



October 15, 2021

Ms. Camilla Tutcho, Chair
Sahtú Renewable Resources Board
PO Box 134
TULIT'A NT X0E OK0
srrb.camilla.tutcho@gmail.com

Dear Ms. Tutcho:

Responses to Information Requests – Round 2 - Délıne 2021 Virtual ʔełets'ėhkwe Godı (Public Listening Session): Tıch'adıı hé Gots'edı (Living with Wildlife): Predators and Competitors

On July 16, 2021, the Department of Environment and Natural Resources (ENR), Government of the Northwest Territories received the Round 2 Information Requests from the ʔehdzo Got'ıne Gots'ė Nákedı (Sahtú Renewable Resources Board - SRRB). ENR is pleased to provide the attached responses to the SRRB's information requests.

Sincerely,

Erin Kelly, Ph.D.
Deputy Minister
Environment and Natural Resources

Attachments

c. Honourable Shane Thompson
Minister
Environment and Natural Resources

Dr. Brett Elkin
Assistant Deputy Minister, Operations
Environment and Natural Resources

Ms. Heather Sayine-Crawford
Director, Wildlife and Fish Division
Environment and Natural Resources

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Mr. Jeff Walker
Superintendent, Sahtú Region
Environment and Natural Resources

Ms. Deborah Simmons
Executive Director
Sahtú Renewable Resources Board



Tłch'ádıı hé Gots'edi (Living with Wildlife)

Predators and Competitors

Environment and Natural Resources - Public Listening
Information Requests – Round 2

October 15, 2021

Information Request (IR) 2.1:

Tłch'ádı́ he Gots'edı́ – Caribou, Predators and Competitors

2.1.1 The Conservation Picture: Caribou, People, Planning and the Public Listening Session

2. ENR and other Parties presenting scientific information at the Délı̄nę 2021 PLS are requested to prepare a glossary of terms with plain language definitions.

The Government of the Northwest Territories (GNWT) Department of Environment and Natural Resources (ENR) will provide a glossary of scientific terms with plain language definitions with its written submission for the Délı̄nę 2021 Public Listening Session.

3. Does the concept of conservation and modern western conservation institutions conflict with our Indigenous knowledge systems and practices, and infringe upon our collective rights as Indigenous peoples? If it does conflict, how does it conflict?

ENR believes that scientific and Indigenous knowledge are complementary knowledge systems that are both integral to the wise management and conservation of wildlife and wildlife habitat.

Within the application of wildlife legislation in the NWT, potential or real conflicts between western conservation management approaches and Indigenous knowledge systems and practices are minimized to the extent possible, and efforts are made to find approaches that support both sets of knowledge and values. Consistent with all settled land claims, the co-management approach taken in the NWT provides a forum to collaboratively address areas of conflicts such as approaches to research and monitoring, and harvest allocations.

The GNWT develops management and monitoring actions and legislation on wildlife in settlement regions based on input, consultation and recommendations from communities and renewable resources boards. Any infringement of the harvesting rights of Indigenous peoples must be justified on the basis of a conservation, public health, or public safety concern. This is reflected in both the *Wildlife Act* and *Species at Risk (NWT) Act*, which were collaboratively developed by the GNWT and Indigenous Governments and organizations. This is highlighted in the preamble of the *Wildlife Act*, which states that the “*Government of the Northwest Territories recognizes and respects the Aboriginal and treaty rights of Aboriginal peoples, including harvesting rights*”.

In 1999, the GNWT set out to develop legislation to protect species at risk and draft a new *Wildlife Act* which would promote conservation and collaborative cooperation among co-management partners. Formal consultation sessions were held with Indigenous governments and organizations to ensure rights and values were incorporated, meetings were held with the public to ensure priority issues for residents were addressed, and consultation sessions with land claim organizations were held to ensure consistency with the applicable clauses of the land claim agreements. Indigenous governments and organizations themselves carried out two rounds of

consultations in their communities. The GNWT also carried out another two rounds of engagement and consultation in all 33 communities of the NWT.

In 2005, groups reconvened for a new collaborative process to draft species-at-risk legislation. The four organizations with settled land claim agreements sent representatives and their legal counsel to collaboratively draft and review the potential legislation alongside GNWT representatives. The four renewable resource boards established by those agreements also sat at the table for the co-drafting process.

The unique made-in-the-north *Species at Risk (NWT) Act* came into effect in February 2010. The act establishes a Conference of Management Authorities to ensure collaboration between all wildlife management authorities, including those under land-claim agreements in assessing, listing, recovering and managing species at risk.

In 2010, the group that worked on drafting the *Species at Risk (NWT) Act* was expanded, with the addition of Indigenous governments and organizations from regions of the NWT without settled land claims, to start work on the *Wildlife Act*. This expanded Wildlife Act Working Group met regularly to collaboratively develop (or review) consultation drafts. Again, public meetings and engagement sessions took place in every one of the NWT's 33 communities, along with formal consultation with Indigenous governments and organizations. The *Wildlife Act* came into force in 2014 and specifically includes annual meetings involving all local, regional and territorial organizations responsible for wildlife management to further promote cooperative and collaborative working relationships.

Land claim agreements provide for Indigenous governments to submit wildlife management proposals to the applicable renewable resources board for consideration and decision, potentially avoiding or mitigating any perceived conflicts with Indigenous knowledge systems. These processes include the best available information for decisions and recommendations, irrespective of whether it is based on local knowledge, community knowledge, traditional knowledge, or science.

4. Do you think community conservation plans or the *Wildlife Act* affect our rights as Indigenous peoples?

ENR remains supportive of community conservation plans, as they can be a valuable part of overall wildlife and harvest management. Community conservation plans contribute to broader management planning and processes that include communities and co-management partners from across a caribou herd's range. However, the *Wildlife Act* can only restrict the harvesting rights of Indigenous peoples on the basis of public health, public safety, or conservation and it must be the minimum required to achieve the objective. Self-developed or implemented community conservation plans may include provisions that otherwise affect the rights of Indigenous peoples, but such measures cannot be enforced under GNWT legislation.

Staff at ENR welcome opportunities to assist communities in supporting development of their community conservation plans at their request.

5. Please share your knowledge about any caribou plans that have been developed outside the Sahtu region.

There are numerous caribou plans that have been developed outside the Sahtú region. These plans were developed with extensive engagement of communities, governments, renewable resources boards and other co-management partners. All of the plans listed below, other than the Łutsël K'é Dene First Nation's Caribou Stewardship plan (developed by the Łutsël K'é Dene First Nation), were developed in a collaborative manner with multiple organizations participating.

- 1) **Porcupine Caribou Management Board (PCMB). 2010. Harvest Management Plan for the Porcupine Herd in Canada.** The Harvest Management Plan and the accompanying Implementation Plan were developed by the PCMB and Parties with responsibility for management of the Porcupine herd in Canada. These parties include five Indigenous governments and organization in the NWT and Yukon (YT), the GNWT, Government of Yukon and Government of Canada.
- 2) **Beverly and Qamanirjuaq Caribou Management Board (BQCMB). 2014. Beverly and Qamanirjuaq Caribou Management Plan 2013-2022.** The BQCMB is one of the oldest co-management boards in Canada (established in 1982), with representation from the Governments of the Northwest Territories (NWT), Nunavut (NU), Manitoba, Saskatchewan (SK) and Canada, and Indigenous governments and organizations on the range of the two herds in the NWT, Nunavut, Manitoba and Saskatchewan. This plan is the most recent in a series of management plans for the Beverly and Qamanirjuaq herds and will be up for renewal in 2022.
- 3) **Ungava Peninsula Caribou Aboriginal Round Table (UPCART). 2017. A long time ago in the future: Caribou and the people of Ungava.** This management plan was developed by nine Indigenous organizations to address declines of the George and Leaf River herds in Québec and Labrador.
- 4) **Government of the Northwest Territories and Government of Nunavut. 2018. Management Plan for the Dolphin and Union Caribou (*Rangifer tarandus groenlandicus x pearyi*) in the Northwest Territories and Nunavut.** This plan was developed by a working group of 12 Indigenous governments and organizations, GNWT, GN and the Government of Canada. This plan was approved by the GNWT, GN, Nunavut Wildlife Management Board and WMAC (NWT) and was adopted by the Government of Canada.
- 5) **Government of the Northwest Territories. 2019. Bathurst Caribou Range Plan.** The Bathurst Caribou Range Plan was developed by a working group of 11 Indigenous governments and organizations, GNWT, GN, renewable resources boards, non-governmental organizations and industry. The range plan was developed to manage human-caused and natural (wildfire) disturbance in the Bathurst range and the effects on caribou and caribou habitat.

- 6) **Western Arctic Caribou Herd Working Group. 2019. Western Arctic Caribou Herd Cooperative Management Plan - December 2019.** This plan was developed as an update to an earlier collaborative plan developed by the working group in 2011. It was signed by four resource management agencies and 20 signatories from organizations and communities across the herd's range.
 - 7) **Conference of Management Authorities. 2020. Recovery Strategy for Barren-ground Caribou (*Rangifer tarandus groenlandicus*) in the Northwest Territories.** This recovery strategy and the two precursor documents, *Caribou Forever – Our Heritage, Our Responsibility, A Barren-ground Caribou Management Strategy for the Northwest Territories 2006-2010* and *2011-2015*, were collaboratively developed with input and review by renewable resource boards, Indigenous governments and organizations, non-governmental organizations, industry and the Government of Canada. This plan was accepted by the Wildlife Management Advisory Council (WMAC (NWT)), Gwich'in Renewable Resources Board (GRRB), the ʔehdzo Got'ıne ʔots'ę Nákedı (Sahtú Renewable Resources Board, SRRB), Wek'èezhii Renewable Resources Board (WRRB), Tłıchq Government and GNWT through a Conference of Management Authorities consensus agreement.
 - 8) **Łutsël K'é Dene First Nation (LKDFN). 2020. Łutsël K'é Dene First Nation's Caribou Stewardship Plan (Yúnethé Xá ʔetthën Hádi).** The purpose of LKDFN's Yúnethé Xá ʔetthën Hádi is "to protect ʔetthën (the caribou) in order to ensure ʔetthën and our way of life continues to exist as long as the sun shines, the grass grows, and the river flows." The plan was developed by the Łutsël K'é Dene First Nation for caribou herds in their Traditional Territory. The GNWT reviewed the plan and met with LKDFN to discuss the plan and its implementation.
 - 9) **Bathurst Caribou Advisory Committee (BCAC). 2021. Bathurst Caribou Management Plan.** This overall management plan for the Bathurst herd was developed by the BCAC which consists of 15 Indigenous governments and organizations, the GNWT and the Government of Nunavut (GN).
 - 10) **Environment and Climate Change Canada (ECCC). 2021. Recovery Strategy for the Peary Caribou (*Rangifer tarandus pearyi*) in Canada (PROPOSED).** ECCC led the development of this recovery strategy and engaged co-management partners which included Indigenous governments and organizations, GNWT and GN.
7. As of the deadline for Round 2 IRs, it will have been eight months since Parties made submissions on the conservation picture (through Round 1 IR responses). Please provide updates on the status of caribou, people and planning.

Since the Round 1 Information Request responses were submitted in January 2021, work has advanced for all 3 ecotypes of caribou that are found in the Sahtú.

In April 2021, the Conference of Management Authorities, which includes the Wildlife Management Advisory Council (NWT), GRRB, SRRB, WRRB, Tłıchq Government, Government of Canada and the GNWT reached consensus to add northern mountain caribou to the NWT List of Species at Risk as a

species of Special Concern. In accordance with the consensus agreement, northern mountain caribou were legally listed in July 2021.

As outlined in ENR's written submission for the Colville 2020 Public Listening Session, the GNWT completed and released a Framework for Boreal Caribou Range Planning in August 2019. The Framework lays out the structure for what regional range plans will consider in order to meet legal obligations to protect critical habitat for boreal caribou. The five communities of the Sahtú region are developing a Boreal Caribou Range Plan in partnership with the SRRB and ENR. Although the range plan will need to be regional in scope, and contribute to meeting overall habitat protection across the NT1 range, the process for creating the plan will incorporate the principles of community conservation planning and will contribute to community conservation plans for boreal caribou. This range plan is part of community-led conservation planning taking place in conjunction with the five-part Public Listening (Hearing) series on the topic, "What is the most effective way to conserve caribou?"

ENR is currently working with the SRRB to plan community meetings after the Délı̨ne 2021 Public Listening Session. These meetings are intended to start a conversation directly with community members about the range planning process in the Sahtú. ENR has also worked with the SRRB to secure additional funding to support Indigenous knowledge research on boreal caribou in the Sahtú; these additional funds will be instrumental in ensuring that traditional knowledge is documented in a way that is most comfortable and respectful to the knowledge holders and will help in the development of the regional range plan.

For barren-ground caribou, in February 2021, the Advisory Committee for Cooperation on Wildlife Management (ACCWM) released the 2021 Action Plans for the Cape Bathurst, Bluenose-West and Bluenose-East herds. At the same time, the ACCWM also released the summary report for the 5th Annual Status Meeting which was held virtually in November 2020.

A late-winter composition survey was flown for the Bluenose-East herd in March 2021. About half the herd (based on collars) was mixed with the Bathurst and Beverly herds so the Bluenose-East survey was focused on the caribou found in areas with only Bluenose-East collars. The calf:cow ratio was estimated at 38 calves:100 cows which is a moderate/good ratio. Also in March 2021, 35 collars (32 cows, 3 bulls) were deployed on Bluenose-East caribou.

In March 2021, 59 collars (42 cows, 17 bulls) were deployed on Bluenose-West caribou in preparation for the July 2021 post-calving survey. While there were no mortalities during capture, since collaring, there has been one mortality, a bull, which upon investigation was most likely killed by predators.

Calving ground photo surveys were flown in early June 2021 for the Bluenose-East and Bathurst herds. Estimates of the numbers of breeding and non-breeding females and overall herd size will be released in November. Post-calving photo surveys of the Bluenose-West, Cape Bathurst and Tuktoyaktuk Peninsula herds were flown in July 2021 and results will be shared in November.

meeting, an updated draft Agreement was provided to Colville Lake leadership on June 25, 2021. ENR is currently awaiting a response on a decision to extend the Agreement.

13. Please provide an update on Déljné and ENR's discussions about the workplan for implementing Déljné's Belare Wíle Gots'é ʔekwé (Caribou for All Time) plan per the SRRB's Recommendation 4.5 as revised by the Minister (January 29, 2021) and accepted by the SRRB (March 30, 2021).

The 2019 version of Déljné's Belare Wíle Gots'é ʔekwé requires formal approval by the Déljné Got'jné Government and Déljné ʔehdzo Got'jné (Renewable Resources Council, RRC). ENR has requested a meeting with the Déljné ʔekwé Working Group this fall to discuss a work plan and timeline for community consultation of the 2019 Belare Wíle Gots'é ʔekwé. Once the revised plan has been finalized and formally approved by the Déljné Got'jné Government and the Déljné RRC, the plan will be submitted to the SRRB and Minister of ENR for review and approval. ENR is committed to working with the Déljné Got'jné Government and the Déljné RRC on implementing the revised 2019 Déljné's Belare Wíle Gots'é ʔekwé and to providing support and capacity as requested and available.

14. Explain how your work is coordinated in the Sahtú region when the Dene Nation is working on Dene Knowledge, t̓dzı (woodland caribou) and its critical habitat, and ENR is working on t̓dzı range planning with Sahtu communities.

ENR and Dene Nation are both collaborators on the Western Boreal Initiative (WBI), which is a collaborative research project being led by the Canadian Wildlife Service of Environment and Climate Change Canada (ECCC-CWS) and Natural Resources Canada (NRCan). The goal of the project is to use computer models to forecast the effects of wildfire, predation, key pests, climate change and human disturbances on the boreal forests of Western Canada, and to evaluate the implications of these forecasted changes on boreal caribou, birds and other ecological indicators. It is expected that the results of this project may help to contribute to the development of range plans for boreal caribou. The goal of the Dene Nation project is to identify a protocol to meet with Dene Leadership to obtain approval to work with their Elders, youth and technicians to identify how their knowledge can be used to protect Boreal caribou and its critical habitat.

Both boreal caribou range planning, and the WBI project, recognize the importance of considering and weaving together Indigenous Knowledge and science on boreal caribou and their habitat. It is expected that Traditional Knowledge that is gathered and considered in the course of range planning may also help to support the development of models used in the WBI project and vice versa.

Dene Nation is engaging with its regional leadership, Elders, youth and technicians through regional workshops and meetings to raise awareness about the WBI project and its link to boreal caribou range planning, and to gather advice and develop guidance for government and other researchers about how best to work with communities and knowledge holders to ensure Traditional Knowledge is appropriately considered and weaved into both these initiatives.

Dene Nation and ENR have been in communication to provide updates on their respective plans, processes and progress. It is ENR's understanding that Dene Nation plans to invite representatives from ENR and ECCC to attend their regional workshops if there is support from the community members to do so. Dene Nation's work with the WBI will be an important opportunity for the GNWT and Indigenous governments and organizations to come together to achieve a common goal, to share important knowledge on boreal caribou, and to support each other's efforts to ensure that boreal caribou persist on the land for generations to come.

2.1.2 Predators

1. Can you provide information on where dīga management actions described in the Revised Joint Proposal on Management Actions for Wolves (Dīga) are proposed to occur, and what impact these actions might have on dīga in the Sahtú region?

The wolf management actions described in the GNWT and Tłıchǫ Government Joint Proposal on Management Actions for Wolves (Dīga) on the Bathurst and Bluenose-East Barren-ground Caribou (Ekwò) Herd Winter Ranges: 2021 – 2024 apply within the North Slave Region of the NWT. The actions include enhanced support for wolf harvesters and the traditional economy including training and incentives, and monitoring activities to assess and evaluate the program. While the WRRB recommended aerial removals not be undertaken, the GNWT varied that recommendation to allow for aerial shooting of wolves when harvest of wolves does not meet the intended target number in a given season. Aerial removals were not undertaken in 2021.

The North Slave Wolf Harvest Incentive Area is established annually within the North Slave Region based on collar locations of Bathurst and Bluenose-East caribou in December and early January reflecting where the Bathurst and Bluenose-East caribou herds are expected to winter. The incentive area was developed and implemented based on discussions at a gathering of North Slave Indigenous leaders/representatives and ENR staff at François Lake in August 2018. Higher financial incentives for harvesters were suggested as a way to reduce wolf predation of the Bathurst and Bluenose-East caribou herds and help support caribou recovery. In 2019-20, the incentive for harvesting a wolf (skinned or unskinned) in this new area was raised to \$1200/wolf for both Indigenous and resident hunters, and the cost of a wolf tag was removed throughout the NWT (General Hunting License holders don't require a tag).

The area encompassed by the North Slave Wolf Harvest Incentive Area in 2021 is show in Figure 1. It is roughly 63,041 km² and somewhat smaller than the 72,129 km² area defined in 2020.



Figure 1: 2021 North Slave Wolf Harvest Incentive Area

NWT Indigenous harvesters and General Hunting Licence holders are eligible for an additional \$400 if the pelt is prepared to traditional standards and an additional \$350 if the pelt meets the requirement of the prime fur bonus. Inuit harvesters harvesting within their traditional use area in the NWT and within the North Slave Wolf Harvest Incentive Area are eligible for \$900 incentive from GNWT and an additional \$300 from Government of Nunavut.

The existing NWT-wide wolf harvest incentive program will continue to support the traditional economy elsewhere in the territory using the previous financial incentives of \$200 for a skinned wolf, plus \$400 for a pelt prepared to traditional standards and an additional \$350 if the pelt meets the requirement for a prime fur bonus.

With wolf removals taking place annually in the North Slave Wolf Harvest Incentive Area, it is possible that wolves from adjacent areas may move in to replace those taken. In addition, changes in pack structure and formation can also be expected with packs splitting and moving to new areas.

We are still learning about the movements and behaviour of wolves in relation to barren-ground caribou, and how harvest levels may impact that relationship and caribou populations.

As part of the research and monitoring activities associated with the wolf management program, ENR has deployed 32 collars on wolves in 2020 and 2021 in the North Slave region, 22 of which are still active. ENR plans to deploy an additional 16 collars to maintain a total of 30 collared wolves in the region (accounting for 8 collars anticipated to drop off in May 2022).

2. What consideration is given to overlapping traditional territory crossing the Délı̄nę and Wek'èezhì boundary?

The North Slave Wolf Harvest Incentive Area, to our knowledge, does not overlap with the traditional territory of Délı̄nę, and therefore implementation of the wolf management program has

been co-led by Tłıchǫ Government and GNWT. The WRRB held a level two proceeding for public review of the program in August 2020 upon submission of a “Revised Joint Proposal on Management Actions for Wolves (diga) on the Bathurst and Bluenose-East Barren-ground Caribou (ᓇᓴᓴᓴ) Herd Winter Ranges: 2021–2024” from GNWT and Tłıchǫ Government, which provided an opportunity for any interested parties, including Délıne, to make a submission with input on the proposed program.

3. Are the outfitters in Shúhtaot’ıne Nené (the Mackenzie Mountains) still allowed to be doing wolf hunts?

Licensed outfitters are permitted to take Non-Resident and Non-Resident Alien Licence holders wolf hunting in the Mackenzie Mountains. The wolf season is from July 25 to April 15 in Wildlife Management Areas S/OT/01, S/OT/02, S/OT/03, S/OT/04, and S/OT/05 (Figure 2) as set out in the *Big Game Hunting Regulations*. Each hunter is limited to a maximum of two wolves per season.

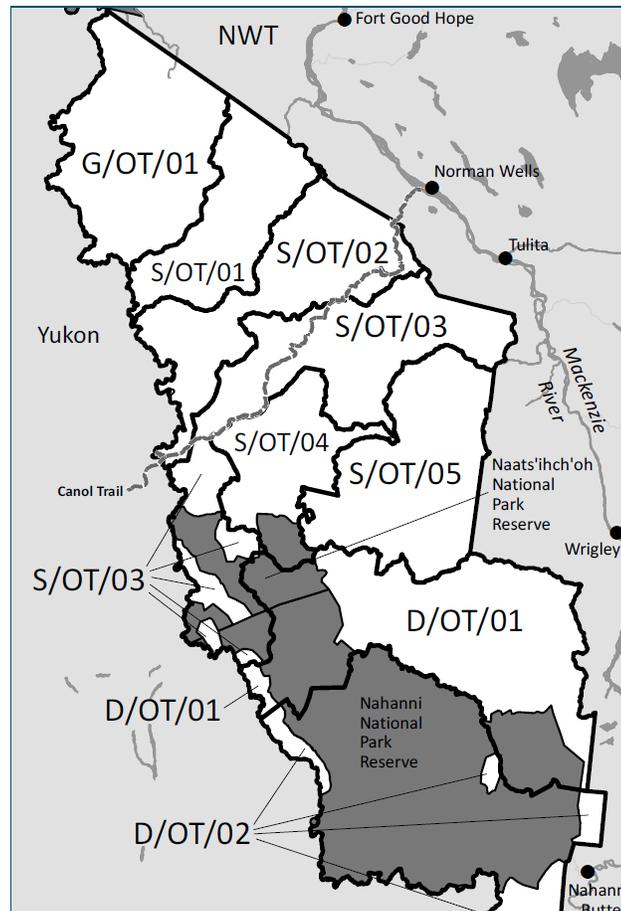


Figure 2: Wildlife Management Areas as set out in the *Big Game Hunting Regulations*.

4. Are the results of 2020 composition surveys of the Bluenose East and Bathurst herds – suggesting high survival of adult females in recent years and relatively high survival of calves over winter, but high mortality of calves in the five weeks post-calving – being considered as a basis for recommending any changes in predator control measures?

The goal of the proposed wolf management program is to sufficiently reduce wolf predation on the Bathurst and Bluenose-East herds to allow for an increase in calf and adult caribou survival rates to contribute to the stabilization and recovery of both herds. While we have seen some positive results in monitoring data in 2020, experience from elsewhere indicates that continued management actions and monitoring is required over a sustained period in order to be effective. As a result, current management actions will continue for the full five years of the management program, and an evaluation of the overall program will be conducted at that time.

Adult and calf survival rates (particularly calf survival rates) are variable from year to year. As a result, while objectives for the wolf management program should consider annual estimates of cow and calf survival, the main focus needs to be on the sustained average values over several years. The wolf management program has been proposed for a 5-year period, in part because experience from previous wolf management programs (in other jurisdictions) has been that wolf reduction needs to be at levels of 60-80% of the wolf population and continue over at least 4-5 years to have a measurable effect on caribou or moose survival rates.

Previous population modeling has established that stability of caribou herds is associated with a combination of cow and calf survival rates. In population modeling summarized by Boulanger and Adamczewski (2016; Table 1), at a cow survival rate of 85%, fall calf:cow ratios needed to be 49-51 calves: 100 cows and late-winter ratios needed to be 38-45 calves: 100 cows for stability. At a higher cow survival rate of 90%, fall calf:cow ratios of 44 calves: 100 cows and late-winter calf:cow ratios of 29 calves: 100 cows were associated with stability. At a low cow survival rate of 77%, it was essentially impossible for the herd to produce enough calves for a stable herd.

Given the complexity and uncertainty regarding the relative contribution of key factors influencing barren-ground caribou populations, attributing the relative contribution of wolf reduction to observed changes in caribou productivity and/or population trends will be challenging, especially over the short term. Other factors such as environmental conditions, biting insect severity, disease, anthropogenic disturbance and caribou harvesting may also be affecting caribou productivity and/or survival rates. As a result, using modeling approaches to explore caribou population response in relation to covariates for wolf removal, and environmental indices will be important for overall analyses and assessment of how the wolf management program has contributed to meeting recovery objectives. Such modelling, while being initiated in the early stages of the program, will be fully engaged during program evaluation following the full five-year implementation of wolf removal actions.

Please note that the results of the 2021 composition surveys will be shared in November 2021.

5. What conclusions about wolf management can be drawn from ENR's research on wolf stomach contents per ENR's submission of October 23, 2020 to the Wek'èezhìi Renewable Resources Board?

Analysis of stomach contents of wolves harvested within the North Slave Wolf Harvest Incentive Areas in 2020 showed that caribou was the main component in 98% of wolf stomachs that contained food. In 2021, analyses showed that 87% of stomachs that were examined from harvested wolves with food in their stomachs contained caribou as the main component. These results show that the wolves removed from the North Slave Wolf Harvest Incentive Area are primarily feeding on caribou.

6. Describe the information that ENR and Tłı̨chǫ Government use to target wolves that might impact the declining caribou herds.

ENR and Tłı̨chǫ Government target wolves within the North Slave Wolf Harvest Incentive Area, which is defined by collared caribou on the winter range of the Bathurst and Bluenose-East caribou herds. An explanation on how this area is derived annually is provided in the response to IR 1 in this section. In addition, the Tłı̨chǫ Government uses Traditional Knowledge captured at elders and harvesters meeting prior to the start of its Community-based harvesting program to identify appropriate locations to set up camp in order to target dı̨ga on the Bathurst and Bluenose caribou winter ranges. One of the key components in collecting the traditional knowledge is to focus on areas where the elders know we have a high chance of harvesting dı̨ga. Along with the traditional knowledge that is used, the Tłı̨chǫ Government hired an experienced dı̨ga trapper from the Alberta Trappers Association to share his knowledge in how to target dı̨ga. The instructor explained his techniques in harvesting dı̨ga which included strategically setting up traps and snares based on the behavior of the dı̨ga and setting up bait stations to specifically target dı̨ga. Although traps and snares have not been used in the Tłı̨chǫ Community-based harvesting program, the ideas behind using bait stations were used. The Tłı̨chǫ hunters also use ekwo kill sites to target the dı̨ga and the location information from collared Bathurst and Bluenose-East ekwo. Being that ekwo is the main diet for dı̨ga, knowing where the bulk of the ekwo are should give an indication where the dı̨ga are. ENR provides daily maps of the collared ekwo to the Tłı̨chǫ Government during the operation of the program.

7. Describe any measures taken to minimize impact of wolf management measures on wolves that do not impact the declining caribou herds.

By defining the North Slave Wolf Harvest Incentive Area around the Bathurst and Bluenose-East caribou herds in the winter, we are targeting wolves specifically associated with those herds that are most likely to be preying on caribou over that time period (as stated in the response to IR 5 in this section, in 2021, analyses showed that 87% of the wolf stomachs that had food contained caribou as a main component). Migratory tundra wolves not only associate with barren-ground caribou on their winter ranges, but move northwards with spring migratory movements of caribou

ultimately denning south of the caribou calving grounds (Heard and Williams 1992¹, Musiani et al. 2007², Hansen et al 2013³). In the joint management proposal, GNWT and the Tłı̨chǫ Government acknowledged that it is not well documented how closely the tundra wolves seasonal movements are affiliated with specific barren-ground caribou herds on an annual basis, and whether the association between tundra wolves and caribou herds may establish a basis for defining wolf populations for management purposes.

As part of the research and monitoring activities associated with the wolf management program, ENR deployed 32 collars on wolves in 2020 and 2021 (22 collars are still active). Recent analysis of wolf movements from the location data of those collared wolves (Caslys Consulting Ltd. 2021) shows three distinct movement patterns of wolves found on the BATH and BNE winter range. North-South (23%), East-West (50%) and Stationary (27%). Wolves exhibiting North-South movements tended to be associated with a single caribou herd; wolves with East-West movements (the majority of those collared) tended to be associated with two or three caribou herds and the Stationary wolves mainly associate with caribou of one or more herds on the winter range.

Seasonal movements of non-stationary wolves show times of low overlap with caribou, such as the month of June when caribou are calving and wolves are constrained by denning and pupping and times of high overlap such as summer and winter. Stationary wolves showed seasonal overlap primarily in winter. As we continue to collect and analyze information on wolf movements, these general movement groups may be revised or confirmed, and can inform changes in the wolf management program in terms of how and where we allocate harvest and removal pressure. As the results of the 2021 wolf management program are still under review by the Tłı̨chǫ Government, GNWT and WRRB technical staff, it is unknown whether this preliminary information may lead to any revisions and adjustments to the program.

8. Please provide an update on any new evidence that may be subject to consideration for the Revised Joint Proposal, including the Clark and Hebblewhite meta-analysis published in December 2020.

The Tłı̨chǫ Government and ENR have committed to produce an annual report on the Wolf Management Program, which will include information on what we have learned over the year. The 2021 annual report will be made available to SRRB once it is finalized. In the interim, we have attached a report brief that was submitted to the WRRB in August 2021 (Attachment 2). This information is still being reviewed and evaluated by Tłı̨chǫ Government, ENR and WRRB technical staff and it is unknown at this time what changes, if any, might be made to the North Slave region wolf management program in 2022 harvest season based on lessons learned.

¹ Heard DC, Williams TM (1992). Distribution of wolf dens on migratory caribou ranges in the Northwest Territories, Canada. *Canadian Journal of Zoology* 70:1504–1510

² Musiani M, Leonard JA, Cluff HD et al (2007). Differentiation of tundra/taiga and boreal coniferous forest wolves: genetics, coat color and association with migratory caribou. *Molecular Ecology* 16:4149–4170

³ Hansen, Ingebjorg & Johnson, Chris & Cluff, Howard. (2013). Synchronicity of movement paths of barren-ground caribou (*Rangifer tarandus groenlandicus*) and tundra wolves (*Canis lupus*). *Polar Biology*: 36.

The meta-analysis by Clark and Hebblewhite (2020)⁴ provides useful context for predator management programs. Their results show that biologically meaningful (8% increase) demographic responses in ungulate populations have been observed in management programs, and that removal programs can be more beneficial for species where predation rates are greater and more destabilizing. Both of these conclusions provide support for a reasonable assumption that the North Slave region Wolf Management Program may lead to positive effects on Bathurst and Bluenose-East caribou. Warnings in the assessment related to effects of predator removal being reduced due to compensatory mechanisms are acknowledged in the Wolf Technical Feasibility Assessment and the current program. They also caution that results can be limited by the ability to remove high numbers of predators due to the spatial and temporal scale of their demography and the potential for immigration to compensate for removals. The five-year timeframe of the North Slave region Wolf Management Program and targeting 60-80% of wolves on the winter range of the Bathurst and Bluenose-East herds are in response to these limitations. Clark and Hebblewhite (2020) suggest lack of rigor in experimental design increased uncertainty about effect sizes. The North Slave region Wolf Management Program incorporates extensive data collection, analysis and review on an annual basis to detect and evaluate program outcomes and adaptive management over the life of the program. Considering the scale over which wolf removals are taking place in the North Slave region, unfortunately it would be impractical to lead the type of experimental design suggested by Clark and Hebblewhite (2020) (i.e. randomly assigned, replicated treatments, simultaneous experiment and control or before-after-control-impact design).

9. What is the ENR and Tłı̨chq̓ Government exit strategy for the five-year approach taken toward wolf control in the Revised Joint Proposal on Management Actions for Wolves (Diga), and how will evidence of impact be used to inform decisions about this approach in the long-term?

ENR and Tłı̨chq̓ Government will undertake an evaluation of the Wolf Management Program each year to identify successes, challenges, areas for improvement, and opportunities to adapt procedures to any new information and understandings. WRRB staff and technical advisors collaborate in the annual review, and a summary report is provided to the WRRB through this review process and posted on their website. At the end of the 5-year implementation phase, Tłı̨chq̓ Government and ENR will conduct a comprehensive analysis of information collected, as well as a full program review with the WRRB and other Indigenous governments and organizations to:

- Assess the effectiveness of wolf reduction actions in achieving program goals and objectives;
- Determine whether wolf reductions should continue based on the effectiveness of the Wolf Management Program; and
- Implement improvements to the overall program, as required.

Attributing caribou population response to specific management actions will be complex, involving consideration of the interacting effects of harvest, predation and environmental conditions.

⁴ Clark, TJ, Hebblewhite, M. Predator control may not increase ungulate populations in the future: A formal meta-analysis. *J Appl Ecol.* 2021; 58: 812– 824.

Caribou population models will be used to help tease out the contribution of multiple factors affecting caribou population response, including the effect of predator management.

Multiple factors play a role in influencing caribou population vital rates, so caribou-centered metrics may not provide unambiguous evidence that wolf removals specifically are effective. However, sustained high levels of cow and calf survival assessed annually and over multiple years may provide indirect evidence that wolf removals are effective.

Summaries of a number of Alaskan wolf management programs indicated that criteria or targets were set that considered when a wolf management program should be suspended. Suspension of wolf management in those programs was linked to one of two scenarios: (1) the targets for the caribou population had been met and wolf management was no longer necessary; and (2) the targets for the caribou population had not been met, the wolf management program was ineffective and should be suspended. In consideration of these points, we suggest that, for the Bathurst and Bluenose-East herds, a comprehensive assessment be made after 5 years to assess the effectiveness of wolf management to that point in time. During that assessment, a number of options could be considered:

- Caribou and wolf-centred objectives have been met through the first 5 years, and further wolf management is not required.
- Caribou and wolf-centred objectives have not been met, the wolf management program has been ineffective, and should be suspended.
- Caribou and wolf-centred objectives have been met or partially met, and a further or modified wolf management program should be considered.

2.1.4 Competitors

4. Do you know if ɾəjire crossed Dəgho (Mackenzie River) or Sahtú Də (Bear River)?

ENR has two observations of muskox on the west side of the Mackenzie River in the Sahtu. One observation is from 1997, when an Arctic Red River pilot spotted a lone individual near the Mackenzie Mountains. In 2020, a lone muskox was reported across the Mackenzie River north of Great Bear Rock. It is uncertain if the 1997 observation is a muskox from the Sahtú population or from the reintroduced muskox population in the North Slope. In addition, a number of other observations have been noted from the communities of Déljñę and Tulita of muskoxen on the Déljñę winter road, though not formally documented.

Although it is likely that muskox have, on occasion, crossed these 2 rivers, it is important to note observations of individual muskox crossing the rivers is not an indication that populations have become established in those areas. Due to the rarity of these reports and observations of muskox locations during recent aerial surveys, it is unlikely that there are any individuals or groups that have crossed and are reproducing west of the Mackenzie or south of the Bear River. The only populations known to have established west of the Mackenzie are from a population of individuals

relocated from Greenland to Alaska in 1970 that have expanded east into parts of the Yukon and north western NWT.

5. How might ɔǰjire impact shúhta goǰepé (mountain caribou) and doe (sheep) if they go into the mountains?

There are currently limited reports or published scientific papers on the interactions between muskox and Dall's sheep or mountain caribou. Currently, muskox share habitat with Dall's sheep in the Northern Richardson Mountains. The Gwich'in Renewable Resources Board's draft "Management Plan for Dall's Sheep in the Northern Richardson Mountains" acknowledges community concerns over impacts of muskox on sheep and identifies this as a knowledge gap. There are currently no muskox in the Mackenzie Mountains, and therefore no overlap with the range of mountain caribou.

There has been some research on the risk of disease transmission between sheep and muskox in a number of locations in northern Canada and Alaska. Research has found a lungworm that can live in both Dall's sheep and muskoxen wasn't able to transfer from muskox to sheep, but could be transferred from sheep to muskox (Kutz et al., 2004⁵). Another lungworm already found in Dall's sheep across North America appears to have spread to muskox populations in the North Slope (Kutz et al., 2001⁶).

ENR's written submission for the Délı̄nę 2021 Public Listening Session will cover the current knowledge and literature on interactions between muskox and caribou, although the focus will be on barren-ground caribou as more work has been done looking at the interactions between these two species.

6. Please share the ENR Traditional Knowledge and Community Knowledge report on muskoxen prepared by the J. Winbourne and K. Benson in 2020 to be posted to the Public Registry.

The Species Status Report (Traditional and Community Knowledge Component) for Muskoxen (*Ovibos moschatus*) in the Northwest Territories can be found at the following link: https://www.enr.gov.nt.ca/sites/enr/files/resources/species_status_report_-_traditional_and_community_knowledge_component_for_muskoxen_in_the_nwt_292_manuscript.pdf.

⁵ Kutz, S, A. Veitch, E. Hoberg, B. Elkin, E. Jenkins and L. Polley. 2001. New host and geographic records for two protostrongylids in Dall's sheep. *Journal of Wildlife Diseases* 37:761-774.

⁶ Kutz S., E. Garde, A. Veitch, J. Nagy, F. Ghandi and L. Polley. 2004. Muskox lungworm (*Umingmakstrongylus pallikuukensis*) does not establish in experimentally exposed thinhorn sheep (*Ovis dalli*). *Journal of Wildlife Diseases*, 40(2):197–204

7. Please provide information about the Indigenous, local and community knowledge component of the ɔ́jire biological assessment planned for 2021.

As of yet, ENR has not received a formal recommendation from any co-management body in the Sahtú recommending an increase in the number of available tags for Wildlife Management Area S/MX/01. Should the Minister of ENR receive a recommendation to increase the limit, a biological assessment would then need to be done to assess sustainable harvest levels.

The information considered in any such assessment would include all the best available information to help inform the Minister of ENR in accepting, modifying, or rejecting such a recommendation. The overall biological assessment would consider and be informed by Indigenous, local and community knowledge, as well as scientific knowledge. Consideration of the available information is done in an integrated manner to help inform the assessment, and is not done as separate formal knowledge components.

8. Please provide information about and a timeline for completing the science component of the ɔ́jire biological assessment planned for 2021.

ENR has not received a formal recommendation from any co-management body in the Sahtú recommending an increase in the number of available tags for Wildlife Management Area S/MX/01. The timelines for considering any biological assessment depends on the nature and complexity of the recommendation received to increase the limits.

Information Request (IR) 2.2: *Harvest Regulation*

2.2.1 Harvest Regulation Planning Toolkit

1. The SRRB provided a Harvest Regulation Planning Toolkit on January 15, 2021. What is missing from the toolkit?

It is important to add a reference to the formal approval process by the Minister of ENR to the Toolkit. On page 1, once the SRRB has approved a community conservation plan, the Minister completes a final review and must approve the plan. The final review is likely to be more straightforward when a community has worked with ENR in the development of a community conservation plan, which helps ensure that any concerns can be identified and addressed at an early stage.

2. Do you think any parts of the Toolkit should be changed?

Under CCP Idea Toolbox – 7, it is important to note that ENR will only be able to investigate any alleged offence that is an offence under the *Wildlife Act*. Any alleged offence of a community caribou

plan that is not an offence under the *Wildlife Act* can be dealt with in the manner deemed appropriate by the community.

3. Are there additional components that would be relevant for conservation planning for predators and competitors?

Déljné's Belare Wíle Gots'é ʔekwé (Caribou for All Time) plan includes actions that would not easily fall into the sections currently identified in the Toolkit, including actions that address impacts of other wildlife (i.e., under *Addressing Impacts of Other Wildlife*, Déljné's Belare Wíle Gots'é ʔekwé plan notes that "*The Working Group will be supporting efforts within the Déljné District that focus on documenting and minimizing the impacts of new species*"). Consideration should be given to expanding the toolkit to consider these types of actions.

2.2.2 Stewardship Roles

1. How is the stewardship role of a community that is a primary harvester of a certain caribou population different from the role of a community that might not have the same access to that caribou population?

It is unfortunate that the agenda item related to the role of RRCs has not been removed from this Public Listening Session, so that ENR can meaningfully participate as requested in the letter sent to the SRRB on September 1 (Attachment 3).

2.2.3 ʔehdzo Got'jné (Renewable Resources Council) Powers

1. Describe the role of the local ʔehdzo Got'jné (RRC) in your experience.

It is unfortunate that the agenda item related to the role of RRCs has not been removed from this Public Listening Session, so that ENR can meaningfully participate as requested in the letter sent to the SRRB on September 1 (Attachment 3).

2. How does the local ʔehdzo Got'jné (RRC) manage harvesting?

It is unfortunate that the agenda item related to the role of RRCs has not been removed from this Public Listening Session, so that ENR can meaningfully participate as requested in the letter sent to the SRRB on September 1 (Attachment 3).

3. How is the local ʔehdzo Got'jné (RRC) accountable, and to whom it is accountable?

It is unfortunate that the agenda item related to the role of RRCs has not been removed from this Public Listening Session, so that ENR can meaningfully participate as requested in the letter sent to the SRRB on September 1 (Attachment 3).

2.2.4 Hunter Education

1. Is it a requirement for students to complete the GNWT Hunter Education course before they reach the age of 16, when they can get their hunting license?

The Hunter Education Course is a free course designed to teach hunters of all backgrounds and experience levels how to be respectful of wildlife, people, the environment and themselves while hunting.

The Hunter Education Course is not a requirement for all Sahtú students. As of January 1, 2020, all Resident and Non-Resident hunters are required under the *Wildlife Act* to complete Hunter Education training prior to being issued a hunting licence in the NWT. Anyone exercising an established or asserted Aboriginal and/or Treaty right to harvest in the NWT in areas where they have or assert harvesting rights or holding a General Hunting Licence (only rights holders are eligible to hold this licence) is exempt from having to take the Hunter Education Course. Additional information is available here: www.enr.gov.nt.ca/en/services/hunter-education and here: www.enr.gov.nt.ca/sites/enr/files/resources/128-hunter_education_fs_en_proof.pdf.

ENR continues to work with the GNWT Department of Education, Culture and Employment to make the Hunter Education modules available in school curriculums across the NWT.

2. Are there harvesters that come from other places to your community's harvesting area? What are the different kinds of harvesters? Describe any protocols for harvesters visiting your area. How do they learn about these protocols?

It is against the law for anyone without asserted or established Aboriginal and/or Treaty rights to harvest wildlife on private lands in a land claim area without permission. Any such person who harvests on private lands without permission can be charged under the *Wildlife Act*.

ENR strongly encourages all harvesters to ask permission from the applicable Indigenous government(s) and/or Indigenous organization(s) to harvest wildlife in any area, as doing so shows respect and helps develop a relationship between harvesters and landowners. Landowners in-turn then know who is harvesting in their area and can help identify areas to be avoided, which may include culturally sensitive areas. Entering private lands without permission can also be a safety issue, especially if traps are set in an area.

Harvesters are ultimately responsible for knowing where they are on the land, following the law, and meeting the terms and conditions specific to land claim agreement if applicable.

Additional information is available here: www.enr.gov.nt.ca/sites/enr/files/resources/enr_harvesting_wildlife_on_private_lands_fact_sheet_p5.pdf.

3. Do harvesters from your community go outside your community's harvesting area to harvest?
Describe any protocols for visiting other areas. How do people learn about these protocols?

[Please see response to response to IR 2 in this section.](#)



Photo J. Adamczewski, ENR

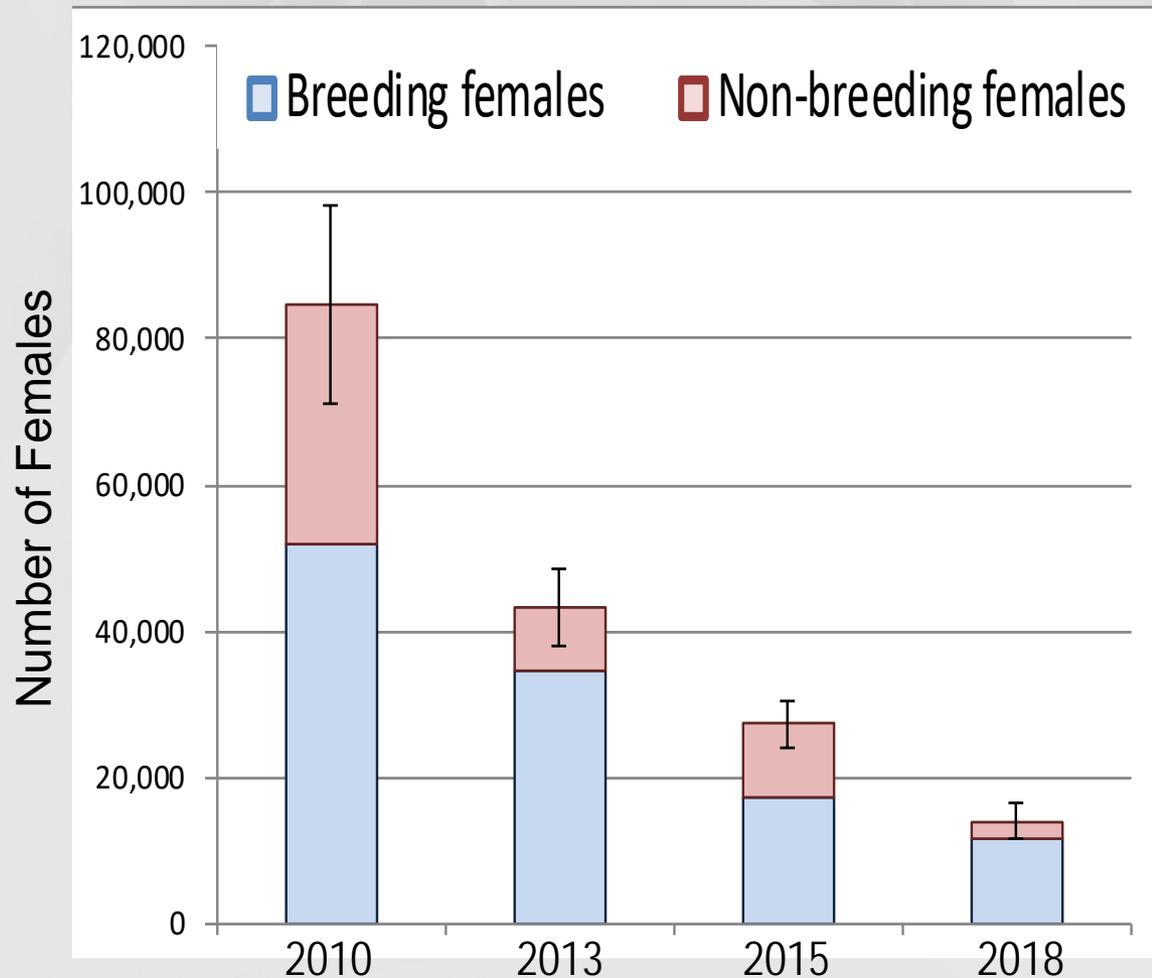
Bluenose-East Caribou: Technical Summary

GNWT ENR, ACCWM Meeting

Nov. 19-21, 2019

Northwest Territories
Environment and
Natural Resources

Bluenose-East June 2018 Survey: Females



2018

Breeding Females:

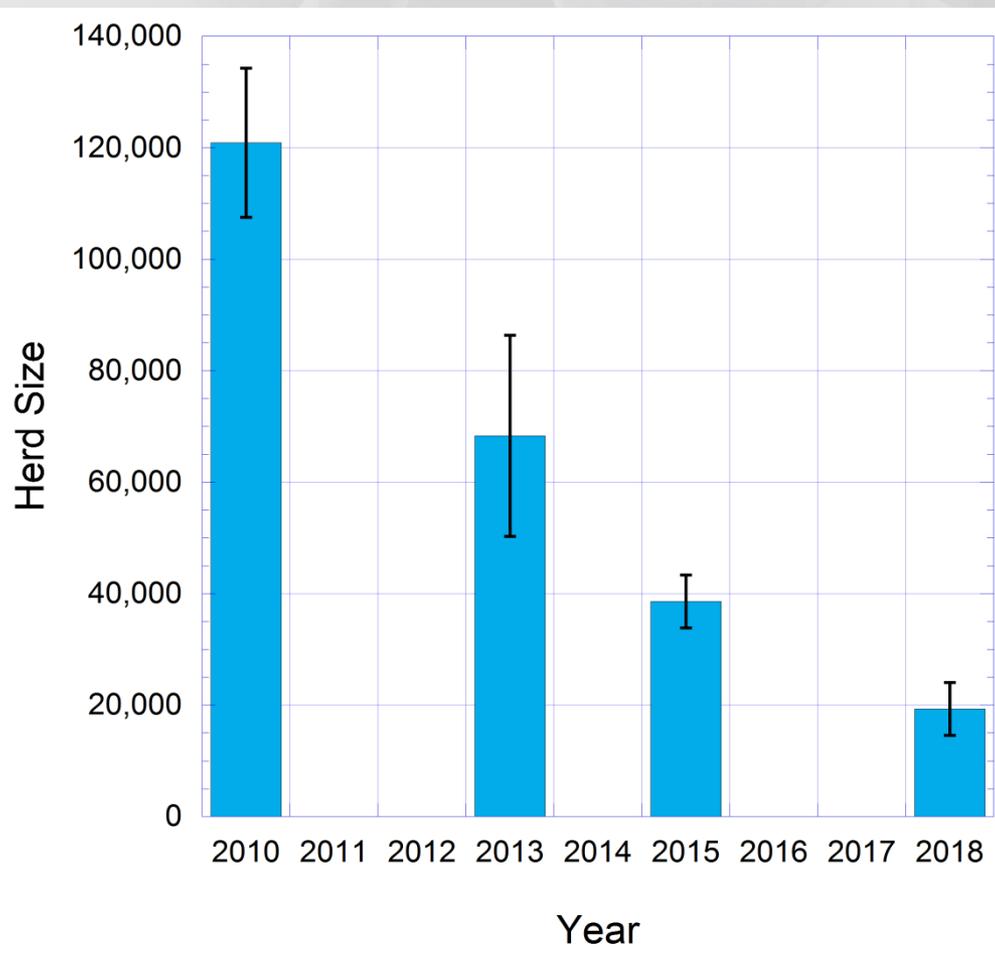
$11,675 \pm 2,040$

Adult Females:

$13,988 \pm 2,333$



Bluenose-East June 2018 Survey: Herd Estimate



Oct. 2018 Bull: Cow Ratio
 38.0 ± 5.7 Bulls: 100 Cows

Adjust Adult Female
Estimate to Add Bulls

Herd Estimate:
 $19,294 \pm 4,729$



Bluenose-East June 2018 & 2019 Composition Surveys: Incidental Sightings

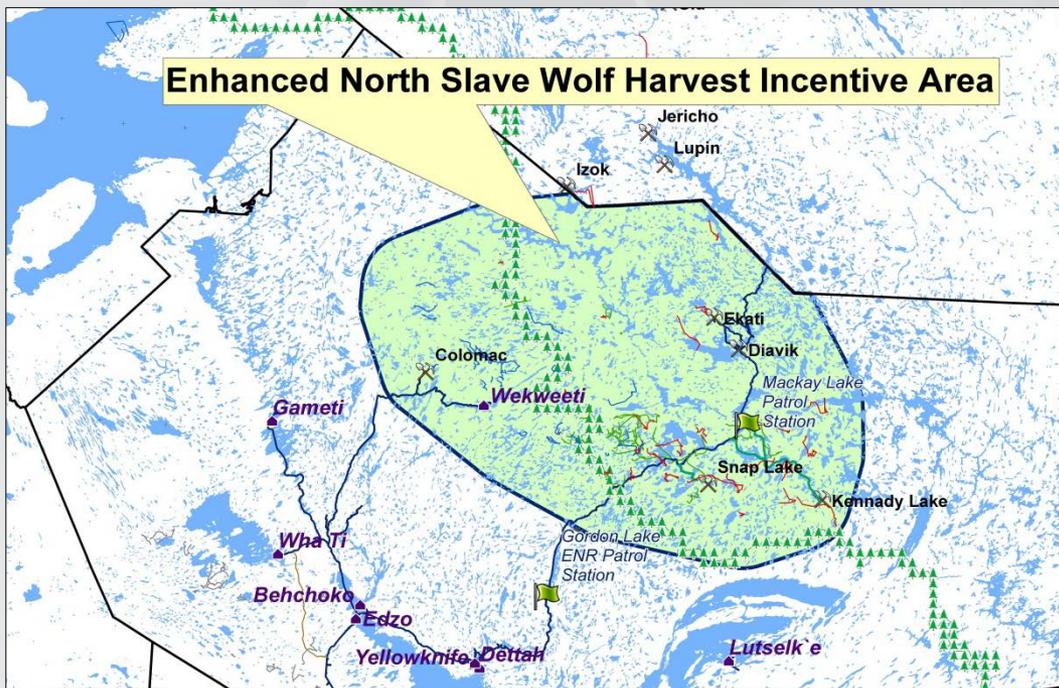
Species	2018	2019
Eagle	0	3
Wolverine	0	0
Red/Arctic Fox	0	0
Wolf	1	3
Grizzly Bear	21	14
Moose	1	1
Muskox	12	65



Internet Photos



Enhanced North Slave Wolf Harvest Incentive Program (GNWT) 2019



Increased incentives this area only

Area built around Bathurst & Bluenose-East caribou locations

Hunters check in and out at ENR stations

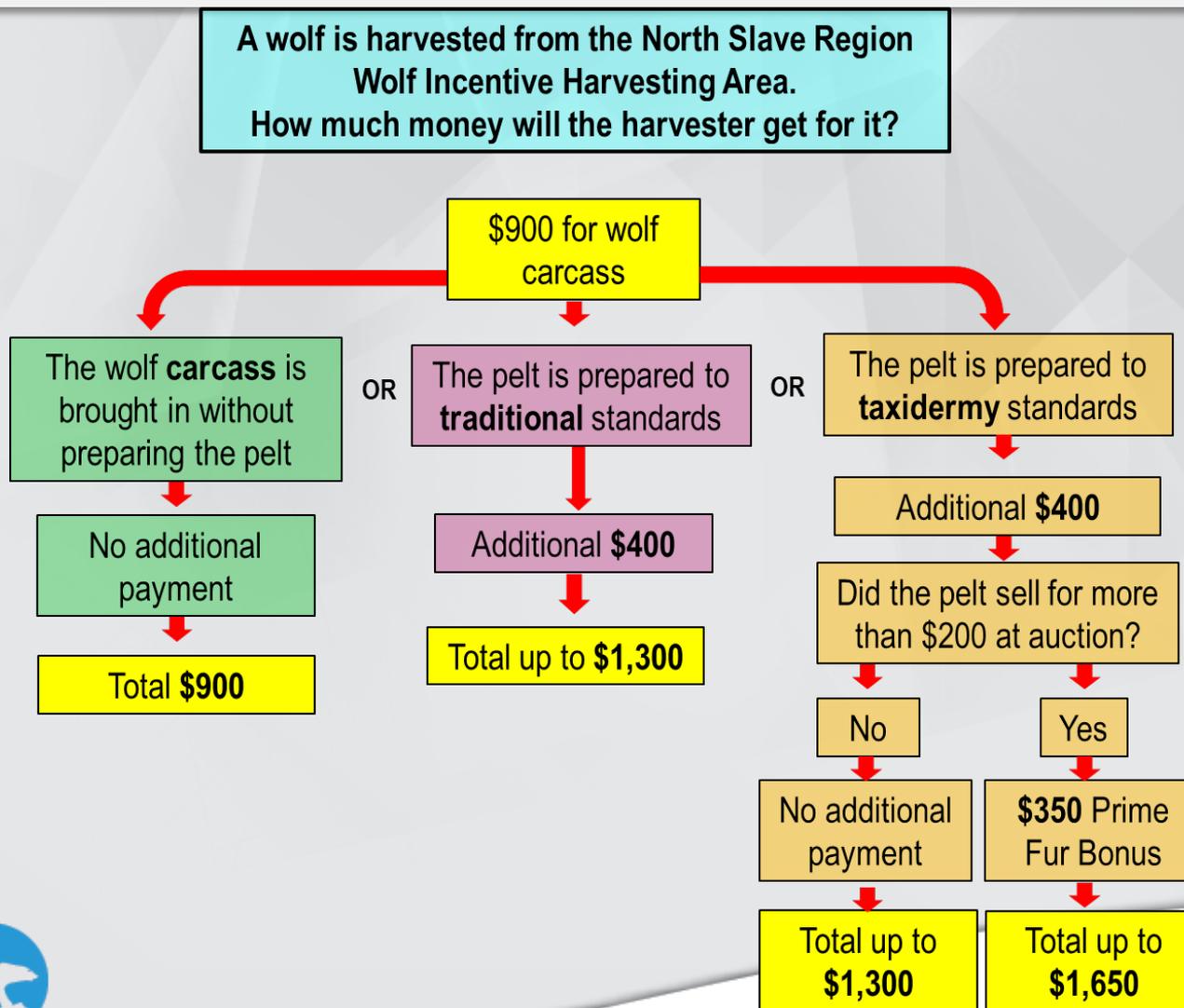
Hunters get receipt for wolf carcass or pelt

Each wolf identified (tattoo)

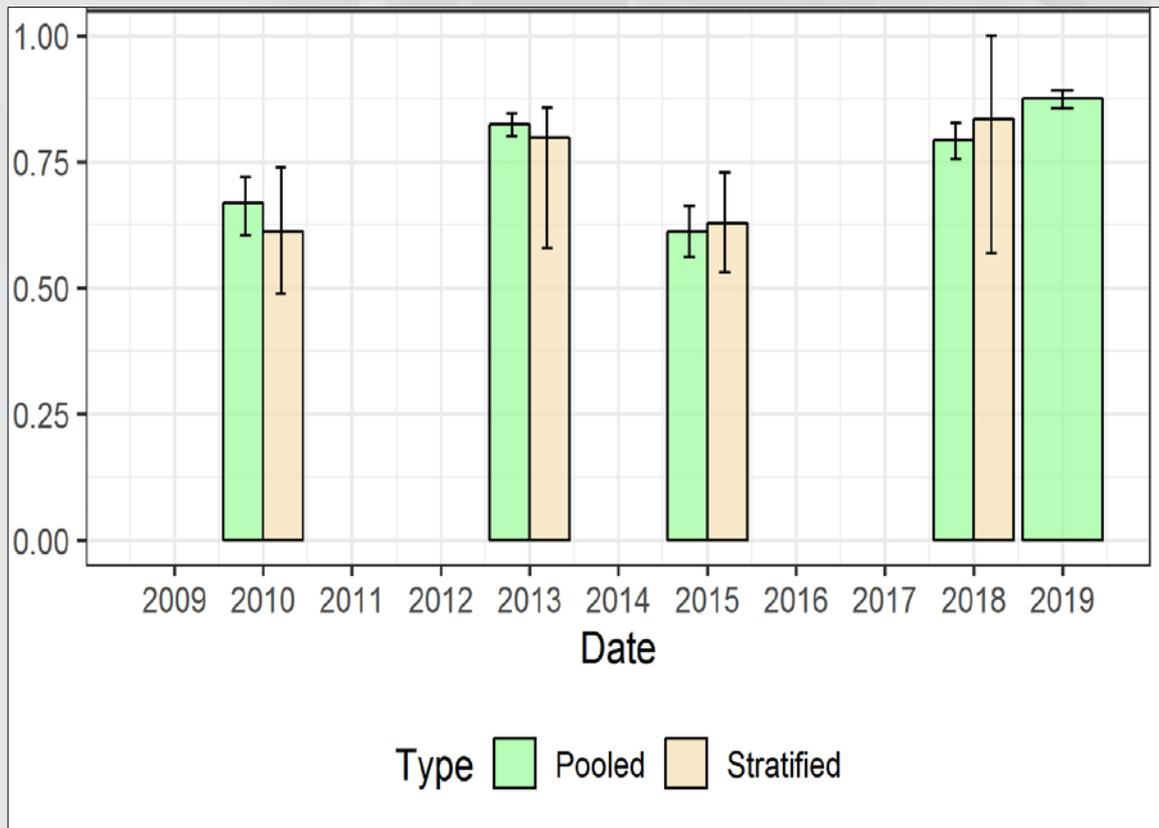


Internet Photo

Enhanced North Slave Wolf Harvest Incentive Program (GNWT) 2019



Bluenose-East June Surveys 2010-2019: Proportion of Breeding Females



June 12-14, 2019

Composition Survey:

451 Groups; 5,347 Caribou

87.5% Breeding Cows

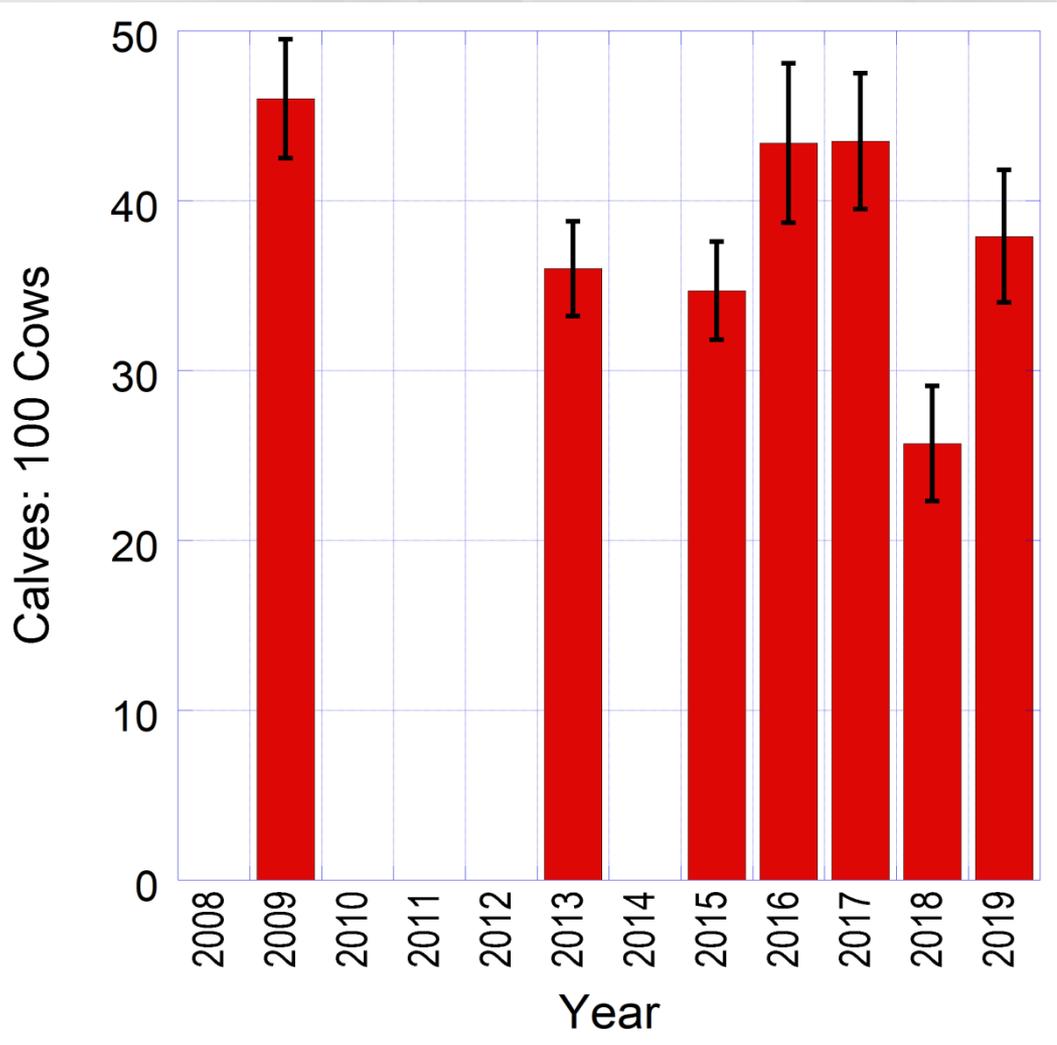
(High)

Peak of Calving June 4-8

(Early)



Bluenose-East Fall Calf: Cow Ratios 2009-2019



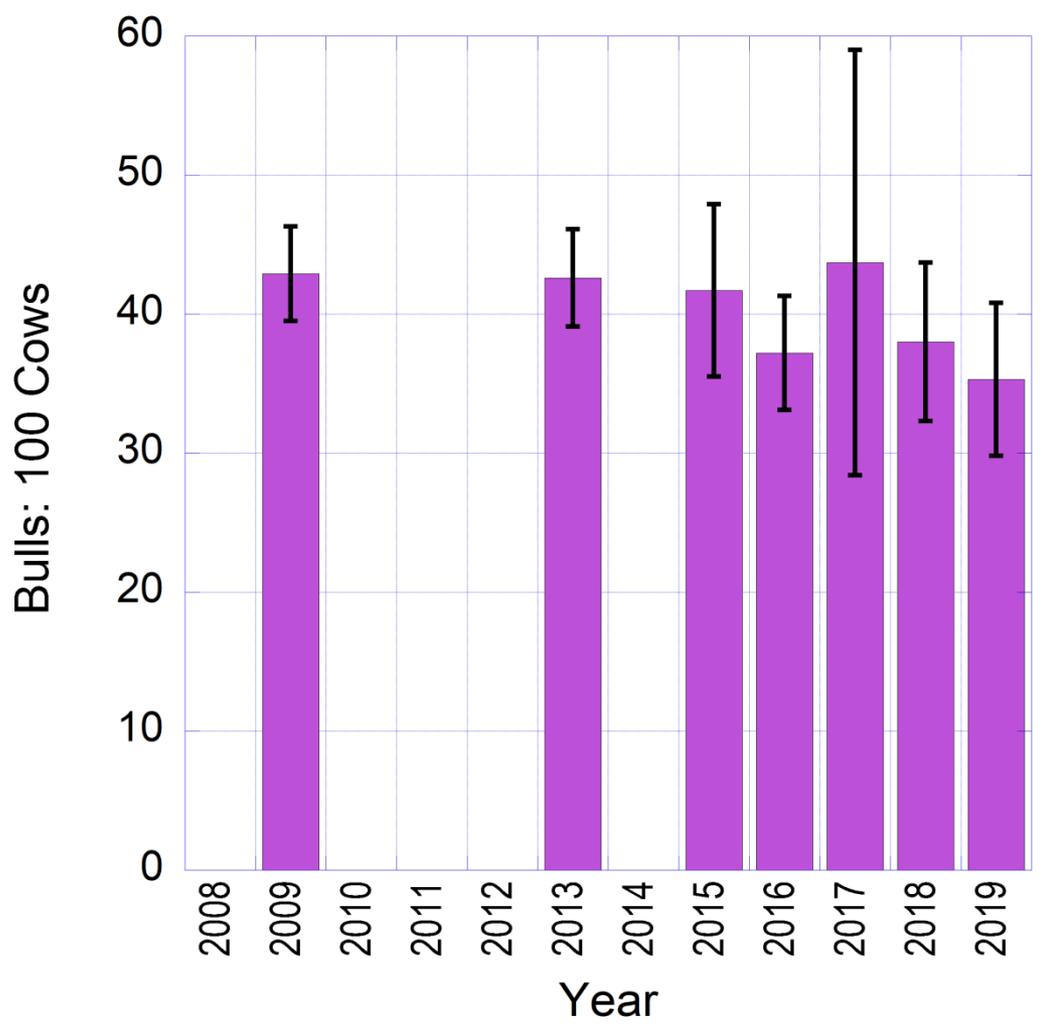
Nov. 2019 Survey:

37.8 ± 3.9 Calves:100 Cows

(3,436 caribou, 144 groups)



Bluenose-East Fall Sex Ratios 2009-2019



Nov. 2019 Survey:

35.3 ± 5.5 Bulls:100 Cows

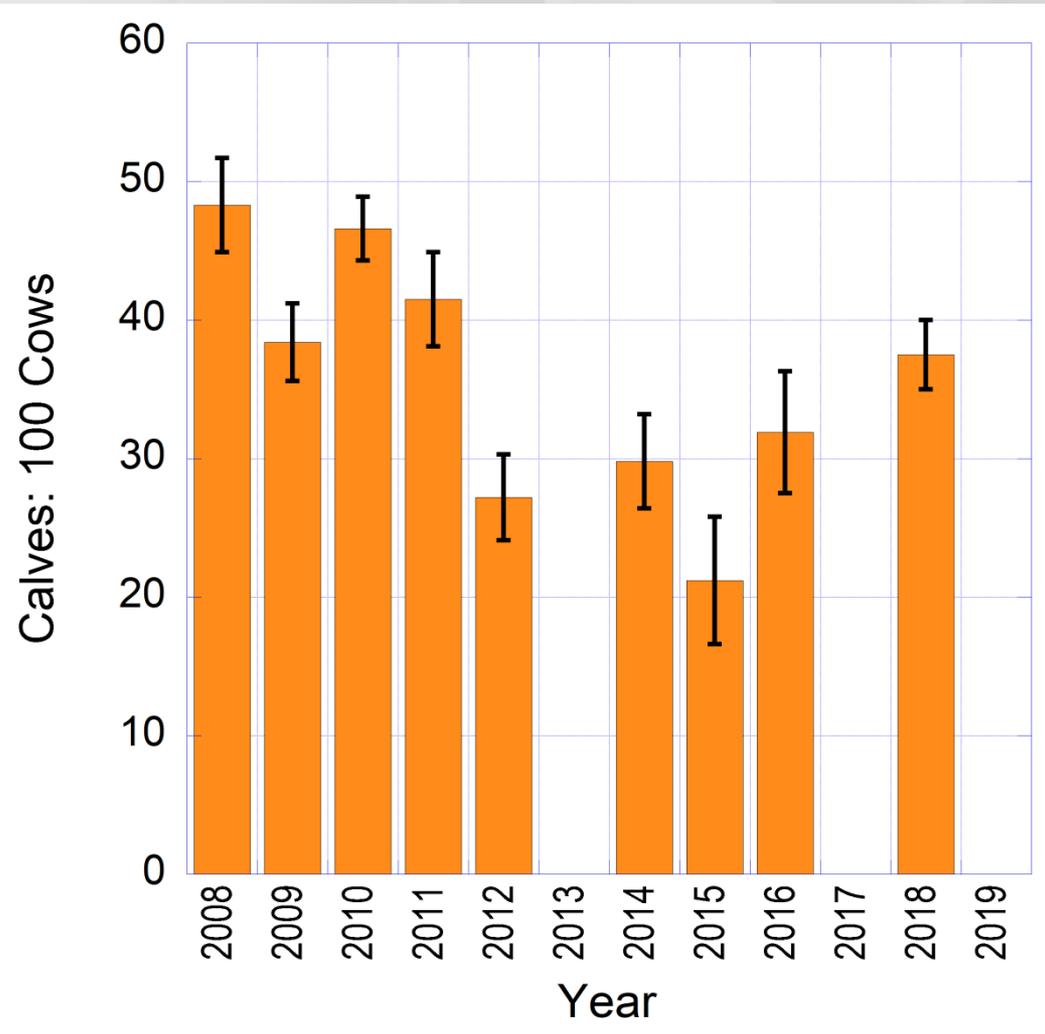
(3,436 caribou, 144 groups)



Photo J. Adamczewski



Bluenose-East Late Winter Calf: Cow Ratios 2008-2018



April 2018 Survey:

37.5 ± 2.5 Calves: 100 Cows

(2,350 caribou, 48 groups)

No 2019 survey; herds mixed

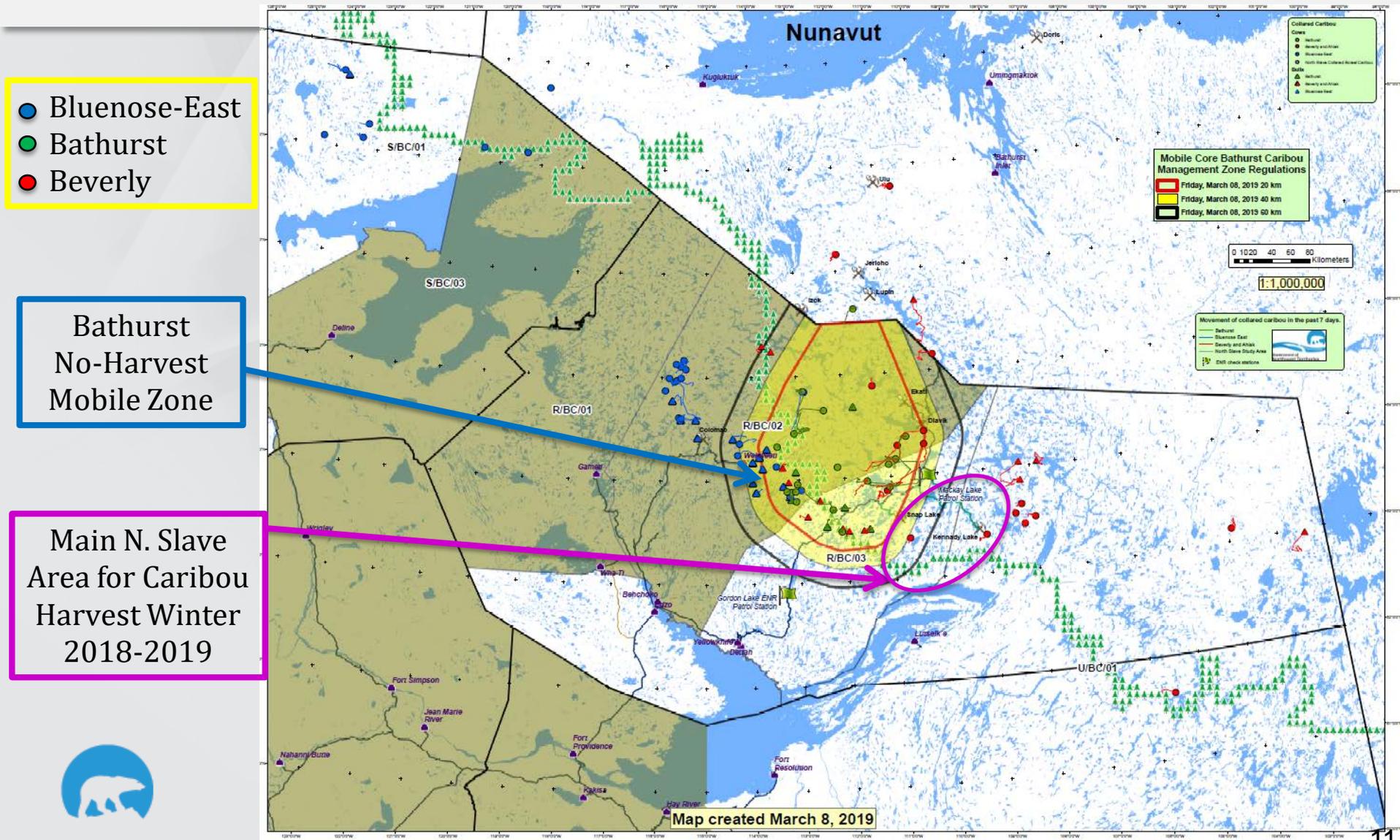


Photo J. Adamczewski



Harvest: Bluenose-East, Bathurst & Beverly Collared Caribou

March 8, 2019



● Bluenose-East
● Bathurst
● Beverly

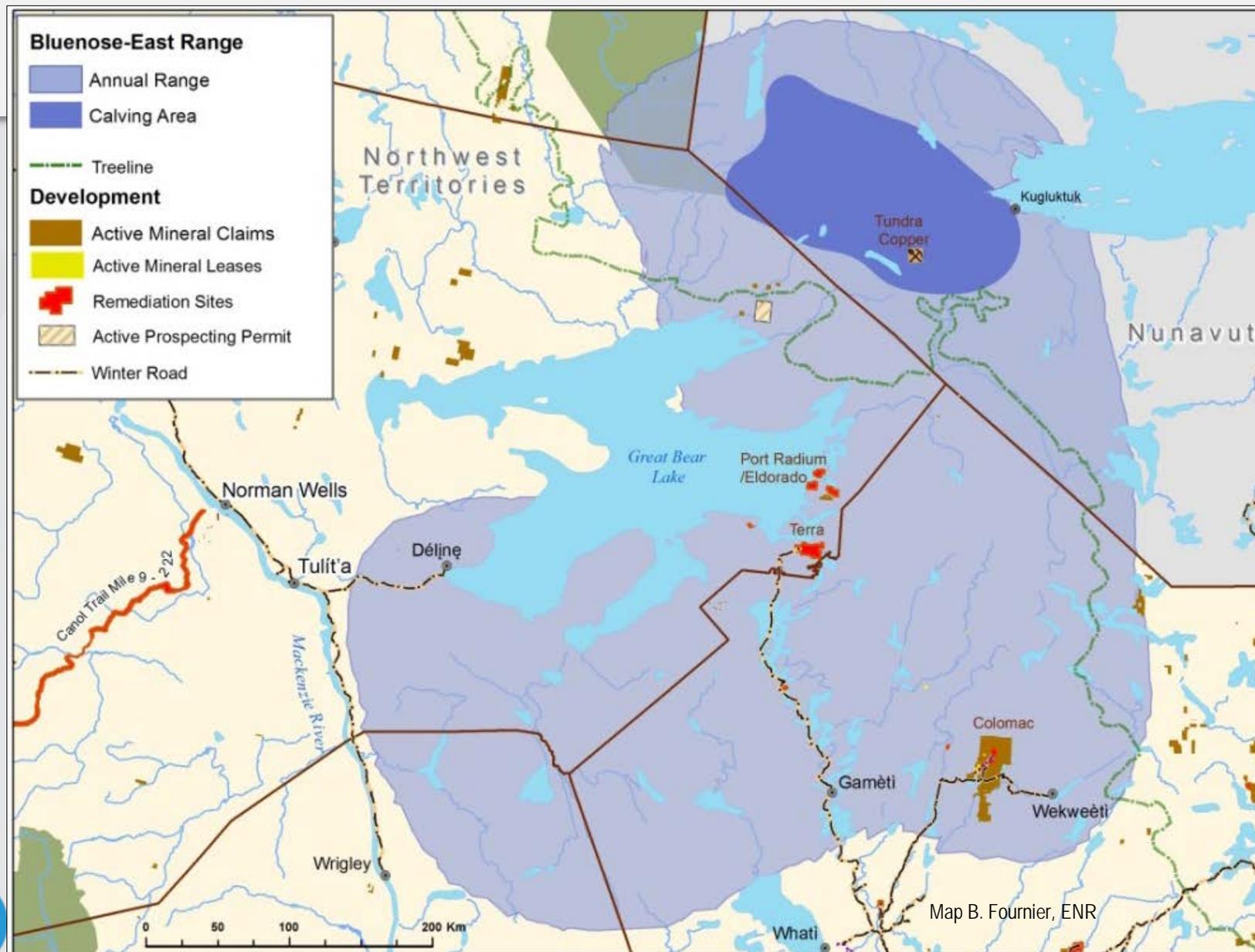
Bathurst
No-Harvest
Mobile Zone

Main N. Slave
Area for Caribou
Harvest Winter
2018-2019



Map created March 8, 2019

Bluenose-East Herd Range & Disturbance



PROPOSED PROJECT:

Cumulative Effects Assessment

Bluenose-West, Bluenose-East & Cape Bathurst caribou (K. Clark, GNWT)

- **Goal:** Inform management of the herds by examining the cumulative effects of land-use, natural environmental and climate change scenarios.
- **Objectives**
 1. Provide decision-making support for caribou management, conservation planning, and environmental reviews.
 2. Communicate current and potential future risks to barren-ground caribou, and the effectiveness of management strategies.
 3. Explore barren-ground caribou population response to habitat and climate change, natural disturbance, land use, natural mortality and harvest.



PROPOSED PROJECT:

Cumulative Effects Assessment

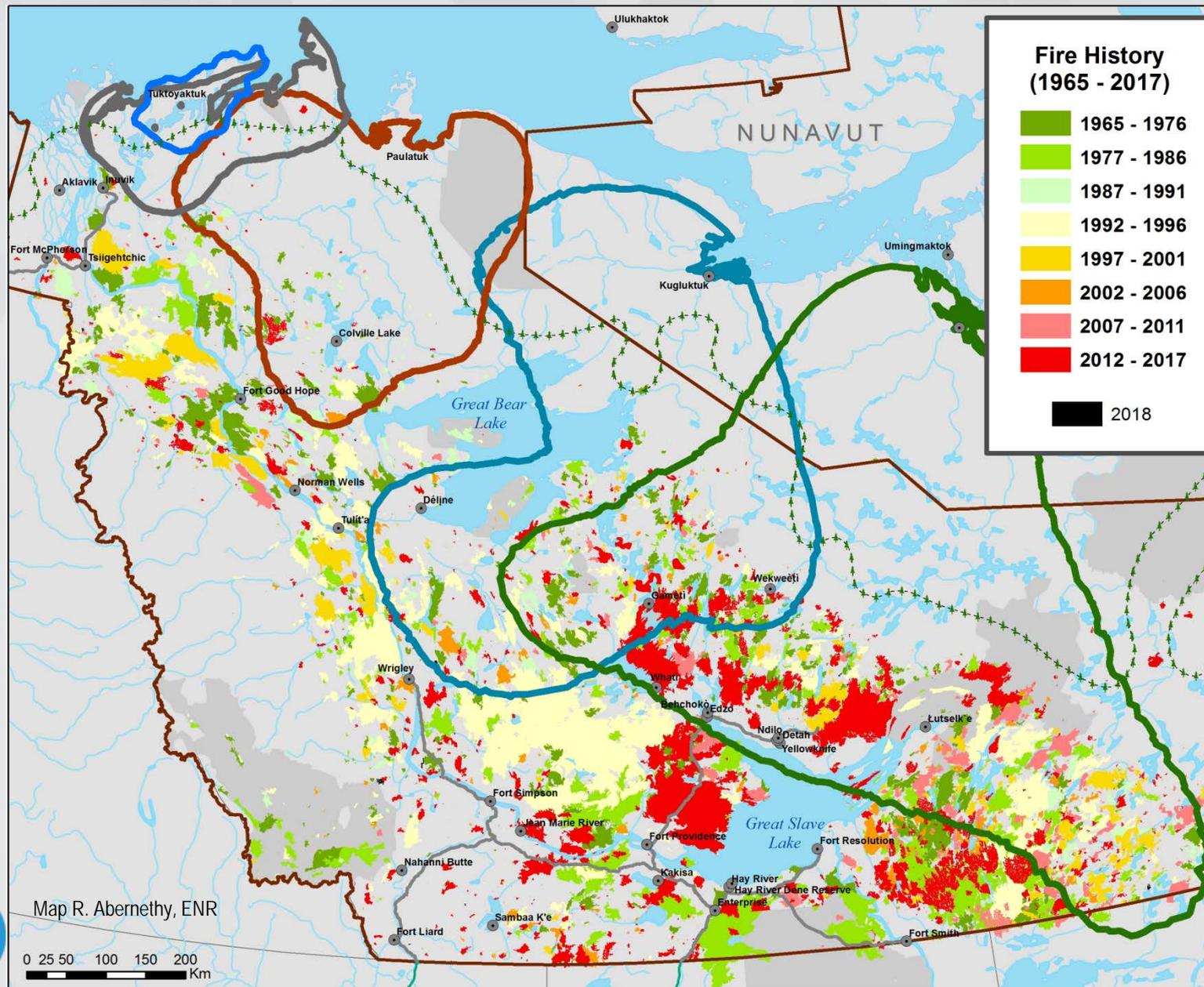
Bluenose-West, Bluenose-East & Cape Bathurst caribou (K. Clark, GNWT)

Process:

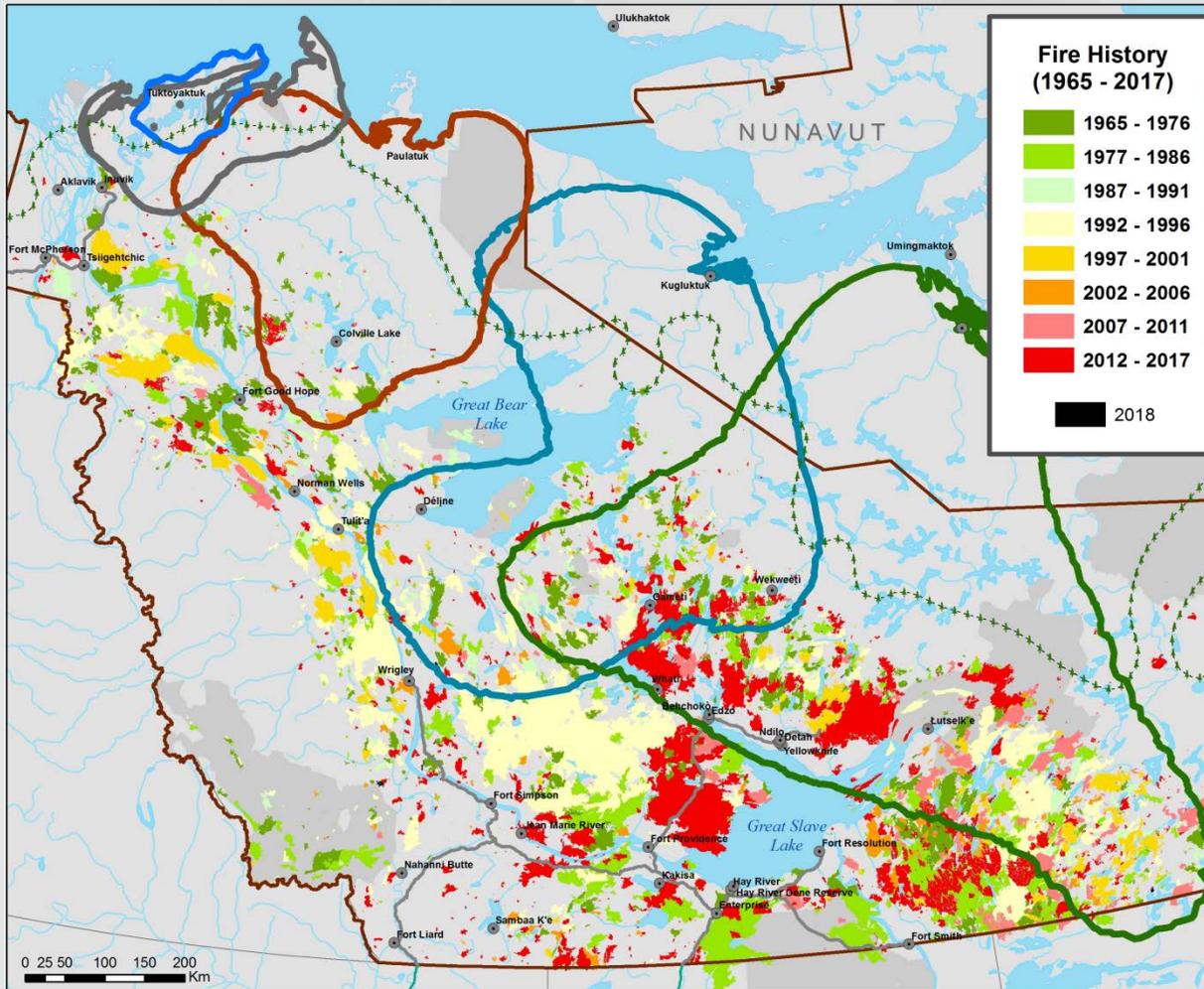
- Proposed three-year project
 - project team and approach similar to previous project in Sahtu
- Submitted Letter of Interest to Cumulative Impact Monitoring Program for funding (November)
 - Sent to WMAC (NWT), GRRB, SRRB and WRRB for review
- Requesting partnership / support
- Full proposal due January (if invited to submit)
- Will work with partners to shape final proposal



NWT Fires 1965-2018 & Barren-Ground Caribou Ranges



NWT Fires 2018 & 2019: Area Burned



2018: 15,000 Hectares
2019: 100,000 Hectares
Average Year:
500,000 Hectares
2014: 3,500,000 Hectares

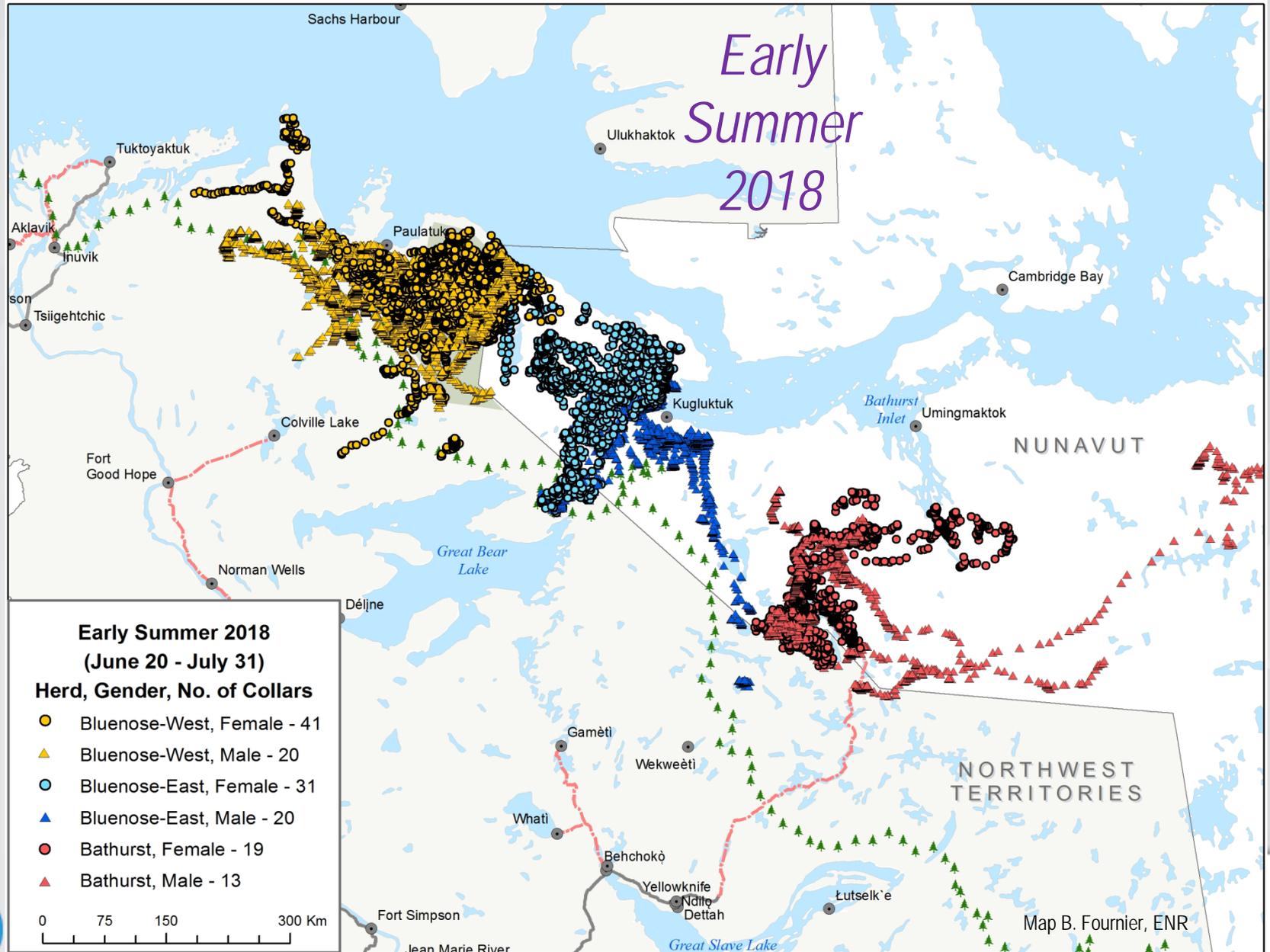
Map R. Abernethy, ENR



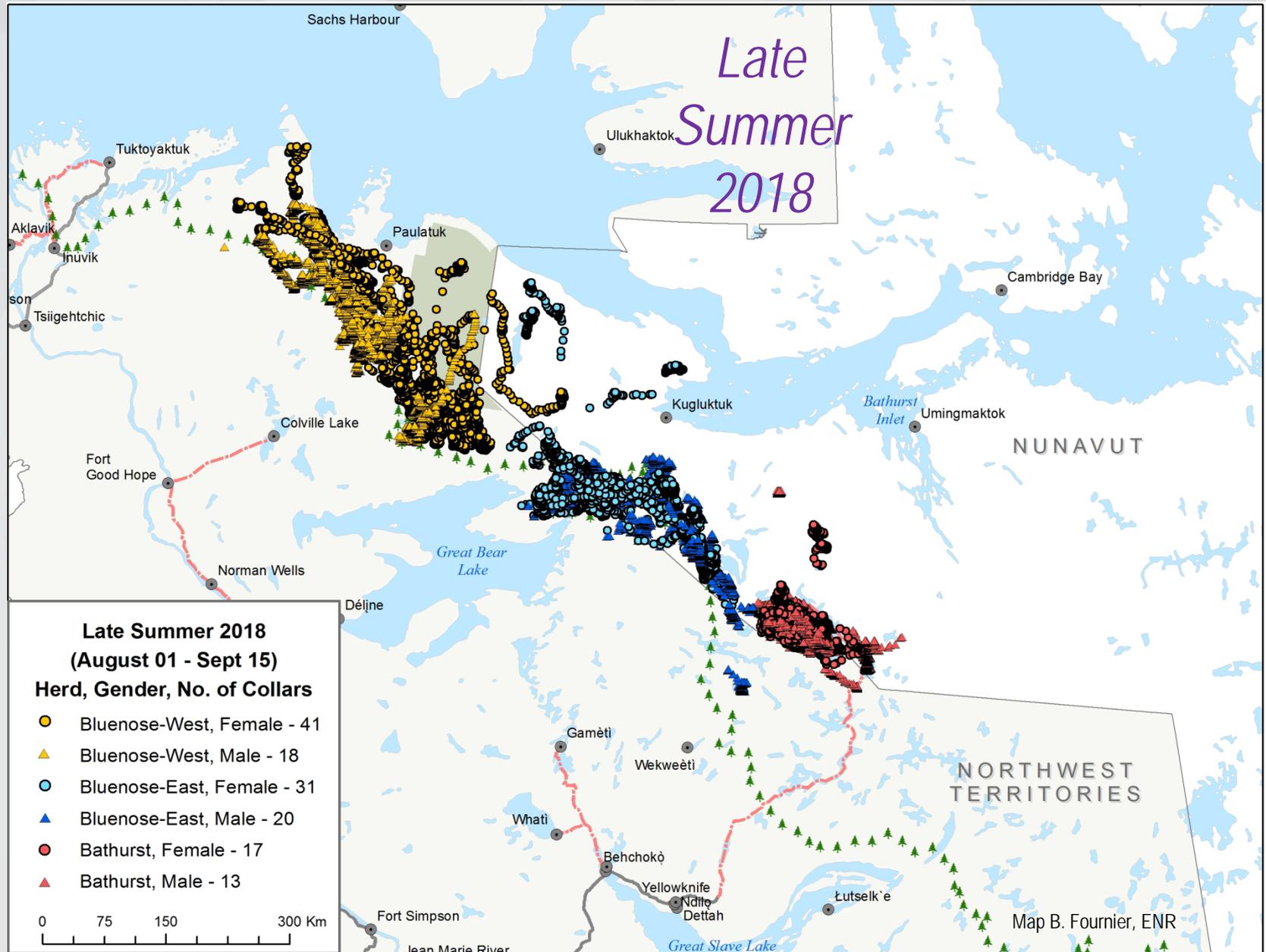
Bluenose-West, Bluenose-East & Bathurst Collars June 1-20, 2018



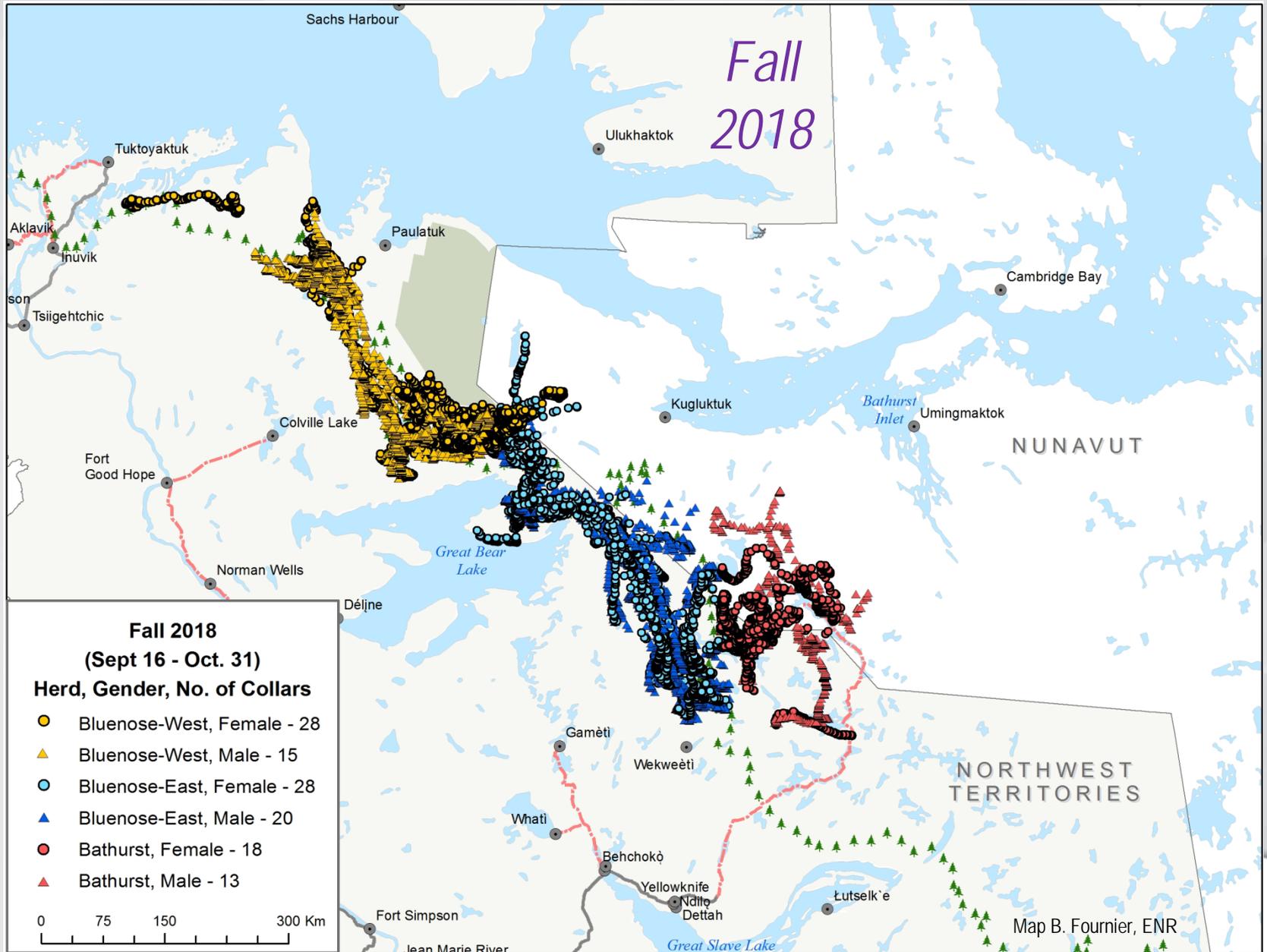
Bluenose-West, Bluenose-East & Bathurst Collars June 20-July 31, 2018



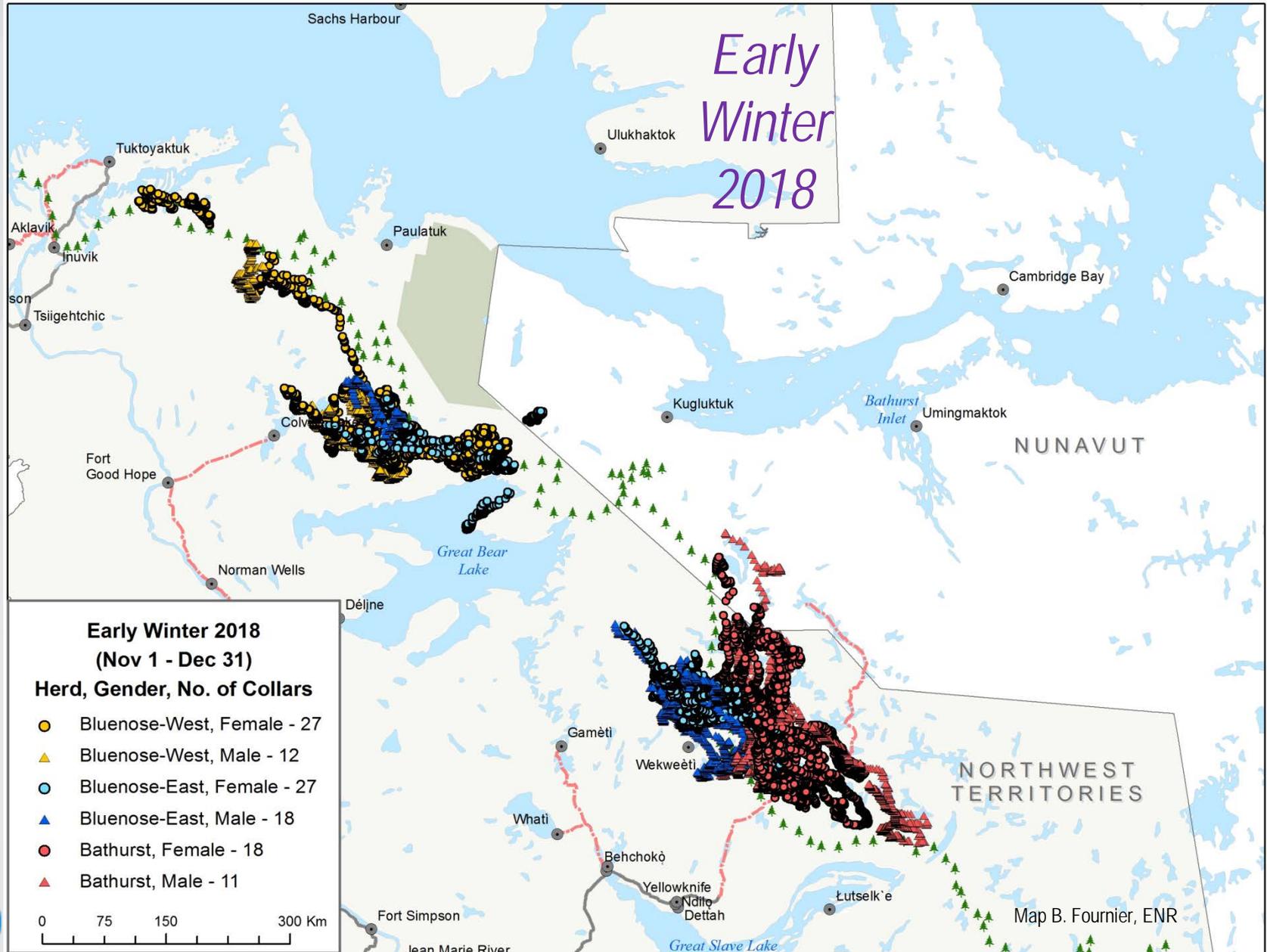
Bluenose-West, Bluenose-East & Bathurst Collars Aug. 1-Sept.15, 2018



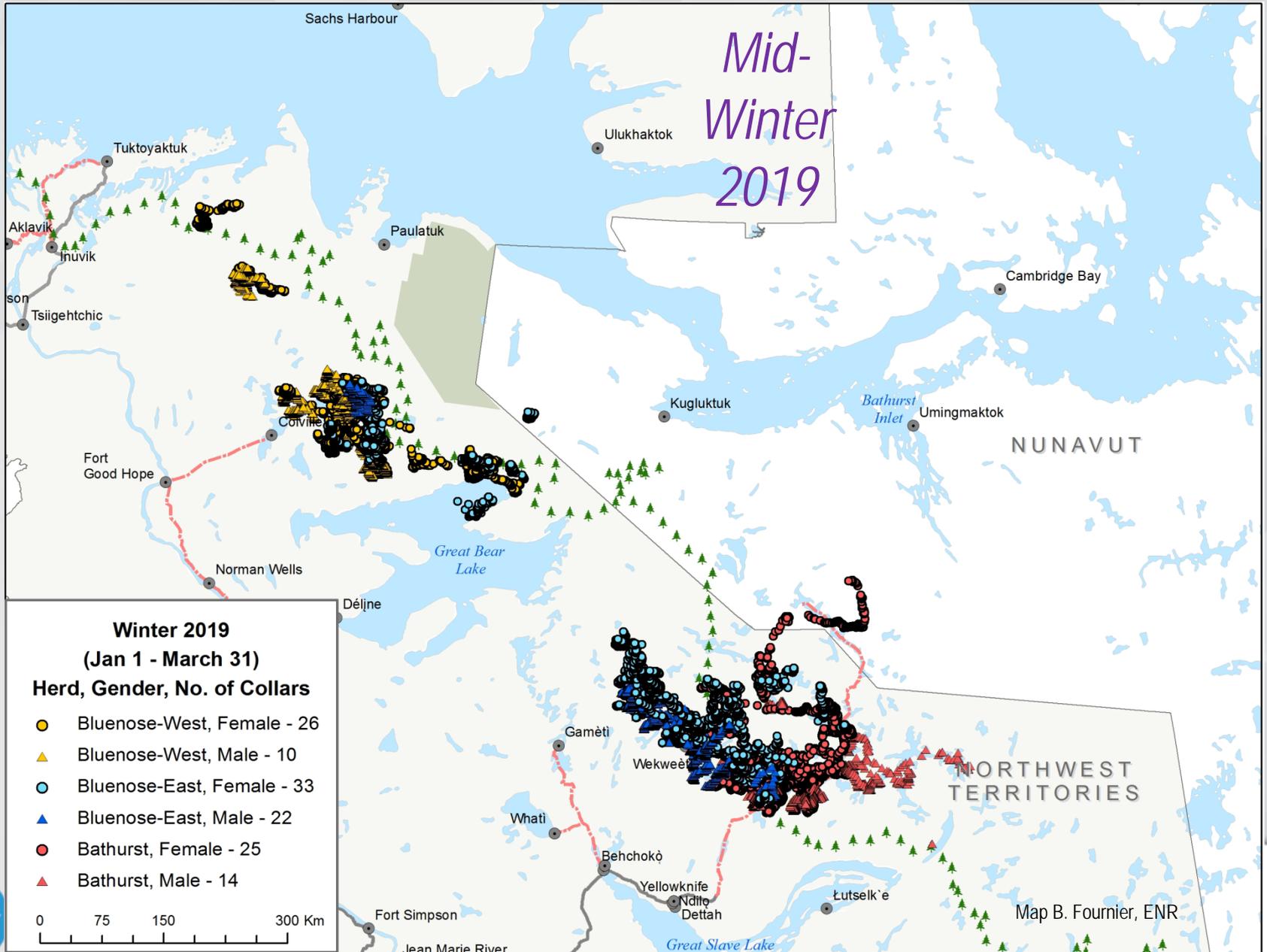
Bluenose-West, Bluenose-East & Bathurst Collars **Sept.15-Oct. 31, 2018**



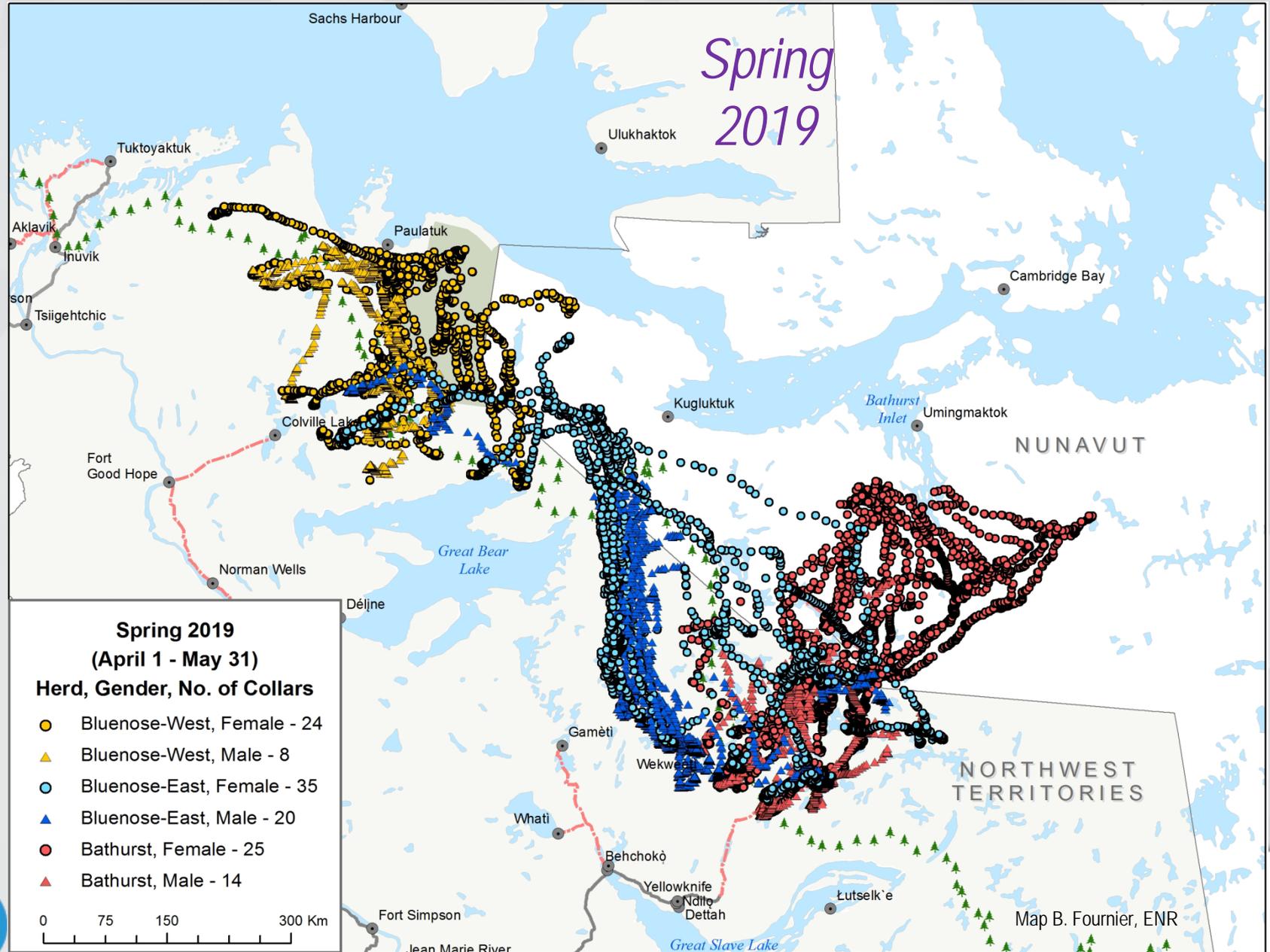
Bluenose-West, Bluenose-East & Bathurst Collars Nov.1-Dec. 31, 2018



Bluenose-West, Bluenose-East & Bathurst Collars Jan.1-March 31, 2019



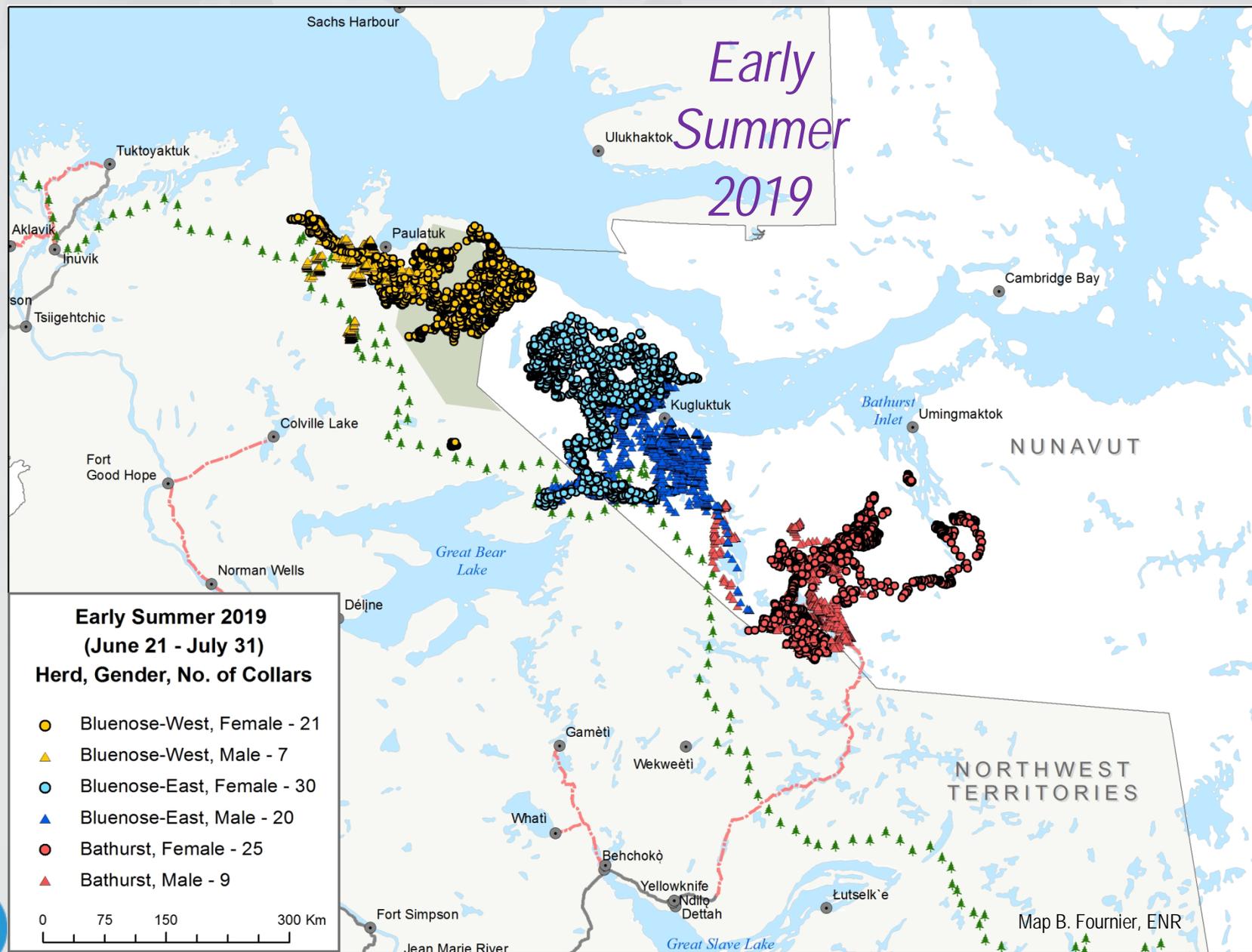
Bluenose-West, Bluenose-East & Bathurst Collars April 1-May 31, 2019



Bluenose-West, Bluenose-East & Bathurst Collars June 1-20, 2019



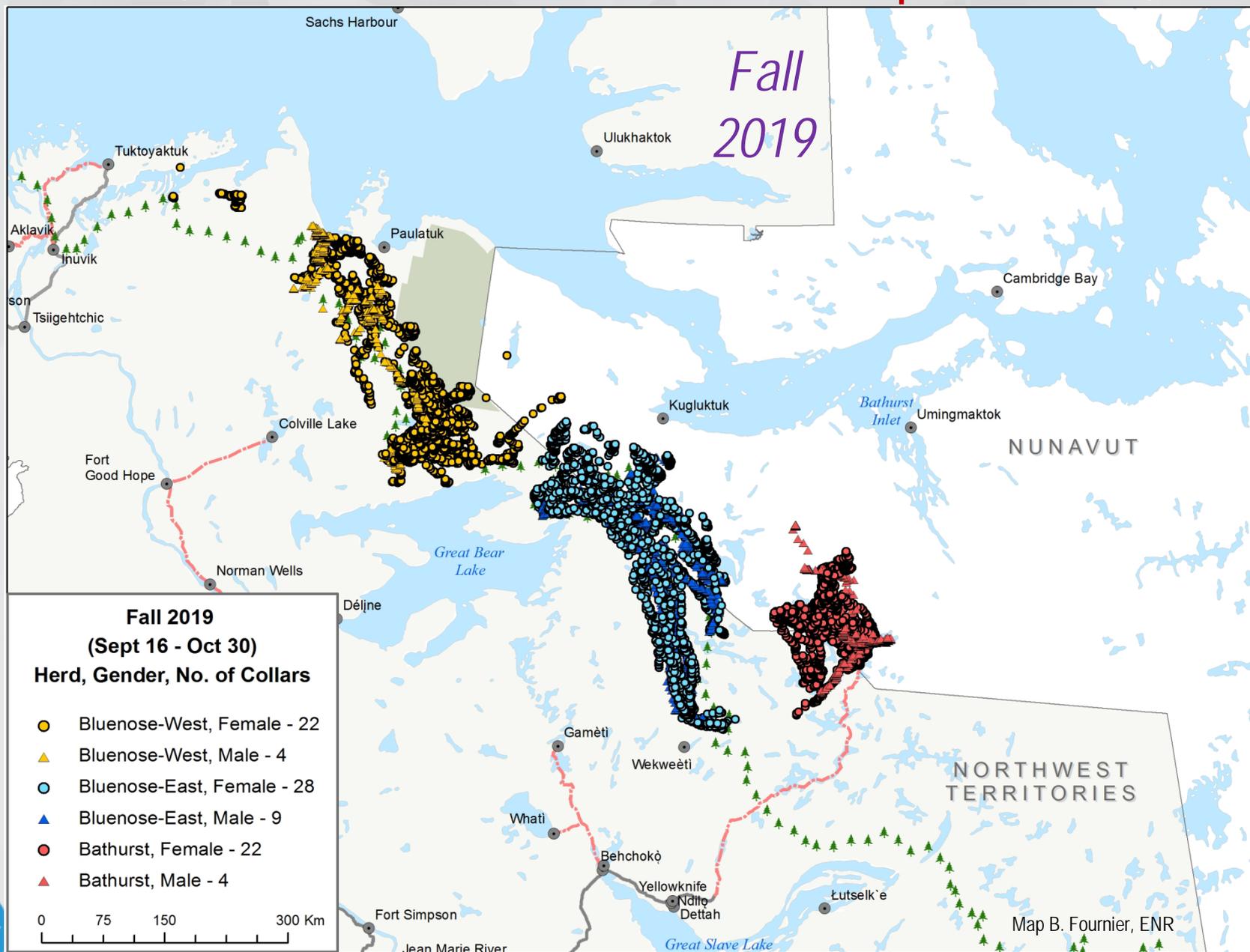
Bluenose-West, Bluenose-East & Bathurst Collars June 21-July 31, 2019



Bluenose-West, Bluenose-East & Bathurst Collars Aug. 1-Sept. 15, 2019



Bluenose-West, Bluenose-East & Bathurst Collars **Sept. 16-Oct. 30, 2019**



Questions?



Photo J. Adamczewski





Update on GNWT and Tłıchǵo Government Wolf (Dìga) Management and Monitoring Actions, Winter 2020-2021

Background

In the winters of 2019/2020 and 2020/2021 the Government of the Northwest Territories (GNWT) and the Tłıchǵo Government implemented wolf management actions to sufficiently reduce predation on the Bathurst and Bluenose-East barren-ground caribou herds to contribute to the stabilization and recovery of both herds. These actions were outlined in the *“Revised Joint Proposal on Management Actions for Wolves (dìga) on the Bathurst and Bluenose-East Barren-ground Caribou (ǵekwǵ) Herd Winter Ranges: 2021 – 2024”* and recommended by the Wek’èezhìi Renewable Resources Board (WRRB) in its Reasons for Decision Final Report (2021). The two governments are currently preparing an annual report of the 2020/2021 wolf management and monitoring activities in fulfilment of the WRRB’s Recommendation #20-2020. We provide this update in the interim.

Harvest Summary

This winter, two hunting camps specifically for harvesting wolves were set up within the Enhanced Wolf Harvest Incentive Area: the Tłıchǵo Government’s Dìga harvester camp at Roundrock Lake, and a camp with Inuit hunters from Kugluktuk, Nunavut (NU) based at Itchen Lake. The Tłıchǵo camp consisted of 16 hunters that harvested 32 wolves between 22 January and 29 March 2021. The Inuit camp consisted of 15 hunters that harvested 87 wolves from 31 January to 29 April 2021. Another 16 wolves were taken in the Enhanced Wolf Harvest Incentive Area from 7 hunters who accessed the area from the Tibbitt to Contwoyto winter road (Figure 1) for a total wolf harvest of 135.

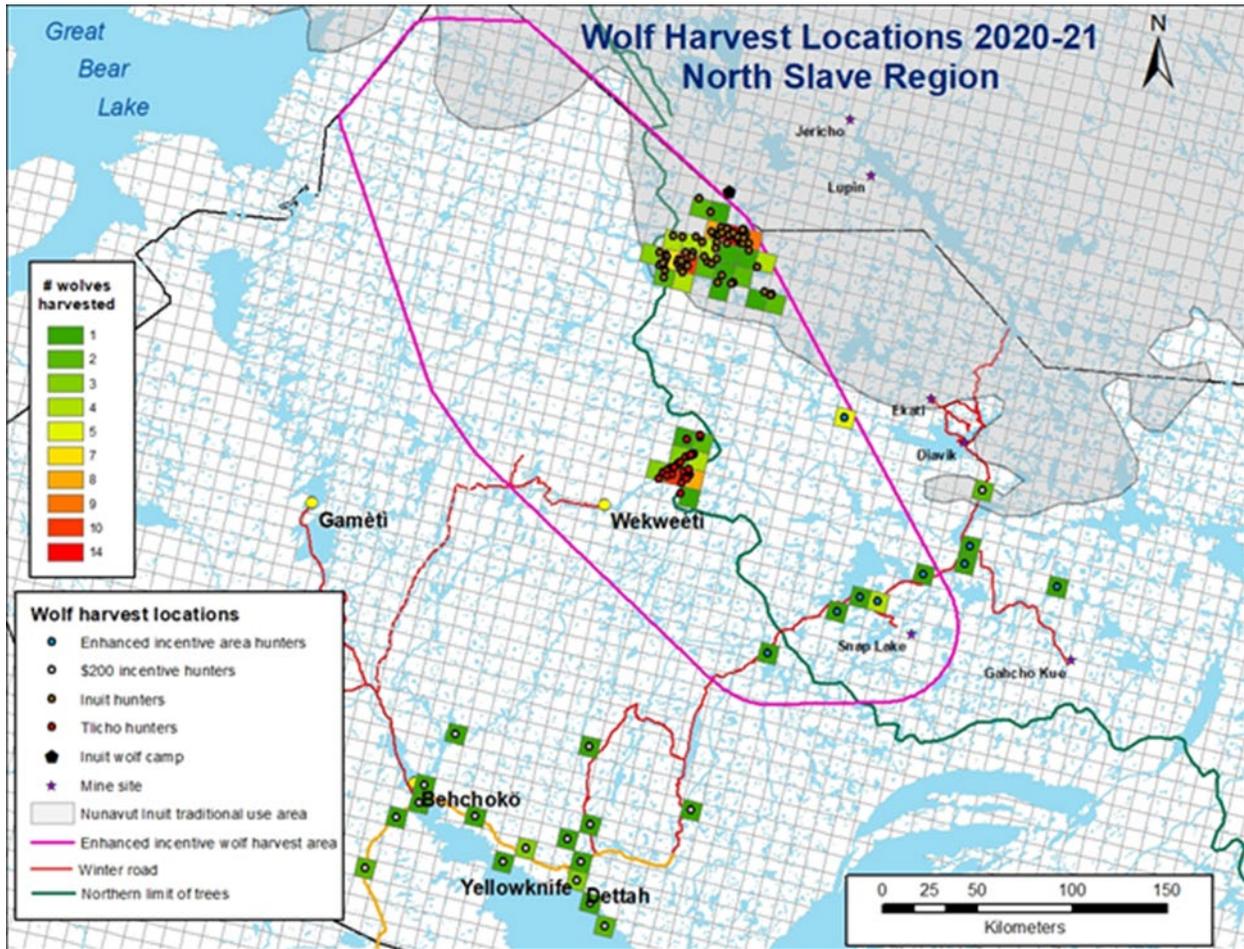


Figure 1. Location of 160 wolves harvested from 56 grid cells (10 km² each) in the North Slave Region, 2020-21. 135 wolves were harvested within the Enhanced Wolf Harvest Incentive Area.

A total of 135 wolves were harvested from the ground within the Enhanced Wolf Harvest Incentive Area in winter 2021 (Table 1). Most of the wolves harvested in 2021 occurred around the camps set up by Tłı̄ch̄o and Inuit hunters. The Tłı̄ch̄o Government's Dìga Harvesting Program was more successful this year resulting in a ten-fold increase in number of wolves harvested (i.e., 32 in winter 2021 compared to 3 in 2020) likely due to a number of factors related to the location of the camp. In 2020, the mobility of hunters was hampered by thick, soft snow, which limited travelling far distances. Similarly, Inuit hunters almost tripled their harvest within the incentive area from 35 in winter 2020, to 84 in winter 2021. The high spatial overlap of Bluenose East, Bathurst and Beverly caribou in winter 2021 likely contributed to the increased wolf harvest



Table 1. Monthly summaries of wolf removals in the Enhanced Wolf Harvest Incentive Area, winter 2020/21.

Winter 2020/2021	
Ground-Based Harvest	
Jan	20
Feb	39
Mar	42
Apr	34
Total	135

Questionnaire Summary

Hunters returned 117 completed questionnaires, dated between January 23rd and April 25th, 2021, to the ENR office, reflecting 79 hunting trips and 123 harvested wolves in the Enhanced Wolf Harvest Incentive Area. There are more surveys than total hunting trips because some groups submitted more than one survey form for the same trip. Of the 123 harvested wolves reported in the surveys, 21 did not have corresponding hunting effort data due to recording errors. Collectively, the total reported kilometers travelled by the hunting parties was 66,839 km, and the reported total hours spent hunting was 1,905 hours (Figure 2 and Table 2).

In comparison, in the 2019-2020 hunting season, 67 surveys were returned to ENR from the hunters from the Kitikmeot and North Slave regions, reflecting 39 hunting trips and 39 harvested wolves.

Table 2. Summary of 2019-2020 and 2020-2021 Wolf Harvester Surveys

	Completed Surveys	# Wolf Hunting Trips	# Wolves Killed by Hunters	Hours Spent	km Travelled
2019 - 2020	67	39	39	1,736	25,565
2020 - 2021	117	79	123	1,905	66,839

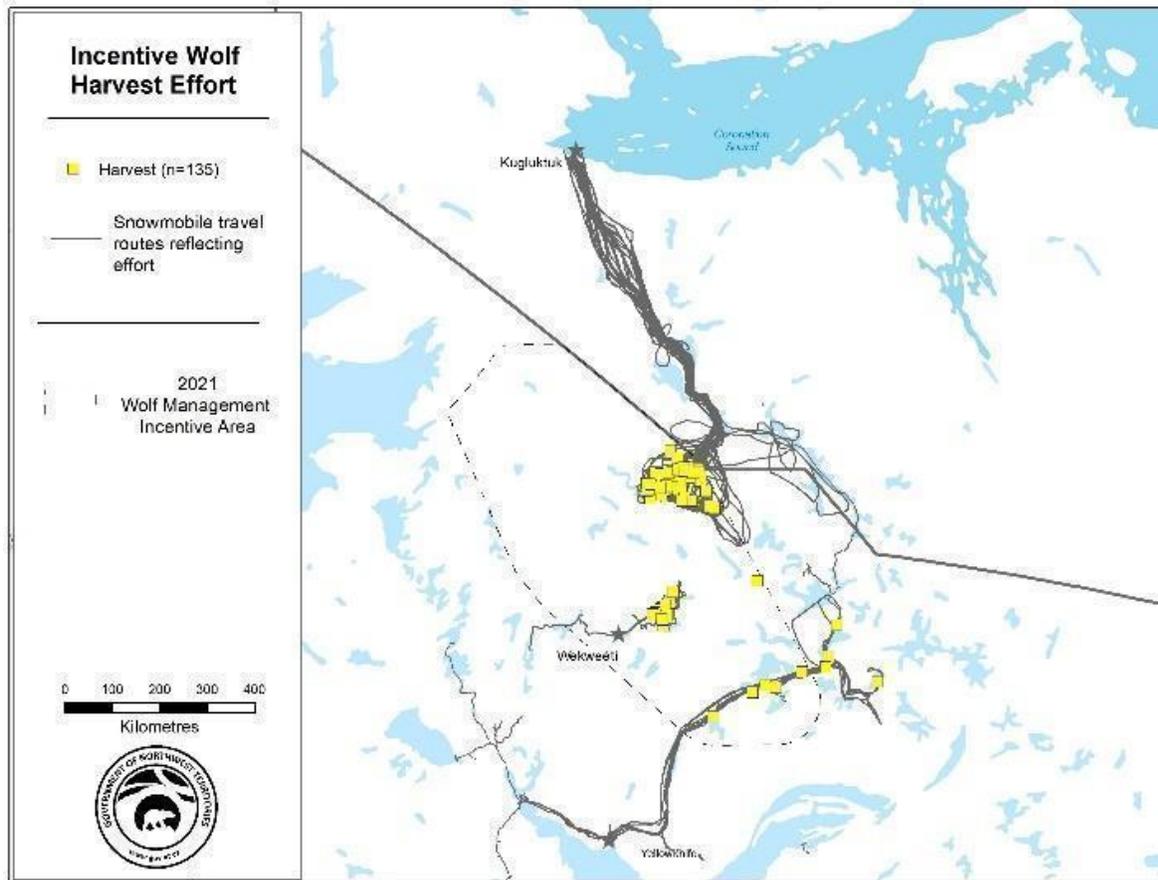


Figure 2. Wolf hunter tracks from hand-held GPS units during the 2020-2021 hunting season in the Enhanced Wolf Harvest Incentive Area.

GNWT contracted Data Sciences Inc. to review and provide recommendations on the survey design and delivery.

Some key recommendations include:

- Switch from a single page survey to a daily logbook model.
- Ask hunters about their overall experience on the trip and how it fared in comparison to previous hunting trips.
- Design a more compact version of the survey for hunters who did not complete responses daily.
- Make the compact version of the survey available online.

The company also provided an example logbook design with icons and small graphics. All recommendations are being considered for implementation in the upcoming wolf harvest season.



Catch per Unit Effort

Catch per unit effort (CPUE) is used to model the relationship between the probabilities of harvest and hunting effort to elicit information about the harvested population's abundance. CPUE is derived by dividing the total catch (i.e., harvest) by a unit of effort over a specified period of time (i.e., daily, weekly, or monthly). This report uses two units of hunter effort, kilometers and hours travelled on a daily basis, for locating and harvesting a wolf.

CPUE was higher in 2021 than in 2020. Hunters that submitted questionnaires in 2021 travelled on average 333 km to catch one wolf in the Enhanced Wolf Harvest Incentive Area, resulting in a CPUE (km) of 3 wolves/1000 km. The wolf encounter rate cannot be calculated because wolf observations were not recorded accurately by an adequate number of respondents. Hunters reported spending an average of 18.9 hours to harvest one wolf, over the course of the season, or 0.05 wolf/ hour. In comparison, in the 2019-2020 harvest season, the average CPUE (km) was 1.71 wolves/1,000 km, and CPUE (HR) was 0.04 wolf/hour. Within the 2021 harvest season, the CPUE in wolf/km and wolf/hour in relation to the cumulative wolf harvests by all three groups of hunters did not show an expected downward trend over the season.

Caribou Distribution, January - May, 2021

Collar data were used to derive monthly range extents for the Bathurst, Bluenose-East and Beverly caribou herds from January through to May 2021 (Figure 2). The Bathurst monthly ranges were almost completely overlapped (99-100%) by the Beverly herd and were overlapped by 56 - 59% by the Bluenose-East herd (Figure 3). In comparison, in winter 2020 the monthly overlap of the Beverly and Bluenose-East herd ranges with the Bathurst herd range varied from 36-56% and there was negligible overlap (i.e., 0-4%) of the monthly distribution of all three herds. The high amount of spatial overlap of all three herds in winter 2021 resulted in increased caribou density, which likely had a strong influence on the distribution and relative abundance of wolves on the winter range of the Bathurst herd.

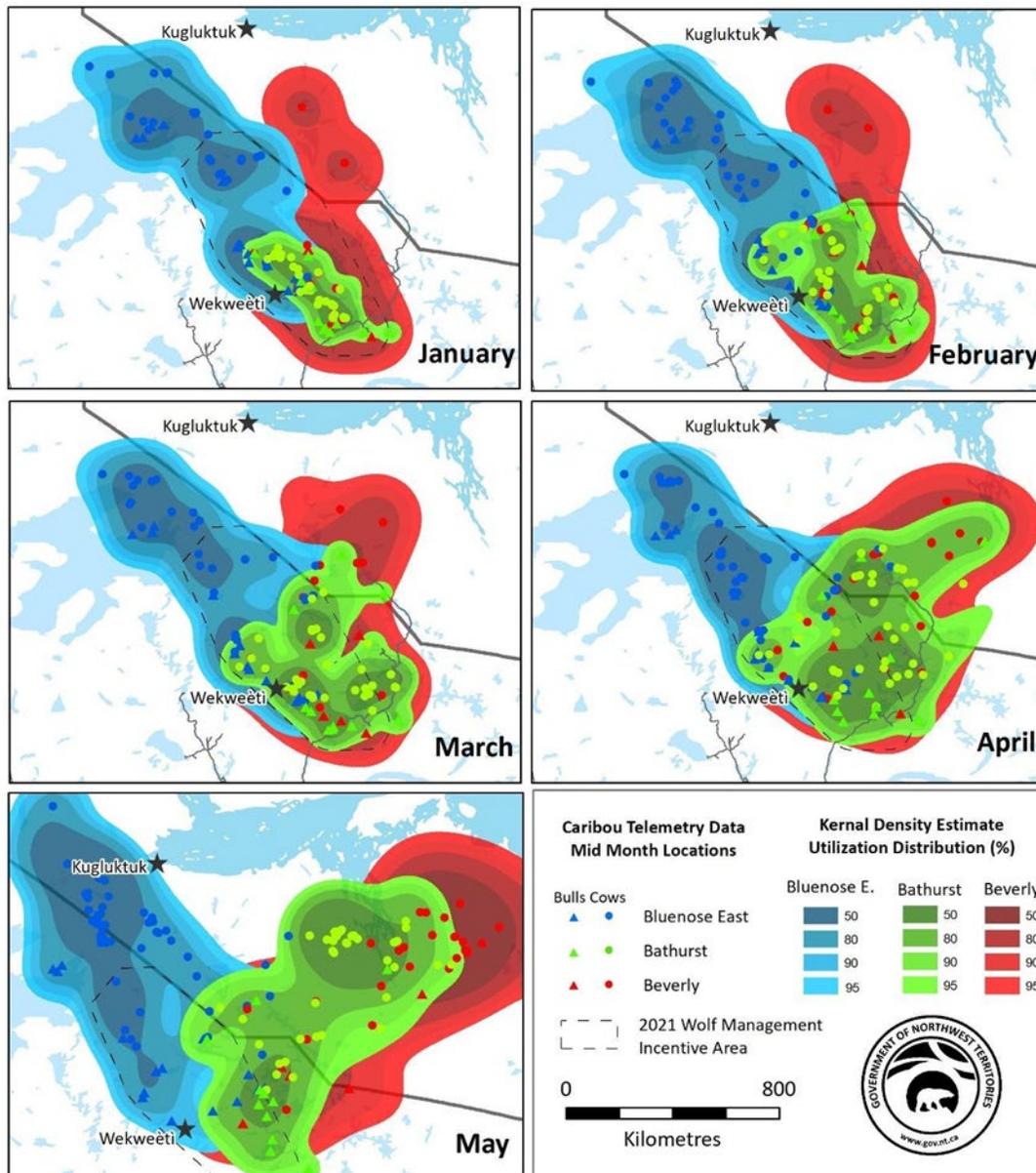


Figure 3. Monthly caribou distribution January to May, 2021 for Bathurst, Bluenose-East and Beverly herds.

Wolf Abundance Survey March 2021

In March 2021, the GNWT conducted an aerial survey of the Bathurst winter range to test a geospatial survey methodology for estimating wolf abundance. The Bathurst 95% KDE (March 6 – 20, 2021) was used to delineate the survey area and 160 out of a total 627 cells (from an 8 by 8km overlaid grid) were selected to survey in high and low density areas (Figure 4). Given the amount of overlap of adjacent barren-ground caribou herds with the Bathurst herd, we expected a relatively high density of wolves



within the survey area. However, the geospatial survey method resulted in an estimate of 89 wolves (31 - 147, 95% confidence limits) or 0.002 wolves / km² on the Bathurst winter range, with relatively low precision (CV=33.4).

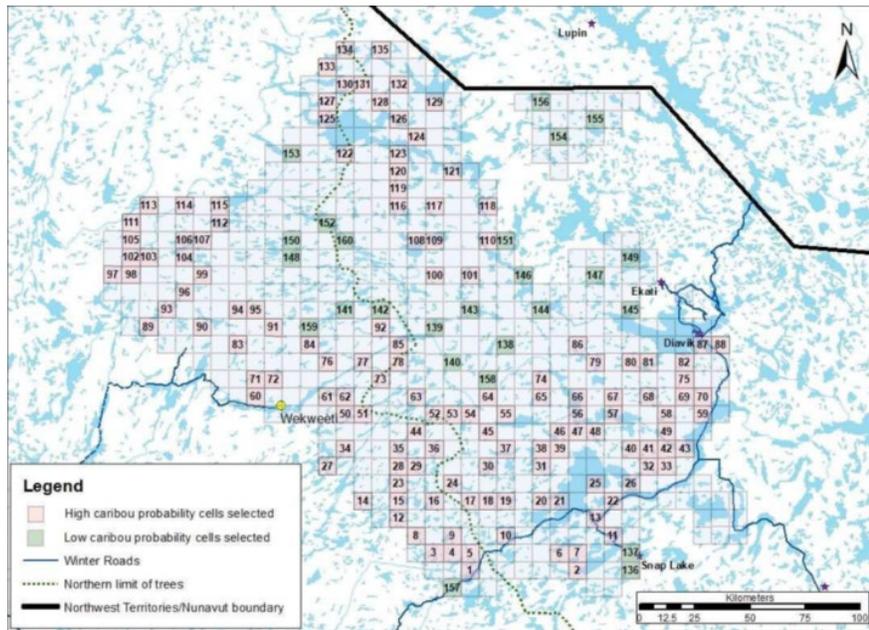
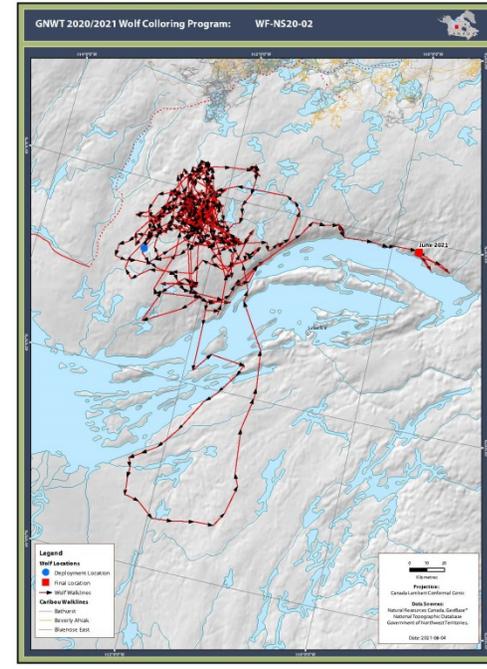
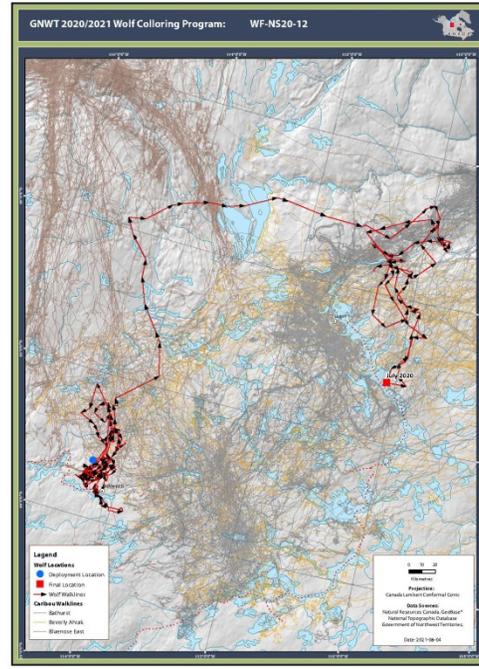
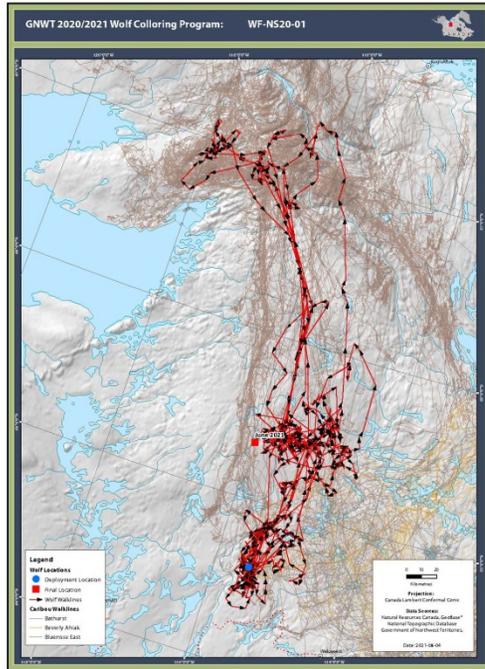


Figure 4. Distribution of 8 km x 8 km survey blocks in areas of higher caribou abundance (135 pink cells) and lower caribou abundance (25 green cells).

Wolf Movement Analysis

GNWT contracted Caslys Consulting Ltd. to conduct an analysis of wolf collar location data (March 2020 – June 2021) to examine seasonal movement patterns in relation to Bluenose-East, Beverly and Bathurst caribou herd movements. Nineteen collars were deployed on wolves on the Bathurst caribou herd winter range in 2021. These collars supplemented thirteen functioning collars that had been deployed in March and April 2020. The analysis was based on data available from 30 collars; data from 2 collared wolves were not included because those individuals died within a month of being captured. There are currently 22 of the wolf collars that are still active.

Based on initial analyses of annual movement patterns from collared wolves over the past two years, 61% have shown east-west movements (collared wolves associated with all three caribou herds equally), 28% are relatively stationary (collared wolves associated with caribou on the winter range) and 11% exhibit north-south movements (where collared wolves appear to be associated with either the Bathurst or Bluenose-East herds) (Figure 5).



a)

b)

c)

Figure 5. Wolf Movement Paths for three wolves showing the three general patterns observed in 2020 and 2021 collared wolves: a) North-South movements; b) East-West movements; and c) Stationary.



Herd Affiliations

Using the same approach as last winter (see Nishi et al. 2020) to assign wolf harvest locations relative to the winter range distributions of Bluenose-East, Bathurst, or Beverly caribou, we found that that most (53%) assignments were uncertain due to overlap with two or three caribou ranges. Based on patterns of spatial-temporal overlap with herd-specific collared caribou distributions, 64 (47%) of the 135 harvested wolves could be attributed to a herd. Of these 64 occurrences, most (n= 62) wolf harvest locations had the strongest overlap with collared Beverly caribou, and only 2 wolf locations overlapped closely with the Bathurst caribou. Seventy-one wolf harvest locations (53%) overlapped with equivalent utilization distribution isopleths of multiple herds, either 2 herds (n=44, 33%), or all three herds (n=27, 20%) (Table 3).

Table 3. Spatial overlap of wolf harvest locations in winter 2021 with distributions of collared caribou from Bluenose East, Bathurst, and Beverly herds.

Winter 2021	1 Herd*			2 Herds			3 Herds	Count	%
	BNE	BAH	BEV	BNE-BAH	BNE-BEV	BAH-BEV	BNE-BAH-BEV		
January	0	0	5	0	0	0	15	20	15%
February	0	0	17	0	10	3	9	39	29%
March	0	2	28	0	0	9	3	42	31%
April	0	0	12	0	17	5	0	34	25%
Count	0	2	62	0	27	17	27	135	100%
Sum	64			44			27	135	
%	47%			33%			20%	100%	

*BNE = Bluenose East caribou; BAH = Bathurst caribou; BEV = Beverly caribou



Wolf Carcass Necropsies

Out of the 160 wolves harvested across the North Slave Region, 111 wolves were necropsied and 100 of which, were within the Enhanced Wolf Harvest Incentive Area. Each wolf was examined for several parameters including health, condition, sex, age class, and cause of death. The wolves were widely distributed across sex and subjective age classes (Table 4).

Table 4. Summary of wolf demographic data, including sex (determined on necropsy examination) and subjective age class (juvenile = 1-2 years old, adult = 3-7 years old, geriatric = 8 years or older) (n=111).

Sex	Frequency
Male	58
Female	53
Age Class	Frequency
Juvenile	32
Adult	57
Geriatric	19
Unknown	3

Internal and external body condition scores ranged from 0.5 to 4.0 on a scale of 0-4; zero being the lowest condition score and 4 being the highest. The average coarse (internal and external combined) body condition score across all 111 examined wolves was 2.58, which is considered good body condition. Barren-ground caribou tissue was found in 64.5% of the stomachs sampled for contents at necropsy (Table 5).

Table 5. Stomach contents gross analysis results. Contents were described based on direct observation during necropsy, and then confirmed by high resolution photograph and/or physical analysis of stomach content subsample by a contracted expert. Results were summarized to reflect likely prey species in the sample of ingesta.

Stomach Contents	Percentage (n=111)
Caribou	64.5%
Empty/fluid	25.5%
Other*	8.2%
Human food material/garbage	1.8%

*Other includes vegetation, ptarmigan, grouse, fish, marten, and snowshoe hare.

For each wolf carcass, we documented injuries caused by each bullet wound and recorded shot locations according to 17 anatomical regions (see Figure 6), a technique adapted from Urquhart and McKendrick (2003). The anatomical region documented for each shot was determined based on the region where most damage from the bullet-wound tract occurred. Regions B, C, and H were considered



the regions where bullet wound tracts would be most likely to impact the brain, upper cervical spine, or heart, and therefore most likely to lead to rapid loss of consciousness or death. Shots in this area were considered *optimal kill shots*. As part of this assessment, these criteria were expanded to include shots to the chest/lungs (region G), which would be more reflective of ground-based shooting in winter field conditions. Under this approach, shots to this area were considered *acceptable kill shots*, assuming loss of consciousness within 180-300 seconds (AIHTS, 1997). Further assessment of these results is pending.

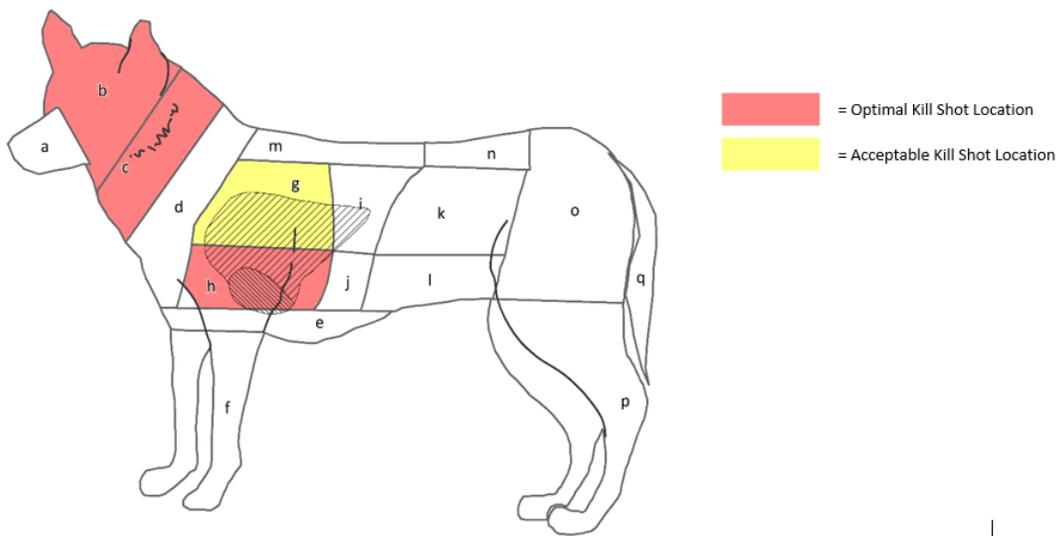


Figure 6. Delineating 17 anatomical regions of a grey wolf, identified to map location of injuries observed during necropsy investigations. The approximate anatomical location of the heart and lungs in a standing wolf are visualized here. The regions highlighted in yellow and red are considered the preferred ‘kill shot’ locations, which when shot, are most likely (compared to other regions) to lead to injuries consistent with (relatively) rapid exsanguination, loss of consciousness, or death.

Note:

Results are preliminary and subject to change based on ongoing analyses.



References

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Urquhart K. A. and I. J. McKendrick. 2003. Survey of permanent wound tracts in the carcasses of culled wild red deer in Scotland. *Veterinary Record* 152, 497-501.



Ms. Camilla Tutcho, Chair
Sahtú Renewable Resources Board
PO Box 134
TULIT'A NT X0E 0K0
srrb.camilla.tutcho@gmail.com

September 01, 2021

Dear Ms. Tutcho:

Délı̄ne 2021 Virtual Public Listening: Tı̄ch'ádı̄ hé Gots'edı̄ (Living with Wildlife) / Predators and Competitors

The Department of Environment and Natural Resources (ENR) has registered as a party to the upcoming Délı̄ne Public Listening Session. Given Colville Lake's application for judicial review of the Minister's Final Response to the Sahtu Renewable Resources Board (SRRB) following the 2020 Colville Lake Public Listening Session, ENR is concerned about the inclusion of the following two matters on the agenda:

- Primary responsibility for stewardship; and
- ʔehdzo Got'ı̄ne (Renewable Resources Council) powers.

On April 30, 2021, the Minister provided final responses for all decisions and recommendations related to these matters following the 2020 Colville Lake Public Listening Session and did not defer any decision or recommendation. The final responses and cover letter submitted to the SRRB by the Minister indicated that the issue of whether renewable resource councils may be granted the power to issue authorizations to participants from other Sahtu communities, and the related issue of the allocation, may be revisited at the SRRB's discretion after further discussions at a future public listening session. Given the pending Judicial Review, it would be premature to discuss these questions as we anticipate that the Court will be commenting on them, and any future decision making will need to take into account the findings of the Court.

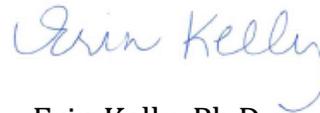
On August 6, 2021, Ms. Heather Sayine-Crawford, Director of the Wildlife and Fish Division for ENR participated in Teleconference #2. During that call, Ms. Sayine-Crawford expressed concern with the two proposed agenda items in the bullets above for the 2021 Délı̄ne Public Listening Session due to the two matters being at issue before the Northwest Territories Supreme Court. Depending upon the Northwest Territories Supreme Court's decision, and subject to any appeal, these two matters could be further addressed by the SRRB in a subsequent public listening session in a manner that is consistent with the court's decision.

.../2

ENR will be unable to meaningfully discuss these two matters at the upcoming Déłıne Public Listening Session, if they remain on the agenda due to the matters being before the court. Given the important nature of these discussions, ENR would like to ensure it can meaningfully participate in all parts of this process. ENR therefore respectfully requests that these two matters be removed from the 2021 Déłıne Public Listening Session agenda.

We look forward to working with the SRRB to complete the 2021 Déłıne Public Listening Session.

Sincerely,



Erin Kelly, Ph.D.
Deputy Minister
Environment and Natural Resources

c. Dr. Brett Elkin
Assistant Deputy Minister, Operations
Environment and Natural Resources

Ms. Heather Sayine-Crawford
Director, Wildlife and Fish Division
Environment and Natural Resources

Mr. Jeff Walker
Superintendent, Sahtu Region
Environment and Natural Resources

Ms. Deborah Simmons
Executive Director
Sahtu Renewable Resources Board