

KIA Technical response to NWMB's issues relevant to the Government of Nunavut's proposal to modify the TAH for Bathurst caribou

To address NWMB's issues, on behalf of KIA, I reviewed GN's briefing note and presentation for NWMB's December 2019 regular meeting and given that the submission was a summary, I also reviewed GNWT's information specifically the 2018 calving ground survey report which was provided to NWMB¹. Relevant information is available through the WRRB proceedings and so I also reviewed the technical information summarized in the WRRB's Reasons for Decision reports² as well as using the NWMB's public registry to find relevant information and documents for the June 2016 public hearings³ and regular meeting December 2019.

Abbreviations and Acronyms

ENR-GNWT	Department of Environment and Natural Resources, Government of Northwest Territories
GN	Government of Nunavut
KHTO	Kitikmeot Hunters' and Trappers' Organization
KIA	Kitikmeot Inuit Association
SRRB	Sahtu Renewable Resource Board
TAH	Total Allowable Harvest
TG	Tłjchq Government
WRRB	Wek'èezhii Renewable Resource Board

1. Responses and feedback on the most recent science population abundance estimate for Bathurst caribou, particularly about:

1.1. The recent decline in the population abundance estimates from 19,769 in 2015 to 8,207 in 2018 feedback on the assumptions associated with the statistical models used to estimate the current population abundance.

Summary: The methods and analyses to estimate the Bathurst herd size in 2018 were standardized and meet an assumption of accuracy and precision: the assumption that all breeding cows return to a single calving ground was partially supported.

Comment: The Bathurst herd declined 59% between 2015 and 2018 which is a higher rate of decline than between the 40% between 2012 and 2015. The estimate in 2018 was 8,207 caribou 2+ years with its statistical confidence limits were 6,218-10,831.

The 2018 estimate of herd size is based on extrapolating from the number of caribou estimated during a systematic aerial survey of the calving ground using visual and aerial photography methods that have become standardized since 1996. The fieldwork is counting the caribou on the higher density part of the calving ground from high altitude photography. Caribou on the lower density areas are fewer and are visually counted from survey aircraft. Ground counts are used to determine the percentage of breeding cows among the caribou counted on the calving ground based on their appearance. In subsequent data analyses, there

¹ <https://www.nwmb.com/en/public-hearings-a-meetings/meetings/regular-meetings/2019/rm-004-2019-kugluktuk-december-4-2019/english-9>

² <https://www.wrrb.ca/public-information/public-registry>

³ <https://www.nwmb.com/en/public-hearings-a-meetings/public-hearings-1/2016-1/nwmb-public-hearing-to-consider-total-allowable-harvest-for-bathurst-caribou>

are two steps as firstly, the estimated number of caribou is extrapolated to estimate the number of breeding cows and then in a second extrapolation, to the total number of 2 year and older caribou in the herd.

The two main assumptions are that all the breeding cows migrate to the calving ground and that the counts are both accurate (minimal bias) and precise. The assumption that all breeding cows return to the previously used calving ground was only partially supported. The distribution of the collared cows revealed marked changes as 3 of 11 cows that had in June 2017 calved west of the Inlet then in 2018 moved east and calved within the calving grounds of the Beverly/Ahiak herd. Previously between 2010 and 2015, the fidelity of the collared Bathurst cows to their traditional calving rather than the neighboring Bluenose East or Beverly/Ahiak calving grounds had been high (98%).

In support of the assumption about accuracy although patchy snow cover meant caribou were not easy to see, double counting with paired observers was used to estimate and correct levels of accuracy. The allocation of survey effort and the photo coverage were reasonable and lead to conventional levels of precision. The estimate of breeding females was reasonably precise (13.9%).

1.2. The area covered and the duration of the aerial surveys

Summary: During the June 2018 Bathurst calving ground survey, an extensive area was covered, there were no delays and the survey was timed for the peak of calving when movements are minimal.

Comment: There were no weather-caused delays during the 2018 survey that could have influenced the survey efforts. The area covered was large with extensive reconnaissance flights. The calving area including the high density area has shifted east compared to previous years although this shift was not analysed. Overall, the area covered in June 2018 differed markedly from other calving ground surveys since 1996 because calving extended east of Bathurst Inlet. The area east of the Inlet was included in the survey and its eastern boundary was coordinated with GN's survey of the Beverly/Ahiak herd calving grounds.

The unusual calving distribution immediately east of the Inlet was accommodated as an additional survey area and thus is unlikely to have changed the outcome. GNWT based its estimate of herd size on the caribou counted on the Bathurst Inlet calving ground which leaves the emigration of 3/11 collared cows (27%) as the explanation for part of the decline between 2015 and 2018. It can be assumed that the 27% emigration of the collared cows may also represent 27% of the Bathurst cows. A lower rate of emigration was also recorded in June 2019 when 3 of 17 collared cows moved to the Beverly/Ahiak calving ground.

1.3. The level of Inuit involvement in the study and use of Inuit Qaujimaqatugangit in the population assessment.

Summary: Four Inuit were involved as observers during the survey but there is no evidence for the use of Inuit Qaujimaqatugangit in the assessment of herd size.

Comment: The 2018 Bathurst calving ground report acknowledges that four Kugluktuk HTO representatives were involved in the survey.

I did not find how GN used Inuit Qaujimagatuqangit for either the 2018 Bathurst calving ground survey or its interpretation relative to a TAH, although it is available. IQ would be useful in assessing the significance of the emigration of breeding cows.

Inuit IQ is shared through the Tlicho Government's monitoring program for the Bathurst herd. Inuit work with the Tlicho Government's Boots on the Ground monitoring program based at Contwoyto Lake which in 2019, described that:

"However, in recent years, most of the Bathurst herd had remained north of the treeline and on the barrenlands through both summer and winter, instead of travelling south to the southern boreal forest. The presence of caribou on the barrenland, and specifically on the post-calving range throughout the year provides a secure and steady supply of available meat for the wolves in the area, like never before." . . . "Every year, John harvests between 30 and 50 wolves in this area. John only hunts in the direct vicinity of his camp as there is a high wolf population in the area."⁴

2. Any information which is used in demographic models including indices of cow and calf productivity/survival, and collar movement data.

Summary: The demographical model integrates field data on adult cow and calf survival, adult sex ratio, number of breeding females and an assumed harvest rate.

Comment: The computer demographic model was developed from a model that was published in 2012 in a peer-reviewed journal. The model uses the field data on adult cow and calf survival, adult sex ratio and number of breeding females and integrates them to generate estimated rates. The model has a useful strength as it incorporates trends in the field data. Details for the field data are summarized in the GNWT calving ground survey reports.

The estimated survival rates include an assumed and constant harvest level since 2010 of 5 cows and 70 bulls although the basis for these harvest levels is not related to the 2016 TAH.

The field data for the calf cow ratios are relatively standardized although detailed reports are not available from GNWT. Unlike the neighboring Bluenose East herd, for the Bathurst herd, the model-based estimates of cow survival are an increasing trend in cow survival averaging survival of 0.81 (CI=0.75-0.87) for the 2014-2017. The analysis also suggested a decline in the number of adult cows dying during the summer. At least in 2017, calf cow ratios in spring and fall appeared to be an improvement over previous years. Although GNWT annually monitor adult and calf survival rates, analyses typically lag until a presented in a calving ground report which means the 2018 and 2019 survival rates are not yet available.

3. Habitat conditions and potential impacts from human activities in the range of the Bathurst caribou herd.

Summary: Information on habitat conditions and potential impacts from human activities were not included in the TAH submission.

⁴ Thçhç Research and Training Institute (TRTI). 2017 We Watch Everything: A Methodology for Boots-on-the-Ground Caribou monitoring. Thçhç Government.

Comment: GN in their December 2019 submission did not provide information on or need for management actions on habitat and human activities. However, concerns for habitat and human activities especially for calving and summer ranges were the basis for recommendations in the 2019 WRRB's Reasons for Decision report. Additionally, in recognition of concerns about habitat changes especially from forest fires and human activities, for the NWT portion of Bathurst herd's range, GNWT, after extensive consultation, recently released a Range Plan for the Bathurst herd.

4. Information regarding the relationship between environmental variables and health of Bathurst caribou.

Summary: Information on if and how environmental variables could affect Bathurst caribou especially their health was not included.

Comment: GN in their December 2019 submission did not offer information on if and how environmental variables could affect Bathurst caribou especially their health. While the GNWT 2018 calving ground report did not include information other GNWT reports have examined the correlation between climate variables and adult and calf survival⁵.

5. The Government of Nunavut's proposed TAH and any alternative recommendations, if any, and why.

Summary: The proposed TAH of 0 was not submitted with alternative recommendations although GN acknowledged that the communities were recommending other management actions such as predator control.

Comment: In the December 2019 NWMB regular meeting, GN recommended support for GNWT's herd-wide 0 TAH. The TAH recommendation for 0 is based on the continued decline in herd size. However, previously in the 2016 NWMB public hearings, after the GNWT had imposed a moratorium on hunting Bathurst caribou, GN had recommended a TAH of 30 male caribou for Nunavut in recognition of the importance of harvesting for economic and cultural continuity during the hearings:

"So at this declining rate, biologically, the herd cannot sustain any harvest. It would just push down farther the declining of that herd; however, on NLCA there is recognition for key economic importance to this herd for Bay Chimo and the outpost camp, the cultural maintenance of their skill practice; and, therefore, the GN was recommended a harvest, negligible harvest of 0.15 percent, which would represent 30 caribou. And that will be male caribou." (public transcript day 14 June 2016 p.32)

However, with the further decline of the Bathurst herd, I did not find evidence for an independent analysis of, for example, the impact of a negligible harvest including whether it would be detectable. GN has not provided analyses to demonstrate that a TAH will, at this stage in the decline, play a role in halting the decline and starting recovery.

⁵ Boulnger report and Range Plan

In terms of alternative recommendations relative to a TAH, I did not find evidence as to how GN (or GNWT) had analysed the role of predation or other possible contributions to the continued decline. GN did not recommend further actions although they reported that the communities were requesting additional management recommendations to be considered such as predator control with higher incentives.

In 2019, GN did not include a recommendation for wolf management although in the 2019 KHTO submission to NWMB, reference was made to GN's 2018/2019 wolf skull collection which provided an incentive for wolf harvest. Despite the evidence for the decline despite the 2016 harvest restrictions, it is unclear if and how GN has moderated its position on wolf management since 2016. During the 2016 NWMB hearings, the KHTO asked GN about wolf culling:

"Drikus Gissing from the Department of Environment.

At this time, no, we have no intention of initiating any wolf cull or grizzly cull or incentive programs. The issue has been discussed within the department, and there's a lot of examples in other places in the country where these initiatives do not work. They actually result in more wolves than actually addressing the issue, unless you put in a lot of money and a lot of time . . . and at this stage we are not considering that I'm not saying that we won't consider it in future. It all depend on requests from communities to government and what pressure is put on government." (transcripts p.46)

6. Inuit Qaujimajatuqangit of the Bathurst caribou, related to:

- o Inuit approaches to caribou management in times of decline
- o the socio-economic and cultural value of the Bathurst caribou herd to Inuit
- o knowledge of caribou behaviour, especially about the location of calving grounds and changes over time

Summary: GN in its December 2019 briefing to NWMB did not reference IQ which is surprising given the amount of information available.

Comment: IQ is outside my field although considerable information has been compiled on these topics especially by the KHTO. GN in its December 2019 briefing to NWMB did not reference IQ which is surprising given the amount of information available. GN did refer to a natural cycle in numbers but not to how that may influence distribution which has been monitored by Inuit over the decades.

7. Inter-jurisdictional considerations when setting management actions for shared herds.

Summary: The degree of inter-jurisdictional sharing of the Bathurst herd is high with five First Nations, three governments and two co-management boards.

Comment: The winter spring, summer and fall ranges of the Bathurst herd are largely in the NWT where the Bathurst herd falls under the jurisdictions of two governments: TG, and GNWT; a co-management board WRRB and First Nations: Łutsel K'e Dene First Nation, Yellowknives Dene First Nation, NWT Métis Nation, North Slave Métis Alliance and Athabasca Denesuline. In

2020, Łutsël K'é Dene First Nation released their caribou stewardship plan (Yúnethé Xá ʔetthën Hádi). The plan states that LKDFN members will not harvest caribou from the Bathurst herd for 2 years in LKDFN's traditional territory and LKDFN respectfully requests that other Indigenous peoples will not harvest caribou from the Bathurst caribou herd for 2 years in LKDFN's traditional territory. In Nunavut, the Bathurst herd is under the jurisdiction of GN and NWMB.

Completed by:
Anne Gunn Ph.D.
Salt Spring Island, BC
10 February 2019