIES

Wolf Den Survey

- The annual spring wolf den occupancy survey and follow-up late summer pup count survey was

suspended in 2013 and 2014 pending an ENR review of wolf monitoring methods.

- 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).

Reconnaissance Survey 2013/2014

- There were no new collars placed on females wolves for 2014.
  - A reconnaissance survey occurred between May 28 to June 02, 2013 to search for candidate sites for collar deployment. *(Figure 20)*

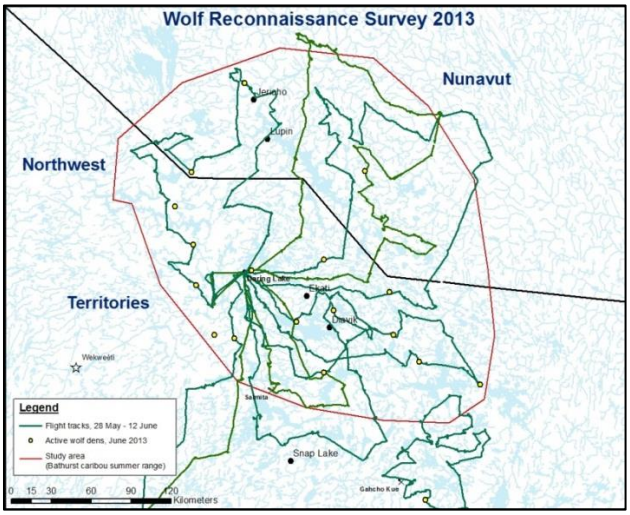

Figure 20: Wolf Dens Survey - Summer 2013

Satellite Collars

- There were no new collars placed on females wolves for 2014, however there were collars remaining from previous years that were being tracked.
  - 16 GPS satellite collars were placed on female wolves between June 21-24th, 2013. By late September of 2013, 15 out of the 16 collars were still active. Between July and September there were 103 aerial checks conducted with >65 hours of field observations and 90 scat samples collected at 14 den sites.

Aerial/ Pup Count

- Aerial and ground observations of tundra wolves to investigate their denning ecology was conducted using fixed-wing and helicopter support between June 30th – July 10th, 2014 and between August 21st -28th, 2014.
  - A total of 10 dens were observed during the survey activities.
  - In early July, 4 active dens and 15 pups were observed.
  - By late August, 5 active dens and 15 pups were observed.
  - 2 other active dens in July were found abandoned by late August. Although pups could have been relocated elsewhere, the possibility of whole litter loss is possible, given that few caribou were observed in the study area.
- Wolf pup recruitment is likely very low and wolf numbers are expected to remain low again this year.