Wek'èezhìi Renewable Resource Board
Management Proposal

1. Applicant Information
Project Title: Government of the Northwest Territories and Tłı̨chǫ Government Joint Proposal on Management Actions for the Bathurst Ekwǫ̀ (Barren-ground caribou) Herd: 2022 – 2024
Contact Persons: Organization Names: Addresses: Phone/Fax Numbers: Email addresses: Tammy Steinwand-Deschambeault Director, Department of Culture and Lands Protection Tłı̨chǫ Government 127 Donda Tili PO Box 412 Behchokǫ̀, NT. X0E 0Y0 Phone: 867-392-6381 Ext: 1352 Fax: 867-392-6406 Tammy.Steinwand@tlicho.ca Bruno Croft Regional Superintendent North Slave Region Department of Environment & Natural Resources (ENR) Government of the Northwest Territories 2nd Floor, ENR Main Building P.O. Box 2668 3803 Bretzlaff Drive Yellowknife, NT. X1A 2P9 Phone: 867-767-9238 Ext: 53234 Fax: 867-873-6260 Bruno_Croft@gov.nt.ca

2. Management Proposal Summary	
Start Date: July 1, 2022	**Projected End Date:** July 1, 2024
Length: 2 years	**Project Year:** 1 of 2
A June 2021 photographic calving ground survey of the Bathurst herd resulted in estimates of 2,878 (95%CI 1,778-4,660) breeding females, 3,808 (95%CI 2,435-5,955) adult females and 6,243 (95%CI 3,950-9,134) adult caribou in the herd. These estimates are based on the female caribou estimated west of Bathurst Inlet at the time of the June survey. Overall, the rate of decline in the herd slowed from 2018 and was approximately 8% per year from 2018 (8,207 adults) to 2021 (6,243 adults). Some demographic indicators like the collar-based adult cow survival in the herd and the bull:cow ratio have shown improvement between 2018 and 2021. Recent observations from 2018 to 2021 of Bathurst caribou in the summer and fall	

from the Ekwǫ̀ Nàxoèhdee K'è program (TRTI 2021, P. Jacobsen pers. comm.), suggested that the summers have been generally cool, wet and windy with less severe insect seasons, healthy habitat and feeding conditions, and animals were in good physical condition.

Interpretation of the 2021 June calving ground survey was complicated by overlap with the Beverly caribou herd. During the survey, there were 34 known Bathurst collared female caribou; 28 of these were located to the west of the Inlet and 6 were found to the east. Later in June and early July, all collared Bathurst caribou west of the Inlet moved south and west, while the 6 Bathurst collared cows and 10 Beverly collared caribou located east of the inlet moved east toward the Beverly calving ground.

If the presumed Bathurst caribou west and east of the Inlet were in proportion to collared caribou numbers and were included in a new population estimate, this would result in an approximate herd estimate of 7,535 (95%CI 4,638-11,239) Bathurst caribou (west+east) at the time of the June survey. This assumes that the Bathurst caribou east of the Inlet were still Bathurst caribou at calving.

However, the eastern movements of the known female Bathurst collared caribou (6 of 34, 17.6%) in 2021 continued a trend from 2018 (3 of 11, 27.2%) and 2019 (3 of 17, 17.6%) of Bathurst collared caribou moving to the Beverly herd calving or post-calving areas to the east. Due to the post-calving movements in late June and early July, a decision was made to base the Bathurst herd estimate on animals that calved west of the Inlet. As a result, the difference in population estimates from 2018 to 2021 is a combination of a numeric decline and possible emigration of 6 known Bathurst cows (and associated un-collared Bathurst cows) that calved east of the Inlet.

This joint management proposal for the Bathurst herd emphasizes continuance of key management actions currently in place as recommended by the Wek'èezhìi Renewable Resources Board (WRRB 2019). The proposal includes actions in the following areas: 1) harvest management, 2) wolf (díga) management, 3) habitat and land use, 4) education, and 5) monitoring and research. Management actions should be reviewed regularly as further information becomes available and following the next Bathurst calving ground survey in 2023, consistent with the Barren-ground Caribou Technical Working Group (BGCTWG) Adaptive Management Framework and the Bathurst Caribou Advisory Committee (BCAC) Annual Action Planning process.

1) Harvest Recommendations for Bathurst Ekwǫ̀

The Tłı̨chǫ Government and the Government of the Northwest Territories (GNWT) Department of Environment and Natural Resources (ENR) propose that the Total Allowable Harvest (TAH) for the Bathurst herd remain at zero (0) in the Northwest Territories, as determined by the WRRB in 2016 and maintained in 2019 (WRRB Determination #1-2019). The Tłı̨chǫ Government and the GNWT propose continuation of the Mobile Core Bathurst Caribou Conservation Area (also referred to as the 'Mobile Zone') as the means for implementing the TAH of zero for the Bathurst herd.

The Tłı̨chǫ Government and the GNWT propose continued regular ground-based and aerial surveillance of the Mobile Zone throughout the winter harvest season. The Tłı̨chǫ Government has developed and implemented the Ekwò Harvest Monitoring Program in the winter of 2021 to share information with Tłı̨chǫ harvesters using the winter road for caribou harvest outside of the Mobile Zone.

The Tłı̨chǫ Government has been working on developing programs that promote alternative harvest such as the Tłı̨chǫ Dǫtaàts'eedı program where fish is provided to the community

members in addition to fuel subsidies to assist people to go out moose hunting. These programs have provided Tłı̨chǫ citizens with other resources to provide for their families in hopes of reducing caribou harvest. The Tłı̨chǫ Government also plans to continue and expand its delivery of programs focused on cultural practices on-the-land. These programs emphasize continued use and maintenance of traditional sites and trails. The long-term aim is continuation of projects that teach Traditional Knowledge (TK) of the land and caribou by bringing elders, youth and community members together on the land.

2) Wolf (díga) Management

A comprehensive Tłı̨chǫ Government-GNWT joint wolf management proposal to reduce predation on the Bluenose-East and Bathurst caribou winter ranges underwent public review in fall of 2020 and was approved by the WRRB in January of 2021. Details of the program from 2020 and 2021 are provided in annual reports to the WRRB (Nishi et al. 2020, Clark et al. 2021) and posted to the WRRB web-site. The wolf management program was approved for a 5-year period.

3) Habitat and Land Use

The collaboratively developed Bathurst Caribou Range Plan (BCRP) was finalized in 2019 to guide range-wide habitat management, including cumulative effects of disturbance and land use (GNWT 2019). The Tłı̨chǫ Government and the GNWT will continue to work on implementation of all recommendations in the BCRP with other Indigenous governments, Indigenous organizations and other co-management partners. Recent work by the Tłı̨chǫ Government and the GNWT on implementation of BCRP recommendations includes:

- Progress on identifying and prioritizing key landscape features for conservation (eg: ekwǫ̀ no'oke – water crossings, tataa – land crossings);
- Working with elders and harvesters, in identifying key unburned areas of winter habitat and providing these locations to the Forest Management Division of ENR to be considered as values-at-risk in fire management decisions;
- Progress on designing a Caribou Guardians Coalition for networking and providing support to community-based caribou monitoring programs on the Bathurst range; and
- Developing a Framework, Operational Guidance and conducting a desktop exercise for the implementation of Mobile Caribou Conservation Measures (ENR 2021 a,b).

In addition, cumulative disturbance levels on the Bathurst annual range are currently being updated by the GNWT to guide management responses as outlined in the BCRP.

The Tłı̨chǫ Government and the GNWT will continue to support TK and scientific research (including the Ekwǫ̀ Nàxoèhdee K'è caribou monitoring program) focused on climate change and other factors affecting caribou heath, abundance and the condition of its range.

4) Education

The Tłı̨chǫ Government and the GNWT propose continuing work on a coordinated suite of education/public awareness initiatives to improve general public knowledge of ekwǫ̀ and current ekwǫ̀ management actions, and to promote respectful hunting practices that would reduce wounding and wastage in areas adjacent to the Mobile Zone where ekwǫ̀ from the Beverly herd are harvested. (i.e., east of the mobile zone and the Tibbett to Contwoyto winter road).

The following are education/public awareness initiatives to promote traditional ways of harvesting, improve hunter practices and reduce wounding and wastage:

- The GNWT's Hunter Education program for new/young hunters has been developed and will be adapted for Tłı̨chǫ communities to be taught in 2 schools in the Tłı̨chǫ

region starting in February 2022 as a pilot program.
- The Tłı̨chǫ Government and ENR have collaborated in training Tłı̨chǫ monitors so that they can teach the Hunter Education Program.
- Enhanced social media messaging by the GNWT and Tłı̨chǫ Government on conservation and recovery efforts for the Bathurst herd.
- The Tłı̨chǫ Government has developed and implemented the Ekwò Harvest Monitoring Program in the winter of 2021 and will continue to run it in the winter of 2022.

The GNWT hosted a Respected Harvesters Gathering with Indigenous governments and Indigenous organizations in December of 2021, which proposed a number of approaches for improving communication and education of caribou hunters on the Tibbett to Contwoyto winter road. A follow-up leaders meeting was held on January 20, 2022 to consider these recommendations. The Tłı̨chǫ Government and the GNWT will work together to address to the extent possible key recommendations of that gathering.

Visits to the 4 Tłı̨chǫ communities to present updated information on caribou herds and review management priorities planned for January 2022 have been postponed due to the current COVID travel and gathering restrictions, but consideration will be given to other options to provide updates and discuss priorities with communities.

5) Monitoring and Research of Bathurst Ekwǫ̀

The biological monitoring activities for the Bathurst herd will continue as recommended by the WRRB in 2019 including annual composition surveys in June, October, and March/April and conducting the next population survey in 2 years (2023). We will maintain up to 50 female collars and 20 male collars, in part to monitor emigration of Bathurst caribou and annual cow survival rates, and to ensure effective definition of the herd's distribution for the Mobile Zone.

An additional aerial survey in June 2022 is proposed to define relative abundance and distribution of caribou west and east of Bathurst Inlet and separation between Bathurst and Beverly caribou. The survey aims at providing more information on the distribution of the Bathurst and Beverly herds during calving. The GNWT is currently considering the possibility of a calving-ground photo survey in 2022 if there is clear separation of herds.

The Tłı̨chǫ Government will continue the Ekwǫ̀ Nàxoèhdee K'è monitoring of the Bathurst caribou. The program will take place each summer at Kokètì (Contwoyto Lake) from mid-July to September for monitors to be on the Bathurst summer range for most of the ice-free season.

This suite of monitoring actions will help to assess the ongoing status and trend of the Bathurst herd. Monitoring will guide adjustments to management as outlined in the BGCTWG Adaptive Management Framework and also to assess the effectiveness of wolf management actions in aiding recovery of the herd.

The Tłı̨chǫ Government and GNWT recommend continued support for research into underlying drivers of change in Bathurst herd abundance through collaboration with academics, other researchers (including remote sensing specialists), the Caribou Guardian Coalition and community-based caribou monitoring programs using both scientific and TK approaches.

Please list all permits required to conduct proposal.

NWT and Nunavut (NU) Wildlife Research Permits will be required annually to conduct monitoring recommended in this proposal.

3. Background

3.1 BATHURST CARIBOU STATUS IN 2021

A. Bathurst Caribou Status in 2021 (based on Ekwǫ̀ Nàxoèhdee K'è caribou monitoring in summer to early fall, 2016 - 2021)

Weather & Habitat Conditions, Caribou Health and Calf Abundance

The Ekwǫ̀ Nàxoèhdee K'è monitors reported a trend of warm and dry habitat, with high calf abundance in 2016 to 2017, shifting to a trend of cold, wet weather with good forage and habitat, resulting in good health conditions but low calf abundance during the last four summers, from 2018 to 2021 (Table 1). During the summers of 2016 and 2017, warm and dry weather conditions were prevalent and resulted in dry, "crusty" caribou forage. Ekwǫ̀ were in "normal" body condition, but were unable to build up fat reserves in July, due to high insect harassment. During 2016 to 2017, monitors observed that ekwǫ̀ had "normal" and average body condition, and ekwǫ̀ groups had at times high calf abundance, with most cows accompanied by calves, resulting in nearly a one-to-one calf-cow ratio. During the summers of 2018 and 2019; the weather trends turned cold, wet, and windy. This was optimal for ekwǫ̀, with consistently good foraging conditions and with much less insect harassment. The herds had more time to feed uninterrupted and build up fat reserves, without the need to continuously run from biting insects. Thus, ekwǫ̀ were healthy, and bulls were building fat reserves in mid-July. While foraging conditions were favorable and caribou were in good physical condition, the majority of groups had few or no calves at all. Interestingly, although the summers of 2018 and 2019 brought favorable weather conditions for vegetation growth, which consequently improved ekwǫ̀ health, those two years also saw declines in calf abundance. The summers of 2020 and 2021 were comprised of similarly favorable weather conditions for ekwǫ̀; creating good forage quality and low insect activity. Consequently, caribou were healthy and in good body condition throughout the summer, although the calf to cow ratio remained low.

Over the six years of monitoring at Kokètì, more calves were seen during the first three years (2016-2018) of the program and comparatively fewer calves have been seen in recent years (2019-2021). During the summer of 2021, more calves were observed compared to the previous two years. We estimated an overall calf:cow ratio of 39.2 calves per 100 cows, which is a higher proportion of calves compared to 29 calves to 100 cows observed in 2020, and 31 calves per 100 cows observed in 2019. The higher ratio of calves seen in 2021 indicates better calf survival in summer compared to those previous years. The mixing of Beverly herd with the Kokètì ekwǫ̀ around Contwoyto lake in August may explain the higher proportion of calves seen in 2021.

For the past four years (2018 to 2021), we have observed that caribou habitat and food has generally been in excellent condition due to much rain and wind, and that caribou health has been observed as "good", including fat bulls and cows observed in August and September. The good condition of caribou habitat and caribou body condition provide the necessary environmental conditions for the population to grow. However, the monitors observe many groups with few or no calves, and the GNWT's calving ground survey shows a continued decline of the herd.

Table 1: Trends of monitoring indicators from 2016-2021.

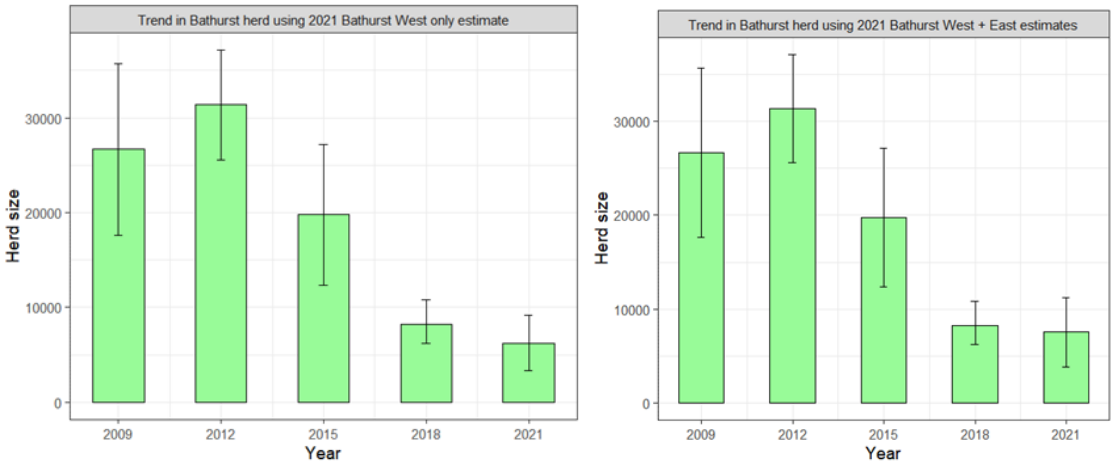
Indicators Over Time

	2016	2017	2018	2019	2020	2021
Weather and Vegetation	Warm, Dry	Mix Dry/Wet	Wet, Windy	Wet, Windy	Wet, Windy	Cool, Windy
Caribou Health	Normal, Many Injured	Normal	Early Fat, Bulls Healthy	Early Fat, Bulls Healthy	Healthy, Fat Animals	Healthy, Fat Animals
Calf Abundance	Normal, High	Normal, High	Normal, Low	Low	Low	Low
Wolves Observed	1	18	16	31	0	13

B. Bathurst Caribou Status in 2021 (Biological monitoring)

(a) Estimated population size, rate of change and collar movements

A June 2021 photographic calving ground survey of the Bathurst herd resulted in estimates of 2,878 (95%CI 1,778-4,660) breeding females, 3,808 (95%CI 2,435-5,955) adult females and 6,243 (95%CI 3,950-9,134) adult caribou in the herd. These estimates are based on the female caribou surveyed west of Bathurst Inlet at the time of the June survey (28 of 34 known Bathurst collared cows). Overall, the rate of decline in the herd slowed from 2018 and was approximately 8%/year from 2018 (8,207 adults) to 2021 (6,243 adults) (Figure 1a).



- b)

Figure 1. Estimated Bathurst herd size extrapolated from calving ground surveys 2009-2021.

Interpretation of the survey results is complicated by a proportion of Bathurst cows (i.e., 6 of 34 known Bathurst collared cows) occurring east of Bathurst Inlet, and the movement of the 6 collared cows in late June and early July further to the east with the Beverly herd. All known collared female Bathurst caribou west of the Inlet (n=28) moved south and west following the survey, while all known collared female Beverly (n=10) and Bathurst (n=6) female caribou

east of the Inlet at the time of the survey, continued moving east toward the Beverly calving ground. As a cautionary approach, we assume the 6 collared Bathurst caribou (and associated uncollared caribou), that calved east of Bathurst Inlet and moved further east in the post-calving period, may have joined the Beverly herd, and as a result will be closely monitored.

A possible alternate estimate of herd size shown in Figure 1b includes the estimate of both Bathurst cows on the west side of the Inlet plus an estimate of Bathurst female caribou east of the Inlet in June 2021 that has been adjusted based on the proportions of known Bathurst collared cows. Assuming that numbers of female Bathurst caribou west and east of the Inlet at the time of the June survey were in proportion to collared caribou numbers (28 of 34 collars or 82.4% west and 6 of 34 collared cows or 17.6% east of the Inlet), would result in estimates of 3,474 (95%CI 2,090-5,772) breeding females, 4,596 (95%CI 2,857-7.392) adult females and 7,535 (95%CI 4,638-11,239) adult Bathurst caribou (west+east) at the time of the June 2021 survey (Figure 1b). Given the trend toward a higher rate of Bathurst cows moving to the Beverly calving ground (2018, 2019) or post-calving areas (2021) over the past several years, potential emigration of Bathurst cows is an important factor to consider in understanding population trend derived from calving ground surveys; if the emigration rate of Bathurst cows occurs at a similar or higher level, it may accelerate a decline or offset numerical increases tied to dynamics of birth and death rates.

The movements of known collared Bathurst and Beverly cows and bulls on the spring migration north (May 1 - June 9), at the time of the aerial photo surveys (June 10), and after the surveys (June 11 - July 6) in 2021 are shown in Figure 2. In this context, “known” means a herd designation was made based on locations the previous year in June (cows) or July (bulls). For the Bathurst herd, the key map is at bottom left of Figure 2: all collared Bathurst caribou after June 10 moved south and west toward Contwoyto Lake, the traditional Bathurst summer range, while all Bathurst and Beverly collared caribou east of the Inlet moved further east toward the Beverly calving ground.

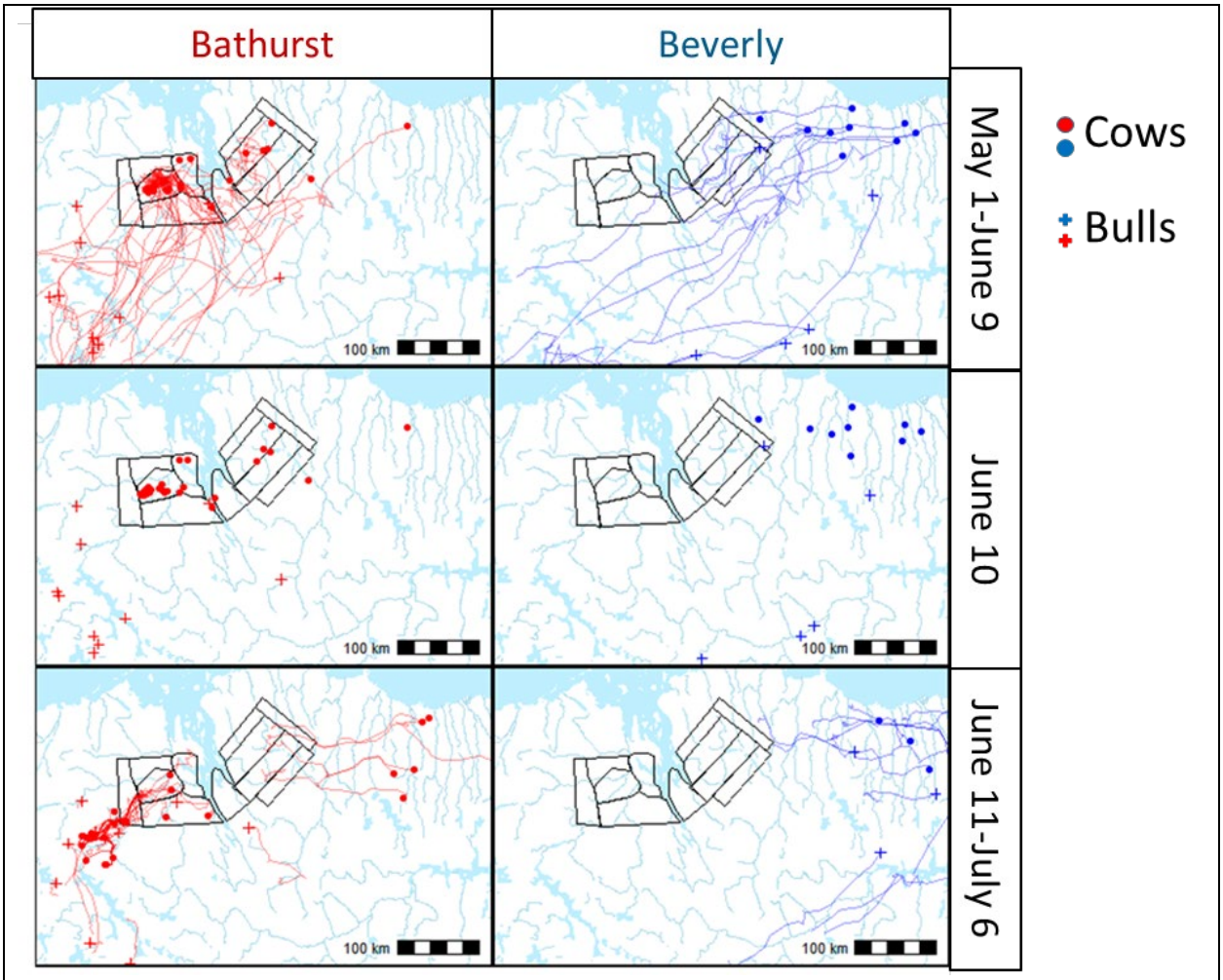


Figure 2. Movements of known Bathurst (red, left) collared cows and bulls and Beverly known collared cows and bulls (blue, right) May 1 - June 9 (top, before survey), June 10 (middle, time of survey), and June 11 - July 6 (bottom, after survey), 2021.

Similar movements to those of known female Bathurst collared caribou (6 of 34, 17.6%) in 2021 were also observed in 2018 (3 of 11 known Bathurst cows, 27.2%) and 2019 (3 of 17 known Bathurst cows, 17.6%). Previous to 2018, fidelity of Bathurst collared caribou to their calving ground had been estimated at 96-98% (Adamczewski et al. 2019), similar to the fidelity normally seen in all NWT migratory barren-ground caribou herds. Based on collared caribou, a winter of high spatial overlap and mixing of Bathurst and Beverly collared caribou preceded each spring of Bathurst caribou emigration in 2018, 2019 and 2021. Of the two herds, the Beverly was by far the larger herd (Beverly herd estimate in 2018 103,000 (Campbell et al. 2019) vs. Bathurst herd estimate of 8,200), outnumbering the Bathurst herd by more than 12 to 1. Mixing with a much larger herd through a long winter may influence the subsequent movements of some Bathurst caribou. Tracking of collared Bathurst and Beverly caribou in 2021-2022 has shown a higher degree of mixing in the ranges of both herds than in past years, including late summer, fall and early winter.

As described by Gunn et al. (2012), gregariousness of female caribou during calving is a strategy for reducing predation risk and is a principal reason for high densities of breeding females on a calving ground. As a population of migratory barren-ground caribou declines below a small threshold size, spatial fidelity to a calving area may start to break down resulting in a partial or complete shift in use of a calving area. Adamczewski et al. (2015) suggested that a rapid numerical decline in abundance of the inland-calving Beverly herd

driven mainly by low cow survival and poor calf productivity led remaining Beverly cows, *circa* 2006 to 2009, to switch to the coastal calving ground utilized by the larger, neighboring Ahiak herd. We recognize that there are other views as to the fate of the inland-calving Beverly herd (see Nagy et al. 2011), however the parallels between that herd's demographics and calving ground shift with the Bathurst herd's recent trends are substantial.

Previously, the Bathurst caribou herd had declined by ~58% from a June 2015 herd estimate of 19,769 caribou in the Bathurst herd to the 8,207 estimated in June 2018 (Adamczewski et al. 2019). At its peak in 1986, the Bathurst herd was estimated at about 470,000 caribou, thus the herd estimate of 6,243 in 2021 represents just 1.3% of that peak value. A portion of the 2015 to 2018 decline was likely due to emigration, based on the movement of 3 of 11 (27.2%) known collared Bathurst cows in June 2018 to the Beverly calving ground.

(b) Demographic indicators in the Bathurst herd

A summary of demographic indicators in the Bathurst herd is included here. For some indicators including late-winter calf:cow ratios, information is somewhat limited owing to the herd's mixing with the Beverly herd, which meant in some years that a representative herd-specific survey was not possible.

Population trends in caribou herds are very sensitive to the cow survival rate; survival rates of about 85% (in combination with late winter calf:cow ratios of ~35:100) or higher are associated with stable herds. Annual collar-based cow survival rates for the Bathurst herd from 1996 to 2020 are shown in Figure 3. In earlier years, collar numbers were limited, resulting in high variance, and these estimates should be used with caution. Survival rates were generally low between 2009 and 2013, but are generally greater from 2014 to 2020. Estimates for 2018 (92%), 2019 (95%) and 2020 (87%) are high.

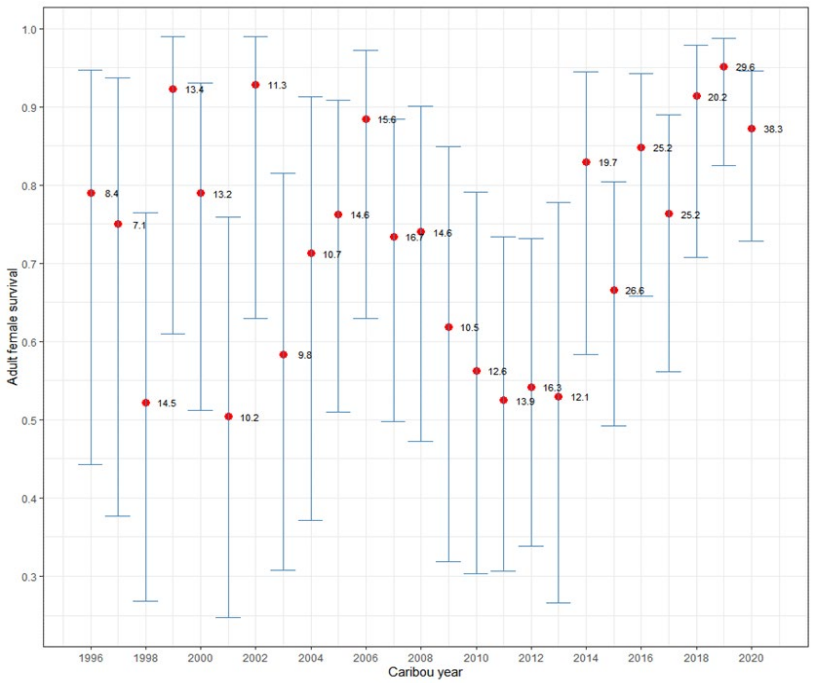


Figure 3. Annual collar-based cow survival estimates for the Bathurst herd 1996-2020. The year begins in early June and ends at the end of May, i.e. year 2020 is from June 2020 to May 2021. Red dots are the estimates and the error bars are 95% confidence intervals; the average number of collared female caribou is shown for each year. Collared female caribou numbers in earlier years were limited, thus variance was very high and the estimates should be used with caution.

The proportion of breeding females on the calving grounds at the peak of calving reflects the pregnancy rate from the previous fall rut. Values of 80% or greater are desirable for growth in a healthy herd. The proportion of breeding females in the Bathurst herd from 2009 to 2021 was variable and included a relatively low value in 2015 (Figure 4). The most recent estimates for 2018 (70.4%), 2019 (86.0%) and 2021 (75.6%) suggest moderate to good pregnancy rates in those years.

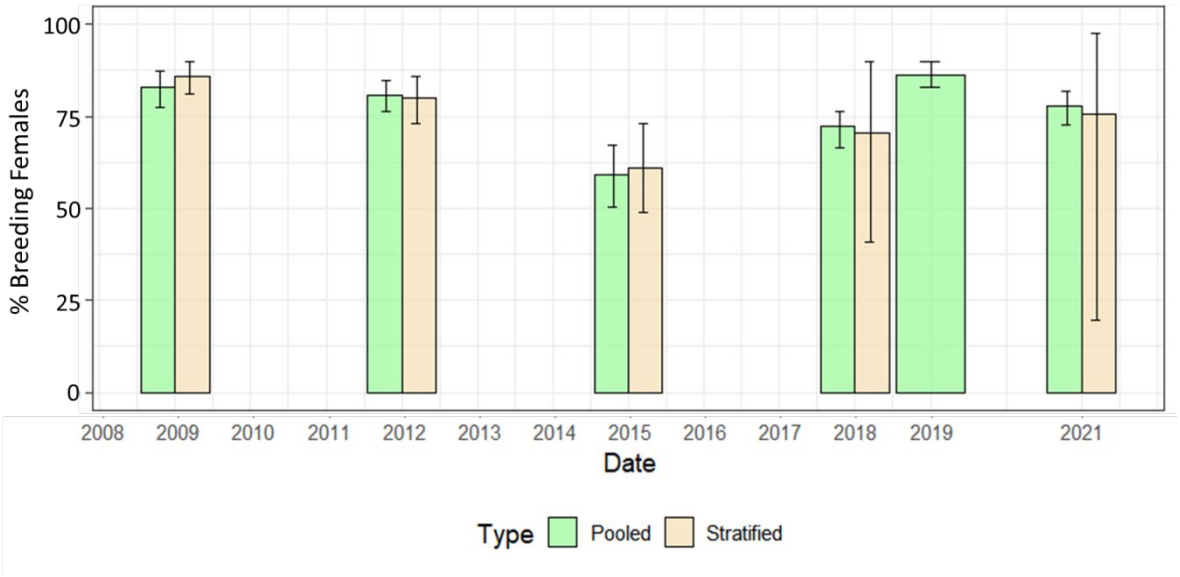


Figure 4. Proportion of breeding females on the Bathurst calving ground from composition surveys near the peak of calving, 2009-2021. All surveys except 2019 were part of calving photo surveys. Stratified estimates consider relative numbers of caribou in individual survey blocks, while pooled estimates do not; the 2019 composition survey was a stand-alone survey with no survey blocks defined. Comparison of pooled and stratified estimates suggests there is little difference.

Calf:cow ratios estimated in the fall (usually late October) during the breeding season provide an index of calf survival from calving through the first 4.5 months of life. Fall calf:cow ratios for the Bathurst herd do not show a clear trend between 2006 and 2020, with ratios generally varying between 20 and 40 calves: 100 cows (Figure 5). The last estimate was for October 2020 and is a moderate to good value of 39.1 calves: 100 cows (95%CI 36.2-41.9). Calf:cow ratios between 2018 and 2020 have increased. A survey was attempted in the fall of 2021 but an estimate was not possible due to mixing with the larger Beverly herd. Late-winter calf:cow ratios for this herd have also been limited in recent years due to mixing with the much larger Beverly herd; in these situations a Bathurst-specific ratio could not be estimated.

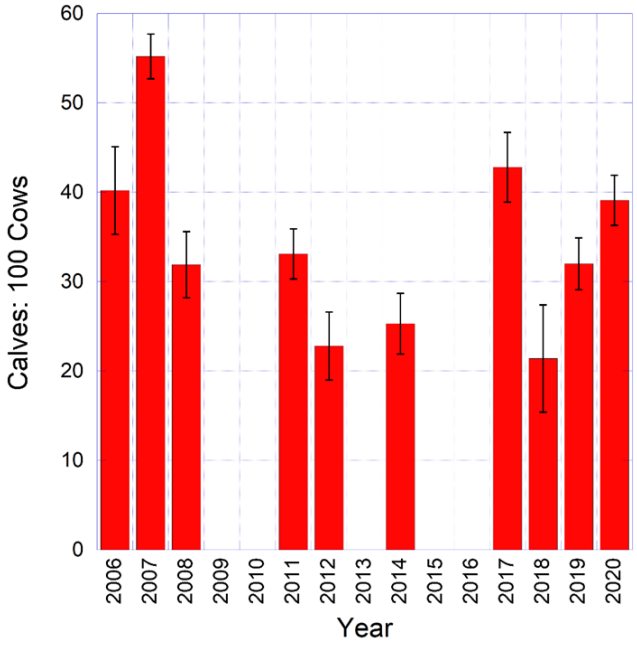


Figure 5. Fall calf:cow ratios in the Bathurst herd 2006-2020. A survey was attempted in 2021 but an estimate was not possible due to mixing with the larger Beverly herd.

Fall composition surveys near the peak of the rut can also give an estimate of the bull:cow ratio as all sex and age classes are mixed. The Bathurst herd's sex ratio, estimated during fall (late October) composition surveys, has shown a variable but generally increasing trend between 2006 and 2020 (Figure 6). The most recent estimate from October 2020 is 64 bulls: 100 cows (95%CI 49.9-79.6) and this value was the highest recorded over this time period. Results from this survey are similar to increased bull:cow ratios in the adjacent Bluenose-East herd in 2020 and 2021 and similar to the average from 6 fall composition surveys during the 1980s when the large herds were last increasing (66 bulls: 100 cows, in Gunn et al. 1997, p. 35). These results suggest that bull survival rates have increased in recent years for the Bathurst herd, consistent with improving overall demographic indicators. A survey was attempted in fall 2021 but an estimate was not possible due to mixing with the larger Beverly herd.

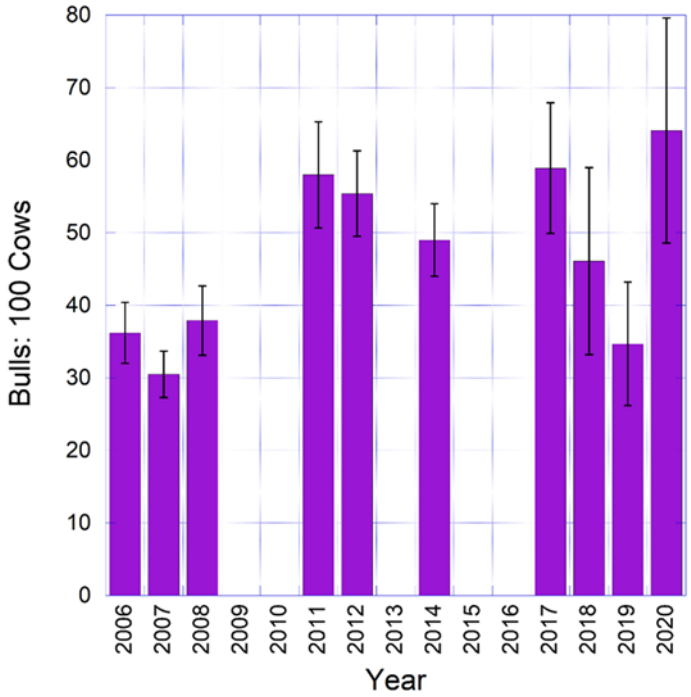


Figure 6. Fall bull:cow ratios estimated in the Bathurst herd 2006-2020. A survey was attempted in 2021 but an estimate was not possible due to mixing with the much larger Beverly herd.

Taken together, the population estimates for 2021, the high collar-based cow survival rates, the moderate to good June breeding female proportions, the moderate to good fall calf:cow ratios, and the increasing bull:cow ratios for the Bathurst herd suggest that the herd's survival and productivity rates have improved between 2018 and 2021.

3.2 MANAGEMENT CONTEXT

- Overall Management Context

A management plan was developed for the Bathurst herd in the early 2000s and finalized in 2004 (BCMPC 2004). That plan pre-dated much of the herd's decline and in 2016 the plan was revisited. A collaborative process started in 2016, led by the Bathurst Caribou Advisory Committee (BCAC), resulting in a renewed Bathurst Caribou Management Plan (BCMP) that was finalized in 2021 (BCAC 2021). This plan serves as primary guidance on Bathurst herd management across the herds range, and incorporates and builds upon habitat and disturbance management recommendations from the BCRP.

The BCMP presents a framework based on the "Caribou Wheel", or cycle of abundance, in which herd status is defined based on relative herd size and trend, along with other indicators. The most serious herd status is defined as Critical Low, when the herd size is less than 30,000 caribou. The Bathurst herd is clearly in that Critical Low phase when the most intensive management and the closest monitoring should be considered.

The BCAC met in December 2021 at its inaugural annual action plan meeting to come to agreement on the status of the herd and make recommendations on management actions in accordance with the plan. The outcomes of the BCAC meeting are pending (anticipated 31 March 2022). Based on the current Critical Low status of the herd and the need for close monitoring, the GNWT and the Tłı̨chǫ Government have put forward the management and monitoring actions outlined in this proposal.

Management actions on Bathurst harvest and other factors have occurred through processes in NWT under the WRRB, GNWT, and other organizations, and in Nunavut under the Nunavut Wildlife Management Board, Government of Nunavut and other organizations, beginning in 2009-2010 and continuing in the present-day (2022).

(b) Joint Management Proposals and WRRB recommendations 2007-2019

The WRRB's Reasons for Decision reports (WRRB 2016a, 2016b and WRRB 2019) provide a comprehensive overview of previous proceedings (2010, 2016, 2019) along with the Board's determinations and recommendations for management of the Bathurst ekwǫ herd. These documents emphasize the need to manage the herd in a comprehensive, holistic manner and this proposal has been developed to address monitoring and management in a similar fashion.

4. Description of Proposed Management Action

4.1 GOAL OF MANAGEMENT ACTIONS

The short-term goal of the proposed management actions is to halt the Bathurst herd's decline and promote recovery. This was also the goal in the Tłı̨chǫ Government-GNWT proposals in 2016 and 2019. Based on the 2021 Bathurst survey results, the management goal has thus far not been met as the herd has declined further since 2018. However, the herd's rate of decline has slowed and some demographic indicators have improved since 2018.

Over the longer-term, the recovery goal is to enable sustainable caribou harvesting that addresses Indigenous community needs levels across this herd's range. Within Wek'èezhìi, the goal is to allow the exercise of Tłı̨chǫ rights to harvest caribou throughout Mǫwhì Gogha

Dè Nįįtłèè.
Recommended actions in this section are structured according to five key themes: 1) harvest management, 2) wolf (díga) management, 3) habitat and land use, 4) education, and 5) monitoring and research.

4.2 HARVEST RECOMMENDATIONS FOR BATHURST EKWǪ

The Tłı̨chǫ Government and the GNWT recommend that the Total Allowable Harvest (TAH) for the Bathurst herd remain at zero (0) (WRRB Determination #1-2019) in the Northwest Territories, and that the Mobile Core Bathurst Caribou Conservation Area (or "Mobile Zone"), (see Appendices A, B) continue to be used as the means for managing and implementing the TAH of zero for the Bathurst herd.

Through the BGCTWG, staff from Tłı̨chǫ Government, GNWT, and the WRRB developed the "Rules for Definition of the Mobile Core Bathurst Caribou Conservation Area (MCBCCA)", and have recently drafted a "Bathurst Caribou Mobile Zone Effectiveness Report" (in fulfillment of WRRB Recommendation #1-2019). The rules and the effectiveness report provide the context to periodically update how the zone is defined in consideration of the changing winter distribution of Bathurst caribou and overlap with Bluenose-East and Beverly caribou. A Technical Task Group has been set up to revisit the Mobile Zone rules in light of this winter range overlap, to maintain protection of the Bathurst herd and to allow harvesting opportunities on adjacent herds outside of the Mobile Zone. Over the next year the Technical Task Group will derive recommendations for rule revisions to be implemented in 2022/23 harvest season.

- Monitoring of Bathurst mobile conservation area and compliance

The Tłı̨chǫ Government and GNWT propose to continue regular ground-based and aerial surveillance of the Mobile Zone through the winter harvest seasons. The Mobile Zone is monitored regularly until the end of the winter hunting season by aerial reconnaissance flights to increase knowledge of the Bathurst herd's distribution and relative abundance, and monitor activity (including hunting) on the winter roads. ENR Renewable Resource Officers regularly conduct ground-based patrols to ensure compliance with the regulation of no-harvest within the Mobile Zone. To aid in compliance monitoring, GNWT added a third check station in 2021. Aerial and ground-based surveillance by GNWT will continue throughout the winter harvest season in 2021 to 2022 and in future years.

In recent winters, Renewable Resource Officers have documented a number of cases of illegal and disrespectful harvest of caribou in and adjacent to the Mobile Zone. During the 2021 winter harvest period, 123 caribou were illegally harvested in the Mobile Zone. Tłı̨chǫ Government and GNWT remain committed to implementing compliance monitoring and enforcement.

The Tłı̨chǫ Government has initiated the Ekwǫ̀ Harvest Monitoring Program to track caribou harvest by Tłı̨chǫ, share information and promote respectful hunting practices by Tłı̨chǫ hunters using the winter road to hunt outside of the Mobile Zone (discussed more fully in Section 4.5 below and addressing WRRB Recommendation #2-2019).

- Nunavut harvest of Bathurst caribou

Following a public hearing in March 2020 held by the Nunavut Wildlife Management Board (NWMB), the Nunavut TAH for Bathurst caribou was reduced from 30 bulls set in 2016 to 10 bulls (NWMB 2020). These tags will be allocated by the Kugluktuk Angoniatit Association, with priority to an Inuit family living at Contwoyto Lake.

- Support for harvest of other wildlife and on-the-land activities:

The Tłı̨chǫ Government and the GNWT recognize that reduced caribou harvesting opportunities have serious implications for Tłı̨chǫ and other Indigenous communities, and that limitations on hunting have negative impacts on the continuity of Tłı̨chǫ culture, language and way of life. The Tłı̨chǫ Government will continue to expand programs focused on cultural practices on the land (in fulfillment of WRRB Recommendation #11-2019). These programs include: sustaining hunting and trapping cabins; traditional canoe trails from the communities to cultural and harvesting locations; and winter skidoo trails to caribou hunting areas, along with other programs currently operated by the Tłı̨chǫ Government.

The Tłı̨chǫ Government has been working on developing programs that promote alternative harvest such as the Tłı̨chǫ Dǫtaàts'eedı program where fish is provided to the community members in addition to fuel subsidies to assist people to go out moose hunting. These programs have provided Tłı̨chǫ citizens with other resources to provide for their families in hopes of reducing caribou harvest. The long-term aim is continuation of projects that teach traditional knowledge of the land and caribou by bringing elders, youth and community members together on the land. By maintaining traditional trails and cabins, community members share knowledge of these important cultural and environmental locations, thus re-visiting and maintaining these sites are important to maintain the Tłı̨chǫ knowledge base. Such activities are important for the practice of the hunting culture, and maintaining cultural identity and continuity as a hunting people, ultimately, to condition people with skills and knowledge of the land, for when caribou return.

ENR's On-The-Land unit, in collaboration with the Wildlife & Fish Division and North Slave Region, play an active role working with Tłı̨chǫ Government and Tłı̨chǫ communities to identify appropriate cultural activities and harvest of other wildlife and fish, and sources of support. A number of on the land and harvester support programs are available to support individual harvesters and communities. The Community Harvester Assistance Program (CHAP) is currently being reviewed and updated to ensure it meets the needs of Indigenous communities.

4.3 WOLF (DÍGA) MANAGEMENT

The rapid decline in the Bathurst herd between 2015 and 2018 combined with low adult and calf survival rates, even with a harvest ban in place, suggested that predation may be a key limiting factor. A comprehensive Tłı̨chǫ Government-GNWT joint wolf management proposal to reduce predation on the Bathurst and Bluenose-East caribou winter ranges underwent public review in the fall of 2020 and was approved by the WRRB in January 2021. A number of actions have been put in place for the reduction of wolves (as the main predator of barren-ground caribou) to assist with recovery of the Bathurst herd through the wolf management program (addressing WRRB Recommendation #5-2019). The original program included three main components: 1) support for wolf harvesters and the traditional economy; 2) the use of aerial removals if harvest targets are not met through ground harvest (not supported by WRRB in its 2021 Reasons for Decision on the Wolf Management Program); and 3) extensive research and monitoring.

Details of the program from 2020 and 2021 are provided in annual reports to the WRRB and posted to the WRRB web-site (in fulfillment of WRRB Recommendations #6-2019 and #7-2019). The initial two winters of wolf management actions resulted in removal of 84 wolves in 2020 (Nishi et al. 2020) and 135 wolves in 2021 (Clark et al. 2021), from areas where most Bathurst and Bluenose-East caribou were wintering. In 2021, Tłı̨chǫ harvesters removed 32

wolves from a base camp at Roundrock Lake, resulting in a ten-fold increase in wolves taken by Tłı̨chǫ harvesters in 2020.

The wolf management program was approved for a 5-year period. Annual review, assessment and adjustment of the wolf management program takes place under the approval, recommendations and commitments made in accordance with the WRRB Reasons for Decision report, January 2021.

4.4. HABITAT AND LAND USE

Caribou harvest and wolf management strategies are important to support improved survival of caribou. Range management strategies are also needed to manage disturbance and maintain the land in a healthy condition so that habitat may continue to support survival and future growth (i.e., calf production) of the caribou herd over the long term.

a) Implementation of the Bathurst Caribou Range Plan

The collaboratively developed Bathurst Caribou Range Plan (BCRP) was finalized in 2019 to guide range-wide habitat management, including cumulative effects of disturbance and land use (GNWT 2019). Recommendations of the BCRP are also incorporated into and build upon the 2021 BCMP.

The BCRP has four main objectives which are to i) ensure the integrity of important habitats, ii) ensure connectivity between seasonal ranges, iii) ensure the amount of human-caused land disturbance is kept below certain levels, and iv) ensure the development, design and use of roads is managed with consideration to caribou.

The BCRP sets out a cumulative land disturbance framework that provides over-arching landscape-level management benchmarks along with management tools that are based on the importance of habitat areas and the levels of habitat disturbance. Progress has been made on implementing many of the BCRP recommendations and is summarized below.

- Managing the range based on the Cumulative Disturbance Framework
  Cumulative disturbance levels on the Bathurst annual range are currently being updated by the GNWT to guide management responses as outlined in the BCRP. In addition a Species and Habitat Viewer website (https://www.maps.geomatics.gov.nt.ca/Html5Viewer/Index.html?viewer=CIMP_ILC_Webmap.ILC_Viewer) has been developed that displays the relevant boundaries in the BCRP and current levels of cumulative disturbance. It also allows users to query new disturbance levels based on an uploaded new disturbance proposed by the user[1]. Range Assessment Area 2 (largely the Wek'eezhii area), is currently in the enhanced management tier. Land use applications are reviewed and commented on in the context of the enhanced management expectations.

- Caribou Guardianship Coalition
  With funding from Polar Knowledge Canada, a series of workshops have been held with Indigenous governments and Indigenous organizations on the Bathurst range to create a vision and objectives for a guardian program. The Indigenous Guardians Toolkit (https://www.indigenousguardianstoolkit.ca) is being followed and lessons from other successful Guardian programs elsewhere in Canada are being considered. The

[1]https://www.geomatics.gov.nt.ca/sites/geomatics/files/resources/shv_user_manual_0.pdf

next workshop is planned for March 2022.

- Mobile Caribou Conservation Measures
  In addition to identifying fixed conservation areas, the GNWT has developed a Framework document, Operational Guidance and conducted a desktop pilot exercise for the implementation of Mobile Caribou Conservation Measures within the Centre of Habitation (ENR 2021 a,b).

  The BCRP defined the Centre of Habitation for the Bathurst herd using empirical data from collared caribou and TK. *The Centre of Habitation is a core use or refuge area that includes important habitats and migration paths, which a caribou population occupies and uses when it is at low numbers in its natural cycle.*

  Mobile Measures are a flexible tool for reducing disturbance of caribou and allowing them to move, with limited disturbance, through an area adjacent to small and medium sized exploration camps. GNWT is working with an industry partner to identify opportunities to test the on-site implementation of Mobile Caribou Conservation Measures at an exploration camp in 2022.

- Wildlife and Fuels Management
  Fire in the forested, winter range of the Bathurst herd can impact herd movements and access to key wintering areas. The Tłı̨chǫ Government has worked with elders and harvesters to identify key unburned areas of winter habitat and has provided these locations to the Forest Management Division of ENR to be considered as values-at-risk in fire management decisions. As operations allow, these areas may be prioritized for actioning fires to help maintain winter habitat for the Bathurst herd.

b) Protection of key caribou habitats

The Tłı̨chǫ Government and GNWT recognize the value in establishing conservation or protected areas for Bathurst ekwǫ̀ in Wek'èezhìi to manage potential disturbance and/or protect key habitat areas. Currently, few areas of the Bathurst range are protected from development, and concerns have been raised by communities and TK about negative impacts of industrial development on caribou (TRTI 2013, 2016). The BCRP also acknowledges the importance of conservation as a habitat management tool (in combination with others) and recommends that a level of protection be implemented for priority ekwǫ̀ no'oke – water crossings and tataa – land crossings on the Bathurst range.

The Tłı̨chǫ Government has conducted significant work with elders and harvesters to identify and select important seasonal habitat and key landscape features (eg: ekwǫ̀ no'oke – water crossings, tataa – land crossings, important migration routes and habitats in seasonal ranges) that are important to caribou and would benefit from conservation. The GNWT and the Tłı̨chǫ Government also conducted a preliminary analysis of 25 years of caribou collar data from the Bluenose-East, Bathurst and Beverly caribou herds to detect, categorize and map water crossings as key habitat features. The GNWT hosted a series of workshops in 2021 that are ongoing in 2022 to support this collaborative work.

In conjunction with the numerical decline, the Bathurst herd has contracted its range. Within recent years in Wek'èezhìi, Bathurst ekwǫ̀ tend to stay closer to the center of habitation on the barrenlands, between Contwoyto lake, Lac de Gras, Point Lake, and into the treeline south of Wekweètì during winter months. With a focus on the core use area, and based on Tłı̨chǫ

knowledge and other Indigenous TK sources, work will continue to identify and define important areas and critical habitat, for establishing interim or long-term protected areas under the Northwest Territories *Wildlife Act* or other appropriate pieces of legislation.

c) Collaboration with Nunavut

An important part of managing impacts to caribou range use and habitat is through the environmental assessment and land use planning processes. The GNWT and the Tłı̨chǫ Government continue to participate in these processes in the NWT and Nunavut that may affect important parts of the Bathurst range, including calving and post-calving ranges. The Tłı̨chǫ Government and GNWT will continue to support TK and scientific research (including the Ekwǫ̀ Nàxoèhdee K'è caribou monitoring program) focused on a range of factors affecting caribou heath, abundance and the condition of its range including climate change.

4.5 EDUCATION

a) Education and public awareness

The Tłı̨chǫ Government and the GNWT recognize that continuing effort is needed to increase awareness among harvesters, communities and the public about the status of NWT barren-ground caribou herds, the need for conservation actions to promote recovery, and how people can contribute to conservation.

Tłı̨chǫ elders have emphasized the need for promoting respect for ekwǫ̀, and adopting traditional practices which includes using all parts of harvested ekwǫ̀ and minimizing wastage. The Tłı̨chǫ Government and GNWT suggest a coordinated suite of education/public awareness initiatives to improve general public knowledge of ekwǫ̀, and to promote respectful hunting practices that would reduce wounding and wastage in other areas where ekwǫ̀ are harvested outside the Mobile Zone (addressing WRRB Recommendations #11-2019 and #12-2019).

Awareness of unsafe, illegal and disrespectful hunting practices and wastage on the mine winter roads was raised after the 2020-2021 winter harvest season. The GNWT has continued to work with Indigenous governments and Indigenous organizations, most recently at two Respected Harvester meetings with harvesters and leaders, to increase awareness and take collaborative actions to improve respect for traditional harvesting methods and reduce wastage. Recommendations included a commitment to work together and improve communication, better coordination among GNWT officers, monitors and Guardians, promoting community hunts, hunter accountability and alternative harvesting opportunities and collaborative public messaging. The Tłı̨chǫ Government and the GNWT will work together to address to the extent possible key recommendations.

The GNWT's Hunter Education course is being introduced to selected schools in the NWT as a pilot program in February 2022, with plans for a full course that will be available to all schools in the 2022-23 school year. To really make an impact on community-wide harvesting techniques, the younger audience needs to be targeted with those teachings so that they grow up to be respectful harvesters. The Tłı̨chǫ Government has collaborated with ENR to have Tłı̨chǫ monitors trained to be able to teach the Hunter Education course.

The Tłı̨chǫ Government recognizes the need to educate and promote respectful harvesting and has been doing so with their Ekwǫ̀ Harvest Monitoring Program. Not only are the Tłı̨chǫ monitors monitoring the number of caribou harvested but they are also educating Tłı̨chǫ

hunters on ENR regulations, acting as a safety net for Tłı̨chǫ hunters, assisting Tłı̨chǫ hunters in butchering their harvest and also promoting and encouraging respectful harvesting. The Ekwǫ̀ Harvest Monitoring Program has mostly been focused where the majority of harvest is occurring along the Tibbitt to Contwoyto winter road.

The following are education/public awareness initiatives to improve hunter practices and reduce wounding and wastage:

- The GNWT's hunter education program for new/young hunters has been developed and will be taught in 2 schools in the Tłı̨chǫ region starting in February 2022 as a pilot program.
- Tłı̨chǫ Government and ENR staff have collaborated in training Tłı̨chǫ monitors so that they can teach the Hunter Education program.
- The Tłı̨chǫ Government developed and implemented the Ekwò Harvest Monitoring Program in winter 2021 and will continue to run it in the winter of 2022.
- An enhanced social media campaign to share information on caribou conservation is under development.

Table 2 below summarizes the Tłı̨chǫ Government and GNWT objectives for increased public engagement and hunter education.

Table 2. Summary of approaches and objectives for increased public engagement and hunter education for caribou in Wek'èezhìi.

General Approach	Description & Objective	Lead (Support)
Hunter education	ENR program for young/new hunters, adapted to Tłı̨chǫ needs	Tłı̨chǫ Government and GNWT
Community meetings	At least 1 meeting per year in each Tłı̨chǫ community to discuss and update wildlife management issues and actions	Tłı̨chǫ Government and GNWT
Radio programs	When needed, radio announcements, interviews and/or updates on wildlife management in Tłı̨chǫ language during winter hunting season (annual)	Tłı̨chǫ Government and GNWT
Sight-in-your-rifle programs	Conduct community-based conservation education programs with an objective of 1 workshop / Tłı̨chǫ community / year	Tłı̨chǫ Government and GNWT (need to coordinate with community directors)
Ekwǫ̀ Nàxoèhdee K'è and other Traditional Knowledge monitoring and guardianship programs	Highlight the programs and their results with Tłı̨chǫ communities and the public (annual)	Tłı̨chǫ Government and GNWT
Outreach through internet and social media	Regular updates on government websites and social media during fall and winter hunting seasons	Tłı̨chǫ Government and GNWT

	(Facebook & Tłı̨chǫ website)	
Poster campaign	Produce posters for distribution in each Tłı̨chǫ community: posters to be developed annually as needed	Tłı̨chǫ Government and GNWT

b) Cultural programs – Supporting on-the-land activities

The Tłı̨chǫ Government plans to continue and expand its delivery of programs focused on cultural practices on-the-land. These programs emphasize continued use and maintenance of traditional sites and trails including: hunting and trapping cabins, traditional canoe trails from the communities to cultural sites and harvesting locations on the barrenlands; winter skidoo trails to caribou hunting areas and other trails and cabin sites to be identified through program delivery.

Harvesting ekwǫ̀ is fundamental for the practice of Tłı̨chǫ culture on the land. Harvest restrictions were implemented for the Bathurst herd in 2010, and a TAH of zero has been in place for Bathurst ekwǫ̀ since 2015; and it is likely that the TAH of zero will continue in to the near future. Consequently, many young people and community members are growing up with less cultural experience of harvesting ekwǫ̀ and traveling and knowing dé (the land), as their parents and grandparents did. This has negative impacts on the continuity of Tłı̨chǫ culture, language and way of life and must be addressed.

The Tłı̨chǫ Government's long-term aim is to implement projects that transfer Traditional Knowledge of dé and ekwǫ̀ by bringing elders and youth together on the land. By maintaining traditional trails and rebuilding old harvesting cabins, youth and elders would work together and share knowledge of these important cultural and geographic locations along the Tłı̨chǫ trail system (see Andrews and Zoe 1997, Andrews et al. 1998). These sites are developed in relation to ekwǫ̀ harvesting, thus revisiting and maintaining these sites are important to maintain the people's knowledge base (Legat et al. 2001). On these trips, the elders teach the youth about the cultural and Traditional Knowledge of ekwǫ̀ and the land. This provides a vital learning opportunity for youth and community members to be immersed in Tłı̨chǫ language and culture (Steinwand 2007, Zoe 2007). Such projects are critically important for maintaining cultural identity and knowledge transfer especially under the current TAH of zero for the Bathurst herd. Maintenance of cultural identity, knowledge, and respectful practices will be key for Tłı̨chǫ when Bathurst ekwǫ̀ recover and hunting resumes.

4.6 MONITORING AND RESEARCH OF BATHURST EKWǪ̀

Three aspects of monitoring and research are described in this section: (a) biological monitoring, (b) the Tłı̨chǫ Ekwǫ̀ Nàxoèhdee K'è caribou monitoring, and (c) support for biological or TK research that helps explain drivers of change in caribou abundance.

a) Biological monitoring

Table 3 is an updated list of biological monitoring of the Bathurst herd, mostly led by the GNWT, proposed for 2022 to 2024. A key focus of the monitoring activities is to provide annual information on productivity and survival of caribou calves and adult cows, as well as surveys continuing every two years to estimate herd size. The monitoring will also assist in assessing the effectiveness of wolf management in improving caribou survival rates. In addition to being presented in Table 3, monitoring actions are also described below with a brief rationale.

- *Population surveys every 2 years*: In 2019 WRRB recommended conducting

calving photo surveys for the Bathurst herd every 2 years rather than every 3 years (WRRB Recommendation #13-2019). New population estimates have been benchmarks for re-assessing herd status and management. Given the continued decline of the Bathurst herd and the on-going wolf reduction program, a further calving photo survey of the Bathurst herd is proposed for June 2023, 2 years after the June 2021 survey. We note that a calving photo survey was planned for June 2020 but was not possible due to COVID travel restrictions.

An additional aerial reconnaissance survey on the Bathurst calving ground is proposed for June 2022. The purpose would be to (a) assess distribution and separation/overlap of Bathurst and Beverly caribou during calving, (b) assess relative abundance of Bathurst caribou, taking into consideration distribution of collared caribou, and (3) assess proportions of breeding females, newborn calves, non-breeding females, yearlings and young males at or near the peak of calving, across the survey area. The GNWT is currently considering the possibility of a calving-ground photo survey in 2022 if there is clear separation of herds.

- *Maintain Collars at 70*: Since 2019, the GNWT has maintained 70 collars (50 cows and 20 bulls) on the Bathurst herd. Continuation of this number of collars is proposed for 2022 to 2024. Maintaining 50 cow collars should provide reliable annual estimates of cow survival rates, as well as increasing confidence in defining distribution of caribou throughout the year, assigning harvest by herd reliably, defining the Mobile Zone, and monitoring cow fidelity to calving grounds. Continuation of collars on bulls will provide insight into range use of bulls, which can vary from bulls, and assist in determining where and when predators should be removed.

  As noted earlier in this proposal, 6 of 34 known Bathurst collared caribou were east of Bathurst Inlet in June during the calving ground survey, and moved further east to the Beverly herd's calving and post-calving areas later in June. These collared cows and associated Bathurst caribou may have joined the Beverly herd, and will continue to be monitored to assess herd association up to and including calving ground use in June 2022. Consideration will be given to re-capturing of the 6 collared cows whose collars may be approaching the end of their battery life, during the next collar deployment expected in February-March 2022. We note that re-capturing caribou is more logistically challenging than the initial captures, as a particular individual must be captured and animal care limits on chase times during captures must be maintained. Experience has shown that previously captured caribou are more wary of the helicopter.

- *Annual composition surveys in June, October and March/April*: In 2019, the WRRB recommended conducting annual composition surveys on the Bathurst herd in June, October and March. These surveys would provide annual information on initial productivity of young (June) and the survival rates of calves to the fall (October) and late-winter (March) periods. The fall surveys also provide an estimated sex ratio, which is needed for generation of the herd estimate in years of the calving photo survey, and gives an index of bull survival rates. Continued high survival of cows and calves is needed for the herd to recover. Sustained high survival of adults and calves may also be a key indicator of effectiveness of predator management. The GNWT and the Tłı̨chǫ Government propose continuing these three annual composition surveys for the Bathurst herd between 2022 and 2024.

One additional composition survey is proposed on a one-time basis: a composition survey in early/mid-July, to follow a June calving ground composition survey. This would allow for an assessment of calf mortality in the first month (i.e., 4-5 weeks) of life, when predation rates of calves may be high. A composition survey was flown in July 2020 on the Bluenose-East and Bathurst ranges; the results suggested relatively high calf mortality that year from calving to July, although a June survey that year was not possible due to COVID-19 travel restrictions.

Harvest compliance monitoring: Accurate monitoring and compliance with a TAH of zero for Bathurst caribou is a high priority. The Tłı̨chǫ Government and GNWT will work together with other Indigenous governments and Indigenous organizations to ensure that all ekwǫ̀ harvest occurs outside the Mobile Zone. The GNWT will continue compliance and enforcement monitoring in the Mobile Zone between January and mid-April through regular ground and aerial patrols by Renewable Resource Officers, and operation of three check stations along the Tibbitt to Contwoyto winter road. Tłı̨chǫ Government will continue its Ekwǫ̀ Harvest Monitoring Program on the winter road.

b) Ekwǫ̀ Nàxoèhdee K'è caribou monitoring program

The Tłı̨chǫ Government and GNWT support the continuation of the Tłı̨chǫ Ekwǫ̀ Nàxoèhdee K'è TK monitoring and guardianship program on the Bathurst range (fulfilling WRRB Recommendation #16-2019). The Ekwǫ̀ Nàxoèhdee K'è program was established to inform Tłı̨chǫ Chiefs and NWT decision makers on Bathurst ekwǫ̀ summer range conditions, predator abundance, impacts from mining infrastructure, and effects from climate change on caribou health and behavior. The program has operated successfully for the past six years since its inception. It is based on placing Tłı̨chǫ monitors (i.e., guardians) on the summer range of the Bathurst herd from July to September. Currently, the monitoring program relies on two boats located at Contwoyto Lake and Fry Inlet, which enable the monitors access to a larger area around these two large water bodies. During recent summer field seasons, the Bathurst herd spent the summers in the Contwoyto Lake area, and monitors observed ekwǫ̀ by walking inland from lakes.

The Tłı̨chǫ Government plan to operate the program each year during the ice-free season from approximately mid-July to September; close to freeze-up on the barrenlands. The monitors will continue using the Tłı̨chǫ TK methods and assess caribou health, cow-calf ratio, predator abundance and habitat conditions.

c) Support for research on factors that affect caribou abundance

Changes in abundance of migratory barren-ground caribou herds, including the Bathurst herd, likely reflect a combination of factors, potentially including underlying natural cycles, weather in all seasons and a changing climate, predation, harvest, and the cumulative effects of development, including exploration camps, roads and other infrastructure. There is a need to better understand predation rates and their significance to caribou, environmental factors affecting caribou condition and population trend, and on the effects of climate change on these relationships. A further area of importance is monitoring and research focused on caribou health, parasites and other diseases, and diseases and parasites from the south that may be expanding into the NWT.

The Tłı̨chǫ Government and the GNWT will continue to support research into underlying drivers of change in herd abundance, predation, parasites and disease by partnership with academic researchers, using scientific and TK approaches. In addition, both governments support Indigenous guardianship and monitoring programs that increase community

involvement, first-hand monitoring of caribou, other wildlife and environmental conditions, and co-generation of knowledge.

Table 3. Biological monitoring of Bathurst herd (ENR primary lead).

Indicator(s)	Rationale	Desired Trend	Adaptive Management Options	How Often	Notes
1. Estimate of breeding cows and extrapolated herd size from calving ground photo survey	Most reliable estimate for abundance of breeding cows and total number of cows & can be extrapolated to herd size based on sex ratio.	Stable or increasing trend in numbers of breeding cows and herd size in 2023	If trend in breeding cows stable-negative continue with survey every 2 years; if trend is increasing, consider increasing survey interval to 3 years	Every 2 years	Last survey: 2021, next survey in 2023 (as herd trend is declining).
1b. Fixed-wing reconnaissance survey west and east of Bathurst Inlet at or near the peak of calving; and a corresponding helicopter/ground-based composition survey	• assess separation of Bathurst and Beverly caribou at calving • assess relative abundance and distribution of Bathurst caribou relative to distribution of collared cows • estimate composition of breeding females, newborn calves, non-breeding females, yearlings and young males	a comparatively low rate (≤ ~5%) of emigration by Bathurst cows to the coastal calving area of the Beverly herd that is east of Bathurst Inlet	Subsequent calving reconnaissance surveys may be planned depending on observed distribution of caribou cows west and east of Bathurst Inlet	June 2022	This survey is planned for June 2022 only. Distribution of collared Bathurst cows may be influenced by amount of spatial overlap with Beverly caribou in winter
2. Cow productivity; composition survey on calving ground in spring (June)	Proportion of breeding females in June at peak of calving establishes initial productivity or approximate pregnancy rate.	Proportion of breeding cows at least 80%.	Low ratio indicates poor fecundity and suggests poor nutrition in previous summer; recent high values for BNE herd suggest increased pregnancy rates.	Annual	Part of calving ground photographic survey. Annual survey to monitor initial productivity, to compare to later calf:cow ratios.
2b. Early summer composition survey (early/mid July)	Assess calf mortality in their first month (4-5 weeks) of life	Calf:cow ratio above 50:100	Data on calf ratios from early summer compared to June calf ratios would indicate the level of mortality that occurs in the calves' first month of life. Assessing the amount and timing of calf mortality would help determine when and whether follow-up monitoring on predation may be useful	July 2022	This survey is planned for July 2022; follow-up monitoring is subject to assessment of results
3. Fall sex ratio and calf:cow ratio; composition survey (October)	Tracks bull:cow ratio and fall calf:cow ratio. Fall calf:cow ratio provides an index of calf survival from birth through initial 4.5 months.	Bull:cow ratio above 30:100; calf:cow ratio consistently more than 40:100.	If bull:cow ratio below target, consider reducing bull harvest. Low fall calf:cow ratios suggest poor calf survival.	Annual	Sex ratio needed for June calving ground extrapolation to herd size. Higher bull:cow ratios 2020 & 2021 suggest higher bull survival.
4. Calf:cow ratio in late winter (March-April); composition	Herd can only grow if enough calves are born and survive to one year, i.e., calf recruitment is	At least 35-40 calves:100 cows on average.	Sustained ratios ≤ 30:100, herd likely declining; may re-assess management.	Annual	Calf productivity & survival vary widely year-to-year, affected by several

survey	greater than mortality.				variables, including weather.
5. Caribou condition assessment from summer Tłı̨chǫ Ekwǫ̀ Nàxoèhdee K'è Program	Condition assessment provides overall index of nutrition/environmental conditions over time.	Continuing observations of healthy caribou and good calf:cow ratios.	Sustained poor condition suggests unfavourable environmental conditions and possibly decline.	Annual	Hunter-killed caribou condition assessment is currently not possible with a 0 harvest of Bathurst caribou. Visual assessment in summer is possible.
6. Cow survival rate estimated from OLS model and annual survival estimates from collared cows	Need survival of 83-86% for stable herd. Increased collar number to 50 cows should improve annual estimation.	Continuation of least 85% averaged over 3 years to 2025.	If cow survival continues 85%, or better, herd likely stable; if it declines and stays below 80%, decline likely.	Annual	Population trend highly sensitive to cow survival rate; recovery will depend on sustained cow survival of at least 85%.
7. Total harvest from this herd by all users groups (numbers & sex ratio)	Accurate tracking of all harvest is essential to management and to knowing whether management actions are effective.	All harvest reported accurately and within agreed-on limits.	Re-assess recommended harvest annually; if herd appears to decline, re-assess harvest limit.	Annual	Multiple factors other than harvest may contribute to decline but harvest is one factors that humans can control.
8. Maintain up to 70 satellite/GPS collars on herd (50 on cows, 20 on bulls)	Collar information is key to reliable surveys, tracking seasonal movements and ranges, monitoring survival and herd fidelity.	Additional collars added every March/April to maintain up to 70 collars on herd.		Annual additions to keep total of 70.	Information from collared caribou is essential to monitoring and management of all North American caribou herds.
9. Wolf Harvest on Bathurst range	On-going wolf removal program (2 of 5 years complete) on Bluenose-East and Bathurst winter ranges to increase adult and calf caribou survival.	Increased harvest of wolves, evidence of depletion of wolf abundance.	Re-evaluation of wolf removal targets as more information is gained on wolf numbers, ecology and evidence of management effectiveness.	Annual	Herd overlap in winter likely means mixing of wolves associated with those herds and may influence effectiveness of wolf removals.

Table 4. Monitoring Programs led by Tłı̨chǫ Government for Kokètì Ekwǫ̀

Programs	Indicators	Rationale/Methods	Desired Outcome	Timeframe
Ekwǫ̀ Nàxoèhdee K'è	Health (body condition and injuries)	Knowing the condition of caribou can give an indication of how well the overall herd is doing and how well they are feeding. When caribou are observed their body condition is rated based on if they are skinny, average or fat.	More fat and average ratings	Annually (July to September)
	Calf Abundance (Calf to Cow Ratio)	An ekwǫ̀ herd with an average adult female survival rate of 85% would need to have approximately 35 calves per 100 cows in late winter to have a stable population growth rate. Calf abundance in summer would need to be comparatively higher	High confidence and representative sampling of caribou herds based on ground observations. Summer ratios of at least 35-40 calves per 100 cows	Annually (July to September)
	Predator Abundance	Dìga, sahcho and nòǫ̀ha are the main predators of ekwǫ̀, if there are high numbers of predators when herds are declining, we know that they are feeding on ekwǫ̀ and their numbers will not increase.	Low observations/ balanced number of predators	Annually (July to September)
	Habitat (Weather and Vegetation)	Summer weather conditions, including trends in temperature, wind speed and precipitation, have direct and indirect influences on ekwò̩ health and fitness for the coming months of the rut and the long winter migrations. Summer weather influences plant growth and forage quality, which, in turn, influences ekwò̩ nutrition, and body condition and fitness. It is important when we are on the land to observe and assess the vegetation and caribou forage.	Rich, moist soil producing succulent, good quality lichens, grasses, shrubs and dwarf birch	Annually (July to September)
	Insect Activity	Biting and parasitic insects may influence ekwǫ̀ foraging behavior and activity levels, which in turn may affect body condition and pregnancy rates of ekwǫ̀.	Low insect activity is desirable so that ekwǫ̀ can feed well through the growing season	Annually (July to September)
	Industrial Infrastructure and Activity	Industrial activity can be a sensory disturbance for caribou that can negatively impact animals' ability to rest and feed properly. Industrial infrastructure may negatively impact the herds ability to migrate to seasonal feeding ground and can fragment their seasonal ranges.	No industrial obstacles that fragment habitat, and less industrial activity causing sensory disturbance	Annually (July to September)
Ekwǫ̀ Harvest Monitoring Program	Harvest Management	Overharvesting may contribute to the decline of many caribou herds; we want to prevent that for caribou and see them become plentiful again. It is important that harvesting is consistent with the WRRB determination for a harvest of zero Kokètì Ekwǫ̀.	Compliance with WRRB determination for zero harvest	Annually (December to May)
	Health (body condition and injuries)	Hunters tend to target healthy, fat animals to feed their families, it is important to note if ekwǫ̀ are unhealthy	Hunter's observations of ekwǫ̀ with rounded rumps,	Annually (December to May)

		because it could indicate the health of the larger herd. Observations of body condition and injuries would focus on ekwǫ̀ outside the MCBCCA.	lots of fat, and good carcass conditions and meat quality.	
	Predator Abundance	We will work with Tłı̨chǫ hunters and monitors to help track predator observations. Monitoring the relative occurrence of predators seen by hunters and monitors while harvesting caribou helps to understand the ongoing level of predation.	Low sightings of wolves (including wolf-killed caribou) and wolverines	Annually (December to May)
Dìga Harvesting Program	Number of dìga killed	Increased harvesting of dìga decreases their abundance on the landscape and predation on ekwǫ̀ which gives a better chance for ekwǫ̀ numbers to recover.	Sustainable amount that allows for the recovery of ekwǫ̀	Annually (January to April)
	Ekwò Abundance and Composition	Participants of the Dìga Harvesting Program complete questionnaires by ENR and are asked how many ekwǫ̀ are observed; watching the amount of ekwǫ̀ can give insight on the interaction and relationship between dìga and ekwǫ̀.		Annually (January to April)
	Catch-Per-Unit-Effort (CPUE)	Trends in CPUE metrics such as the number of km traveled or hours driven on snow mobile by hunters will be used to assess relative occurrence of dìga numbers.	A decrease in CPUE of wolves would be predicted if wolf occurrence (density) has declined because of wolf management actions.	Annually (January to April)

4 Consultation

This section lists a number of key meetings where GNWT presented results of Bathurst calving ground surveys and other monitoring. Discussion and participant comments at these meetings have shaped the proposal. On several occasions, participating organizations were offered individual follow-up meetings.

- On November 9, 2021, GNWT, ENR staff presented results of the June calving ground survey of the Bathurst herd at the annual Section 15 meeting (required under the *Wildlife Act*) of NWT organizations responsible for wildlife management (in person/virtual). Meeting notes are available upon request.

- ENR staff presented results of June 2021 survey and other monitoring of the Bathurst herd December 9-10, 2021 at the (virtual) first annual BCAC caribou herd status meeting. As most Nunavut members of the BCAC were not available at the December 9-10 meeting, a further (virtual) meeting of Nunavut BCAC members was held December 14, 2021. A 2021 Action Plan with management recommendations is pending.

- ENR sent a letter via email to all Indigenous Governments on barren-ground caribou survey results on November 29, 2021. The letter offered follow up presentations upon request.

- ENR presented results of the Bathurst calving ground surveys to the WRRB on December 7, 2021 (WRRB request).

- The GNWT issued a press release on results of all barren-ground caribou population estimates, including the Bluenose-East and Bathurst calving ground surveys on December 20, 2021. The GNWT website was also updated with the new estimates.

- The ENR Minister met with leadership of the North Slave Métis Alliance on December 15, 2021 where information on Bathurst and Bluenose-East population surveys and management actions were discussed.

- The ENR Minister met with leadership of the Tłı̨chǫ Government on December 17, 2021 where information on Bathurst and Bluenose-East population surveys and management actions were discussed.

- The ENR Minister met separately with leadership of NWT Métis Nation, Łutsel K'e Dene First Nation and Yellowknives Dene First Nation on January 12, 2022 where information on Bathurst and Bluenose-East population surveys and management actions were discussed.

- Meetings in the four Tłı̨chǫ communities are planned for winter 2022 subject to COVID gathering restrictions. These would include the Tłı̨chǫ leaders and senior officials from ENR to talk about the caribou herds and proposed management.

- An in-person meeting and presentation on Bluenose-East and Bathurst caribou surveys and management was requested by the Kugluktuk Hunters and Trappers Organization in December 2021; this meeting was planned for January 2022 and has been postponed due to COVID travel restrictions.

In addition:

- The Tłı̨chǫ Government, ENR and WRRB staff met periodically in the fall and winter 2021-2022 to discuss status and management of the Bluenose-East, Bathurst and Beverly caribou herds. These 3 groups comprise the Barren-Ground Caribou Technical Working Group, which has been meeting since 2010.

- The Tłı̨chǫ Government and ENR staff began to meet in late November 2021 and continued into December 2021 and January 2022 to develop joint management proposals for the Bluenose-East and Bathurst caribou herds.

5 Communications Plan

Describe the management proposal's communications activities and how the Tłı̨chǫ communities will be informed of the proposal and its results.

The Tłı̨chǫ Government and the GNWT leadership will, together, hold an information session in each of the 4 Tłı̨chǫ communities pending COVID travel and gathering restrictions. Emphasis will be placed on visual aids that are easily understood and on hearing from community members.

Table 2 (listed earlier in this proposal) describes approaches and objectives for increased public engagement and hunter education for caribou in Wek'èezhìi.

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7 Relevant Background Supporting Documentation

Appendix A. Rules for Definition of the Mobile Core Bathurst Caribou Conservation Area (MCBCCA) for winter 2017-2018[2]

- ENR, Tłı̨cho Government and WRRB, revised Nov. 16, 2018

1. Background:

The Mobile Core Bathurst Caribou Conservation Area (MCBCCA; hereafter referred to as the mobile zone) was first used in the winter of 2014-2015 to protect Bathurst caribou in the NWT from hunter harvest. The mobile zone was built as a minimum convex polygon (MCP; essentially a line drawn around the outside of all collars) with a buffer of 20-30km to account for other caribou in the herd associated with the collared animals.

A key assumption of defining the mobile zone is that the collared Bathurst caribou are truly representative of the distribution and movements of most animals in the herd. Based on this assumption being correct, the mobile zone offered two advantages over the two large fixed zones used 2010-2014: (1) the restricted area was much smaller than the two large zones, limiting harvest restriction in the region, and (2) the restricted area focused on where the herd was at any given time. In previous winters some Bathurst collars were west and east of the large fixed zones, thus potentially exposed to higher harvest pressure in those areas.

Prior to the 2016-2017 harvest season, delineation of the mobile zone included a 60km buffer (see Appendix A of this document). The rationale for this modification was to provide more certainty and clearer information to hunters about location of the mobile zone. The use of a larger mobile zone would allow for movement of caribou inside the zone between collar data acquisitions without creating the need for a new map every four days. Thus, if Bathurst collared caribou moved around within this expanded mobile zone, the boundaries could remain unchanged for extended periods, as compared to a new zone and boundaries that changed weekly.

However, in the winter of 2016-2017, the distribution of collared caribou from the Bathurst, Bluenose-East and Beverly and Ahiak herds showed an exceptional degree of overlap, which meant that the mobile zone for Bathurst caribou with a 60 km, 40 km or 30 km buffer also enclosed most of the neighbouring herds (based on collars) and would have severely limited Aboriginal hunting opportunities. As a result, the size of the buffer on the mobile zone was reduced to 20 km and then 10 km to give hunters reasonable opportunities to hunt the Beverly and Ahiak herds (where there is currently no harvest restriction in the NWT) and the Bluenose-East herd (which has a Total Allowable Harvest in place of 750 bulls in Wek'èezhìı). For a part of the winter, the single mobile zone was changed to two sub-zones, a main one in the west and a smaller one in the east. Overall, monitoring by officers and community monitors indicated that few Bathurst or Bluenose-East caribou were taken (based on the locations of reported kills

[2] The rules and the effectiveness report provide the context to periodically update how the zone is defined in consideration of changing winter distribution of Bathurst caribou overlap with Bluenose-East and Beverly caribou. A Technical Task Group has been set up to revisit the MCBCCA rules in light of this winter range overlap, to maintain protection of the Bathurst herd and to allow harvesting opportunities on adjacent herds outside of the MCBCCA. Over the next year the Technical Task Group will derive recommendations for rule revisions to be implemented in 2022/23 harvest season.

relative to distributions of collared caribou) and that harvest was primarily Beverly and Ahiak caribou with a large proportion of bulls.

At a meeting of the Barren-Ground Caribou Technical Working Group Sept. 15, 2017, the unforeseen conditions and changes to the mobile zone in winter 2016-2017 were reviewed and a revised set of rules was developed. The group recognized that a balance might be needed between conservation (no harvest) of the Bathurst herd, which will likely be promoted by larger buffers, and limiting harvest restrictions on neighbouring herds, which may be enabled by smaller buffers if there is overlap. Plans need to be adaptive, depending on whether the Bathurst herd is relatively well separated from neighbouring herds (Situation A) or well mixed with either one or both of the neighbouring herds (Situation B). These rules are an update on Appendix A from June 29, 2016 TG & ENR response to the WRRB's Bathurst Caribou Final Report, Part A. The wildlife regulation for the mobile zone is in Appendix B.

2. Situation A: Bathurst herd is largely separate from neighbouring herds

In some winters (e.g. 2015-2016; see Figure 1), the Bathurst collared caribou have been well separated from the Bluenose-East and Beverly and Ahiak caribou. Under these conditions (i.e. Situation A), hunter access to alternate herds is not restricted substantially by the mobile zone. Under these conditions, the following rules will be applied.

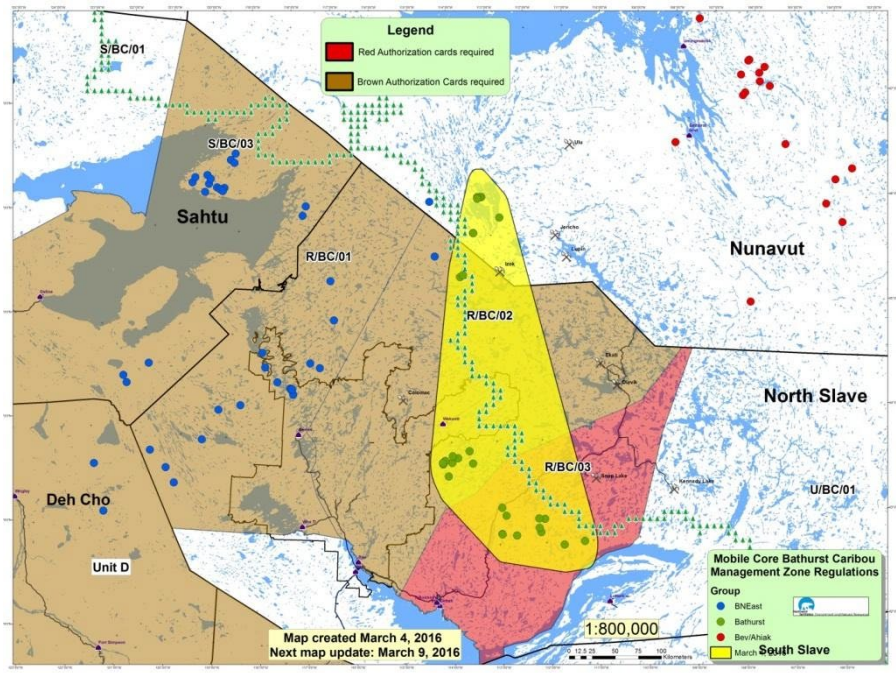

Figure 1. Mobile zone and collared caribou locations in March 2016. Bluenose-East collared locations are blue, Bathurst green and Beverly and Ahiak red. Map B. Croft, GNWT ENR.

- The mobile zone boundary will be defined from a minimum convex polygon (MCP) around all functioning collars on Bathurst caribou (cows and bulls) plus a 60 km buffer around the MCP.
- A recommended number of collars for the Bathurst herd to define its distribution with confidence is 40 or more, based on analyses by J. Boulanger and others (see Adamczewski and Boulanger 2016 for details and further references).
- With fewer collars, consideration should be given to a larger buffer on the mobile zone

as there is a greater chance that a portion of the herd's distribution is not well defined.
- An approximately equal number of collars on the two neighbouring herds is also recommended to define their distribution with confidence.
- Collar locations will be updated weekly.
- The mobile zone will be defined based on all active Bathurst collars, including any in Nunavut (although the no harvest zone will only apply in NWT).
- In general, separation of the mobile zone into two or more sub-zones will be avoided and will be considered only when there is substantial overlap between herds. An example of substantial overlap from winter 2016-2017 is in Fig. 2; similar situations will be considered on a case-by-case basis.
- Once established, the mobile zone boundaries will not change as long as all the collared Bathurst caribou remain within the mobile zone and no collars are less than 20 km from the boundary.
- If one or more collared Bathurst caribou move to within 20 km of the boundary of the zone or move out of the mobile zone, the mobile zone will be re-defined based on the same method described above (60 km buffer), and the new zone boundaries will be in effect as long as all collared Bathurst caribou remain within the new boundaries.
- With respect to areas where collared Bathurst caribou may overlap with collared Bluenose-East or Beverly and Ahiak caribou, the WRRB determination of a zero (0) Total Allowable harvest (TAH) on the Bathurst herd means that no caribou will be harvested within the mobile zone, regardless of herd affiliation.
- The mobile zone will be defined in the NWT prior to the fall harvest season and will continue until the end of the winter harvest season.
- Tłı̨cho GovernmentG and ENR will explore ways of modifying zone boundaries to use natural features such as rivers or lake edges as a way of making the zone more practical for hunters, provided that there is no significant reduction in protection for the Bathurst herd.
- Tłı̨cho GovernmentG and ENR will also explore ways of making information about the mobile zone location more easily accessible to hunters by making it available in formats for GPS devices and Google Earth, and by using signs on the winter road to show the direction of the zone boundary.

1. **Situation B: Bathurst herd shows overlap with neighbouring herds**

During winter 2016-2017, a 40km buffer on the Bathurst mobile zone would have nearly eliminated hunter access to Beverly and Ahiak caribou and severely restricted access to Bluenose-East caribou in Wek'èezhìı (see Figure 2). Under these conditions, reduction of the mobile zone buffer may be considered under the following rules.

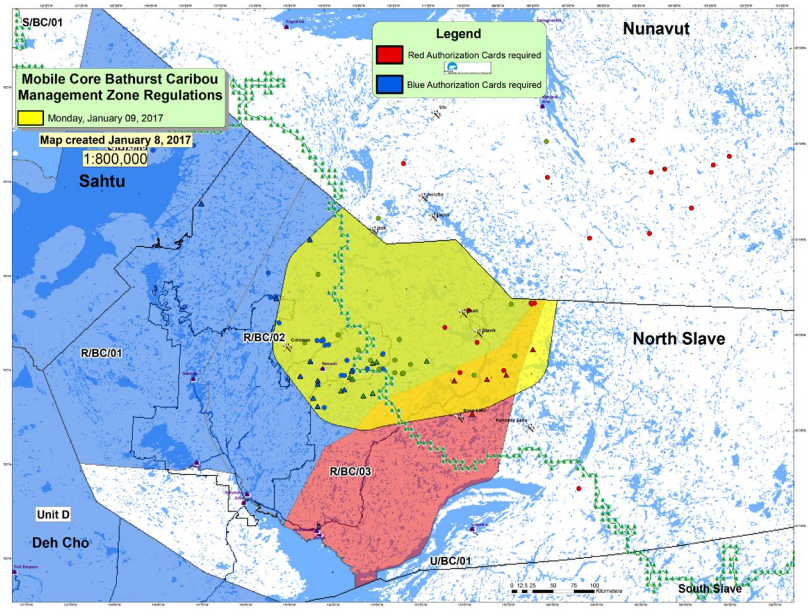

Figure 2. Mobile zone and collared caribou locations January 9, 2017 – 40 km buffer. Bluenose-East collared locations are blue, Bathurst green and Beverly and Ahiak red. Map B. Croft, GNWT ENR.

- The mobile zone boundary will initially be defined from a minimum convex polygon (MCP) around all functioning collars on Bathurst caribou (cows and bulls) plus a 60 km buffer around the MCP.
- Collar locations will be updated weekly.
- A recommended number of collars for the Bathurst herd to define its distribution with confidence is 40 or more, based on analyses by J. Boulanger and others (see Adamczewski and Boulanger 2016 for details and further references).
- With fewer collars, consideration should be given to a larger buffer on the mobile zone as there is a greater chance that a portion of the herd's distribution is not well defined.
- An approximately equal number of collars on the two neighbouring herds is also recommended to define their distribution with confidence.
- The mobile zone will be defined based on all active Bathurst collars, including any in Nunavut (although the no harvest zone will only apply in NWT).
- The minimum buffer under any conditions on the mobile zone will be 20 km[3].
- Hunter access to Beverly and Ahiak caribou or Bluenose-East caribou will be considered sufficient if at least 50% of active collars on either of these two herds in the NWT are outside the mobile zone.
- If more than 50% of the collared caribou from either the Bluenose-East or Beverly and Ahiak herds, found within the NWT, are within the mobile zone, then reduction of the mobile zone buffer can be considered.
- Under these conditions, the mobile zone buffer may be reduced in 10km increments until less than 50% of the collars from the neighbouring herd are within the zone. A minimum of 20km on the buffer will be maintained at all times.
- Use the range and median distance traveled by the collared caribou over the preceding

[3]Based on experience of flying the Bathurst mobile zone in winters with little overlap (e.g. 2015-2016), the collars consistently are associated with the main wintering concentrations of the herd, and very few caribou are found more than about 20 km away from collars.

seven days to help determine the size of the buffer.
- In general, separation of the mobile zone into two or more sub-zones will be avoided.
- However, delineation of two or more sub-zones may be considered if there are two or more widely separated groups of collared caribou. The minimum distance between nearest-neighbour collars in proposed sub-zones will be 80km[4].
- A sub-zone would need to have a minimum of 3 collared Bathurst caribou; this is the minimum needed to define a polygon.
- If one or more collared Bathurst caribou move to within 20 km of the boundary of the zone or move out of the mobile zone, the mobile zone will be re-defined.
- With respect to areas where collared Bathurst caribou may overlap with collared Bluenose-East or Beverly and Ahiak caribou, the WRRB determination of a zero (0) TAH on the Bathurst herd means that no caribou will be harvested within the mobile zone, regardless of herd affiliation.
- The mobile zone will be defined in the NWT prior to the fall harvest season and will continue until the end of the winter harvest season.
- Tłı̨cho Government and ENR will explore ways of modifying zone boundaries to use natural features such as rivers or lake edges as a way of making the zone more practical for hunters, provided that there is no significant reduction in protection for the Bathurst herd.
- Tłı̨cho Government and ENR will also explore ways of making information about the mobile zone location more easily accessible to hunters by making it available in formats for GPS devices and Google Earth, and by using signs on the winter road to show the direction of the zone boundary.

1. **Review of Mobile Zone definition:**

To assist in adaptive decision-making about the mobile zone, the Barren-Ground Caribou Technical Working Group will plan to meet in December and January to review collar data and mobile zone definition(s), and recommend to Tłı̨cho Government, ENR, and WRRB any changes to be made. By this time in the winter, collared caribou have usually ended most directional movement until April. The working group will periodically review information on harvest locations and amounts to check on herd assignments for harvest and check on the possibility of Bathurst caribou being harvested.

Reference:

Adamczewski, J. and J. Boulanger. 2016. Technical rationale to increase the number of satellite collars on the Bathurst caribou herd. Environment and Natural Resources, Government of Northwest Territories, Yellowknife, Northwest Territories, Canada, Manuscript Report no. 254.

APPENDIX "A" from June 29, 2016 Tłı̨cho Government & ENR response to the WRRB's Bathurst Caribou Final Report, Part A

As a result of a number of discussions between Tłı̨cho GovernmentG and ENR, the approach to defining the Bathurst Mobile Core Conservation Zone (MCBCMZ) has been modified slightly from the initial two winters to reduce the number of times that the zone is re-defined, and make

[4]With a 20km buffer, collared caribou 40km apart would have buffers that touch; the 80km separation would mean that the sub-zones with a 20 km buffer would be separated by 40km.

the zone more predictable and practical for hunters. The criteria for defining the zone for the 2016-2017 harvest season are expected to be as follows:

- The mobile zone boundary will be defined from a minimum convex polygon (MCP) around all functioning collars on Bathurst caribou (cows and bulls) plus a 60 km buffer around the MCP.
- Where collared Bathurst caribou show distinct, well-separated sub-groups, the mobile zone can be shaped as 2 or more parts of the mobile zone.
- Once established, the mobile zone boundaries will not change as long as all the collared Bathurst caribou remain within the mobile zone.
- If one or more collared Bathurst caribou move to within 5 km of the boundary of the zone or move out of the mobile zone, the mobile zone will be re-defined based on the same method described above, and the new zone boundaries will be in effect as long as all collared Bathurst caribou remain within the new boundaries.
- With respect to areas where collared Bathurst caribou may overlap with collared Bluenose-East or Beverly and Ahiak caribou, the WRRB determination of a zero (0) harvest on the Bathurst herd means that no caribou will be harvested within the mobile zone, regardless of herd affiliation. The possibility of dividing the mobile zone into two or more parts provides some flexibility with respect to identifying areas where collared caribou from neighbouring herds may be found and where some harvest is possible provided there are not Bathurst collars in the area.
- The mobile zone will be defined in the NWT beginning when collared Bathurst caribou move back into the NWT, potentially as early as mid-summer, and will continue until the end of the winter harvest season.
- Tłı̨cho Government and ENR will explore ways of modifying zone boundaries to use natural features such as rivers or lake edges as a way of making the zone more practical for hunters, provided that there is no significant reduction in protection for the Bathurst herd. Review of the mobile zone boundaries from winter 2015-2016 suggests that from about the end of November to the end of March, there was little directional movement of collared Bathurst caribou and a relatively fixed zone may be possible. Boundaries on the land that are readily recognized by hunters would be very helpful to both harvesters and enforcement officers.

Tłı̨cho Government and ENR will also explore ways of making information about the mobile zone location more easily accessible to hunters by making it available in formats for GPS devices and Google Earth, and by using signs on the winter road to show the direction of the zone boundary.

Appendix B: GNWT Wildlife Regulation for Bathurst Mobile Zone.

WILDLIFE ACT

MOBILE CORE BATHURST CARIBOU MANAGEMENT ZONE REGULATIONS
R-006-2016
In force January 23, 2016

AMENDED BY

This consolidation is not an official statement of the law. It is an office consolidation prepared by Legislation Division, Department of Justice, for convenience of reference only. The authoritative text of regulations can be ascertained from the *Revised Regulations of the Northwest Territories, 1990* and the monthly publication of Part II of the *Northwest Territories Gazette*.

This consolidation and other G.N.W.T. legislation can be accessed on-line at

https://www.justice.gov.nt.ca/en/browse/laws-and-legislation/

LOI SUR LA FAUNE

RÈGLEMENT SUR LA ZONE DE GESTION DU NOYAU DE POPULATION MOBILE DU CARIBOU DE BATHURST
R-006-2016
En vigueur le 23 janvier 2016

MODIFIÉ PAR

La présente codification administrative ne constitue pas le texte officiel de la loi; elle n'est établie qu'à titre documentaire par les Affaires législatives du ministère de la Justice. Seuls les règlements contenus dans les *Règlements révisés des Territoires du Nord-Ouest (1990)* et dans les parutions mensuelles de la Partie II de la *Gazette des Territoires du Nord-Ouest* ont force de loi.

La présente codification administrative et les autres lois et règlements du G.T.N.-O. sont disponibles en direct à l'adresse suivante :

https://www.justice.gov.nt.ca/en/browse/laws-and-legislation/

WILDLIFE ACT

MOBILE CORE BATHURST CARIBOU MANAGEMENT ZONE REGULATIONS

The Commissioner, on the recommendation of the Minister, under sections 88 and 173 of the *Wildlife Act* and every enabling power, makes the *Mobile Core Bathurst Caribou Management Zone Regulations*.

1. The Mobile Core Bathurst Caribou Management Zone is established as a wildlife management zone for barren-ground caribou, consisting of one or more areas delimited as follows:

(a) from the date that these regulations come into force to January 25, 2016, in accordance with the area shaded in yellow in the map in the Schedule;

(b) from January 26, 2016 and thereafter, in accordance with a map of the area or areas, which shall be

(i) available for public inspection and lodged with the Superintendent at Yellowknife and each of the regional offices of the Department of Environment and Natural Resources, and

(ii) posted in a conspicuous place in each community in or near which the area or areas are located.

2. (1) No person shall harvest barren-ground caribou in an area that is part of the Mobile Core Bathurst Caribou Management Zone.

(2) For greater certainty, these regulations prevail over the *Big Game Hunting Regulations* in respect of the authorization to harvest barren-ground caribou in those wildlife management zones or areas that overlap with any area that is part of the Mobile Core Bathurst Caribou Management Zone.

3. The *Mobile Core Bathurst Caribou Conservation Area Regulations*, established by regulation numbered R-006-2015, are repealed.

LOI SUR LA FAUNE

RÈGLEMENT SUR LA ZONE DE GESTION DU NOYAU DE POPULATION MOBILE DU CARIBOU DE BATHURST

Le commissaire, sur la recommandation du ministre, en vertu des articles 88 et 173 de la *Loi sur la faune* et de tout pouvoir habilitant, prend le *Règlement sur la zone de gestion du noyau de population mobile du caribou de Bathurst*.

1. La zone de gestion du noyau de population mobile du caribou de Bathurst est désignée à titre de zone de gestion de la faune du caribou des toundras et est composée d'une ou plusieurs des régions décrites comme suit :

a) à compter de l'entrée en vigueur du présent règlement, soit le 25 janvier 2016, en conformité avec l'aire ombragée en jaune sur la carte à l'annexe;

b) à compter du 26 janvier 2016 et, par la suite, en conformité avec la carte de la région ou des régions qui est, à la fois :

(i) disponible à l'examen public et déposée auprès du surintendant à Yellowknife et de chaque bureau régional du ministère de l'Environnement et des Ressources naturelles,

(ii) affichée dans un endroit bien en vue dans chaque collectivité dans, ou près de, laquelle la région ou les régions sont situées.

2. (1) Il est interdit à toute personne de récolter le caribou des toundras dans une région qui fait partie de la zone de gestion du noyau de population mobile du caribou de Bathurst.

(2) Il est entendu que le présent règlement l'emporte sur le *Règlement sur la chasse au gros gibier* qui traite de l'autorisation de récolter le caribou des toundras dans ces zones ou régions de gestion de la faune qui chevauchent toute région qui fait partie de la zone de gestion du noyau de population mobile du caribou de Bathurst.

3. Le *Règlement sur la région de conservation du noyau de population mobile du caribou de Bathurst*, pris par le règlement n° R-006-2015, est abrogé.

4. These regulations come into force January 23, 2016.	4. Le présent règlement entre en vigueur le 23 janvier 2016.
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8 Time Period Requested

Identify the time period requested for the Board to review and make a determination or provide recommendations on your management proposal.

Management actions proposed here would apply from July 1, 2022 (start of the harvest season) until July 1, 2024 with the results of the next calving ground photo survey of the Bathurst herd expected in 2023. The Tłı̨chǫ Government and the GNWT suggest that management actions be reviewed annually or whenever key additional information is available according to the BGCTWG Adaptive Management Framework (e.g. additional survey information or recommendations from BCAC).

9 Other Relevant Information

If required, this space is provided for inclusion of any other relevant project information that was not captured in other sections.

The Tłı̨chǫ Government and the GNWT support efforts by the WRRB, NWMB, BCAC and Indigenous governments, through recommendations and public hearings, to address the possible multiple causes of the Bathurst decline and the implementation of the Bathurst Caribou Management Plan.

10 Contact Information

Contact the WRRB office today to discuss your management proposal, to answer your questions, to receive general guidance or to submit your completed management proposal.

Jody Pellissey
Executive Director
Wek' èezhìi Renewable Resources Board
102A, 4504 – 49 Avenue
Yellowknife, NT. X1A 1A7
Phone: (867) 873-5740
Fax: (867) 873-5743
Email: jpellissey@wrrb.ca