

Nunavut Wildlife Management Board In-person Public Hearing to Consider the Government of Nunavut's Proposal to Decrease the Total Allowable Harvest for Bathurst Caribou from 30 to 0

Submission from Government of the Northwest Territories (GNWT), Department of Environment and Natural Resources (ENR)

Summary: This document summarizes information on the status of the Bathurst barren-ground caribou herd, recent and proposed management actions for this herd in the Northwest Territories (NWT), and the GNWT's recommendations on harvest of Bathurst barren-ground caribou. More detailed information on the herd is found in supporting documents. In 1986 the Bathurst herd was one of the largest migratory barren-ground caribou herds in northern Canada, estimated at about 470,000 caribou. Since then the herd has declined by about 98% to an estimate of just over 8,200 adult caribou in 2018. This estimate was less than half the herd estimate of about 19,800 in 2015. All herd estimates since 1986 are derived from the same photographic survey method on the calving grounds.

The herd's recent vital rates (cow survival, calf survival, and pregnancy rate) suggest that further decline is likely. Spring movements of collared Bathurst female caribou in June 2018 and June 2019 suggest that some emigration of Bathurst caribou to the range of the neighbouring and much larger Beverly herd has occurred. Harvest management in the NWT in 2010 included closure of resident and commercial hunting and a reduction in the Indigenous harvest from an estimated 4,000-6,000 caribou/year consisting primarily of cows, to a harvest limit of 300 caribou/year with 80% bulls. In 2015, after further decline in the herd, the Indigenous harvest of this herd was closed in the NWT.

Other management actions have included developing a collaborative range plan to ensure that the herd has sufficient high-quality habitat across its range, and actions to promote wolf harvest to increase caribou calf and adult survival rates. An overall management plan for the herd was developed in 2004 and an updated plan is under development in 2020 under the Bathurst Caribou Advisory Committee. The remainder of this submission has information on the following subjects: (1) Bathurst herd status, (2) Management context for the Bathurst herd, and (3) Management of Bathurst barren-ground caribou harvest in the NWT 2009-2019, and (4) GNWT's suggestions on harvest of Bathurst barren-ground caribou in Nunavut (NU). The GNWT supports the Government of Nunavut's (GN) recommendation to close the Bathurst barren-ground caribou harvest in Nunavut, in consideration of the herd's more than 98% decline since 1986, and to ensure a consistent approach across the herd's entire range.

1. Bathurst Herd Status

The Bathurst historic barren-ground caribou range as determined from collared barren-ground caribou locations since 1996 covers an area of about 350,000 km² (Figure 1). The herd's calving grounds since 1996 have been west of Bathurst Inlet and a large portion of the herd's summer range is in NU. The remainder of the herd's range, including most of the winter range, is in the NWT; occasionally some Bathurst barren-ground caribou have

wintered as far south as northern Saskatchewan. Since the herd's decline to much lower numbers after 2006, the range has contracted towards the north and the winter range in particular has been reduced, with much less use of the more peripheral areas in the southeast and southwest.



Figure 1: Annual range and calving grounds for the Bathurst herd, 1996-2009, based on accumulated radio collar locations of cows. The calving area and a portion of the summer range are in NU and the rest of the range is mostly in the NWT. At high numbers the herd has occasionally wintered as far south as Saskatchewan.

The June 2018 calving ground photographic survey resulted in an overall herd estimate of $8,207 \pm 2,624$ barren-ground caribou in the Bathurst herd, which is less than half the estimate in 2015 of $19,769 \pm 7,420$ (Adamczewski et al. 2019). These survey results showed that the herd has continued to decline and the herd in 2018 had declined by more than 98% from its peak abundance in 1986 of about 470,000 (Figure 2). The most rapid decline in the herd occurred between 2006 and 2009, when the herd declined from more than 100,000 to 32,000. The herd was roughly stable between 2009 and 2012, but surveys in 2015 and 2018 showed further declines. All population surveys since the 1980s have used the same methods, with a photographic survey over the calving grounds providing estimates of the number of females on the calving grounds. The estimates of female numbers are converted to herd estimates by adding in the males, which are rarely on the calving grounds, based on fall composition surveys that provide an estimate of relative male to female abundance. Details are provided in individual survey reports and a full description of methods is in Adamczewski et al. (2017).

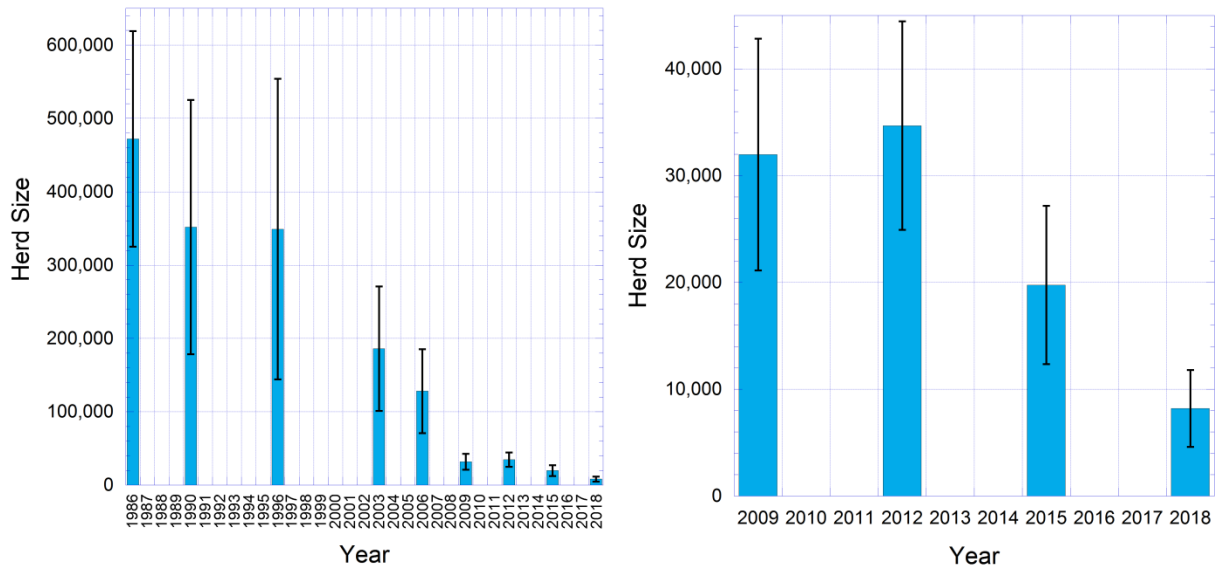


Figure 2. Estimated herd size in the Bathurst barren-ground caribou herd 1986-2018 (left), based on calving ground photographic surveys conducted in June. For clarity, the four estimates of herd size since 2009 are shown on the right with a reduced scale. Error bars are 95% confidence intervals.

Other demographic indicators for the Bluenose-East herd in recent years are consistent with a rapidly declining trend 2015-2018. Three key demographic indicators of herd health are the cow survival rate, the pregnancy rate and the calf survival rate. Biologists term these the population's vital rates.

Of these indicators, the most critical is cow survival rate; multiple studies (e.g. Boulanger et al. 2011) have shown that it needs to be between 84% and 90% to maintain a stable herd. Evaluation of survival in collared cows combined with demographic modeling indicates that the Bathurst cow survival rate has varied between about 78% and 82% between 2015 and 2018 and the best estimate for 2017-2018 was 82% (Adamczewski et al. 2019). While there appears to be a trend toward improved cow survival rate between 2015 and 2018, it would still need to be substantially higher and consistently well over 80% for the herd to stabilize.

The best information available on the pregnancy rates of this herd is from June composition surveys that provide an estimate of the proportion (%) of breeding females. Pregnancy rates have varied from relatively low values in 2015 of about 60% to higher values of about 80% in 2013 and 2018 and a higher rate of 86.0% in June 2019 (Figure 3). These results suggest that a low pregnancy rate has contributed to the herd's decline in some years, as the percentage of breeding females should be at least 80% in a healthy herd.

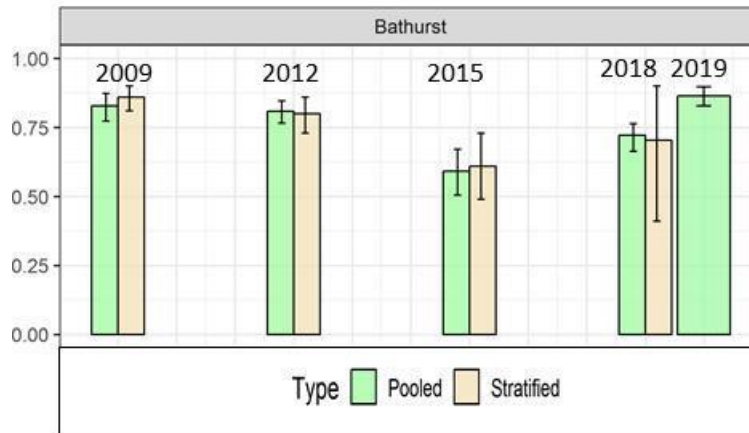


Figure 3. The proportion (%) of cows on the Bluenose-East calving grounds classified as breeders in June near the peak of calving, 2009-2019. The pooled and stratified values were calculated using slightly different methods but resulted in nearly identical results.

Late-winter calf:cow ratios provide an index of the proportion of calves born the previous June that survived the first nine to ten months. A benchmark of at least 30 calves:100 cows has been used as a guide to healthy populations of caribou; however, this benchmark is most applicable for populations where the cow survival rate is healthy (85-90%). Where the cow survival rate is low, as in the Bathurst herd from 2009 to 2018, calf:cow ratios would need to be much higher (45-50 calves:100 cows or higher) to result in a stable herd. Late-winter calf:cow ratios averaged 25.4 calves:100 cows for the Bathurst herd for 2014-2016 (Figure 4). Late-winter composition surveys were not carried out in 2017, 2018 or 2019 for this herd as it was mixed heavily with either the Bluenose-East herd or the Beverly herd or both, thus resulting ratios would be difficult to assign to each herd.

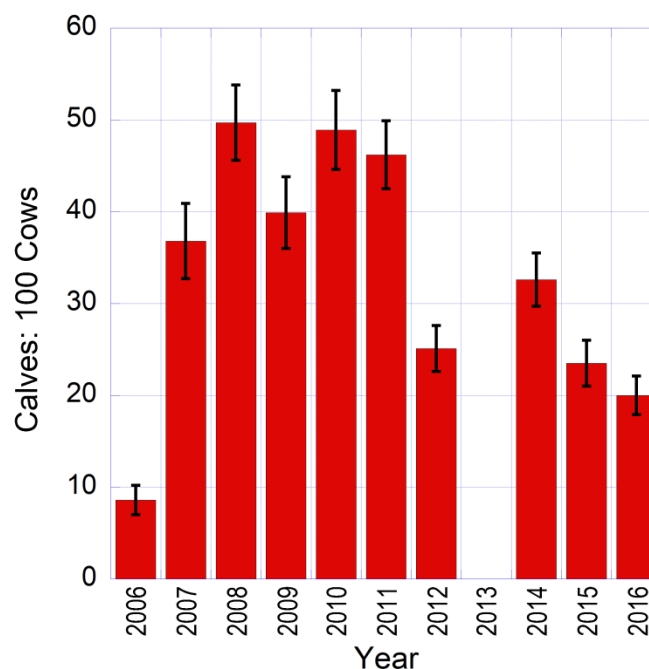


Figure 4. Late-winter calf:cow ratios for the Bathurst herd, 2006-2016.

Taken together, the information on Bathurst cow survival rates, proportion of breeding females in June, and late-winter calf:cow ratios indicate that low values of all three vital rates have contributed to the herd's continuing decline. The cow survival rates estimated for 2015-2018 are better than in previous years but still well below levels needed for stability. Calf recruitment between 2014 and 2016 was well below levels associated with stability.

Tracking of Bathurst collared cows from 2010-2015 and 2016-2018 indicates that rates of caribou switching between the Bathurst and neighbouring Bluenose-East and Beverly calving grounds have remained low from 2010 to 2017 (Figure 5). Switches of calving grounds have tended to occur about equally in both directions. Overall, there were 254 cases of cows in the three herds returning to the same calving ground during 2010-2015 and five switches (1.9%). There were 174 cases of cows returning to the same calving ground during 2016-2018 and three switches (1.7%). This suggested that movement to neighbouring herd ranges did not account for the decline in the Bathurst herd 2015-2017.

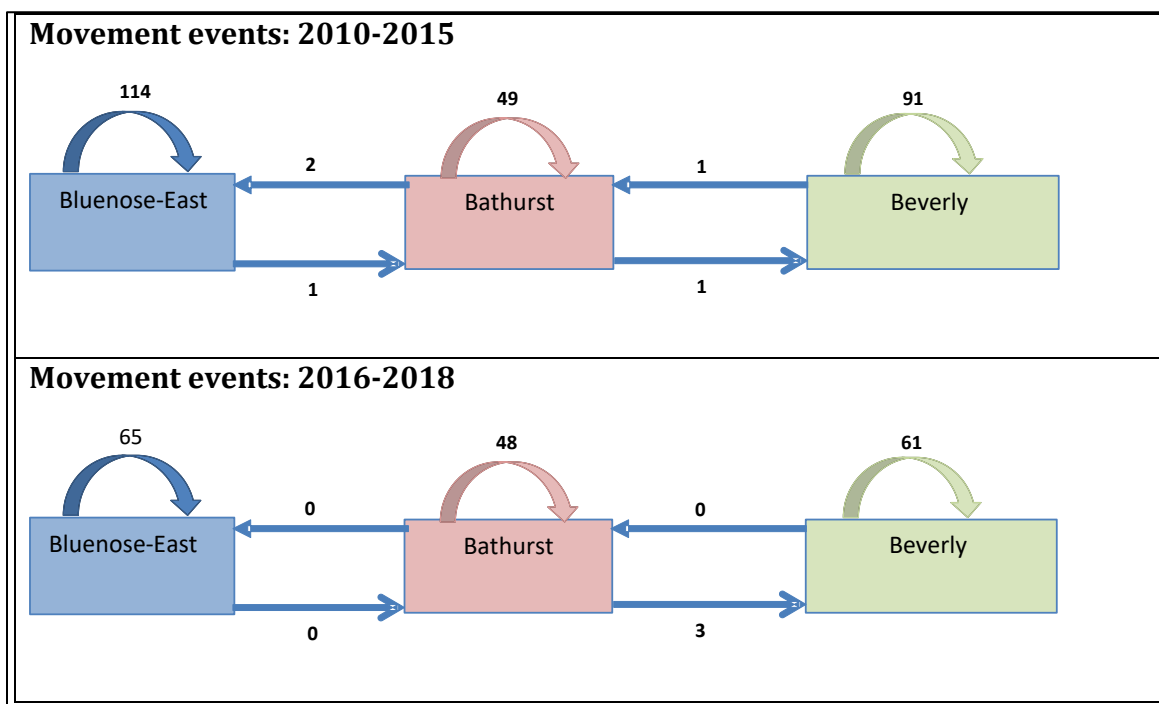


Figure 5. Frequencies of collared caribou movement events for the Bathurst and neighbouring Bluenose-East and Beverly herds 2010-2015 and 2016-2018 based on consecutive June locations. The curved arrows above the boxes indicated the number of times a caribou returned to the same calving ground in successive years. The straight arrows indicate movement of caribou to other calving grounds. From Adamczewski et al. (2019).

However, the three collared cow switches during 2016-2018 from the Bathurst calving ground to the Beverly calving ground all occurred in spring 2018. In the winter of 2017-2018, Bathurst collared cows and bulls were heavily mixed all winter with collared cows and bulls of the Beverly herd (Figure 6). There was a large size disparity between the two

herds, with the Bathurst estimated in 2018 at about 8,200 (Adamczewski et al. 2019) and the Beverly estimated in 2018 at about 103,000 (Campbell et al. 2019), for a ratio of about 12:1. During the spring migration north, three of 11 (27%) known Bathurst collared cows (known to be Bathurst from their June 2017 locations on the Bathurst calving ground) moved north and east with Beverly collared cows and did not return (Figure 7). This may have resulted from the gregarious nature of caribou and an attempt to maintain gregarious calving (Gunn et al. 2012). While this is based on a limited sample of collars, it suggested that a greater than normal proportion of the Bathurst herd emigrated to the east, and this may have contributed to the very low herd estimate in 2018.

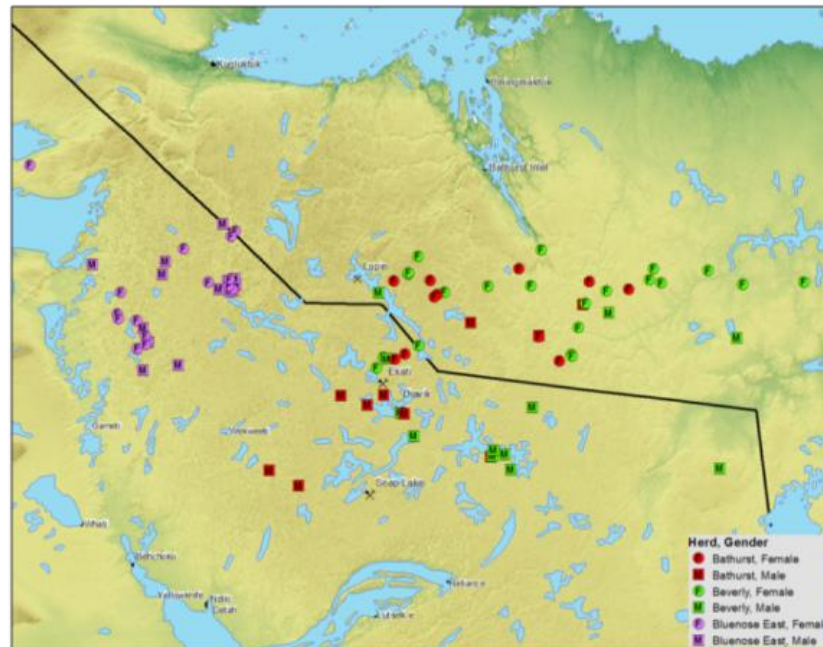


Figure 6. Winter locations (March 15, 2018) of Bluenose-East collared cows (18) and bulls (18) in purple, Bathurst cows (10) and bulls (10) in red, and Beverly cows (23) and bulls (12). The Bathurst and Beverly herds were mixed throughout winter 2017-2018.

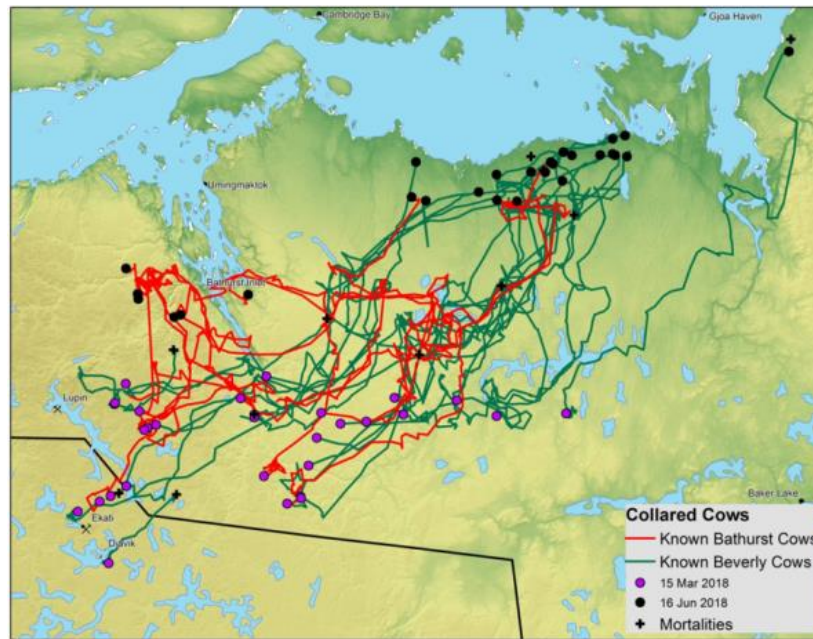


Figure 7. Spring migration paths northward March 15-June 16, 2018 of 11 known Bathurst collared cows (red) and 19 known Beverly cows (green). Purple dots are March 15 locations and indicative of wintering areas; black dots are June 16 locations.

In addition to the collar data, the demographic model for the Bathurst herd was used in 2018 to assess what the herd's estimated size should have been in 2018, based only on its internal vital rates and not on the actual survey-derived estimate in 2018. This exercise suggested that the herd estimate in 2018 should have been about 30% larger, and although this was only a modeling exercise, it provided further support for a substantial emigration of the Bathurst herd in June 2018. In the winter of 2018-2019, the Bathurst and Beverly herds were again mixed heavily all winter, and in the spring, three of 17 (18%) known Bathurst collared cows (collared cows known to have been on the Bathurst calving ground in June 2018) moved east in the spring with Beverly collared cows and did not return. While this sample is also relatively small, it does suggest that movement from the Bathurst range in spring 2018 and 2019 was potentially much higher than the 1-2% rate of switching normally recorded between the Bathurst and neighbouring calving grounds prior to 2018. The future of the Bathurst herd is thus at risk not only from numeric decline but from emigration to the east.

2. Management Context for the Bathurst Herd

Overall Management: An overall management plan was developed for the Bathurst herd through a collaborative process and finalized in 2004 (Bathurst Caribou Management Planning Committee 2004). This plan dated from an earlier period when the herd still numbered well over 100,000 caribou; the herd's circumstances have changed since then, and an updated plan is needed. A collaborative group called the Bathurst Caribou Advisory Committee has met a number of times between 2017 and 2020. It is made up of 18 organizations in NWT, NU and northern Saskatchewan that have an interest in or responsibility for managing the herd. A draft plan is expected in 2020. Like other herd-

Predator Management: As a result of the large and continuing declines in the Bluenose-East and Bathurst herds, the GNWT has led or supported a number of approaches to increase the harvest of wolves as a means of increasing caribou adult and calf survival rates. These approaches include the following programs.

A collaborative technical feasibility assessment of a full range of wolf management options was carried out in 2016-2017, to consider the practicality, costs, and likely effectiveness of different wolf reduction options. The Wek'èezhì Renewable Resources Board (WRRB), Tłı̨chǫ Government (TG) and ENR were lead partners on this feasibility assessment. The main focus was the Bathurst herd, but the assessment could be applicable to other herds.

In 2019, the GNWT increased its incentives for wolf harvesters in an area centered on the wintering collar locations of Bluenose-East and Bathurst barren-ground caribou to include three options (Figure 9a). These included an option for a hunter to receive \$900 for an unskinned, intact wolf, an additional incentive of \$400 for a wolf skinned to traditional standards, and a further option for another \$350 for a prime pelt skinned to taxidermy standards. Approximately 60 wolves were harvested in winter 2019 in the Enhanced North Slave Wolf Harvest Incentive Area. These incentives will continue in winter 2019-2020, with further increases in the incentives (Figure 9b).

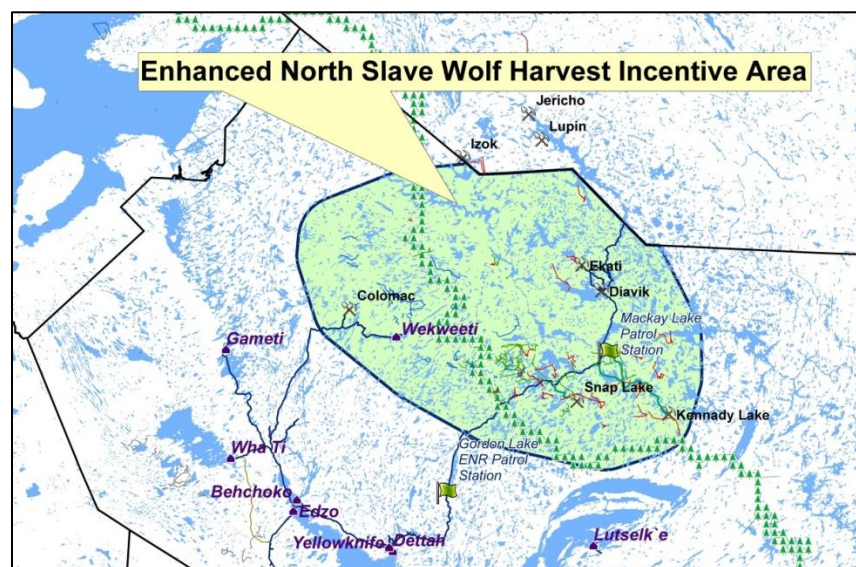


Figure 9a. Enhanced North Slave Wolf Harvest Incentive Area, centered on wintering range used by collared caribou from the Bathurst and Bluenose-East herds in winter 2018-2019, where increased incentives for wolf harvest were available.

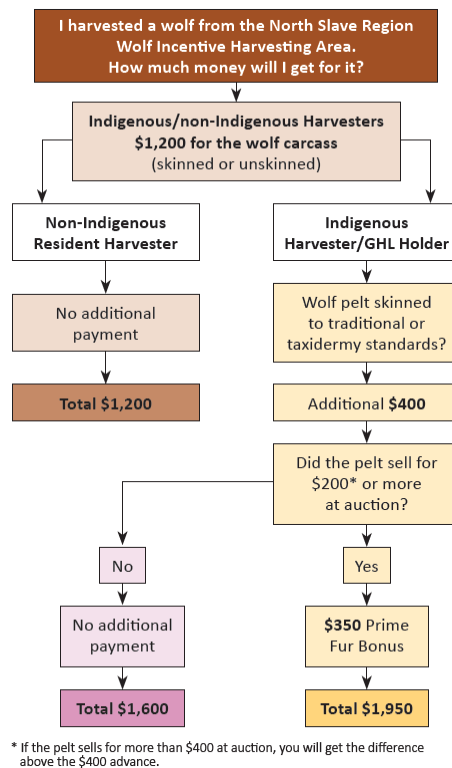


Figure 9b. Incentives for wolf pelts available to wolf harvesters under the Enhanced North Slave Wolf Harvest Incentive Program in the NWT in winter 2019/2020.

ENR has also worked with the Kugluktuk Hunters and Trappers and the GN wildlife staff in Kugluktuk on support for Kugluktuk wolf hunters to hunt wolves in the NU-NWT border country within their traditional area, which includes some areas on the NWT side of the border.

In addition, the TG with GNWT support has developed a pilot community-based wolf harvest program associated with the Tłıchʼo communities that would include training and support for wolf harvest on the winter range of the Bathurst herd in culturally acceptable ways. Winter camps for wolf harvest will be set up in 2020 in support of this program.

3. Management of Bathurst Barren-ground Caribou Harvest in the NWT 2009-2019

Harvest of Bathurst barren-ground caribou in the NWT was substantial up to 2009, and included harvest by a number of Indigenous groups, resident hunters and big-game outfitters. Harvest in 2007-2008 and 2008-2009 was not fully documented but estimates based on check-stations, community monitors, community interviews, and patrols by wildlife officers indicated that the harvest was in the order of 4,000-6,000/year (Adamczewski et al. 2009). After the June 2009 calving photo-survey documented a very rapid decline from more than 100,000 to about 32,000 in three years, actions were taken to reduce the NWT harvest (Figure 10).

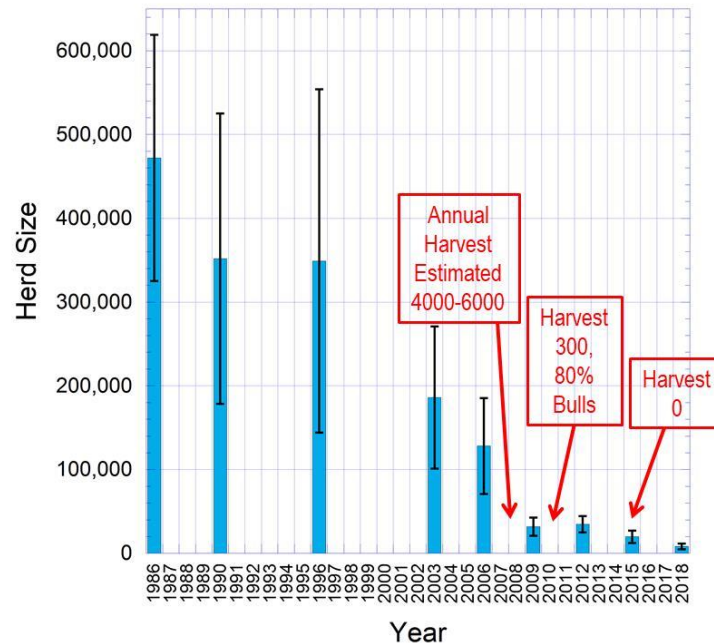


Figure 10. Population size of the Bathurst herd 1986-2019 and NWT harvest management.

In December 2009 the Minister of ENR closed all harvest of Bathurst caribou in the NWT (resident, commercial, and Indigenous) effective starting in January 2010 within two large management areas (R/BC/02 and R/BC/03); these measures were to remain in place until review and recommendations from the WRRB in 2010.

A joint management proposal from the Tłıchǫ Government and ENR on caribou management was submitted to the WRRB in May 2010. The main recommendation in the proposal was to establish an annual Indigenous harvest target of $300 \pm 10\%$ Bathurst caribou with a sex ratio of 80% bulls, with continued closure of resident and commercial harvest. The WRRB held a hearing in August 2010 and issued a report in October 2010 which supported the recommended harvest limit and made additional recommendations (WRRB 2010).

In October 2010, ENR signed an agreement with the Yellowknives Dene First Nation (YKDFN) that included tags or authorization cards for 150 Bathurst caribou, which included the same sex ratio of 80% bulls.

In spring 2013, WRRB recommended that short-term harvest of Bathurst caribou remain limited to 300 caribou and 80% bulls, and extended its 2010 recommendations for Bathurst caribou through the 2013-2014 hunting season.

In January 2015, ENR submitted a proposal to WRRB for interim management of Bathurst barren-ground caribou. The proposal recommended use of a Mobile Core Bathurst Caribou Conservation Area centered on locations of collared Bathurst barren-ground caribou for winter 2014-2015 (Figure 11), with no harvest of barren-ground caribou within the mobile zone. In January 2015, WRRB accepted this proposal on an interim basis for the balance of

the 2014-2015 harvest season. The WRRB held a hearing in 2016 on management of the Bathurst herd and determined that the 0 harvest for the Bathurst herd should continue (WRRB 2016).

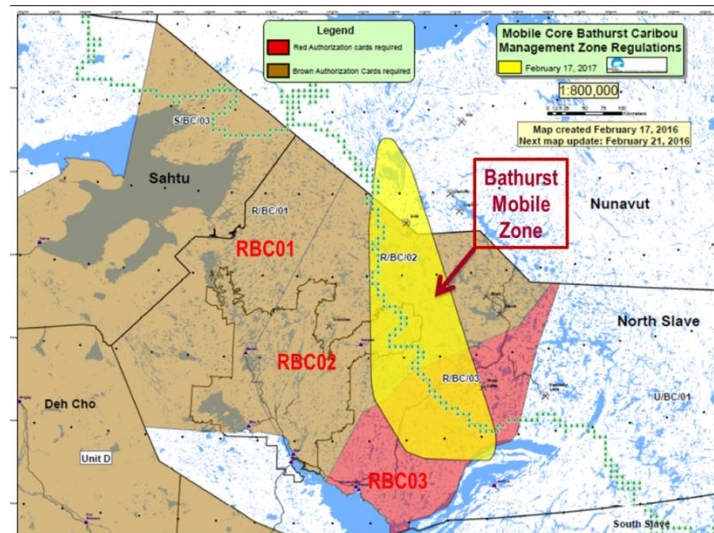


Figure 11. An example of the Mobile Bathurst No-Harvest Zone (in yellow) in February 2016. The mobile zone polygon extends into NU because some collared caribou were in NU, but the zone has no management status outside NWT. R/BC/02 and R/BC/03 are the two large areas where Bathurst caribou harvest was limited to 300 in 2010-2014.

In January 2019, TG and ENR submitted a joint management proposal for the Bathurst herd to the WRRB and the WRRB in 2019 determined that the 0 harvest of the Bathurst herd in the NWT should continue (WRRB 2019).

4. Proposed Harvest Management for Bathurst Herd in Nunavut

The GN has proposed to Nunavut Wildlife Management Board that harvest of Bathurst barren-ground caribou in NU be reduced to 0. The GNWT supports the GN proposal for the following reasons:

1. The herd has declined by more than 98% since 1986; this is the most extreme decline of any barren-ground caribou herd in NWT or NU. Key population indicators such as late-winter calf: cow ratios, estimated cow survival rate, and pregnancy rates suggest further decline is likely. The herd estimate in 2018 was less than half the estimate in 2015.
2. Bathurst collared caribou movements in spring 2018 and 2019 indicate that the herd's future is at risk not only from numeric decline, but also from emigration of Bathurst caribou to the range of the neighbouring, much larger Beverly herd.
3. There is precedent for closing all harvest from other caribou herds that have reached very low numbers:

- All harvest of the Cape Bathurst herd in the Beaufort-Delta region has been closed since 2007 due to very low numbers in 2006 at ~3,000 animals, after declining from peak numbers of ~13,000 in 2000. (Wildlife Management Advisory Council (NWT) recommendation, implemented by GNWT). In this case, harvest was closed when the herd reached about 10% of known peak numbers.
 - The Harvest Management Plan for the Porcupine caribou herd which was finalized in 2010 (PCMB 2010) has a "red zone" population threshold at 45,000 caribou, below which all harvest would be closed. Surveys since the 1970s indicate this herd has generally not exceeded 200,000-218,000 at peak abundance. In this case the red zone is at about 21% of peak numbers.
 - By comparison, the Bathurst herd is at about 2% of its largest observed herd size in 1986 and may decline further.
4. Several Indigenous groups in the NWT have expressed concern over continuing sports hunting of Bathurst barren-ground caribou in NU when all harvest of Bathurst barren-ground caribou in the NWT, including Indigenous harvest, has been closed since 2015. Closing the NU harvest of Bathurst barren-ground caribou would ensure a consistent approach across the herd's range.

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