

Nunavut Wildlife Management Board in-person Public Hearing to Consider the Government of Nunavut's Proposal to Modify the Total Allowable Harvest of Bluenose-East Barren-ground Caribou from 340 to 107 and to Establish a Male-Only Harvest Non-Quota Limitation

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

Summary: This document summarizes information on the status of the Bluenose-East barren-ground caribou herd, recent harvest and management for this herd in the Northwest Territories (NWT), and the GNWT's recommendations on harvest of Bluenose-East caribou. More detailed information on the herd is found in supporting documents. In 2010 the Bluenose-East herd was estimated at about 120,000 caribou, but has since declined to an estimated 68,300 in 2013, 38,600 in 2015, and 19,300 in 2018. All these estimates are based on the same calving ground photographic survey methods. In the NWT, resident and commercial harvesting of this herd was closed in 2010. In the NWT, the Bluenose-East herd ranges into two land claim areas: the Sahtú Settlement Area and Wek'èezhìi (Tłı̄chǫ land claim area).

In 2016, the Wek'èezhìi Renewable Resources Board (WRRB) held a hearing on management of the Bluenose-East caribou and determined a total allowable harvest (TAH) of 750 caribou (all bulls) for Bluenose-East caribou on a herd-wide basis, while recognizing that the board only has jurisdiction in Wek'èezhìi. The WRRB held another hearing in 2019 on the Bluenose-East herd and determined that the TAH for the entire herd should be reduced to 193 bulls, which is 1% of the estimated herd size in 2018. The Sahtú Renewable Resources Board also held a hearing in 2016 and recommended that Bluenose-East herd harvest by harvesters from Délı̄ne should follow a community-based management plan from that community (Délı̄ne 2016) with a harvest limit of 150 barren-ground caribou with a focus on young bulls. In 2019 a draft revised plan from Délı̄ne included a reduced harvest limit of 30 Bluenose-East barren-ground caribou with a focus on young bulls.

The remainder of this submission has further information on the following subjects: (1) Bluenose-East barren-ground caribou herd status, (2) management context for the Bluenose-East herd, and (3) recent harvest and management of Bluenose-East barren-ground caribou in the NWT 2016-2019. The GNWT supports the Government of Nunavut's (GN) proposal for a TAH of 107 bulls from the Bluenose-East herd for Nunavut (NU). The reduction in TAH from 340 to 107 is in line with reduced harvest limits for the NWT in the Sahtú and Tłı̄chǫ land claim areas.

1. Bluenose-East Barren-ground Caribou Herd Status

The Bluenose-East barren-ground caribou range as determined from collared caribou locations since 1996 covers an area of 200,000-250,000 km² (Figure 1). The herd's calving grounds in recent years have been west of Kugluktuk in NU, and a portion of the herd's summer range is in NU. The remainder of the herd's range, including most of its winter

range, is in the NWT, mostly to the east and south of Great Bear Lake. In the NWT, the Bluenose-East herd ranges into two land claim areas: the Sahtú Settlement Area and Wek'èezhìi (Tłı̨chǫ land claim area).



Figure 1. Annual range and calving grounds of the Bluenose-East caribou herd, 1996-2009, based on accumulated radio collar locations of cows.

The June 2018 calving ground photographic survey of the Bluenose-East barren-ground caribou herd provided an estimate of $19,294 \pm 3,230$ (95% Confidence Interval (CI)) adult caribou, which was about half the June 2015 estimate of $38,592 \pm 4,733$ (Figure 2). These survey results are alarming for two reasons: 1) the annual rate of decrease (-22%) was faster between 2015 and 2018 than the -16% annual rate of change observed between surveys in 2010 and 2013; and 2) if the rate of decline from 2015 to 2018 were to continue, estimated herd size in 2021 would likely be about 10,000-11,000 adults, or about half the 2018 estimate. All four herd estimates (2010, 2013, 2015, and 2018) are derived from the same calving ground photographic survey methods, as described in Boulanger et al. (2019). The rapid decrease in the size of the Bluenose-East herd is similar to the rapid rate of decline observed in the Bathurst herd during 2006-2009, when the annual rate of decline exceeded 30%.

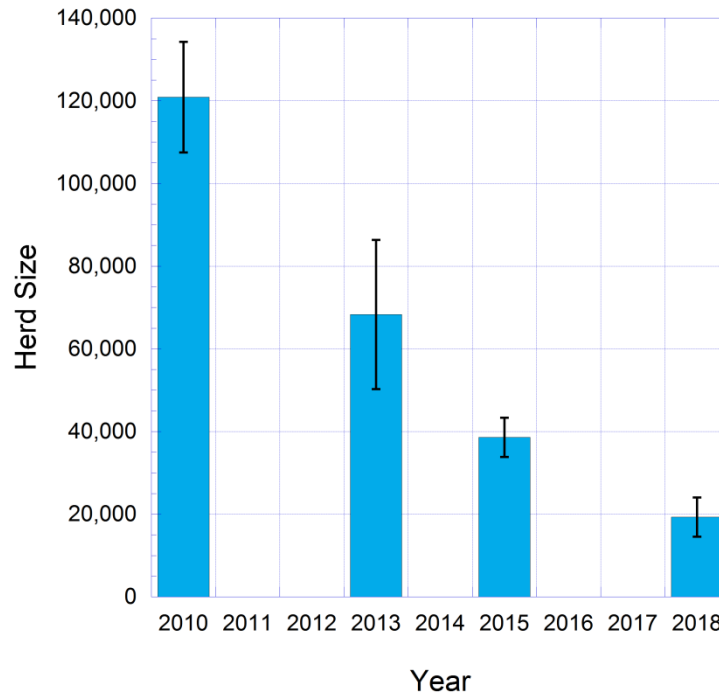


Figure 2. Estimated numbers of adult caribou ($\pm 95\%$ CI) in the Bluenose-East herd 2010-2018, based on extrapolation from calving ground photographic surveys.

Other demographic indicators for the Bluenose-East herd in recent years are consistent with a rapidly declining trend during 2010-2015. 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 in combination with demographic modeling indicates that the Bluenose-East cow survival rate has varied between about 71% and 79% between 2015 and 2018 and the best estimate for 2017-2018 was 72% (Boulanger et al. 2019). The cow survival rate would 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 in 2010, 2013, 2015, 2018 and 2019 that provide an estimate of the proportion (%) of breeding females. It has varied from relatively low values in 2010 and 2015 of 60-65% to higher values of about 80% in 2013 and 2018 and an even higher rate of 87.5% 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 consistently at or above 80% in a healthy herd.

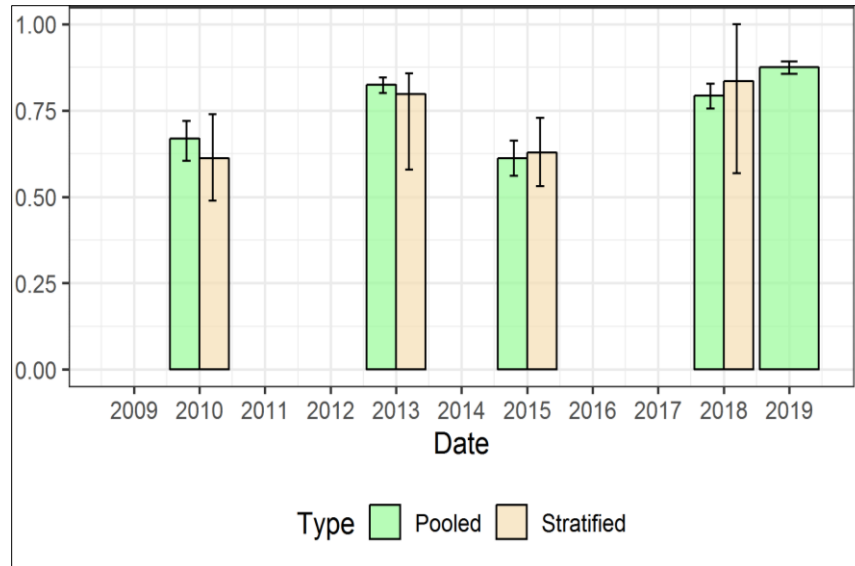


Figure 3. The proportion (%) of cows on the Bluenose-East calving grounds classified as breeders in June near the peak of calving, 2010-2019. The pooled and stratified values were calculated using slightly different methods but resulted in nearly identical results.

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 Bluenose-East herd for 2010-2018, 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 have averaged 30 calves:100 cows for the Bluenose-East herd for 2014-2018 (Figure 4).

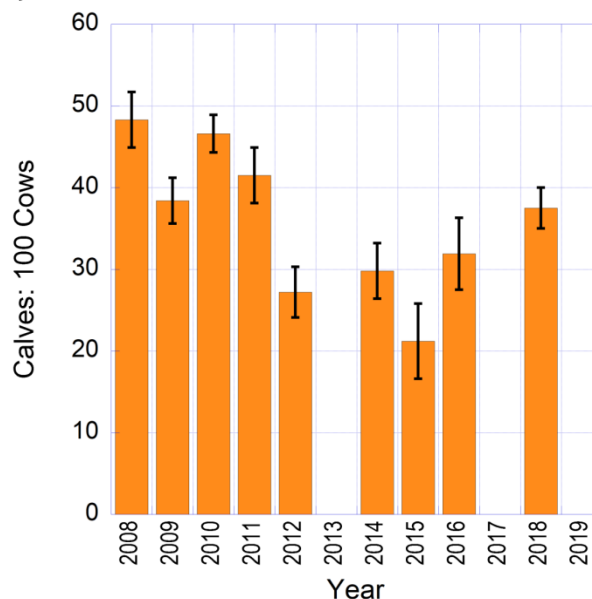


Figure 4. Late-winter calf:cow ratios for the Bluenose-East herd, 2008-2018.

Taken together, the information on Bluenose-East cow survival rates, proportion of breeding females in June, and late-winter calf:cow ratios indicates that low values of all three vital rates have contributed to the herd's continuing decline, with the low cow survival rate the most critical vital rate that would need to increase substantially for the herd to stabilize and begin to recover.

Tracking of Bluenose-East collared cows during 2010-2015 and 2016-2018 indicates that rates of switching between the Bluenose-East and neighbouring Bathurst and Bluenose-West calving grounds have remained low from 2010 to 2018 (Figure 5). Incidents of caribou switching of calving grounds have tended to occur about equally among the herds resulting in essentially no net movement between them. Overall, there were 199 cases of cows in the three herds returning to the same calving ground during 2010-2015 and five occasions of a cow switching calving grounds (2.4%). There were 176 cases of cows returning to the same calving ground during 2016-2018 and three occasions of a cow switching calving grounds (1.7%). This suggests that movement to neighbouring herd ranges does not account for the decline in the Bluenose-East herd during 2015-2018.

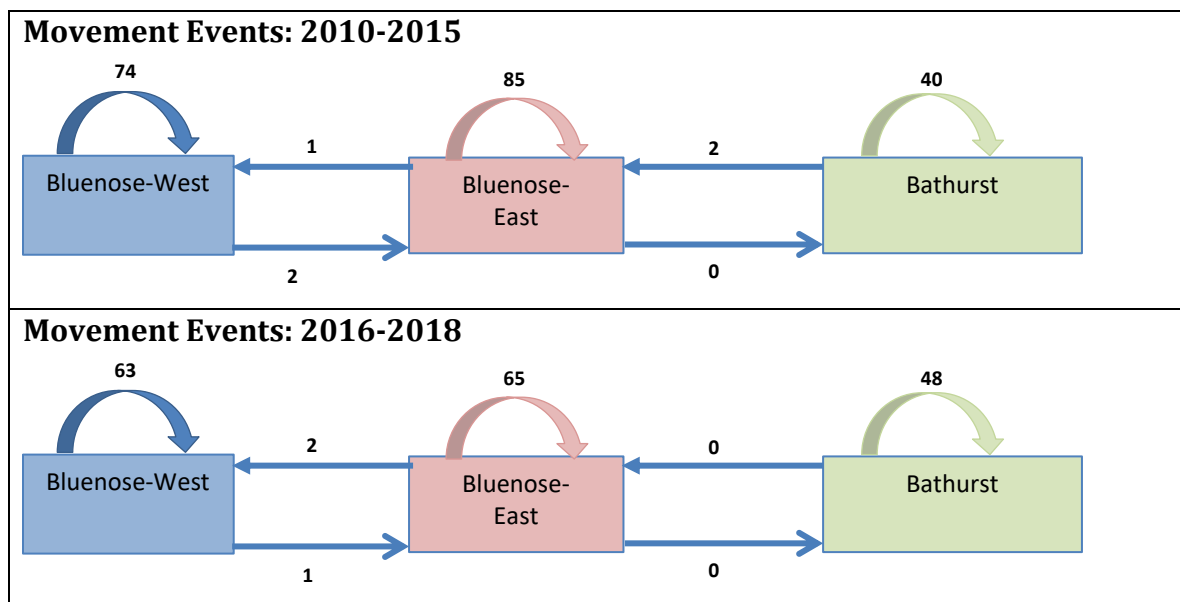


Figure 5. Results of consecutive June calving ground locations for satellite collared cows in the Bluenose-East herd and its western neighbour the Bluenose-West herd and its eastern neighbour the Bathurst herd, 2010-2018. A data point is one pair of consecutive June locations of a satellite collared cow. Curved arrows show the number of cases of cows returning to the same calving ground in consecutive years, and straight arrows show the number of cases when cows switched calving grounds. From Boulanger et al. (2019).

2. Management Context for the Bluenose-East Herd

Overall Management: A management plan for the Cape Bathurst, Bluenose-West and Bluenose-East barren-ground caribou herds entitled *Taking Care of Caribou* was developed by the Advisory Committee for Cooperation on Wildlife Management (ACCWM). The ACCWM is a group of co-management boards in the NWT and NU. The boards represented on the ACCWM include the Wildlife Management Advisory Council NWT, the Gwich'in

Renewable Resources Board, the Ⱦehdzo Got'ınę Gots'ę Nákedı - Sahtú Renewable Resources Board (SRRB), the WRRB, the Kitikmeot Regional Wildlife Board, and the Tuktut Nogait National Park Management Board. This plan was finalized in 2014 (ACCWM 2014), and serves as primary guidance on management of these three herds in the NWT.

The ACCWM plan includes an overall approach to management of the three herds based on the phase of the overall population cycle that the herd is in (Figure 6). There are four phases: green is high numbers, yellow is intermediate numbers and increasing, orange is intermediate numbers and decreasing, and red is low numbers. For the Bluenose-East herd, the threshold for the red phase is 20,000 or fewer and the threshold for the green phase is 60,000 or higher. Recommended actions on harvest, predators, land use, habitat conservation and education are linked to the colour phase chart, with the most critical actions for herds in the red (low) phase.

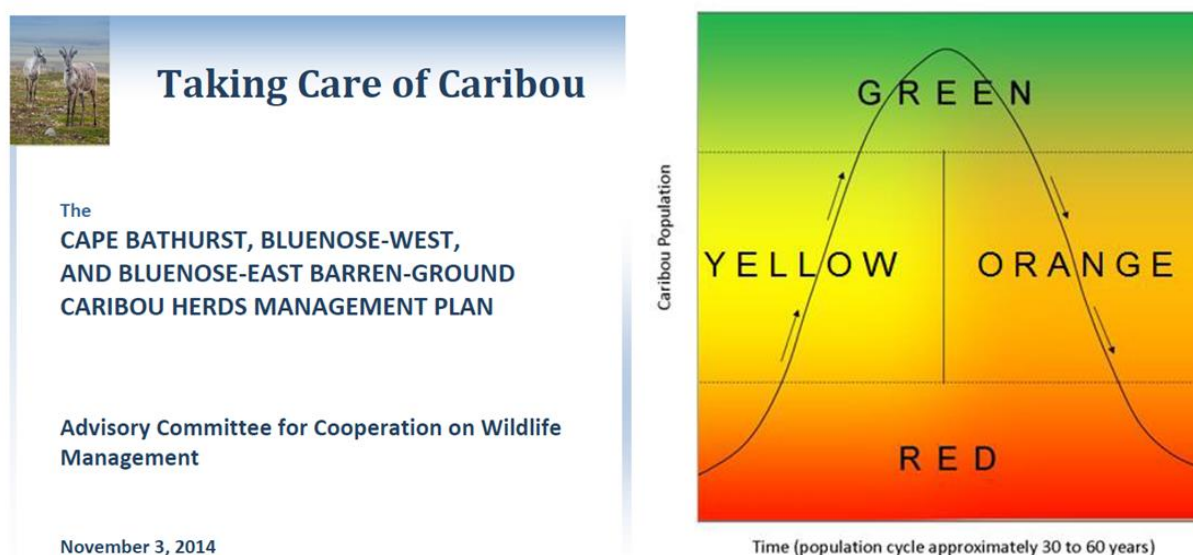


Figure 6. The ACCWM caribou management plan *Taking Care of Caribou* (left) and the colour phase chart for the herds based on population size and trend. From ACCWM (2014).

The ACCWM has held annual status meetings in November 2017, 2018 and 2019, to assess new information on each of the three herds from scientific and community sources, assign each herd to a colour phase, and recommend action plans for each herd. The Bluenose-East herd was categorized as being in the red phase in November 2018 and 2019.

Land Use and Environmental Assessment: There are currently no active mines in the Bluenose-East range in the NWT and NU (Figure 7), unlike the Bathurst barren-ground caribou range to the east where there are three active diamond mines and a number of all-weather and winter roads. Tundra Copper carried out mineral exploration work on the calving grounds of the Bluenose-East herd in 2014 and 2015, but has not been active in the area since then. The GNWT and a number of NWT groups have raised concerns over this development on the calving grounds due to potential effects on cows with calves at very sensitive times of year.

ENR has participated in all recent Environmental Assessment (EA) processes within the NWT that may affect barren-ground caribou ranges. ENR has also engaged in EA processes in NU for projects that could affect the trans-boundary Bluenose-East herd's calving grounds and summer range (e.g. Tundra Copper). A number of Indigenous governments and other groups have also engaged in EA processes in NWT and NU. ENR has participated in a number of workshops in NU focused on protection of caribou habitat.

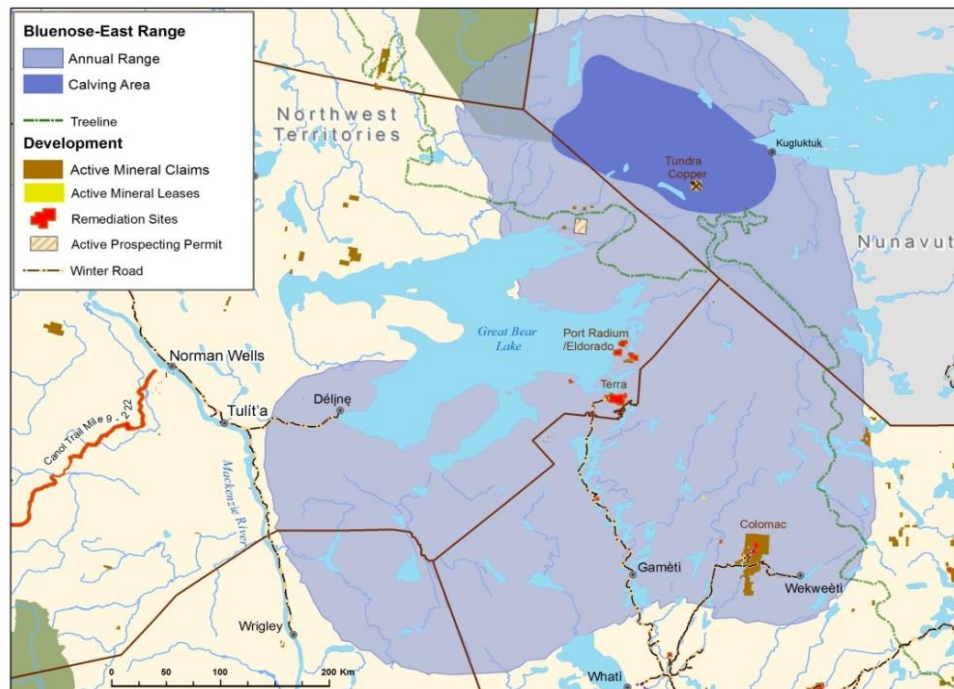


Figure 7. Annual range and calving grounds of the Bluenose-East barren-ground caribou herd in the NWT and NU and recent development activity.

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 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 8a). These included an option for a hunter to receive \$900 for an unskinned, intact wolf, an additional \$400 incentive 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 2018-2019 in the Enhanced

North Slave Wolf Harvest Incentive Area. These incentives will continue in winter 2019-2020 with further increases in the incentives (Figure 8b).

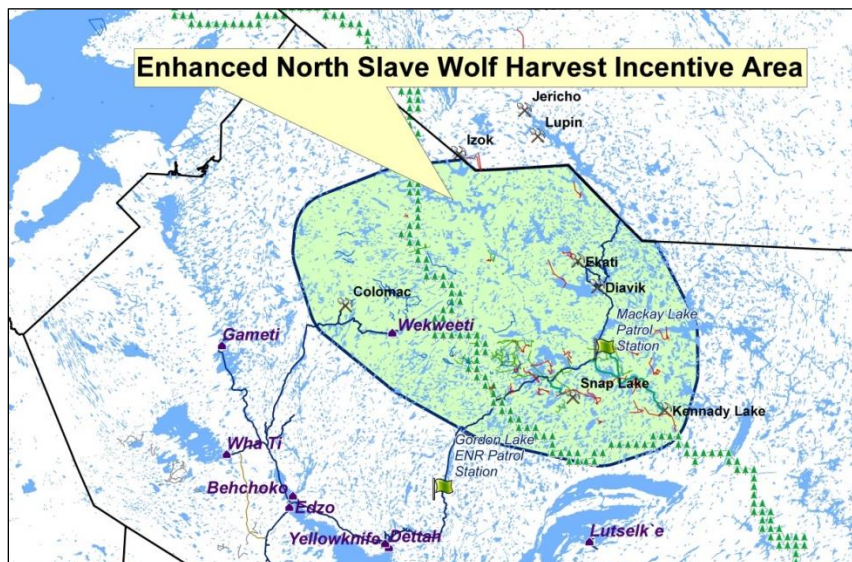
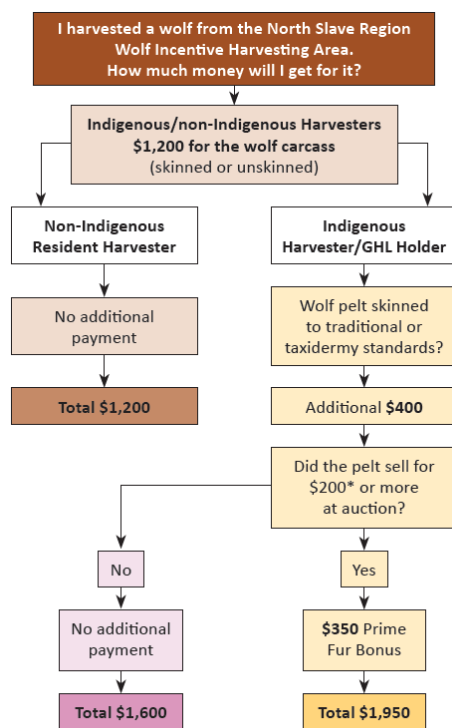


Figure 8a. Enhanced North Slave Wolf Harvest Incentive Area centered on wintering range used by collared caribou from the Bathurst and Bluenose-East herds in winter 2018-2019, where increased incentives for wolf harvest were available.



* If the pelt sells for more than \$400 at auction, you will get the difference above the \$400 advance.

Figure 8b. 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 Tłı̨chʼı̨ 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.

3. Management of Bluenose-East Barren-ground Caribou Harvest in the NWT 2016-2019

In 2016, the WRRB held a hearing on management of the Bluenose-East barren-ground caribou and determined a TAH of 750 caribou (all bulls) for Indigenous harvesters of Bluenose-East barren-ground caribou on a herd-wide basis, recognizing that the board only has jurisdiction in Wek'èezhìi (WRRB 2016). In the NWT, resident and commercial harvesting of this herd had been closed previously in 2010. The WRRB held another hearing in 2019 on the Bluenose-East herd and determined that the TAH for the entire herd should be reduced to 193 bulls, which is 1% of the estimated herd size in 2018 (WRRB 2019).

The SRRB also held a hearing in 2016 and recommended that Bluenose-East harvest by harvesters from Délı̨ne should follow a community-based management plan from that community (Délı̨ne 2016) with a harvest limit of 150 caribou and a focus on young bulls (SRRB 2016). In 2019 a draft revised plan from Délı̨ne included a reduced harvest limit of 30 Bluenose-East barren-ground caribou with a focus on young bulls.

In early 2015 the ACCWM recommended, and ENR accepted, a harvest limit for NWT Indigenous hunters of 1,800 Bluenose-East barren-ground caribou, with at least 80% of those being bulls, for the remainder of winter 2014-2015. Although the NU harvest for the Bluenose-East herd was not well documented, it was estimated by GN wildlife staff to number up to 1,000/year. When harvest was restricted for Indigenous harvesters in NWT and NU in 2015-2016, an allocation formula was needed as a number of Indigenous groups had hunted the herd in the NWT, in addition to Kugluktuk hunters in NU. After seeking input on allocation of this herd from NWT Indigenous user groups and co-management boards, ENR determined an allocation for the herd in NWT. This was based in large part on recent documented harvest from this herd but also on several other criteria, including access to other animals.

The NWT-NU split was based on the 1,800 caribou proposed for NWT by the ACCWM in 2015 and the 1,000 estimated for NU hunters by GN staff in 2015 (hence 1,000/2,800 or 36% for NU and the rest for NWT). The allocation in February 2015 (Figure 9) shared the harvest as follows: Tłı̨chʼı̨ 39.2%, Sahtú 16.4%, Dehcho 1.6%, Inuvialuit 0.9%, NWT Métis Nation 0.4%, Akaitcho 2.1%, and North Slave Métis Alliance 1.8%. The NU harvest under

this formula was 36.8%, recognizing that harvest limits for NU will be determined by NU processes including the NU Wildlife Management Board and the GN.

Bluenose-East Caribou Interim Allocation Feb. 2015

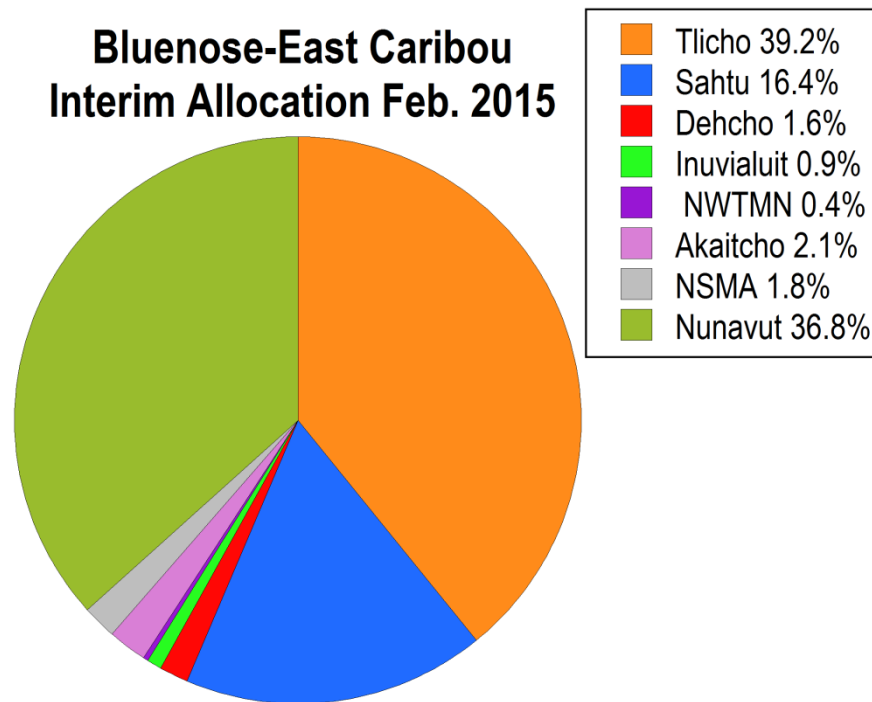


Figure 9. Interim allocation of Bluenose-East barren-ground caribou harvest among seven Aboriginal groups in the NWT from February 2015. The 2015 allocation was for the NWT only and did not include NU. NU is included here for reference (assuming 1,800 for NWT and 1,000 for NU), recognizing that harvest limits for NU will be determined by NU processes.

Actual Bluenose-East harvest levels in the NWT since 2016 have been very low. Délne harvesters reported a harvest of 126 caribou (94 males, 33 females) in winter 2016-2017, and no harvest in 2017-2018 and 2018-2019 as the herd wintered in remote areas far from the community. Harvest by other Indigenous groups in the NWT, including Th̓ch̓ hunters, were also very low in the winters of 2016-2017 (estimated 15 bulls), 2017-2018 (estimated 10 bulls), and 2018-2019 (estimated 100 bulls*). This was in part because much of the herd wintered in remote areas difficult to access. In addition, Indigenous hunters in the region primarily hunted Beverly barren-ground caribou from winter roads to the diamond mines in the eastern NWT, where Indigenous harvest is still unrestricted. (*Pending confirmation from TG).

4. Harvest Management for the Bluenose-East Herd in 2019-2020

To assist in considering possible harvest recommendations for the Bluenose-East herd after the 2018 population herd estimate, a population model was used to assess likely population trend from 2018 to 2021 over a range of herd demographic indicators, and various levels of harvest and harvest sex ratio. The results are described in Boulanger et al. (2019). A selection of outcomes is shown in Figure 10, with harvest ranging from 0 to 2,000 caribou and harvest of either all bulls or all cows. With no harvest, the herd was projected

to be about 11,000 in 2021. Increasing levels of harvest result in incrementally lower projected herd size in 2021. The effects of cow harvest compared to bull harvest become increasingly apparent at larger harvest levels.

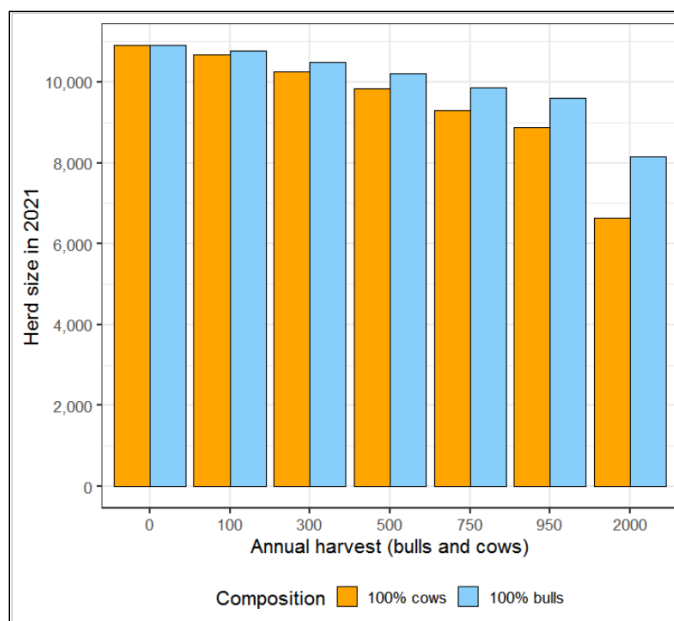


Figure 10. Projected herd size of the Bluenose-East herd in 2021 with various levels of harvest and harvest sex ratio of 100% bulls and 100% cows. Key assumptions: cow survival rate of 0.716 and average calf productivity of 0.301. Details are in Boulanger et al. (2019).

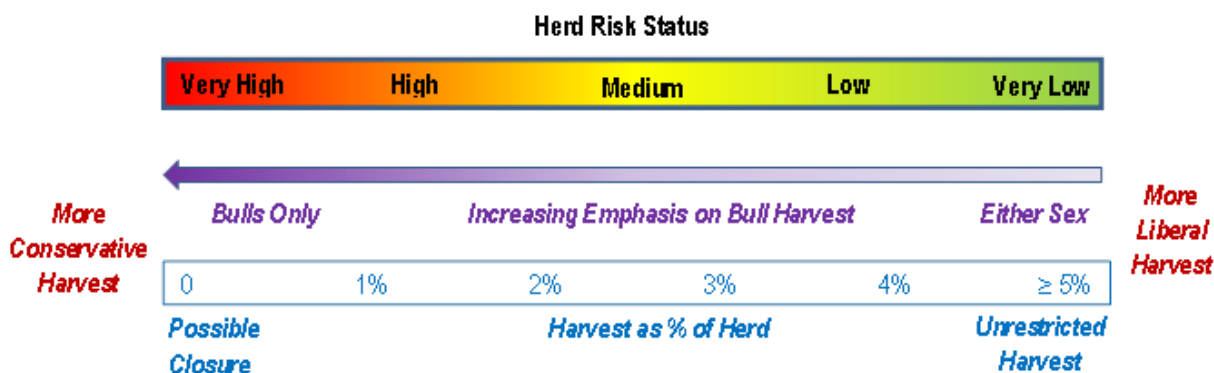


Figure 11. Recommended range of harvest from barren-ground caribou herds based on herd size and trend based on harvest modeling by Boulanger and Adamczewski (2016). A herd at relatively low numbers and declining rapidly is at highest risk of further significant decline and its trend is most significantly affected by harvest.

In addition, a wider range of harvest modeling options was explored in a report by Boulanger and Adamczewski (2016). This included herds increasing, decreasing or stable, and a wide range of harvest levels and harvest sex ratios. An overall “rule of thumb” graphic was derived from this modeling and is shown in Figure 11. In general, large herds with an increasing trend were best able to withstand higher levels of harvest, and herds at

low numbers and with a declining trend were least able to tolerate substantial harvest. As a result, recommended harvest should be lowest (as a % of the herd) and most strongly focused on bull harvest for herds in the highest risk category (low numbers and declining).

In 2019, the WRRB determined that herd-wide harvest of the Bluenose-East herd should be limited to a TAH of 193 bulls for all Indigenous harvesters of this herd, while recognizing that the board has no jurisdiction outside their land claim area (WRRB 2019). This is 1% of the herd estimate in 2018. This is a reduction of 74% from the TAH of 750 bulls the WRRB determined in 2016 (WRRB 2016).

In 2019 the recommended harvest of the Bluenose-East herd under the draft updated Délne community-based caribou management plan was 30 barren-ground caribou, which is a reduction of 80% from the harvest limit in 2016 under the Délne plan of 150 barren-ground caribou with a focus on harvest of young bulls (SRRB 2016).

In NU, the GN has recommended a TAH of 107 bulls to the NWMB for 2020. This would be a reduction of 71% from the TAH recommended in 2016 by the NWMB for this herd of 340 barren-ground caribou (sex not specified), with the community-based barren-ground caribou management plan of the Kugluktuk Hunters and Trappers serving as the mechanism for management of this harvest limit.

The GNWT supports the TAH proposed by the GN for Bluenose-East barren-ground caribou in NU of 107 bulls. The reduction in harvest proposed by the GN is consistent with the reduction of harvest in the Sahtú and Tłchq land claim areas in the NWT in 2019, and is consistent with the overall management plan for this herd (*Taking Care of Caribou*, ACCWM 2014).

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