NUNAVUT WILDLIFE MANAGEMENT BOARD
Agenda: Regular Meeting No. RM001-2020
March 11, 2020 (9:00 AM - 6:00 PM)
Iqaluit, Nunavut

	No:	Item:	Tab:	Presenter:	Maximum Time
9:00 AM - 9:02 AM	1	Open Meeting		Chairperson	2 Minutes
9:02 AM - 9:03 AM	2	Declaration of Conflict of Interest		Chairperson	1 Minute
9:03 AM - 9:05 AM	3	Agenda: Review and Approval	1	Chairperson	2 Minutes
		Department of Environment- GN (GN-DOE): Issues/Decisions			
9:05 AM - 10:00 AM	3	Baffin Island Caribou Management Plan [Decision]	2	Government of Nunavut	55 Minutes
10:00 AM - 10:15 AM		**BREAK**			15 Minutes
10:15 AM - 11:00 AM	4	Update on the Department of Environment Long-term Ecosystem Monitoring Program [Information]	3	Government of Nunavut	45 Minutes
		Fisheries and Oceans Canada (DFO): Issues/Decisions			
11:00 AM - 11:45 AM	5	Action Plan for the Blue Whale, Northwest Atlantic Population, in Canada [Decision]	4	Government of Nunavut	45 Minutes
11:45 AM - 1:00 PM		**LUNCH**			1 Hour & 15 Minutes
1:00 PM - 1:30 PM	6	Total Allowable Catch Levels for Northern Shrimp and Striped Shrimp for the 2020-2021 Season in the Western and Eastern Assessment Zones [Decision]	5	Fisheries and Oceans Canada	30 Minutes

1:30 PM - 2:00 PM	7	Decisions and Recommendations of Arctic Cod Bycatch Limits in the Northern and Striped Shrimp Fishery within and adjacent to the Settlement Areas [Decision]	6	Fisheries and Oceans Canada	30 Minutes
2:00 PM - 2:30 PM	8	Removing Bycatch Designation for Northern Shrimp (*Pandalus borealis*) in Nunavut and Nunavik East [Decision]	7	Fisheries and Oceans Canada	30 Minutes
2:30 PM - 3:00 PM	9	Total Allowable Catch levels for Northern Shrimp for the 2020 Season in Shrimp Fishing Area 0 [Decision]	8	Fisheries and Oceans Canada	30 Minutes
3:00 PM - 3:15 PM		**BREAK**			15 Minutes
3:15 PM - 3:45 PM	10	Cambridge Bay Arctic Char [Information]	9	Fisheries and Oceans Canada	30 Minutes
3:45 PM - 4:15 PM	11	Department of Fisheries and Oceans Canada - Updates [Information]	10	Fisheries and Oceans Canada	30 Minutes
		Environment and Climate Change Canada: Issues/Decisions			
4:15 PM - 5:00 PM	13	Irniuviit Area Co-management Committee: Management Plans for the Qaqsauqtuuq and Ikkattuaq Migratory Bird Sanctuaries [Decision]	11	Environment Canada	45 Minutes
5:00 PM - 5:30 PM	14	Update on the consultations in Nunavut on the proposed listing of Barren-ground Caribou as Threatened under the federal Species at Risk Act (SARA) [Information]	12	Environment Canada	30 Minutes
		Kitikmeot Regional Wildlife Board: Issues/Decisions			
5:30 PM - 6:00 PM	15	Request to increase the Grizzly Bear Sport Hunt Tags in the Kitikmeot Region from 15 to 20 Tags [Decision]	13	Kitikmeot Board	30 Minutes
	16	Adjournment of RM001-2020			

SUBMISSION TO THE

NUNAVUT WILDLIFE MANAGEMENT BOARD

FOR

Information: **Decision: X**

Issue: Baffin Island Caribou Management Plan

Background:

- The Baffin Island Caribou Management Plan was initially developed in December 2014 in collaboration with ten affected Hunters and Trappers Organizations (HTOs), the Qikiqtaaluk Wildlife Board (QWB), Nunavut Tunngavik Inc. (NTI), and Parks Canada.
- The Baffin Island Caribou Management Plan was submitted to the NWMB for decision in March 2016. The Board requested the Department of Environment (DOE) conduct additional consultations due to edits made to the plan after initial consultations.
- A revised version of the Management Plan was submitted in September 2019 and included results from composition surveys completed from 2015-2018. The composition surveys were used to assess calf recruitment and approximate sex ratios. That version also identified the limitations of identifying population trends based on composition survey results.
- Earlier versions of the draft Management Plan incorporated 5 harvest management units and recommended harvest management actions for Baffin Island based on population phases. Those components were removed from the plan based on feedback from co-management partners during consultations.

Current Status:

- Following the September 2019 regular meeting, the NWMB requested that the Qikiqtaaluk Wildlife Board (QWB) provide comments, on the content of the proposed management plan, to the DOE by December 13, 2019. The QWB did not provide any comments by the deadline set by the NWMB.
- The NWMB also requested that the DOE address the following concerns:
    - The lack of specific management actions to address current threats to Baffin Island caribou.
    - The management plan has not been updated to include recent changes to Baffin Island caribou harvest non-quota limitations.

- The Minister of Environment sent a letter to NWMB dated January 6, 2020 to address the NWMB concern over specific management actions with the following response:
    - "Specific management recommendations such as Total Allowable Harvest (TAH) levels, which are based on scientific information, traditional knowledge, and consultation with co-management partners, were indeed not included in the management plan. This is because the wildlife management system in Nunavut requires that the NWMB and co-management partners have an opportunity to comment on management recommendations. It is our position that if specific management actions were provided in the management plan, this would be overly prescriptive and create a redundancy, or even a conflict, with the NWMB's existing approval process."
- The management plan has now been updated to include the recent NWMB decision to allow a harvest of up to 25 female caribou as part of the total TAH of 250 caribou, before its re-submission to the NWMB.

Consultation:

- Consultations on the draft Management Plan occurred March 16–April 7, 2015 and included discussions on caribou research and monitoring component of the Plan.
- The current Baffin Regional Biologist initiated consultation with all Baffin HTOs, which harvest Baffin Island Caribou, in the fall of 2018, following updates to the Management Plan, to incorporate current knowledge and management priorities.
- During the planning for fall consultations, which were proposed for September 24–October 5, 2018, the DOE received a letter from QWB requesting postponement until January. The DOE agreed to postpone the consultations to facilitate participation from co-management partners.
- The Draft Baffin Island Management Plan was provided to the QWB, NTI, NWMB and ten HTOs on September 25, 2018. At that time, the DOE Baffin Regional Biologist requested that the co-management partners provide comments on the Management Plan prior to the January consultations. An additional reminder email was distributed on November 26, 2018 requesting comments prior to the meetings.
- The Baffin Regional Biologist visited all Baffin communities, which harvest from the Baffin Island caribou herd, from January 7 – 18, 2019, to discuss composition survey results from 2015-2018, the Baffin Island Caribou Management Plan, sex-selective harvest options and future research needs.
- Consultations were held with HTO representatives from Kimmirut, Qikiqtarjuaq, Pangnirtung, Iqaluit, Cape Dorset, Hall Beach, Igloolik, Arctic Bay and Pond Inlet. Unfortunately, during this consultation tour, weather prevented the charter from getting to Clyde River. Consultations were subsequently completed with the Clyde River HTO on May 27, 2019.
- No comments on the draft management plan were received prior to or during consultations and as a result, the DOE asked for comments to be provided by April 15, 2019.

- The DOE received a second letter from the QWB requesting that the comment period be extended. The DOE agreed to accept comments until June 30, 2019. On June 27, 2019, the GN received an additional request from QWB that the comment period be further extended by a week. No comments were received from the QWB on the Baffin Island Caribou Management Plan during the consultation period of 25 September through 30 June 2019, neither up to 15 July 2019.
- A consultation summary report was provided to the NWMB for their regular meeting (RM003-2019) in September 2019.

Recommendations:

1. The GN requests that the NWMB approve the revised Baffin Island Caribou Co-Management Plan

GOVERNMENT OF NUNAVUT: DEPARTMENT OF ENVIRONMENT

Baffin Island Caribou Management Plan

Working together to ensure Baffin Island caribou harvest is sustainable

GN DOE

December 2019

Summary

The purpose of the Baffin Island Caribou Management Plan is to provide guidance and recommendations to decision makers regarding the harvest management and monitoring of caribou inhabiting Baffin Island based on the best available Inuit Qaujimajatuqangit and science. The main body of this management plan is a guiding document that will be reviewed on a ten year term with co-management partners. The appended *Action Plan,* which will be reviewed annually by the Department of Environment, recommends management more specifically for the next 5 years, 2019-2024. Barren-ground caribou, such as those inhabiting Baffin Island, are known to undergo large cyclical fluctuations in abundance over a 50-90 year period, transitioning from periods of low abundance to high abundance, with phases of increasing and decreasing between. Each of these periods is represented by a corresponding management phase: Red (low), Yellow (increasing), Green (high), and Orange (decreasing). Baffin caribou are currently in the Red Phase, which means they are extremely vulnerable to overharvesting which could cause extirpation or prevent recovery. This plan advises harvest management and recommends continuous systematic monitoring of this population.

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Baffin Island Caribou Management Plan

1.0 Objectives

The primary objective of the Baffin Island Caribou Management Plan (BICMP) is to be an adaptive guide to harvest and monitoring of the Baffin Island caribou population (hereafter *Baffin caribou*). Management recommendations within the plan are intended to allow the caribou population to increase once range conditions improve. The rate of the caribou increase is dependent on the number of caribou harvested, recruitment, habitat availability, range condition, disease, predation and extreme weather events such as icing. Increasing from low to high abundance may take from several years to several decades to occur. This cyclical fluctuation can be delayed or interrupted by stress related to the above factors and overharvest. By minimizing risks related to harvest we can improve the likelihood that the population will increase and fluctuate naturally. In order to manage the harvest successfully we require current and accurate information on the status of the caribou, the productivity of their habitat, and the status of the harvest. The BICMP summarizes the components of a comprehensive harvest management and monitoring program and provides broad recommendations for the next ten years. The appended Action Plan makes more specific monitoring and research recommendations for the next five years, and will be subject to Department of Environment (DOE) review on an annual basis and amended as-needed (Appendix 1). The BICMP is not intended to be an overview of Baffin Island caribou consultations, research or ecology, all of which can be found in other publications cited herein. The legislative context of the plan and how it relates to the Nunavut Agreement can be found in Appendix 2. The spatial area covered by this plan is shown in Figure 1.

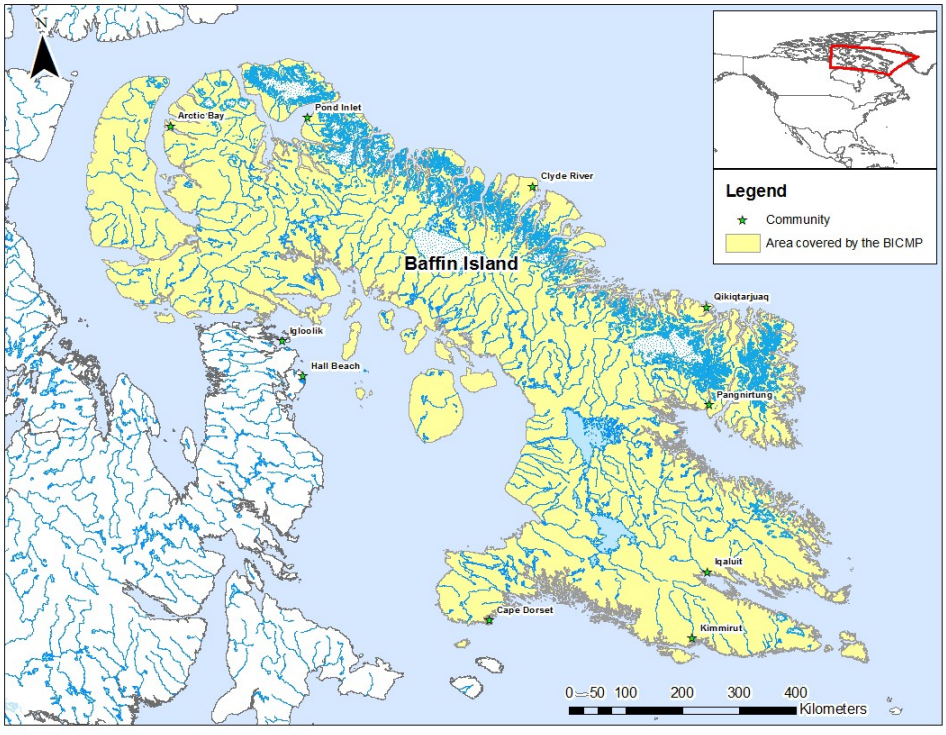


Figure 1. Area covered by the BICMP. All animals within this area are considered Baffin caribou and all harvest management and monitoring recommended herein is defined within these boundaries.

2.0 Participants

The BICMP affects all Nunavummiut; however, Inuit hunters from the ten communities which harvest caribou on Baffin Island (Iqaluit, Kimmirut, Cape Dorset, Pangnirtung, Qikiqtarjuaq, Clyde River, Pond Inlet, Arctic Bay, Igloolik and Hall Beach) will experience the greatest impacts. Co-management organizations that will contribute to the ongoing development and implementation of the BICMP include the Government of Nunavut Department of Environment, Baffin Hunters and Trappers Organizations (HTOs), Qikiqtaaluk Wildlife Board (QWB), Nunavut Tunngavik Incorporated (NTI), Nunavut Wildlife Management Board (NWMB), and Parks Canada (PC). Management of Baffin caribou will be most successful if co-management partners work collaboratively to ensure the sustainability of Baffin caribou.

In Nunavut, the Nunavut Wildlife Management Board is the main instrument of caribou management, subject to the ultimate authority of the Minister of Environment. The NWMB is an Institution of Public Government that includes representatives appointed by the Designated Inuit Organizations (DIO) and relevant government departments. The NWMB holds public hearings to garner input and makes decisions regarding caribou management based on information provided by DOE, HTOs, QWB, NTI and PC. These decisions then require the approval of the Minister of Environment to be enacted.

The Department of Environment has the legislated mandate to manage caribou in Nunavut. This includes the collection of scientific research and Inuit Qaujimajatuqangit (IQ), the development of caribou management plans, and ensuring legislative and regulatory compliance of harvest restrictions through education and enforcement. DOE provides background information on terrestrial wildlife species in Nunavut and provides recommendations to the NWMB, which then makes management decisions.

Hunters and Trappers Organizations represent hunters of each community on Baffin and provide conservation and management input directly through the QWB and NWMB public hearings.

The Qikiqtaaluk Wildlife Board works with the HTOs on harvesting practices and restrictions and allocates harvest within the Baffin region. The QWB also provides IQ input to the NWMB for making caribou management decisions.

Nunavut Tunngavik Incorporated ensures that all processes adhere to the Nunavut Agreement. Inuit harvesting rights are set out in the Nunavut Agreement and beneficiaries retain last harvesting rights until conservation restrictions become necessary to ensure long term sustainable harvest.

Parks Canada is responsible for managing caribou within lands designated as National Parks. This includes Sirmilik and Auyuittuq National Parks for the purpose of the BICMP.

DOE consults with HTOs, QWB, NTI and communities when proposing research activities or management actions.

3.0 Review/Timelines

The BICMP Action Plan (Appendix 1) will be reviewed by the DOE whenever there is new information that informs caribou management. This includes new Inuit Qaujimajatuqangit as well as scientific data regarding the status of Baffin caribou, population delineation, caribou range/habitat and/or harvest. The overarching BICMP will be revisited by all affected parties once every 10 years. The 10 year review will include input from all affected parties and will include community and agency consultations. Once completed or revised, the BICMP will be submitted to the NWMB for consideration. Once the NWMB approves the plan it can be implemented, subject to final approval by the Minister of Environment.

4.0 Baffin Caribou

4.1 *Abundance*

Inuit Qaujimajatuqangit and archeological excavations of Thule sites suggest Baffin caribou have experienced large changes in abundance for at least the last 1000 years (Ferguson 1998; Stenton 1991). Fluctuations in caribou abundance seem to be cyclical, occurring over a period of 50-90 years. At its peak, the population is at least ten times larger than it is when caribou are scarce and numbers are at a minimum (Campbell et al. 2015; Ferguson 1998; Stenton 1991). These large scale fluctuations have been observed in many other caribou populations throughout the Arctic (Ferguson 1997; Gunn 2001; Morneau and Payette 2000). These cycles are believed to be natural and result from the interaction of caribou, vegetation, predation, and disease. On Baffin Island there are few predator species that persist at low densities, and it is believed much of the fluctuations in Baffin caribou abundance are driven by the interaction of caribou and their habitat. Caribou numbers increase until they surpass the carrying capacity of the environment. Eventually, large numbers of caribou degrade their range and the population declines quickly to low numbers until the range conditions improve and the cycle begins again (DOE 2015; Ferguson 1997; Ferguson and Messier 2000; Ferguson et al. 2001).

We divide the caribou cycle into 4 phases for the sake of caribou management. The duration of these phases are estimated from IQ and scientific observations during the previous caribou cycle (Ferguson et al. 1998):

Red Phase:

Caribou abundance is at a minimum (<10% of peak) during this *low* phase. During this phase, extirpation caused by overharvesting is possible for some or all of Baffin Island. Near the end of this phase caribou range will begin to recover and the population will increase in number and distribution. The rate of population increase is dependent on many factors but it can be slowed as a result of harvesting. We are currently in the Red Phase (2019). The last Red Phase spanned 25-30 years between about 1935-1965 (Ferguson 2005).

Yellow Phase:

Caribou abundance and range expand during this increasing phase. During the latter part of this phase the rate of increase can become quite high. Heavy harvest during the Yellow Phase could actually slow this rate of increase and prolong this stage. The last Yellow Phase spanned 25-30 years between about 1965-1990 (Ferguson 2005).

Green Phase:

Caribou abundance peaks and then begins to decline during this high phase. The last Green Phase spanned about 10 years between about 1990 and 2000 (Campbell et al. 2015; Ferguson 2005). During this phase the population far exceeds the ability of the environment to support it. The higher the number of caribou and the longer these numbers persist, the longer the recovery will be when the range recovers after the next Red Phase. During this phase, heavy harvest pressure could reduce the period to the next *increasing* and *high* phase.

Orange Phase:

Caribou abundance declines rapidly during this declining phase. Calf production and adult survival decline. The last Orange Phase spanned 10-15 years from about 2000-2010. Harvest in the early part of this phase will hasten the decline and could extirpate animals from certain areas as the population again enters the Red Phase.

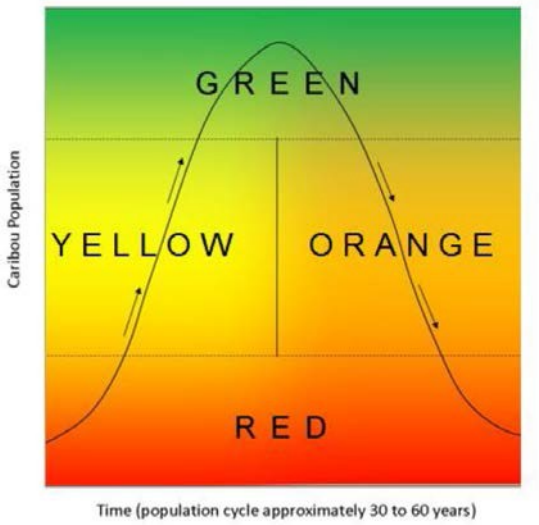


Figure 2. Population dynamics of Barren-ground caribou herds identifying *low/red, increasing/yellow, high/green* and *declining/orange* population phases (ACCWM 2014).

We collected demographic information through composition surveys from 2015-2019, that can be used to determine whether the caribou population is increasing, stable or decreasing. However, trends identified using composition survey data should be verified with additional abundance information prior to committing to specific management actions. We also lack the necessary historical data to determine what population sizes would constitute transitions between phases or to set thresholds, as has been done with other caribou herds across the Arctic (Advisory Committee for Cooperation on Wildlife Management (ACCWM) 2014, Beverly and Qamanirjuaq Caribou Management Board (BQCMB) 2005, Porcupine Caribou Management Board (PCMP) 2010). It is the intention of this plan to outline what research needs to occur for this data to be available in the future.

4.2 *Distribution*

Caribou are not evenly distributed across the landscape (Figure 3; Campbell et al. 2015). Barren-ground caribou tend to form distinct groups called herds, which utilize unique geographic areas that include calving grounds and migration routes and may have unique morphometric traits (Geist 1998). IQ and scientific analyses utilizing limited data suggest there may be several distinct subpopulations of caribou on Baffin Island. Available IQ and limited scientific information suggest there may be three to perhaps five distinct herds of caribou inhabiting Baffin Island. Inuit harvesters have suggested that caribou from different areas of Baffin have very different physical characteristics, and taste. Size, coloration, and eyelash length have all been cited as examples where caribou differ from one part of Baffin to another. Currently there is insufficient scientific data to delineate these populations with confidence (Campbell et al. 2015).

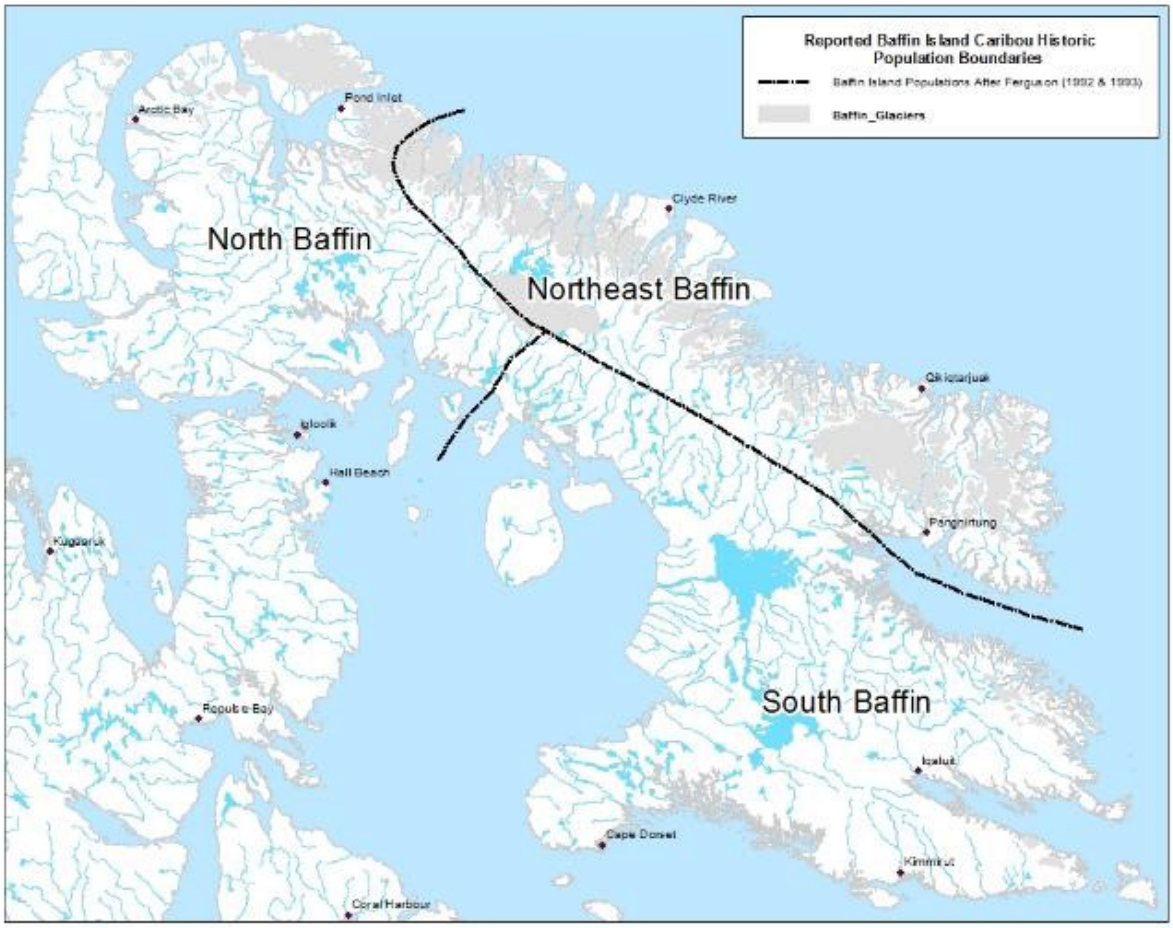


Figure 3. IQ studies with Inuit of Baffin Island in the early 1990s by Ferguson (1993) provided three regional caribou groupings or geographic areas.

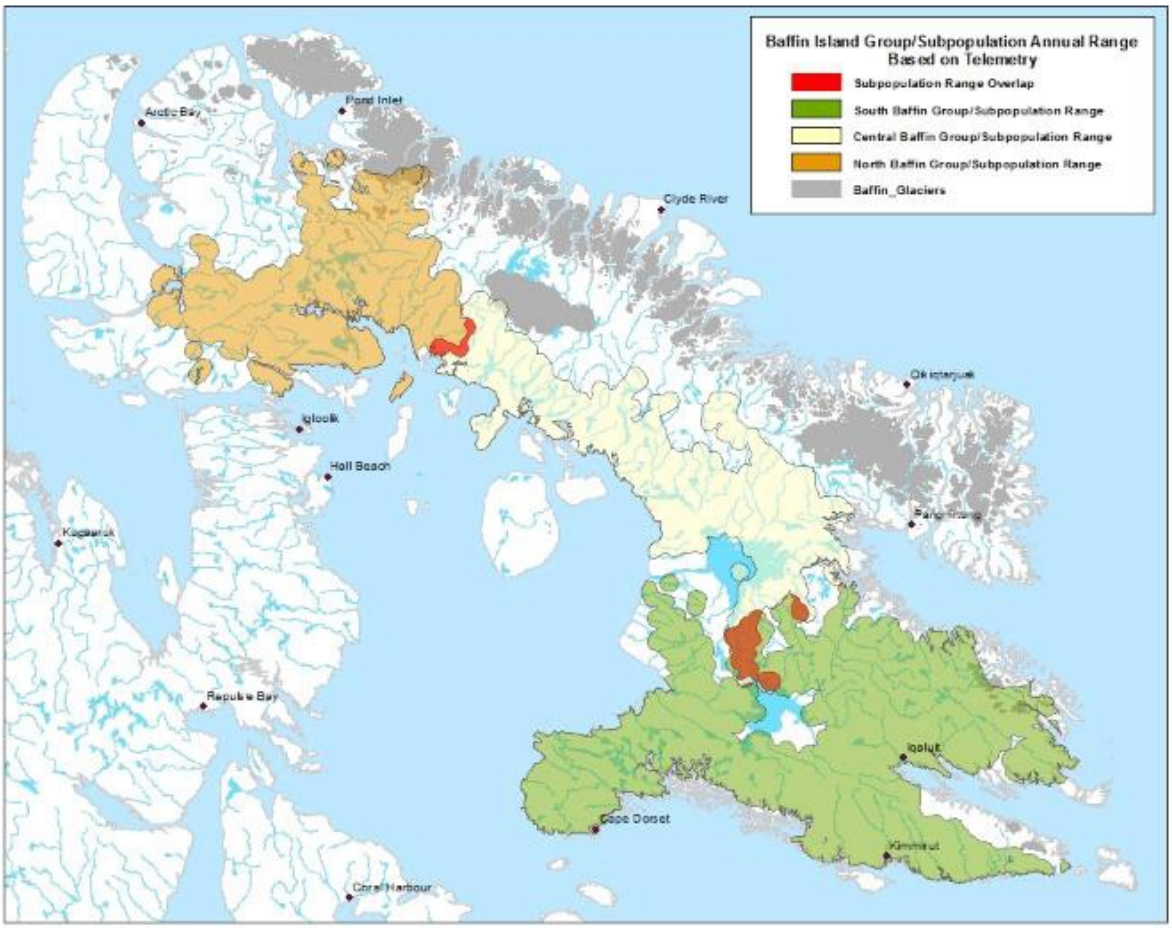


Figure 4. Caribou Group/Subpopulation annual range delineation based on telemetry studies from 1987 to 1994 (primarily South Baffin), and 2008 to 2011 (North Baffin) (Campbell et al. 2015). For a detailed description of methods used to produce this preliminary separation of Baffin caribou see Campbell et al. (2015).

4.3 *Current Status*

Baffin caribou are currently in the Red Phase (2019). In the early 2000's, IQ gathered from hunters across Baffin suggested the caribou had suffered a severe decline from the 1990's. Due to the apparent decline reported by hunters across Baffin, a study was designed incorporating IQ and the first population estimate of the whole of Baffin caribou range was completed in February and March 2014. As of March 2014 there were 4,652 (3,462 to 6,250; 95% CI) caribou on Baffin Island, including the nearby Prince Charles Island in Foxe Basin. Most of these caribou are concentrated in south Baffin and Prince Charles Island (Table 1; Figure 5; Campbell et al. 2015). This corresponds to a population decline of more than 95% based on the 1991 qualitative estimate derived from IQ (Ferguson 1998). As of March 2014 there were 159 - 622 (95% CI) caribou in North Baffin (Table 1; Figure 4). Caribou in this region are particularly vulnerable to extirpation.

Table 1. Estimates of caribou abundance by survey area *(Figure 5)* from the February and March 2014 Baffin Island survey.

Strata (Survey Area)	Caribou estimate	95% Confidence Limit (caribou estimate range)
North Baffin		
Borden Peninsula	6	1-30
Mary River	224	96-521
North Central Baffin	85	31-230
Total	**315**	**159-622**
South Baffin		
Central Baffin	1,091	662-1,798
Foxe Peninsula	216	48-972
Hall Peninsula	887	467-1,686
Meta Incognita Peninsula	539	256-1,138
Prince Charles Island	1,603	1,158-2,220
Total (+ Prince Charles Island)	4,337	3,169-5,935
Total (- Prince Charles Island)	**2,734**	**1,777-4,207**
Baffin Island Total	**4,652**	**3,462-6,250**

Although there is widespread agreement amongst Inuit hunters and scientists that there are much fewer caribou on Baffin now than in the 1990s, what happened to them remains a matter of debate. Many Inuit that were consulted during the 2013 DOE Baffin caribou IQ research study (hunter-elder survey) and community public opinion poll, and the 2012-2015 community and HTO consultations believe that caribou numbers have not actually declined as scientists believe. Instead, they believe that the caribou have moved somewhere else, either far away or into the mountains (DOE 2015, Kotierk 2015a, Kotierk 2015b). Most believe that the bulk of the reduction in caribou numbers was caused by a mass migration onto the mainland via the Melville Peninsula. For this reason the Melville Peninsula was included in the 2014 Baffin caribou aerial survey (Figure 5). The most recent data suggests that caribou numbers have also declined on the mainland, though to a lesser extent than on Baffin. Recent genetic analyses suggest Melville caribou are genetically separated from Baffin caribou which are genetically uniform. Whether the caribou moved or have declined, what happens to the ones that remain is the focus of the BICMP.

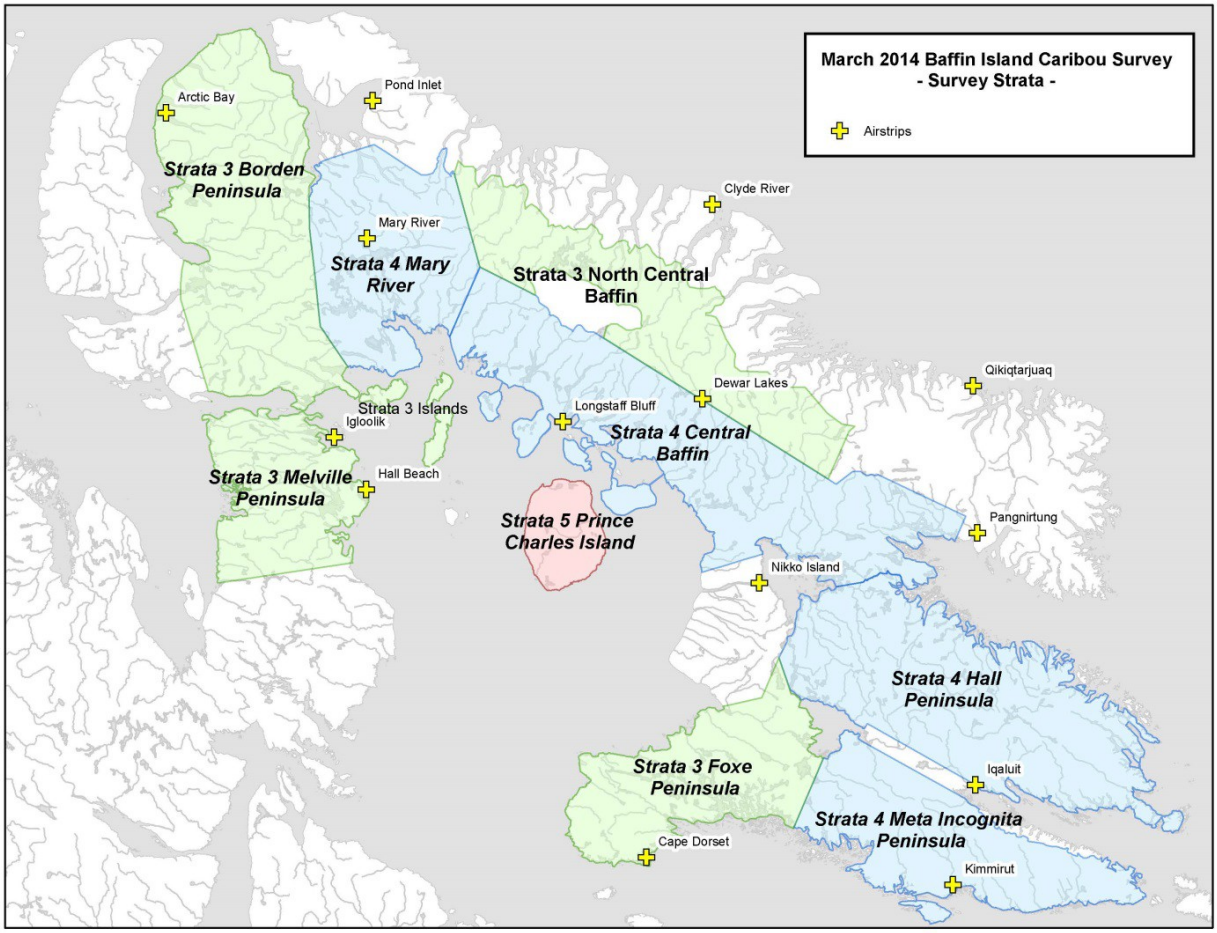


Figure 5. Survey Areas for the Baffin Island Caribou Survey – March 2014 corresponding to population and sustainable harvest estimates.

5.0 Harvest

5.1 *Harvest Management*

Caribou are important for cultural use and subsistence in Nunavut and have been harvested by Inuit for the last 1000 years (Stenton 1991). Ten Qikiqtaaluk communities and roughly half of all Nunavummiut rely on Baffin caribou as a source of food and traditional clothing. Human harvest could impact Baffin Island caribou populations, especially with increasing access and modern hunting techniques. If harvest, along with other forms of mortality such as predation and natural causes, surpasses calf recruitment, then population decline will result. Harvest management involves ensuring that the number of caribou hunted does not negatively affect the ability of people to harvest animals in the future, thus ensuring that Inuit can harvest caribou for the next 1000 years and beyond.

The potential impact of harvest is greater at times or in geographic areas where there are few animals. Furthermore, overharvesting in localized areas could lead to population fragmentation and added susceptibility to extreme weather events, which greatly increase the risk of extirpation. The extirpation of caribou by overharvesting has occurred previously on Southampton Island (Coral Harbour Hunters and Trappers Organization and Nunavut Department of Environment 2011; MacPherson and Manning,

1967). Consideration should be given to distributing harvest in proportion to available caribou, ideally for each distinct herd as herds become further delineated with ongoing research.

Harvest can occur and can even be encouraged at a sustainable level depending on what phase of the caribou population cycle is occurring. Harvest rates are set to ensure that harvest does not cause a decline in Baffin caribou and does not inhibit repopulation out of the current low phase. Harvest management could include management tools such as: Total Allowable Harvest (TAH), moratoriums, harvest management units (MUs), Non Quota Limitations (NQLs), and seasonal restrictions. Implementing a TAH means restricting the number of caribou harvested, while NQLs restrict where and/or what kind of caribou (e.g. cows, bulls during the rut, etc.) can be harvested. The maximum sustainable harvest for Barren-ground caribou populations used in the BICMP match our current understanding of caribou ecology and is based on empirical data and demographic modeling for Barren-ground caribou herds (see for example: Alaska Department of Fish and Game 2001; Porcupine Caribou Management Board 2010). A sustainable harvest level for caribou populations is 0-3% (bulls only) depending on population trajectory (decreasing, stable, or increasing). Higher level harvests can be sustained if there is little to no predation and rapid population growth; however this would increase risk and require intensive monitoring to ensure sustainability. Each cow harvested in the population is equivalent to approximately 3 bulls; therefore, a sustainable mixed harvest would need to be proportionately lower. Harvest should be restricted in accordance with the Nunavut Agreement, giving preferential and last harvesting rights to Inuit Beneficiaries (Nunavut Agreement 1993). Non-beneficiary harvesting will be residual to the achievement of Basic Needs Level harvest, as determined by NWMB in consultation with NTI, QWB, HTOs and DOE (article 5.1.3 (a) (i) and (ii), Nunavut Agreement 1993).

Harvest equal to the population growth rate will prevent any population recovery. Any harvest that occurs during in the *Red* or *Yellow Phase* will mean it will take longer for the population to recover. Harvest can be unrestricted and even encouraged in the later *Yellow* and *Green Phases*.

5.2 *Current Status*

The cause for the recent *Orange Phase* caribou decline (2000-2010) is likely a combination of factors (described in *4.1 Abundance*) and is not assumed to be the direct result of overharvest. However, overharvesting when there are so few animals may lead to further decline and possibly even extirpation of this population. At the very least, overharvest will restrict the capacity of the caribou population to increase as range conditions improve. The impact of harvest will be more or less significant depending on the population trajectory (decreasing, stable, and increasing). If calf recruitment and survival are high then a higher harvest level can be sustained. However, we do not know if Baffin caribou are currently increasing or decreasing because we do not have sufficient recent demographic data. Multiple years of demographic data are needed to establish what the trend is for this population.

Until recently there has been no mechanism by which DOE could collect reliable harvest information, and no reliable harvest statistics exist. Effective in 2015, the Minister of Environment accepted a decision by the NWMB to allow a limited harvest of 250 bull caribou including mandatory reporting. This harvest regime was in place until July 15, 2019 when the Minister accepted a decision from the NWMB to maintain the total allowable harvest of 250 Baffin Island caribou and change the non-quota limitation to allow for up to 25 females (cows) without calves to be harvested within the total allowable harvest. Future harvest management decisions will be made through the NWMB and Nunavut Agreement process, which includes opportunities for input by interested public, communities and co-management partners.

6.0 Monitoring

Sound management is not possible without information. Uninformed management will risk further decline, prevent recovery and possibly lead to the extirpation of caribou from Baffin Island. Successfully managed caribou populations require a multitude of information, including harvest levels, caribou abundance, population trend, and range status (Table 2). For the sake of brevity and clarity, monitoring methodologies are not explained in detail in the BICMP (methodological references can be found in GN project reports).

6.1 *Community Involvement in Monitoring*

All monitoring activities undertaken by DOE involve participation by community members and regional HTOs (*see for example* Campbell et al. 2015; Goorts 2014; Jenkins et al. 2012; Jenkins and Goorts 2012; Nunavut Department of Environment 2013). This includes a) scoping and design of surveys, b) consultation and consideration of the cultural and ethical appropriateness of study techniques and c) involvement in research activities through Inuit expertise and direct employment as per the guidelines in the Nunavut Agreement (article 5.1.6, Nunavut Agreement 1993).

6.2 *Inuit Qaujimajatuqangit*

Inuit Qaujimajatuqangit (IQ) is the system of values, beliefs and knowledge gained through living and hunting on the land over many generations. The Government of Nunavut DOE mandate is to collect and utilize IQ alongside scientific data. DOE conducted IQ research on Baffin caribou in 2013. This was comprised of hunter-elder traditional knowledge (TK) interviews and public opinion poll surveys in the various Baffin communities (Kotierk 2015a, Kotierk 2015b). DOE considers IQ and science together when making management recommendations (Nunavut Agreement article 5). IQ is also collected during project consultations and has helped inform scientific study design on numerous occasions. IQ is an important component for designing studies, and observations made by local harvesters provides valuable information on the status, distribution and behaviour of Baffin caribou.

6.3 *Harvest Reporting*

Quantifying the number of animals being harvested is important in all management phases, but essential when the population is low. Our understanding of harvest is crucial to sound management. The sex and age of harvested animals is important, as mortality of cows and calves may have a significant role in herd dynamics. Not knowing harvest levels severely hampers modeling and management efforts. There are several ways that caribou harvest can be quantified, but the most reliable method is mandatory reporting through a tag system, which is recommended herein and elsewhere (Rettie 2010).

6.4 *Herd Status*

There are many methods to help us better understand the status of Baffin caribou. Some methods provide one piece of information while others can provide many different kinds of information. In order to prioritize these approaches it is necessary to balance the effort with the amount and type of information gained (Table 2). Overall, collaring is the single most effective research tool to study caribou (Table 2).

6.4.1 Population Size, Demographics, and Rate of Change

The primary pieces of information required to successfully manage caribou are the number of animals and the demographics within a population (Northwest Territories Department of

Environment and Natural Resources 2011). With these values we can calculate the rate of increase of the population and predict the population size a few years into the future. Knowing how many calves are recruited will allow us to make an assessment of the sustainable level of harvest. However to be certain, we also require periodic estimates of cow survival.

6.4.2 Herd Delineation

Most Barren-ground caribou are managed as socially distinct units or herds which share seasonal range distributions. We do not currently know if all Baffin caribou form distinct herds or how many herds of caribou occur on Baffin Island. Both available IQ and Scientific information suggest that separate herds exist on Baffin Island, however there is currently insufficient data to delineate them with confidence (Campbell et al. 2015). Recent genetic analyses indicate there is minimal gene flow between Melville Peninsula and Baffin Island suggesting that Baffin caribou are unique from the mainland herds. These results also indicate that there is no genetic difference between caribou in North and South Baffin. Delineating separate herds of caribou on Baffin Island is necessary for the long-term success of any harvest management program (Northwest Territories Department of Environment and Natural Resources 2011). Managing Baffin caribou as one herd, when there are in fact separate herds, risks extirpating unique herds.

6.4.3 Health

Health refers to the condition of the individual animals within the herd, which is indicative of range condition, disease prevalence and population age structure. The health and condition of caribou can affect productivity and survival of caribou. Knowledge of the health status of caribou on Baffin Island will add to our understanding of the mechanisms of population decline and other health related obstacles that may hinder recovery of the caribou population. Protocols for standardized health and body condition monitoring are available (CARMA 2008). Overall, it is important to identify the causes of decreased condition so that managers may predict the overall effects on the herd and manage appropriately.

6.5 *Range*

Caribou have minimum habitat requirements necessary in order for them to survive and ultimately, the status of this habitat greatly impacts whether a population increases or decreases. Key habitat areas vary by season and the specific requirements of different life history stages from calving to overwintering. Inuit Elders have referred to areas in which caribou remain when they are absent everywhere else during population lows as “Special Areas” (Ferguson 1998), and these can be more fully designated through the implementation of the BICMP’s research and monitoring (Table 3). While calving ranges are important for population recruitment winter ranges may be the limiting factor for these barren-ground caribou, a time of year when they are most energetically taxed and forage is less accessible and of lower quality (Ferguson et al. 2001). Understanding habitat selection is critical to assess the impacts of disturbance and to identify critical habitats that caribou take refuge in when range condition is highly degraded. Along with IQ, habitat selection requires good caribou use information from a satellite collaring program and accurate habitat maps (Table 2).

6.6 *Human Disturbance*

Resource exploration and development has been on the rise in recent years across Northern Canada. A number of these developments currently exist on Baffin Island. The potential for mining/industrial activities and infrastructure to negatively impact caribou is a concern amongst Baffin communities and wildlife managers. Impacts to caribou could include, but are not limited to: increased levels of stress and energy expenditures associated with sensory disturbances, physical barriers to movement or alterations to movement patterns, habitat destruction and degradation, abandonment or avoidance of certain areas, and increased levels of harvesting. Other human disturbances such as aircraft-over flights and recreational activities may also impact caribou. Overall these disturbances have the potential to negatively influence movement and habitat use, and could act cumulatively to impact caribou condition, recruitment and health. Understanding the effects and the threshold levels of disturbance to caribou will be important to evaluate the impacts of development. This will require a thorough research program to understand the baseline condition of Baffin caribou.

6.7 *Predation*

Predators have the ability to limit the growth of caribou populations, and various predator-prey relationships are possible. Wolves are the primary predators of caribou on Baffin Island and have probably had a modulating effect on the population through time. Studying the wolf population and monitoring wolf-caribou interactions would provide insight into what role wolves play in the cycling of caribou on Baffin. Although wolves eat several other species, including Arctic Hare and various seals, their primary prey are ungulates. There are no Muskox on Baffin and currently very few caribou so the wolf population is likely extremely low and subsequently difficult to study (none were seen on the 2014 survey). Incidental observations of wolves by hunters could provide an early warning system of increasing wolf numbers or activity which could then signal the need for further study.

Table 2. Scientific methods used to determine the status of caribou harvest, caribou habitat and caribou herds and the inferences we can make using data from these methods.

Monitoring Activity	Population Estimate	Population Trajectory	Sustainable Harvest Level	Migration	Population Delineation	Habitat Selection	Animal Health	Harvest Rate	Range condition
Satellite Collaring	X*	X*	X*	X	X	X*	X	X	
Composition Survey	X*	X	X						
Population Size Survey	X	X*	X						
Landscape Genetics Study					X*				
Health Monitoring							X		
Range Classification						X*			X
Harvest Study		X*	X*					X	

* Only in some cases or when coupled to other data or over multiple years

6.8 *Current Status*

A thorough review and re-analyses of historical research conducted on Baffin caribou can be found in Campbell et al. (2015). Early scientific surveys (1940-1970) failed to provide reliable population estimates due to limited coverage and unsophisticated survey methods. In 2012, DOE conducted a survey of Southern Baffin Island and generated an estimate of 1,555-3,093 (95% CI; Jenkins et al. 2012; *revised estimate from* Campbell et al. 2015). In February and March 2014, the first Baffin Island-wide caribou aerial survey was completed using multiple aircraft and the Distance-Double Observer Pair Platform technique (Boulanger et al. 2014). Local Hunters and Trappers Organizations (HTOs) were involved in the planning of the aerial survey and in its implementation. Data from this survey formed the basis of the first scientifically rigorous population estimate for Baffin Island caribou (Table 1; Campbell et al. 2015). Similar island-wide surveys will be necessary in the future to determine whether the population size has changed.

While scientific research continues, more information will be needed to sufficiently inform the BICMP on herd delineation, migration routes, calving grounds, and habitat affiliations. Collaring of caribou was conducted in North Baffin from 2008-2011 and in South Baffin from 1987-1994, with a total of 102 collars deployed. While this number may seem large, it is insufficient to determine with confidence the spatial affiliations of Baffin caribou, given the huge extent and timescale (Campbell et al. 2015).
While data to determine herd delineation needs to be expanded, data from 2008-2011 and 1987-1994 collaring indicates some seasonal movements within North and South Baffin. A continuation of a multi-year collaring program during decadal periods of both high and low population regimes with collars deployed across Baffin will be required to accurately delineate caribou sub groups, determine habitat use, and seasonal distributions.

A caribou Health Monitoring program was conducted on Baffin Island between 2012 and 2014 (Goorts 2014). This program, based on CARMA protocols, involved hunters bringing in samples, which were then prepared and sent to labs for analyses. A program similar to this should be instituted whenever caribou harvest is permitted and sufficient capacity exists to process samples in order to provide information on disease and parasite prevalence.

Composition surveys were conducted on Baffin Island from in spring and/or fall from 2015 to 2019. There are many key pieces of information required to ensure the successful recovery of caribou on Baffin Island. These include; 1) The total harvest between the 2014 population estimate and the 2019 spring composition survey (legal and illegal), 2) Multiple concurrent estimates of overwinter survival, 3) Average recruitment for the different sampling areas, and 4) Overall health of caribou. Baffin caribou cannot be confidently managed until the missing information is collected and the composition survey results and associated trends can be verified. This information is imperative to determine what level of harvest is sustainable for caribou on Baffin Island. Demographic composition surveys should be conducted on a yearly basis to monitor calf recruitment and also to model changes to the population size between island-wide population estimates. It is very important that we begin regular systematic monitoring of this herd in order to effectively manage Baffin Island Caribou for the future.

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Appendix 1: 2019-2024 Baffin Caribou Action Plan

2014/2015 Management Action

The March 2014 caribou survey confirmed that there are extremely low caribou numbers on Baffin Island necessitating immediate management action to prevent human harvest from causing further decline. In November 2014, the Department of Environment (DOE) recommended immediate management action to the Nunavut Wildlife Management Board (NWMB) in order to minimize the imminent risk to the caribou population due to low numbers and relatively high harvest. The NWMB started the co-management consultation process with a public hearing planned for March 2015 and suggested that the Minister of Environment take any action necessary in the interim to ensure that caribou are not extirpated from Baffin Island. In December 2014, by interim order of the Minister, a moratorium on all harvest of Baffin caribou was announced due to urgent and unusual circumstances. The order came into effect in January 2015. In March 2015, NWMB held a public hearing to garner input on Baffin caribou management and to consider recommendations by members of the public, as well as Baffin HTOs, QWB, NTI, DOE and PC. In June 2015, the NWMB decided to replace the moratorium with a harvest of 250 bull caribou, to be followed by a review upon receipt of the results of the first survey.

On August 21st, 2015, the Minister signed a Baffin Island Caribou Total Allowable Harvest Order thereby removing the harvest moratorium. A limited harvest of 250 male caribou was permitted on Baffin Island. By a decision of the QWB, the allowable harvest was allocated evenly among the eight Baffin Island communities (30 tags/community), with an additional 10 tags provided to Igloolik and no tags in the current year provided to Hall Beach.

Recommendations

Management Action Plan

Any managed harvest should correspond to the guidelines explained in section 5.1 *Harvest Management*. By conducting the research suggested in the BICMP the GN will be able to confidently recommend management actions, such as adjustments to percent harvest or tag allocation. The issue of harvest pressure can be addressed through various management actions such as TAH, non-quota limitations (e.g. bull only harvest), time and area closures and other restricted access measures when and where caribou are particularly vulnerable. Any allocation of harvest should be adjusted by the estimated harvest since the 2014, or more recent, caribou survey. Any harvest that is above the population growth rate will cause further decline. Harvest equal to the population growth rate will prevent any population recovery.

Monitoring Action Plan

Inuit Qaujimajatuqangit and science will be used together in decision making for Baffin caribou management. Inuit Qaujimajatuqangit research on Baffin caribou (DOE 2015a, 2015b; Kotierk 2015a, 2015b; Ferguson et al. 1998) has been considered in the BICMP. We cannot manage what we do not know, and relative to most Barren-ground caribou there is a need for more scientific information regarding Baffin Island caribou. There is similarly limited documentation of Inuit Qaujimajatuqangit in a usable format for management purposes. What information is available is largely anecdotal and was collected over a long time period, with varying caribou densities and habitat quality. If we monitor 1) harvest, 2) the status of Baffin caribou and 3) their range we will be more able to manage harvest appropriately. Overall, a thorough scientific monitoring program for Baffin caribou would include regular

population estimates, yearly demographic surveys and a continuous collaring program (Table A1). This would be coupled to an ongoing landscape genetics program and hunter harvest caribou health monitoring program (Table A1). A harvest monitoring program needs to be instituted for Baffin caribou for all harvest management regimes. Mandatory harvest reporting is by far the most effective and least complicated method available (Table A1).

Table A1. Proposed caribou monitoring activities and information gained for the next five years. All activities are subject to budget constraints and HTO/community review and input. Note population estimates are expensive and GN may not be able to commit to a five year (ten year with certainty) interval for budgetary reasons.

Activity	**Implementation Schedule**				
	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024
Collaring program		**X**	**X**	**X**	**X**
Composition Survey	**X**	**X**	**X**	**X**	
Landscape Genetics	**X**	**X**			
Health Monitoring			**X**	**X**	**X**
Range Classification		**X**	**X**		
Population Estimate Survey					**X**
Harvest Study			**X**	**X**	**X**

Appendix 2: Legislative Background and Context

The Baffin Island Caribou Management Plan accords with and is supported by legislation as follows: the Canada Nunavut Act (CNA), the Nunavut Agreement, and the Nunavut Wildlife Act.

In Article 5 of the Nunavut Agreement principles, objectives and values of Nunavut are outlined with respect to Inuit harvesting rights in concert with the conservation and management objectives of the Nunavut Agreement for wildlife and the environment. For clarification, some important Article 5 excerpts relevant to the BICMP include:

Principles

- 5.1.1 a) "species" means any particular species or any distinct sub-group within a species such as a stock or population;
- 5.1.2 e) there is a need for an effective system of wildlife management that complements Inuit harvesting rights and priorities, and recognizes Inuit systems of wildlife management that contribute to the conservation of wildlife and protection of wildlife habitat
- 5.1.2 f) there is a need for systems of wildlife management and land management that provide optimum protection to the renewable resource economy
- 5.1.2 g) the wildlife management system and the exercise of Inuit harvesting rights are governed by and subject to the principles of conservation
- 5.1.2 i) Government retains the ultimate responsibility for wildlife management.

Conservation

- 5.1.5 The principles of conservation are:
  c) the maintenance of vital, healthy, wildlife populations capable of sustaining harvesting needs as defined in this Article; and
  d) the restoration and revitalization of depleted populations of wildlife and wildlife habitat.

Total Allowable Harvest

- 5.6.16 Subject to the terms of this Article, the NWMB shall have sole authority to establish, modify or remove, from time to time and as circumstances require, levels of total allowable harvest or harvesting in the Nunavut Settlement Area.
- 5.6.17 A total allowable harvest of a stock or population may be expressed in numbers…a) …in terms of a community total allowable harvest, and…b) …in terms of a regional total allowable harvest.
- 5.6.20 The basic needs level shall constitute the first demand on the total allowable harvest. Where the total allowable harvest is equal to or less than the basic needs level, Inuit shall have the right to the entire total allowable harvest.

With reference to the Wildlife Act, the BICMP incorporates the precautionary principle as applied to the conservation and management of Baffin caribou.

As a management plan under the purview of the Nunavut Wildlife Management Board (the main instrument for wildlife management in Nunavut (Nunavut Agreement)), the BICMP also needs to conform to territorial, national and international obligations of Nunavut on biodiversity. This national and international obligation for Nunavut to conserve biodiversity at the herd, "stock", "distinct sub-group" or "population" level arises from the Canada Nunavut Act and the federal responsibilities for conservation of biodiversity conveyed therein upon Nunavut. This includes the requirement for conformity of the

BICMP with the Canadian Biodiversity Strategy arising from Canada's signatory commitment to the United Nations Convention on Biodiversity.

Consultations with Hunting and Trapping Organizations on the Baffin Island Caribou Composition Survey Results, Future Research Recommendations, and Draft Management Plan

January 7-18, 2019 and May 27, 2019

Department of Environment, Government of Nunavut, Iqaluit, Nunavut

Executive Summary

Government of Nunavut (GN), Department of Environment (DOE) representatives conducted consultations with Hunters and Trappers Organizations (HTOs) in the Baffin region from January 7-18, 2019 and on May 27, 2019 in Clyde River due to weather in January.

The intent of this round of consultations was to ensure HTOs were informed on the results of caribou abundance and composition surveys from 2014 to present on Baffin Island. DOE presented options for future research on Baffin Island including a telemetry-based collaring program. The feedback collected during this round of consultations will aid the GN in future research planning and monitoring for Baffin Island caribou.

This report attempts to summarize the comments made by participants during the round of consultations.

Preface

This report represents the Department of Environment's best efforts to accurately capture all of the information that was shared during consultation meetings with the Hunters and Trappers Organizations of Kimmirut, Qikiqtarjuaq, Pangnirtung, Iqaluit, Cape Dorset, Hall Beach, Igloolik, Arctic Bay and Pond Inlet. Unfortunately, during this consultation tour weather prevented us from meeting with Clyde River but the DOE was able to meet with the HTO on May 27, 2019.

The views expressed herein do not necessarily reflect those of the Department of Environment, or the Government of Nunavut.

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1.0 Report Purpose and Structure

This report is intended to collate and summarize comments, questions, concerns and suggestions provided by the HTOs in response to the summarized 2015-2018 composition survey results, caribou monitoring methods, and the draft Baffin Island Caribou Management Plan. The following communities were consulted:

- Kimmirut, January 7, 2019
- Clyde River, Postponed due to weather
- Qikiqtarjuaq, January 8, 2019
- Pangnirtung, January 10, 2019
- Iqaluit, January 11, 2019
- Cape Dorset, January 14, 2018
- Hall Beach, January 15, 2019
- Igloolik, January 16, 2019
- Arctic Bay, January 17, 2019
- Pond Inlet, January 18, 2019
- Clyde River, May 27, 2019

Representatives from the DOE, the Nunavut Wildlife Management Board (NWMB), Nunavut Tunngavik Inc. (NTI), and the Qikiqtaaluk Wildlife Board (QWB) attended each of the consultations.

2.0 Purpose of Consultations

The preliminary consultations were to discuss the newest information regarding the Baffin Island Caribou and allow HTOs to voice questions, comments and concerns regarding future research programs.

2.1 Format of Meetings

The meetings were held in the evening and ran between 3 to 4.5 hours depending on HTO engagement. Meetings were facilitated and led by the Baffin Regional Wildlife Biologist, John Ringrose, and the Kivalliq Regional Wildlife Biologist, Mitch Campbell. Each consultation started with a presentation by John Ringrose on the two survey methods used by the GN since 2014 for monitoring caribou; aerial abundance surveys and composition surveys (Appendix 1). The participants were invited to ask questions, raise concerns, or provide advice during the presentation but were advised there would be breaks for questions. The presentation then provided the HTOs with survey results from 2015-2018 composition surveys across Baffin Island. Mr. Campbell then presented on the caribou monitoring program in the Kivalliq region including, aerial surveys (abundance), composition surveys and telemetry. After this presentation there was a break for questions. Mr. Ringrose then provided a brief description of the draft Baffin Island caribou management plan and asked for comments, concerns and questions from HTOs regarding the plan. After the presentations, questions/discussion continued until no further questions were raised. DOE asked HTOs to internally discuss the

addition of a telemetry collaring program on Baffin Island and provide letters of support for collaring work in their region.

3.0 Summary by Community

The objectives of the consultations were made clear to the HTO members prior to and at the start of each meeting. There were many similar questions, concerns and suggestions raised by HTO Board members in all the communities consulted.

3.1 Kimmirut

Date: January 7, 2019

Representatives:

- GN-DOE, Baffin Regional Wildlife Biologist: John Ringrose
- GN-DOE, Kivalliq Regional Wildlife Biologist: Mitch Campbell
- GN-DOE, Acting South Baffin Manager: Alden Williams
- NTI, Resource Management Advisor: Cheryl Wray
- NWMB, Wildlife Management Biologist: Kyle Ritchie
- QWB, Senior Wildlife Advisor: Michael Ferguson
- Mayukalik HTA Board members
    - Sandy Akavak
    - Mikidjuk Kolola
    - Jeannie Padluq
    - Kapik Ikkidluak
    - Palanga Lyta
    - Pitsiulala Akavak
    - Kamikee Akavak
    - Dustin Joanas

Comments and questions:

The HTO members expressed their interest in the logistics of composition surveys and the recent suspected die-offs on Prince Charles Island. The HTO members wondered if collaring would be done in the future and if the consultations were regarding changes to the Total Allowable Harvest (TAH). They also raised concerns regarding development activities and how elder information and Inuit Qaujimajatuqangit (IQ) would be incorporated into future research.

HTO members indicated that ongoing monitoring needed to more accurately detect changes in the population and lead to more responsive management actions such as TAH changes. Mikidjuk Kolola asked that if an increase was observed in south Baffin but not in north Baffin would an adjustment to the TAH be considered in south Baffin only. The DOE explained how the use of telemetry may be able to separate different subpopulations and allow abundance surveys to occur on smaller scales and be more reactive to changes. The HTO asked about the detailed logistics of collar deployment and what the effects would be on caribou. HTO members

were curious if there was ongoing monitoring of wolf abundance. There was concern with the Bull-only harvest and the effect it may be having on the population.

There was some confusion about the ongoing federal listing process and the recent round of consultations by the federal government. DOE, QWB and NWMB provided clarification of the differences between the federal consultations and the current meeting.

No comments were provided regarding the draft management plan during the meeting. The HTO said they will discuss this internally at an upcoming board meeting and provide input to the GN in writing.

3.2 Qikiqtarjuaq

Date: January 9, 2019

Representatives:

- GN-DOE, Baffin Regional Wildlife Biologist: John Ringrose
- GN-DOE, Kivalliq Regional Wildlife Biologist: Mitch Campbell
- GN-DOE, Acting South Baffin Manager: Alden Williams
- NTI, Resource Management Advisor: Cheryl Wray
- NWMB, Wildlife Management Biologist: Kyle Ritchie
- QWB, Senior Wildlife Advisor: Michael Ferguson
- Translator, Titus Arnakallak
- Nativak HTO Board members
    - Alison Kopalie
    - Juelie Kuksiak
    - Loasie Alikatuktuk
    - Jacopie Audlakiak
    - Jonah Keeyookta
    - Jaypatee Newkinguak
    - Uriah Newkinguak

Comments and questions:

The HTO members discussed the population decline that they observed in the early 2000s. There was concern over the number of wolves spotted during the surveys and low number of caribou in their area. DOE clarified that they had observed very few wolves during surveys from 2012 to present and they believe the impact of wolves at this time is relatively low. The HTO provided information regarding caribou locations in the mountainous areas surrounding Qikiqtarjuaq as well as historical hunting areas.

The HTO commented on the historical movement patterns of caribou on Baffin. The QWB provided input of historical information from discussions with elders. QWB identified that Inuit believe there are different types (subpopulations) of caribou on the island that display different behavioural patterns and utilize different habitats. Additional survey methods, such as including cameras or video cameras with composition surveys, was discussed but determined that using

them at this time would likely increase survey time and negative effects on the caribou. There was interest expressed in the Nunavut Harvesters Support Program (NHSP) offered by NTI and a commitment was made by NTI to provide further information after the meetings.

No comments were provided regarding the draft management plan during the meeting. The HTO said they will discuss this internally at an upcoming board meeting and provide input to the GN in writing.

3.3 Pangnirtung

Date: January 10, 2019

Representatives:

- GN-DOE, Baffin Regional Wildlife Biologist: John Ringrose
- GN-DOE, Kivalliq Regional Wildlife Biologist: Mitch Campbell
- GN-DOE, Acting South Baffin Manager: Alden Williams
- NTI, Resource Management Advisor: Cheryl Wray
- NWMB, Wildlife Management Biologist: Kyle Ritchie
- QWB, Senior Wildlife Advisor: Michael Ferguson
- Translator, Titus Arnakallak
- Pangnirtung HTA Board members
    - Davidee Nowyuq
    - Johnny Mike
    - Mark Kilabuk
    - George Qaqqasiq
    - Billy Etooangat
    - Kelly Qaapik
    - Patrick Kilabuk

Comments and questions:

The HTO members expressed their interest in the population estimates from 2014, the estimated trend in productivity based on composition and the desire to take part in GN led surveys. The HTO was interested in the overall productivity of the herd and the number of bulls that are likely required to ensure cows are bred. The QWB provided insight to the movement of caribou between Baffin Island and the mainland on Melville Peninsula. The QWB stated that they do not believe that movement between the peninsula and Baffin Island makes a large impact on the numbers of caribou on Baffin Island.

The HTO members expressed they believe there is a small group of caribou present to the east of Pangnirtung and expressed that if another abundance survey was to be conducted, this area should be discussed. DOE clarified how the 2014 abundance survey results supported decisions regarding TAH and which areas are included in the TAH for Baffin Island. GN, QWB and the HTO

discussed estimated wolf numbers on the island and the numbers observed during surveys since 2014 but all parties agreed that the current impact from wolves on caribou was likely low.

The HTO showed interest in the telemetry collaring process including field logistics and collar application. DOE indicated that if collars were to be supported by the HTO and applied to caribou on Baffin Island it would likely be mature cows that received collars. The QWB provided insight as to collaring methods that were done in the 1990s and field measurements that will ensure only mature adults are being collared. The HTO expressed a need for better management of caribou on Baffin as well as the need for additional movement and distribution information to support the current IQ. Billy Etooangat stated that he saw the value in collaring caribou so they could know where they are going and allow DOE to conduct surveys of the areas where caribou are found. The HTO mentioned the DeBeers diamond mine on Hall Peninsula and they are concerned about the effects of this project on caribou in their hunting area. They believe that a telemetry program may be beneficial to assess the impacts.

The community of Pangnirtung has a hard time hunting caribou right now because caribou don't seem to be migrating where they used to and access to these areas is difficult due to thin ice.

No comments were provided regarding the draft management plan during the meeting. The HTO said they will discuss this internally at an upcoming board meeting and provide input to the GN. Many members said this was their first time seeing this management plan so they wanted an opportunity to review it internally.

3.4 Iqaluit

Date: January 11, 2019

Representatives:

- GN-DOE, Baffin Regional Wildlife Biologist: John Ringrose
- GN-DOE, Kivalliq Regional Wildlife Biologist: Mitch Campbell
- GN-DOE, Acting South Baffin Manager: Alden Williams
- NTI, Resource Management Advisor: Cheryl Wray
- NWMB, Wildlife Management Biologist: Kyle Ritchie
- QWB, Senior Wildlife Advisor: Michael Ferguson
- Amaruq HTO Board members
    - Jerry Ell
    - David Alexander
    - Martha Kunuk
    - Ben Kovic
    - Manasie Mark

Comments and questions:

The meeting in Iqaluit discussed the merging of survey results and IQ, the number of bulls needed in a population, and the need for additional tools, such as a telemetry program, to support IQ.

The HTO expressed their concern regarding the bull-only harvest and the issues that would arise if the number of bulls were reduced. DOE representatives agreed that harvesting too many bulls will limit productivity of the population but monitoring to date has suggested there are currently enough bulls in the population in south Baffin. The QWB expressed that during previous conversations with elders it was identified that the quality of bulls is important.

The HTO asked whether there is any current technology available that can be used to better understand caribou movements across the island and if the GN has considered collaring any caribou.

After the GN presented about the telemetry program in the Kivalliq region there was support from the HTO for a similar program on Baffin. The HTO stated that they needed a telemetry collar program on South Baffin to address the concerns with TAH. Discussions followed regarding application of collar data, how many collars would be needed and if collaring would be done on bulls or cows. The HTO emphasized the need for new tools in the Baffin region including a telemetry collaring program. Jerry Ell expressed the desire of the HTO for a collaring program to the QWB representative, Mike Ferguson, and said that they wanted QWB to "make it happen".

No comments were provided regarding the draft management plan during the meeting. The HTO said they will discuss this internally at an upcoming board meeting and provide input to the GN. There is a desire to have the TAH removed but there was no discussion at this meeting regarding increased abundance in south Baffin or objection to 2014 estimates. The HTO mentioned the need for additional resources to facilitate discussions with other HTOs.

3.5 Cape Dorset

Date: January 14, 2019

Representatives:

- GN-DOE, Baffin Regional Wildlife Biologist: John Ringrose
- GN-DOE, Kivalliq Regional Wildlife Biologist: Mitch Campbell
- GN-DOE, North Baffin Manager: Scott Johnson
- NTI, Resource Management Advisor: Cheryl Wray
- NWMB, Wildlife Management Biologist: Kyle Ritchie
- QWB, Senior Wildlife Advisor: Michael Ferguson
- Translator, Titus Arnakallak
- Aiviq HTO Board members
    - Annie Suvega
    - Adamie Nuna
    - Dana Pootoogook
    - Simiga Suvega
    - Ejeeseak Peter
    - Tagialuk Nuna

- Ningeoseak Etidloi

Comments and questions:

The majority of discussion with the Aiviq HTO included concerns over the bull-only harvest, how the composition surveys allow monitoring the herd productivity, Baffinland Iron Mines in North Baffin, concerns about development, and movement patterns of caribou on the Island.

QWB questioned the validity of calf:cow and bull:cow ratios and referred to a paper from the 1990s where there were 42 calves:100 cows but this is based on a limited sample size. Mike Ferguson stated that he believes the ratios being used need further refinement.

The HTO asked if there were more bulls or cows based on previous survey results and was under the impression that the bull-only TAH was because there were more males in the population. The GN clarified that composition surveys are designed to be incorporated with IQ to detect changes in productivity. The HTO was unsure if harvesting on Prince Charles Island was allowed and the GN clarified that harvesting can occur but it is likely there has been a reduction in the number of caribou in this area because of several die-offs in 2016 and 2018. The HTO asked whether there will be female harvest in the future and the QWB responded stating that a private discussion between QWB and the HTO would commence after the meeting to discuss TAH issues. However, the GN explained that in order to maintain productivity of the population, the number of tags would need to be reduced if female harvest is accommodated.

The HTO asks about caribou in north Baffin, relative to Mary River, and identified the need for additional information in the future to help reduce the problems associated with development. DOE identified the likely effects of roads and developments on caribou and what impact this may have on caribou in North Baffin.

A desire to have caribou or reindeer introduced to the 3 small islands south of Cape Dorset was mentioned by the HTO. Movement patterns of caribou were also mentioned by the HTO and addressed suspected movement to Northern Quebec and within Baffin between areas south of Nettlling Lake and the southern peninsulas.

Similar to previous meetings there were no comments provided regarding the draft management plan during the meeting. The HTO said they will discuss this internally at an upcoming board meeting and provide input to the GN.

3.6 Hall Beach

Date: January 15, 2019

Representatives:

- GN-DOE, Baffin Regional Wildlife Biologist: John Ringrose
- GN-DOE, Kivalliq Regional Wildlife Biologist: Mitch Campbell
- GN-DOE, North Baffin Manager: Scott Johnson
- NTI, Resource Management Advisor: Cheryl Wray

- NWMB, Wildlife Management Biologist: Kyle Ritchie
- QWB, Senior Wildlife Advisor: Michael Ferguson
- Translator, Titus Arnakallak
- Hall Beach HTA Board members
    - Jaypeetee Audlakiak
    - Jopie Kaernerk
    - Cain Pikuyak
    - Zillah Pialiaq
    - Inokie Irqittuq (elder)
    - Abraham Ullalaa
    - Sam Arnardjuak
    - George Innuksuk
    - Joyce Arnarojuak

Comments and questions:

Discussions with the Hall Beach HTO included bull-only harvest, the TAH system and allocations between communities, composition survey methods, and telemetry collar information.

The HTO expressed their interest in taking part in surveys in the future and the incorporation of IQ into design, management and future plans. DOE representatives clarified that the composition survey results are incorporated with IQ and hunter observations: they are not mutually exclusive. The QWB states that they are responsible for the allocation of tags between the 10 HTOs and that if Hall Beach wants tags this year they will have to ask another HTO or discuss with QWB for the future.

Discussions surrounded identification of males and females from the helicopter and use of composition data to determine the productivity and the number of bulls able to breed. The HTO identified that large die-offs may not have occurred on Prince Charles Island in 2018 because caribou could move off of the island. The DOE representatives provided insight into the number of dead caribou observed, the ice conditions between Air Force Island and Baffin Island, and that they do not have evidence to support a large scale movement but stated it was possible. The HTO asked about movements of caribou on Melville Peninsula and historical information was provided by QWB. Mike Ferguson stated that in 1982 they conducted a reconnaissance survey in June of the area west of Hall Beach and observed areas where calving occurred.

The HTO wanted additional information on how telemetry collars are applied in the field and which sex they are applied to. The DOE representatives provided insight into how the telemetry program is conducted in the Kivalliq region including field logistics and HTO participation. There was concern form HTOs regarding collars that were left on polar bears and caused mortality but DOE and QWB assured those concerned that technological advances have reduced the size and weight of collars and the drop-away system performs very well and only requires a single handling event of caribou. The HTO was concerned about a caribou that was collared from

2008-2011 that had a collar improperly applied that caused damage to the animal. The GN responded that this incident was because of improper installation and this example is being used to train current collaring teams. The QWB identified the desire to have a private meeting with the HTO after the consultation to discuss female harvest and future tag allocations.

The HTO expressed the desire to discuss the management plan internally at an upcoming board meeting. There were no comments provided regarding the draft management plan during the consultation.

3.7 Igloolik

Date: January 16, 2019

Representatives:

- GN-DOE, Baffin Regional Wildlife Biologist: John Ringrose
- GN-DOE, Kivalliq Regional Wildlife Biologist: Mitch Campbell
- GN-DOE, North Baffin Manager: Scott Johnson
- NTI, Resource Management Advisor: Cheryl Wray
- NWMB, Wildlife Management Biologist: Kyle Ritchie
- QWB, Senior Wildlife Advisor: Michael Ferguson
- Translator, Titus Arnakallak
- QIA, Charlie Inuarak
- Igloolik HTO Board members
    - Simonie Issigaitok
    - Gideon Tugaoqak
    - Natalino Piuguttuk
    - Daniel Akittirq
    - Michelline Ammaaq
    - David Aqqiaruq
    - Edward Attagutaluk
    - Jacob Malliki

Comments and questions:

Discussions with the Igloolik HTO included the perceived die-offs on Prince Charles Island, HTO participation in surveys, telemetry collaring program for Baffin Island, and combining IQ with survey results.

The HTO expressed interest in the 2018 composition survey on Prince Charles Island where dead, skinny and weak caribou were observed. All parties agreed that in the future, if possible, samples should be taken when large scale die-offs are observed. The HTO were interested in taking part in surveys where possible and increasing the number of Inuit that take part in DOE surveys during field and planning phases.

As with other meetings there was discussion regarding the number of wolves observed during the surveys since 2014. DOE was able to provide some insight into this issue and stated that very few wolves have been observed since 2012 and it is unlikely that the wolf population at this time is having a significant impact on the caribou on Baffin.

After the presentation on the Kivalliq caribou monitoring program, there was discussion surrounding the logistics of collaring on Baffin. The HTO stated their interest in the information that collaring was able to provide but there was hesitation about the size of the collars shown during the presentation. The GN clarified that the collars shown in the presentation were older models and due to airline restrictions they couldn't bring one for the meeting. QWB, Mike Ferguson, stated that dummy collars may be an option to show the size and weight to HTOs and issues with roads were well known in Norway. The GN mentioned that the information from a collaring program would be a useful tool for HTOs to incorporate with IQ and utilize during land use discussions.

DOE then led discussions regarding accidental female harvest.

The HTO stated they wanted to discuss the management plan internally at an upcoming board meeting. There were no comments provided regarding the draft management plan during the meeting.

3.8 Arctic Bay

Date: January 17, 2019

Representatives:

- GN-DOE, Baffin Regional Wildlife Biologist: John Ringrose
- GN-DOE, Kivalliq Regional Wildlife Biologist: Mitch Campbell
- GN-DOE, North Baffin Manager: Scott Johnson
- GN- DOE, Wildlife Officer; Matthew Akikulu
- NTI, Resource Management Advisor: Cheryl Wray
- NWMB, Wildlife Management Biologist: Kyle Ritchie
- QWB, Senior Wildlife Advisor: Michael Ferguson
- Translator, Titus Arnakallak
- Ikajutit HTO Board members
    - Valerie Qaunaq
    - Joeli Qamanirq
    - Kunnak Enoogoo
    - Roland Taqtu
    - Paul Ejangiaq
    - Jonah Oyukuluk
    - Jennifer Pauloosie

Comments and questions:

The discussions with the Ikajutit HTO included survey logistics, male-only harvest, HTO participation in surveys, telemetry collaring program for Baffin, and combining IQ with survey results.

The HTO expressed interest in participating in upcoming survey work during the field and planning aspects. There was discussion regarding field logistics and how DOE deals with weather and mechanical issues and how these affect survey results. There was a lengthy conversation about female harvest with the HTO and the process for the GN, QWB and NWMB to adjust quotas and remove restrictions on female harvest.

The HTO expressed interest in a telemetry collaring program in response to effects of Baffinland Iron Mines on caribou in North Baffin. One member asked if a telemetry program could be initiated by DOE prior to the establishment of the railway south of Mary River to see what the effects were. There was also concern from the HTO about helicopters chasing caribou and flying very low. The DOE representatives advised the HTO that if aircraft are observed chasing caribou, the observer should be documenting the tail sign, the location and colour of the aircraft, the time of the incident, and report it to the GN. The HTO planned to discuss a collaring program at their next internal board meeting.

There were no comments provided regarding the draft management plan during the meeting. The HTO stated they wanted to discuss the management plan internally at an upcoming board meeting.

3.9 Pond Inlet

Date: January 18, 2019

Representatives:

- GN-DOE, Baffin Regional Wildlife Biologist: John Ringrose
- GN-DOE, Kivalliq Regional Wildlife Biologist: Mitch Campbell
- GN-DOE, North Baffin Manager: Scott Johnson
- NTI, Resource Management Advisor: Cheryl Wray
- NWMB, Wildlife Management Biologist: Kyle Ritchie
- QWB, Senior Wildlife Advisor: Michael Ferguson
- Translator, Abraham Kublu
- Mittimatalik HTO Board members
    - Amy Killiktee
    - David Qaminiq
    - Elijah Nashook
    - Eric Ootoova
    - Daniel Quasa
    - Phanuel Enoagah
    - Enookie Inuarak

Comments and questions:

The discussions with the Mittimatalik HTO included survey logistics, telemetry collaring in North Baffin, and effects from the Mary River project.

The HTO was concerned about the competence of the volunteer provided in 2018 and their inexperience in hunting or caribou identification. The parties discussed survey heights and different methods to ensure effective identification of males and females during composition surveys.

The HTO in Pond Inlet expressed concern over the effects of Baffinland and stated that since they are in the Mary River area they need the most help dealing with mining. There was also anger about the approved production increase and approval by the minister. The HTO expressed interest in splitting North and South Baffin as separate management areas.

After the presentation of the DOE Kivalliq caribou monitoring program there was discussion regarding collaring logistics and how collars are applied in the field. There was concern about collared animals losing weight due to the collars. The GN responded in saying that in general caribou wear the collars well and for the life of the collar. The GN explained 2 cases where caribou have been injured directly by collars and how these situations were included in future training to ensure it does not happen again. There was also concern that if a caribou died as a direct result of the collar, that caribou would come off the quota.

There were no comments provided regarding the draft management plan during the meeting. The board was unaware of earlier version of the management plan and even members that were not new did not remember discussions from 2015 with the HTO. The HTO stated they wanted to discuss the management plan internally. There seemed to be interest in the idea of a management plan by a few new members but no comments were made during the meeting.

3.10 Clyde River

Date: May 27, 2019

Representatives:

- GN-DOE, Baffin Regional Wildlife Biologist: John Ringrose
- GN-DOE, North Baffin Manager: Scott Johnson
- Nangmautaq HTO Board members
    - Apiusie Apak
    - Joamie Apak
    - Nysana Qillaq
    - Lucy Palituq
    - Jaysie Tigullaraq
    - Gary Aipellee

Comments and questions:

The HTO members identified and expressed their interest in survey design and logistics, the recent suspected die-offs on Prince Charles Island, a GPS telemetry collaring program, and effects of development on caribou.

The HTO and DOE discussed abundance and composition survey design and logistics at length, including the possibility of using alternative methodologies. Discussions regarding the use of drones for survey work were of particular interest, as this technology has a lot of current attention.

HTO members and DOE discussed using GPS telemetry collar data to identify effects of roads, railways, and effects of development activities. Members showed particular interest in the section of the presentation where animations showed effects of roads on caribou movement and behavior. There was further discussion following the presentation on effects of development including caribou avoidance behavior.

The DOE explained the logistics of collar deployment and the effects collars would have on caribou. HTO members were curious of what the perceived wolf abundance was on Baffin Island. Jaysie Tigullaraq asked how supporting a collaring program would allow increases in TAH. The DOE explained that if caribou are divided into subpopulations or herds then surveys can be done on a smaller scale, conducted more frequently, and be more reactive to increasing or decreasing TAH as needed.

No comments were provided regarding the draft management plan during the meeting. The HTO said they would discuss this internally at an upcoming board meeting and provide input to the GN in writing.

4.0 Summary

All ten HTOs sought clarification on abundance and composition survey methodology. All HTOs expressed interest in a greater involvement in GN led surveys including field aspects and pre-planning. The majority of HTOs expressed interest in some form of a telemetry collaring program in the future for Baffin Island. The Iqaluit, Pangnirtung and Arctic Bay HTOs had the most outspoken members in support of a collaring program but all HTOs indicated that they planned to discuss this internally prior to making a commitment. Many of the HTOs expressed their interest for modifying or adjusting the current TAH to include an aspect of female harvest. QWB had internal discussion with all of HTOs after the GN consultations to discuss the current TAH.

There were no comments from any HTO consulted regarding the draft management plan and all HTOs said they wanted to have internal discussions prior to submitting anything to the GN.

5.0 Appendix 1

Baffin Island Caribou HTO Consultations

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Baffin Regional Wildlife Biologist
Pond Inlet
Jringrose@gov.nu.ca
(867)899-7576

Outline

Introduction

Survey Types

Composition Survey
- 2015-2018 results
- 2019 spring survey

Monitoring Caribou

Draft Management Plan Comments



Introduction



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John Ringrose

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Regional Wildlife Biologist
Baffin Region
Department of Environment
Government of Nunavut

Avikturviani Huradjanut Qauyihaiyi
Qiqiktaaluk
Avatilliqiyitkut
Nunavut Kavamanga

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867-899-7576

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Survey types and methods

Two Main Types of Caribou Surveys

Abundance- The number of caribou

Composition- The ratio of bulls, cows, calves and calf survival

Fall surveys are best for Bull:cow ratio and a benchmark for over-winter calf survival trends

Spring Surveys are for calf over-winter survival

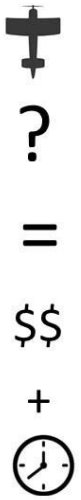
Baffin Island Caribou **Abundance** last completed in 2014

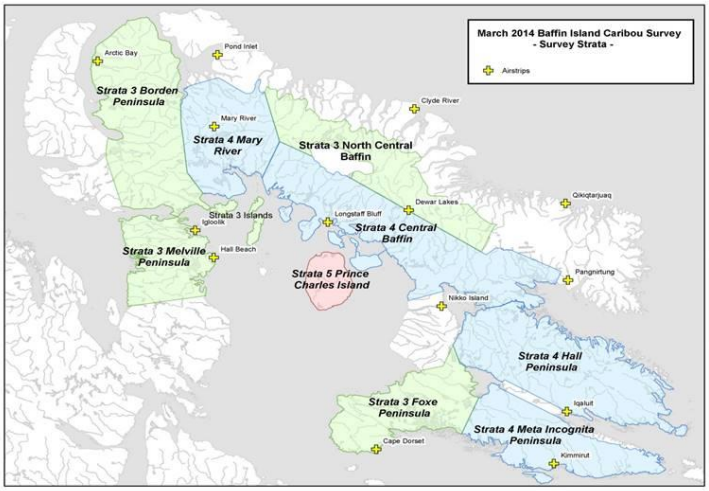
Composition Surveys completed 2015 -2018.

Next survey being completed March/April 2019

How do we determine how many caribou there are?

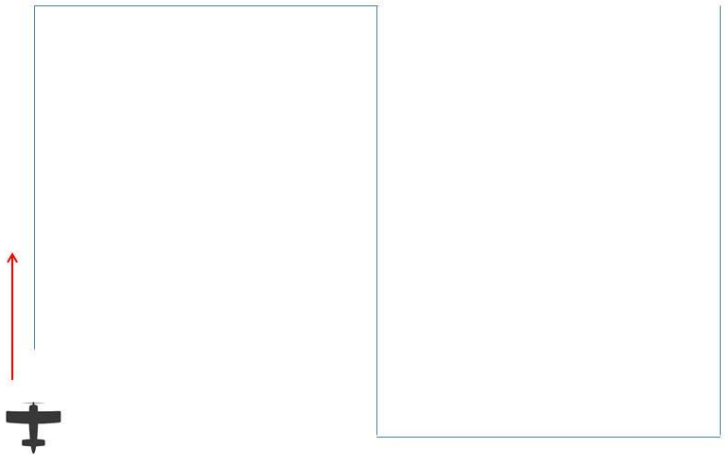
1) Pick where to fly on Baffin Island ABUNDANCE**

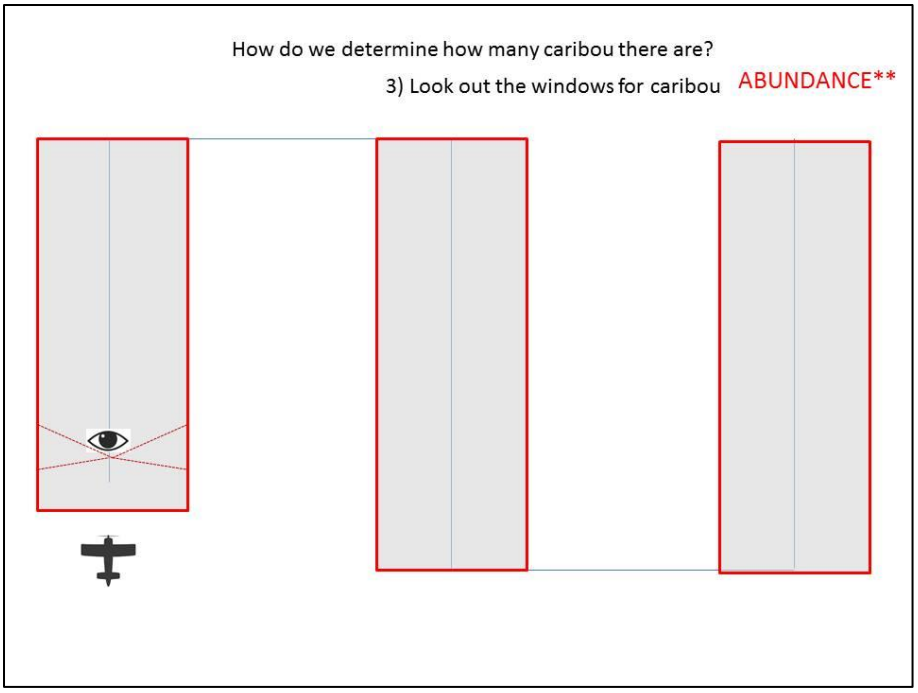


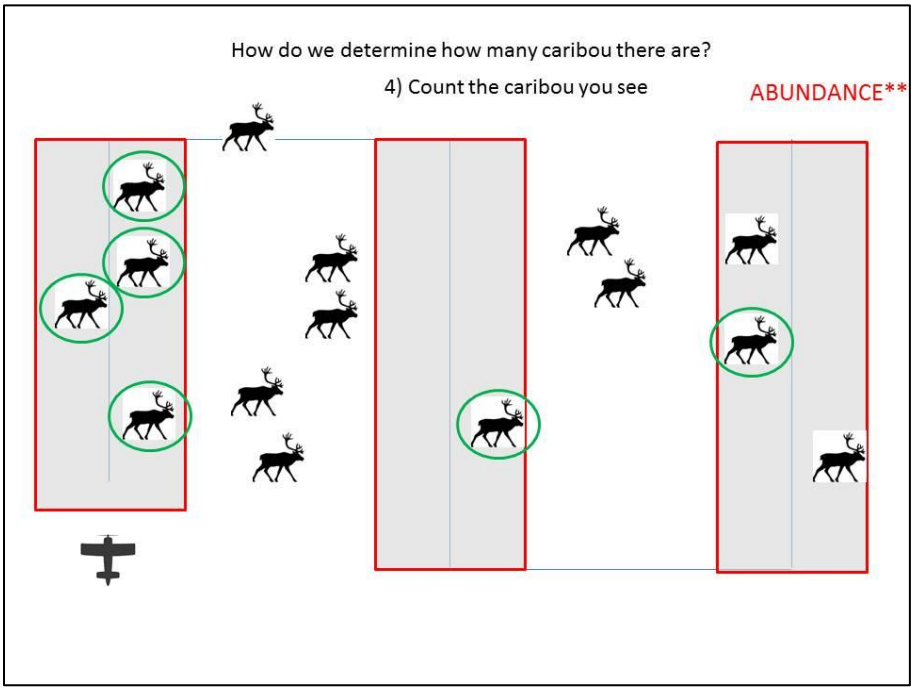


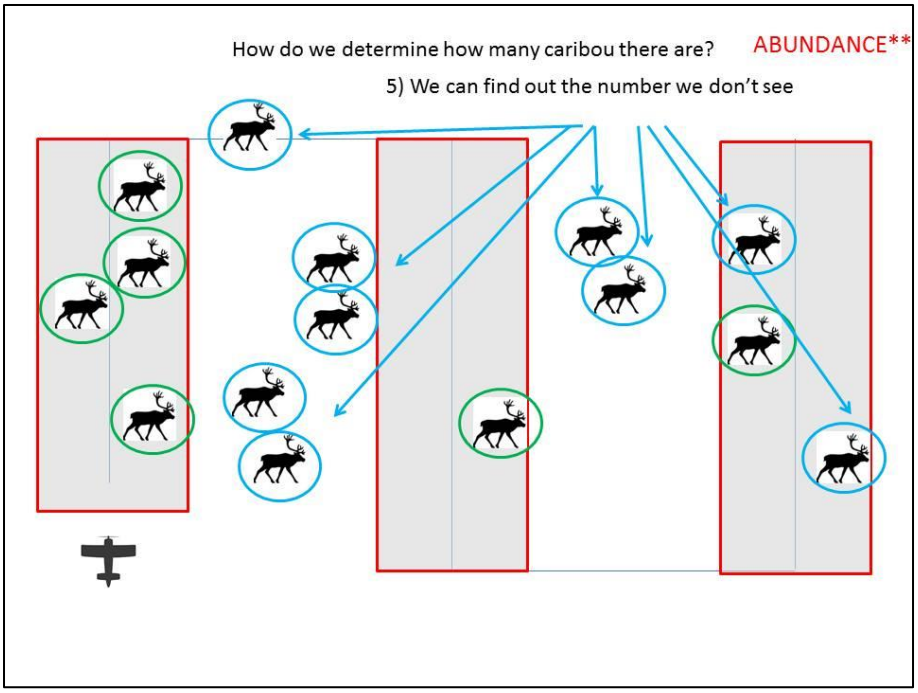
How do we determine how many caribou there are? ABUNDANCE**

2) Place lines on the island and fly along them




How do we determine how many caribou there are?
3) Look out the windows for caribou
ABUNDANCE**

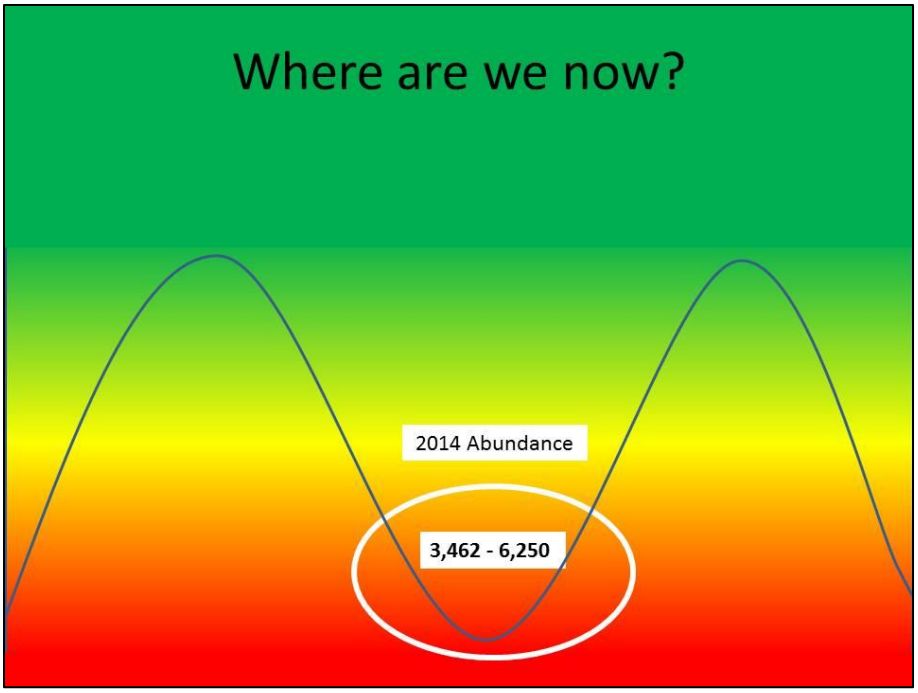

How do we determine how many caribou there are?
4) Count the caribou you see
ABUNDANCE**



2014 Survey Number of caribou

ABUNDANCE**

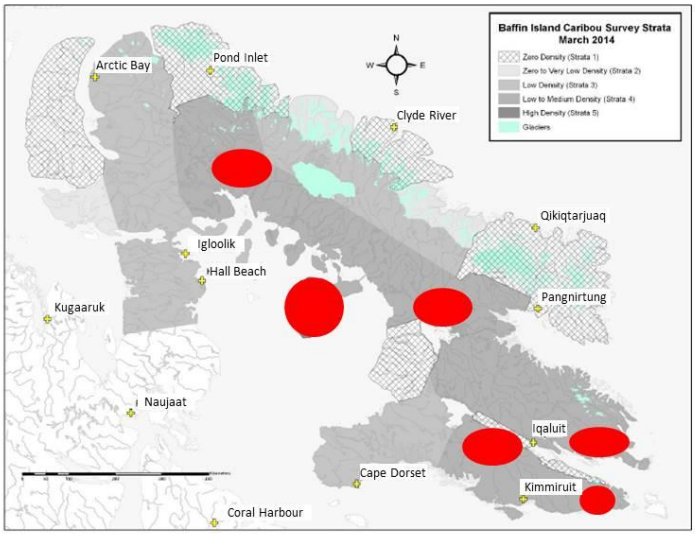
Subpopulation	Individuals Observed	We are 95% certain the actual number of Caribou lay between these two values
North Baffin		
Borden Peninsula	1	1 -30
Mary River	49	96 - 521
North Central Baffin	13	31 - 230
Total	***63***	***159 - 622***
South Baffin		
Central Baffin	197	662 – 1,798
Foxe Peninsula	20	48 - 972
Hall Peninsula	176	467 – 1,686
Meta Incognita Peninsula	91	256 -1,138
Prince Charles Island	557	1,158 – 2,220
Total	***824***	***3,169 – 5,935***
Total (-Prince Charles Island)	267	1,777 – 4,207
Other areas		
Melville Peninsula	26	88 - 551
Baffin Island + Melville P.	1,130	3,661 – 6,484
Baffin Island Total	***1,104***	***3,462 – 6,250***

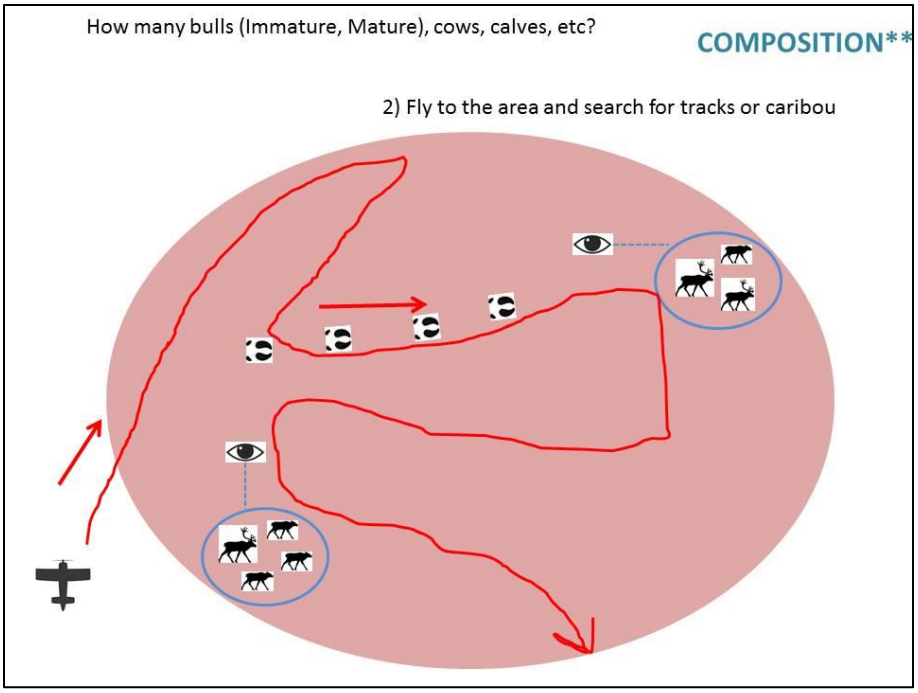


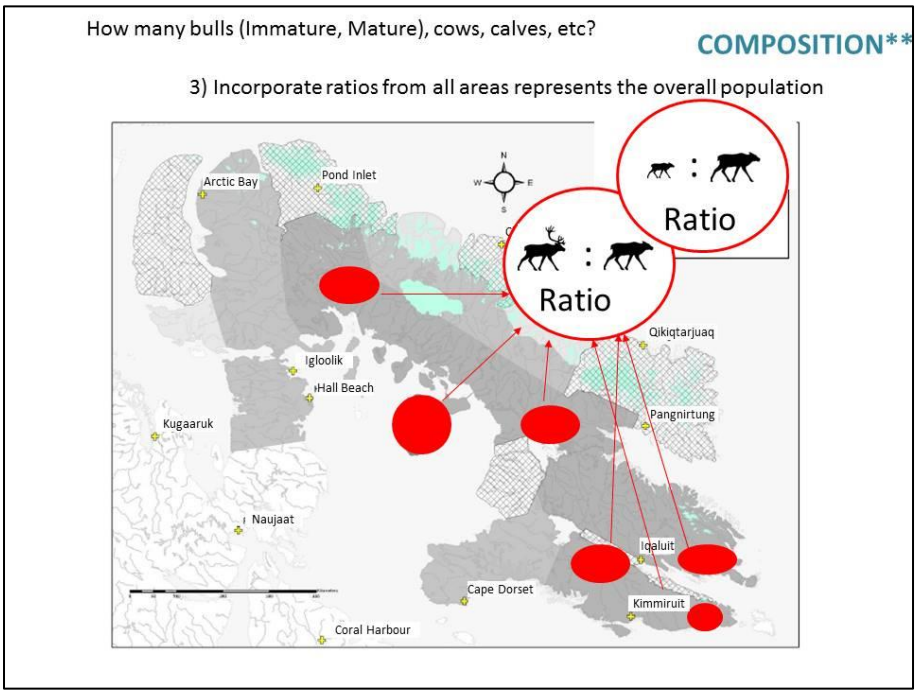
We know how many caribou there are. (ABUNDANCE)
How many bulls (Immature, Mature), cows, calves, etc?

COMPOSITION**

1) Locate main groups of caribou (HTO direction)




How many bulls (Immature, Mature), cows, calves, etc?
COMPOSITION**
2) Fly to the area and search for tracks or caribou


How many bulls (Immature, Mature), cows, calves, etc?
COMPOSITION**
3) Incorporate ratios from all areas represents the overall population
Ratio
Ratio
Arctic Bay
Pond Inlet
Igloolik
Hall Beach
Kugaaruk
Naujaat
Qikiqtarjuaq
Pangnirtung
Iqaluit
Cape Dorset
Kimmiruit
Coral Harbour

Composition Surveys
2015-2018

Objectives

1) Determine the vigor of the population based on productivity and demographic composition; i.e. what proportion of the population are young bulls, mature bulls, cows, yearlings, and calves.

2) Determine the trajectory of productivity of the population based on the demographic composition; and with spring composition results, determine if an index of calf productivity and overwinter survival suggests an increasing or decreasing trend.

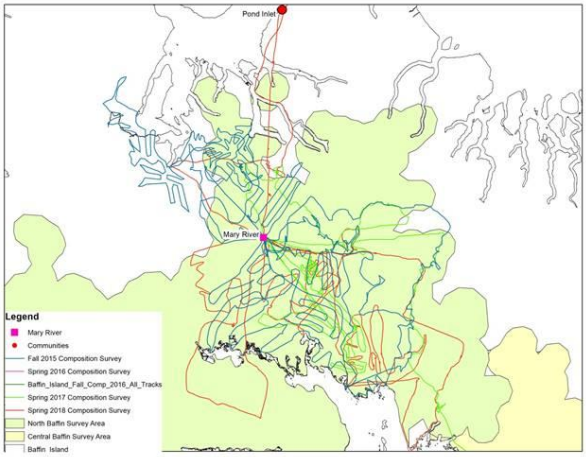
3) Monitor bull ratios to insure that the bull only harvest is not reducing bulls to a proportion that could interfere with rutting success.

4) Build a database with which to estimate the current population trend through demographic modeling, utilizing all demographic composition data to project a trend from the 2014 population estimate. **

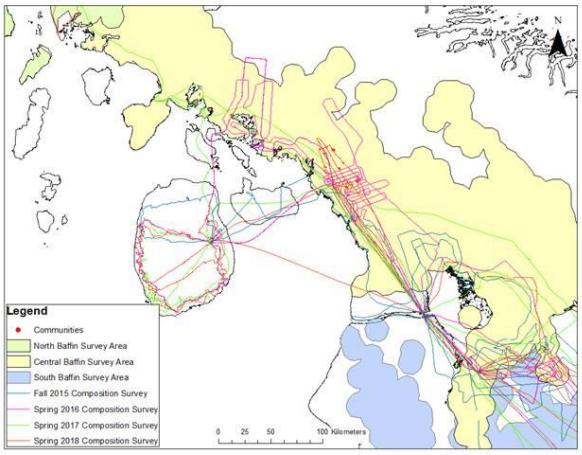
5) Inform on management discussions regarding current TAH levels.

**with multiple years of data and cow survival and calf over winter survival

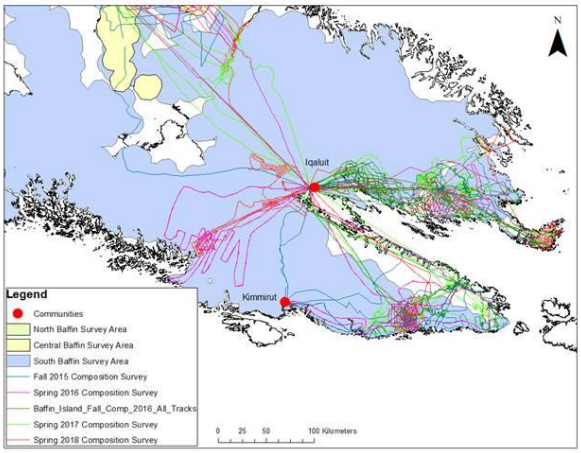
Composition Surveys
North Baffin



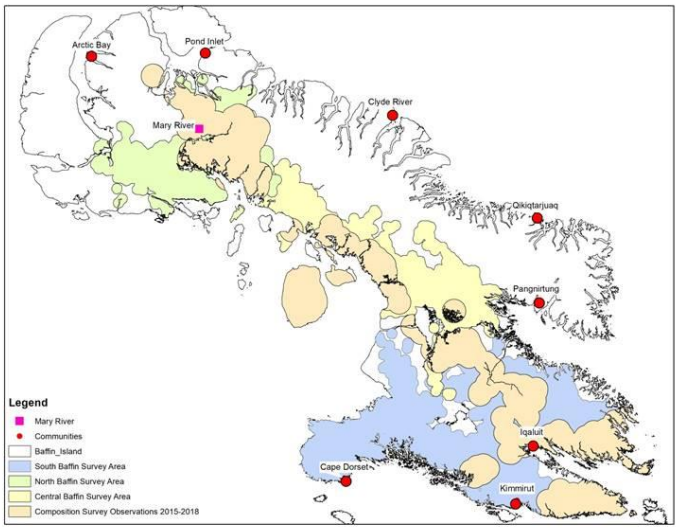
Composition Surveys
Central Baffin



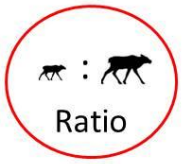
Composition Surveys
South Baffin

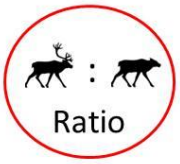


Composition Surveys



Composition Surveys Results





Suggested calf:cow ratios in NWT for stable or increasing populations:

- 70-90 at calving
- 50-70 in the fall
- 30-50 following winter

40 bulls:100 cows is suggested as a benchmark for the number of bulls required in a population to ensure all cows are bred successfully (Tobey 2001).

These are just indices

Composition Surveys Results- North

Fall

Table 4 Number of observed caribou by demographic group during Baffin Island composition surveys 2015-2018.

Year	2015				2016				2016				2017				2017				2018			
Season	Fall				Spring				Fall				Spring				Fall				Spring			
Location	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island
Calves Observed	55	28	133	49		23	82	49	54			81	47	1	114	92	86				21	18	31	155
Cows Observed	77	39	189	64		67	328	222	94			196	120	1	351	249	139				36	33	161	401
Calves/100 Cows	71	72	70	77		34	25	22	57			41	39	100	32	37	62				58	55	19	39
Yearlings Observed	N/A	N/A	N/A	N/A		10	76	29	N/A			42	23	0	57	75	17				5	7	37	100
Bulls Observed	76	29	126	46		25	204	151	54			126	64	6	133	181	74				38	40	73	277
Bulls/100 Cows	99	74	67	72		37	62	68	57			64	53	600	38	73	53				106	121	45	69
Bull + Cows	153	68	315	110		92	532	373	148			322	184	7	484	430	213				74	73	234	678
Adults + Yearlings Observed	153	68	315	110		102	608	402	148			364	207	7	541	505	230				79	80	271	778
Total Observed (Calves, Yearlings and Adults)	208	96	448	159		125	690	451	202			445	254	8	655	597	316				100	98	302	933

Not completed

Ratio

40 bulls:100 cows

40 bulls:100 cows

40 bulls:100 cows

Suggests enough bulls to breed cows

Composition Surveys Results- North

Spring

Table 4 Number of observed caribou by demographic group during Baffin Island composition surveys 2015-2018.

Year	2015				2016				2016				2017				2017				2018			
Season	Fall				Spring				Fall				Spring				Fall				Spring			
Location	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island
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Not completed

Ratio

? Calves:100 cows

30-50 calves:100 cows

30-50 calves:100 cows

Suggests good calf over-winter survival

Composition Surveys Results- Central

Fall

Table 4 Number of observed caribou by demographic group during Baffin Island composition surveys 2015-2018.

Year	2015				2016				2016				2017				2017				2018			
Season	Fall				Spring				Fall				Spring				Fall				Spring			
Location	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island
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Not completed

Ratio

40 bulls:100 cows

? bulls:100 cows

? bulls:100 cows

2015 suggests enough bulls to breed cows

Composition Surveys Results- Central

Spring

Table 4 Number of observed caribou by demographic group during Baffin Island composition surveys 2015-2018.

Year	2015				2016				2016				2017				2017				2018			
Season	Fall				Spring				Fall				Spring				Fall				Spring			
Location	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island
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Total Observed (Calves, Yearlings and Adults)	208	96	448	159		125	690	451	202			445	254	8	655	597	316				100	98	302	933

Not completed

Ratio

30-50 calves:100 cows

30-50 calves:100 cows

30-50 calves:100 cows

Suggests good calf over-winter survival

Composition Surveys Results- PCI

Fall

Table 4 Number of observed caribou by demographic group during Baffin Island composition surveys 2015-2018.

Year	2015				2016				2016				2017				2017				2018			
Season	Fall				Spring				Fall				Spring				Fall				Spring			
Location	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island
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Not completed

Ratio

40 bulls:100 cows

? bulls:100 cows

? bulls:100 cows

2015 suggests enough bulls to breed cows

Composition Surveys Results- PCI

Spring

Table 4 Number of observed caribou by demographic group during Baffin Island composition surveys 2015-2018.

Year	2015				2016				2016				2017				2017				2018			
Season	Fall				Spring				Fall				Spring				Fall				Spring			
Location	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island
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Total Observed (Calves, Yearlings and Adults)	208	96	448	159		125	690	451	202			445	254	8	655	597	316				100	98	302	933

Not completed

Ratio

30-50 calves:100 cows

30-50 calves:100 cows

30-50 calves:100 cows

Suggests poor calf over-winter survival

Composition Surveys Results- South

Fall

Table 4 Number of observed caribou by demographic group during Baffin Island composition surveys 2015-2018.

Year	2015				2016				2016				2017				2017				2018			
Season	Fall				Spring				Fall				Spring				Fall				Spring			
Location	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island
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Bulls Observed	76	29	126	46		25	204	151	54			126	64	6	133	181	74				38	40	73	277
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Not completed

Ratio

40 bulls:100 cows

40 bulls:100 cows

? bulls:100 cows

2015 and 2016 suggests enough bulls to breed cows

Composition Surveys Results- South

Spring

Table 4 Number of observed caribou by demographic group during Baffin Island composition surveys 2015-2018.

Year	2015				2016				2016				2017				2017				2018			
Season	Fall				Spring				Fall				Spring				Fall				Spring			
Location	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island	North Baffin Island	Central Baffin Island	Prince Charles Island	South Baffin Island
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Not completed

Ratio

30-50 calves:100 cows

30-50 calves:100 cows

30-50 calves:100 cows

Suggests good calf over-winter survival

Composition Surveys
2019 Spring

Currently planning logistics for spring surveys in March/April 2019

Planning for south and central Baffin

In discussions with Baffinland regarding support for north Baffin

Working Together to Monitor Caribou on Baffin Island

– Planning For Recovery

Aerial Surveys

- Offer the most unobstructed viewing of caribou.
- Can cover large areas.
- Can be used to determine population trend.
- Can be used to estimate populations.
- Can be used to document large distributional shifts.

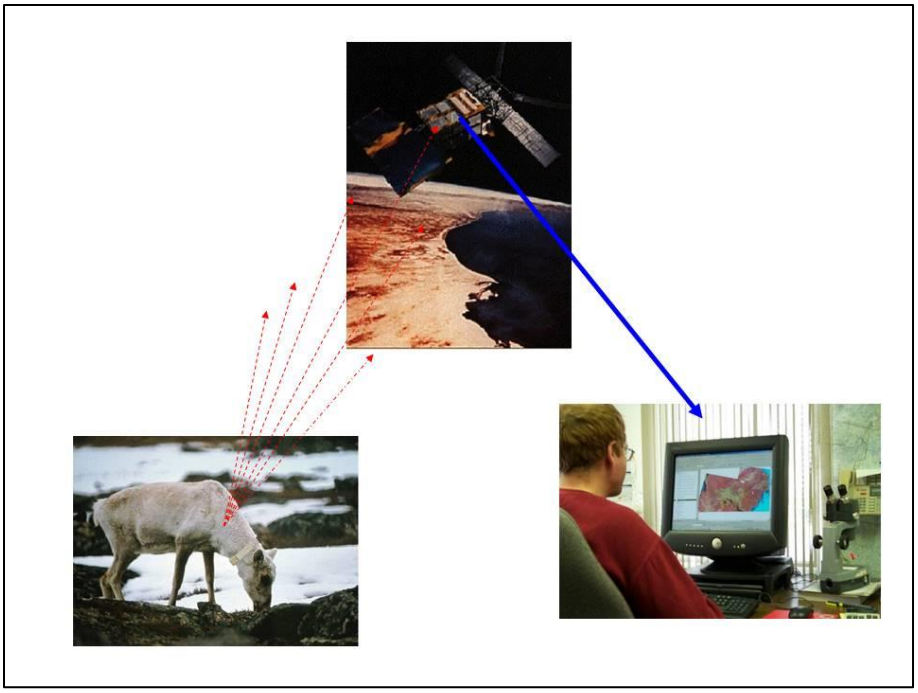
Composition Surveys

- Can be expensive
- Can be used as an index of population trend.
- Can be used to trigger more costly aerial surveys.
- Monitors changes in gender related survival.
- Provides an index of productivity.

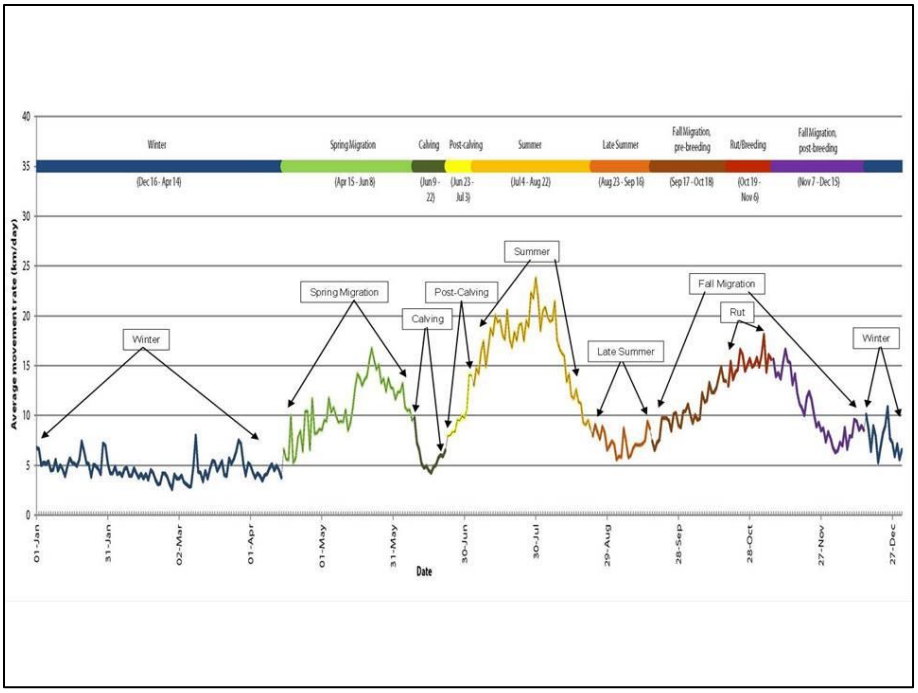
Telemetry Studies

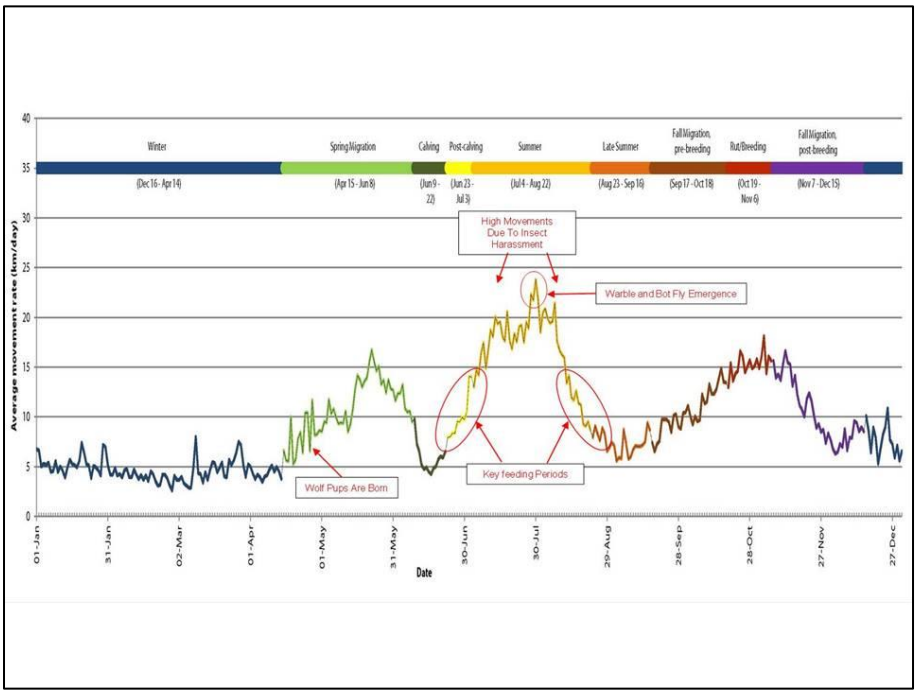
- Cost Effective.
- Dramatically lowers the cost of aerial and composition surveys.
- Can be used to determine herd annual range.
- Can be used to determine seasonal range.
- Can be used to guide aerial survey efforts.
- Can be used to determine critical habitat.
- Can be used to protect critical habitat.



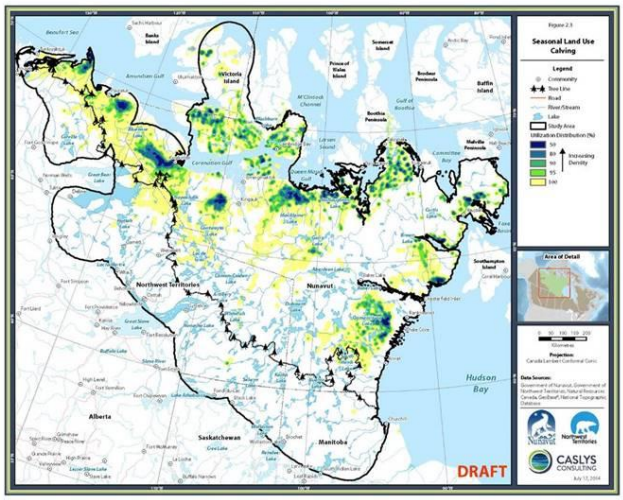


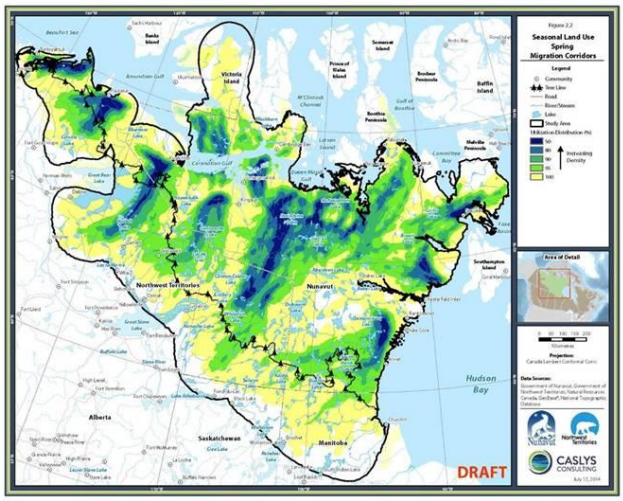
How Telemetry is being used


Winter
(Dec 16 - Apr 14)
Spring Migration
(Apr 15 - Jun 8)
Calving
(Jun 9 - 22)
Post-calving
(Jun 23 - Jul 3)
Summer
(Jul 4 - Aug 22)
Late Summer
(Aug 23 - Sep 16)
Fall Migration, pre-breeding
(Sep 17 - Oct 18)
Rut/Breeding
(Oct 19 - Nov 6)
Fall Migration, post-breeding
(Nov 7 - Dec 15)
Average movement rate (km/day)
Date
01-Jan
31-Jan
02-Mar
01-Apr
01-May
31-May
30-Jun
30-Jul
29-Aug
28-Sep
28-Oct
27-Nov
27-Dec

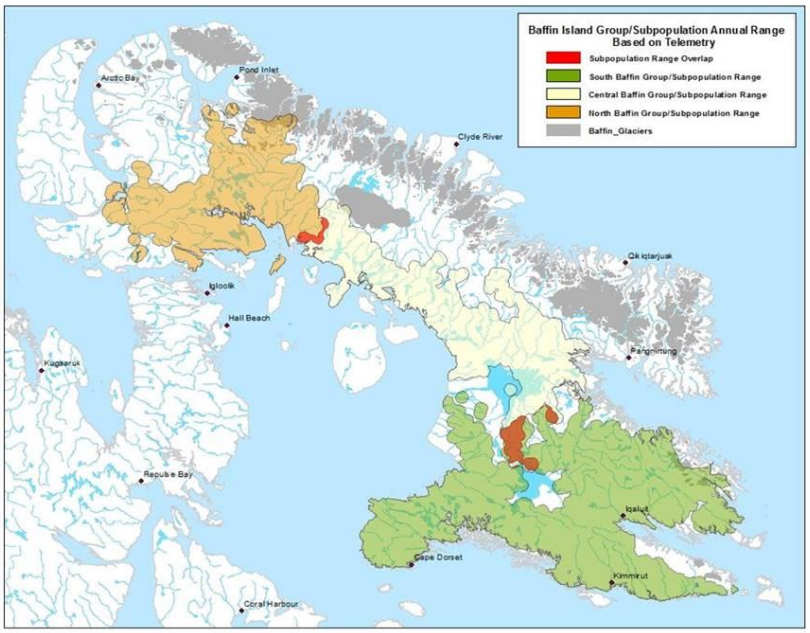

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Rut/Breeding
(Oct 19 - Nov 6)
Fall Migration, post-breeding
(Nov 7 - Dec 15)
High Movements Due To Insect Harassment
Warble and Bot Fly Emergence
Wolf Pups Are Born
Key feeding Periods
Average movement rate (km/day)
Date
01-Jan
31-Jan
02-Mar
01-Apr
01-May
31-May
30-Jun
30-Jul
29-Aug
28-Sep
28-Oct
27-Nov
27-Dec

Determining Seasonal Range

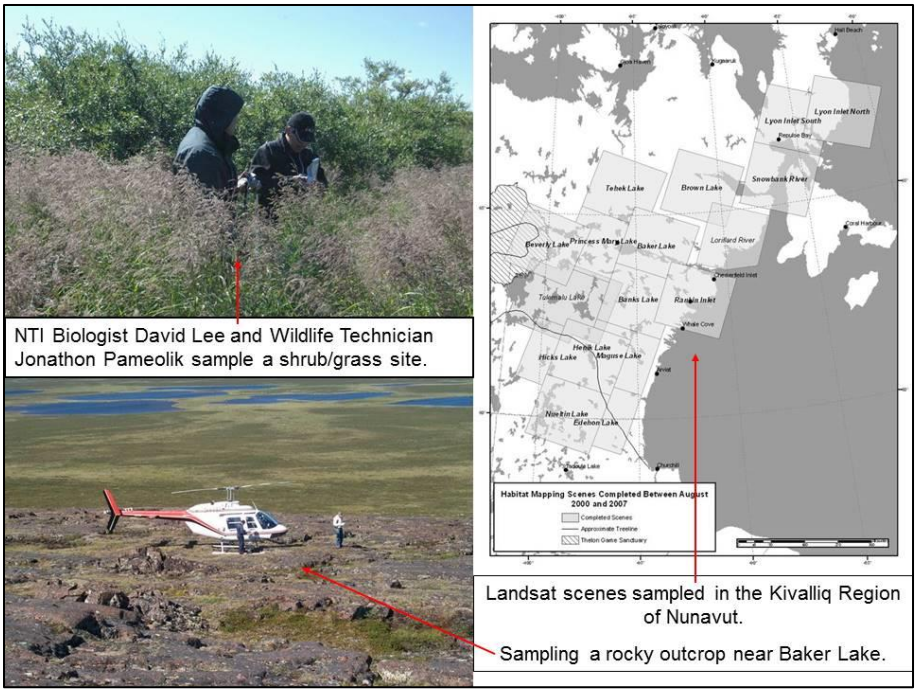


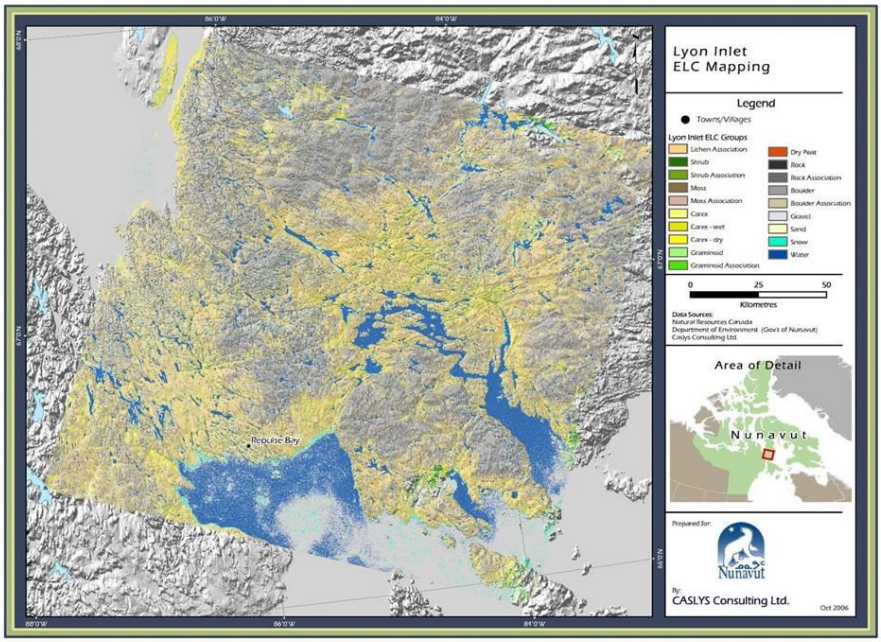


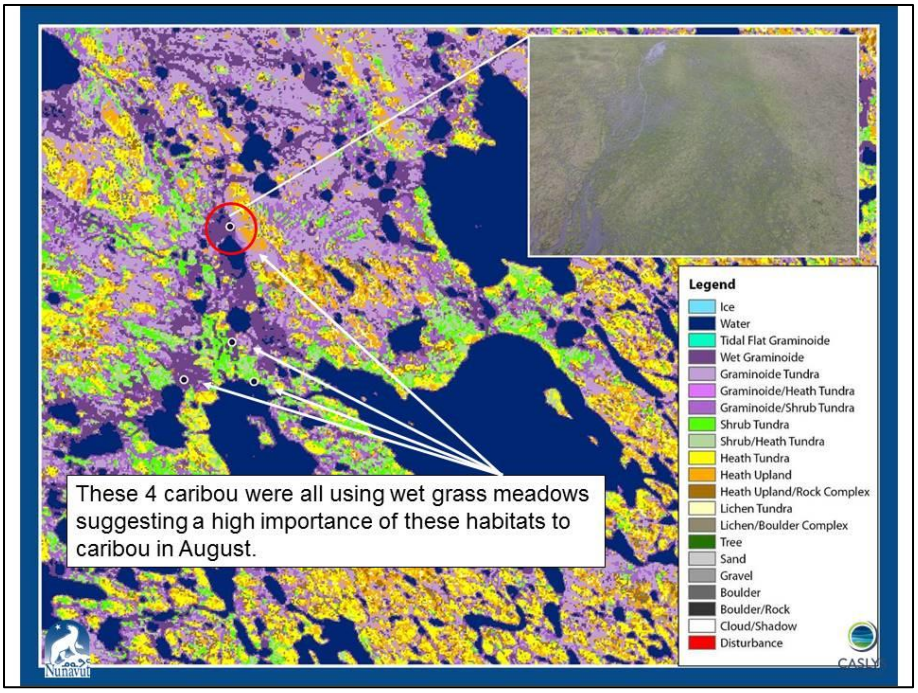
Herd Delineation



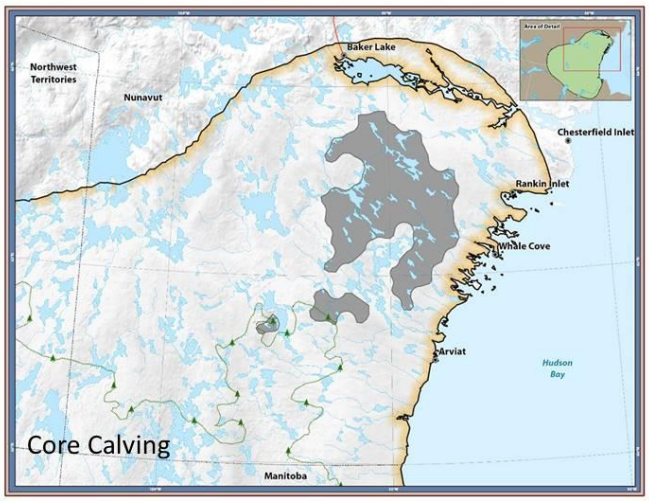
Ecological Studies


NTI Biologist David Lee and Wildlife Technician Jonathon Pameolik sample a shrub/grass site.
Lyon Inlet North
Lyon Inlet South
Repulse Bay
Snowbank River
Tehek Lake
Brown Lake
Beverly Lake
Princess Mary Lake
Baker Lake
Lorillard River
Tulemalu Lake
Banks Lake
Rankin Inlet
Whale Cove
Hicks Lake
Meguse Lake
Nueltin Lake
Ethelon Lake
Habitat Mapping Scenes Completed Between August 2000 and 2007
Completed Scenes
Approximate Treeline
Thelon Game Sanctuary
Landsat scenes sampled in the Kivalliq Region of Nunavut.
Sampling a rocky outcrop near Baker Lake.


Lyon Inlet
ELC Mapping
Legend
Towns/Villages
Lyon Inlet ELC Groups
Lichen Association
Shrub
Shrub Association
Moss
Moss Association
Carex
Carex - wet
Carex - dry
Graminoid
Graminoid Association
Dry Peat
Rock
Rock Association
Boulder
Boulder Association
Gravel
Sand
Snow
Water
0
25
50
Kilometres
Data Sources:
Natural Resources Canada
Department of Environment (Gov't of Nunavut)
Caslys Consulting Ltd.
Area of Detail
Nunavut
Repulse Bay
Prepared for:
By:
CASLYS Consulting Ltd.
Oct 2006

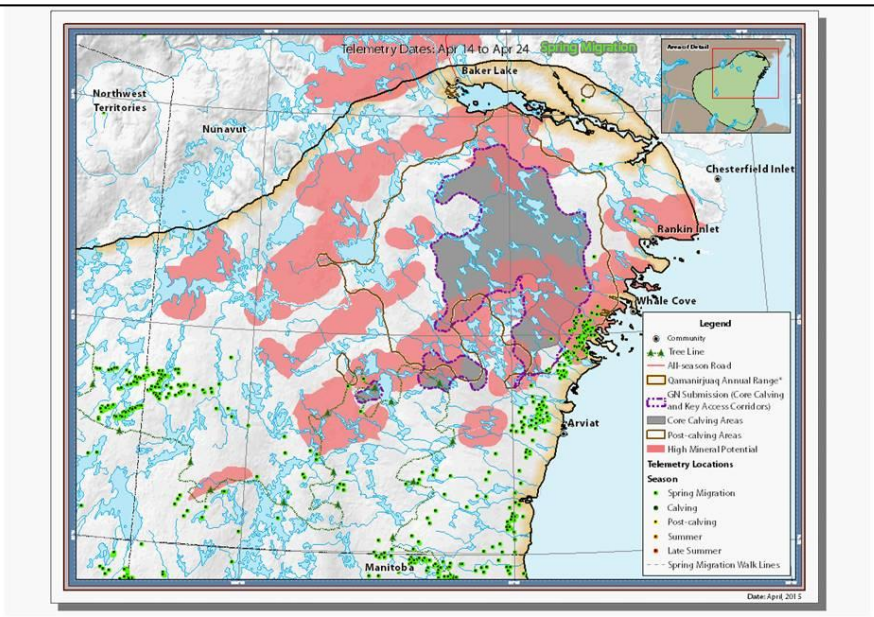


Protecting Caribou From Development

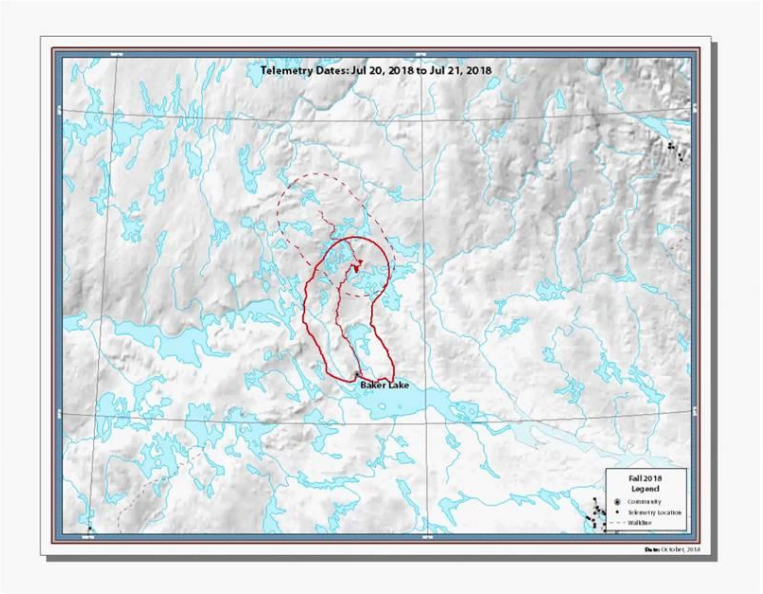

Northwest Territories
Nunavut
Baker Lake
Chesterfield Inlet
Rankin Inlet
Whale Cove
Arviat
Hudson Bay
Manitoba
Core Calving


Northwest Territories
Nunavut
Baker Lake
Chesterfield Inlet
Rankin Inlet
Whale Cove
Arviat
Hudson Bay
Manitoba
Spring Migration Corridor

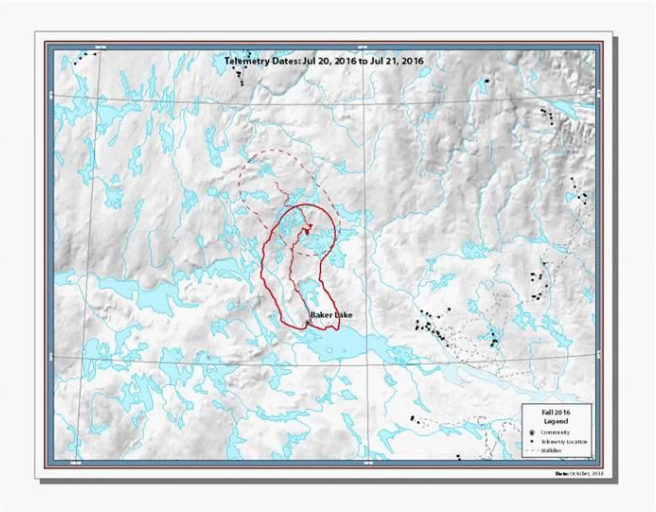

Baker Lake
Northwest Territories
Nunavut
Chesterfield Inlet
Rankin Inlet
Whale Cove
Arviat
Hudson Bay
Post-calving
Manitoba


Telemetry Dates: Apr 14 to Apr 24 Spring Migration
Baker Lake
Northwest Territories
Nunavut
Chesterfield Inlet
Rankin Inlet
Whale Cove
Arviat
Manitoba
Legend
Community
Tree Line
All-season Road
Qamanirjuaq Annual Range*
GN Submission (Core Calving and Key Access Corridors)
Core Calving Areas
Post-calving Areas
High Mineral Potential
Telemetry Locations
Season
Spring Migration
Calving
Post-calving
Summer
Late Summer
Spring Migration Walk Lines
Date: April, 2015

2018


Telemetry Dates: Jul 20, 2018 to Jul 21, 2018
Baker Lake
Fall 2018
Legend
Community
Telemetry Location
Waterline

2016


Telemetry Dates: Jul 20, 2016 to Jul 21, 2016
Baker Lake
Fall 2016
Legend
Community
Telemetry Location
Waterline



Draft Management Plan

Sent to HTO in September 2018

We want to know community concerns, questions and comments

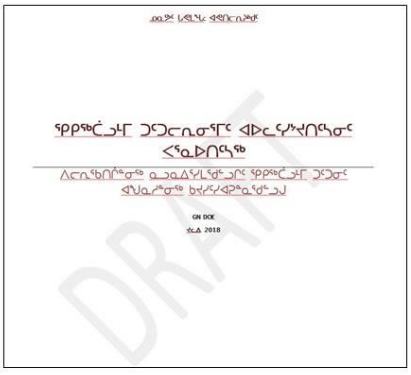

GOVERNMENT OF NUNAVUT: DEPARTMENT OF ENVIRONMENT

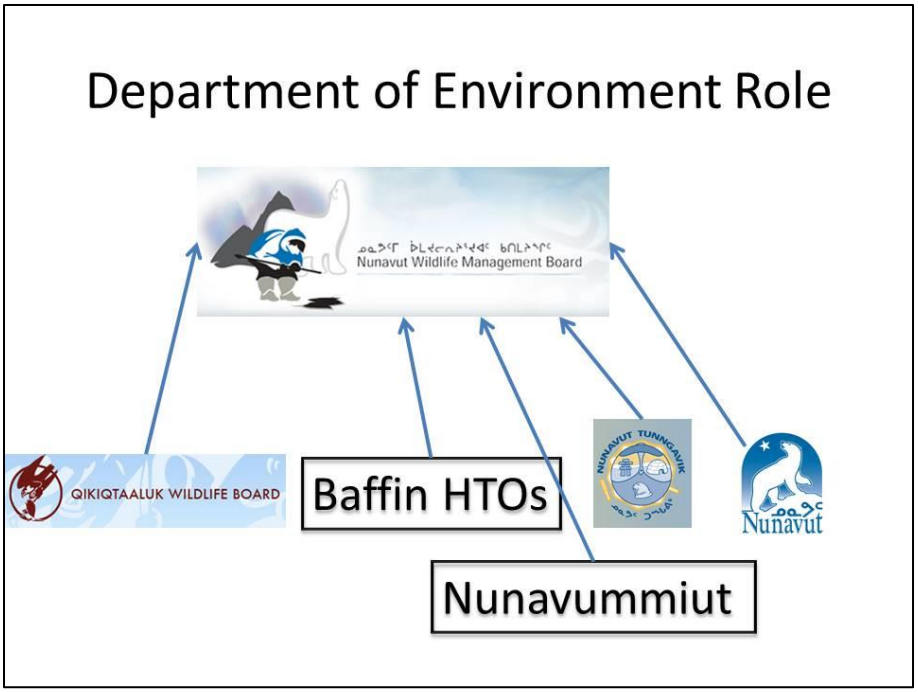
Baffin Island Caribou Management Plan

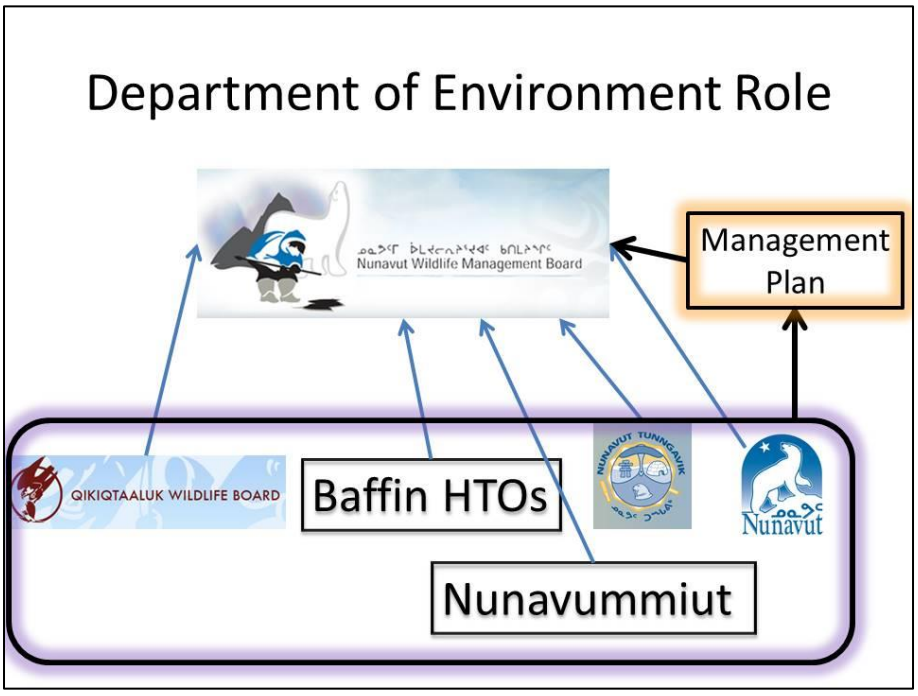
Working together to ensure Baffin Island caribou harvest is sustainable

GN DOE
July 2018

DRAFT


DRAFT


Department of Environment Role
Nunavut Wildlife Management Board
QIKIQTAALUK WILDLIFE BOARD
Baffin HTOs
Nunavut Tunngavik
Nunavut
Nunavummiut


Department of Environment Role
Nunavut Wildlife Management Board
Management Plan
QIKIQTAALUK WILDLIFE BOARD
Baffin HTOs
Nunavut Tunngavik
Nunavut
Nunavummiut

What if something changes?

- Plan updated if there is new information
  - Status of caribou
  - Status of harvest management
  - Status of monitoring
- Complete review every 10 years
  - Next major revision (2028)



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Nunavunmi Anngutighatigut Aulapkaijitkut Katimajiat
Nunavut Wildlife Management Board

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Tammaqtailinahuarniriit anngutighat atuqhugit Inuit qaujimajatuqangillu ilihimaniillu ilitquhiannin
Conserving wildlife through the application of Inuit Qaujimajatuqangit and scientific knowledge

October 08, 2019

Honourable Joe Savikataaq
Minister of Environment
Government of Nunavut

Dear Minister Savikataaq:

Re: Proposal to Approve the Baffin Island Caribou Management Plan

At the Nunavut Wildlife Management Board's (NWMB or Board) Regular Meeting in Iqaluit on September 11, 2019 (RM003-2019), your department asked the NWMB to approve the *Baffin Island Caribou Management Plan* (management plan). The goal of the management plan is to serve as "an adaptive guide to harvest and monitoring of the Baffin Island caribou population."

At the NWMB's In-Camera Meeting in Iqaluit on September 12, 2019 (IC003-2019), the Board considered your proposal, along with records of government consultations with affected communities in the Qikiqtaaluk Region. The NWMB raised the following concerns:

- The lack of specific management actions to address current threats to Baffin Island caribou.
- The management plan has not been updated to include recent changes to Baffin Island caribou harvest non-quota limitations
- The QWB did not provide and comment on the content of the proposed management plan. Even though your department accommodated the Qikiqtaaluk Wildlife Board's (QWB) requests for deadline extensions in three instances.

The NWMB has written to the Qikiqtaaluk Wildlife Board (QWB) to request that they provide their position on the content of the management plan to your department for consideration by December 13, 2019.

The NWMB, therefore, recommends that your department consider the points raised above and to consider the written comments from the Qikiqtaaluk Board if any.

The Board will be pleased to consider the Proposal once the points above have been addressed.

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Nunavunmi Anngutighatigut Aulapkaijitkut Katimajiat
Nunavut Wildlife Management Board

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Tammaqtailinahuarniriit anngutighat atuqhugit Inuit qaujimajatuqangillu ilihimaniillu ilitquhiannin
Conserving wildlife through the application of Inuit Qaujimajatuqangit and scientific knowledge

Yours sincerely,



Daniel Shewchuk
Chairperson
Nunavut Wildlife Management Board

cc - Drikus Gissing, Director of Wildlife Management, Nunavut Department of Environment

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Building Nunavut Together
Nunavuliuqatigiingniq
Bâtir le Nunavut ensemble

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Minister of Environment
Ministaat Avatiliqiyitkut
Ministre de l'Environnement

Mr. Daniel Shewchuk
Acting Chairperson
Nunavut Wildlife Management Board
P.O Box 1379
Iqaluit, NU X0A 0H0

Translation
To follow

January 6, 2020

Re: Proposal to Approve the Baffin Island Caribou Management Plan

Dear Mr. Shewchuk,

Thank you very much for your letter dated October 8, 2019 concerning the Department of Environment's (DOE) request for approval of the Baffin Island Caribou Management Plan (BICMP). Regarding the concerns raised by yourself and the Nunavut Wildlife Management Board (NWMB), I would like to provide some context and responses to your specific points.

The Board indicated that there was a *"lack of specific management actions to address current threats to Baffin Island caribou"*. Specific management recommendations such as Total Allowable Harvest (TAH) levels, which are based on scientific information, traditional knowledge, and consultation with co-management partners, were indeed not included in the management plan. This is because the wildlife management system in Nunavut requires that the NWMB and co-management partners have an opportunity to comment on management recommendations. It is our position that if specific management actions were provided within the management plan, this would be overly prescriptive and create a redundancy, or even a conflict, with the NWMB's existing approval process.

Your letter indicated, *"the management plan has not been updated to include recent changes to Baffin Island harvest non-quota limitations"*. Due to the short timeframe between the decision on the Baffin Island TAH and Non-Quota Limitation, it was overlooked as an addition to the BICMP before the submission deadline for the NWMB regular meeting in September 2019. Changes to the non-quota limitations will be added to the Baffin Island Caribou Management Plan before it is re-submitted to the NWMB.

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Iqaluit, Nunavut X0A 0H0

Titiqakuvia 2410
Iqaluit, Nunavut X0A 0H0

C. P. 2410
Iqaluit, Nunavut X0A 0H0

867-975-5050
867-975-5051

The final point made by the NWMB was that "*the QWB did not provide and comment on the content of the proposed management plan. Even though your department accommodated the Qikiqtaaluk Wildlife Boards (QWB) requests for extensions in three instances".* This plan has been in circulation since 2005 and has undergone multiple rounds of consultations with the more recent consultations taking place with co-management partners, including the QWB, at the beginning of 2019. We recognize the need for co-management partners to have ample opportunity to provide input. Unfortunately, QWB has not responded by December 13, 2019 and the comment period was extended to accommodate QWB's request for this extension; which has created further delays in the approval process.

The DOE appreciates the Board providing a date by which QWB should respond. Unfortunately, as noted the December 13, 2019 deadline has passed without QWB providing any input on the BICMP.

I would like to thank the Board for their consideration of this plan and for their willingness to work together with us on the conservation and management of Baffin Island caribou during this critical, recovery phase for their population.

Sincerely,

Joe Savikataaq,
Minister of Environment

Cc. Jimmy Noble Jr., Deputy Minister of Environment
Steve Pinksen, Assistant Deputy Minister of Environment
Drikus Gissing, Director of Wildlife

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Nunavunmi Anngutighatigut Aulapkaijitkut Katimajiat
Nunavut Wildlife Management Board

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Conserving wildlife through the application of Inuit Qaujimajatuqangit and scientific knowledge

September 18, 2019

James Qillaq
Chairperson of the
Qikiqtaaluk Wildlife Board

Dear Mr. Qillaq:

Re: Request for comments from the Qikiqtaaluk Wildlife Board concerning the Government of Nunavut's *Baffin Island Caribou Management Plan*

NWMB decision

At the Nunavut Wildlife Management Board's (NWMB or Board) Regular Meeting in Iqaluit on September 11, 2019 (RM003-2019), the Government of Nunavut asked the NWMB to approve the *Baffin Island Caribou Management Plan* (management plan). The goal of the management plan is to serve as "an adaptive guide to harvest and monitoring of the Baffin Island caribou population."

The Board considered the Government of Nunavut's proposal, along with records of government consultations with affected communities in the Qikiqtaaluk Region and decided to write to the Qikiqtaaluk Wildlife Board (QWB). The Board decided to request that the QWB provide its position on the contents of the management plan, to the Government of Nunavut—before making a decision on the management plan. In reaching this decision, the NWMB considered the following:

- The Baffin Island caribou population is at a historic low, and there is a need to actively engage co-management partners in its management and recovery planning.
- On September 25, 2018, the Government of Nunavut sent the revised management plan to all Qikiqtaaluk Hunters and Trappers Organizations, QWB, Nunavut Tunngavik Inc., and NWMB for comment. The initial deadline for submission of comments on the management plan was postponed several times at the request of the QWB. No comments were received from the QWB or any other Qikiqtani community by the July 15, 2019, deadline.
- Written input by the the Qikiqtaaluk Wildlife Board could assist the Government of Nunavut in improving the management plan.
- The Qikiqtaaluk Wildlife Board is a key co-management partner and the Qikiqtaaluk communities are the most directly affected in the management of Baffin Island caribou.

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Nunavunmi Anngutighatigut Aulapkaijitkut Katimajiat
Nunavut Wildlife Management Board

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Conserving wildlife through the application of Inuit Qaujimajatuqangit and scientific knowledge

The NWMB is requesting that the QWB provides its position on the *Baffin Island Caribou Management Plan* to the Government of Nunavut by **Friday, December 13, 2019,** at **5 p.m. eastern time**.

If you or your officials have any questions or concerns about the content of this letter, please do not hesitate to contact the NWMB

Yours sincerely,



Daniel Shewchuk
Chairperson
Nunavut Wildlife Management Board

cc - Drikus Gissing, Director of Wildlife Management, Nunavut Department of Environment;
- Paul Irngaut, Director of Wildlife, Nunavut Tunngavik Incorporated; and
- Pitsiulak Kolola, Executive Director, Qikiqtaaluk Wildlife Board.

SUBMISSION TO THE

NUNAVUT WILDLIFE MANAGEMENT BOARD

FOR

Information: X **Decision:**

Issue: Update on the Department of Environment Long-term Ecosystem Monitoring Program

Background:

- The Government of Nunavut's Department of Environment (DOE) established the Long-Term Ecological Monitoring Program (LTEMP) in 2012 to monitor ecosystem-level changes associated with climate and economic development, and how these changes affect tundra-breeding wildlife. The long-term goal of the program, is to monitor the temporal changes within ecosystems over decades, as opposed to a couple of years.

- The program was run from 2012-2013 and again from 2015-2016 but due to high turnover in departmental staff, there were gaps in the delivery of this program. In order to improve the continuity and efficiency of the program, the DOE decided to collaborate with academic partners.

- The LTEMP is undertaken through a Memorandum of Understanding (MOU) between the University of Alberta, A. Franke, and the Government of Nunavut. Fieldwork, data management and storage, analysis, and reporting are conducted by a team of researchers, led by A. Franke at the University of Alberta in collaboration with the DOE.

Current Status:

- The goal of the LTEMP is to undertake annual monitoring at spatial and temporal scales relevant to monitoring ecosystem components within the summer range of the Qamanirjuaq caribou herd.

- Primary concerns of the project are two-fold: 1) documenting long-term changes associated with climate change and how these may impact ecosystems, and 2) establishing base-line conditions in a region that is under increasing pressure due to its potential for economic development.

- Starting in 2019, intensive monitoring is conducted annually near the community of Rankin Inlet, and extensive monitoring (vegetation and pellet counts) has been conducted periodically at 16 permanent locations established in the summer range of the Qamanirjuaq caribou herd since 2012.

- The intensive monitoring near Rankin Inlet incorporates multiple ecosystem components across three trophic levels (primary producers to tertiary consumers), while extensive monitoring focuses on vegetation and pellet counts. Current components of the monitoring near Rankin Inlet include vegetation, arthropods, songbird community, small mammal community, and some avian predators.

- All data collection is conducted using accepted taxa-specific protocols, including those developed by Arctic tundra ecologists involved in the International Tundra Experiment.

- The Nunavut General Monitoring Program is a significant, long-term funding partner (2019/20 – 2021/22) of the LTEMP.

- Starting in 2019, with support from Nunavut Arctic College (NAC) and the Kivalliq Inuit Association, students enrolled in the NAC Environmental Technology Program were employed through the LTEMP internship program, which was designed to provide science-based, on-the-job training.

- At least two Nunavut Inuit are employed each year; they are involved in all aspects of the field program, but also transfer of local knowledge (e.g., safe travel on the land and sea) and Inuit Qaujimajatuqangit (e.g., working together, innovative thinking, skill development, respect for the land and animals).

- The LTEMP is an ideal program for the integrating community-based monitoring, and the DOE is open to collaborating with co-management partners to expand community involvement. There is potential to increase the participation of Nunavut Inuit students and summer employment of local community members.

Consultations:

- Consultations with Hunter Trapper Organizations in Rankin Inlet and Baker Lake were conducted by the DOE in May 2019.
- Additional consultations are tentatively planned in all relevant communities for February 2020.

Recommendations:

- *N/A*

Long-term Ecological Monitoring Program: Executive Summary

It is well established that temperatures in the Arctic have risen at almost twice the rate of temperatures elsewhere. However, studying the effects of climate change on wildlife is challenging; unlike physical processes that generally respond to increased temperature in predictable ways (e.g., permafrost, glacial erosion and oceanic winds, tides and densities), animals can respond in surprising ways, and assessing environmental change that results from natural and anthropogenic drivers in ecosystems that are inherently variable exacerbates these challenges.

Ecosystem change is expected to be significant and ongoing. Shifts in the distribution and demography of tundra-breeding wildlife, such as barren-ground caribou, are expected to occur with climate-induced increases in vegetation growth and range expansion, potentially benefitting species associated with shrub-dominated habitats, and harming species more reliant on tundra habitat, through climate-induced habitat loss. Similarly, pathogens and parasites currently excluded from the Arctic are expected to become established through range expansion and warming. Novel relationships among hosts and parasites can increase the prevalence of infectious diseases, increase host morbidity and mortality, and have cascading impacts on food webs and ecosystem functioning. Similarly, over the long-term, the frequency of extreme weather events, outside of historical range in variation, is likely (e.g., rain on snow, summer storms, temperature highs and lows, snow cover and depth). The ecological consequences of these events include changes to food webs and timing of key ecological relationships, shifts in species distribution and community composition, and changes in demography.

To address two primary concerns (documenting long-term changes associated with climate change, and documenting baseline conditions in a region of high interest for economic development, the Government of Nunavut, Department of Environment (DOE) established the Long-Term Ecological Monitoring Program (LTEMP) in 2012. The goal of the program is to undertake annual monitoring at spatial and temporal scales relevant to monitoring ecosystem components within the Kivalliq region. Within the calving grounds of the Qamanirjuaq herd, extensive monitoring has been conducted periodically at 16 permanent locations since 2012, and starting in 2019, intensive annual monitoring was initiated near the community of Rankin Inlet. The intensive monitoring near Rankin Inlet incorporates multiple ecosystem components across three trophic levels (primary producers to tertiary consumers), while the extensive monitoring in the summer range of the Qamanirjuaq herd focuses on vegetation and pellet counts.

To address research and staffing capacity issues associated with the LTEMP, and to ensure the continuity of the project, the DOE decided to collaborate with academic partners. A Memorandum of Understanding with the University of Alberta, Department of Biological Sciences, and Dr. Alastair Franke was developed to facilitate the partnering of academic researchers with Government of Nunavut-led research projects, such as LTEMP. The main purpose of the LTEMP is to maintain a long-term (i.e., decades), field-based study to monitor ecosystem changes and incorporate the results into wildlife management practices. Specifically, this involves site-specific, standardized data collection for terrestrial (scat counts, bird surveys, small mammal surveys, invertebrate sampling, and vegetation surveys) and physical (temperature, precipitation, land cover) ecosystem components.

Intensive research site monitoring was conducted during the summer near the community of Rankin Inlet (Figure 1) in 2019. The study area represents approximately 2500 km^2 of coastal tundra and marine habitat typical of the low Arctic, containing a diversity of wet meadows, dwarf shrubs, dry eskers, rocky ridges, tidal flats and sea cliffs. The landscape consists of low rolling hills, interspersed with ponds and lakes. Rock outcrops are common throughout the area, and are well-developed as barrier islands. Ridge tops, upland areas, and well-drained slopes support lichens, moss, and low shrubs. Dominant vascular plants are Labrador tea (*Ledum palustre*), mountain cranberry (*Vaccinium vitisidaea*), and crowberry (*Empetrum nigrum*). Bell heather (*Cassiope tetragona*) occurs in low-lying areas and rock crevices. Vegetation on most slopes and hillsides consists of heath patches comprising *Dryas integrifolia*, Carex spp., Cassiope, and lichens.

We have structured our study design to incorporate monitoring of multiple ecosystem components across three trophic levels (primary producers to tertiary consumers). Monitoring of vegetation, including a warming experiment (starting in 2020), is central to the overall study design. To monitor plant species composition, and vegetation structure, five stations each comprising four replicates (two control and two treatment) were selected based on distribution and proximity of three vegetation types, shrub, heath, and graminoid. For each replicate, three 1m X 1m point-framing-plots (PFPs) have been permanently established within uniform patches of three vegetation types (shrub, heath, and graminoid), resulting in a total of 60 PFPs (30 control and 30 treatment). To monitor plant phenology, we have established a 50-m transect to monitor three species, *Dryas integrifolia* (mountain avens), *Eriophorum vaginatum* (cottongrass), and *Salix arctica* (Arctic willow), respectively. Other ecosystem components (small mammals, arthropods, avian community, and raptors) are monitored simultaneously, along with abiotic variables associated with weather, snow-cover, freeze-up and thaw. For arthropods, one pitfall trap was placed in each vegetation type (graminoid, shrub, and heath) at each control and treatment plot (4 plots total) at each PFP site (5 sites total), for a total of 60 pitfall traps. In addition, we documented pollinator diversity using pan traps. Two small mammal trapping stations were established each comprising effort no less than 720 trap-nights per trapping session.

Extensive, short-term monitoring was also conducted within the calving grounds of the Qamanirjuaq herd (Figure 2) in the summer of 2019. Sixteen permanent sampling sites have been established along a gradient of historical intensity of use by caribou, as determined by collar data collected between 1993 and 2012. Each of the 16 sampling locations contain three vegetation plots, one each for shrub, graminoid, and heath dominated micro-environments. Vegetation sampling occurs at all plots, and can be broken down into two main categories: (i) visual estimation of percent cover, and, (ii) species presence/richness. In addition, we record species-specific pellet counts annually as an index of animal use.

Data collection, back-up and storage, and preliminary data analysis has been conducted for vegetation community sampling (n = 15 locations), carabid and spider sampling (n = 15 locations), passive songbird sampling (n = 13 locations), active songbird sampling (n = 60 locations), historical shrub growth sampling (n = 7 locations), rainfall measurements (n = 4 locations), and raptor monitoring (study site wide) for the Rankin Inlet study area. Historical data collected (i.e., prior to 2018) in the calving grounds has similarly been backed-up and stored, and basic analysis of the pellet count data (e.g., site-specific counts per species for each habitat type) has been completed.

Figures

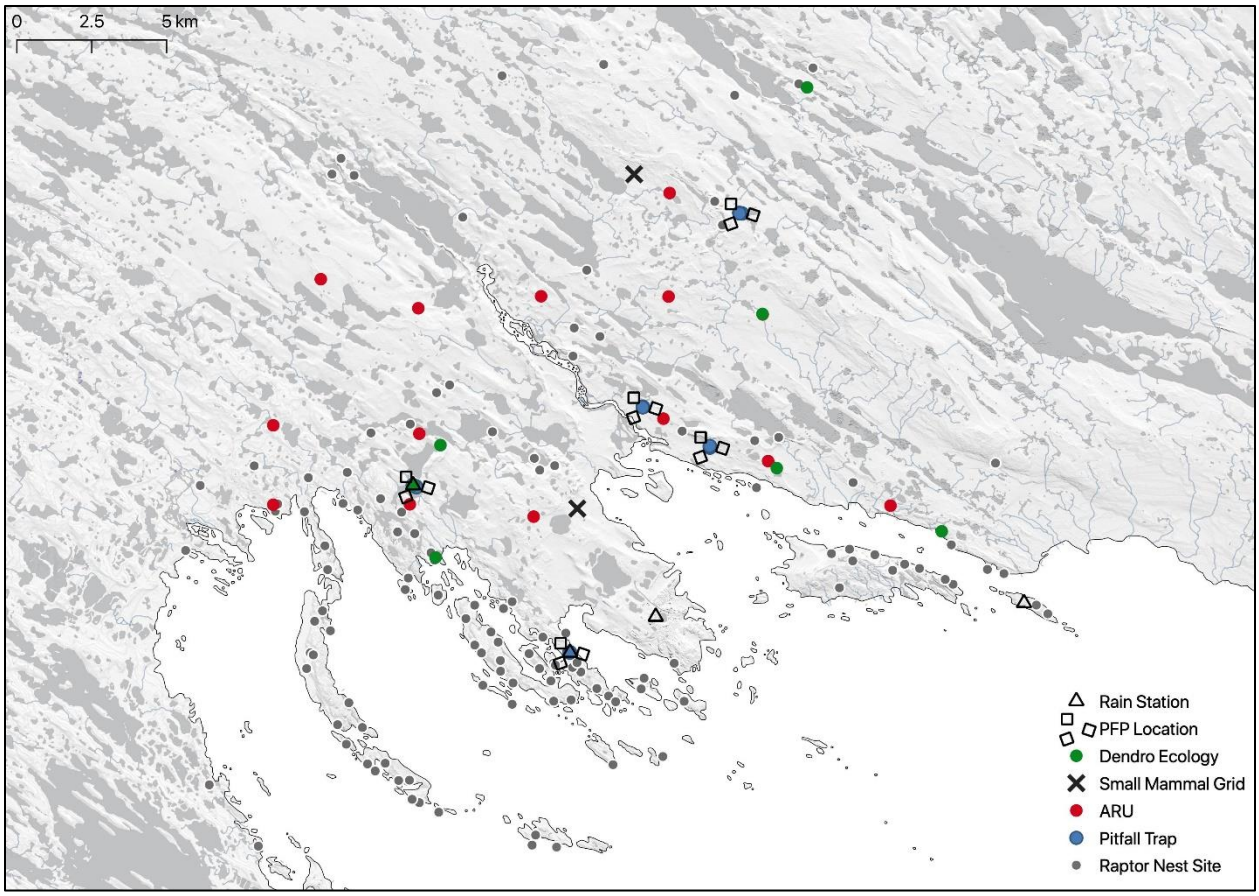


Figure 1 Sampling locations (2019 – ongoing) for rain gauges, community vegetation plots (PFP), dendro-ecology, small mammals, songbirds (ARU passive sampling), arthropods (pitfall traps), and raptors nesting sites monitored near Rankin Inlet.

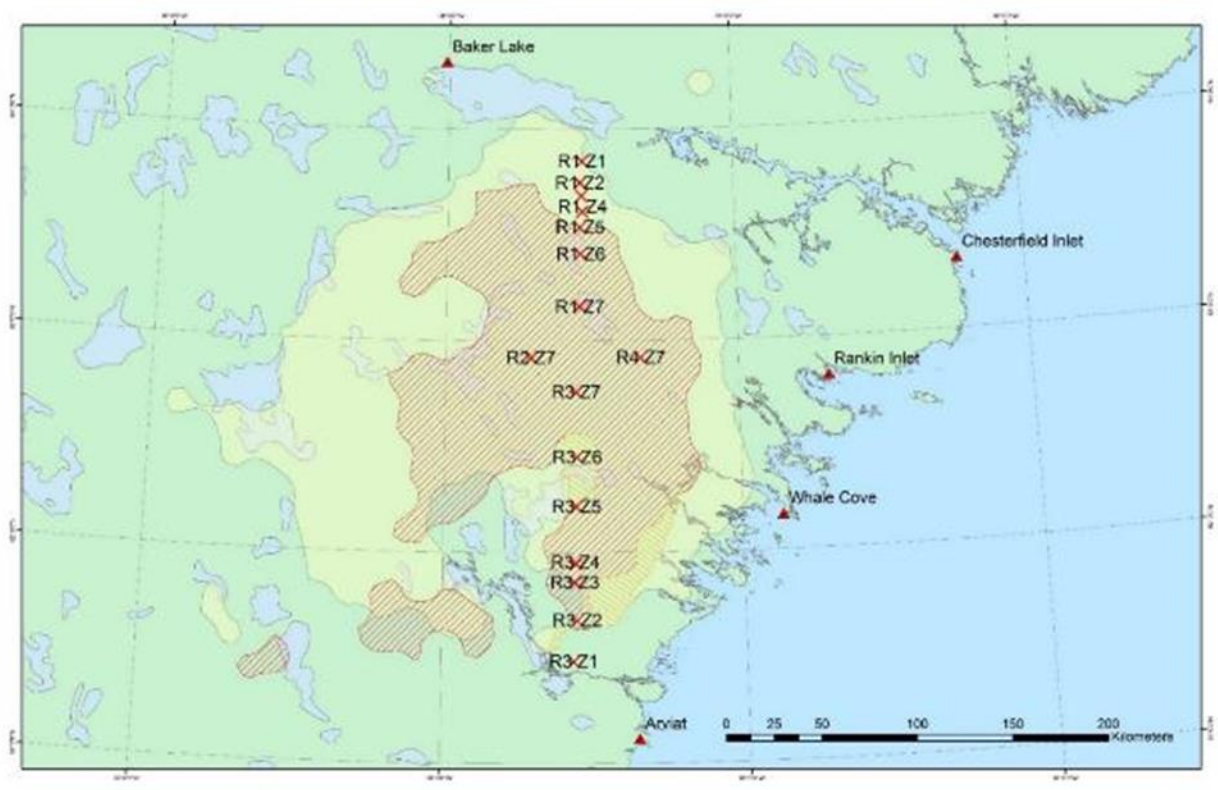


Figure 2 Four permanent site locations were established within the core, and 12 permanent sites were established extending northward (N=6) and southward (N=6) from the core calving grounds resulting in a total of 16 permanent sampling sites distributed from south to north within the Qamanirjuaq caribou herd calving grounds. The southernmost site is located approximately 260 km from the northernmost site.





LTEMP

Long-term Ecological Monitoring Program

Nunavut Wildlife Cooperative Research Unit

Government of Nunavut
University of Alberta

2019 - Nov
Annual Report

Erik Hedlin
Alastair Franke
Kevin Hawkshaw
Rebekah McKinnon
Nick Gulotta

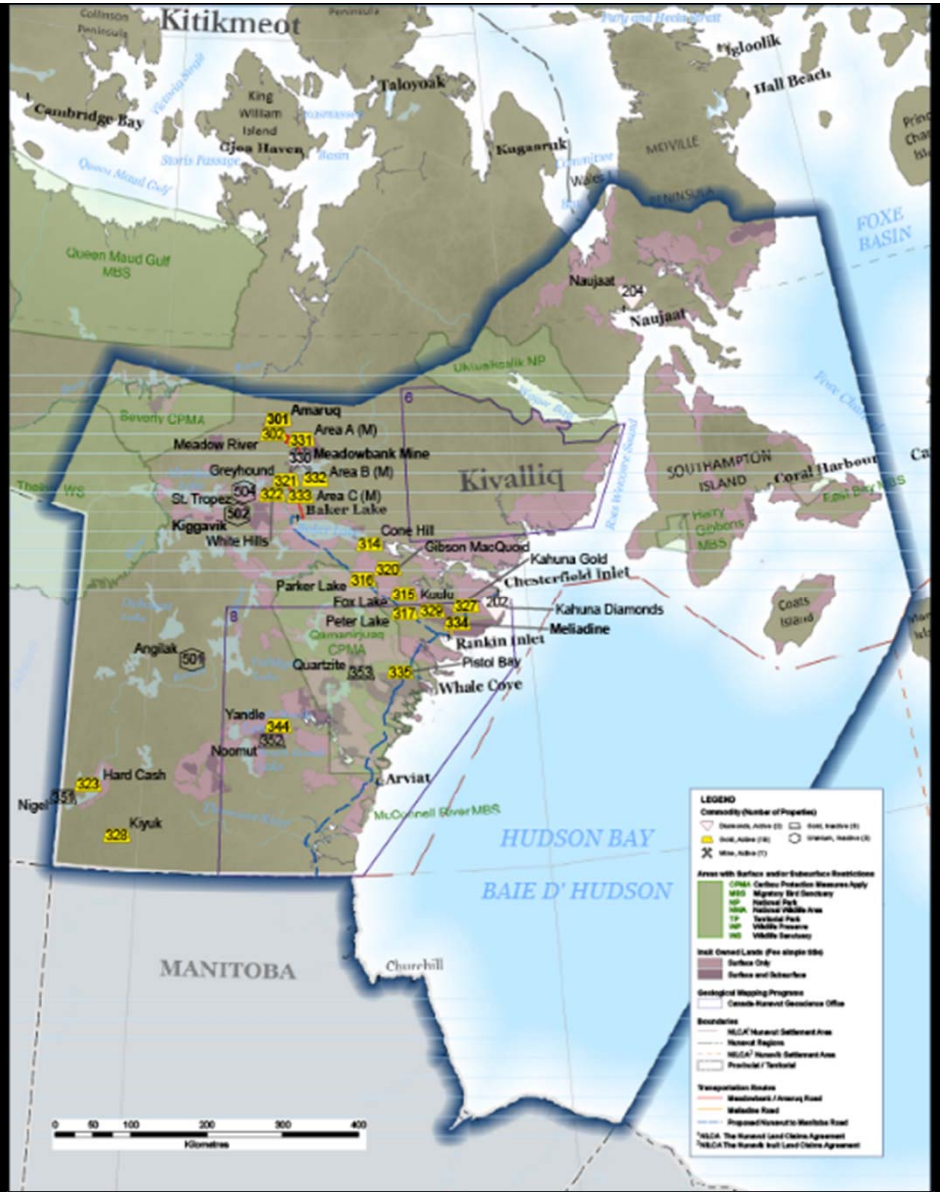
Disclaimer: This draft report has been prepared for the Government of Nunavut and presents preliminary findings that may change with further analysis. The views and interpretations in this report article are those of the authors and do not necessarily represent the views of the Government of Nunavut. Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the Government of Nunavut.

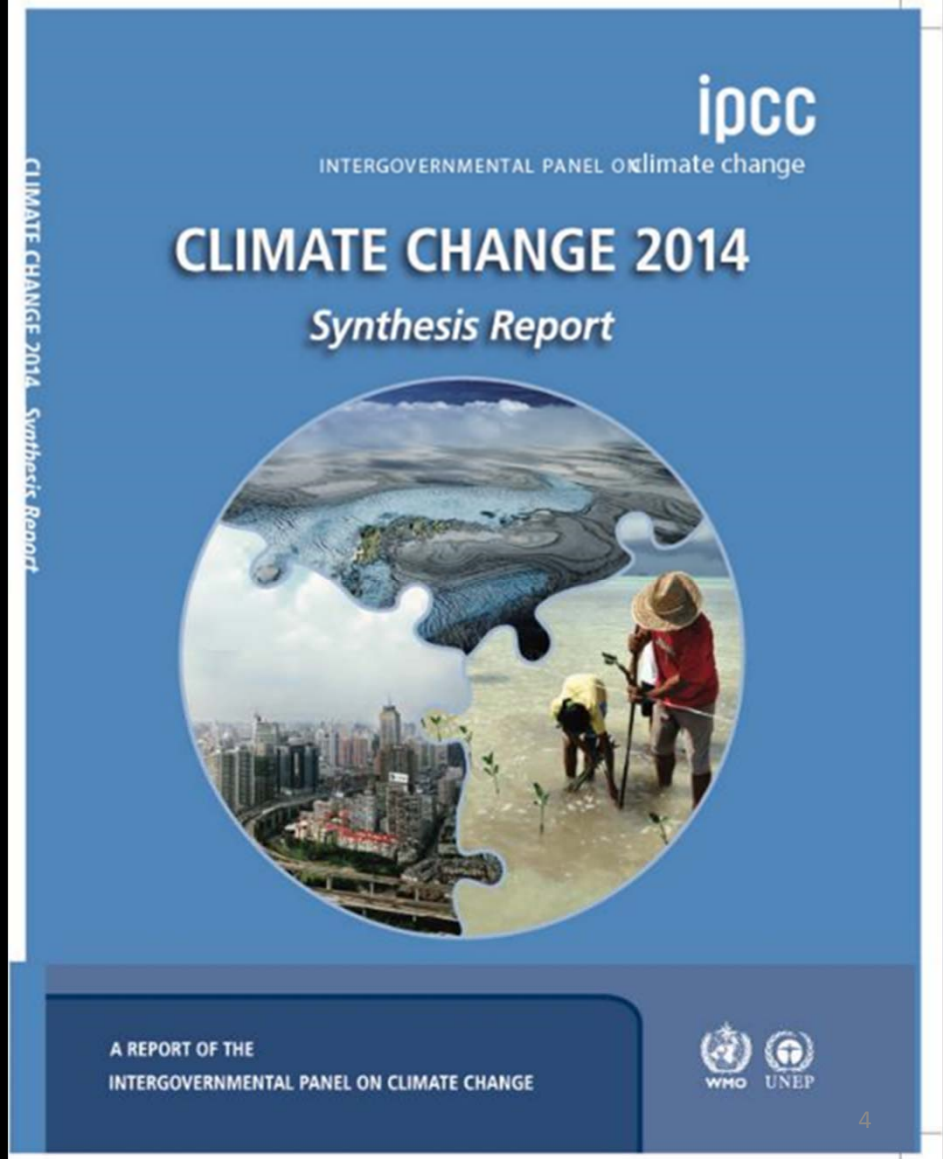
Background

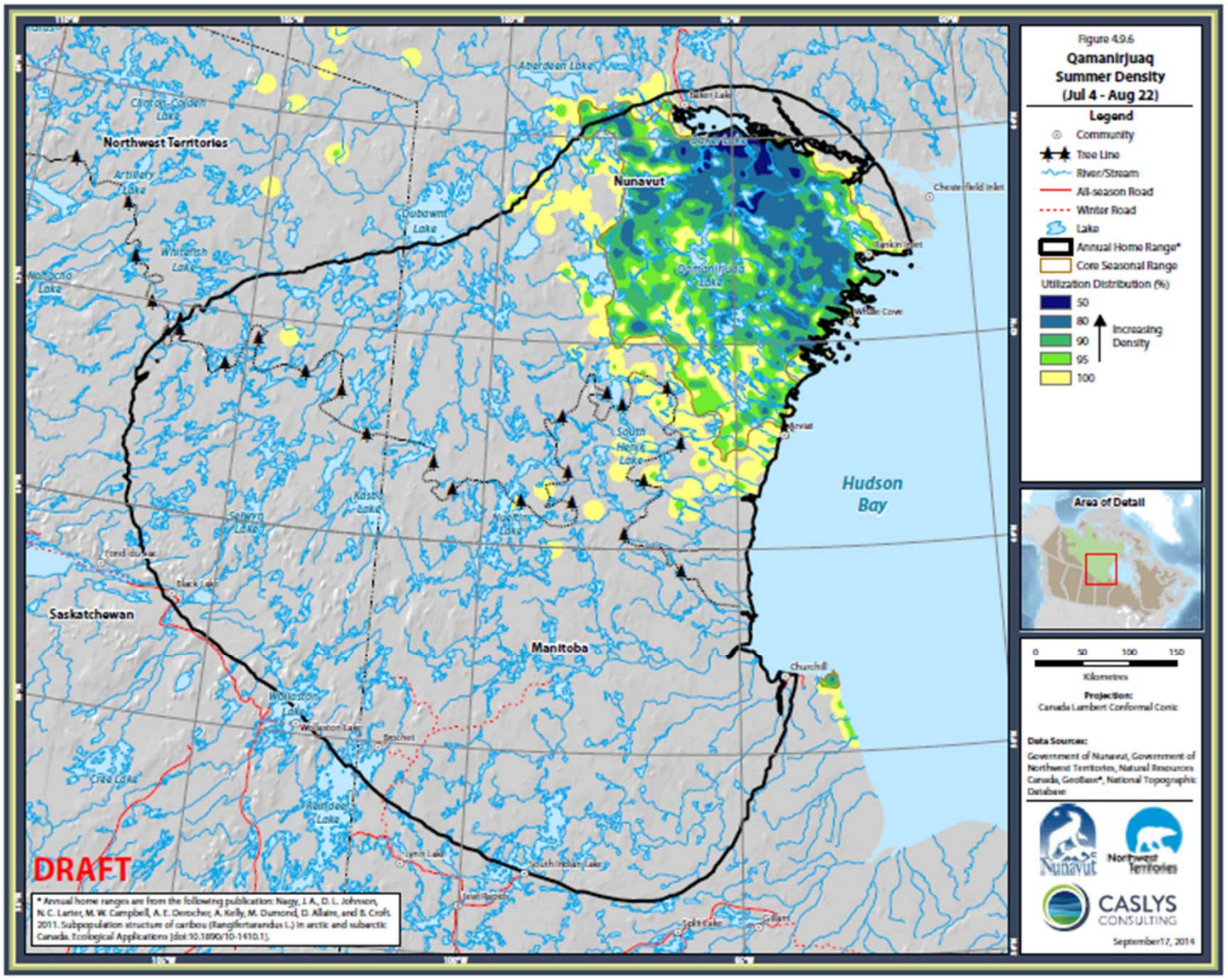
- GN established the Long-Term Ecological Monitoring Program (LTEMP) in 2012 to monitor ecosystem-level changes associated with climate and economic development.
- Fieldwork occurred 2012-2013 and 2015-2016. Due to high turnover of staff, the DOE decided to collaborate with academic partners to build long-term capacity to carry out the project.

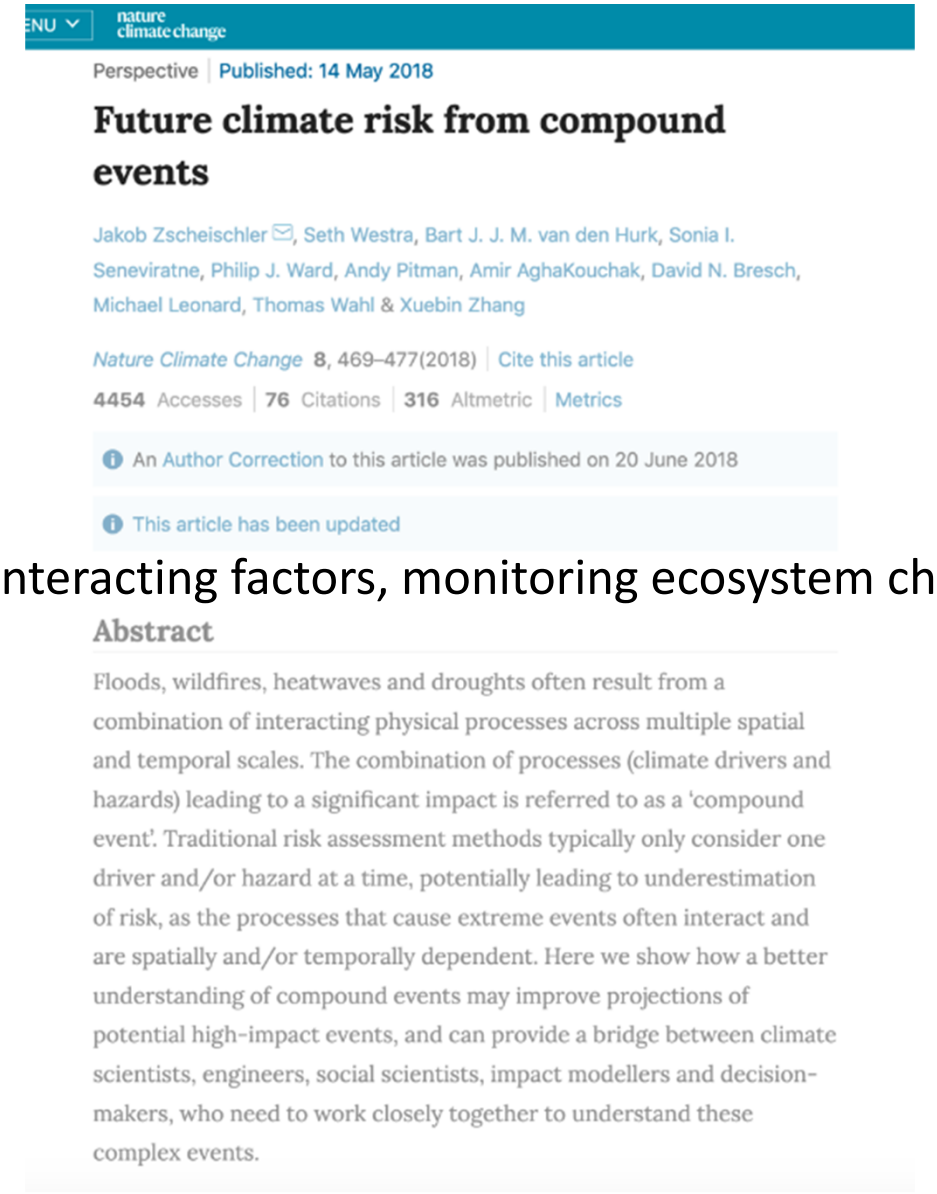
- A Memorandum of Understanding with the University of Alberta, Department of Biological Sciences, and A. Franke was developed to facilitate the partnering of academic researchers with Government of Nunavut-led research projects, such as LTEMP.

- Goal: monitor ecosystem within summer range of the Qamanirjuaq caribou herd.
- Primary concerns: 1) documenting long-term changes due to climate change, and 2) establishing base-line conditions (mineral-rich region).
  - intensive monitoring is conducted annually near the community of Rankin Inlet
  - extensive monitoring in the calving grounds of the Qamanirjuaq caribou herd
- is currently the only ecosystem-level monitoring program in the territory.
- NGMP is a significant, long-term funding partner (2019/20 – 2021/22).
- NAC and KivIA support ETP student employment through an internship program.
- Two Inuit beneficiaries are employed each year
  - involved in all aspects of the field program
  - transfer of local knowledge and Inuit Qaujimajatuqangit
- The LTEMP is an ideal candidate for which community-based monitoring could be fully integrated.


Kitikmeot
Cambridge Bay
Taloyoak
Kugaaruk
Pelly Bay
Igloolik
Hall Beach
King William Island
Gjoa Haven
Queen Maud Gulf MBS
FOXE BASIN
Naujaat
Naujaat
Kivalliq
Amaruq
Area A (M)
Meadowbank Mine
Area B (M)
Area C (M)
Baker Lake
Meadow River
Greyhound
St. Tropez
Kiggavik
White Hills
Cone Hill
Gibson MacQuoid
Kahuna Gold
Chesterfield Inlet
Parker Lake
Fox Lake
Kuulu
Peter Lake
Kahuna Diamonds
Meliadine
Rankin Inlet
Angilak
Quartzite
Pistol Bay
Whale Cove
Yandle
Noomut
Hard Cash
Arviat
Kiyuk
SOUTHAMPTON ISLAND
Coral Harbour
Coats Island
HUDSON BAY
BAIE D' HUDSON
MANITOBA
Churchill
LEGEND
0 50 100 200 300 400
Kilometres


ipcc
INTERGOVERNMENTAL PANEL ON climate change
CLIMATE CHANGE 2014
Synthesis Report
CLIMATE CHANGE 2014 Synthesis Report
A REPORT OF THE
INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE
WMO
UNEP


Figure 4.9.6
QamanirJuaq
Summer Density
(Jul 4 - Aug 22)
Legend
Community
Tree Line
River/Stream
All-season Road
Winter Road
Lake
Annual Home Range*
Core Seasonal Range
Utilization Distribution (%)
50
80
90
95
100
Increasing Density
Area of Detail
0 50 100 150
Kilometres
Projection:
Canada Lambert Conformal Conic
Data Sources:
Government of Nunavut, Government of Northwest Territories, Natural Resources Canada, GeoBase®, National Topographic Database
Nunavut
Northwest Territories
CASLYS CONSULTING
September17, 2014
Northwest Territories
Nunavut
Saskatchewan
Manitoba
Hudson Bay
Aberdeen Lake
Baker Lake
Chesterfield Inlet
Rankin Inlet
Whale Cove
Arviat
Churchill
Artillery Lake
Clinton-Colden Lake
Dubawnt Lake
Whitefish Lake
Nonacho Lake
Qamanirjuaq Lake
South Henik Lake
Kasba Lake
Nueltin Lake
Selwyn Lake
Fond-du-Lac
Black Lake
Wollaston Lake
Wollaston Lake
Brochet
Cree Lake
Reindeer Lake
Lynn Lake
South Indian Lake
Leaf Rapids
Lake Eliza
Gillam
DRAFT
* Annual home ranges are from the following publication: Nagy, J. A., D. L. Johnson, N. C. Larter, M. W. Campbell, A. E. Derocher, A. Kelly, M. Dumond, D. Allaire, and B. Croft. 2011. Subpopulation structure of caribou (Rangifertarandus L.) in arctic and subarctic Canada. Ecological Applications [doi:10.1890/10-1410.1].



nature climate change

Perspective | Published: 14 May 2018

Future climate risk from compound events

Jakob Zscheischler, Seth Westra, Bart J. J. M. van den Hurk, Sonia I. Seneviratne, Philip J. Ward, Andy Pitman, Amir AghaKouchak, David N. Bresch, Michael Leonard, Thomas Wahl & Xuebin Zhang

Nature Climate Change **8**, 469–477(2018) | Cite this article

4454 Accesses | **76** Citations | **316** Altmetric | Metrics

An Author Correction to this article was published on 20 June 2018

This article has been updated

Abstract

Floods, wildfires, heatwaves and droughts often result from a combination of interacting physical processes across multiple spatial and temporal scales. The combination of processes (climate drivers and hazards) leading to a significant impact is referred to as a 'compound event'. Traditional risk assessment methods typically only consider one driver and/or hazard at a time, potentially leading to underestimation of risk, as the processes that cause extreme events often interact and are spatially and/or temporally dependent. Here we show how a better understanding of compound events may improve projections of potential high-impact events, and can provide a bridge between climate scientists, engineers, social scientists, impact modellers and decision-makers, who need to work closely together to understand these complex events.

But with many interacting factors, monitoring ecosystem change is difficult.

Global Change Biology

Global Change Biology (2015) 21, 4651–4661, doi: 10.1111/gcb.13051

Contrasting effects of warming and increased snowfall on Arctic tundra plant phenology over the past two decades

ANNE D. BJORKMAN[1,2], SARAH C. ELMENDORF[3,4], ALISON L. BEAMISH[1,5], MARK VELLEND[6] and GREGORY H. R. HENRY[1]

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Phenology does not advance

Abstract

Recent changes in climate have led to significant shifts in phenology, with many studies demonstrating advanced phenology in response to warming temperatures. The rate of temperature change is especially high in the Arctic, but this is also where we have relatively little data on phenological changes and the processes driving these changes. In order to understand how Arctic plant species are likely to respond to future changes in climate, we monitored flowering phenology in response to both experimental and ambient warming for four widespread species in two habitat types over 21 years. We additionally used long-term environmental records to disentangle the effects of temperature increase and changes in snowmelt date on phenological patterns. While flowering occurred earlier in response to experimental warming, plants in unmanipulated plots showed no change or a delay in flowering over the 21-year period, despite more than 1 °C of ambient warming during that time. This counterintuitive result was likely due to significantly delayed snowmelt over the study period (0.05–0.2 days/yr) due to increased winter snowfall. The timing of snowmelt was a strong driver of flowering phenology for all species – especially for early-flowering species – while spring temperature was significantly related to flowering time only for later-flowering species. Despite significantly delayed flowering phenology, the timing of seed maturation showed no significant change over time, suggesting that warmer temperatures may promote more rapid seed development. The results of this study highlight the importance of understanding the specific environmental cues that drive species' phenological responses as well as the complex interactions between temperature and precipitation when forecasting phenology over the coming decades. As demonstrated here, the effects of altered snowmelt patterns can counter the effects of warmer temperatures, even to the point of generating phenological responses opposite to those predicted by warming alone.

Keywords: Arctic tundra, Bayesian hierarchical modeling, climate change, flowering time, interval censoring, plant phenology, seed maturation

Community-level phenological response to climate change

Otso Ovaskainen, Svetlana Skorokhodova, Marina Yakovleva, Alexander Sukhov, Anatoliy Kutenkov, Nadezhda Kutenkova, Anatoliy Shcherbakov, Evegeniy Meyke, and Maria del Mar Delgado

PNAS August 13, 2013 110 (33) 13434-13439; https://doi.org/10.1073/pnas.1305533110

Edited by William H. Schlesinger, Cary Institute of Ecosystem Studies, Millbrook, NY, and approved July 9, 2013 (received for review March 25, 2013)

Article | Figures & SI | Info & Metrics | PDF

Phenology advances

Abstract

Climate change may disrupt interspecific phenological synchrony, with adverse consequences to ecosystem functioning. We present here a 40-y-long time series on 10,425 dates that were systematically collected in a single Russian locality for 97 plant, 78 bird, 10 herptile, 19 insect, and 9 fungal phenological events, as well as for 77 climatic events related to temperature, precipitation, snow, ice, and frost. We show that species are shifting their phenologies at dissimilar rates, partly because they respond to different climatic factors, which in turn are shifting at dissimilar rates. Plants have advanced their spring phenology even faster than average temperature has increased, whereas migratory birds have shown more divergent responses and shifted, on average, less than plants. Phenological events of birds and insects were mainly triggered by climate cues (variation in temperature and snow and ice cover) occurring over the course of short periods, whereas many plants, herptiles, and fungi were affected by long-term climatic averages. Year-to-year variation in plants, herptiles, and insects showed a high degree of synchrony, whereas the phenological timing of fungi did not correlate with any other taxonomic group. In many cases, species that are synchronous in their year-to-year dynamics have also shifted in congruence, suggesting that climate change may have disrupted phenological synchrony less than has been previously assumed. Our results illustrate how a multidimensional change in the physical environment has translated into a community-level change in phenology.

nature climate change

LETTERS

PUBLISHED ONLINE: 6 JULY 2015 | DOI: 10.1038/NCLIMATE2697

Climate sensitivity of shrub growth across the tundra biome

Isla H. Myers-Smith[1]*, Sarah C. Elmendorf[2,3], Pieter S. A. Beck[4,5], Martin Wilmking[6], Martin Hallinger[6,7], Daan Blok[8], Ken D. Tape[9], Shelly A. Rayback[10], Marc Macias-Fauria[11], Bruce C. Forbes[12], James D. M. Speed[13], Noémie Boulanger-Lapointe[14,15], Christian Rixen[16], Esther Lévesque[14], Niels Martin Schmidt[17], Claudia Baittinger[18], Andrew J. Trant[19,20], Luise Hermanutz[20], Laura Siegwart Collier[20], Melissa A. Dawes[16], Trevor C. Lantz[19], Stef Weijers[21], Rasmus Halfdan Jørgensen[22], Agata Buchwal[23], Allan Buras[6], Adam T. Naito[24], Virve Ravolainen[25], Gabriela Schaepman-Strub[26], Julia A. Wheeler[16,27], Sonja Wipf[16], Kevin C. Guay[5], David S. Hik[28] and Mark Vellend[29]

Shrub proliferation

Rapid climate warming in the tundra biome has been linked to increasing shrub dominance[1–4]. Shrub expansion can modify climate by altering surface albedo, energy and water balance, and permafrost[2,5–8], yet the drivers of shrub growth remain poorly understood. Dendroecological data consisting of multi-decadal time series of annual shrub growth provide an underused resource to explore climate–growth relationships. Here, we analyse circumpolar data from 37 Arctic and alpine sites in 9 countries, including 25 species, and ~42,000 annual growth records from 1,821 individuals. Our analyses demonstrate that the sensitivity of shrub growth to climate was: (1) heterogeneous, with European sites showing greater summer temperature sensitivity than North American sites, and (2) higher at sites with greater soil moisture and for taller shrubs (for example, alders and willows) growing at their northern or upper elevational range edges. Across latitude, climate sensitivity of growth was greatest at the boundary between the Low and High Arctic, where permafrost is stored[9]. The observed variation in climate–shrub growth relationships should be incorporated into Earth system models to improve future projections of climate change impacts across the tundra biome.

The Arctic is warming more rapidly than lower latitudes owing to climate amplification involving temperature, water vapour, albedo and sea ice feedbacks[5,7]. Tundra ecosystems are thus predicted to respond more rapidly to climate change than other terrestrial ecosystems[4]. The tundra biome spans Arctic and alpine regions that have similar plant species pools and mean climates, yet vary in topography, seasonality, land cover and glaciation history. Concurrent with the recent high-latitude warming trend[7], repeat photography and vegetation surveys have shown widespread expansion of shrubs[1–3], characterized by increased canopy cover, height and abundance. However, climate warming[7] and shrub increase[2,10] have not occurred at all sites. Models predict that warming of 2–10 °C (ref. 11) could convert as much as half of current

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Global Change Biology

Global Change Biology (2009) 15, 2681–2693, doi: 10.1111/j.1365-2486.2009.01935.x

Herbivores inhibit climate-driven shrub expansion on the tundra

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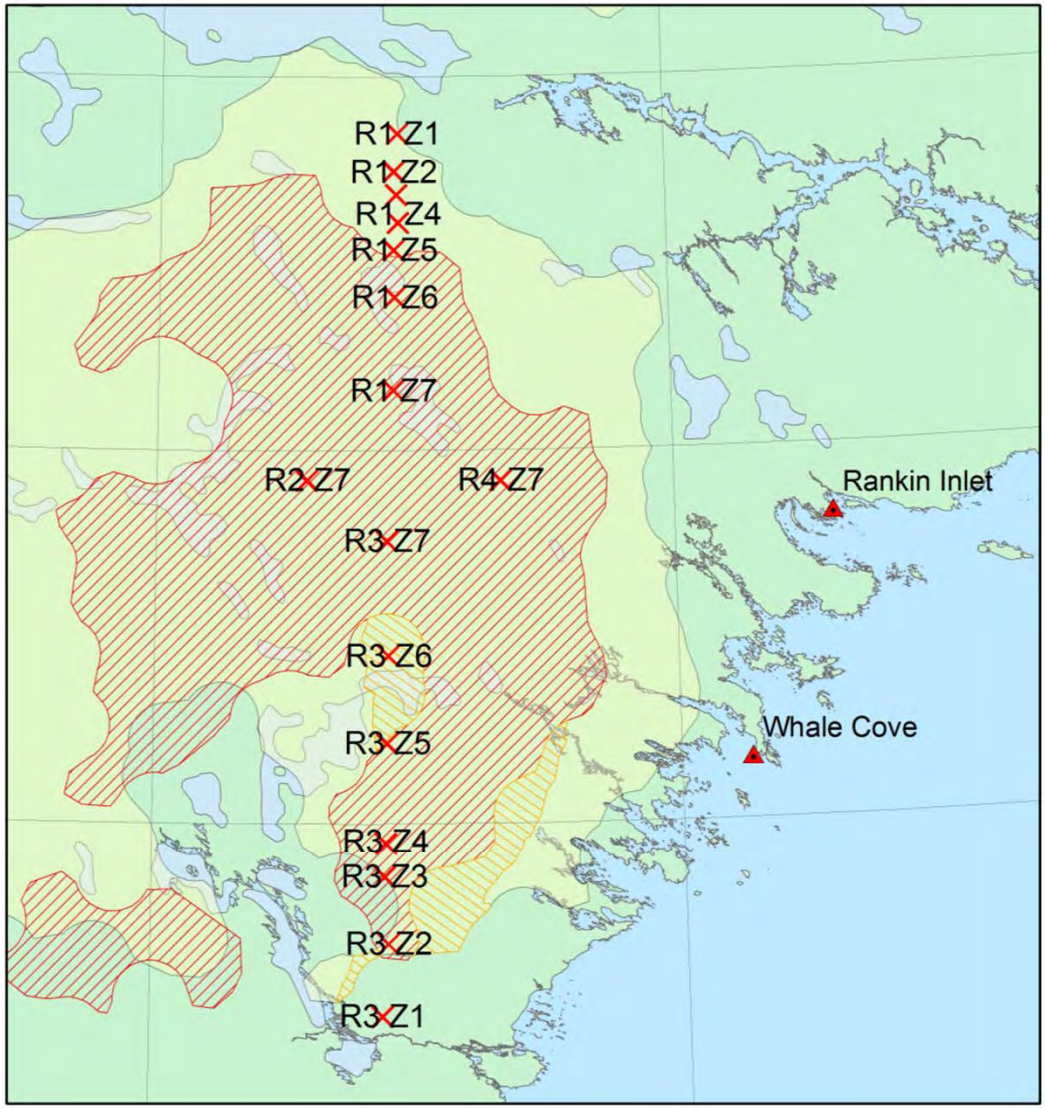
Shrub proliferation suppressed by herbivory

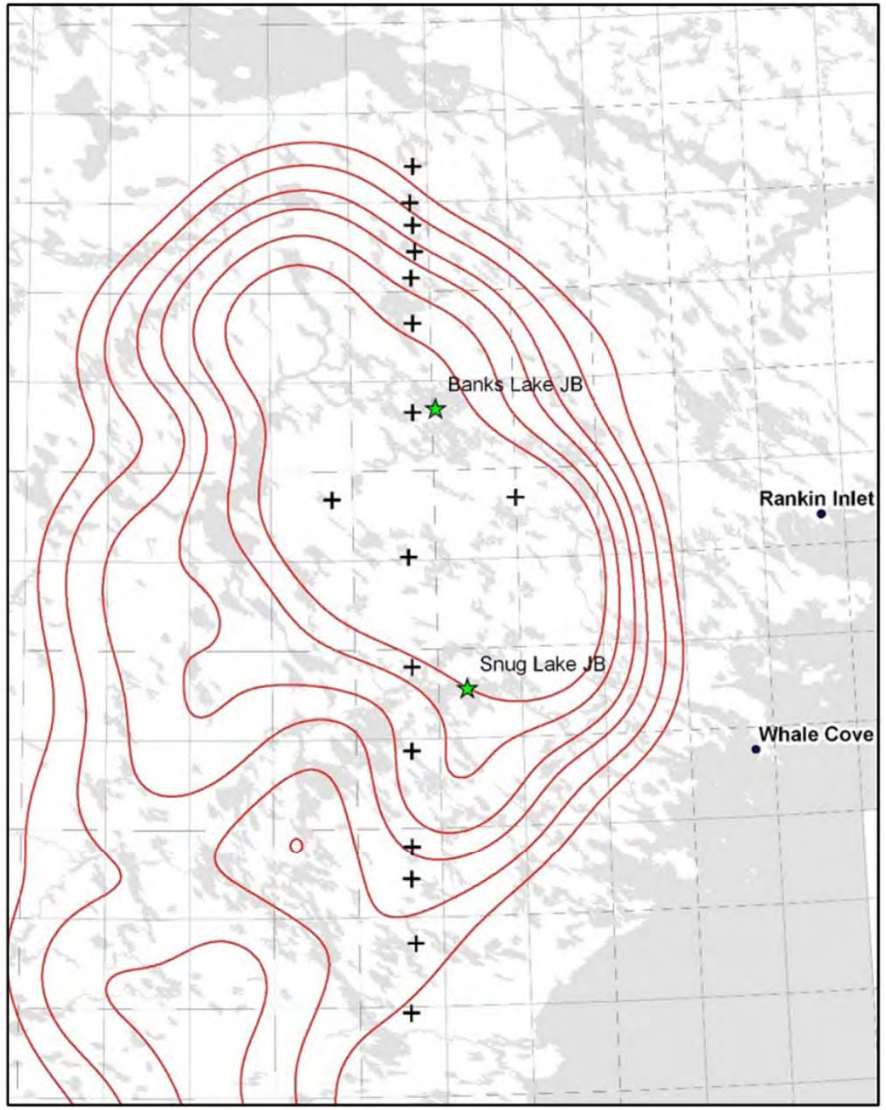
Abstract

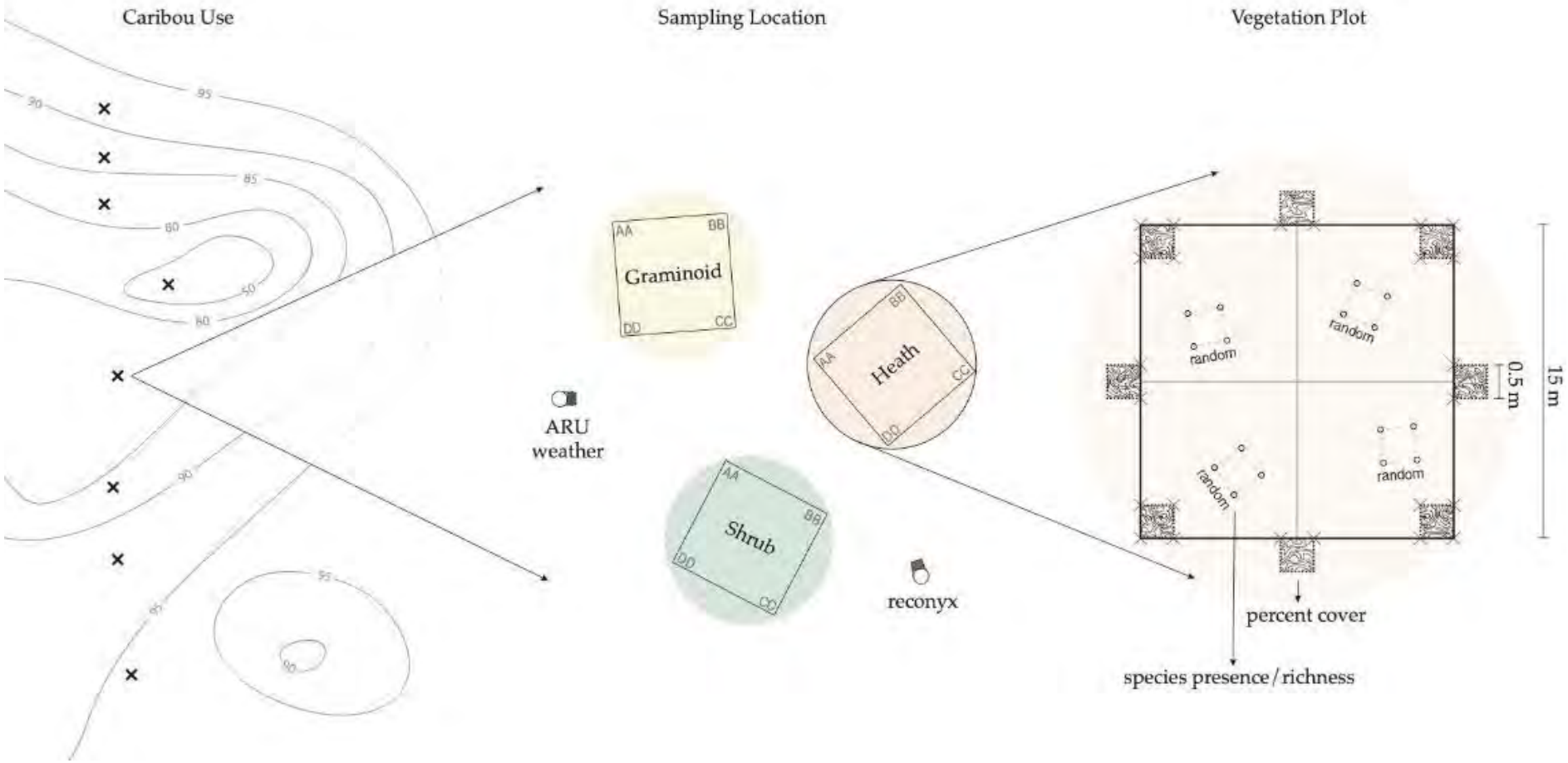
Recent Pan-Arctic shrub expansion has been interpreted as a response to a warmer climate. However, herbivores can also influence the abundance of shrubs in arctic ecosystems. We investigated [illegible] changes in plant community composition during the last 10 years in permanent plots inside and outside exclosures with different mesh sizes that exclude either only reindeer or all mammalian herbivores including voles and lemmings. The exclosures were replicated at three forest and tundra sites at four different locations along a climatic gradient (oceanic to continental) in northern Fennoscandia. Since the last 10 years have been exceptionally warm, we could study how warming has influenced the vegetation in different grazing treatments. Our results show that the abundance of the dominant shrub, *Betula nana*, has increased during the last decade, but that the increase was more pronounced when herbivores were excluded. Reindeer have the largest effect on shrubs in tundra, while voles and lemmings have a larger effect in the forest. The positive relationship between annual mean temperature and shrub growth in the absence of herbivores and the lack of relationships in grazed controls is another indication that shrub abundance is controlled by an interaction between herbivores and climate. In addition to their effects on taller shrubs (>0.3 m), reindeer reduced the abundance of lichens, whereas microtine rodents reduced the abundance of dwarf shrubs (<0.3 m) and mosses. In contrast to short-term responses, competitive interactions between dwarf shrubs and lichens were evident in the long term. These results show that herbivores have to be considered in order to understand how a changing climate will influence tundra ecosystems.**

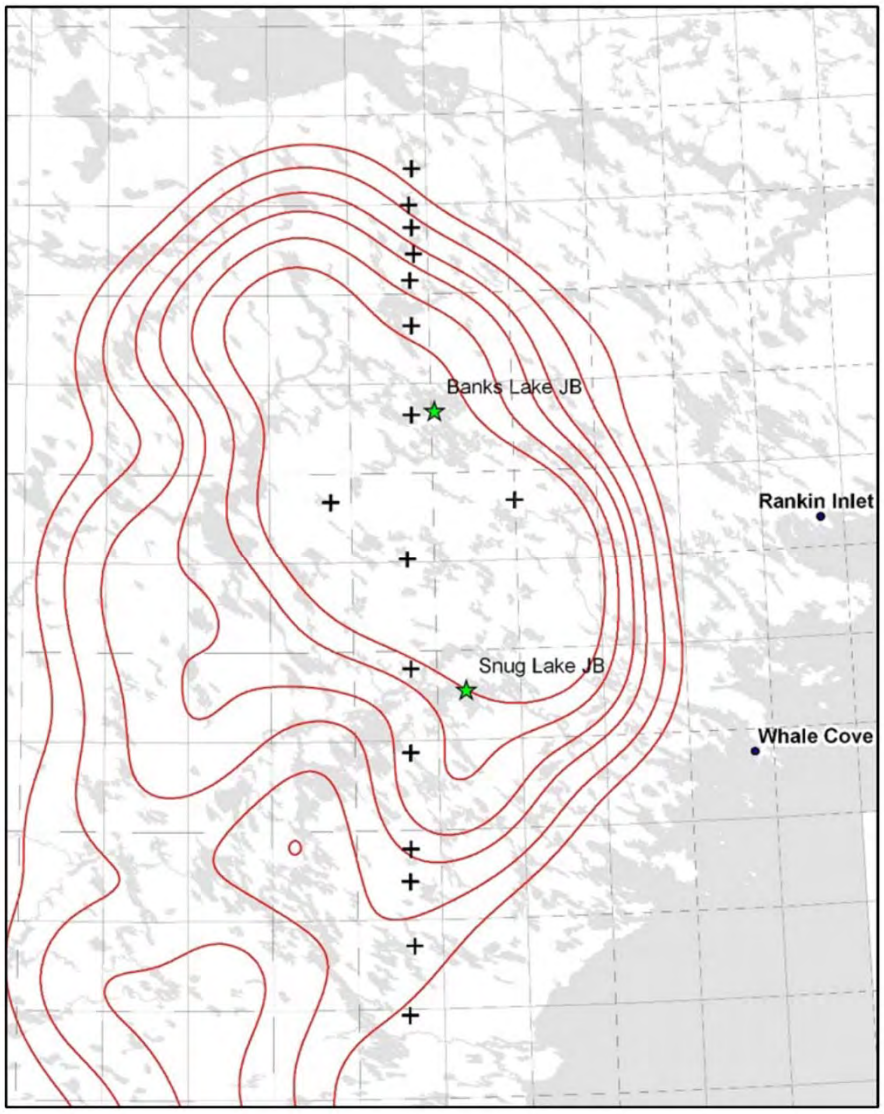
Keywords: *Betula nana*, exclosures, global warming, herbivores, lemmings, reindeer, shrubs, snow, tundra, voles

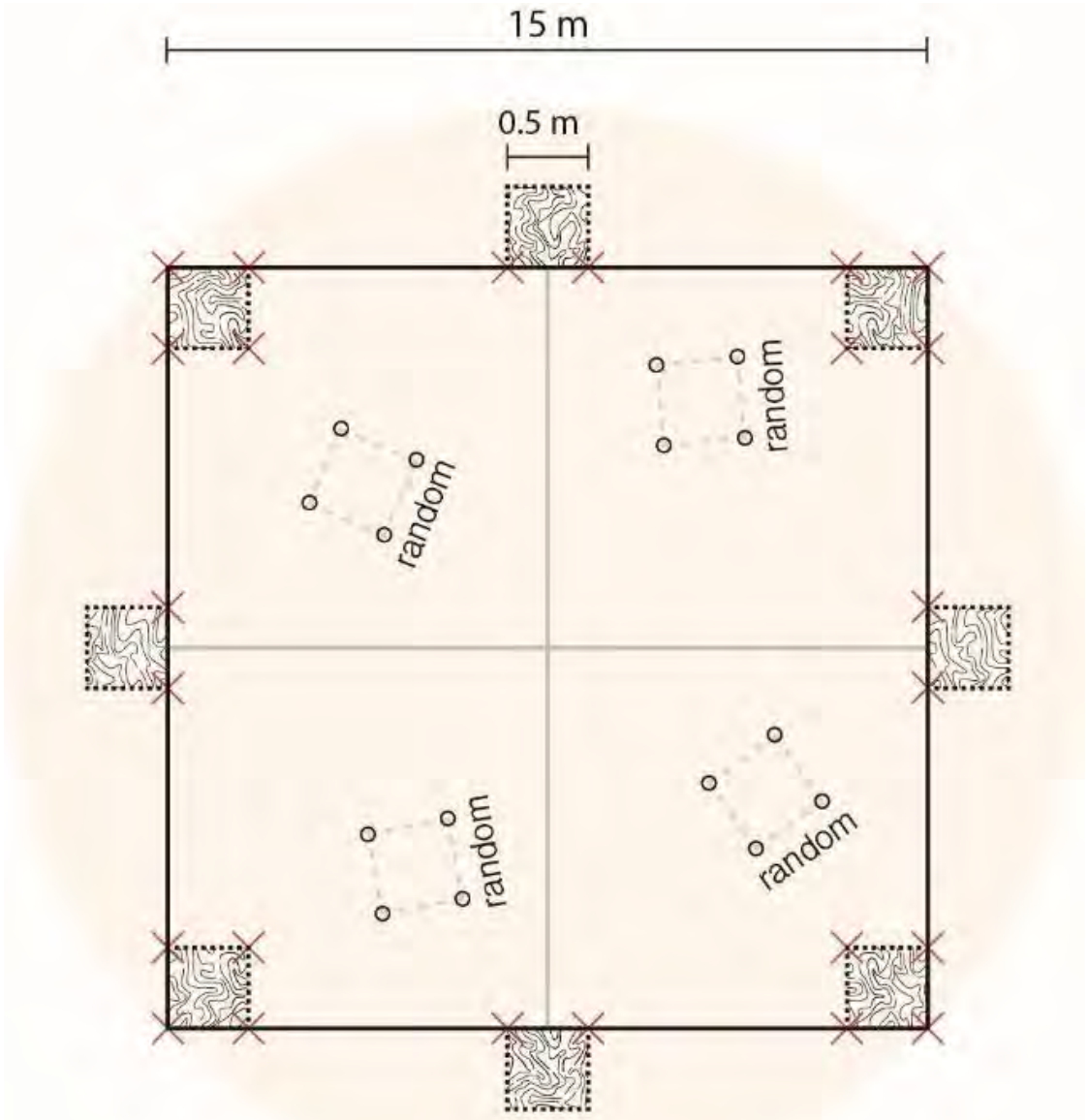
Received 15 October 2008 and accepted 16 February 2009

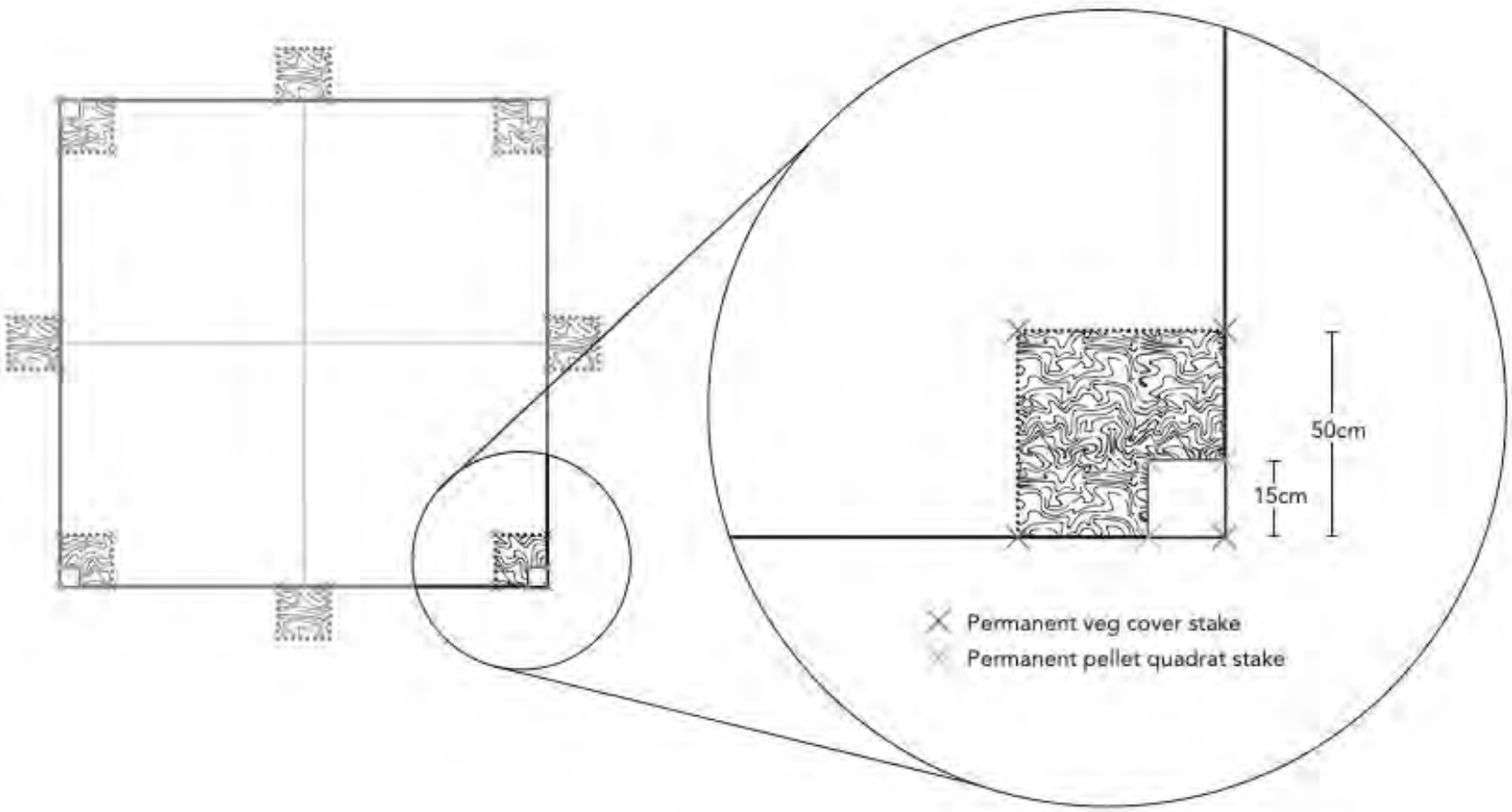

R1Z1
R1Z2
R1Z4
R1Z5
R1Z6
R1Z7
R2Z7
R4Z7
R3Z7
R3Z6
R3Z5
R3Z4
R3Z3
R3Z2
R3Z1
Rankin Inlet
Whale Cove

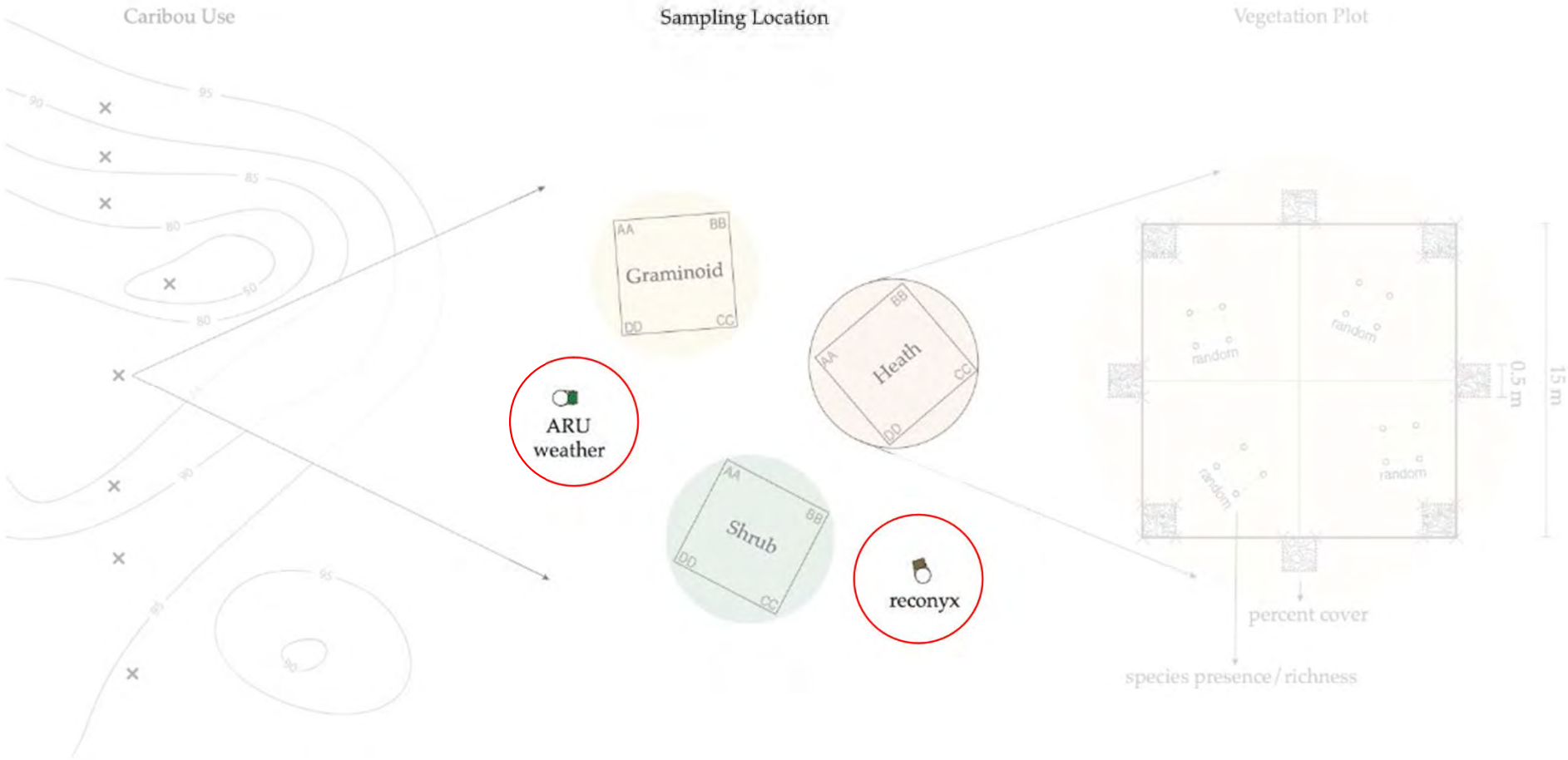

Banks Lake JB
Snug Lake JB
Rankin Inlet
Whale Cove

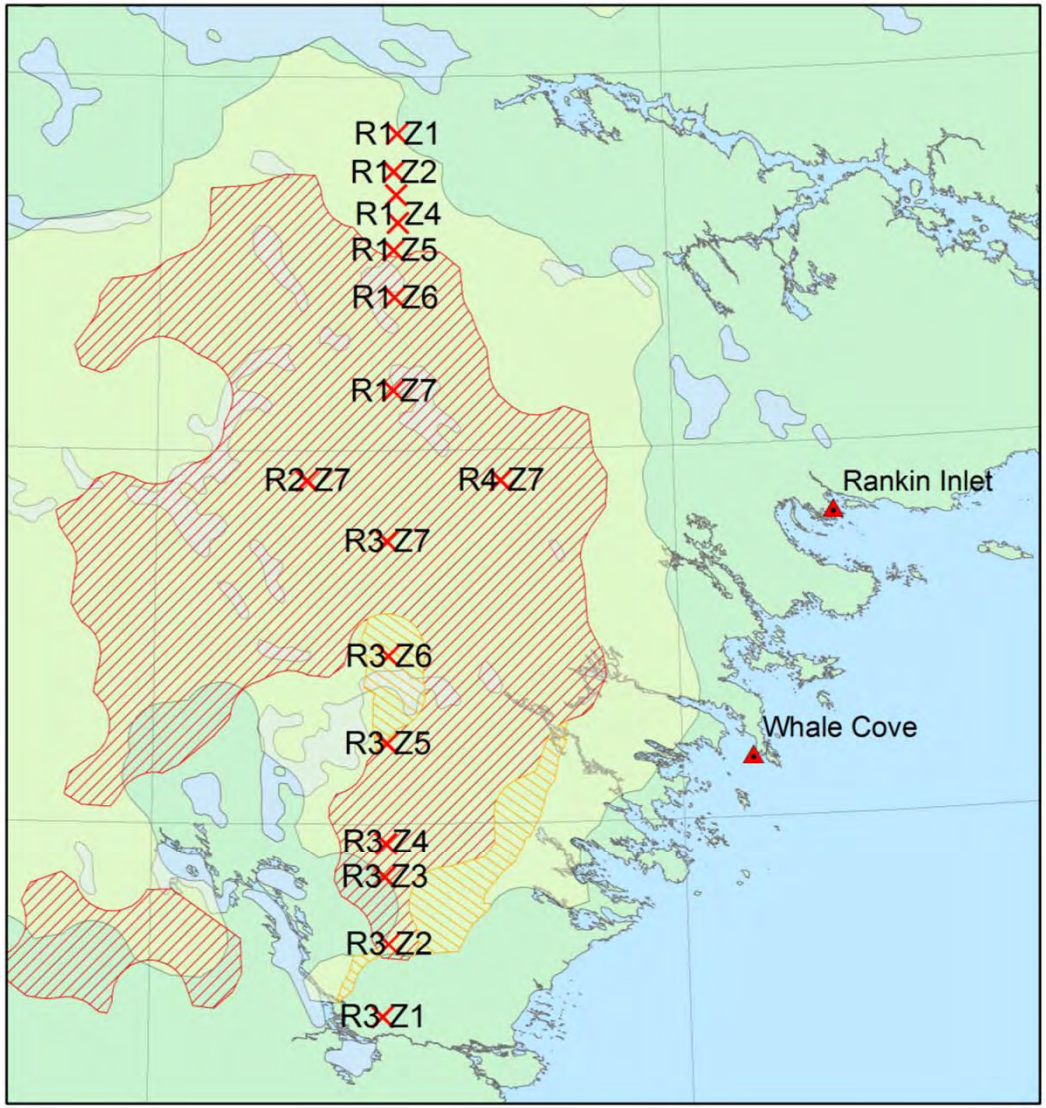

Caribou Use
Sampling Location
Vegetation Plot
95
90
85
80
50
60
90
95
90
AA
BB
Graminoid
DD
CC
ARU
weather
AA
BB
Heath
DD
CC
AA
BB
Shrub
DD
CC
reconyx
random
random
random
random
0.5 m
15 m
percent cover
species presence / richness

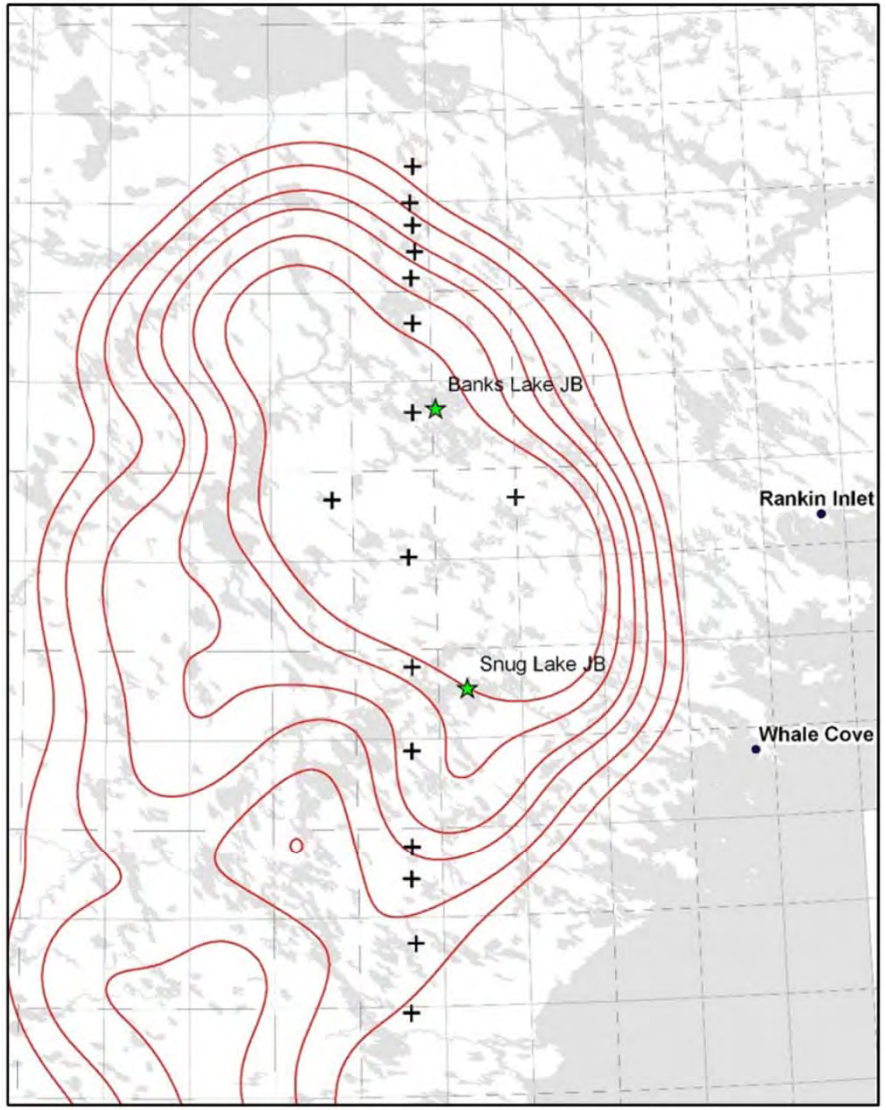

Banks Lake JB
Snug Lake JB
Rankin Inlet
Whale Cove


15 m
0.5 m
random
random
random
random


50cm
15cm
Permanent veg cover stake
Permanent pellet quadrat stake

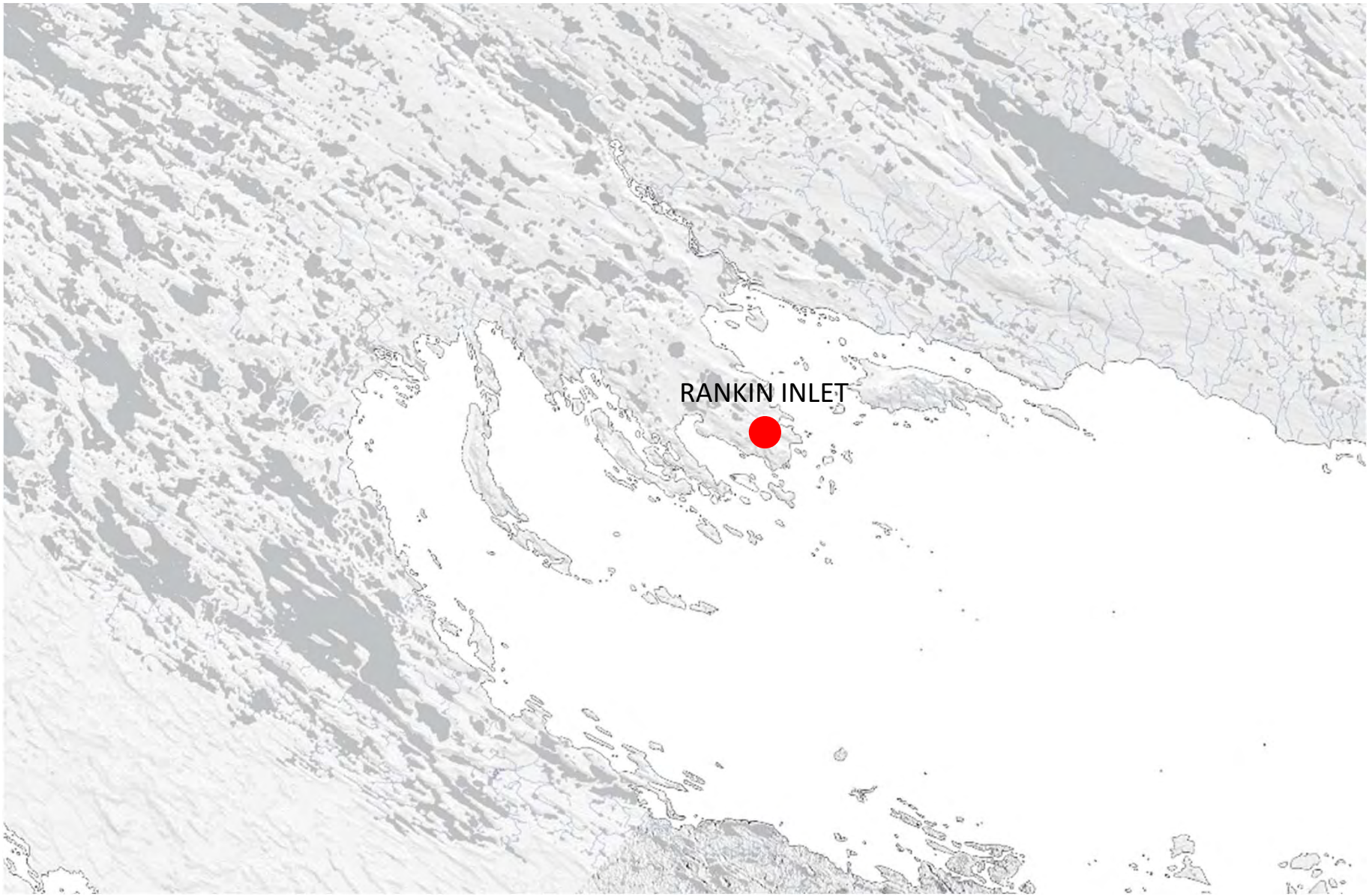

Caribou Use
Sampling Location
Vegetation Plot
95
90
85
80
90
95
AA
BB
Graminoid
DD
CC
ARU
weather
AA
BB
Heath
DD
CC
AA
BB
Shrub
DD
CC
reconyx
random
random
random
random
0.5 m
15 m
percent cover
species presence/richness


R1Z1
R1Z2
R1Z4
R1Z5
R1Z6
R1Z7
R2Z7
R4Z7
R3Z7
R3Z6
R3Z5
R3Z4
R3Z3
R3Z2
R3Z1
Rankin Inlet
Whale Cove


Banks Lake JB
Snug Lake JB
Rankin Inlet
Whale Cove

Qamanirjuaq Calving Grounds

	2012	2013	2014	2015	2016	2017	2018	2019
Lead	N. Lecomte	N. Lecomte	/	M. Wilson	M. Wilson	/	NuWCRU	NuWCRU
Veg	Yes	Yes	/	Yes	No	/	Yes	Yes
Scat	Removal	Removal/Count	/	Removal	No	/	Removal	Removal/count
Camera	No	No	/	Yes	Yes	/	No	No
ARU	No	No	/	Yes	Yes	/	No	No


RANKIN INLET

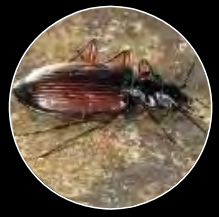














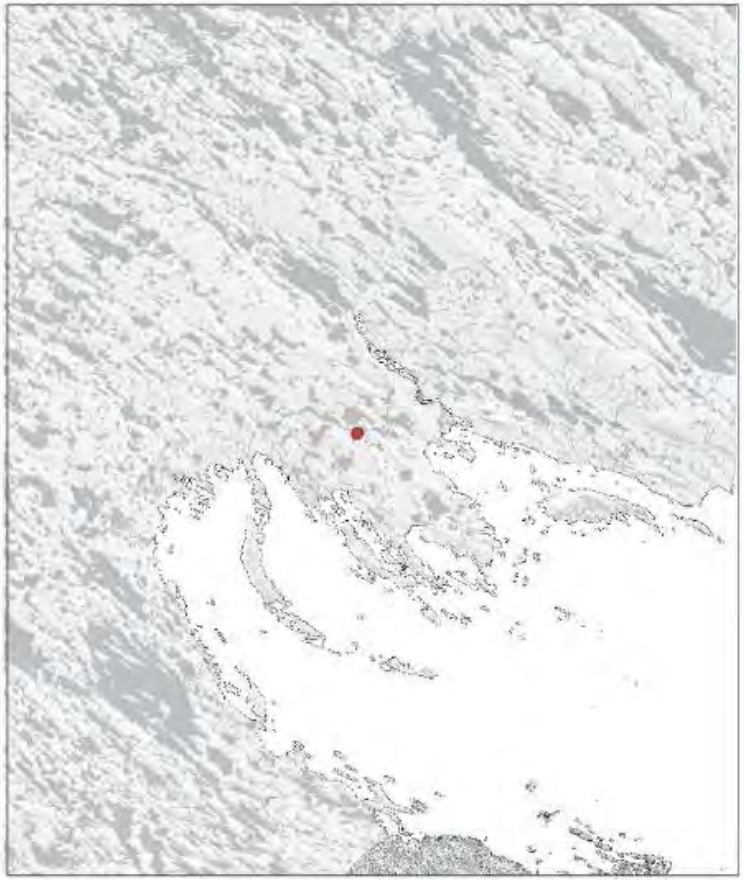


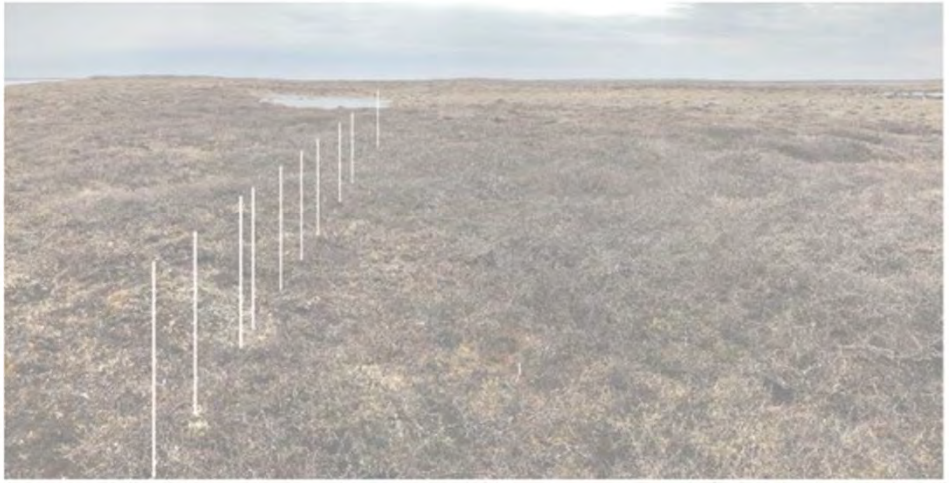



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Invertebrate
Pollinator Trap
Pitfall Trap
Vegetation
Dendro Ecology
Phenology
Community Composition

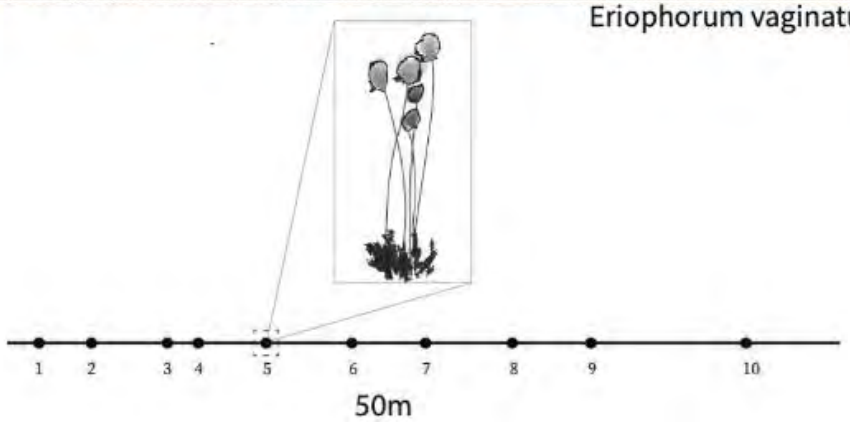


Vegetation Phenology



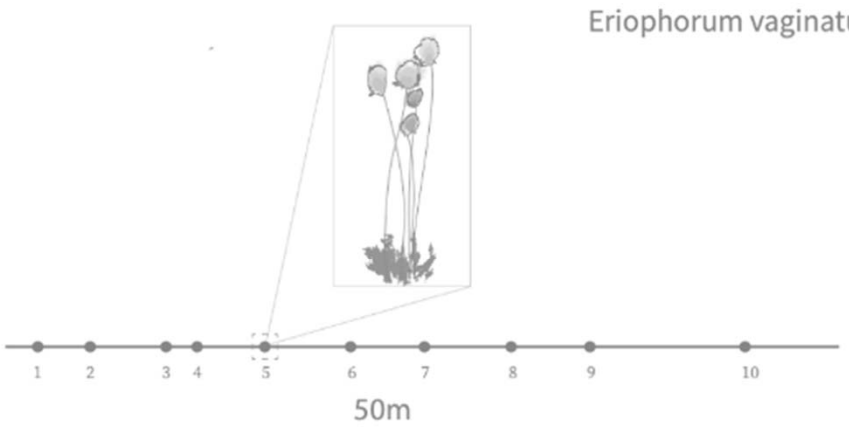


Eriophorum vaginatum

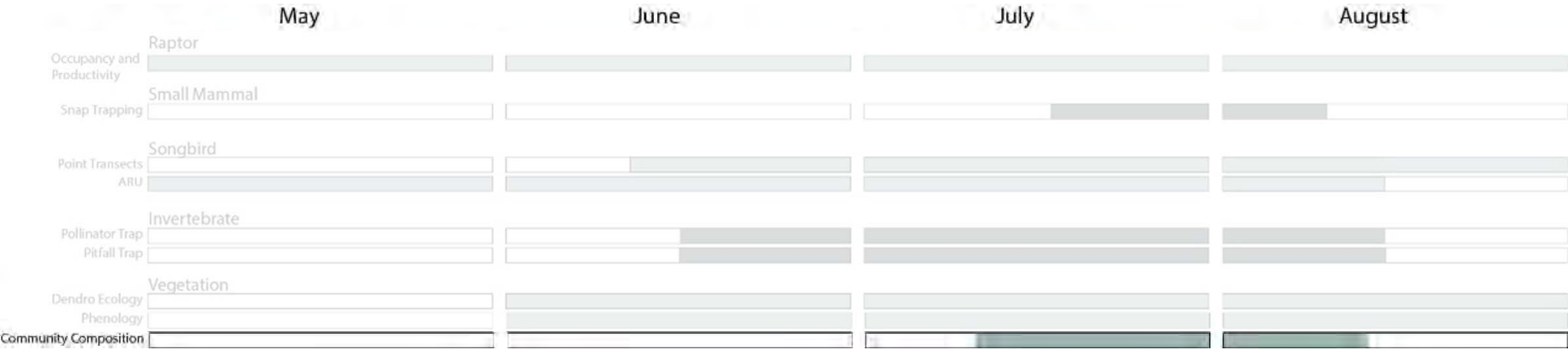




Vegetation Phenology

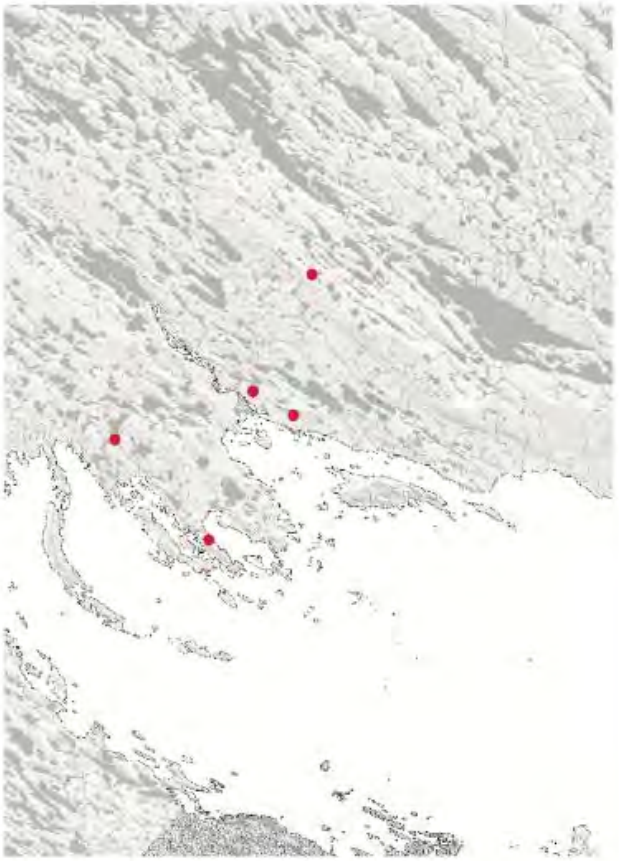


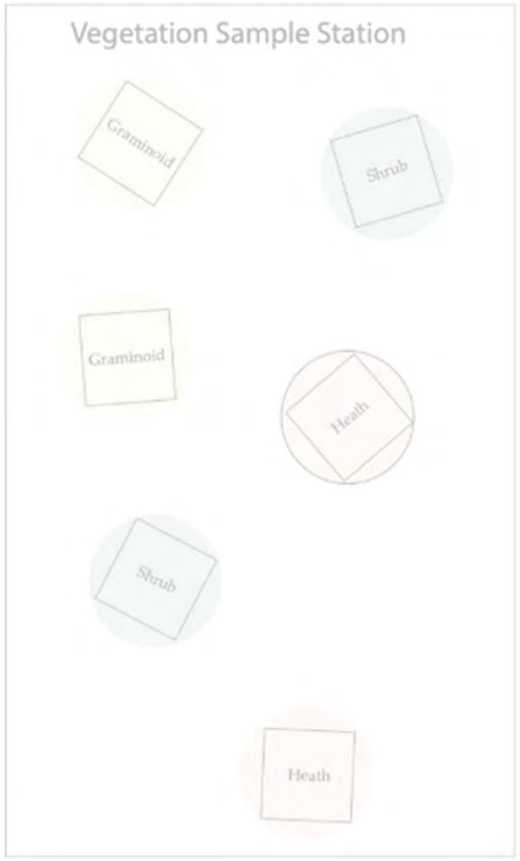
1. date snow free
2. date first appearance of flower buds
3. date first pollen visible (yellow anthers)

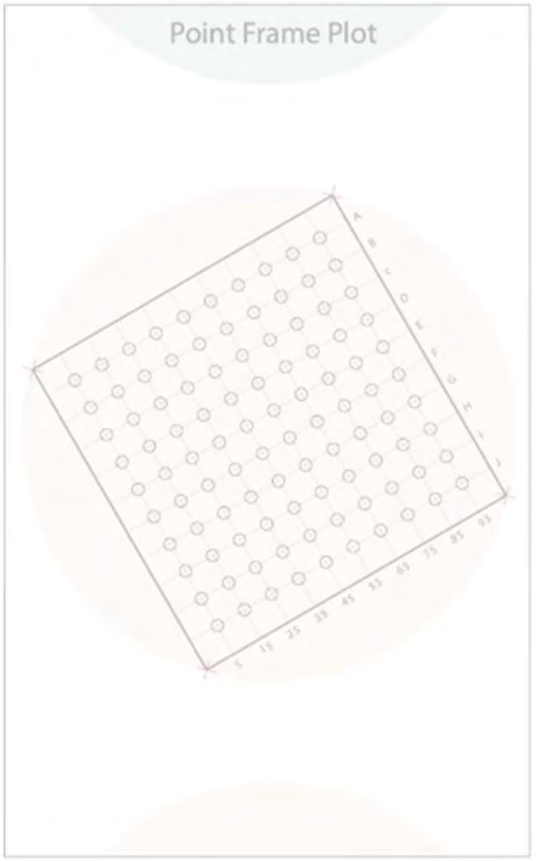

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Community Composition

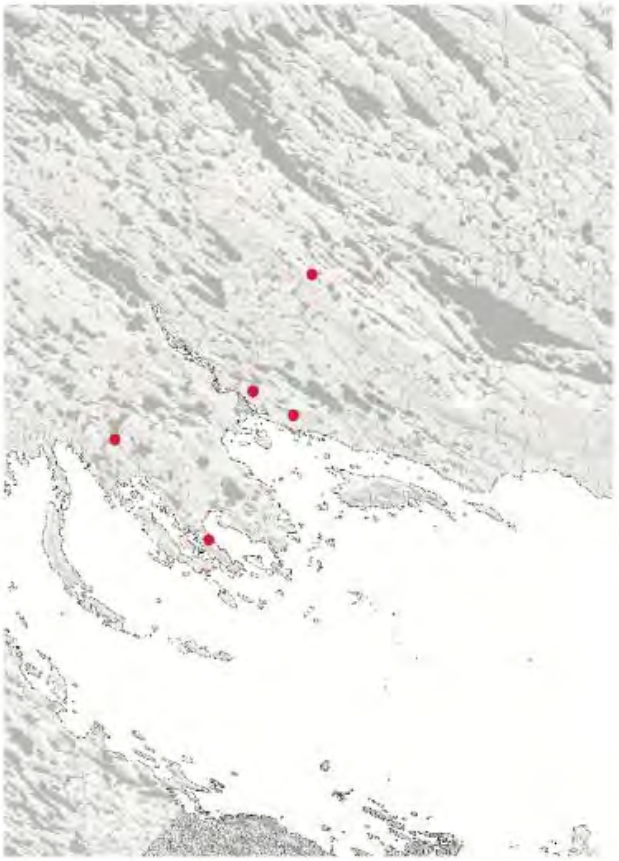


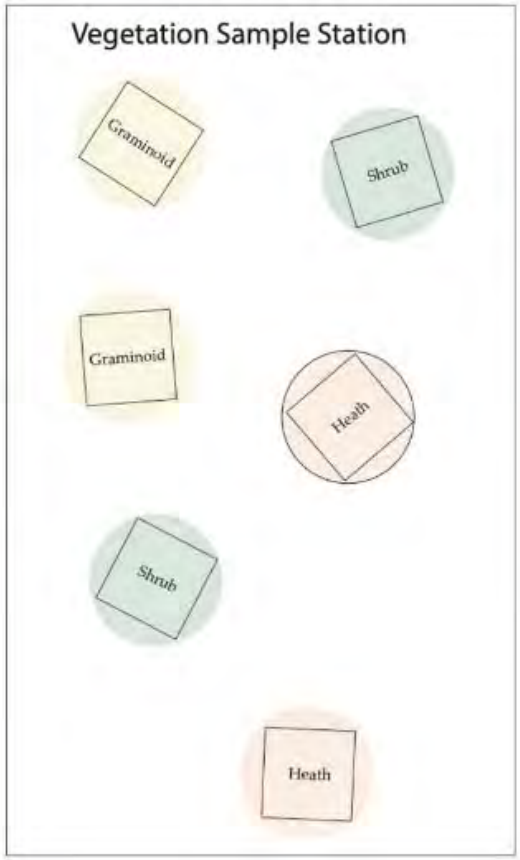


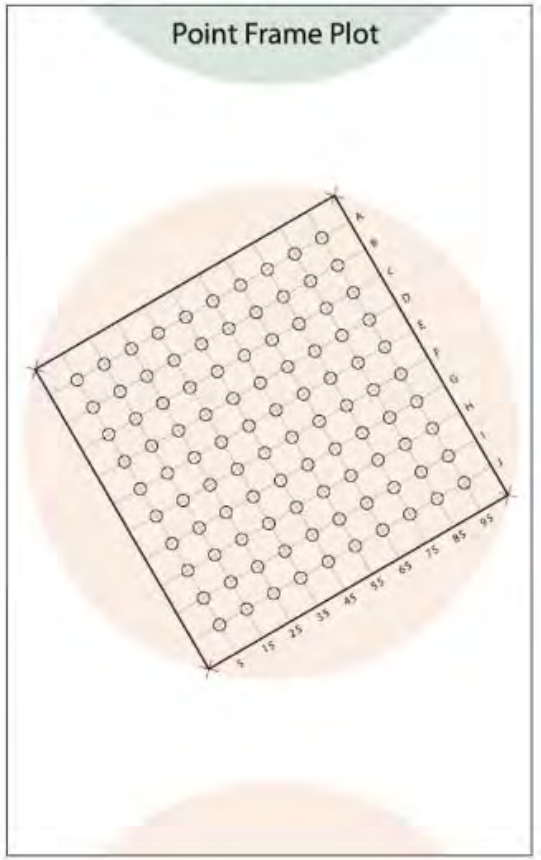




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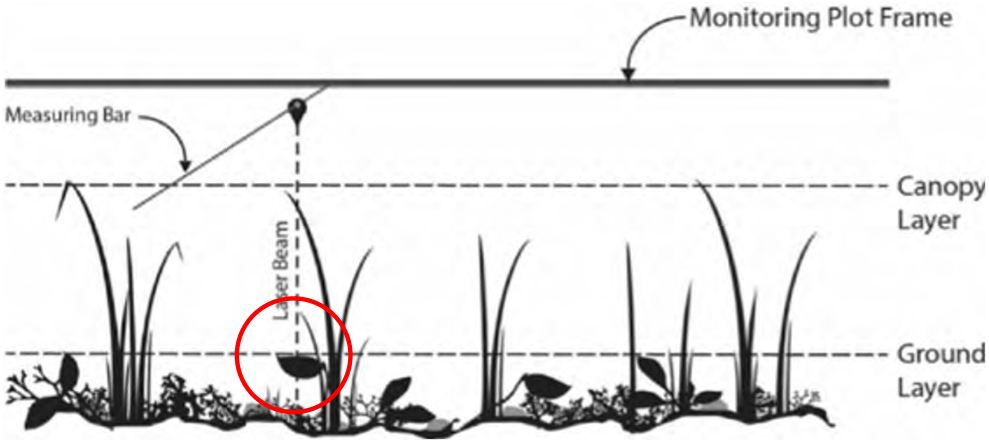


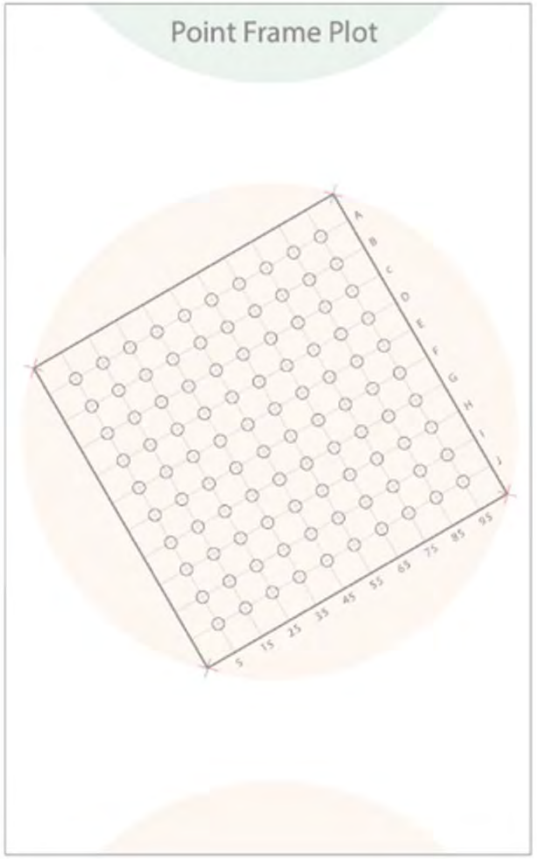






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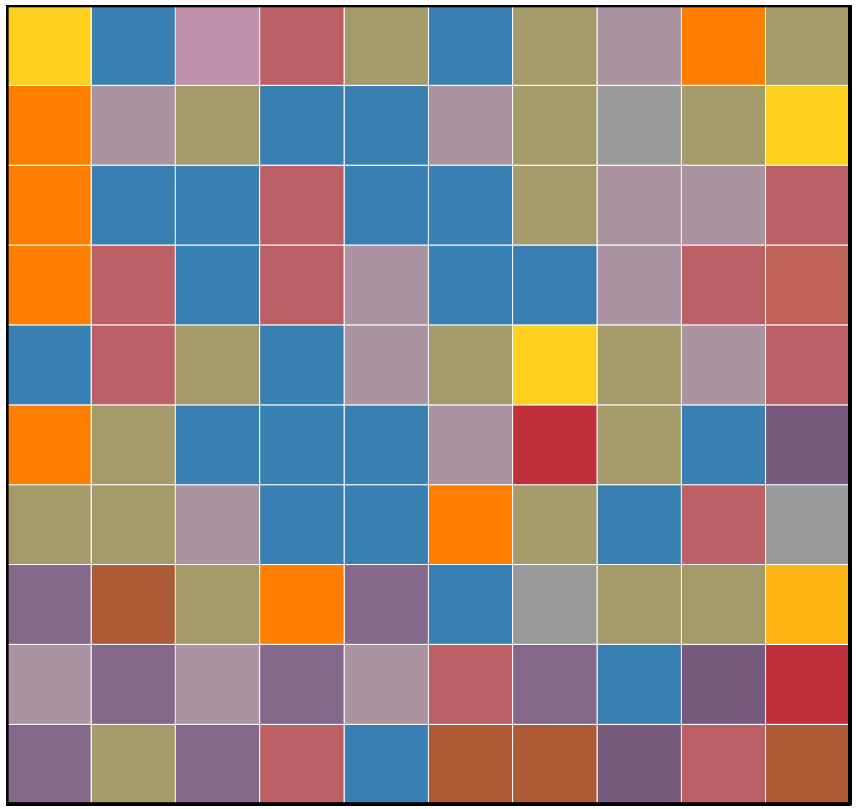




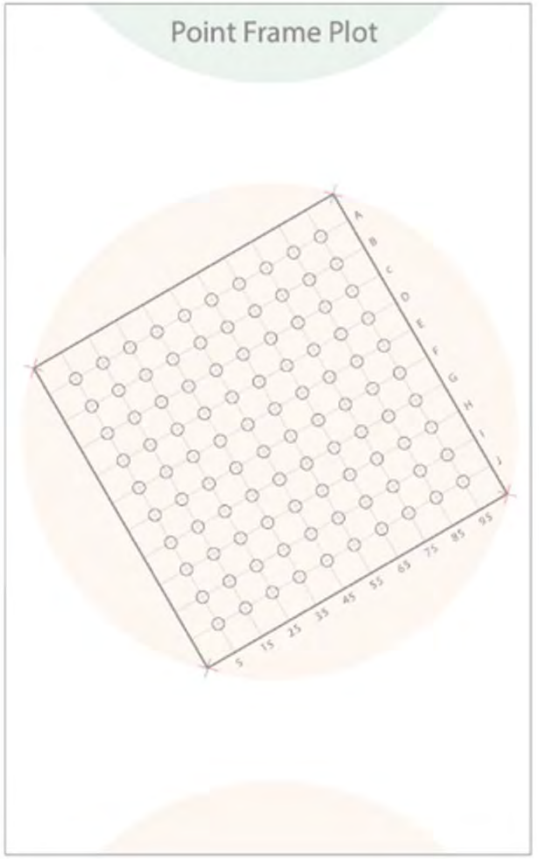
Community Composition

PFP3 Heath

Ground

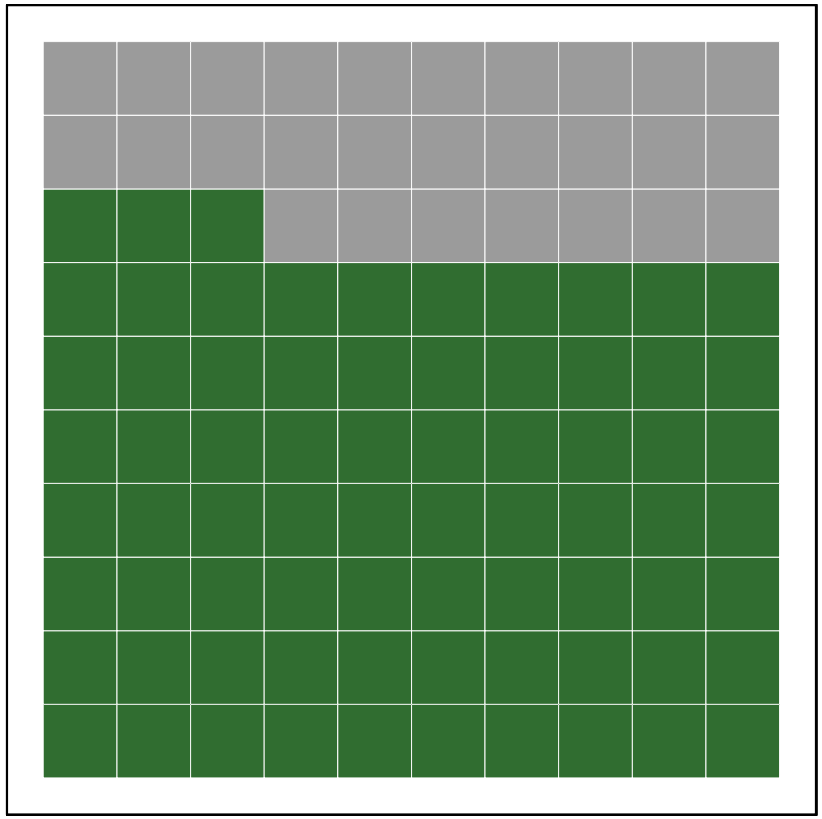






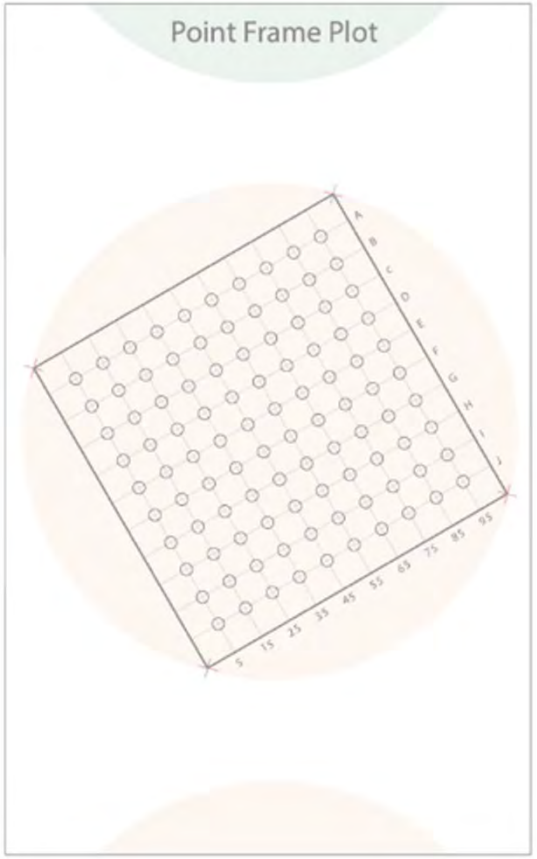


Community Composition



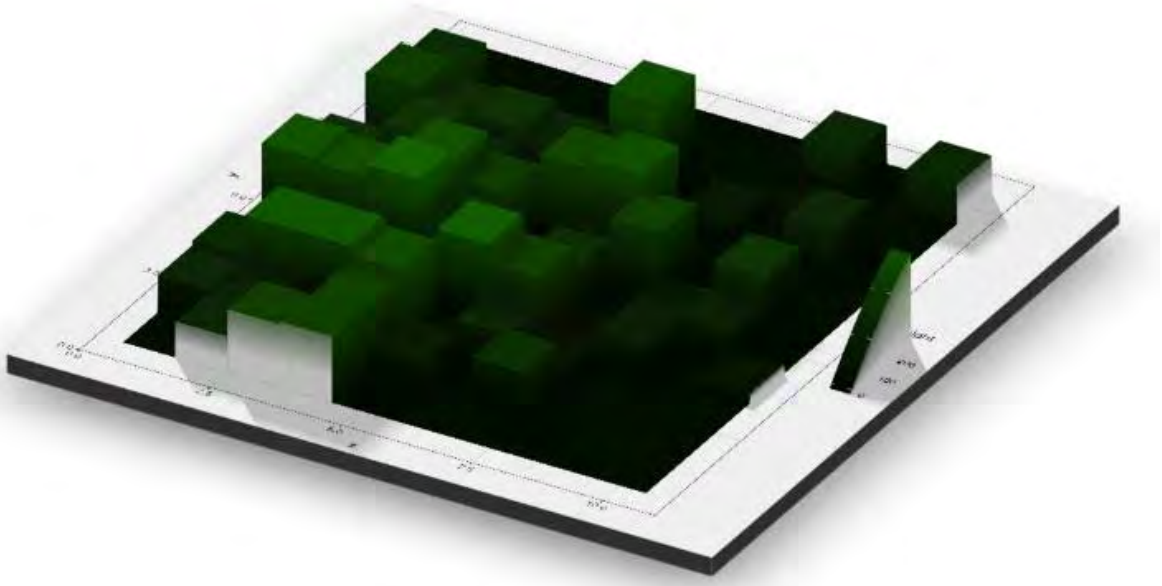
Betula glandulosa

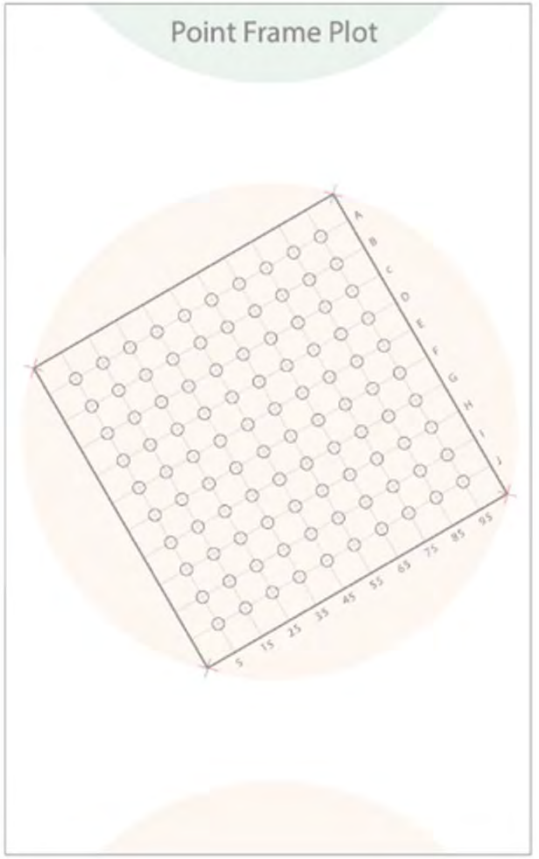
no vegetation

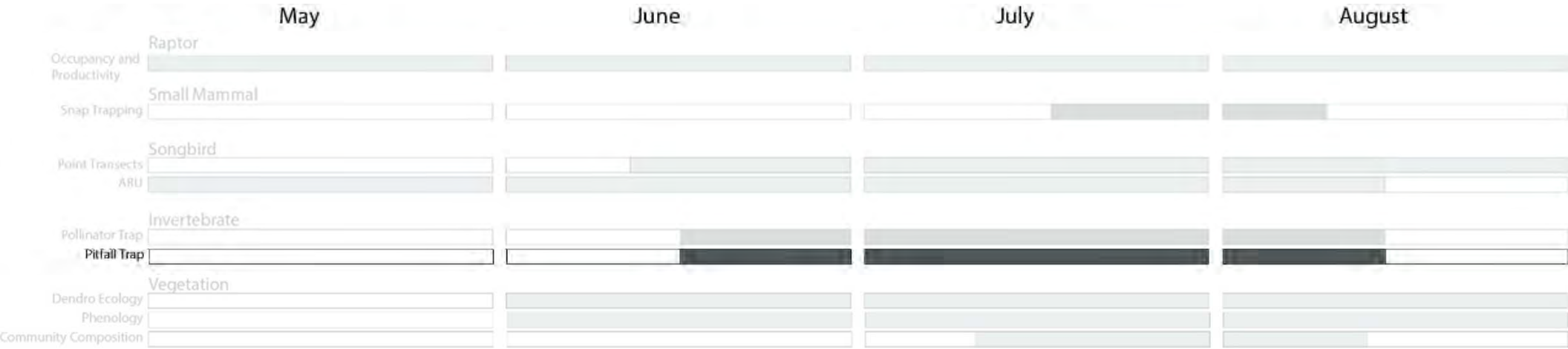


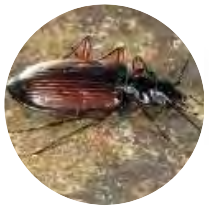


Community Composition

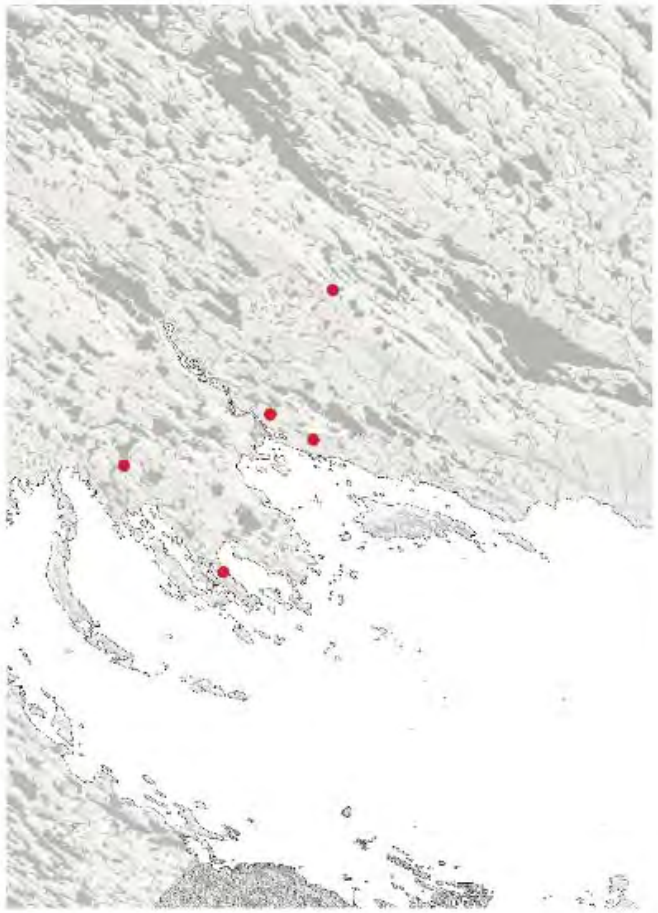


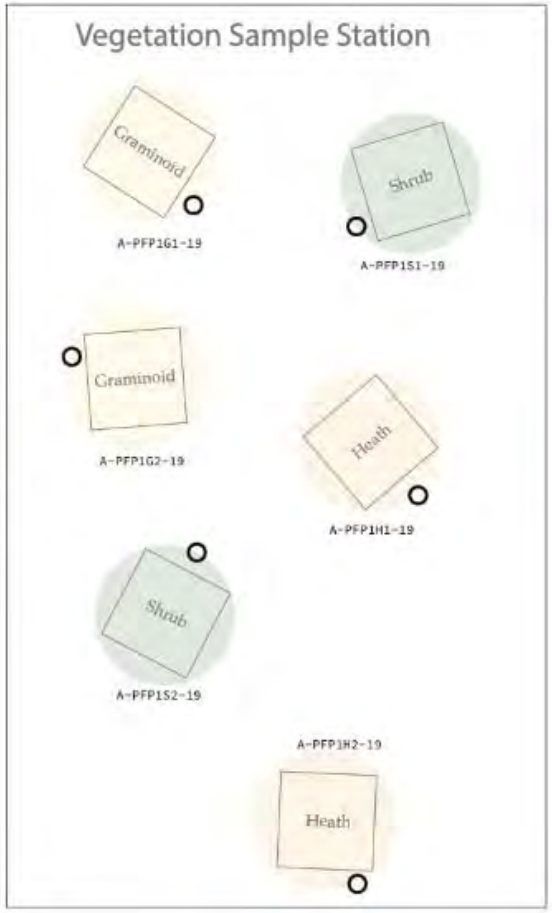


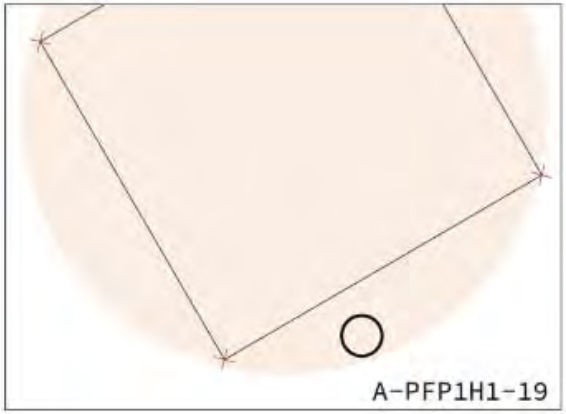

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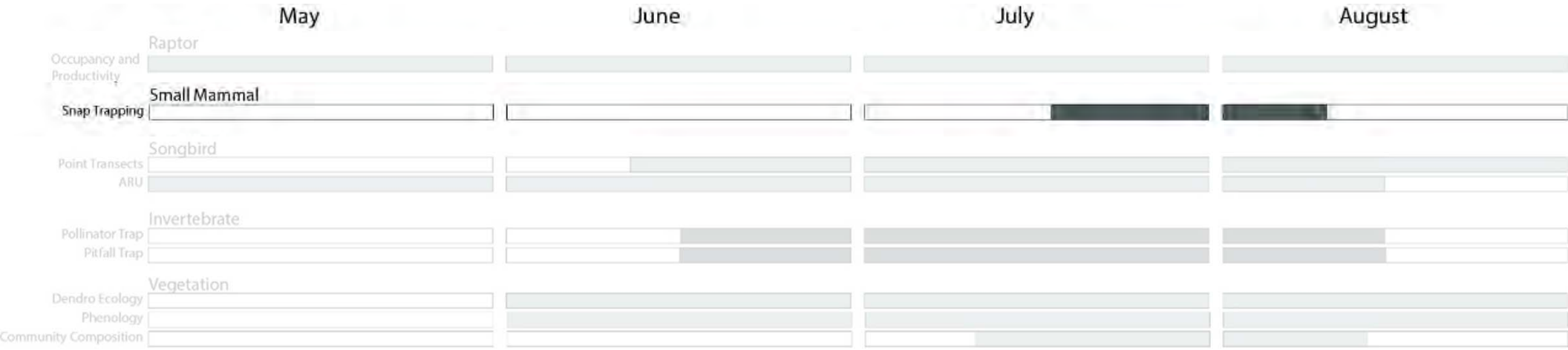
Community Composition



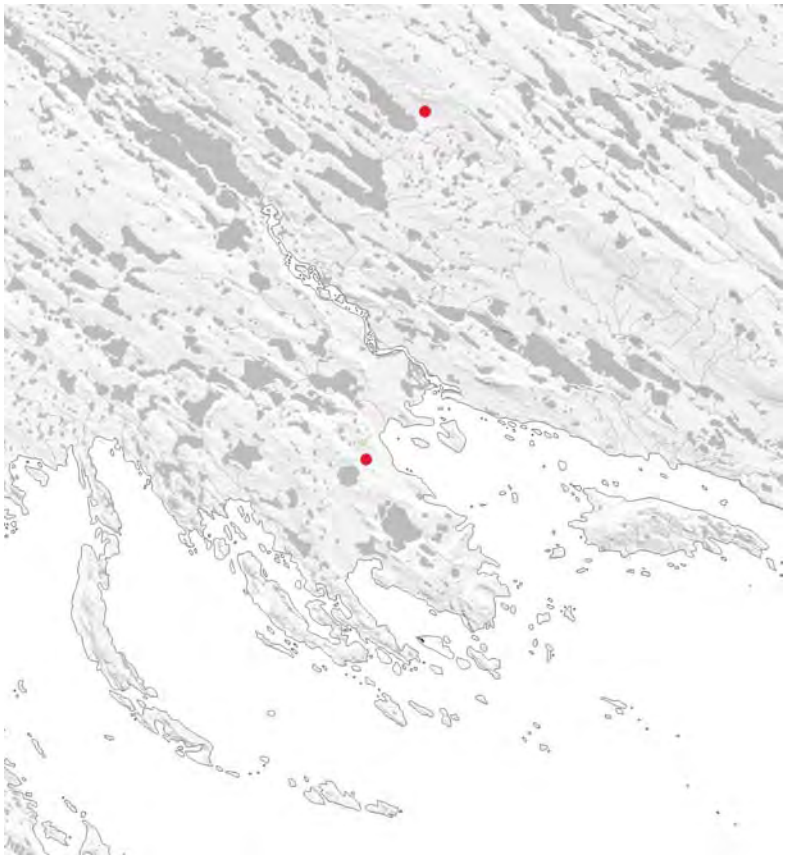


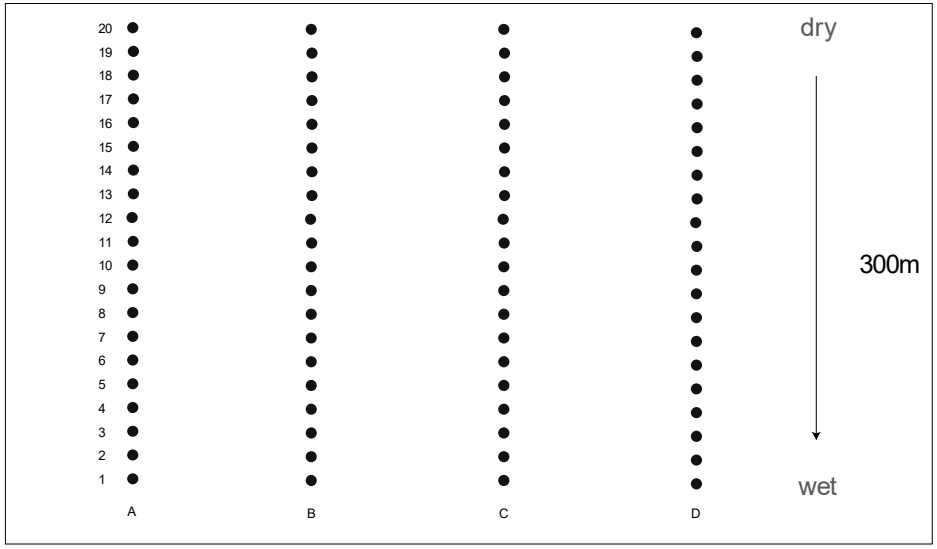


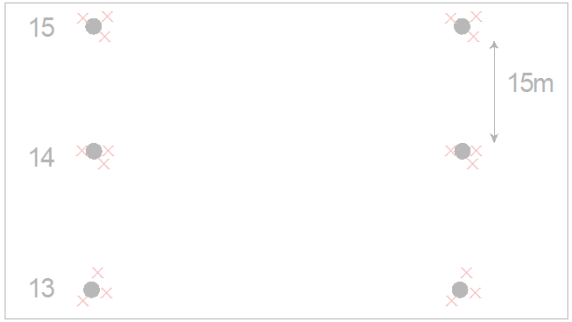


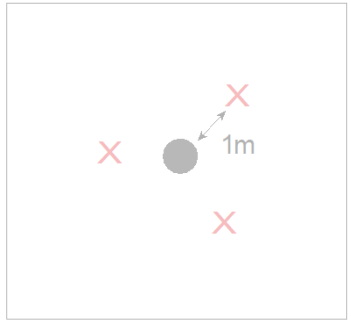

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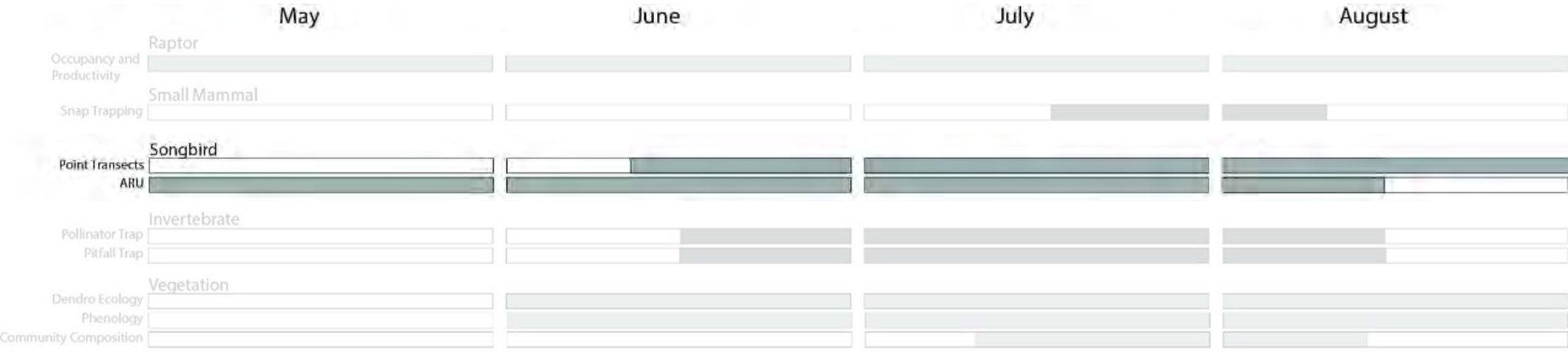




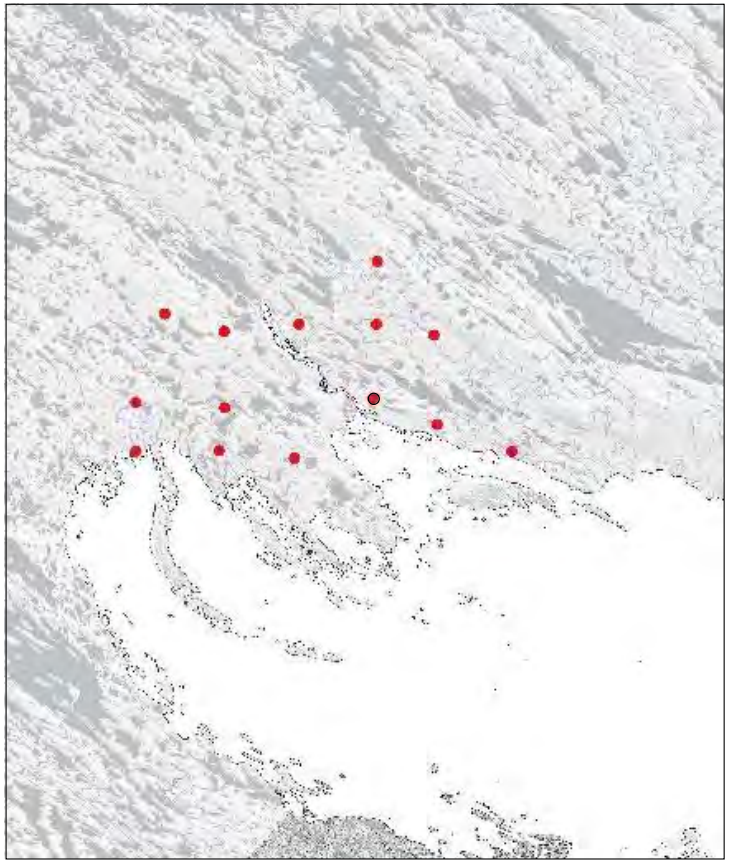

20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
A
B
C
D
dry
300m
wet


15
14
13
15m

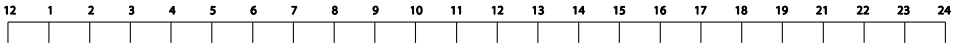

1m


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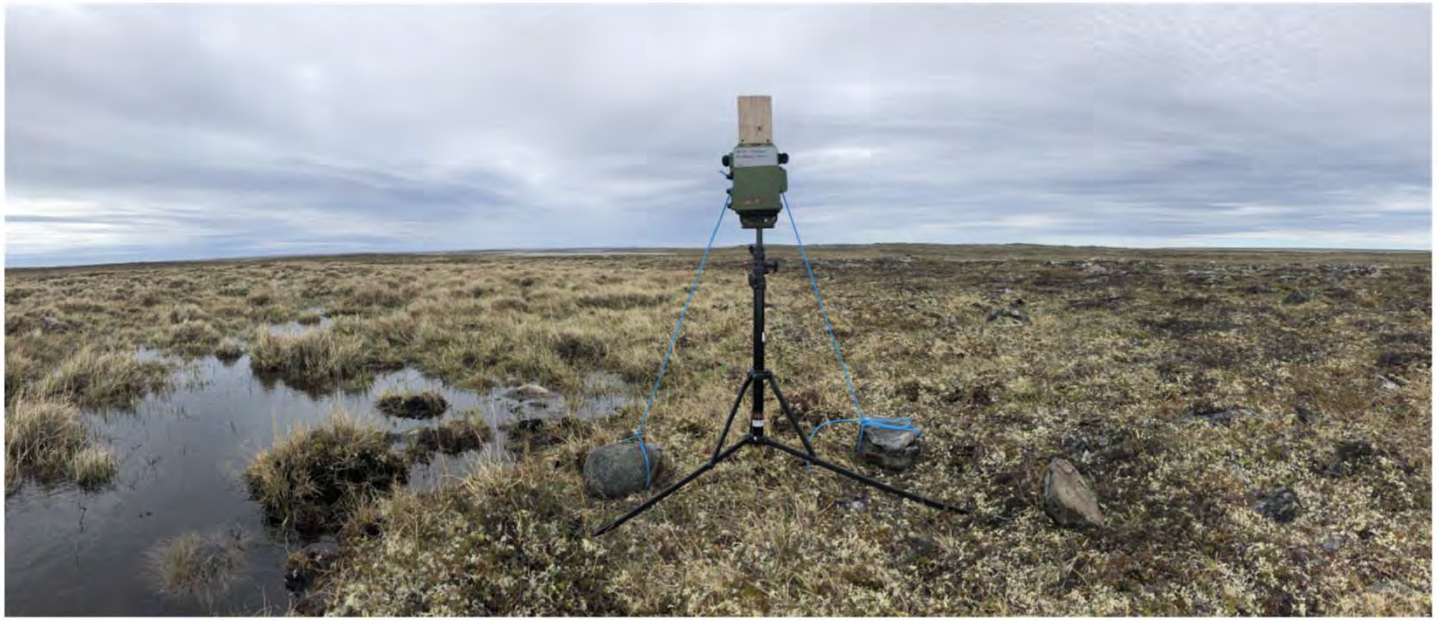


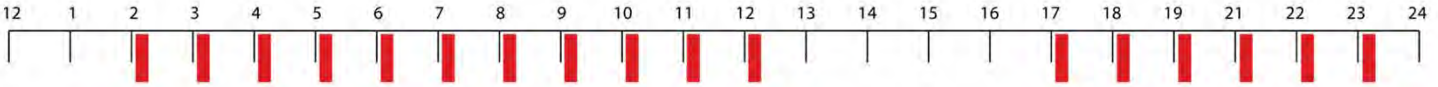




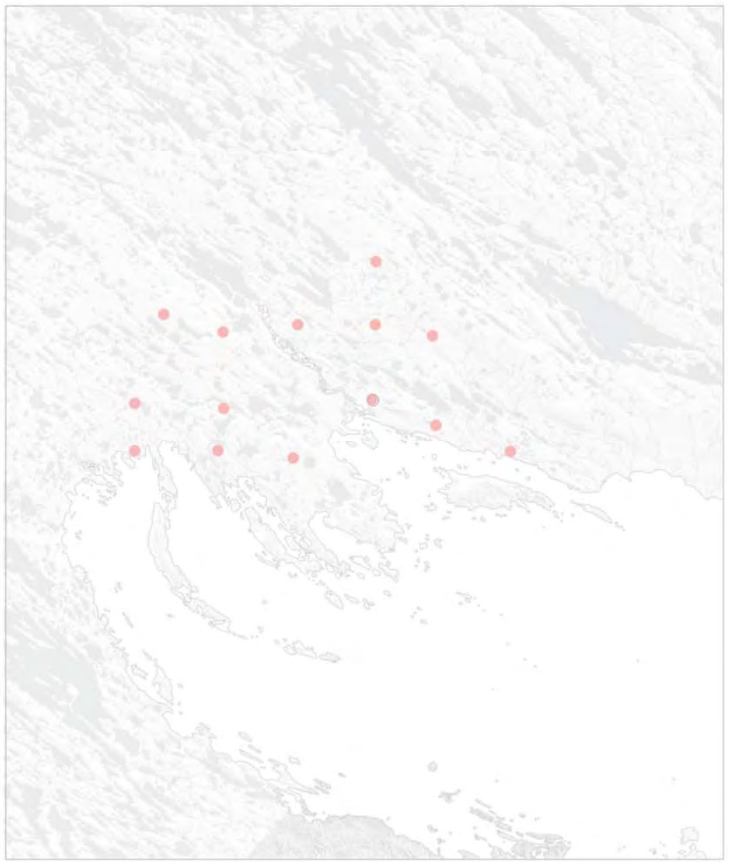

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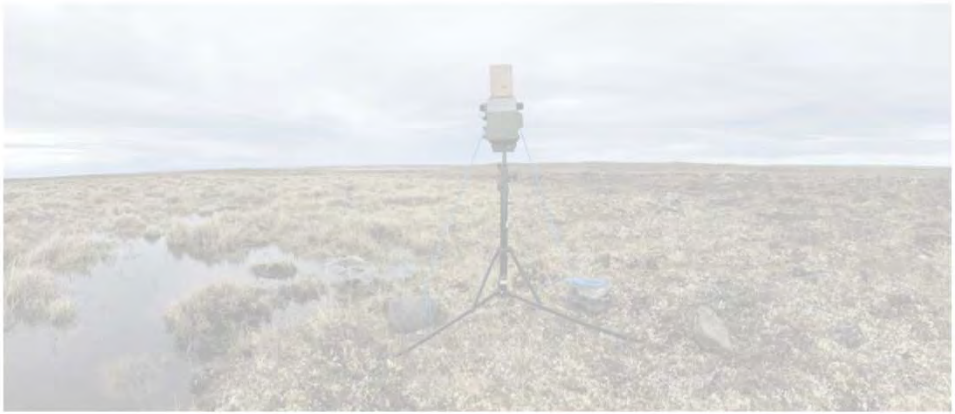


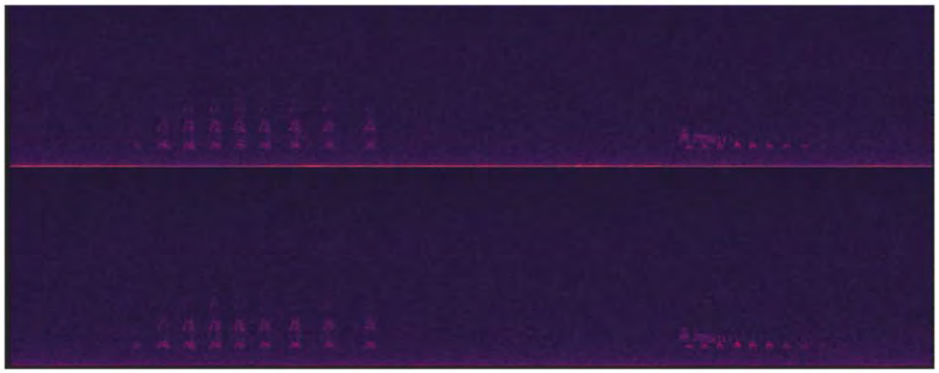


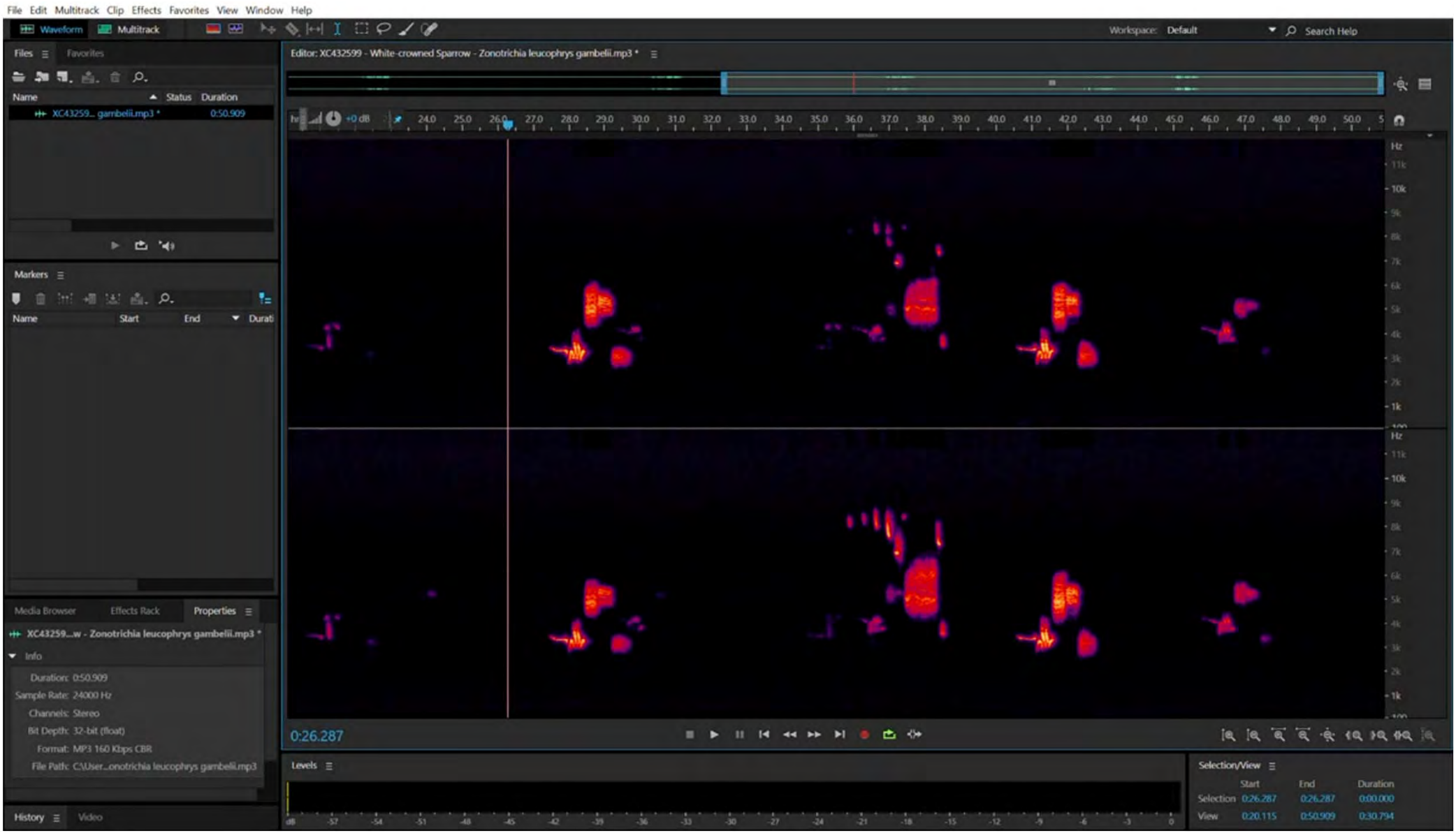

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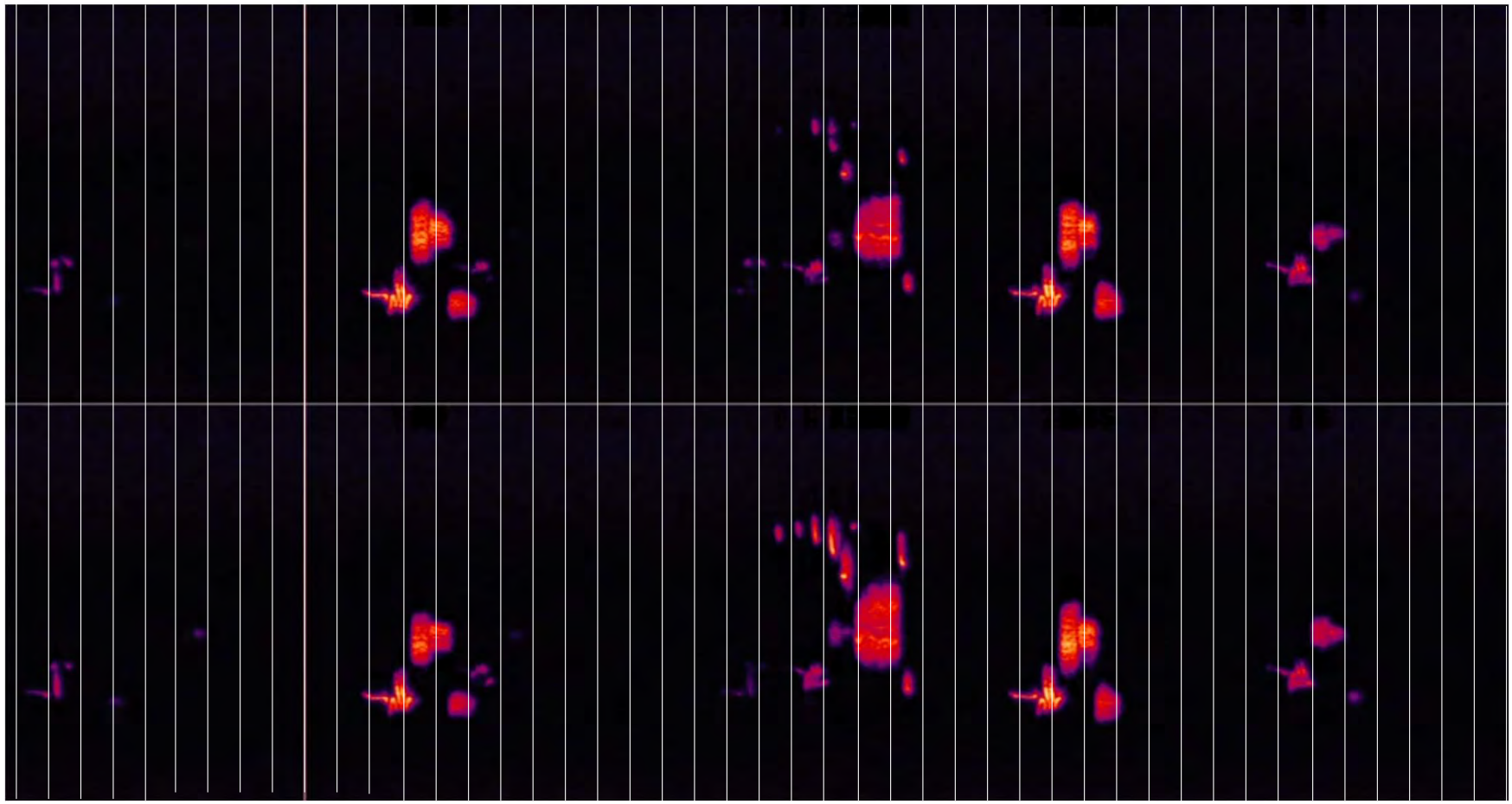







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Selection/View
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Ecology and Evolution

Open Access

Using bioacoustics to examine shifts in songbird phenology

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Keywords
Acoustic Complexity Index, Alaska, climate change, Glacier Bay, monitoring, songbirds, soundscape.

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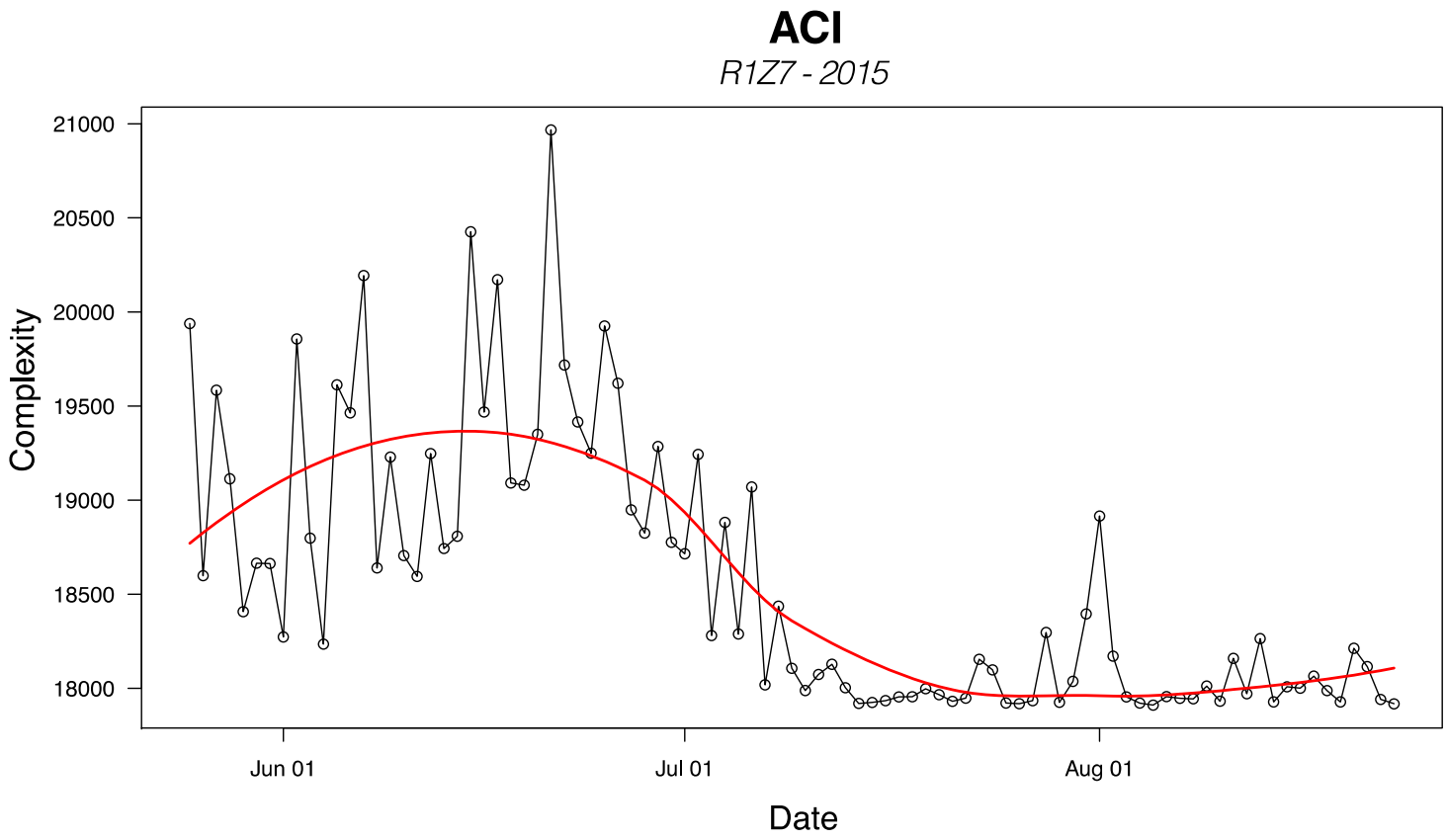
Ecology and Evolution 2016; 6(14): 4697–4710

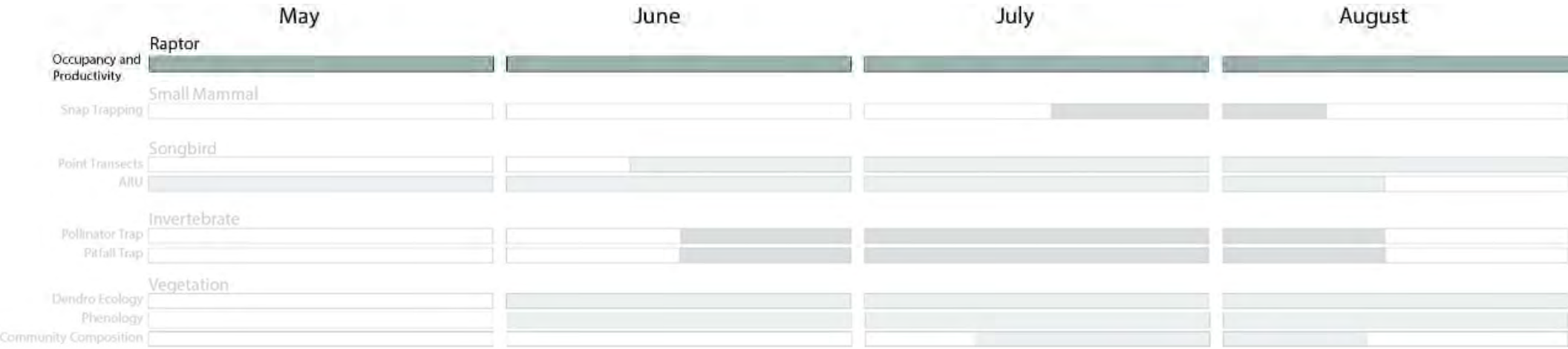
doi: 10.1002/ece3.2242

Abstract

Monitoring patterns in biodiversity and phenology have become increasingly important given accelerating levels of anthropogenic change. Long-term monitoring programs have reported earlier occurrence of spring activity, reflecting species response to climate change. Although tracking shifts in spring migration represents a valuable approach to monitoring community-level consequences of climate change, robust long-term observations are challenging and costly. Audio recordings and metrics of bioacoustic activity could provide an effective method for monitoring changes in songbird activity and broader biotic interactions. We used 3 years of spring and fall recordings at six sites in Glacier Bay National Park, Alaska, an area experiencing rapid warming and glacial retreat, to examine the utility of bioacoustics to detect changes in songbird phenology. We calculated the Acoustic Complexity Index (ACI), an algorithm representing an index of bird community complexity. **Abrupt changes in ACI values from winter to spring corresponded to spring transition, suggesting that ACI may be an effective, albeit coarse metric to detect the arrival of migrating songbirds.** The first peak in ACI shifted from April 16 to April 11 from 2012 to 2014. Changes in ACI were less abrupt in the fall due to weather events, suggesting spring recordings are better suited to indicate phenology. To ensure changes in ACI values were detecting real changes in songbird activity, we explored the relationship between ACI and song of three species: varied thrush (*Ixoreus naevius*), Pacific wren (*Troglodytes pacificus*), and ruby-crowned kinglet (*Regulus calendula*). ACI was positively related to counts of all species, but most markedly with song of the varied thrush, the most common species in our recordings and a known indicator of forest ecosystem health. We conclude that acoustic recordings paired with bioacoustic indices may be a useful method of monitoring shifts in songbird communities due to climate change and other sources of anthropogenic disturbance.



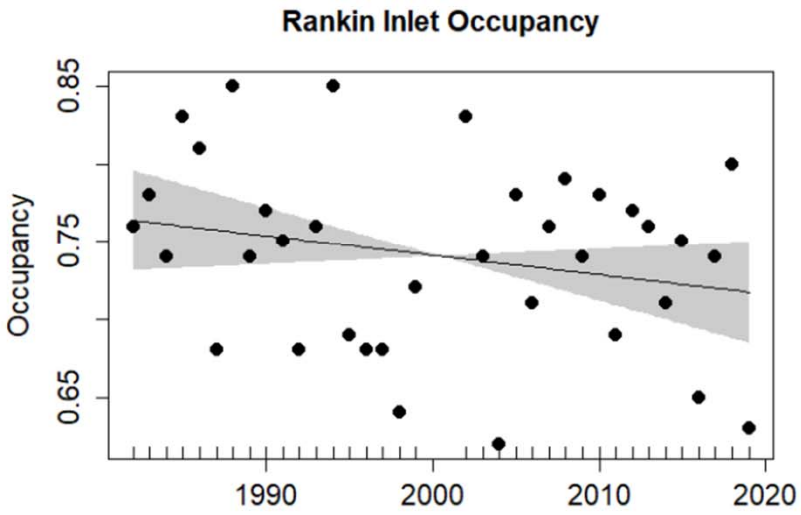

ACI
R1Z7 - 2015
21000
20500
20000
19500
19000
18500
18000
Complexity
Jun 01
Jul 01
Aug 01
Date

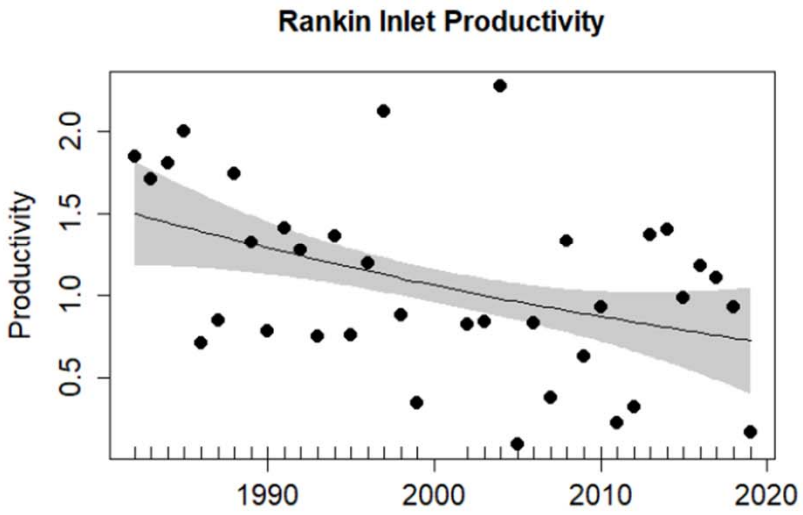

May
June
July
August
Raptor
Occupancy and Productivity
Small Mammal
Snap Trapping
Songbird
Point Transects
ARU
Invertebrate
Pollinator Trap
Pitfall Trap
Vegetation
Dendro Ecology
Phenology
Community Composition








Rankin Inlet Occupancy
Occupancy
0.85
0.75
0.65
1990
2000
2010
2020


Rankin Inlet Productivity
Productivity
2.0
1.5
1.0
0.5
1990
2000
2010
2020


2011-07-16 01:48:29 M 1/1 5°C
SITE18
RECONYX


2012-07-29 2:26:22 AM M 1/1 7°C
SITE67
RECONYX

CALVING GROUNDS –EXTENSIVE SAMPLING

2015 – 2016 < 50 images passive sampling

2015 – 2016 ≥ 181, 960 minutes passive sampling
2015 – 2016 > 48, 000 images passive sampling

2012 - 2015 ≥ 192 plot*yrs., 695 caribou pellets
2012 - 2015 ≥ 192 plot*yrs., 294 sm. mammal pellets
2012 - 2015 ≥ 192 plot*yrs., 294 ptarmigan pellets

2012 - 2019 ≥ 192 plot*yrs., 3,840 specimens ID'd
2012 - 2019 ≥ 192 plot*yrs., 1920 quadrat photos











RANKIN INLET – INTENSIVE SAMPLING

1980 – 2019 ≥ 1200 nest*years

2015 – 2019 ≥ 550 1-km transects active sampling
2019 ≥ 73, 130 minutes passive sampling

2008 – 2019 ≥ 720 trap*nights/yr

2019 ≥ 17, 377 trap*hours, 376 specimens ID'd

2019 ≥ 10 PFPs, 1500 specimens ID'd











Questions?







LTEMP

Long-term Ecosystem Monitoring Program

Nunavut Wildlife Cooperative Research Unit
Government of Nunavut
University of Alberta

2019 - Nov
Annual Report

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Disclaimer: This draft report has been prepared for the Government of Nunavut and presents preliminary findings that may change with further analysis. The views and interpretations in this report article are those of the authors and do not necessarily represent the views of the Government of Nunavut. Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the Government of Nunavut.

Long-term Ecological Monitoring Program: Executive Summary It is well established that temperatures in the Arctic have risen at almost twice the rate of temperatures elsewhere. However, studying the e[U+FB00]ects of climate change on wildlife is challenging; unlike physical processes that generally respond to increased temperature in predictable ways (e.g., permafrost, glacial erosion and oceanic winds, tides and densities), animals can respond in surprising ways, and assessing environmental change that results from natural and anthropogenic drivers in ecosystems that are inherently variable exacerbates these challenges. Ecosystem change is expected to be signi[U+FB01]cant and ongoing. Shifts in the distribution and demography of tundra-breeding wildlife, such as barren-ground caribou, are expected to occur with climate-induced increases in vegetation growth and range expansion, potentially bene[U+FB01]tting species associated with shrub-dominated habitats, and harming species more reliant on tundra habitat, through climate-induced habitat loss. Similarly, pathogens and parasites currently excluded from the Arctic are expected to become established through range expansion and warming. Novel relationships among hosts and parasites can increase the prevalence of infectious diseases, increase host morbidity and mortality, and have cascading impacts on food webs and ecosystem functioning. Similarly, over the long-term, the frequency of extreme weather events, outside of historical range in variation, is likely (e.g., rain on snow, summer storms, temperature highs and lows, snow cover and depth). The ecological consequences of these events include changes to food webs and timing of key ecological relationships, shifts in species distribution and community composition, and changes in demography.

To address two primary concerns (documenting long-term changes associated with climate change, and documenting baseline conditions in a region of high interest for economic development), the Government of Nunavut, Department of Environment (DOE) established the Long-Term Ecological Monitoring Program (LTEMP) in 2012. The goal of the program is to undertake annual monitoring at spatial and temporal scales relevant to monitoring ecosystem components within the summer range of the Qamanirjuaq caribou herd. Within the calving grounds of the Qamanirjuaq herd, extensive monitoring has been conducted periodically at 16 permanent locations since 2012, and starting in 2019, intensive annual monitoring was initiated near the community of Rankin Inlet. The intensive monitoring near Rankin Inlet incorporates multiple ecosystem components across three trophic levels (primary producers to tertiary consumers), while the extensive monitoring in the summer range of the Qamanirjuaq herd focuses on vegetation and pellet counts.

To address research and staffing capacity issues associated with the LTEMP, and to ensure the continuity of the project, the DOE decided to collaborate with academic partners. A Memorandum of Understanding with the University of Alberta, Department of Biological Sciences, and Dr. Alastair Franke was developed to facilitate the partnering of academic researchers with Government of Nunavut-led research projects, such as LTEMP. The main purpose of the LTEMP is to maintain a long-term (i.e., decades), field-based study to monitor ecosystem changes, and incorporate the results into wildlife management practices. Specifically, this involves site-specific, standardized data collection for terrestrial (scat counts, bird surveys, small mammal surveys, invertebrate sampling, and vegetation surveys) and physical (temperature, precipitation, land cover) ecosystem components.

Intensive research site monitoring was conducted during the summer near the community of Rankin Inlet (Figure 1) in 2019. The study area represents approximately 2500 km2 of coastal tundra and marine habitat typical of the low Arctic, containing a diversity of wet meadows, dwarf shrubs, dry eskers, rocky ridges, tidal flats and sea cliffs. The landscape consists of low rolling hills, interspersed with ponds and lakes. Rock outcrops are common throughout the area, and are well-developed as barrier islands. Ridge tops, upland areas, and well-drained slopes support lichens, moss, and low shrubs. Dominant vascular plants are Labrador tea (Ledum palustre), mountain cranberry (Vaccinium vitisidaea), and crowberry (Empetrum nigrum). Bell heather (Cassiope tetragona) occurs in low-lying areas and rock crevices. Vegetation on most slopes and hillsides consists of heath patches comprising Dryas integrifolia, Carex spp., Cassiope, and lichens.

We have structured our study design to incorporate monitoring of multiple ecosystem components across three trophic levels (primary producers to tertiary consumers). Monitoring of vegeta-

tion, including a warming experiment (staring in 2020), is central to the overall study design. To monitor plant species composition and vegetation structure, five stations each comprising four replicates (two control and two treatment) were selected based on distribution and proximity of three vegetation types, shrub, heath, and graminoid. For each replicate, three 1m X 1m point-framing-plots (PFPs) have been permanently established within uniform patches of three vegetation types (shrub, heath, and graminoid), resulting in a total of 60 PFPs (30 control and 30 treatment). To monitor plant phenology, we have established a 50-m transect to monitor three species, Dryas integrifolia (mountain avens), Eriophorum vaginatum (cottongrass), and Salix arctica (Arctic willow), respectively. Other ecosystem components (small mammals, arthropods, avian community, and raptors) are monitored simultaneously, along with abiotic variables associated with weather, snow-cover, freeze-up and thaw. For arthropods, one pitfall trap was placed in each vegetation type (graminoid, shrub, and heath) at each control and treatment plot (4 plots total) at each PFP site (5 sites total), for a total of 60 pitfall traps. In addition, we documented pollinator diversity using pan traps. Two small mammal trapping stations were established each comprising effort no less than 720 trap-nights per trapping session.

Extensive, short-term monitoring was also conducted within the calving grounds of the Qamanirjuaq herd (Figure 2) in the summer of 2019. Sixteen permanent sampling sites have been established along a gradient of historical intensity of use by caribou, as determined by collar data collected between 1993 and 2012. Each of the 16 sampling locations contain three vegetation plots, one each for shrub, graminoid, and heath dominated micro-environments. Vegetation sampling occurs at all plots, and can be broken down into two main categories: (i) visual estimation of percent cover, and, (ii) species presence/richness. In addition, we record species-specific pellet counts annually as an index of animal use.

Data collection, back-up and storage, and preliminary data analysis has been conducted for vegetation community sampling (n = 15 locations), carabid and spider sampling (n = 15 locations), passive songbird sampling (n = 13 locations), active songbird sampling (n = 60 locations), historical shrub growth sampling (n = 7 locations), rainfall measurements (n = 4 locations), and raptor monitoring (study site wide) for the Rankin Inlet study area. Historical data collected (i.e., prior to 2018) in the calving grounds has similarly been backed-up and stored, and basic analysis of the pellet count data (e.g., site-specific counts per species for each habitat type) has been completed.

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1 Introduction

It is well established that temperatures in the Arctic have risen at almost twice the rate of temperatures elsewhere [35]. However, studying the effects of climate change on wildlife is challenging [6]; unlike physical processes that generally respond to increased temperature in predictable ways (e.g., permafrost, glacial erosion and oceanic winds, tides and densities), animals can respond in surprising ways, and assessing environmental change that results from natural and anthropogenic drivers is challenging. In the Arctic, ecosystems show considerable annual variability, which exacerbates the challenge to understand the effects of natural and anthropogenic perturbations [7].

Ecosystem change is expected to be significant and ongoing [35, 86]. Shifts in distribution and demography of tundra-breeding wildlife, such as caribou, are expected to occur with climate-induced increases in vegetation growth and range expansion [75], potentially benefitting species associated with shrubs, and harming tundra obligates through climate-induced habitat loss [78, 54]. Similarly, pathogens and parasites currently excluded from the Arctic are expected to become established through range expansion and warming [43, 79]. For example, warmer conditions are thought to be associated with increasing prevalence of a parasitic nematode in muskoxen *Ovibos moschatus* [43]. These novel relationships among hosts and parasites can increase the prevalence of infectious diseases [27, 2, 79], increase host morbidity and mortality, and have cascading impact on food webs and ecosystem functioning [32]. Over the long-term, Collins et al. [1] indicated that the frequency of extreme weather (i.e., outside of historical range in variation) events is likely (e.g., rain on snow, summer storms, temperature highs and lows, snow cover and depth). The ecological consequences of these events include trophic mismatch [67], shifts in species distribution [82, 44], and species assemblages [67], and changes in demography [3]. Furthermore, changes in inputs from precipitation and outputs from evaporation and plant transpiration [34] can have greater impact on ecosystems than the progression of climate change *per se* [64], potentially leading to episodic tundra drying, altered hydrology, reduced permafrost and deeper active layer in summer [32]. In Nunavut, climate-sensitive factors are exacerbated by the potential for cumulative effects of economic development [19].

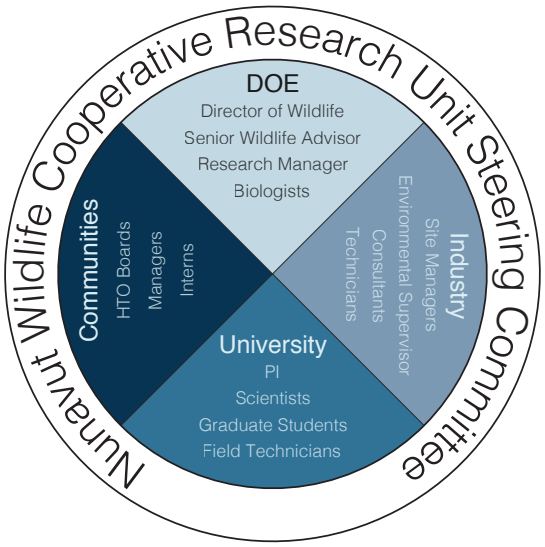
In order to effectively investigate questions of ecosystem function and cumulative effects, assessments should be considered at spatial and temporal scales relevant to species' of interest. Johnson et al. [36] argued that monitoring of multiple organism groups reduced uncertainty when conducting studies focused on detection of ecological change. In a separate study, Johnson et al. [37] compared response time of indicators of ecological change, and argued that nonlinear responses among organism groups can be used to identify early warning indicators. Ims and Fuglei [34] pointed out that many tundra species exhibit cycles, and argued that cycles result from trophic interactions within plant-based food webs, where microtine rodents play a critical role as prey, or as consumers of vegetation. Periodicity among species varies considerably; lemmings for example are thought to cycle approximately every four years [65, 8], ptarmigan species every ten years [4, 59], and caribou are thought to cycle over several decades [53]. Thus, distinguishing between natural cycles and declines that may cause local extinction [49] is extremely challenging, particularly for species that cycle over very long periods.

1.1 Study Objectives

The Government of Nunavut, Department of Environment recognizes the need to increase research capacity and productivity, including work related to wildlife population trends, species interactions, and research relating to the effects of anthropogenic (e.g., economic development) and natural disturbance regimes (e.g., climate change) on wildlife species and their habitat. The Department recognizes that a major challenge for management of wildlife in Nunavut will be to mitigate cumulative landscape impacts. This will be particularly important for critical areas, such as calving grounds, den sites, feeding grounds, migration routes and molting areas, and implies conserving important habitats at scales that preserve functional connectivity, ecosystem resilience and facilitates adaptation to climate change.

To expand research capacity and productivity that will support management of wildlife species in Nunavut, the Department of Environment signed a Memorandum of Understanding with Alastair Franke, the University of Alberta, Department of Biological Sciences. Alastair Franke and Caryn Smith established the Nunavut Wildlife Cooperative Research Unit (NuWCRU) as the basis for collaboration among four main stakeholder groups: (i) the department; (ii) community-based organizations; (iii) university-based researchers at the University of Alberta, and; (iv) proponents of economic development.

Within the context of NuWCRU goals and objectives, the Department directed Alastair Franke to build on the Long-term Ecosystem Program (L-TEMP).



1.2 Program History

The purpose of the Long-Term Ecological Monitoring Program is to assess ecosystem change within the summer range of the Qamanirjuaq caribou herd. The Qamanirjuaq Caribou Herd is the largest caribou herd in the western arctic occupying 300,000 km^2 [10]. Each year, Kivalliq Inuit and Manitoba Dene harvest approximately 8,000 and 5,000 animals, respectively. Aboriginal hunters in Saskatchewan and Northwest Territories harvest an additional 1,000 to 5,000 animals annually [17]. The estimated value of the harvest is 15 to 25 million dollars annually. A decline in herd size, first reported in the early 1950's, resulted in follow-up surveys dedicated to estimating herd size. Although estimates vary considerably, Boulanger et al. [10] suggest that the Qamanirjuaq herd is in a slow decline. The goal of long-term monitoring outlined here is to complement existing species-specific monitoring initiatives (e.g., government-led caribou and muskox surveys) in order to describe long-term change associated with natural and anthropogenic drivers within the calving grounds of the Qamanirjuaq caribou herd. For caribou, ecosystem monitoring should be conducted at broad spatial scales, over long time periods (e.g., decades) using multiple organism groups, including those that are early warning indicators.

1.2.1 Qamanirjuaq Calving Grounds

Work was established in 2012 under the direction of the Government of Nunavut (GN) ecosystems biologist with the goal to undertake extensive monitoring at spatial and temporal scales relevant to monitoring change within the Qamanirjuaq caribou herd calving grounds. The initial study design was limited to assessing vegetation and pellet counts in the calving grounds. Monitoring with motion sensitive cameras and autonomous recording units was added in 2015. Fieldwork was not conducted in 2014 and 2017 because the Ecosystems Biologist position was vacant, and vegetation and scat

sampling were not conducted in 2016. Responsibility for program delivery was assigned to the GN-led Nunavut Wildlife Cooperative Research Unit (Table 1) in 2018, in part to enable continuity of annual monitoring.

	2012	2013	2014	2015	2016	2017	2018	2019
Lead	N. Lecomte	N. Lecomte	/	M. Wilson	M. Wilson	/	NuWCRU	NuWCRU
Veg	Yes	Yes	/	Yes	No	/	Yes	Yes
Scat	Removal	Removal/Count	/	Removal	No	/	Removal	Removal/count
Camera	No	No	/	Yes	Yes	/	No	No
ARU	No	No	/	Yes	Yes	/	No	No

Table 1: Summary of field work completed as part of the Long-term Ecosystem Monitoring Program from 2012 – 2019.

Intensive summer monitoring in the calving grounds is not possible due to the potential for disturbance to caribou during the calving period. Monitoring capable of evaluating change across multiple trophic levels requires frequent sampling [55]. For example, arthropod pitfall traps need to be emptied and recharged bi-weekly, vegetation phenology metrics have to be examined every two days, small mammal sampling has to be conducted daily, and ensuring sufficient sample size for vegetation communities requires full time work over the course of several weeks. Implementing such a program throughout the Qamanirjuaq Calving grounds is not feasible, and NuWCRU therefore established an additional study area surrounding Rankin Inlet in 2019.

All L-TEMP data were provided to NuWCRU personnel in October 2018. An external hard-drive containing all relevant data was shipped to the NuWCRU office at the University of Alberta by O. Chaikina (received 7 October 2018). Lapses in fieldwork have resulted in three years of only pellet removal (i.e., to remove multi-year accumulation of scat), and only one year (2013) where counts reflect accumulation over the course of a single calving season. Vegetation sampling and time-series photographs of quadrats were repeated in four years (2012, 2013, 2015 and 2018) from 2012 - 2018. Trail camera and autonomous recording unit (ARU) data were collected only twice (2015 and 2016) over the seven-year period.

1.2.2 Rankin Inlet

In 2019, all existing LTEMP equipment was moved to Rankin Inlet with the intent of conducting intensive monitoring. Data collection was implemented in 2019 (Table 2).

	2012	2013	2014	2015	2016	2017	2018	2019
Lead	/	/	/	/	/	/	/	NuWCRU
Veg Phenology	/	/	/	/	/	/	/	No
Veg Community	/	/	/	/	/	/	/	Yes
Dendro	/	/	/	/	/	/	/	Yes
Rain	/	/	/	/	/	/	/	Yes
ARU	/	/	/	/	/	/	/	Yes
Distance Sampling	/	/	/	/	/	/	/	Yes
Pitfall	/	/	/	/	/	/	/	Yes
Pollinator Trap	/	/	/	/	/	/	/	No
Malaise Trap	/	/	/	/	/	/	/	No
Raptor Monitoring	/	/	/	/	/	/	/	Yes
Small Mammal	/	/	/	/	/	/	/	Yes

Table 2: Summary of field work completed as part of the Long-term Ecological Monitoring Program from 2012 to 2019 in the Rankin Inlet study area.

1.3 Study Area

1.3.1 Rankin Inlet

The study area (Figure 1) surrounds the community the Rankin Inlet, Nunavut, Canada (62.81° N, 92.09° W), encompassing approximately 2500 km^2 of coastal tundra habitat. The landscape is typical of the low Arctic, containing a diversity of wet meadows, dwarf shrubs, dry eskers, rocky ridges, tidal flats and sea cliffs. Summers are short and cool. Spring thaw begins in mid-May, reaching a peak by the first week of June, when ice cover on small lakes and ponds begins to melt. Land-fast sea ice persists until the second week of July. Annual rainfall is approximately 16cm, and snowfall is approximately 118.0. The landscape consists of low rolling hills, interspersed with ponds and lakes. Rock outcrops are common throughout the area, and are well developed as barrier islands. Ridge tops, upland areas, and well-drained slopes support lichens, moss, and low shrubs. Dominant vascular plants are Labrador tea (*Rhododendron tomentosum*), mountain cranberry (*Vaccinium vitisidaea*), and crowberry (*Empetrum nigrum*). Bell heather (*Cassiope tetragona*) occurs in low-lying areas and rock crevices. Vegetation on most slopes and hillsides consists of heath patches comprising *Dryas integrifolia*, Carex spp., Cassiope, and lichens.

1.3.2 Qamanirjuaq Caribou Herd Calving Grounds

The Dubwant Lake plain/upland ecoregion is primarily used in July and August during the post calving period. The eastern and southeastern portions of Kazan River upland ecoregion are used during fall migration and rut (September and October). The Coastal Hudson Bay lowland ecoregion within the Hudson Plains ecozone is most commonly used during late winter and occasionally during late fall (Appendix 5). The study region is rich in biological resources and diversity, and is under continuing pressure for mineral development. The Kivalliq Region contains several Tier 2 and 3 mineral projects that overlap with range of the Qamanirjuaq herd.

In 2012, cumulative caribou collar relocation data spanning from 1993 to 2012 were used to delineate seven zones that varied in intensity of use (Figure 2); Zone 7 contained the highest concentration of use during the calving period, and Zone 1 containing the lowest concentration of use[a]. As a result, sixteen permanent site locations extending northward and southward from the core calving grounds were established (Figure 2). Within each site location, Inuit Qaujimajatuqangit (IQ) was

[a] see Appendix 5 for annual movement

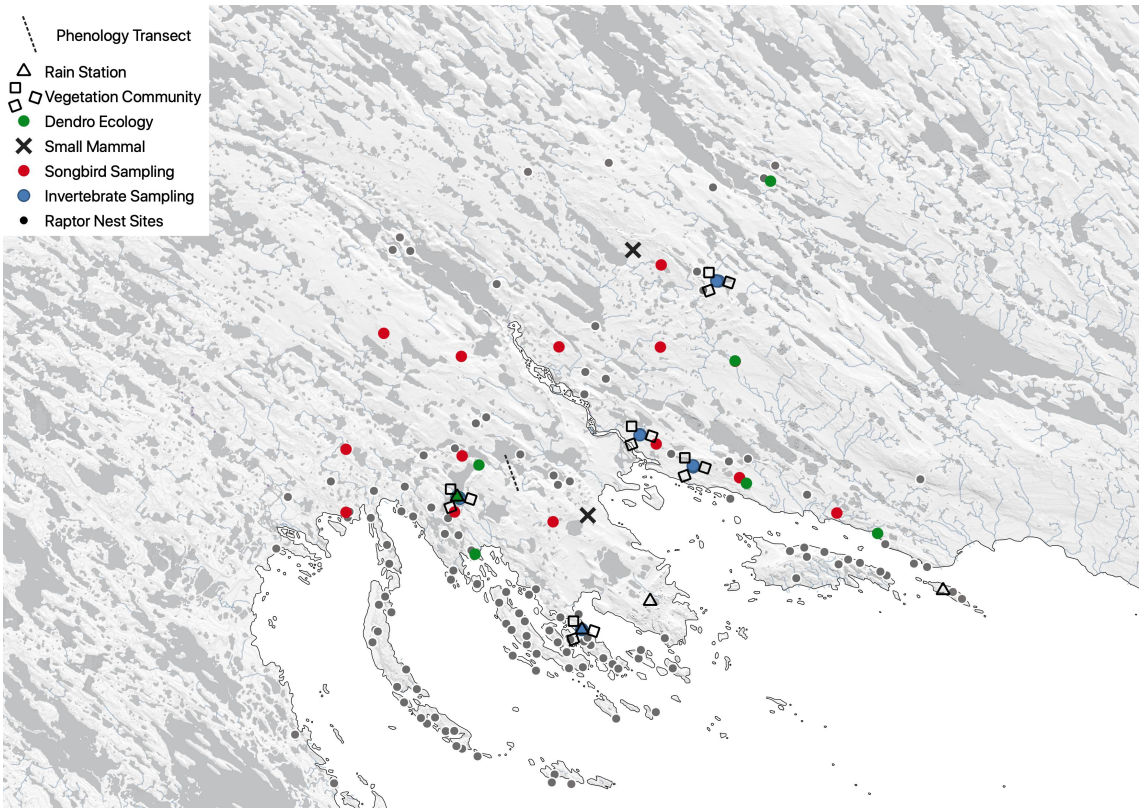


Figure 1: Sampling locations surrounding Rankin Inlet

used to identify plots dominated by three different vegetation types (shrub, graminoid and heath) representing the habitat that caribou were most likely to use. Similarly, IQ was used to exclude locations least likely to be used (i.e., those containing more than 30% mires, areas which were prone to flooding, or those comprised primarily of rock).

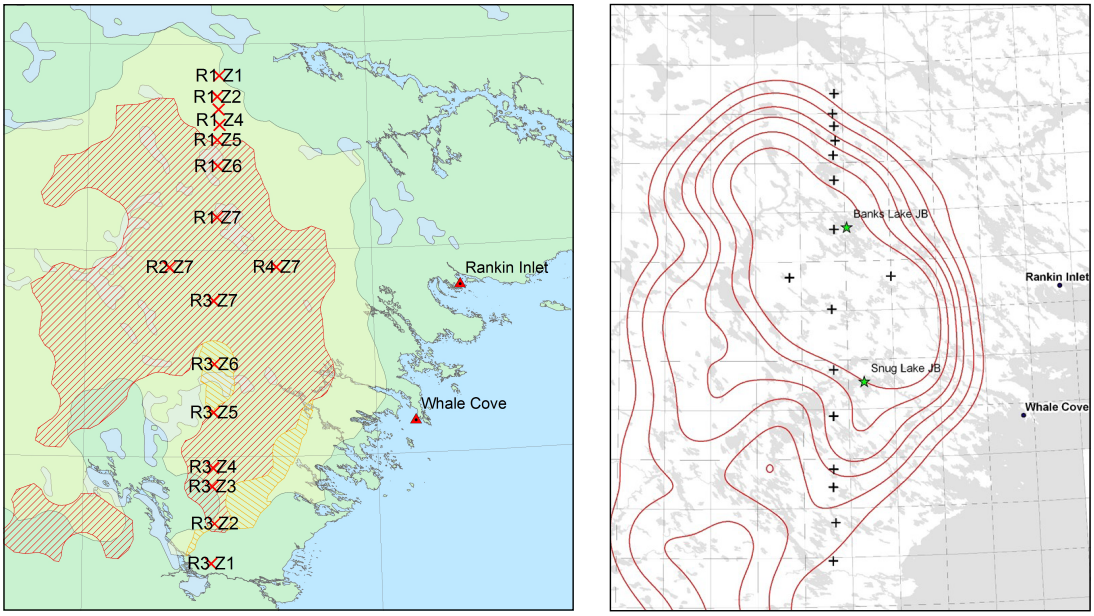


Figure 2: Sampling locations within the core calving (red), and post-calving (yellow) areas. The map on the right shows the utlization distributions used to inform the study design.

2 Methods

Fieldwork in 2019 was conducted from May 15 to August 25 in Rankin inlet, and August 7 to August 13 in the calving grounds. The following section describes field methods applied across all years combined (i.e., not all methods applied in all years), for both study areas.

General Study Design

2.1 Rankin Inlet

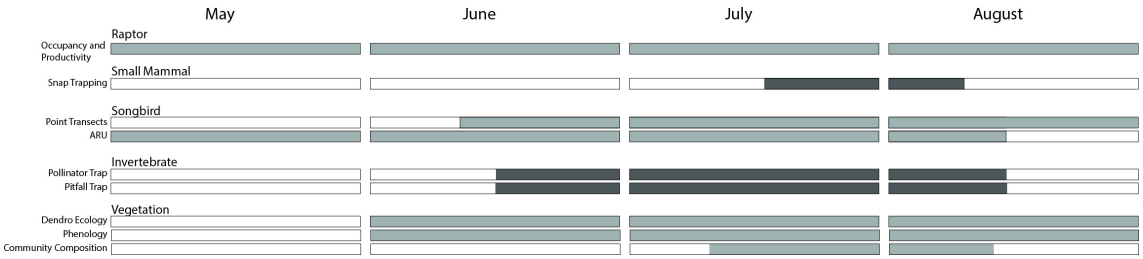


Figure 3: Diagram of the sampling schedule.

We have structured our study design to incorporate monitoring of multiple ecosystem components across trophic levels (primary producers to tertiary consumers). Monitoring of vegetation, including future implementation of a warming experiment, is central to the overall study design. To monitor plant species composition and structure, five stations each comprising four replicates (two control and two treatment) were selected based on distribution and proximity of three vegetation types. For each replicate, three 1mX1m point-framing-plots (PFPs) have been permanently established within uniform patches of three vegetation types (shrub, heath, and graminoid), resulting in a total of 60 PFPs (30 control and 30 treatment). To monitor plant phenology, we have established a 50 m transect to monitor three species, *Dryas integrifolia* (mountain avens), *Eriophorum vaginatum* (cottongrass), and *Salix arctica* (Arctic willow), respectively. Other ecosystem components (small mammals, arthropods, avian community, and raptors) will be monitored simultaneously in time and space, including abiotic variables associated with weather, snow-cover, freeze-up and thaw. For arthropods, one pitfall trap will be placed in each vegetation type (graminoid, shrub, and heath) at each control and treatment plot (4 plots total) at each PFP site (5 sites total), for a total of 60 pitfall traps. In addition, we shall document pollinator diversity using pan traps. Two small mammal trapping stations will be established each comprising effort no less than 720 trap-nights per trapping session.

2.1.1 Primary Producers

Vegetation Community Composition

Field Methods Arctic tundra ecologists involved in the International Tundra Experiment (ITEX; [30]) developed and published standard protocols for measurements, experimental design and statistical analyses in the ITEX Manual. ITEX researchers recommend the point quadrat method for assessing vegetation changes in tundra plant communities because it is quantitative and repeatable [30]. A total of 30 permanent point framing plot (PFP) locations were established in the Rankin Inlet area in 2019. The 30 plots are grouped into 5 sampling stations (6 plots in each station), and each station contains two heath-dominated plots, two grass-dominated plots, and two shrub-dominated plots. Each plot is composed of a 10 by 10 grid that results in 100 intersections at which the canopy height, canopy vegetation species, and ground vegetation species are all identified. These plots will serve as permanent, long-term monitoring plots to evaluate changes in community composition.

Analytical Methods - Repository Because sampling plots are nested temporally and spatially, we will use hierarchical models that include random intercepts for sample location and year to estimate change in canopy height (Gaussian distribution), trends in vegetation percent cover (Binomial distribution), and species richness (Poisson distribution).

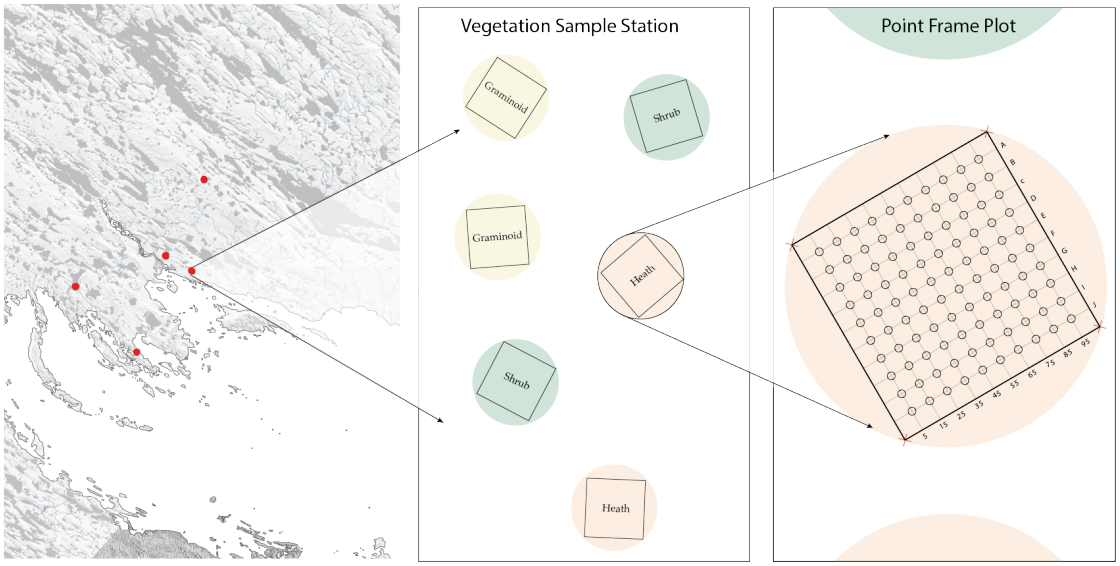


Figure 4: Diagram of the sampling scheme.

Plant Phenology

Field Methods To monitor plant phenology, we have established a 50-m transect to monitor three species, *Dryas integrifolia* (mountain avens), *Eriophorum vaginatum* (cottongrass), and *Salix herbacea* (Alpine dwarf shrub), respectively. Data shall be collected every 2 to 3 days from snow melt (mid-June) to senescence (Mid-August) each year. The long-term objective is to monitor trends in species-specific phenological milestones and realized growing season length (time between leaf emergence and leaf senescence) in conjunction with snow melt, and spring and autumn temperatures. For *Salix herbacea*, we shall monitor: 1. date snow free; 2. date of first leaf bud burst; 3. date first pollen visible on male plants; 4. date of onset of seed dispersal in female plants 5. date first yellowing of leaves 6. date last green leaf turning yellow 7. date all leaves dead
For *Dryas integrifolia*, we shall monitor:

1. date snow free; 2. date first appearance of white color on flower buds; 3. date first open flower; 4. date last petal shed, and; 5. date first twisting of filaments on seed heads.

For *Eriophorum vaginatum*, we shall monitor:

1. date snow free; 2. date first appearance of flower buds, and; 3. date first pollen visible (yellow anthers).

Analytical Methods Phenological events will be estimated with a Bayesian hierarchical model using an interval censored response variable. Given the limitations associated with a survey frequency of every 2 to 3 days, the exact time at which a phenological event occurs may be unknown (the event occurred after the last survey, but before the current survey). Resulting uncertainty can bias model estimates depending on how one chooses to deal with the uncertainty [9]. With an interval censored response variable, lower and upper boundaries of time within which the event must have occured are created to reflect the uncertainty, and parameter estimates are corrected as a result. Following Bjorkman et al. (2015), we define the upper boundary as the first day in which the phenological event was detected, and the lower boundary as the day of the previous survey. Factors potentially affecting yearly variation in phenology such as (i) winter temperature, (ii) spring temperature,

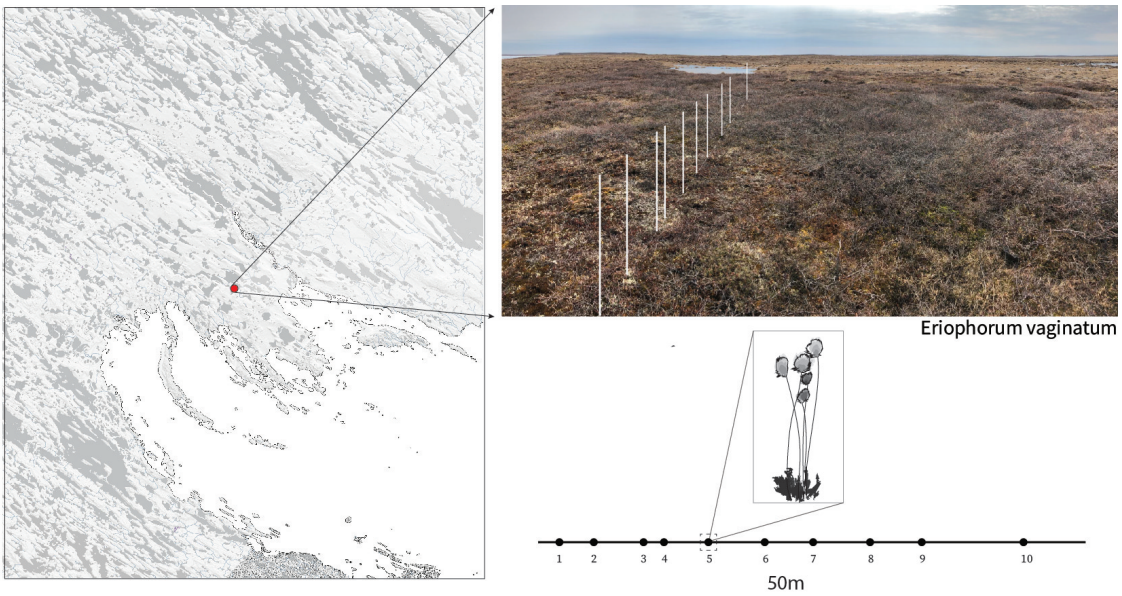
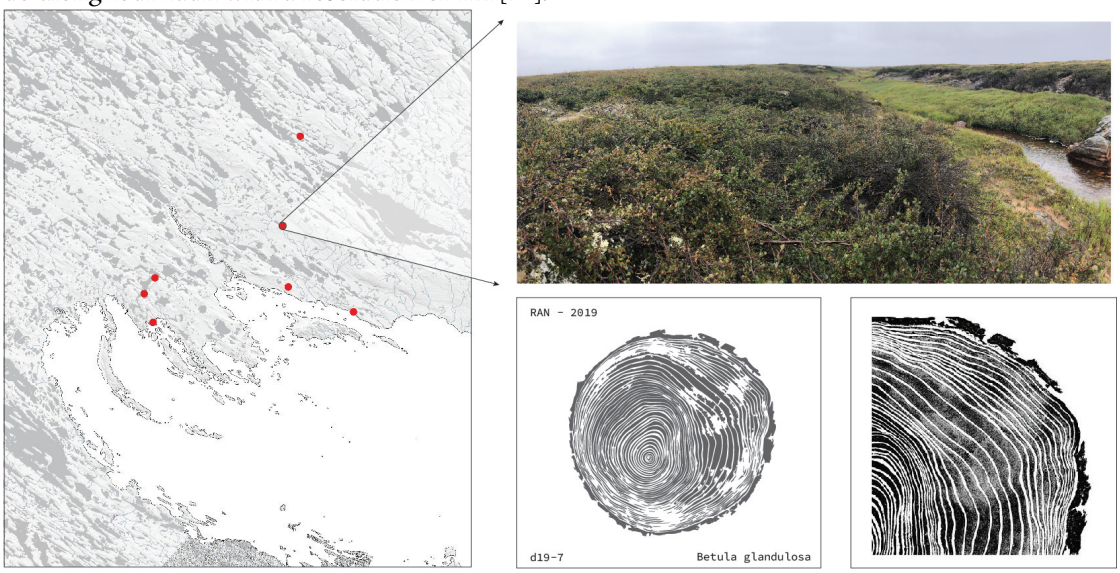


Figure 5: Diagram of the sampling scheme.

(iii) previous summer temperature, and (iv) timing of snowmelt per plot, per year, will be included as fixed effects within the model, and as the sample locations within the transect will remain the same across years, plot will be added as a random intercept to account for individual-specific variation.

Plant Growth

Field Methods Annual growth increments in woody species can provide information on trends in growth related to local growing conditions, including long-term climate change. Sample processing shall follow methods adapted for tundra shrub species [56]. Thin cross sections of either the largest stem or the root collar shall be mounted on glass slides and photographed under a dissecting microscope. Using the digital image, individual rings shall be counted and measured for each section of shrub along four radii with a resolution of 1m [70].



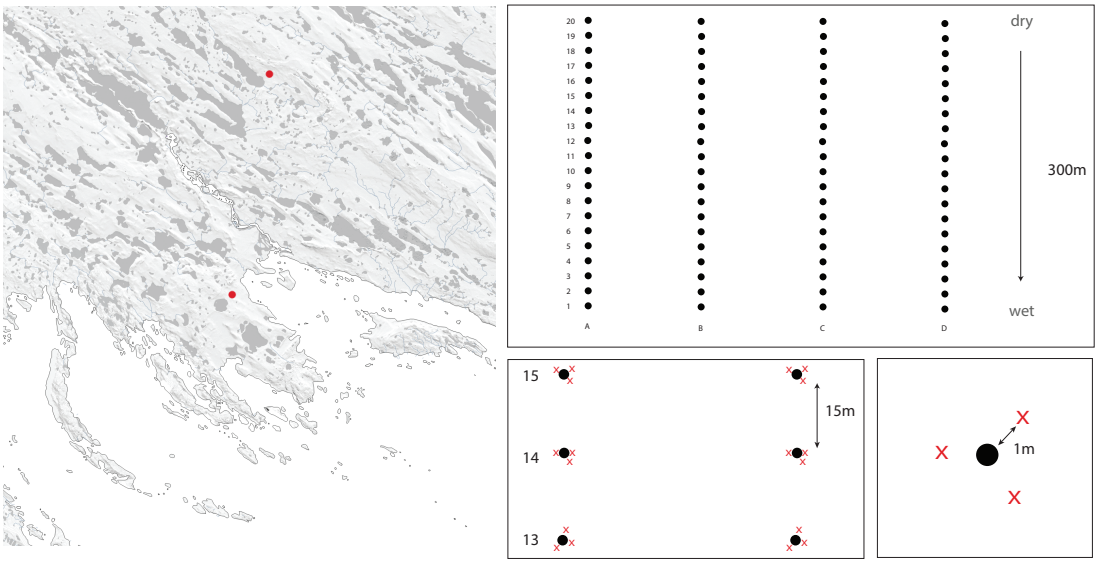
Analytical Methods - Repository - As one sample from a single individual will be used to generate growth metrics among multiple years, we will include a random intercept for individual, and

year to estimate change in radial growth over time. Models will be built separately for each species of shrub, and will include within-year covariates such as winter, spring, and summer conditions obtained from archived records, as well as local topography, and NDVI. Spatial correlation structures will be added to the model to investigate potential spatial relationships in radial shrub growth within the study area.

2.1.2 Primary and Secondary Consumers

Microtine Rodents

Field Methods Following the procedures outlined by [41], we propose to establish two permanent small mammal trapping sites. Trapping sites have been selected based on their inclusion of habitats suitable for brown and collared lemmings (presence of old lemming nests, runways and burrows, seed bearing plants, wet and dry tundra, and a total area that is equal to or larger than 700 m in length). We will establish four permanent line transects (GPS-located) at each trapping site. Line transects shall be 300 m long and travel from xeric to hydric conditions. Each transect contains 20 trapping stations that consist of a flagged stake and three museum special snap traps attached to the stake using string (1 m in length), resulting in a total of 240 traps. Traps shall be distributed around the stake, with extra effort taken to target areas of suspected lemming use (lemming burrows or runs). Snap traps are placed no further than 1 m from the station flag, and baited with peanut butter. All traps shall be checked once daily for three trap-nights, resulting in 720 trap-nights per trapping session. We shall record all captures, misfires, or missing bait from each trap. Lemming abundance will be expressed as the total number of lemmings caught along all transects per 100 trap nights [24].



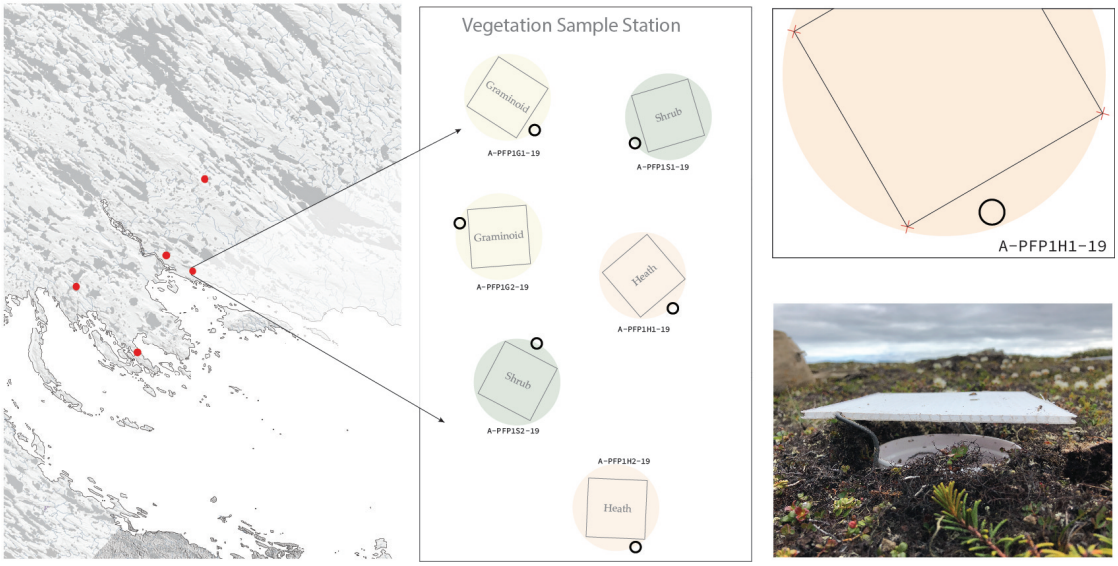
Arthropod Diversity

Field Methods To measure epigeic arthropod diversity, one pitfall trap is placed in each vegetation type (graminoid, shrub, and heath) at each control and treatment plot (4 plots total) at each PFP site (5 sites total), for a total of 60 pitfall traps. Traps are placed adjacent to the vegetation plot so that sampling efforts are specific to the vegetation type, but sufficiently far away to ensure that the vegetation plot isn't heavily trampled.

Traps are placed in a hole in the ground such that the pitfall trap fits snugly in, with its upper rim exactly level with the soil surface. Litter and vegetation surrounding the freshly dug hole is replaced as much as possible. Each trap consists of an outer plastic container, an inner plastic container, and

a rain shelter pegged into the ground at two corners. The inner pitfall trap container is filled 1/3 to 1/2 full with a mix of 50% non-toxic monopropylene glycol, 50% water.

Pitfall traps are first deployed in early July when the surface soil layer has fully thawed, and removed roughly one week into August. Trapped specimens are removed from the pitfall traps every two weeks, and transferred into 70% ethanol. Specimens are then returned to the lab in Edmonton for pinning, identification, and archival.



Analytical Methods - Repository - Arthropod sampling adopts the same hierarchical structure as plant species diversity, and models will therefore be similar - random intercepts for plot and year will be included to account for repeated observations. However, unlike plant species diversity, repeated observations with arthropods enables the estimation of detection error, so n-mixture models will be used to estimate species richness at each location while accounting for imperfect detection. We will estimate trends in species richness among years while including within-year covariates such as vegetation type, winter conditions, spring conditions, topography, and NDVI.

2.1.3 Avian Herbivores and Insectivores

Passive Sampling

Field Methods A permanent grid of locations has been established for passive avian sampling using autonomous recording units (ARUs). Each year, ARUs are deployed and powered on in May, and sensors remain active until early August. Due to the length of recording period, units are visited every 3 weeks for maintenance and battery replacement if needed. ARUs are programmed to replicate the recommended sampling duration for human conducted point counts [48], and record in two daily sampling periods, 1) 10 minute recordings every hour from 02:00 to 12:00, and 2) 10 minute recordings every hour from 17:00 to 23:59.

Analytical Methods A permanent grid of locations has been established for autonomous recording unit deployment. A total of 13 units were deployed in Rankin Inlet in 2019 in a range of areas dominated by srhub, heath, and graminoid vegetation. The units were deployed between July 3 and July 11, and were active until August 15. All units were programmed to record daily for 10 minutes every hour between 2:00AM and 12:00PM, and 10 minutes every hour between 5:00PM and

12:00AM, resulting in 17 recordings per day per unit. Transcription protocols have been developed and refined to reduce observer bias in data extraction (Appendix 9), and a database has been created to aid data entry and ensure errors are minimized. All recordings have been converted from WAC to WAV format to allow transcription, and recordings are currently being processed using the following two methods.

1. Traditional Transcription - Repository -
    - Using the protocols outlined in Appendix 9, an observer listens to the recording and identifies all species detected.
    - Data structure enables hierarchical modeling that simultaneously estimates detection probabilities, and probability of species occurrence.
    - As data processing is slow, a subset of recordings from each site are processed.
2. Acoustic Indices - Repository -
    - Using R, audio files are analyzed to investigate sound patterns typically associated with wildlife activity. Numerical outputs that indicate certain qualities of the recording are produced, and can be used to compare the level of wildlife activity across days in the summer.
    - This process drastically reduces processing time considerably, as it doesn't require an observer to listen to the recording. Index outputs can't fully replace transcription as they can't be used to determine species occurence, however, this method increases the amount of data various aspects of songbird phenology (acoustic complexity will increase as birds arrive in the spring).
    - all recordings obtained can be processed each year.

Active Sampling

Field Methods We used distance sampling transects [12], each 1 km in length, to estimate abundance and habitat associations of avian species and guilds. We generated 400 random start points at the start of each field season, and surveyed approximately two transects per day spanning the period from spring melt to the start of southward migration for many avian species. Based on work conducted in this study area (Hawkshaw, 2019, pers. comm.), we expect the sampling period to extend from the end of May to mid-August. Sampling is classified into two periods: early summer (prior to July 11), and late summer (all surveys conducted after July 11). This date corresponds to the division between incubation and brood rearing for most avian species in our study area (Hawksahw, 2019, pers. comm.), and thus was a logical cut-off when investigating how habitat associations and abundance might change seasonally. All transects are replicated before and after this date. To avoid the confounding effects of date and habitat in our counts, all replicates were a minimum of 15 days apart. Time of day of surveys ranged from 9:00 – 20:00. In the arctic, typical activity patterns in avian species are generally relaxed and they can remain active throughout the day [72].

Analytical Methods Density surface modelling [52] will be used to relate the abundance of species to spatial or habitat covariates to create distribution maps. To estimate detection functions, we shall follow the approach recommended by Thomas et al. [76]. Candidate models (i.e., detection functions) will include covariates that potentially influence detection (e.g., Julian day, time of day, precipitation and wind speed). The top detection function used for each guild shall be selected using Akaike's Information Criterion (AIC). Detection functions shall be estimated using the package Distance (Miller et al. 2017) in the R statistical environment (R Development Core Team 2010). To model spatiotemporal variation in abundance of avian guilds, we shall use an extension of distance

sampling known as density surface modelling (DSM). DSM incorporates the probability of detection estimated using the detection function and models adjusted counts on the basis of spatial or habitat covariates in a generalized additive model framework. As a final step, the resulting model shall be used to predict abundance over a grid of each permanent site. Analyses will completed using the R package dsm (Miller et al. 2017) and mgcv (Wood 2015).

2.1.4 Tertiary Consumers

Raptors

Field Methods As falcons arrive from their wintering grounds in May of each year, all historical and potential new breeding sites shall be surveyed by snowmobile to determine the presence or absence of territorial, breeding-aged adults. All known sites (i.e. cliff or rock outcrop used by a single pair of peregrines including known alternate nest sites within a breeding territory) shall be checked until occupied or until the breeding season is sufficiently advanced to conclude that the site was vacant. In cases where sites are occupied by individuals previously fitted with unique alphanumeric color-coded leg bands, bands shall be read using a Questar Field Model telescope, hand held digital camera, or Reconyx trail camera. If territories are occupied by unmarked individuals, effort shall be made to trap and mark these birds with an alphanumeric color band on one leg and a US Fish and Wildlife band on the other.

After breakup of the sea-ice, territories will be surveyed by boat to determine occupancy and productivity at each site; inland sites shall be accessed by all-terrain vehicle for the same purpose. During summer, banded adult birds shall be identified by either trapping or visually by telescope. Unmarked individuals shall be trapped and banded where possible. Once nestlings reached a minimum of 25 days of age (first week of August), they too shall be banded. Only young that survived beyond 25 days and were banded were included in the annual nestling census.

Analytical Methods Using the mgcv package in R, general additive models (GAM) are used to estimate annual trends for occupancy and productivity. Models include random intercepts at the year level, and smoothers are applied to account for potential non-linear patterns. Typical model validation procedures were performed to ensure that no model assumptions were violated (normal residuals), and the observed data was adequately described by the model.

2.1.5 Physical

Meteorological Conditions

Field Methods Up to four Rainwise PortLog Weather Stations will be deployed approximately uniformly within the study area, and will record hourly estimates of wind speed, wind direction, temperature, humidity, dew point, barometer, rainfall, and solar radiation. In addition, one rain gauge and one phenocam will be deployed at each PFP. A snow gauge shall be deployed within the field of view of the phenocam to monitor snow depth. Analysis of these data shall include annual summaries of precipitation, temperature, snow depth and cover for the purpose of direct long-term comparisons. However, we shall also use these measures as covariates in other analyses. For example, snow depth data could be included in occupancy models that may explain annual variation in caribou or other wildlife (e.g., song birds) phenology.

Analytical Methods - Repository - General linear models (Gaussian distribution) that incorporate site and year as random intercepts will be used to estimate trends in rainfall patterns, total rainfall amounts, temperature, snow-depth, and snow melt.

2.2 Qamanirjuaq Calving Grounds

As indicated, 16 permanent sampling sites have been established within the caribou calving grounds. The sampling locations have been intentionally placed along a gradient of historical caribou intensity of use, as determined by collar data collected between 1993 and 2012 during the calving period. Each of the 16 sampling locations contain three vegetation plots, one for shrub, graminoid, and heath dominated micro-environments (Figure 6). All micro-environment plots are anchored at a fixed location using permanent stakes and flagging, and all corners of the plot are identified with a unique ID (AA, BB, CC, and DD) so that all sampling within the plot can be reliably compared among years.

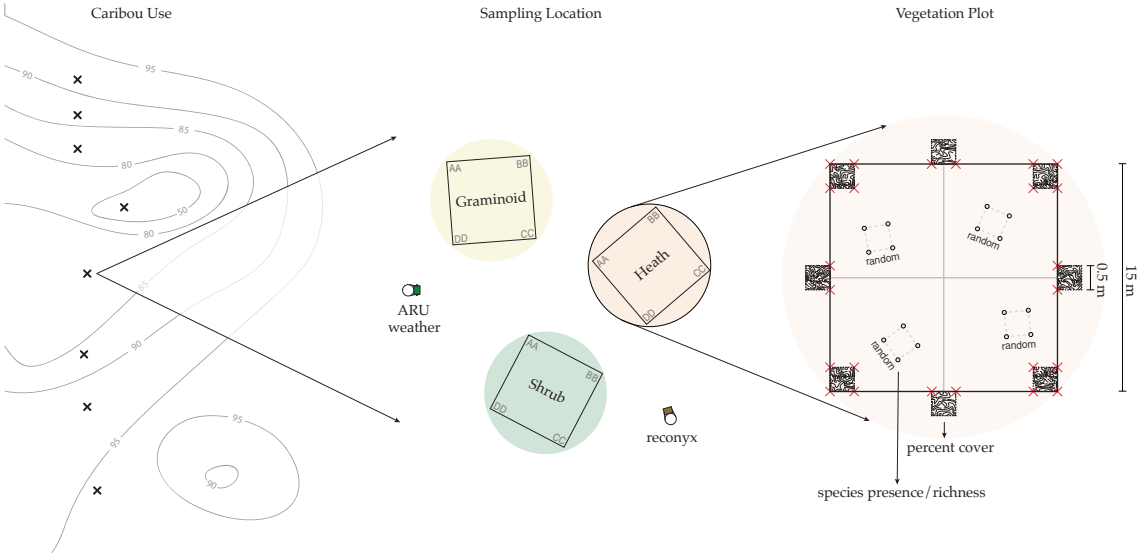


Figure 6: Diagram of the sampling scheme.

2.2.1 Vegetation monitoring

Vegetation sampling occurs at all plots, and can be broken down into two main categories: (i) visual estimation of percent cover, and, (ii) species presence/richness.

Percent Cover Percent vegetation cover can be estimated in the field by technicians, however, digital photography and image processing can be used as a replacement to decrease the amount of time spent in the field [15]. Each year, a total of eight digital photographs are taken of 50cm x 50cm quadrats placed in permanent locations around the perimeter of each micro-environment plot (Figure 6). A measuring tape is extended across one edge of the quadrat, and a digital camera is placed at a consistent height of 1.2 m above the ground using a tripod. All photos are taken in jpg format, and the image is composed so that the 50cm x 50cm quadrat fills as much of the frame as possible. Placing an erasable whiteboard with custom labels that includes plot ID, location ID (ex. AA), dominant vegetation, and date, within the image makes organizing the pictures after field work much easier (Figure 7).

Percent Cover - Repository -

Estimating yearly percent cover of the entire 15m x 15m quadrats is not feasible given the low sampling effort within the quadrat (n = 16 samples per year). Alternatively, we will estimate percent cover using the 8 digital photographs taken around the quadrat (Figure 6). This will be completed by overlaying a 10 x 10 grid on every image, and identifying specimens located at each of the 100 grid intersections within the image. Each photo will therefore be reduced to 100 data points from which percent cover can easily be estimated (for example, if 20/100 intersections contained graminoid species, percent cover of gram would equal 20%). Percent cover calculations for each im-

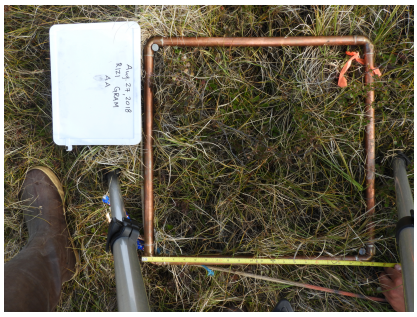


Figure 7: Example veg cover image

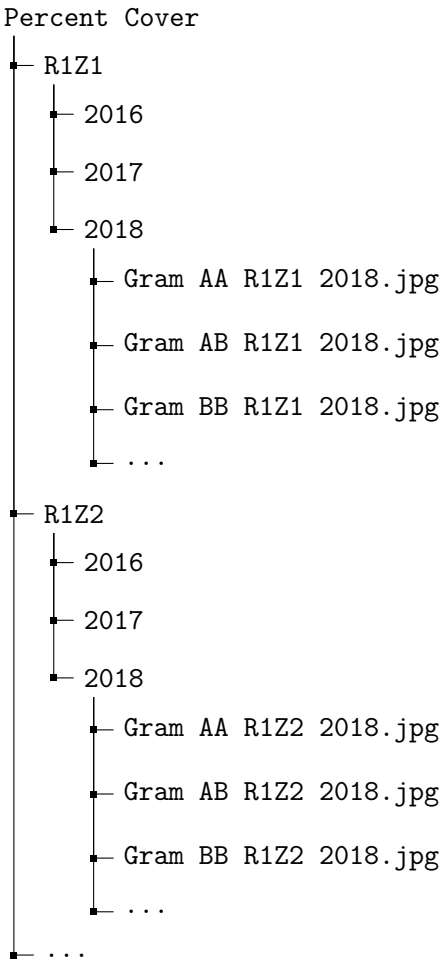


Figure 8: Photo file structure

age associated with a vegetation quadrat will be averaged to provide an estimate of percent cover for the entire 15m x 15m plot.

Species Presence/Richness In an effort to build vegetation species accumulation curves, a 50cm x 50cm quadrat was randomly thrown into each of the four quadrants of all vegetation plots each year (Figure 6). Plant species touching the corners of the quadrat after random tossing were identified to species, which resulted in a total of 16 plants identified to species per vegetation plot. When technicians were unable to ID plant species, samples were collected and sent to the Canadian Museum of Nature for consultation (see Appendix C for detailed protocol on specimen collection).

Species Presence/Richness Analysis - Repository -

As many samples were shipped to Jeff Saarela in 2019, we don't have all Species Presence/Richness data. Once data is received, Bayesian linear models can be used to estimate site-level changes in species richness/evenness over time.

All photos are named with the vegetation type, corner ID, sampling location ID, and year (ie. `Heath AA - R2Z7 2018.jpg`), and file organization uses the convention depicted in Figure 8.

2.2.2 Pellet Counts

The relationship between pellet counts and the number of individuals is well established [21]. To determine the annual pellet counts for a number of species, Four 15cm x 15cm pellet quadrats are located in the corner of each dominant vegetation plot (Figure 9), and all pellets contained within each

of the quadrats are counted, identified to species, and collected for potential lab work (e.g., genetic structure, stress hormones etc.). Pellet counts/collection are conducted annually, and data therefore reflect animal use throughout the entire year.

Pellet Count Analysis - Repository -

The goal of this analysis was to investigate pellet count trends, and compare variables potentially related to pellet counts across the 16 plots in the study area. Pellets were counted at 4 locations within each of the three habitat specific quadrats (graminoid, heath, and shrub) in the years 2012, 2013, and 2015. Because pellets were not removed prior to 2012, counts from that year included all historical scat deposits that had not degraded. After counts were conducted in 2012, all pellets were then removed from the plots so that 2013 data would represent one year of herbivore presence. The same protocol was used in 2013, however biologists did not return to the plots until 2015. Counts from 2015 therefore represent herbivore presence between the time when surveys were conducted in 2013, and the time when surveys were conducted in 2015 (two years).

Pellet counts were pooled within habitat-specific quadrats at every site within each year. There are 16 sites within the study area, each with a graminoid, heath, and shrub plot, so our analysis involved a total of 48 values for every year that data was collected (i.e., 2012-graminoid = 16, 2012-heath = 16, and 2012-shrub = 16). Although pellets for all species were recorded, the number of detections were only sufficient for analysis among caribou, ptarmigan, and small mammals. We modeled pellet count using a Poisson distribution with the covariates distance north (i.e., the plot located furthest to the south = 0 km), habitat (graminoid, heath, or shrub), year (2012, 2013, or 2015), and zone (Z1 through Z7). We predicted that caribou pellet counts would be higher in the core of the calving grounds, an area located part way along the south to north gradient. We therefore expected pellet counts to have a non-linear relationship with distance north where pellet abundance was reduced at the low and high values of the variable. To test for this prediction, we compared models containing this variable with a linear-predictor, against models containing this variable with smoothing splines [85]. All other covariates were categorical, and were included as dummy variables. A total of five models containing various combinations of the above covariates were estimated for caribou, ptarmigan, and small mammals separately using uninformative priors in a Bayesian framework with Stan, and the R package brms [13] Models were then compared using leave-one-out cross-validation (LOO), and the widely applicable information criterion (WAIC; [81]).

2.2.3 Trail Cameras, ARUs and Weather Monitoring

At each of the 16 sites, one motion-sensitive camera, one acoustic monitor, one rain gauge and one temperature logger is mounted on a tripod located within the vicinity of the three 15m x 15m quadrats. Motion-sensitive cameras are programmed to capture one photograph per hour, every day for the entire duration of the calving and post calving period (June-August), and three images when triggered by motion. Acoustic monitors are programmed to record for 10 min every hour from the time of installment (late April) to retrieval (late August). Historically, a rain gauge and temperature logger are mounted on a tripod to record local conditions. NuWCRU is in the process of securing parts to construct environmental monitoring units (EMUs) composed of temperature/humidity, soil moisture, and light sensors [51].

Trail Camera Analysis - Repository -

To get a better sense of migratory timing and general patterns of occupancy across the south to north gradient, all available images were looked at, and summarized by plotting the maximum number of individuals detected on a daily basis from May 1 and August 25. Although motion sensitive cameras are common and useful tools for assessing population abundance and movement, a higher intensity of sampling design is necessary to distinguish spatial and temporal patterns in abundance. As such, cameras were not deployed in the calving grounds in 2019.

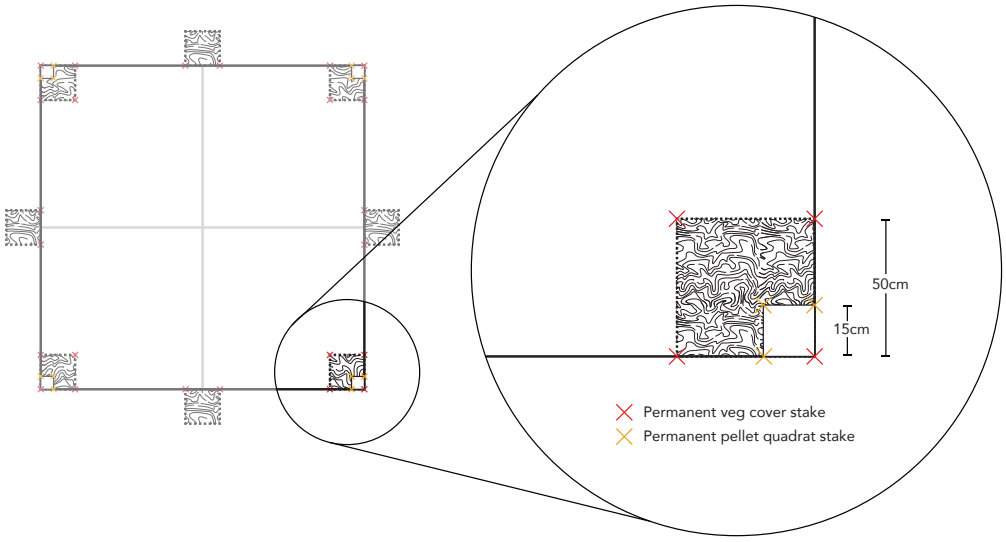


Figure 9: Permanent pellet sampling quadrats

Autonomous Recording Units To efficiently and consistently process data obtained with ARUs, we've developed protocol (Appendix 9) and have built a database. We have converted all data from WAV to WAC format to allow transcription, and are currently processing historical recordings. Here, we summarize the tally of recordings that were obtained in the summers of 2015 and 2016 (no ARUs were deployed in subsequent years). To increase the density of sampling within a given area, ARUs were deployed in the Rankin Inlet area in 2019.

Weather Monitoring Many ecological changes have been reported in the north as temperatures increase [54, 55, 63], however, site-specific differences between studies have resulted in substantial variation [22]. Sources of such variation include site-specific characteristics such as topography, permafrost presence, moisture regimes, and local environmental variables [22]. Site-specific environmental data can therefore enhance modeling beyond random grouping variables, and may provide additional explanations for observed site-level differences.

Environmental monitors that record soil moisture, temperature/humidity, and photo information are currently being constructed – no results are available to present here.

3 Results

3.1 Rankin Inlet

3.1.1 Primary Producers

Community Composition A total of 30 permanent point framing plot (PFP) locations were established in the Rankin Inlet area in 2019. The 30 plots were grouped into 5 sampling stations (6 plots in each station), and each station contained two heath dominated plots, two grass dominated plots, and two shrub dominated plots. Each plot is composed of a 10 by 10 grid that results in 100 intersections at which the canopy height, canopy vegetation species, and ground vegetation species are all identified.

In 2019, 3 quadrats (1 heath, 1 gram, 1 shrub) were sampled from each station for a total of 1500 vegetation IDs. Species occurence for each plot have been visualized in Figure 10 and Tables 3 to 6, and species richness analysis will be added to the following report on March 31, 2020.

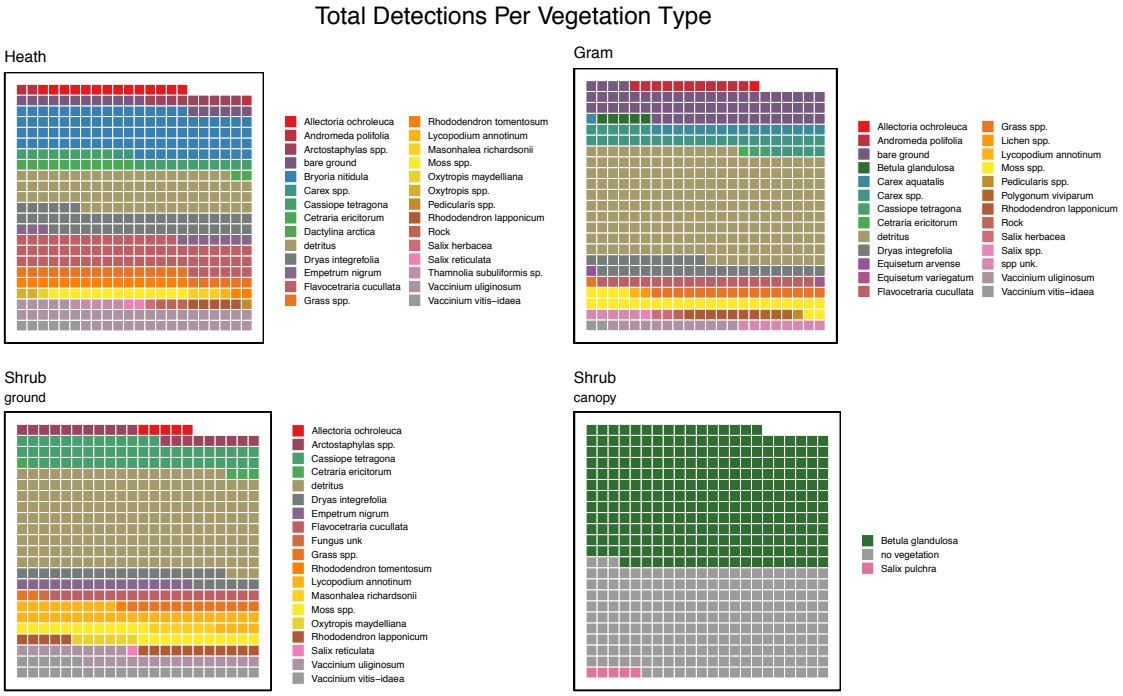


Figure 10: All plant species detected within each vegetation type.

Graminoid Plot

spp	*n*
detritus	223
bare ground	64
Carex spp.	33
Dryas integrefolia	32
Moss spp.	28
Flavocetraria cucullata	20
Carex aquatalis	17
Grass spp.	17
spp unk.	13
Vaccinium uliginosum	12
Andromeda polifolia	11
Rhododendron lapponicum	7
Betula glandulosa	5
Polygonum viviparum	3
Cassiope tetragona	2
Salix herbacea	2
Vaccinium vitis-idaea	2
Allectoria ochroleuca	1
Cetraria ericitorum	1
Equisetum arvense	1
Equisetum variegatum	1
Lichen spp.	1
Lycopodium annotinum	1
Pedicularis spp.	1
Rock	1
Salix spp.	1

Table 3: Tally of detections for all graminoid plots

Heath Plot

spp	*n*
Bryoria nitidula	93
detritus	80
Flavocetraria cucullata	65
Dryas integrefolia	47
Vaccinium uliginosum	43
Grass spp.	22
Cassiope tetragona	20
bare ground	18
Rhododendron tomentosum	18
Allectoria ochroleuca	14
Moss spp.	13
Empetrum nigrum	10
Arctostaphylas spp.	9
Cetraria ericitorum	9
Vaccinium vitis-idaea	6
Rhododendron lapponicum	5
Thamnolia subuliformis sp.	5
Dactylina arctica	4
Andromeda polifolia	3
Masonhalea richardsonii	3
Rock	3
Carex spp.	2
Oxytropis spp.	2
Salix reticulata	2
Lycopodium annotinum	1
Oxytropis maydelliana	1
Pedicularis spp.	1
Salix herbacea	1

Table 4: Tally of detections for all heath plots

Shrub Canopy

spp	*n*
Betula glandulosa	277
no vegetation	218
Salix pulchra	5

Table 5: Tally of detections at shrub plots, exclusively at the canopy layer.

Shrub Ground

spp	*n*
detritus	198
Cassiope tetragona	56
Lycopodium annotinum	35
Vaccinium vitis-idaea	28
Vaccinium uliginosum	26
Dryas integrefolia	25
Moss spp.	23
Arctostaphylas spp.	20
Flavocetraria cucullata	19
Empetrum nigrum	16
Rhododendron lapponicum	16
Grass spp.	14
Masonhalea richardsonii	6
Oxytropis maydelliana	6
Allectoria ochroleuca	5
Cetraria ericitorum	4
Fungus unk	1
Rhododendron tomentosum	1
Salix reticulata	1

Table 6: Tally of detections at shrub plots, exclusively at the ground layer.

Plant Phenology Data collection will start in 2020.

Plant Growth A total of 7 shrub root collars were collected for analysis in 2019 in the Rankin Inlet area. This included 6 Salix samples, and one Betula glandulosa sample. The samples will be cross sectioned and sanded to maximize growth ring contrast, and yearly radial growth will be quantified from growth ring measurements. Result will be submitted March 31, 2020.

3.1.2 Primary and Secondary Consumers

Microtine Rodents Historical data going back to 2008 is available for one of the small mammal trapping locations used in 2019 (Figure 11). The second trapping location was established in the summer of 2019 to determine how microtine rodent abundance varies within the study area. Snap trapping was conducted from July 23 to 26 at the new location (grid number 2), and conducted from July 30 to August 2 at the historical location (grid number 1). A total of 8 collared lemmings were detected, with 5 detections at grid 1, and 3 detections at grid 2. Figure 11 combines the results from both grids in 2019, and standardizes them into the number of detected small mammals per 100 trap nights to enable comparison with historical records. Small mammal abundance was highest in the first year of sampling (2008), and despite a similar peak in 2013, has largely decreased over the 11 year period.

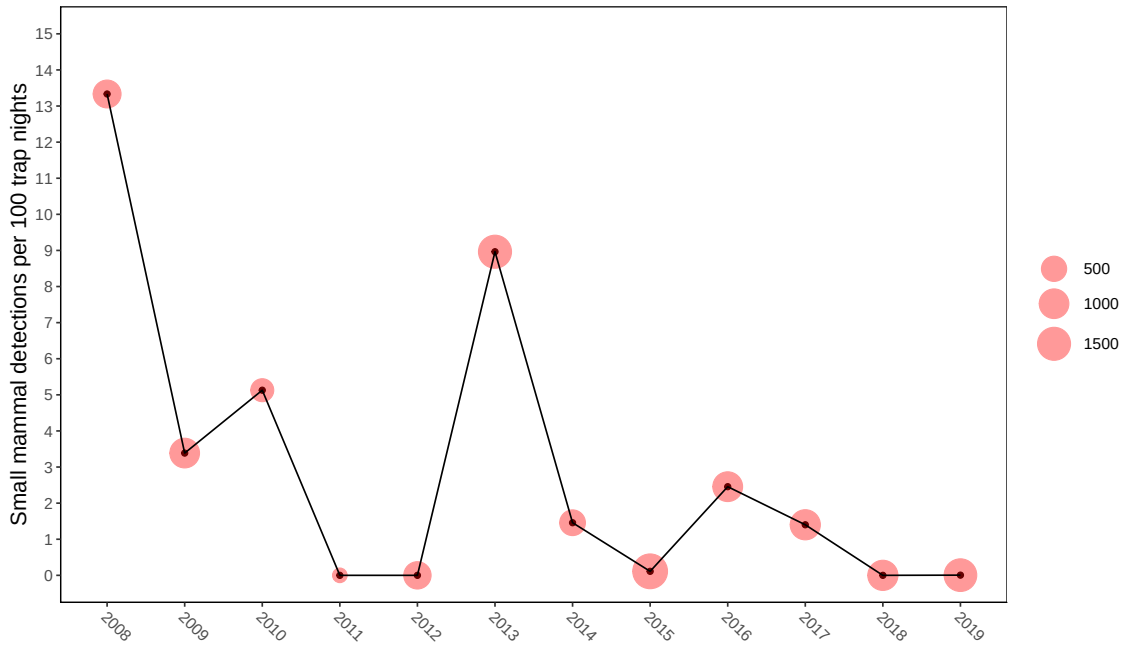


Figure 11: Lemming detections per 100 trap nights across years. Trapping efforts varied by year, and total trap nights are visualized in red.

Arthropod Diversity In 2019, 30 pitfall traps were deployed from July 17 to August 17. Traps were recharged once during this period, and resulted in a total of 60 collections and 17,377.9 trap hours. Pitfall samples are currently being sorted into the following categories: 1. carabidae, 2. spiders, and 3. non-carabidae beetles.

Specimen sorting is almost complete, and current detections per site are summarized in Table 7. So far, a total number of 108 carabidae, 189 spiders, and 12 beetles not in the carabidae family have been sorted. Under spervision of NuWCRU staff, three undergraduates at the University of Alberta showing interest in invertebrate ecology have been recruited to identify specimens to species, and undertake correct sample archival.

PFP1			
Veg Type	**Carabidae**	**Spiders**	**Other Beetle**
gram	6	18	0
heath	3	NA	2
shrub	31	44	2
total	*40*	*62*	*4*
PFP2			
Veg Type	**Carabidae**	**Spiders**	**Other Beetle**
gram	6	25	4
heath	6	7	0
shrub	3	10	0
total	*15*	*42*	*4*
PFP3			
Veg Type	**Carabidae**	**Spiders**	**Other Beetle**
gram	15	13	0
heath	9	24	0
shrub	14	14	0
total	*38*	*51*	*0*
PFP4			
Veg Type	**Carabidae**	**Spiders**	**Other Beetle**
gram	6	8	0
heath	1	0	4
shrub	11	5	0
total	*18*	*13*	*4*
PFP5			
Veg Type	**Carabidae**	**Spiders**	**Other Beetle**
gram	1	4	0
heath	9	9	0
shrub	10	13	0
total	*20*	*26*	*0*

Table 7: Current tally of detected invertebrates at all locations. Specimen sorting is not yet complete (approximately 10% of samples left to process) so these numbers will increase.

3.1.3 Avian Herbivores and Insectivores

Passive Sampling All recordings have been converted to WAV format for processing, and 5 recordings have been transcribed from each ARU station. A total of 28 species were detected across all recordings, with the tallies shown in Table 8.

spp	*n*	*spp*	*n*
TUSW	38	REDP	4
SAVS	35	UNPA	4
HEGU	28	UNSH	4
AMPI	25	COLO	3
REDP	22	RLHA	3
CANG	21	LESA	2
HOLA	20	RTLO	2
SACR	16	SESA	2
LTDU	15	CANG	2
LALO	12	ARGS	1
PALO	9	CORA	1
SEPL	7	UNDU	1
UNLO	6	UNGO	1
FOX	4	UNKN	1

Table 8: All species detected within the first round of transcritptions (n = 48 recordings) for 2019 in Rankin Inlet.

3.1.4 Tertiary Consumers

Raptors Model results (Figure 12, and Table 9) indicate that occupancy has remained stable, throughout the monitoring period. Productivity appears to have declined over the same period. Potential mechanisms for these patterns have been investigated in standalone studies ([46], [23], [3], [44]). After fitting each GAM, we validated model fit using histograms and kernel density plots to inspect the residuals for normality. We assessed homogeneity of variance by plotting residual values against fitted values, and inspected each plot to ensure that points were uniformly distributed. Model outputs for each GAM included estimates of the grand mean for each attribute of interest for each monitoring site (i.e., the intercept term).

	Coefficient		Smoothing Terms				
model	*Intercept*	*SE*	*edf*	*p-value*	*D (%)*	*GCV*	*n*
occupancy ~ s(year)	0.74	0.010	1.00	0.16	5.7	0.004	36
productivity ~ s(year)	1.07	0.085	1.23	0.043	19.3	0.28	36

Table 9: Model structure and smoothing terms for peregrine falcon occupancy and productivity at Rankin Inlet, NU. The intercept estimates the grand mean, we do not report a p-value as the intercept is expected to be significantly different from zero *a priori*. Effective degrees of freedom (edf) were estimated by generalized cross-validation, where higher values indicate less smoothing and lower values indicate more smoothing; significant p-values indicate improved model fit (%D, deviance explained) compared to a linear model. Non-significant p-values indicate highly variable data.

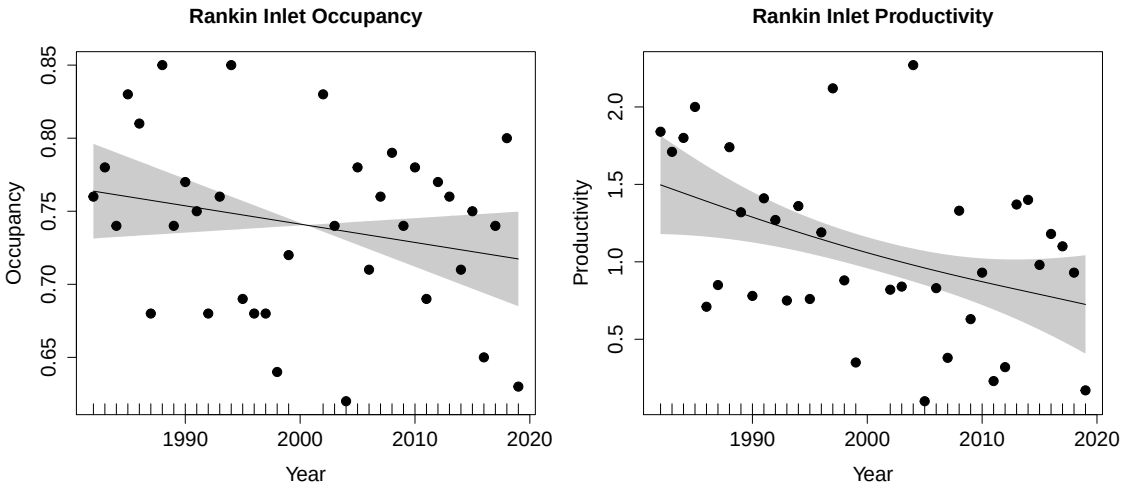


Figure 12: Peregrine Falcon occupancy and productivity since 1981.

3.1.5 Physical

Temperature Historical climate data from the Rankin Inlet weather station dates back to 1981. To visualize and compare annual trends, we've summarized daily temperatures for two decades on the extreme ends of the available data, 1981-1991, and 2009-2019. For both decades, we plotted the minimum, maximum, and mean daily temperature for each day of the year. We then subtracted the difference in mean daily temperature between the two decades for each day, and calculted the monthly difference in mean temperature. The results are presented in Figure 13, which shows an overall increase in mean monthly temperature by 1.7°C (0.95), a maximum increase in the month of December of 3.94°C, and a minimum increase in April of 0.510°C.

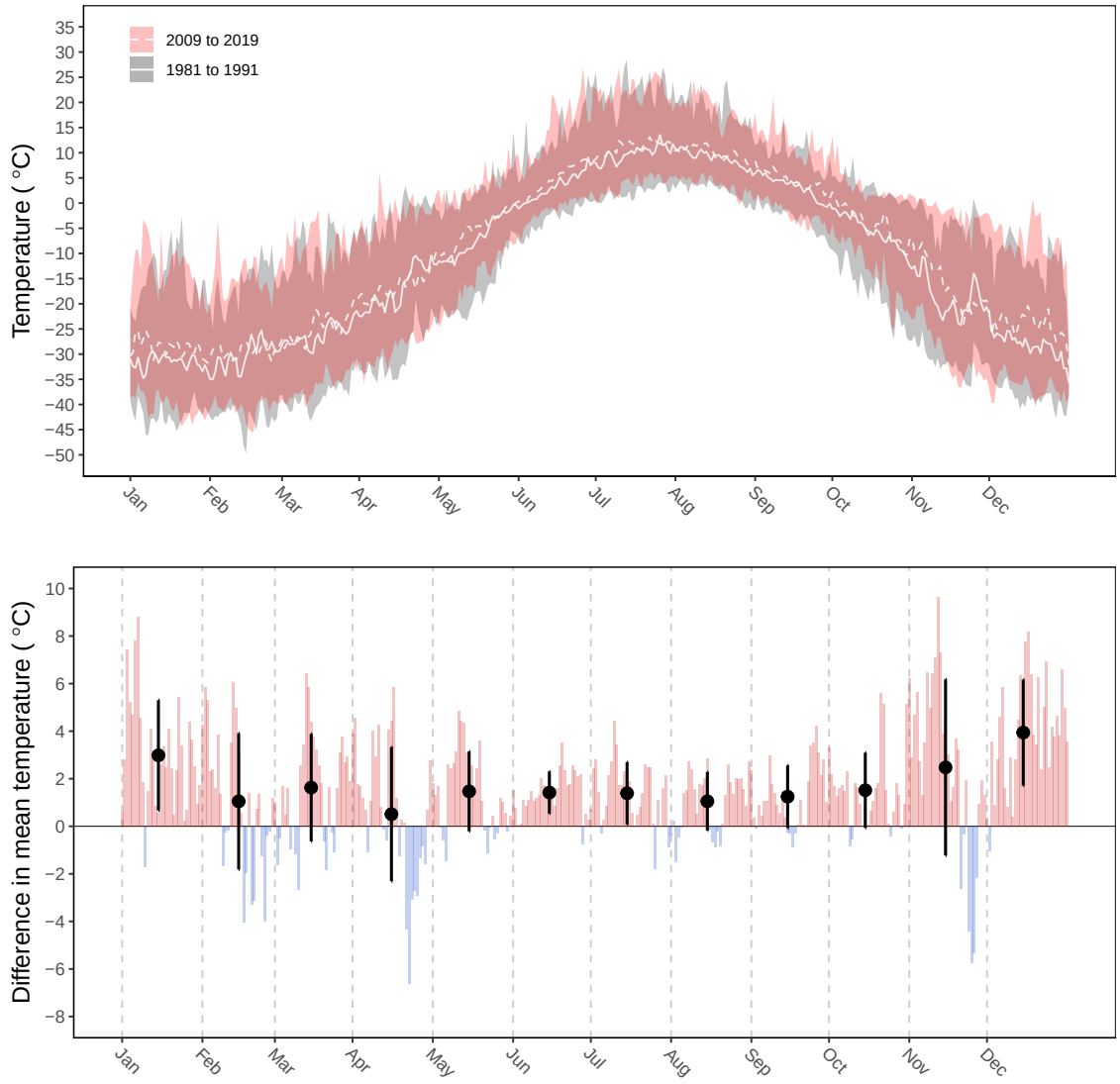


Figure 13: A comparison of daily minimum, maximum, and mean temperatures from 1981-1991, and 2009-2019.

Snow on the Ground To visualize trends in ground snow accumulation over the past 40 years, we visually compared the minimum, maximum, and mean ground snow measurements for the years 1981-1991, and 2009-2019 (14). The resulting figure reveals substantial differences in the mean amount of snow on the ground from December to May, a trend observed by others [9]. Although snow depths were greater from 2009-2019, first snow free dates do not differ.

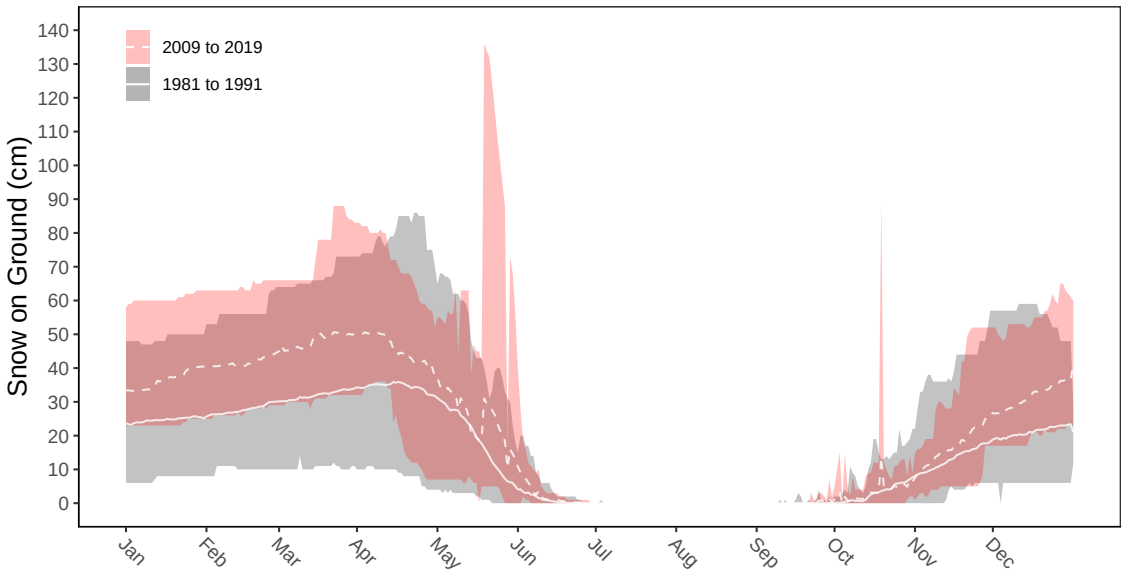


Figure 14: A comparison of daily minimum, maximum, and mean depths of ground snow from 1981-1991, and 2009-2019.

Summer Precipitation To investigate trends in rainfall since 1981, we tallied total monthly precipitation from May through August for all years, as well as the average amount of precipitation per event. The majority of monthly precipitation occurs in July and August, but there is substantial variation between years (Figure 15). Overlaying a simple general linear model indicates little to no trend in the data. Similarly, there doesn't appear to be any pattern in the amount of precipitation falling per event (Figure 16).

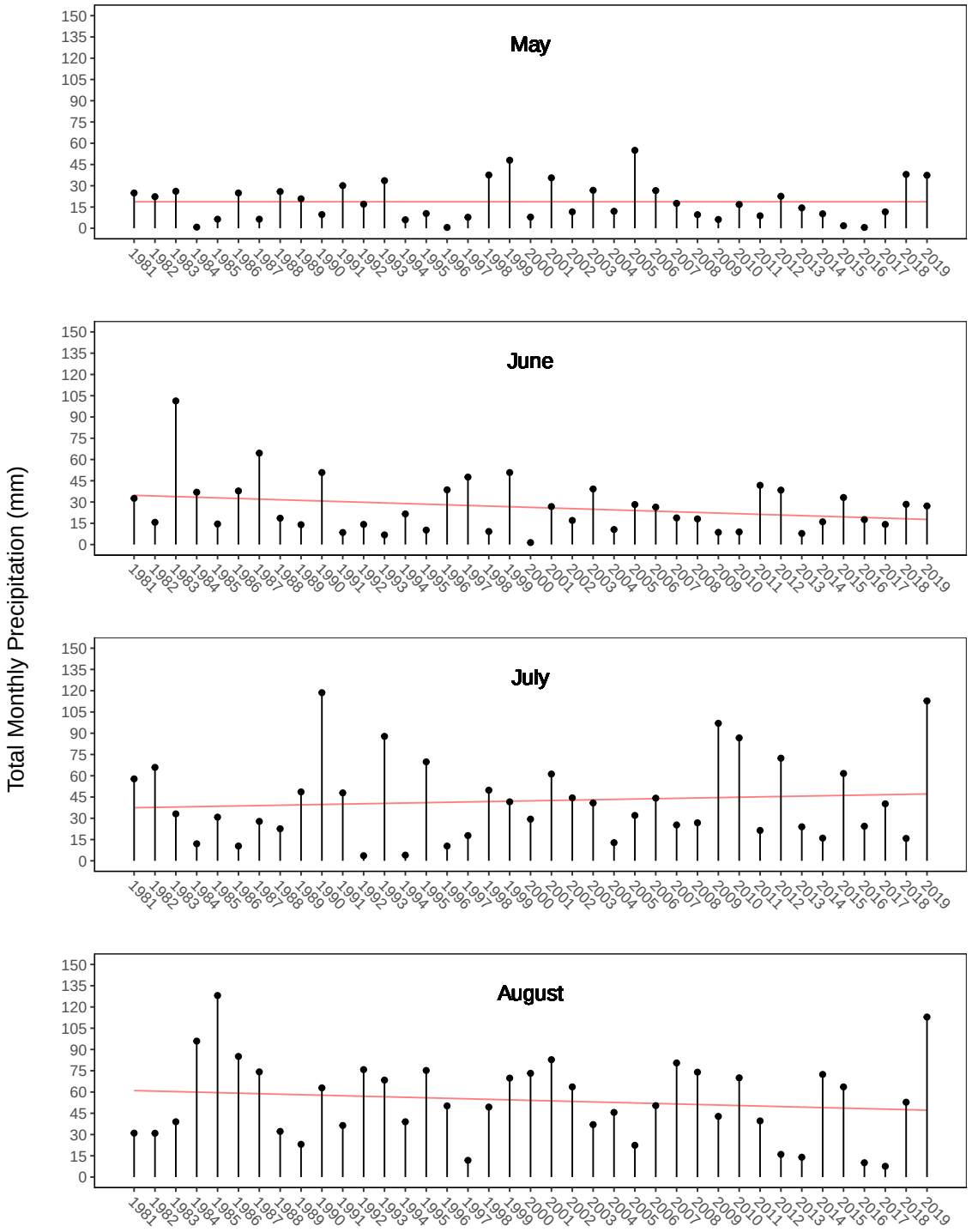


Figure 15: Total precipitation in the summer months from 1981 to 2019.

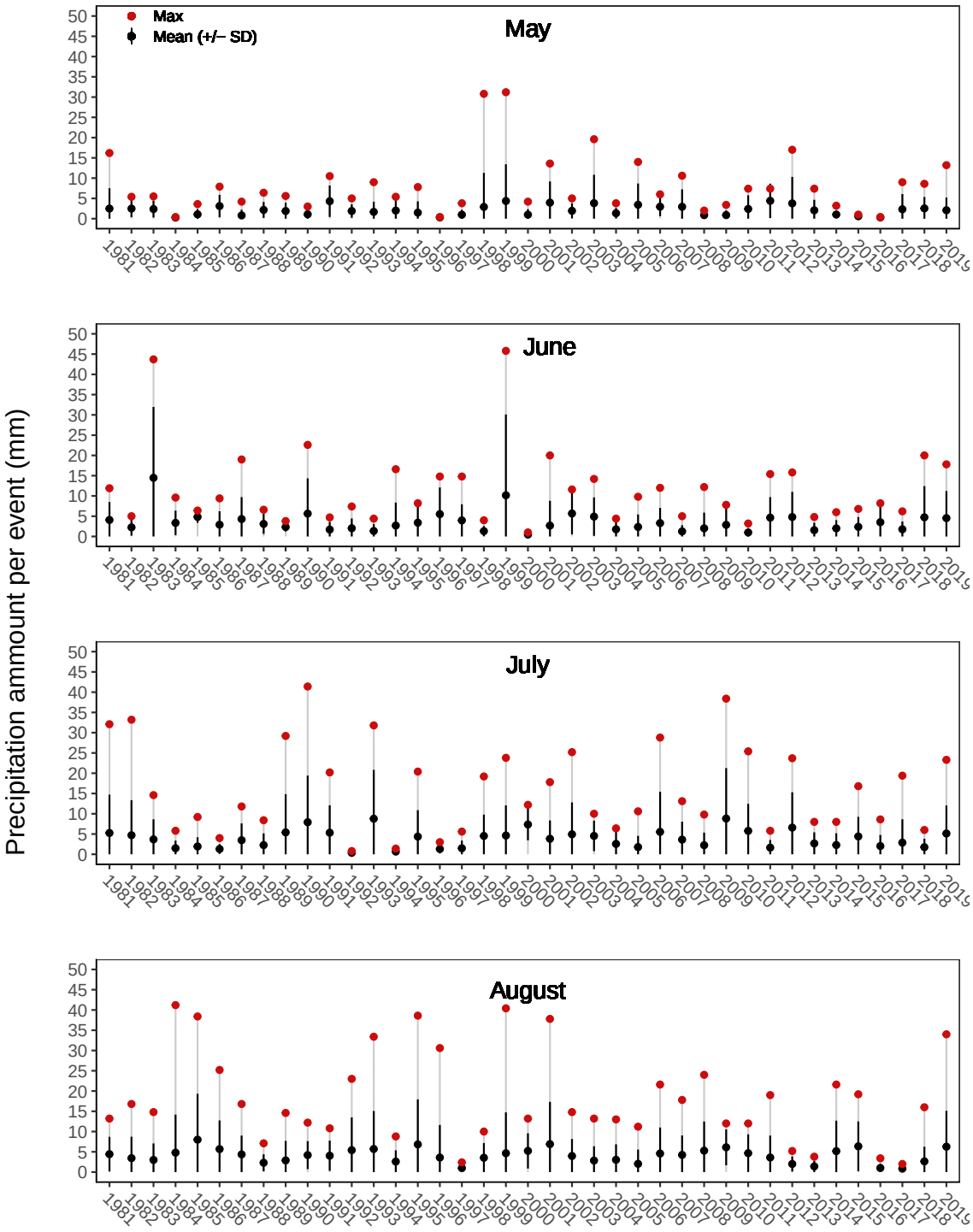


Figure 16: The mean (± SD) and max rainfall amounts within the summer months for each year from 1981 to 2019.

3.2 Qamanirjuaq Calving Grounds

3.2.1 Vegetation Monitoring

Visual comparison of vegetation quadrats images (Figure 17) show clearly that plant matter in 2012 was much drier compared to 2018. In 2102, quadrat photographs were recorded between September 18th and 23rd, and in 2018 photographs were recorded approximately one month earlier (between

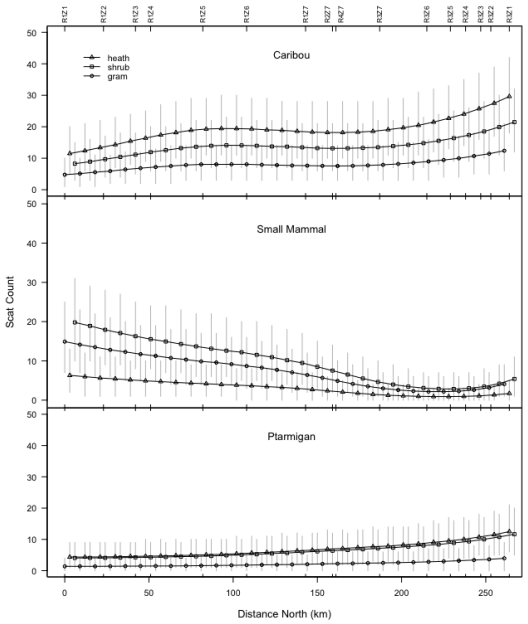
August 26th and 29th).

The goal of this analysis was to provide a preliminary comparative visual assessment of the vegetation quadrats over times for each habitat type at each sampling station. Using the library of images recorded in 2012, and 2018, we randomly selected one 1x1 meter quadrat in each of the three permanent 15m x 15m quadrat (heath, shrub, graminoid), per site, and constructed a panel of 96 images (2 years by 16 sites, by 3 types of vegetation communities). We have started to translate methods from Chen et al. 2010 [15] into R for analysis.

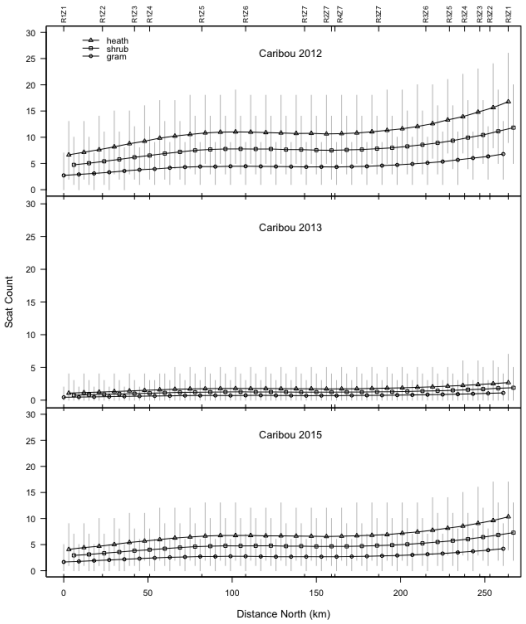
3.2.2 Pellet Counts

Here we report on predicted values for pellets counts averaged across years (mean ± 1 standard deviation). Pooled pellet count trends for caribou, small mammals and ptarmigan (Figure 18a) increased from south to north for both caribou and ptarmigan, while pooled counts for small mammals decreased from south to north. For caribou the highest predicted counts were recorded at the northernmost station (R3Z1) averaged to 9.9±7.0, 7.0±5.0, and 4.0±2.8, for heath, shrub, and graminoid quadrats respectively. Similarly, the highest pellet counts for ptarmigan were recorded at the northernmost station and averaged 3.9±3.4, 3.6±3.1, and 1.2±1.04, for heath, shrub, and graminoid quadrats respectively. Pellet counts for small mammal were highest in the southernmost station and averaged 13.2±9.4, 10.0±7.1, and 4.2±3.0, for shrub, graminoid and heath quadrats respectively. The lowest counts for caribou summed to 2.7±2.93, 1.73±1.9, and 1.0±1.1 for heath, shrub, and graminoid quadrats respectively. Although the lowest counts for small mammals occurred within R3Z6, and were slightly higher in the northernmost zone (R3Z1), confidence intervals in counts for each zone overlapped, suggesting no difference. Small mammal pellt counts in R3Z6 summed to 0.4±0.7, 0.3±0.6, and 0.1±0.2, for shrub, graminoid and heath quadrats respectively. For caribou the lowest counts recorded summed to 4.0±2.8, 2.8±2.0, and 1.6±1.2, for heath, shrub, and graminoid quadrats respectively, and lowest counts for ptarmigan summed to 1.3±1.1, 1.1±1.0, and 0.4±0.3, for heath, shrub, and graminoid, respectively. Smoothed trends of annual pellet counts for caribou, small mammals and ptarmigan (Figure 18b, Figure 18c, and Figure 18d) show the lowest counts in 2013 (i.e., the year following removal). The smoothed trends for all species in all years followed the same trend for pooled years; caribou and ptarmigan increased from south to north, and small mammals decreased from south to north. Pellet counts were highest in 2012 for caribou and for ptarmigan, but for small mammals, counts were highest in 2015.

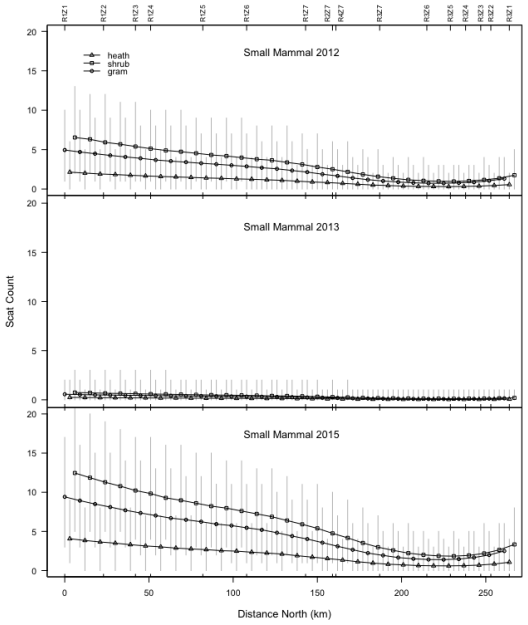
Total predicted counts for species by year (Figure 19) indicate, unsurprisingly, that for all species counts were lowest in 2013, following removal in 2012. For caribou and ptarmigan, highest counts were observed in 2012 (the first year of the program). Predicted counts for small mammal pellets were highest in 2015 despite removal in 2012 and 2013.



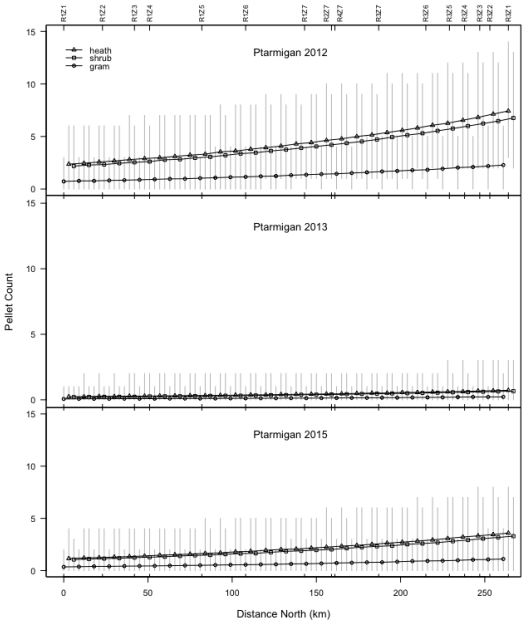
(a) Pellet counts pooled across all years



(b) Caribou pellet counts



(c) Small mammal pellet counts



(d) Ptarmigan pellet counts

Figure 18: A summary of pellet counts among three veg dominated plots (heath, graminoid, and shrub), and three years

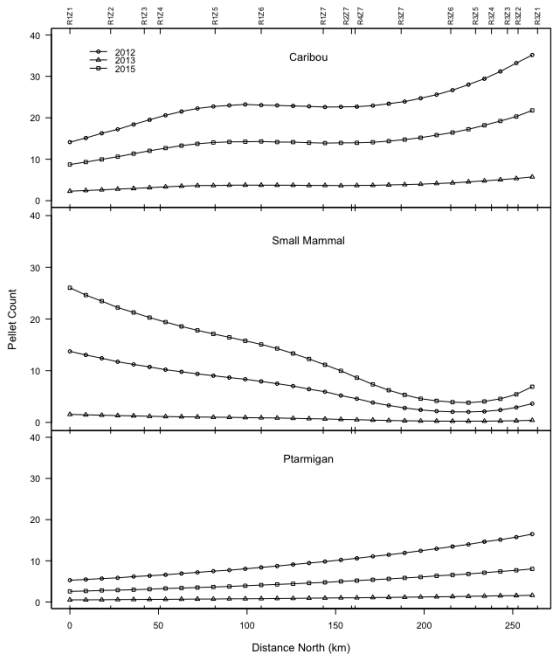


Figure 19: pellet count pooled within each year for all species

3.2.3 Motion Sensitive Cameras

A total of 31 cameras were installed over two years; 15 in 2015, and 16 in 2016 (Figure 21). In 2015, cameras were deployed from May 14 to May 16, and were retrieved at the end of August. A total of 16,893 images (excluding images captured after camera had fallen over) were captured, with an average of 1,126 images per site. The number of days over which cameras captured quality images in 2015 averaged 58 per site, and ranged from 6 (R3Z5), to 101 (R3Z7). A total of five cameras fell, or were pushed over prior to retrieval resulting in a reduced duration of operation. In 2016, 31,130 images were captured averaging 1,945 per site. The average number of days with useable images in 2016 was greater than 2015 with an average of 72 per site, and ranged from 9 days at site R1Z6 to 121 days at R4Z7, and R1Z4. A total of 6 cameras were disturbed, or pushed over by wildlife (muskox, caribou, and grizzly), and an additional three fell from unknown causes.

The timing of caribou migration, as determined by the first yearly Caribou detection in any year, ranged from May 9 at the site furthest to the south (R3Z1), to July 3 at the site furthest to the north (Figure 20).

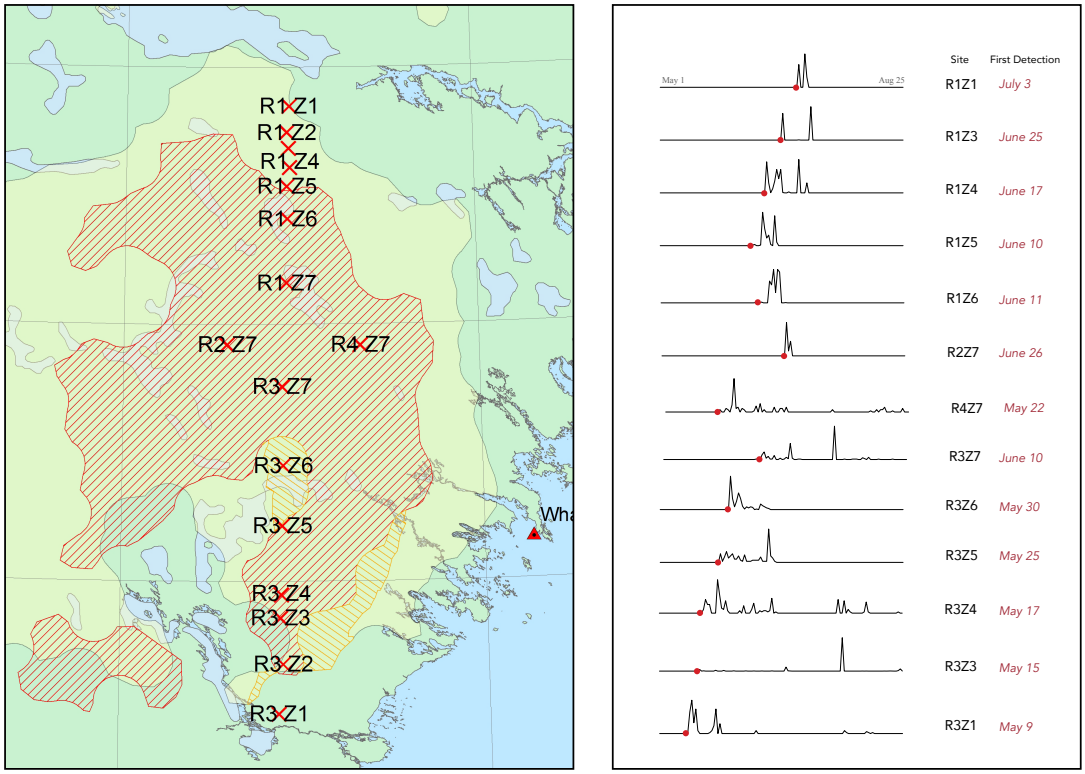


Figure 20: A visual of daily caribou detections from remote cameras between May 1 and August 25

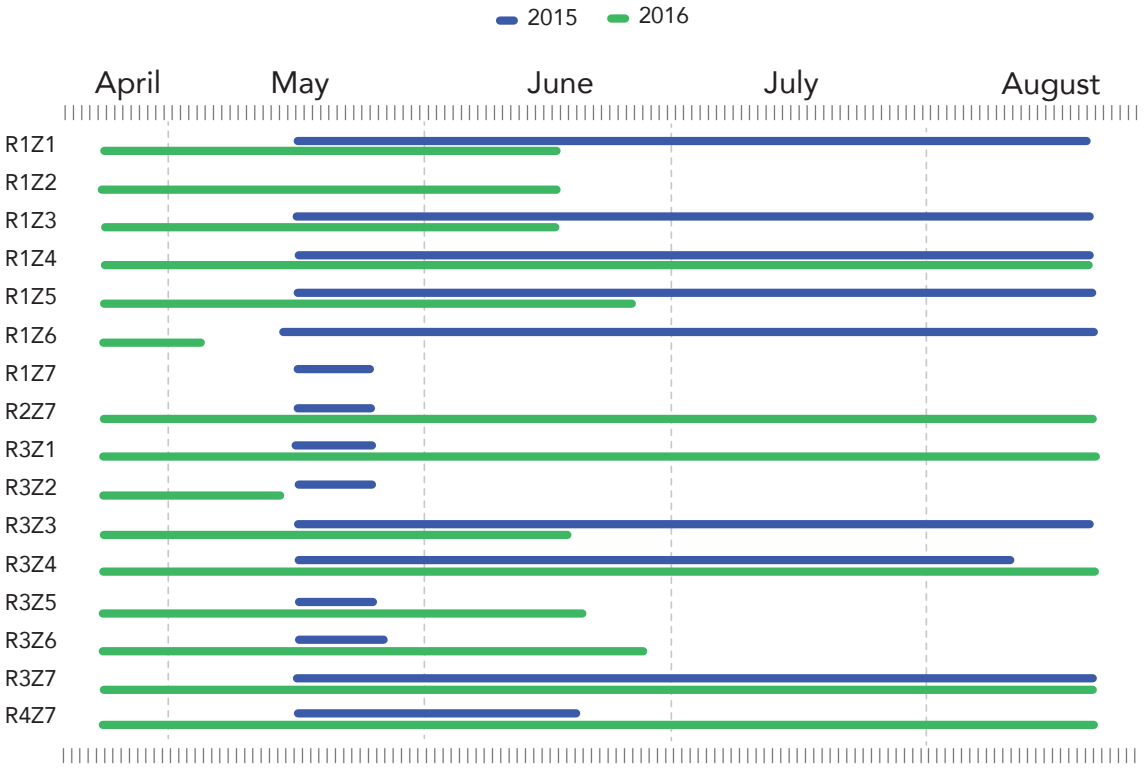


Figure 21: Motion sensitive cameras functioning in 2015 (blue) and 2016 (green)

3.2.4 ARUs

A total of 18,196 ten-minute recordings spanning approximately 12 weeks in 2015, and approximately 10 weeks in 2016 are available. ARUs were installed at 12 sites in 2015 with recordings beginning in late May, and continuing through August (variation in monitoring period among sites, likely due to battery power), and 8 sites in 2016 with recordings beginning in late April, and continuing through early July (Figure 22). The number of ten-minute recordings available for each day of coverage ranges from 5 to 15. The first and last recording times within each day vary, however mainly range from 12:00 AM to mid-afternoon. Files are currently being transcribed.

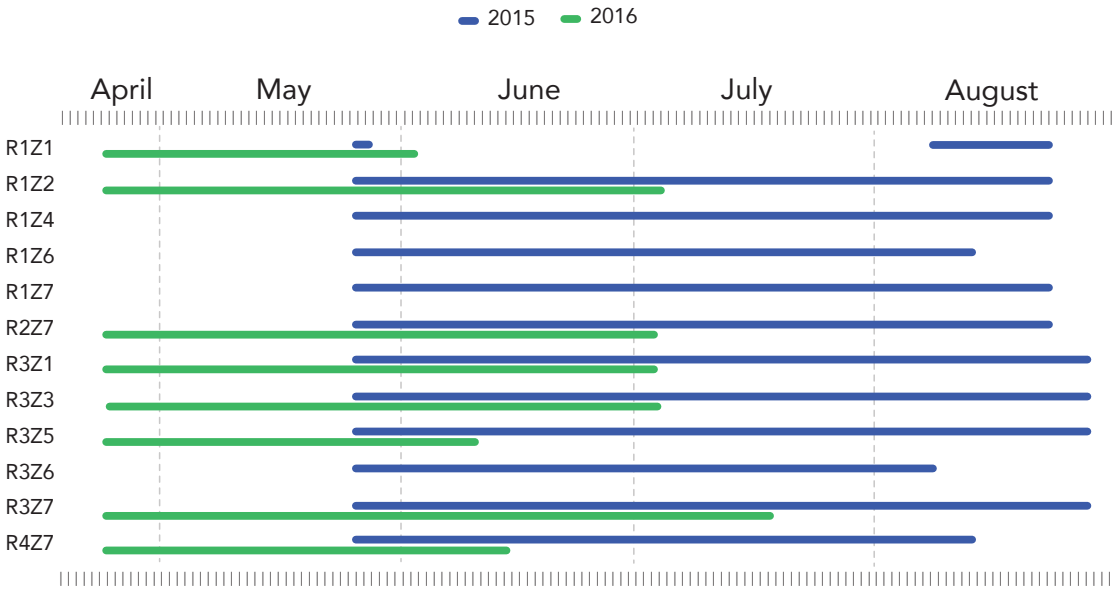


Figure 22: Autonomous recording units successfully recording in 2015 (blue) and 2016 (green).

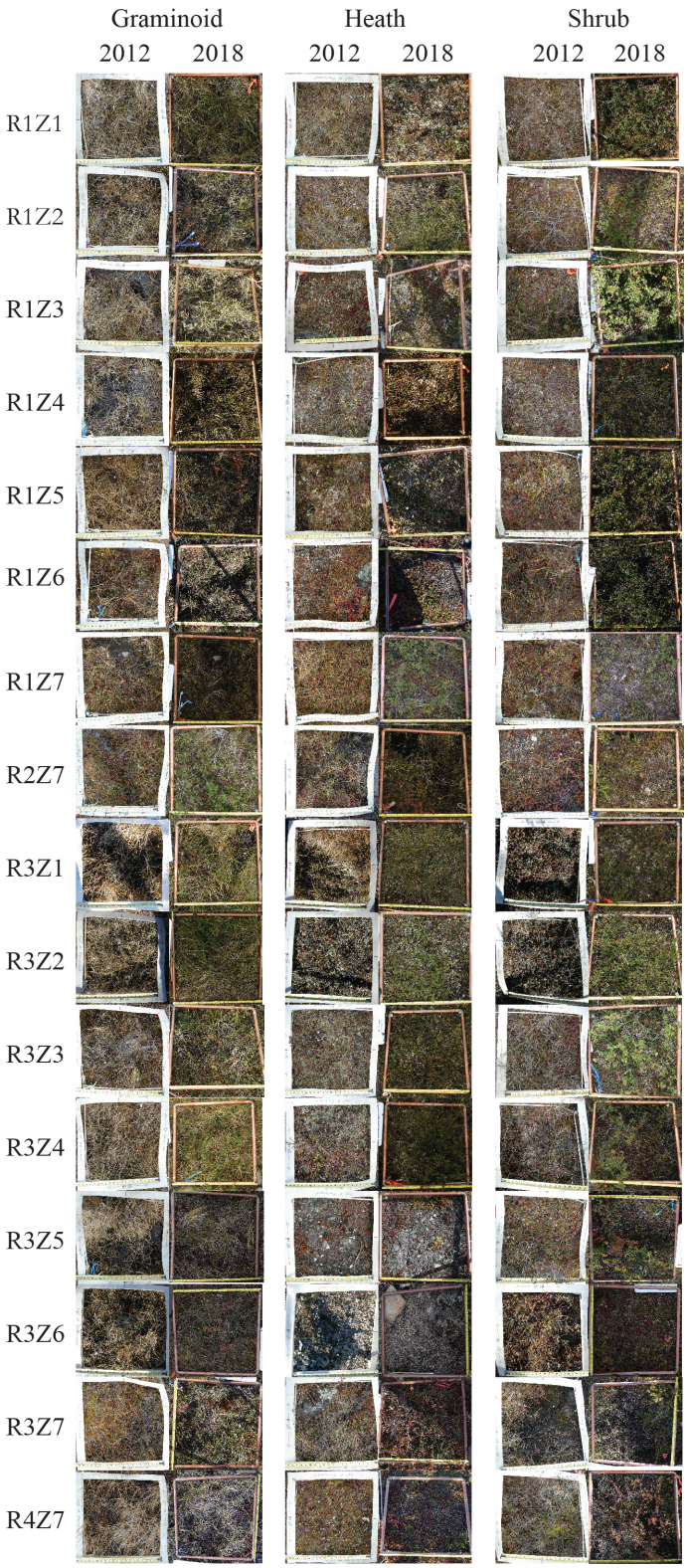


Figure 17: To compare changes in vegetation between 2012 and 2018, photos of the same location within respective plot are displayed beside one another.

4 Discussion

To date, large amounts of data have been collected and archived. This report outlines efforts taken to summarize and analyze data that have been collected, describes potential problems associated with the data, compiles information relevant to ongoing work, describes the deployment of an additional field program around Rankin Inlet (for efficacy related to helicopter access), provides preliminary analysis and data summaries, and offers recommendations to ensure that ecosystem-level monitoring in the Qamanirjuaq caribou summer range continues with best practices in mind.

In the 2019 field season, many components of a new field program were rolled out near the community of Rankin Inlet. Following the general L-TEMP approach to monitoring ecosystem change across trophic levels(primary producers, and primary to tertiary consumers). Permament sampling locations were established to ensure consistent sampling across years for all trophic levels, and new equipment and sampling methods were trialed. Work completed in 2019 includes:

- Primary Producers
  - vegetation community dynamics
  - dendro ecology, and secondary growth patterns
- Primary and Secondary Consumers
  - microtine rodent sampling
  - invertebrate sampling
  - avian herbivore and insectivore sampling
- Tertiary Consumers
  - raptor monitoring
- Physical
  - rain loggers
  - work with historical data

NuWCRU continues to investigate additional data collection methods to employ in the upcoming field season, and we anticipate adding 1. vegetation phenology transects for *Dryas integrifolia* (mountain avens), *Eriophorum vaginatum* (cottongrass), and *Salix herbacea* (Alpine dwarf shrub), 2. pan traps for sampling pollinating insects, and 3. extensive work with available earth observation data.

Work continued in the Qamanirjuaq calving grounds following methods established in 2012. Concern over sampling design resulted in moving environmental sensors (ARUs and remote cameras) to Rankin Inlet, but vegetation (random sampling, images, and dendro ecology), and pellet sampling were completed. Analysis of historical pellet count data indicated that counts of caribou and ptarmigan pellets increased from north to south, while counts of small mammal pellets decrease from south to north. The general pattern of increased caribou pellet counts from south to north is consistent with observations that in recent years calving has tended to occur within the northeastern extents of the calving grounds, and with increased post-calving abundance in the same region. Our analysis indicated that caribou pellets were highest in heath habitat, which may be associated with selection of elevated heath communities that are relatively snow-free compared to shrub and graminoid-dominated vegetation. Alternately, heath communities tend to be more xeric which may contribute to lower break-down rates compared to relatively mesic vegetation. However, inconsistent deployment of a field program obscures these results. Only one year (2013) of seven characterized pellet counts for a calendar year, and although the general trend for caribou remains consistent with counts for multiple years, counts are very low. Single year accumulations of ptarmigan and small mammal pellets were essentially zero. We suggest that the current approach of recording the

number of individual pellets up to a maximum of four, and recording all other counts (i.e., five or more) within a single category (i.e., >4), may have obscured true pattern. It is also possible that the quadrat size over-which pellet counts are currently tallied is too small to capture among-year variation of pellet counts given the current herd size. Microtine rodent abundance is known to be cyclical [65], and it appears that microtine rodent abundance was high in 2014 and/or 2015; unfortunately, we cannot determine which of the three possibilities occurs because pellet removal did not occur in 2014.

Although further analysis of data collected to date is possible, inconsistency in data collection has reduced power, and many challenges are associated with the data. As such, NuWCRU prioritized the development of analytical methods, databases, protocol, analytical transparency and version control, best practices for data management, so that incoming data is organized and well-documented. The infrastructure for transparency and data management has now been established, and NuWCRU continues to work through data incoming from the 2019 field season, as well as archived data from historical work in the calving grounds (2012-2018).

Acknowledgements

A lot of hard work and investment from many people has made the collection of data to date possible. We would like to thank Page Burt for her extreme hospitality, expertise, and patience in helping with unknown plant specimens. We also thank Mitch Campbell and Keenan Lindell for their guidance, and help with data collection throughout the program deployment.

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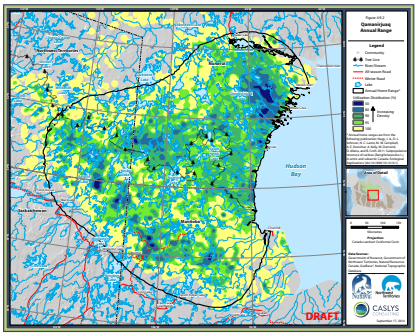
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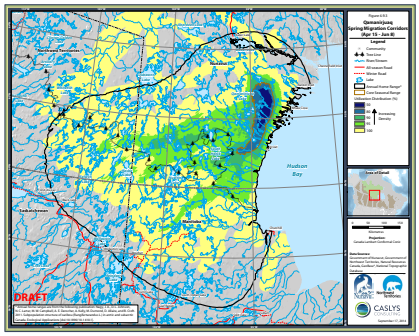
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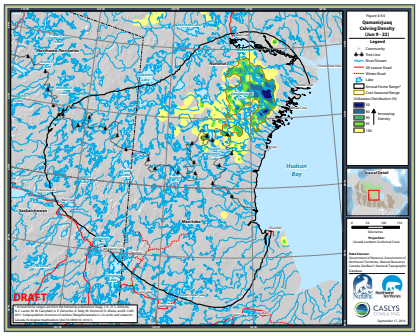
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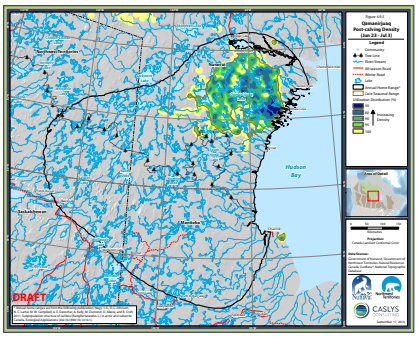
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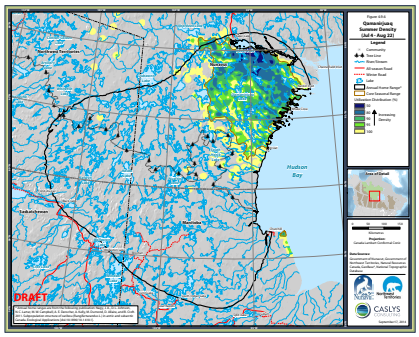
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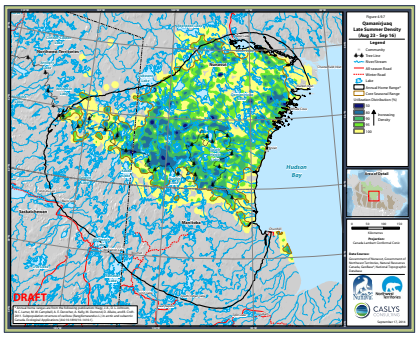


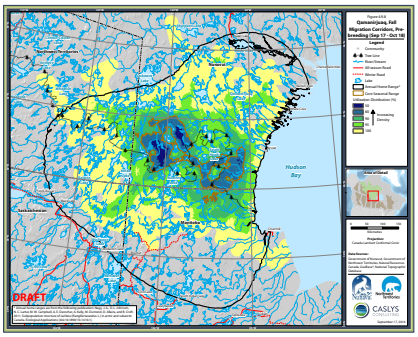


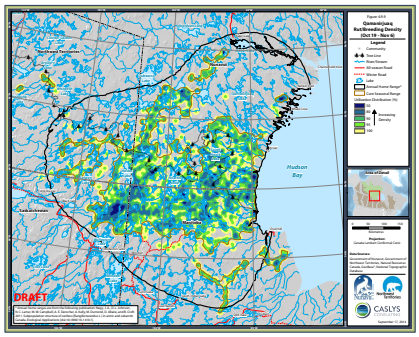


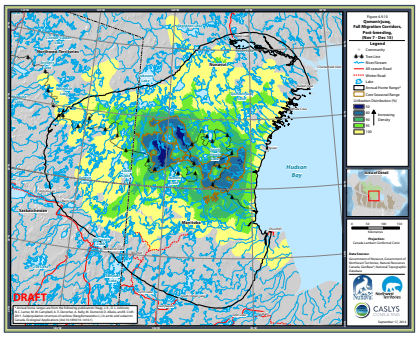


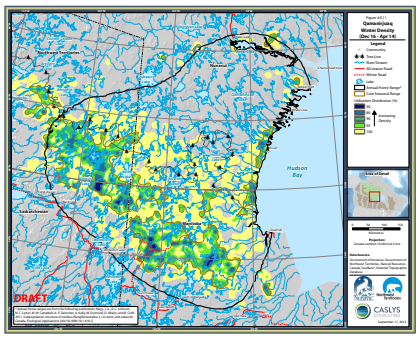












6 Data Management Plan

Data Collection

File formats, and methods of collection

- tabular data will be initially collected on paper (vegetation data sheets) or in digital delimited format (ie. weather data), followed by entry into databases specific to the data
- spatial data although all collected data has a spatial component, here we refer to earth observation data (satellite imagery) as "spatial". All such data will be pulled from existing databases, most commonly in delimited format
- images are generated in .jpg format
- audio is recorded in `WAV` format, and converted to `WAC` format for processing

Data security and storage during collection

- tabular data collected on paper will be backed up in the field using a camera. Tabular data in delimited format will be copied to additional drives and cloud storage
- spatial data all spatial data is pulled from existing databases, and can therefore be copied to additional drives and cloud storage immediately
- images will be copied to additional drives and cloud storage
- audio will be copied to additional drives and cloud storage

Data amount and long-term storage

- most of the mass of data will be in audio and image files. At our current rate of sampling, we expect to collect 0.5 TB each year, and will therefore need a total of 1.0 TB of hard rive space, and 0.5 TB of cloud storage for secure back up.

Data organization and version control

- Data will be stored in databases specific to each sub-project. Data will be queried and exported for specific analysis, and as such, stored with all necessary components of the analysis. The analytical components (figures, scripts, input data, results tables) will be stored within a "Project" folder using RStudio's Project functionality. Furthermore, all analytical projects will be linked to GitHub to implement version control, and promote efficient collaboration.

Documentation and Metadata

Documentation to ensure data is read and interpreted correctly in the future

- All analytical projects will be accompanied with a README file that outlines: 1) who collected the data, 2) when it was collected, 3) how was it collected, 4) relevant study documents, 5) data queries used to pull data from database, 6) naming conventions used within data and scripts.

Metadata standard and tools used to document and describe the data

- A template README file[b] will be included within the project folder of each analysis. The template can be altered, but will provide a good starting point that ensures all necessary information is included

[b] see Appendix 7 for the template README

Insurance that the documentation is created or captured consistently throughout your project

- The template README file[c] will be a primary tool to ensure consistency, and all scripts will be heavily commented to ensure sufficient communication of rationale and methodology.

Storage and backup

Data storage and back-up during the project

- All data is backed up on at least two hard drives that are stored in separate locations. Google Drive and Github are use for cloud storage.

Sensitive data security

- Hard drives are located in secure locations, only accessible to key staff. Data stored in the cloud is encrypted and password protected.

Preservation

Selecting which data to destroy, or preserve

- All data will be preserved due to the high potential of reuse, and incorporation in an historical context.

Data life after the end of the project

- All data will be transferred to the Government of Nunavut at the conclusion of this project

Preparation of data preservation and access

- tabular data will be entered into databases, but all originals will be preserved
- because spatial data is acquired to fulfill analytical needs, storage is typically within the analytical project folder. To increase ease of sharing, all spatial data will be copied into a folder specific to spatial data as well.
- images are preserved in their original format, as well as any converted formats (ie. IHS)
- audio will be preserved and shared in `WAC` format

Methods of sharing data

- Data sharing restrictions are imposed by the Government of Nunavut, and data access requests will be processed by them

End-user agreements included with data sharing

- as data sharing requests are processed by the Government of Nunavut, all end-user agreements are supplied by them as well

Responsibilities and Resources

Data management responsibilities

- the Principal Investigator and Research Associate will be responsible for data management

[c] see Appendix 7

Personnel changes and transitioning responsibilities

- Due to the thorough and consistent documentation accompanying all data and analysis, personnel changes will not be an issue

Party responsible for data sharing and preservation after the project has concluded

- All data will be transferred to the Government of Nunavut upon the completion of the program. The Government of Nunavut will also adopt all data management responsibility at this time

Resources required for data storage

- hard drives, and cloud storage subscriptions

7 README Template in Markdown

The following is the contents of the template `README.md` file contained within each project analysis folder. An exampl can be seen here.

```
# NuWCRU README Template

## Project Description
This is a basic template to be included with all NuWCRU
    github repositories. The purpose of this template is to
    standardize th  metadata generated for each project/
    analysis to implement reproducibility and transparency,
    and efficient knowledge sharin between  personnel. This
    template should be used as a mere starting point, and can
    /should be altered to suit the specific needs o each
    project.

For basic workflow techniques using R, Hadley Wickham's
    freely available [R for Data Science](https://r4ds.had.co
    .nz/index.html is  highly recommended. See [Chapter 8:
    Workflow](https://r4ds.had.co.nz/workflow-projects.html)
    for working with R Projects.


## General Project File Structure
To avoid project folders filled with random files, it helps
    to organize files into a common structure. This is just
    an example and  both the files and their descriptions
    will be unique to each project.

‘‘‘
| --- .gitignore <- Files that should be ignored by git.
|
| --- README.md <- The top-level README including general
    project descriptions
|
| --- data
| |-- tab_data.csv <- Converted, but pre-process tab data
| |-- processed.csv <- Data ready for modeling
| |-- raw <- Raw data pulled from source
| |-- temp <- Temporary files
|
| --- docs
| |--process_doc.md <- Displaying process and some results
|
| --- figures
| |-- range.png <- figure description
| |-- eda.png <- figure description
| |-- growth.png <- figure description
|
| --- scripts
|-- d_wrangle.R <- wrangling pre-processed tab data, output:
```

```
    processed.csv
|-- src.R <- cleaned and standardized covariates
|-- model.R <- model building/runs
|-- vis.R <- model results, tables, and visualizations
```

Data
* Description of the data here. All relevant information
    needed to understand the data, and subsequently the
    analysis should b documented here.
* This includes covariate abbreviations, specific data
    collection methodology, years data was collected, and
    possibly eve contacts in the case of questions.
*If data was pulled from a database, notes about the queries
    used should be documented here

Relevant Study Documents
If methods are adopted from others (articles or research
    groups), links to the original documents are placed here.

Authors
Contact information for the most recent personnel working on
    the project.

8 C3 Plant and Lichen Collecting Protocols

Questions: email Jeff Saarela (jsaarela@mus-nature.ca) or Paul Sokoloff (psokoloff@mus-nature.ca)

Botanists at the Canadian Museum of Nature are building a record of all the plants, lichens, mosses and liverworts that live i Canada's Arctic. Species occurrences are documented with specimens housed permanently in the national collections of the Canadia Museum of Nature. During the Canada C3 voyage, the science team will be collecting plants whenever possible to build pan-Canadian collection as a record of the voyage and to contribute to documentation of Canada's botanical biodiversity.

Things you'll need:

Collecting

- collecting satchel
- GPS
- camera
- digger
- pruning shears
- field notebook
- ziploc collecting bags
- paper collecting bags
- sharpies
- pencils
- field guide
- hammer and chisel

Pressing

- plant press ends (x2)
- plant press straps (x2)
- cardboard
- newsprint
- silica gel envelopes
- jewelers tags
- sharpies
- national herbarium specimen sheets
- cheesecloth

Collection

Site selection The main goal at each landing is to document, with collections, as much plant and lichen diversity as possible. Ideally you wil be able to collect at a few sites per landing, time permitting. When you arrive on land, you will need to locate an area in whic to collect. If there is a distinctive coastal community in the vicinity of the landing area, start there. This habitat will no usually extend too far beyond the wrack line.

Once you have collected examples of all plants, lichens and algae in the coastal community (including macroalgae in the intertida zone), move to another community type further inland.
Here are some guidelines to keep in mind:

- If there are multiple inland habitats in the general landing area, start with a site that appears to have the greates plant and lichen diversity.
- If there is an area that looks to have different or uncommon species compared with what you have collected at othe sites on the trip, and collecting time is limited, start there. We want to capture diversity at each site, but also across th Arctic – and species that are uncommon either locally or regionally are always of interest and collecting those species shoul be a priority.

- If the whole general area looks similar in terms of plant and habitat diversity, any spot will work.
- A single collection site can be fairly large if the plant community is fairly homogeneous (up to about 300 m radius fro the recorded GPS coordinates), but if you move far away from your original site, or enter a dramatically new habitat with different suite of species (e.g., a wetter area, a drier area, a south-facing slope) it is best to start a new site.

Data collection For each collection site, fill out a site record; below that fill out a species record for eac specimen collected in the field. Each record should be filled out as completely as possible while you are the field makin collections. You won't be able to remember all the details to fill this in later. The fields necessary are defined below. All thi data will appear on the herbarium labels.

For each *collection site*, fill out the following fields:

1. Site Number: This is a unique identification number for a collection site. Use the date, followed by th site visited in sequential order: i.e. the first site visited on July 1, 2017 would be 2017-July-1-1, the second sid 2017-July-1-2, etc.
2. Site Information: Record site information, including country, province or territory, island (if applicable) region and/or lower level political division (leave these blank if you don't know; we can figure out the correct informatio later), a general description of the locality, GPS co-ordinates (these are critical) and elevation. The locality should includ named landmarks or geographical features to assist in relocating the sites, i.e. "10 km north of Cambridge Bay, along road t Mount Pelly" or "western shore of Lady Gaga Bay, just south of the mouth of the Beyoncé River". Do your best to describ where you are; we can edit this info later to improve accuracy. Record coordinates in degrees, minutes, seconds, and ensur the datum on your GPS is set to WGS84 (check this when you get the GPS on your leg, and then don't change it). Record both th uncertainty displayed on the GPS, and the radius (estimated by the collector) of the collection site from the location wher you recorded the coordinates. If you are saving waypoints in the GPS unit record their names/numbers here.
3. Habitat Information: Describe the habitat of the site, noting moisture levels and makeup of the habitat i.e. dry tundra, wet meadow, gravelly scree, coastal area, along river, prostrate shrub tundra, etc. Take some photographs o the general habitat of the collecting site and record the photo IDs in this field so we can later associate the photos wit sites.
4. Collector(s): Record the names of all collectors in your party, starting with the collector whose numbe series (see Collector Number) is being used.
5. Associates: List the dominant plant species growing in the general habitat. If you don't know the species leave this blank and we can fill it in later from the habitat photos.

For each *specimen* collected, fill out the following fields:

1. Collection Number: This is a unique identification number assigned to each specimen, allowing the fiel notes to be linked to the sample. Numbers must not be repeated. Best practice is for an individual collector to start at 1. For C3, append your initials to the collection number (`JS-1, JS-2`, etc.). If a collection is later found to be mixture of more than one species, we will subdivide the collection with letters (e.g., `JS-720a, JS-720b`).
2. Species: The species name of the specimen (if known). If you don't know the species, identify it as closel as possible (i.e, to family or to genus, or with a description such as "flower with 4 purple petals" or "evergree shrub"). Be sure to circle the type of specimen you've collected

(vascular plant, moss, lichen, macroalgae, or other), an whether or not a silica gel sample and/or photograph were taken (and the photo's filename from the camera). Silica gel sample won't be taken until you are back in the ship; it is at that point, when you are processing your samples, when you should not in the field book if a silica sample was taken.

3. Specimen Notes: Record flower and fruit colour as observed in the field, as these often change while drying Describe anything in particular that you notice about how the plant was growing (e.g., rhizomatous, tufted/cespitose, cushio plant), its reproductive stage (e.g., in flower, in fruit), its size (e.g. height, especially if referring to a larger wood plant from which you are only collecting one or more branches, or to the typical height, if the sample you are collecting i not representative; stem diameter for trees or shrubs).

4. Substrate: For mosses and lichens record the moisture level (e.g., wet, dry, mesic), light level (e.g. exposed, shaded), and type of substrate (e.g., rock, soil, old shingles) exactly where the specimen was growing. This ca differ from the general conditions at the site (e.g., dry rocks above the water level in a stream or pond). If it's raining try to guess how sunny or dry the substrate usually is.

5. Species Abundance at Site: Record a rough estimate of plant abundance at the collected site, e.g., dominant common (the plant is frequently encountered throughout the site), rare (only a few plants in the area; in these cases it i appropriate to count and record the number of individuals present, if time permits), locally common (common in a localize area rather than all over the site).

NOTE:

- A collection is a gathering of one species in one spot. Ideally each gathering will consist of multiple individuals o the species. You may end up collecting the same species more than once at a site, if you think the plants are differen species, or if one gathering of a species is in a fruiting stage and another in a flowering stage. This is normal, and in suc cases each collection gets its own number. Even though the collections are the same species, they represent differen collecting events.

- If you make more than nine collections from a site (in most cases you will), start a new page with the collection sit number noted on top. There is no need to fill out the location information again if all specimens are collected from the sam location.

Specimen Collection At each site, collect as many different plant, lichen, and algae (if applicable) species. The mor you wander around a site, exploring as many microhabitats as possible, the more species you will encounter. If you are not sure i plants represent different species (often it will be obvious, but in some cases it will not be, particularly for small species) use your best judgment to decide whether or not to make a collection: if the plants or lichens look different to you, it is bes to collect.

Collecting Vascular Plants

1. Take photographs of the plant you're collecting (time permitting), aiming for a photo that shows the whole plant in it local habitat. These photos will be useful for helping us describe the habitat and associated species. Feel free to tak close-ups of flowers, etc., but it would be better to do this if you have time after you have collected all the plan diversity in each area.

2. Dig herbaceous (non–woody) plants out by the roots (try your best to keep the roots intact), and shake off any exces dirt. However, if you don't get the roots or rhizomes, still keep the specimens. If you're collecting a woody plant (e.g., willow or birch shrub), use the pruning

shears to cut off one or more branches with flowers and/or fruits where possible Branches should be cut a bit shorter than the size of a herbarium sheet, on which they need to fit later.

3. Try to collect enough individual plants (or clippings) from a population to fill a standard 11' by 18' herbarium sheet In general, collecting many individuals is always better than collecting a few. Individual Arctic plants often make poo specimens on their own. The exceptions to this rule are rare plant species, or extremely small populations. NEVER collect all or most) of the specimens growing in an area.

4. Fill out the collection information for this specimen in your field notebook (see Data Collection, above).

5. Place your specimen in a Ziploc bag and write the collection site number and the collection number for that specimen o the outside of the bag with a Sharpie. Large specimens can be folded, but otherwise plants should be handled carefully so the don't get mangled. You may put multiple collections in the same bag, but make sure (i) you don't mix species that have any chance of being confused later when pressing the collections, and (ii) you write th collection numbers of each collection on the bag, so you can associate the correct specimens with the correct numbers.

6. Place this bag in your collecting satchel, and take care not to crush the specimens in the bag.

Collecting Bryophytes

1. Take a photograph of the collection site, and the plant you're collecting (time permitting).

2. Collect groups of entire plants. All parts of a bryophyte help in identification. Use an implement such as your digge to lift plants from rocky or woody substrates without leaving their bases behind. Collect a small sample of substrate with th plants if they are too firmly attached to their substrates to lift them in one piece (but generally avoid collecting larg quantities of soil or litter with the plants). Plants with sporophytes (capsules) – even old ones – are more useful fo identification than those without.

3. Each sample should ideally be about the size of your palm. Never collect a sample if it will remove most or all of th species from the site.

4. Each sample should have a single species dominant. Bryophytes often grow intermixed, but try to make separat collections for each species. For example, if species A is mixed with B, try to collect a sample that is mostly species A an another that is mostly species B.

5. Each sample should be collected in a separate paper bag. On drying, bryophyte samples become brittle and difficult t separate from one another without inflicting damage. Some samples that form solid cushions when moist can fall apart when dr and mix together with other species in the same bag. Furthermore, mosses in over-stuffed bags may dry too slowly to preven mold from rendering the samples useless. Paper is used instead of plastic because bryophytes are preserved best in a dr state, and no further processing is necessary once the sample is placed in a bag. The top of each bag should be folded ove tightly so that the sample doesn't fall out, then place the bag in your collecting satchel, ensuring the specimen is no crushed.

6. Each bag should be legibly labeled in permanent ink (use your Sharpie). Include at least the collection number. The res of the specimen information can be recorded in your collection book. Alternatively, if you prefer to transcribe th information later, on the ship, record it on the bag and make sure to record the collection numbers for the site in the book

Collecting Lichens

Lichens are collected in much the same way that bryophytes are. Of the three main types of lichen (*fruticose*, *foliose*, and *crustose*), only some of the larger *fruticose* species grow free from a substrate. The rest ofte grow attached to tree branches, rocks, or soil. It is therefore often necessary to collect the lichen with a part of it substrate. This includes chipping *crustose* lichens off rock (try to get as much of the lichen as possible, including th center, and the margins), cutting away a branch from a larger shrub with a lichen attached to it (be sure to record the shru species), or carefully digging out a tiny bit of soil with a soil crust lichen on it. Once you make a collection, follow steps through 8 noted above under bryophytes.

Collecting Macroalgae

Macroalgae (kelp) can be found in the intertidal zone both as complete organisms (species that grow in this zone and that ar adapted to tidal life), and as fragments (or whole organisms) that have washed ashore from deeper waters.

Collecting both types of kelp are important contributions to marine biodiversity science. When collecting either type be sure t collect as intact a specimen as possible, ideally one possessing a hold-fast, stipe, and blade (or part thereof).

1. Select a specimen, and place this specimen in a Ziploc collection bag.
2. Fill out a collection record for the site (if necessary) and specimen, and write the collection number on the Ziploc bag.
3. Place this Ziploc in your collecting satchel, and protect the specimen from being crushed.

Processing

Vascular Plants Ideally, plants should be pressed as soon as possible after collection, but this is not alway practical (it's late in the day; you are tired and hungry; there's something more interesting going on, etc.). It is okay t process your collections the morning after they were collected. Some species, such as poppies, will lose their petals if no processed quickly. If you don't have time to process all your collections upon return to the ship, try to at least process th most sensitive ones that are losing their petals, or that are really shrivelling up, etc. Prior to processing keep the collectin bag containing the plant specimens in a cool, shaded place to prevent wilting. Ensuring the Ziploc bags are closed will also slo down excessive wilting (some wilting is okay and makes it easier to press plants; excessive wilting, in some cases, will result i poorer specimens).

1. Cover the workspace in newsprint (this can be re-used) to minimize the mess, or work on a large tarp that will captur all the extra dirt and debris from the specimens.
2. Organize your bagged samples by site - it's often easier to press in the order you collected the plants in. However since you should have assigned collection numbers to all your collections, ordering them is not strictly necessary, especiall if time is limited.
3. If necessary, clean excessive dirt and especially mud from the roots of the plants using a bowl of water, and shake th excess water off. If pressed for time, just shake the roots out onto your tarp. Specimens with lots of dirt attached to the dry slower and are messy when the specimens are back in the museum.
4. Place a plant press end flat on your workspace, place a cardboard on top, and open a blank newsprint onto it. Arrang the plants from a single collection on the newsprint so that they all fit on the sheet. For plants with large flowers, arrang the specimen so the flowers are fully

visible when the plant is dry. For small plants and grass-like plants it is sufficien to just lay them on the sheets in any orientation. Space the specimens out, as much as possible, so they are not laying ato one another, as this slows down drying. Fold specimens that are larger than the newsprint sheets. If a specimen is folded t fit in the newsprint, it will fit on a herbarium sheet. Do not simply fold a large plant in half; rather, fold over the part or parts) of the plant that extend beyond the sheet margins. If you have lots of material, you can use multiple newsprin sheets. Be sure the collection number is marked on each sheet.

5. Write the collector name and collection number (required; e.g. JS 25 or Saarela 25) on the inside and outside of th newsprint, along the bottom or side edges, and the species name on the outside of the newsprint (time permitting; this speed up sorting back in the herbarium) Make sure we can read the collection numbers please!

6. As you're processing your plants, go through your camera, and write the filename of any photos of that plant on th collection form. Be sure to transfer these photos to the lab computer.

7. DNA Samples: Collect leaf material from one plant per collection, and put it in a silica gel envelope labeled with you name, the collection number, the date, and the location. For large specimens with lots of leaf material, sample several leave (again, more is always better). For small plants with few leaves, sample one or more leaves, but don't remove all the leave from the specimen, rendering it useless. For very small individuals, it will be difficult to sample one or more leaves, an these will be so small it will be difficult to get DNA out of them. In these cases, sample a whole plant into the silica ge envelope. Seal the envelope with a bit of water (don't lick it…remember what happened to George Costanza's fiancé?) and put i back in the silica gel, which will rapidly remove the moisture from the leaf tissue, preserving the DNA for later extraction Write the range of the collection numbers of the silica gel envelopes on the outside of the silica gel Ziploc (e.g. JS-1 t JS-25)

8. Tag the plant you removed the leaf material from with a jewelry tag marked with "DNA" and your collection number. If yo sampled a whole plant, note this in the fieldbook; in such cases there will be no plant to tag. Close the newsprint, place new cardboard on top of the closed sheet, and repeat the arranging and pressing process, alternating cardboards and fille newsprints, until you have all your specimens processed.

9. Place a plant press end on the top and bottom of the stack, and cinch the stack together as tight as you can with tw plant press straps. It often helps to have one person stand on the press while another person tightens it.

10. Place the tightened press in front of a space heater, set to low, to speed the drying process. To dry, warm air needs t move through the press to remove moisture from the specimens. The press can also be dried in a windy and sunny area. Do no get the press wet.

11. Check the press for dry plants when you are getting close to running out of cardboard. Plants that are stiffl 2-dimensional, and dry to the touch, are dry (the newsprint in which they are pressed in should also be dry), and can b removed from the press. Small plants and most grasses, sedges and rushes will dry in one day, if dried with a heater; larg plants, wet plants and woody plants usually take several days to dry. If you run out of cardboard and find that specimens i the press are not yet dry, you may double- or triple-up sheets of newsprint between cardboards. The specimens will dry slower but will turn out okay. Once removed from the press, specimens must be packaged for transport by wrapping a stack of specimen tightly in several sheets of paper. Do not leave loose sheets of newsprint with dried plants laying around. If you don't hav enough dry specimens to prepare a package, put a stack of specimens between two pieces of cardboard and securely tighten th pile with string. Ensure each specimen remains in its newsprint, so that the collection remains associated with its number. I the

plants fall out of their sheets they become useless because they cannot be associated with their collection data.

Lichens and Bryophytes

Dry samples as soon as possible upon return to the ship. Moss and lichen bags need only be labeled with the collection number which should have been done in the field), and dried in a single layer in front of the heater. Be sure that there are measures i place to prevent samples on the floor from being stepped on, or kicked/blown out of reach or out of sight. It is not necessary t take samples for later DNA extraction from bryophytes and lichens. Drying samples should be shifted periodically until thei contents are completely dry to the touch (be sure to test the middle of large clumps as well as the outside). Once dry the sample can be stored almost indefinitely in their paper bags, in a mesh sack in a dry place. Do not put the paper bags into a mesh sac if they are wet or moist, or fungi will colonize them, ruining the specimens.

Macroalgae

Macroalgae are processed in the same way as vascular plants (including sampling of tissue for DNA analyses - blot the tissue firs to speed up drying) except for one modification designed to prevent the wet specimens from sticking to the newsprint. When yo open the newsprint on the cardboard, place a National Herbarium of Canada plant specimen sheet on the stack, on top of the ope newsprint. Lay the wet macroalgae specimen on the plant specimen sheet, and then place a sheet of cheesecloth on top of th specimen. Close the newsprint, and continue pressing plants. The specimen will be stuck to the herbarium sheet when dry, and th cheesecloth will prevent the top side of the newsprint from sticking to the specimen.

9 Autonomous Recording Unit Transcription Protocol

This protocol describes the methodology used to identify and count species detected within the recordings [45].

9.1 Converting File Formats

The autonomous recording units are set to record in `WAC`, a proprietary format created by the manufacturers of the cording units, Wildlife Acoustics. To open the recordings in software necessary for anscription, the files first need to be converted into `WAV` format. This can be done using a command line converter veloped by Peter Solymos[d], or with software developed by Wildlife Acoustics available for free - download Kaleidoscope here.

Once installed, opening Kaleidoscope brings you to the main screen (Figure 23).

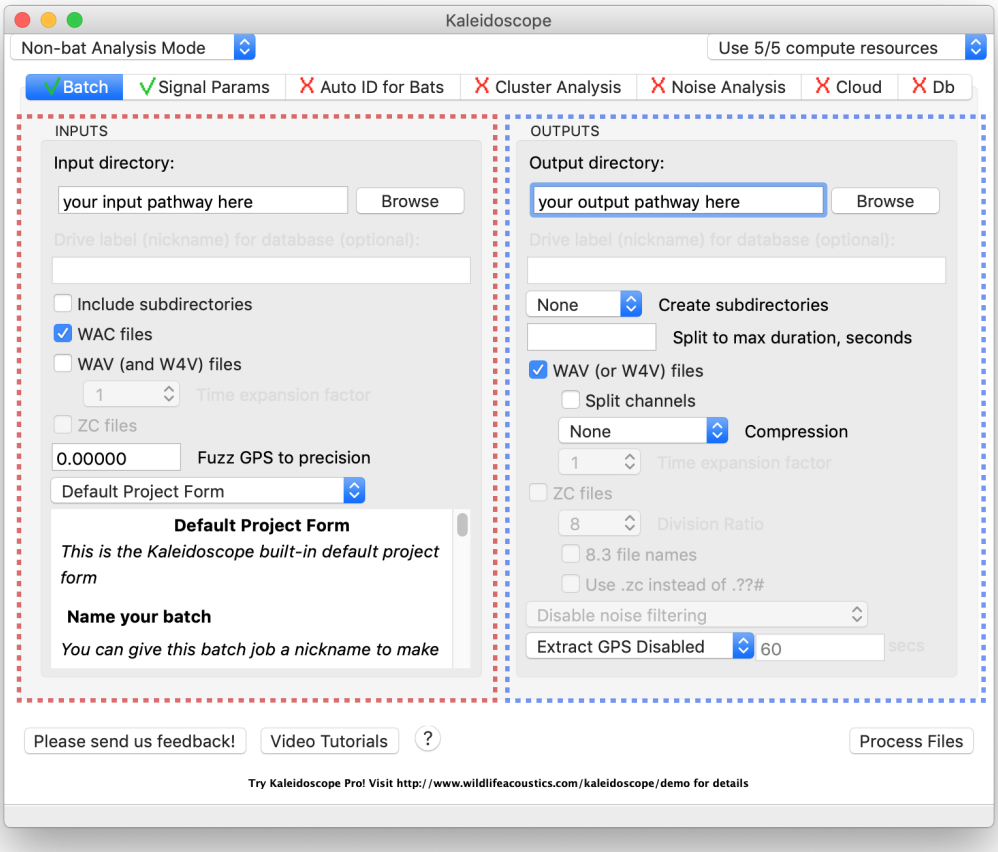


Figure 23: A screen capture of the main window in Kaleidoscope.

The kaleidoscope window is composed of two main parts:

- the `INPUTS` section (red) that specifies the file format and location of files to be converted,
- the `OUTPUTS` section (blue) that specifies the format files should be converted to, and their future location.

[d] See the github repository for the converter here

9.2 Listening Software

Many software programs can be used to help identify, and count the species detected in recordings accurately. The programs best ited for this purpose all visually display the audio information in a spectrograms. Spectrograms display sound frequencies ross time, and given the unique aural signatures at the species and individual level, a visual representation of sound enables a stener to both "see" and hear vocalizing animals and thus more easily identify all individuals (Figure **??**).

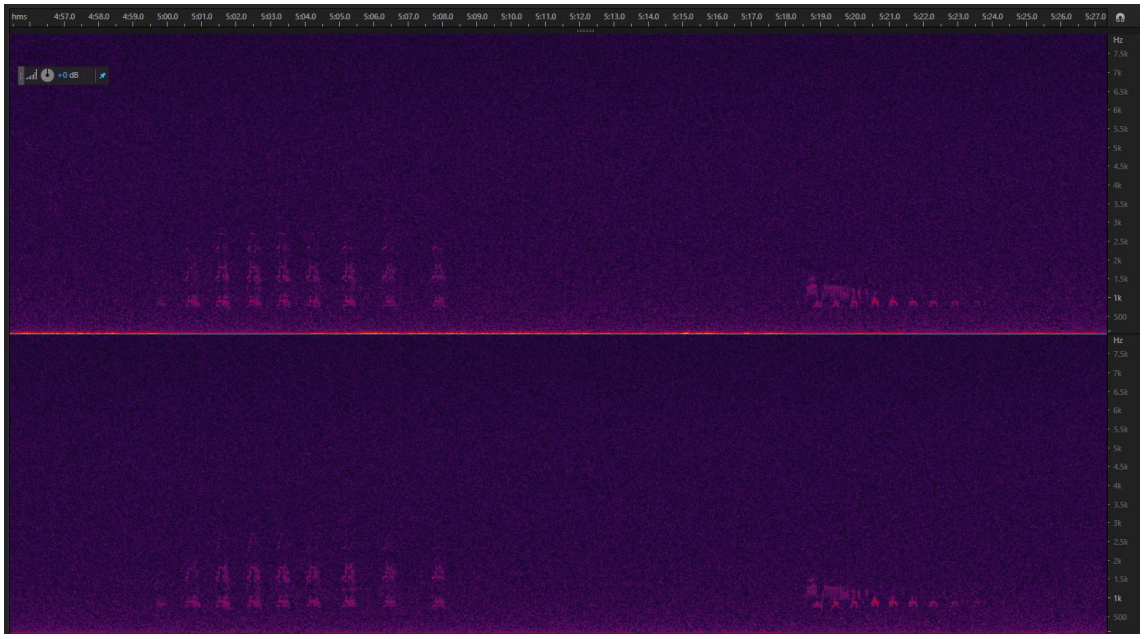


Figure 24: A screen capture from Adobe Audition's spectrogram display. We can clearly see the Sandhill Crane's vocalizing.

9.2.1 Software Settings

In this protocol, we focus on the programs Adobe Audition and Audacity. With a few adjustments to the default settings in these programs, we can create a much tter environment for detecting bird species/individuals in the recordings.

Spectral Display The settings responsible for tailoring the spectral display to specific monitor resolutions are cated in the top menu: `Edit` ⇒ `Preferences` ⇒ `General`, with recommended ttings found in Table 10. These settings ensure that vocalizations appear sharp and constrasted ainst background noise.

Size	Window Type	Scale	Decibel Range (dB)	Length Min	Length x
2048	Blackmann-Harris	Logarithmic	132	15	30 to

Table 10: Spectral display settings used to improve the appearance of vocalizations in recordings

Frequency Range Songbirds vocalize within a certain range of sound frequencies, and identifying calls is made easier adjusting the range of the spectrogram accordingly.

- create screen cap of spectrogram with inappropriate range
- compare with proper frequency range

Timeframe When the audio recording is first opened, the spectrogram spans the entire recording (10 minutes in our se). This resolution is too low to reliably detect individuals, and the spectrogram should be adjusted so that 20-40 seconds are splayed, depending on the monitor size. This can be achieved in Adobe Audition by resizing the scroll bar above the spectrogram, d the zoom buttons located above the spectrogram can be used in Audacity.

9.3 Entering Data

All data entry is completed in the `Data Entry` form within the LTEMP ARU Database (Figure 25).

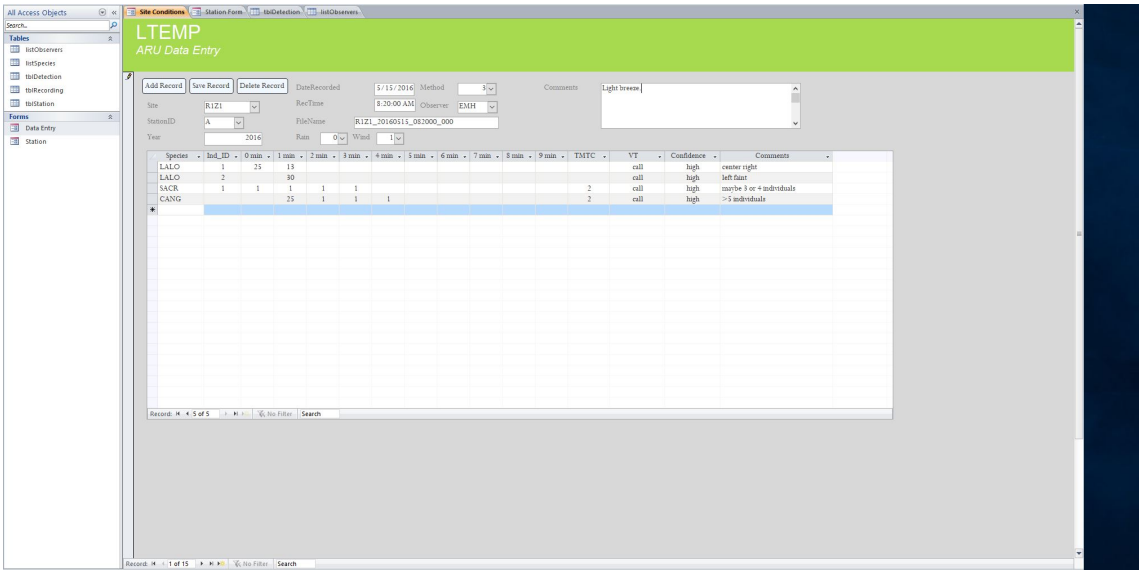


Figure 25: Screen capture of the data entry form within the ARU database used while transcribing recordings.

9.3.1 Site Info Data Entry

- Site - unique ID associated with the sampling site.
- StationID - unique ID of the ARU location within the site. This was added to prevent overlapping data tries if multiple ARUs are deployed within each Site.
- Method
  - 1 = listen to the first 5 minutes, visually scan the last 5 minutes
  - 2 = listen to the first 5 minutes with no additional visual scan
  - 3 = visually scan all 10 minutes with listening to confirm species/individual IDs
- Rain - on a scale of 1 → 5 of intensity, with 5 being the highest
- Wind - same scale as rain

9.3.2 Species Detections Entry

While listening to the recording, each individual detected should be recorded on a seperate row, with the following information lled in:

- Species - Entered using the four letter AOU standardized code.

- Ind_ID - The default value for this field is '1'. It corresponds to uniquely identified individuals of a species on the recording. In other words, if you hear two Snow buntings in the recording, you would have one row with NBU 1' and second row with 'SNBU 2'. As many individuals as you can identify can be added. Evidence for multiple individuals eds to be strong (see TMTC below). Fill in the field with '0' if the species is 'NONE'.
- O min → 9 min - Enter the second when each individual was detected within each nute. In other words, every box should either be empty, signifying that individual was not heard during that minute or have a value between 1 d 59. Detections made within the first 1 second (e.g. <1) are labeled as '1'. Each audio program contains a digital timer to lp pinpoint the second the species was heard.
- TMTC - The TMTC (too many to count) column is used to indicate whether one individual was clearly detected, multiple individuals with simultaneous and overlapping vocalizations were detected. A value of "1" indicates just one dividual was heard, while a "2" indicates there are too many individuals to count seperately. A value of 2 is often tributed to migrating flocks.
- VT - This field identifies what type of vocalization was heard. Songs are unique and repetitive territorial calizations, and are thus easier to identify. Calls are often less unique and therefore more difficult to identify to ecies.
- Confidence - Confidence in species identification, as well as whether or not this is a new individual of the me species (ie. high confidence that the detected individual is a second SNBU for example)
- Comments - additional comments associated with the detected individual.

Recording Unknowns If a song or call cannot be identified, the species code should begin with "UN", followed by the first two letters of the bird oup (UNPA, UNSH, UNGU for unknown passerine, shorebird and gull respectively). A clip of the song should be saved into a folder tled "unknown", using the following naming scheme: siteID-stationID-date-time of recording-time of clip-species code.wav. An ample of this would be: `R1Z1-A-20150515-063000-0150-unpa.wav`. This procedure should also be used for species signments with low confidence.

9.3.3 Additional Resources for Confirming Species ID

Many individuals will be difficult to identify due to sub-optimal recording, or unusual vocalizations. In cases where individuals an unknown species are detected, online libraries of bird vocalizations can be used to compare similar sounding species:

- Xeno-Canto - a vast library of user submitted bird vocalizations from around the rld. Recordings include both song and calls, and each recording is accompanied by a spectrogram.
- Environment Canada's Dendroica - fewer recordings than Xeno-Canto for ch species, but good user-interface, and spectrograms can be viewed here as well.

SUBMISSION TO THE
NUNAVUT WILDLIFE MANAGEMENT BOARD

FOR

Information: **Decision: X**

Issue: A decision is needed to approve/not approve the Blue Whale (*Balaenoptera musculus*) (Northwest Atlantic population) Action Plan.

Background:
The Blue Whale (Northwest Atlantic population) was assessed by the Committee of the Status of Endangered Wildlife in Canada (COSEWIC) as an Endangered species in 2002 and added to the List of Wildlife Species at Risk List in 2005. The NWMB was notified of the COSEWIC assessment and asked to make a decision on listing in 2004. The NWMB was also asked about and approved a Recovery Strategy in 2007 which was made official in 2010. As an Endangered species, the requirement under the *Species at Risk Act* calls for the creation of an Action Plan within five years of listing.

Article 5.2.34 (d) (i) of the Nunavut Agreement states that the NWMB shall, at its discretion, approve plans for management, classification, protection, restocking or propagation, cultivation or husbandry of particular wildlife, including endangered species. Details of how to achieve approval of management plans, recovery strategies and action plans are not addressed under the 2008 "*A memorandum of understanding to harmonize the designation of rare, threatened and endangered species under the Nunavut Lands Claim Agreement and the listing of wildlife species under the Species at Risk Act*".

The Blue Whale (Northwest Atlantic population) Action Plan (Executive Summary attached and translated into Inuktitut) outlines what needs to done to begin or further support the strategic direction set out in the Recovery Strategy. As the Blue Whale is a rare visitor to Nunavut waters, no work has been carried out in this area and none is planned. The Action Plan outlines what needs to be done in areas most frequented by Blue Whale. As part of the process in creating an Action Plan, the NWMB is requested to review this final document, provide any comments, and state whether they approve of this action plan.

This document was originally brought to the Board in March 2016, at which time the Board requested that review not occur until the document was considered final. The document is now considered final.

On September 11, 2019, the Blue Whale Action Plan was brought before the Board. The Board did not approve the Action Plan at that time as there was a concern that some HTOs near where Blue Whale might appear could have comments. DFO sent copies of the Action Plan to six communities inquiring about their interest in Blue Whale and to seek comment on the plan asking for a response by November 25, 2019. Despite

the attempts, only two HTOs responded and both said they did not see Blue Whale and therefore had no comment (see Annex 1). In checking to see if the commercial fishing industry had provided any comment on the Action Plan when originally prepared, we found that even in areas where Blue Whale are common there were no comments from the industry, suggesting there are no concerns from that sector.

Recommendations:
The NWMB review the updated action plan for Blue Whale (Northwest Atlantic population), provide any comments to DFO and it's decision.

Prepared by:
Sam Stephenson, Species at Risk Biologist, DFO, Central and Arctic Region, Winnipeg

Date:
16 January 2020

Annex 1 – Results of contact with Hunters and Trappers Organizations regarding the Action Plan for Blue Whale

CONTACT WITH HTOs:
October 9, 2019 – Express Post letter with information on the Blue Whale Action Plan (complete English Action Plan, translated Executive Summary, and letter [English and Inuktitut]) sent to Kimmirut, Iqaluit, Pangnirtung, Qikiqtarjuaq, Clyde River and Pond Inlet HTOs. According to Canada Post, all delivered by October 17th.

October 28, 2019 – Email reminder, with original materials attached, to all HTOs about DFO request for action on Blue Whale Action Plan

November 20-21 – Phone calls to HTOs with messages left for **Iqaluit, Kimmirut** and **Pond Inlet**. None of these communities provided comments to DFO.

Clyde River HTO: Stated that they do not see Blue Whales, so they had no comment.

Pangnirtung HTO: No comment as they do not see Blue Whales.

Qikiqtarjuaq HTO: On November 21, the person answering the phone commented she was unsure if they had received the materials or not, so I re-emailed them. Two later phone calls were not answered.

Executive summary – Action Plan for the Blue Whale (Northwest Atlantic population)

The Northwest Atlantic blue whale was listed as endangered under the *Species at Risk Act* in 2005. The main threats to its recovery are anthropogenic noise, lack of food availability, contaminants, collisions, disturbances and entanglements. Published in 2009, the Recovery Strategy proposed three recovery objectives intended to increase knowledge of the population, its habitat, and threats, and implement measures to mitigate threats.

The action plan for the Northwest Atlantic blue whale presents measures that will be implemented in the short and medium term to assist in meeting the recovery objectives. The first set of recovery measures will be undertaken by Fisheries and Oceans Canada, sometimes with the collaboration of partners. These are primarily research measures to estimate the population's size and its use of Canadian waters. They also aim to implement or enforce legislation or policies to protect blue whale habitat and mitigate threats.

The second set of measures will be undertaken by the Department in partnership with the various stakeholders involved in the blue whale's recovery. For example, these measures include research on krill and the use of hydroacoustics to document the presence of these whales. The third set presents measures that concerned stakeholders could undertake voluntarily. Such measures include gathering observations of the blue whale, photo-identification and raising awareness among marine users.

The measures set out in the action plan could affect some stakeholders such as non-governmental organizations or the shipping industry. However, their implementation would not necessarily result in incremental costs to these stakeholders. Canadian society as a whole would benefit from the implementation of the action plan, given the economic value that Canadians attach to the recovery of the species and the protection of its habitat.

Species at Risk Act
Action Plan Series

Action Plan for the Blue Whale (*Balaenoptera musculus*), Northwest Atlantic Population, in Canada

Blue Whale, Northwest Atlantic Population



2019

Canada

Recommended citation:

Fisheries and Oceans Canada. 2019. Action Plan for the Blue Whale (*Balaenoptera musculus*), Northwest Atlantic Population, in Canada. *Species at Risk Act* Action Plan Series. Fisheries and Oceans Canada, Ottawa. iv + 21 pp.

For copies of the Action Plan, or for additional information on species at risk, including COSEWIC Status Reports, residence descriptions, recovery strategies, and other related recovery documents, please visit the Species at Risk Public Registry.

Cover illustration: Y. Morin, DFO

Également disponible en français sous le titre
«Plan d'action pour le rorqual bleu (*Balaenoptera musculus*), population de l'Atlantique Nord-Ouest, au Canada. »

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Preface

The federal, provincial, and territorial government signatories under the Accord for the Protection of Species at Risk (1996) agreed to establish complementary legislation and programs that provide for the effective protection of species at risk throughout Canada. Under the *Species at Risk Act* (S.C. 2002, c.29) (SARA), the federal competent ministers are responsible for preparing action plans for species listed as extirpated, endangered, and threatened, and for which recovery has been deemed feasible. They are also required to report on progress five years after the publication of the final document on the Species at Risk Public Registry.

The Minister of Fisheries and Oceans is the competent minister under SARA for the Northwest Atlantic Blue Whale and has prepared this Action Plan to implement the Recovery Strategy, as per Section 47 of SARA. The minister responsible for the Parks Canada Agency is the competent minister for individuals in the waters of Forillon National Park. In preparing this Action Plan, the competent ministers have considered, as per Section 38 of SARA, the commitment of the Government of Canada to conserving biological diversity and to adhering to the principle that, if there are threats of serious or irreversible damage to the listed species, cost-effective measures to prevent the reduction or loss of the species should not be postponed for a lack of full scientific certainty. To the extent possible, this Action Plan has been prepared in cooperation with Parks Canada Agency and the Mingan Island Cetacean Study, as per Section 48(1) of SARA.

As stated in the preamble to SARA, success in the recovery of this population depends on the commitment and cooperation of many different constituencies that will be involved in implementing the directions and actions set out in this Action Plan and will not be achieved by Fisheries and Oceans Canada or any other jurisdiction alone. The cost of conserving species at risk is shared between different constituencies. All Canadians are invited to join in supporting and implementing this Action Plan for the benefit of the Northwest Atlantic Blue Whale and Canadian society as a whole.

Under SARA, an action plan provides the detailed recovery planning that supports the strategic direction set out in the recovery strategy for the species. The plan outlines recovery measures to be taken by Fisheries and Oceans Canada, Environment and Climate Change Canada and other jurisdictions or organizations to help achieve the population and distribution objectives identified in the Recovery Strategy. Implementation of this Action Plan is subject to the appropriations, priorities, and budgetary constraints of the participating jurisdictions and organizations.

Acknowledgments

Fisheries and Oceans Canada would like to thank Andréanne Demers, Hugues Bouchard, Sarah Larochelle and Charline Le Mer, who drafted this Action Plan, as well as all those in the Department who supported its development. The Department also wishes to acknowledge the contributions of Parks Canada, as well as Richard Sears and Christian Ramp of the Mingan Island Cetacean Study.

Executive summary

The Northwest Atlantic Blue Whale was listed as Endangered under the *Species at Risk Act* in 2005. The main threats to its recovery are anthropogenic noise, lack of food availability, contaminants, collisions, disturbances and entanglements. Published in 2009, the Recovery Strategy proposed three recovery objectives intended to increase knowledge of the population, its habitat, and threats, and implement measures to mitigate threats.

The Action Plan for the Northwest Atlantic Blue Whale presents measures that will be implemented in the short and medium term to assist in meeting the recovery objectives. The first set of measures will be taken by Fisheries and Oceans Canada. They consist primarily of research aimed at estimating the size of the Northwest Atlantic Blue Whale population and its use of Canadian waters. The measures also include adopting or enforcing legislation or policies to protect Blue Whale habitat and mitigate threats. The second set of measures will be implemented by the Department in partnership with the various stakeholders involved in the Blue Whale's recovery. They include research on krill and the use of hydroacoustics to document the presence of these whales. The third set of measures consists of actions that concerned stakeholders will be able to take voluntarily. They include observations and photo-identification of Blue Whales and outreach and awareness initiatives.

The measures set out in the Action Plan could affect some stakeholders such as non-governmental organizations or the shipping industry. However, their implementation would not necessarily result in incremental costs to these stakeholders. Canadian society as a whole would benefit from the implementation of the Action Plan, given the economic value that Canadians attach to the recovery of the species and the protection of its habitat.

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1. Recovery actions

1.1 Context and scope of the Action Plan

The Blue Whale (*Balaenoptera musculus*) is a baleen whale that uses coastal and offshore Atlantic Canadian waters mainly in the summer (Figure 1), to feed primarily on euphausiids, commonly known as krill. The Blue Whale population in the Northwest Atlantic was designated as Endangered by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) in May 2002. This population was reassessed by COSEWIC in 2012 and its status confirmed. It was listed as Endangered under the *Species at Risk Act* (SARA) in January 2005. Commercial whaling historically carried out in the Atlantic Ocean reduced the population by about 70%; at least 11,000 Blue Whales were killed before the 1960s including at least 1,500 animals in eastern Canadian waters. The size of the Northwest Atlantic population is currently unknown, but experts estimate that the number of mature animals is unlikely to exceed 250 individuals.

The Recovery Strategy for the Northwest Atlantic Blue Whale (Beauchamp et al. 2009) presents the various threats facing the population. In addition to historical whaling and natural sources of mortality such as ice entrapment and predation, several threats have been identified and their general level of concern assessed. This level of concern depends on the potential impact of the threat on the population, knowledge on the threat, and its extent within the distribution range. The main threats to the recovery of the Northwest Atlantic Blue Whale population were determined by experts to be anthropogenic noise, which causes a degraded underwater acoustic environment and alters behaviour, and the lack of food resources, which could result from ecosystem changes caused in particular by climate change.

Contaminants, vessel collisions, disturbances caused by whale watching activities, entanglements in fishing gear, epizootics, toxic algal blooms and toxic spills also pose a threat to the Blue Whale. Based on the best available information when the recovery strategy was published in 2009, these threats were assessed as presenting a low level of concern, either because their impact was considered low, very localized or difficult to quantify or because the threats were considered potential. Based on new data from photo-identification (Gaspard et al. 2017), the impact of the threat of entanglement in fishing gear needs to be reassessed, as it may be more significant than previously thought. Given the small size of the Blue Whale population, even activities that affect a small number of individuals can have a significant impact on the species' survival in the Atlantic Ocean.

The long-term goal of this Recovery Strategy is to reach a total of 1,000 mature individuals. To reach this recovery goal, three objectives were set for the Canadian range:

Objective 1: Define and conduct a long-term assessment of the size, structure and trends of the Northwest Atlantic Blue Whale population, and determine their range and critical habitat within Canadian waters;

Objective 2: Implement control and monitoring measures for activities that could hinder the recovery of the Blue Whale in its Canadian range;

Objective 3: Increase knowledge of the main threats to the recovery of the Blue Whale in Canadian waters both to determine their true impact and to identify effective measures to mitigate the negative consequences for the population's recovery.

The Recovery Strategy is proposing recovery approaches based on three broad strategies: research and monitoring, conservation, awareness and education. The purpose of this Action Plan is to outline priority actions to meet the above recovery objectives, following the same broad strategies. These actions are related to all the threats described in the Recovery Strategy and the full range of the population in Atlantic Canada's waters. The Recovery Strategy provides more details on the strategies and approaches for recovering Northwest Atlantic Blue Whales, on studies to identify their critical habitat, and on their biology (Beauchamp et al. 2009).

Under Section 47 of SARA, the competent minister must prepare one or more action plans based on the Recovery Strategy. Action planning for species at risk recovery is therefore an iterative process. The Implementation Schedule in this Action Plan may be modified in the future depending on the level of progress made towards recovery.

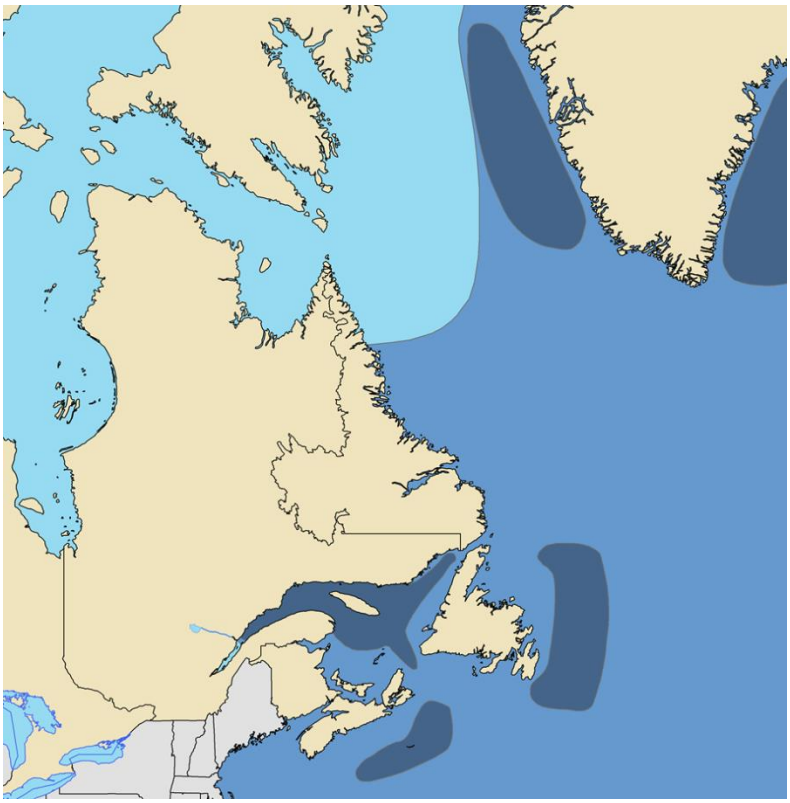


Figure 1. Geographic range and concentration areas (darker blue) of the Blue Whale in the Northwest Atlantic Ocean.

1.2 Measures to be taken and Implementation Schedule

Success in the recovery of this population is not dependent on the actions of any single jurisdiction; rather, it requires the commitment and cooperation of the many different constituencies involved in implementing the directions and actions set out in this Action Plan.

This Action Plan outlines measures that maximize the likelihood of achieving the population and distribution objectives for the Northwest Atlantic Blue Whale. It also includes measures to address threats to the population and monitor its recovery, in order to guide not only activities to be undertaken by Fisheries and Oceans Canada (DFO), but also those in which other jurisdictions, organizations and individuals have a role to play. DFO strongly encourages all Canadians to participate in the conservation of the Blue Whale by supporting and implementing the priority recovery measures outlined in this Action Plan. DFO recognizes the important role of key players in the field in the implementation of recovery measures for this population.

The following three tables are not intended to present all the measures that could be taken to foster the Blue Whale's recovery; instead, they target measures likely to be taken

in the medium term (within the next 5 to 10 years). These measures are technically and financially feasible and will help identify measures that could be implemented in the longer term based on the knowledge that will be acquired. Given that the Northwest Atlantic Blue Whale has a vast range, the proposed research focuses on targeted areas to optimize results and efficiency. Much of this research could help support future critical habitat identification.

Table 1. Implementation Schedule: Measures to be undertaken by Fisheries and Oceans Canada

Table 1 identifies measures to be taken by DFO to support the recovery of the Blue Whale. This table primarily presents research and monitoring measures that will have to be led by DFO, particularly because of the complex logistics involved in monitoring a Blue Whale population with such a vast range. This research is a continuation or logical extension of studies already performed by DFO as part of the Recovery Strategy and as part of its mandate for marine mammal conservation. For an overview of the research activities and conservation and awareness measures carried out from 2009 to 2014, see the Report on the Progress of Recovery Strategy Implementation for the Blue Whale, Northwest Atlantic Population (Fisheries and Oceans Canada 2016). The measures listed in Table 1 as well as Tables 2 and 3 address the three recovery objectives:

Objective 1: Increase knowledge of the population and its size (Measures 1 to 3): A better understanding of the high-concentration areas of Blue Whales will make it possible to carry out targeted surveys to assess the population size more effectively; this research will also make it possible to understand the reasons why Blue Whales are attracted to certain locations. It is being conducted to meet both Objective 1 of the Recovery Strategy and the Schedule of Studies to identify critical habitat included in the Recovery Strategy. The studies on high-concentration areas and their characteristics, such as high concentrations of krill, could lead to the identification of Blue Whale critical habitat, at least partially, in an update of the Recovery Strategy.

Objective 2: Mitigate threats (Measures 7 to 10): Fisheries and Oceans Canada will also implement conservation measures to protect the Blue Whale's food resources, mitigate the risk of collisions and protect the Blue Whale from disturbances through policies and regulations.

Objective 3: Develop a better understanding of threats (Measures 4 to 6): The impact of threats, such as noise, disturbance or entanglement, which can alter the behaviour of Blue Whales and thereby adversely affect their recovery, are still poorly understood. Studies on noise sources and the impact of disturbance and entanglement on the recovery of the population will make it possible to implement suitable mitigation measures and improve on existing mitigation measures.

The measures presented in Table 1 are in addition to the implementation of DFO's mandate and enforcement of laws in effect. The Blue Whale is protected under SARA, which prohibits anyone from harming or harassing an endangered species. The Blue Whale’s needs must also be taken into account in the environmental assessments of various projects under the *Fisheries Act,* the *Canadian Environmental Assessment Act,*

2012 or the *National Energy Board Act*. Mitigation measures can also be included in authorization conditions issued under various types of legislation enforced by the Department. Environmental assessments of projects submitted to federal-provincial offshore petroleum boards are also reviewed by DFO to ensure that species at risk are taken into account. Moreover, scientific research protocols on the Blue Whale are reviewed to minimize disturbances. By enforcing legislation, other government departments and agencies also contribute to Blue Whale recovery. For example, Parks Canada is implementing the *Marine Activities in the Saguenay–St. Lawrence Marine Park Regulations*.

Table 1. Measures to be undertaken by Fisheries and Oceans Canada

#	Recovery Measures	Priority[1]	Threats or Objectives Addressed[2]	Timeline
Broad Strategy: *Research and monitoring*				
1	Continue delineating high-density seasonal areas in Canadian waters using satellite transmitters, especially in southwestern Newfoundland and on the Scotian Shelf. Transmitters have been put on several Blue Whales since 2010 and data have been used to define feeding areas and migratory routes. This research will identify locations where the Blue Whale is found in order to assess their numbers through targeted surveys.	High	Objective 1	5 years
2	Conduct targeted surveys in high-density areas to assess the population size. Once high-density areas have been identified, aerial or vessel-based surveys can focus on these areas and thereby be more effective in estimating the number of Blue Whales.	High	Objective 1	5 years
3	Assess the extent to which the biological processes (krill aggregations) and physical processes (currents, tides) affect the distribution, behaviour, and migrations of the Blue Whale.	High	Objective 1	5 years

[1] **Priority**: Reflects the degree to which the measure contributes directly to the recovery of the population or is an essential precursor to a measure that contributes to the recovery of the population.

- "High" priority measures are considered those most likely to have an immediate or direct impact on the achievement of the recovery objective for the population.
- "Medium" priority measures may have a less immediate or direct impact on the achievement of the population and distribution recovery objectives, but are still important for the recovery of the population.
- "Low" priority recovery measures will likely have an indirect or gradual impact on the achievement of the recovery objectives. They are nonetheless considered important contributions to the knowledge base or public involvement and to the value the public ascribes to the species.

[2] **Threats or objectives addressed**: Indicates which recovery objective the measure addresses or which threat it mitigates. Summary of the objectives: Objective 1: Increase knowledge of the population and its size; Objective 2: Mitigate threats; Objective 3: Develop a better understanding of threats.

#	Recovery Measures	Priority[1]	Threats or Objectives Addressed[2]	Timeline
4	Study the Blue Whale's behavioural responses to various noise sources in various contexts. The Blue Whale's tolerance to noise must be better understood in order to develop appropriate mitigation measures for noise-generating human activities.	Medium	Objective 3 Noise	10 years
5	Study the behavioural response of Blue Whales to various approach distances of boats (whale watching, research, and recreational boats). This knowledge will help to establish acceptable approach distances for the Blue Whale.	Medium	Objective 3 Disturbance	2 years
6	Assess the fishing effort and characterize the fishing gear used in areas occupied by the Blue Whale to determine the potential impact of the threat of gear entanglement on the population.	Low	Objective 3 Entanglement	10 years
Broad Strategy: *Conservation*				
7	Assess whether any commercial fishery of krill would affect the integrity of the ecosystem or the energy needs of a recovering or a recovered Blue Whale population, in accordance with the Policy on New Fisheries on Forage Species.	High	Objective 2 Availability of food	Ongoing
8	Adopt and implement the amendments to the *Marine Mammal Regulations* to help protect the Blue Whale from anthropogenic disturbances in all of the areas that they occupy. The amended regulations include approach distances for species at risk like the Blue Whale in order to reduce disturbance.	High	Objective 2 Disturbance Collisions	Ongoing
9	Determine the best management tools for achieving the St. Lawrence Estuary Area of Interest's conservation objectives and implement them, including the designation of a marine protected area.	High	Objective 2	5 years
10	By enacting regulations, designate a marine protected area in the American Bank area located off the Gaspé Peninsula. This site is, among other things, considered as a high-density Blue Whale area. Examples of potential conservation measures would be voluntary measures and rules of ethics to regulate marine observation activities and reduce disturbances, as well as	Medium	Objective 2 Disturbance Entanglement	2 years

#	Recovery Measures	Priority[1]	Threats or Objectives Addressed[2]	Timeline
	apply fishery measures aimed at protecting forage species, such as krill, the Blue Whale's main prey.		Collisions	
Broad Strategy: *Outreach*				
11	Encourage the whale watching public to report their observations. For example, the "Tell Jack" outreach campaign encourages the whale watching public in Newfoundland and Labrador to play a role in DFO marine mammal science and promote DFO's research on marine mammals including the Blue Whale. Anecdotal reports and pictures sent to the marine mammal research group can provide useful information. The campaign uses social media, proactive media relations, and public outreach activities to solicit observation reports and pictures from the public via Twitter and email.	Medium	Objective 1	Ongoing
12	Carry out outreach and educational activities intended for whale watching operators, the whale watching public, and other mariners about best practices for observing marine mammals including the Blue Whale. For example, in Newfoundland and Labrador, school visits and public events such as Oceans Day are organized using life-size Blue Whale tails made of fabric. The tails could be used to educate people on the Blue Whale's biology, behaviour, and lifecycle, as well as its SARA status.	Medium	Objective 2 Disturbance	Ongoing

Table 2. Measures to be undertaken collaboratively between Fisheries and Oceans Canada and its partners

Table 2 shows the actions that will be taken by Fisheries and Oceans Canada and its partners working in collaboration. The order in which partners are listed in the table is not indicative of their contribution or degree of involvement. Implementation of these measures will be dependent on a collaborative approach, in which Fisheries and Oceans Canada is a partner in recovery efforts, but cannot implement the measures alone. Table 2 presents research and monitoring measures that DFO is implementing in close partnership with universities, other government agencies, the private sector and research organizations. The purpose of these measures is to:

1. Continue the characterization of noise sources and levels and the Blue Whale's exposure to noise in the areas they use the most (measure 13).
2. Study the Blue Whale's primary food source, krill (Measures 14 to 16). DFO intends to continue its research on krill production in the Estuary and Gulf of St. Lawrence, and on krill interaction with Blue Whales, in collaboration with universities.
3. Increase knowledge of the Blue whale distribution in areas outside the Estuary and Gulf of St. Lawrence, for which few observational data are available (Measures 17 to 22). DFO and several partners intend to use hydroacoustics and photo-identification for this purpose. These measures also support the schedule of studies intended to identify critical habitat set out in the Recovery Strategy.
4. Better assess the effect of the threat of entanglement on the health and recovery of the Blue Whale (measure 23).

This table also proposes several partnerships to implement conservation measures and thereby mitigate threats to Blue Whale recovery. Certain initiatives are underway or are planned for the near future to mitigate threats, such as noise (Measure 24), toxic spills (Measure 25), vessel collisions (Measures 26 and 27) and entanglements (Measure 28). Two awareness campaigns are also underway to improve the data collected by observers (Measure 29) and to raise awareness among pleasure boaters around the Saguenay–St. Lawrence Marine Park in order to reduce disturbances in this important area for the Blue Whale (Measure 30).

Table 2. Collaborative measures between Fisheries and Oceans Canada and its partners.

Acronyms: DFO (Fisheries and Oceans Canada), NGO (Non-Governmental Organizations), NOAA (National Oceanographic and Atmospheric Administration, US).

#	Recovery Measures	Priority[3]	Threats or Objectives Addressed[4]	Timeline	Partnerships[5]
Broad Strategy: *Research and monitoring*					
13	Continue characterizing of noise sources and levels, and analyzing the exposure of Blue Whales to noise in the areas they use most often in Canadian Atlantic waters.	Medium	Objective 3 Noise	Ten years	DFO Transport Canada Industry
14	Study krill distribution, population dynamics and production processes. Tides, currents, and krill behaviour will determine the aggregation areas essential for effective Blue Whale feeding. A better understanding of these factors could be integrated into critical habitat identification.	High	Objective 3 Availability of food	3 years	DFO Universities Research institutes
15	Study the Blue Whale's energy needs to estimate the krill biomass necessary to support the current population and eventually a recovering population.	High	Objective 3 Availability of food	3 years	DFO Universities Research institutes
16	Study the trophic interactions between the Blue Whale and krill to try to explain the high inter-annual and inter-regional variability of Blue Whale occurrences and residence time.	High	Objective 3 Availability of food	3 years	DFO Universities Research institutes

[3] See footnote 1.
[4] See footnote 2.
[5] **Potential partners**: Université du Québec à Rimouski, Dalhousie University, Institut des sciences de la mer à Rimouski, Group for Research and Education on Marine Mammals (GREMM), Mingan Island Cetacean Study, Réseau d'observation des mammifères marins, Indigenous groups, Shipping Federation of Canada, whale watching tour operators, emergency response networks, etc.

#	Recovery Measures	Priority[3]	Threats or Objectives Addressed[4]	Timeline	Partnerships[5]
17	Use hydroacoustic techniques to monitor the occurrence and number of Blue Whales in Atlantic Canada's waters, especially on the Scotian Shelf and south of Newfoundland. Bottom-moored recorders will make it possible to collect data on all marine mammal species that vocalize in a specific location.	High	Objective 1	2 to 5 years	DFO Universities Research institutes
18	Acquire data on Blue Whale distribution and abundance outside the Gulf of St. Lawrence (Cabot Strait and Scotian Shelf) where very little information is available, using photo-identification and the installation of satellite transmitters.	High	Objective 1	5 years	NGO DFO Universities
19	Conduct necropsy on dead Blue Whales whenever possible and follow protocols for data collection and sharing.	High	Objective 1 Objective 3	Ongoing	NGO DFO Universities
20	Continue collecting tissue samples and conducting biopsies to assess the population structure, pregnancy rates, and level of contaminants, especially in the Gulf of St. Lawrence, the Cabot Strait and the Scotian Shelf.	Medium	Objective 1 Objective 3	5 years	NGO Universities DFO
21	Better integrate all Blue Whale sightings data collected by various sources.	Low	Objective 1	5 years	NGO Universities Research institutes DFO
22	Establish international research partnerships to increase understanding of the Blue Whale's distribution and migration routes. Sharing hydroacoustic data is an example of collaboration.	Low	Objective 1	10 years	DFO NOAA Universities

#	Recovery Measures	Priority[3]	Threats or Objectives Addressed[4]	Timeline	Partnerships[5]
23	Use photo-identification to monitor entanglement rates in Blue Whales in order to better assess the impact of this threat on the health and recovery of the population.	Medium	Objective 2 Entanglement	In progress	NGO DFO
Broad Strategy: *Conservation*					
24	Study and implement measures to reduce the negative impact of noise caused by human activities, such as shipping, construction, and seismic exploration.	High	Objective 2 Noise	Ongoing	DFO Transport Canada Industry Parks Canada Universities NGO
25	Develop and implement response plans to reduce impacts to Blue Whales and their habitat likely to be caused by toxic spills. The government's initiative to strengthen the tanker safety system includes improving response planning in the event of toxic spills in targeted areas such as the Gulf of St. Lawrence, a high-risk area for spill impacts.	Medium	Objective 2 Spills	5 years	Provincial and federal departments Industry NGO
26	Maintain the Marine Mammal Response Program in the various regions of Canada's Atlantic coast. This program supports organizations that maintain call centres and databases, and that intervene when a marine mammal is in distress. It also supports training for emergency responders.	Medium	Objective 2 Entanglement Collisions	Ongoing	NGO DFO Indigenous groups
27	Study how to reduce the risk of vessel collisions with Blue Whales in the St. Lawrence Estuary and Gulf of St. Lawrence beyond existing voluntary measures for speed reduction, with the goal of identifying measures to implement (e.g., moving shipping lanes, establishing no-go areas).	Medium	Objective 2 Collisions	5 years	DFO Transport Canada Industry NGO

#	Recovery Measures	Priority[3]	Threats or Objectives Addressed[4]	Timeline	Partnerships[5]
28	Develop projects to promote the recovery of ghost or lost fishing gear in the Estuary and Gulf of St. Lawrence	Low	Objective 2 Entanglement	5 years	DFO Industry NGO
Broad Strategy: *Outreach*					
29	Continue training observers to improve marine mammal identification and information gathering. Training is intended for all those who have the opportunity to gather observational information (researchers, bird watchers, observers on platforms).	Medium	Objective 1	Ongoing	DFO NGO Industry
30	Educate pleasure boaters and captains of whale watching excursions on the impacts their activities have on Blue Whales near the Saguenay-St. Lawrence Marine Park. In collaboration with fisheries officers, the goal of this project is to educate users on the appropriate behaviour to adopt outside the marine park. It could be extended to other areas where there is a high incidence of disturbance by pleasure boaters and whale watchers.	Medium	Objective 2	5 years	DFO Parks Canada NGO

Table 3. Measures that represent opportunities for other jurisdictions, organizations or individuals to lead

As all Canadians are invited to join in supporting and implementing this Action Plan for the benefit of the Blue Whale and Canadian society as a whole, Table 3 identifies measures likely to support the recovery of the Northwest Atlantic Blue Whale that could be taken voluntarily by other jurisdictions, institutions, groups, and individuals interested in supporting the species' recovery. The order in which partners are listed in Table 3 is not indicative of their contribution or degree of involvement. The research and monitoring measures presented in Table 3 are activities that could be implemented by non-governmental organizations, particularly the Mingan Island Cetacean Study (MICS). These measures involve continuing Blue Whale monitoring activities through photo-identification, hydroacoustics, tissue sample collection, and biopsies (Measures 31 to 36) in Canadian and international waters. Several organizations, including Parks Canada, are already involved in efforts to raise marine user awareness of the impact their activities have on the Blue Whale, and these efforts are expected to continue (Measures 37 and 38).

If your organization is interested in participating in one of these measures, please contact the Species at Risk Management Division in Quebec at lep-sara-qc@dfo-mpo.gc.ca.

Table 3. Measures that represent opportunities for other jurisdictions, organizations or individuals to lead.

#	Recovery Measures	Priority[6]	Threats or objectives addressed[7]	Partnerships[8]
Broad Strategy: *Research and monitoring*				
31	Continue photo-identification activities, especially in various areas of the Gulf of St. Lawrence, and analyze photos to continue identifying individuals. These analyses help to better understand the Blue Whale's annual use of Canadian waters and assess its abundance. The continuation of these activities implies maintaining a database of observations and photos.	High	Objective 1	NGO Indigenous groups
32	Conduct acoustic monitoring (recording vocals using moored recorders) in various sectors of the Gulf of St. Lawrence and Atlantic Canada that are difficult to access in order to better characterize their use by the Blue Whale.	High	Objective 1	NGO Universities Research institutes
33	Conduct an analysis of the Northwest and Northeast Atlantic photo-identification catalogues to verify whether there are connections between these two areas of the Atlantic Ocean.	Medium	Objective 1	NGO Universities Research institutes
34	Biopsy Blue Whales to monitor their contaminants levels. The accumulation of contaminants in the Blue Whale is barely known and biopsies could make it possible to identify contaminants found in tissues and monitor their evolution over time.	Medium	Objective 3 Contaminants	NGO Universities Research institutes
35	Conduct genetic analyses of tissues collected from individuals that died in spring 2014 in southern Newfoundland. The comparison of these analyses with biopsies carried out across the North Atlantic will allow for a better understanding of the extent of exchange among the whales in the various regions.	Low	Objective 1	NGO Universities Research institutes

[6] See footnote 1.
[7] See footnote 2.
[8] See footnote 5.

#	Recovery Measures	Priority[6]	Threats or objectives addressed[7]	Partnerships[8]
36	Conduct a survey off Mauritania in the winter to determine whether the Northwest Atlantic Blue Whale uses the waters off West Africa to breed.	Low	Objective 1	NGO Universities Research institutes
Broad Strategy: *Outreach*				
37	Continue raising awareness among marine users of the impact their activities have on the Blue Whale (marine observation activities, commercial shipping, and pleasure boaters).	Medium	Objective 2	Parks Canada Transport Canada NGO Industry Indigenous groups
38	Continue mandatory training for all captains and kayaking guides who conduct their activities in the Saguenay-St. Lawrence Marine Park to familiarize them with the best practices for observing marine mammals (marine park regulations, biology, and ways to diversify excursions).	Medium	Objective 2	Parks Canada

1.3 Critical habitat

1.3.1 Critical habitat identification

The Act requires an action plan which or that includes an identification of critical habitat to the extent possible. When published in 2009, the Recovery Strategy for the Northwest Atlantic Blue Whale included a schedule of studies to identify critical habitat. Several such studies have been carried out since the publication of the Recovery Strategy, and others are ongoing. These studies are summarized in the Report on the Progress of Recovery Strategy Implementation for the Blue Whale, Northwest Atlantic population. The results were presented and peer-reviewed at a DFO Science Advisory Meeting in winter 2016. A Science Advisory Report was published recently (Fisheries and Oceans Canada 2018) and will be used to support the identification of Blue Whale critical habitat, to the extent possible. This identification will be presented in an update of the Recovery Strategy, rather than in this Action Plan.

2. Socioeconomic assessment

The *Species at Risk Act* requires that an Action Plan include an assessment of the socioeconomic costs associated with its implementation and of the benefits to be derived from the implementation (SARA 49(1)(*e*), 2002). This assessment addresses only the incremental (new) socioeconomic costs associated with the implementation of this Action Plan at the national level as well as the social and environmental benefits of implementing it in its entirety, recognizing that not all aspects of its implementation are under the jurisdiction of the federal government. It is intended to inform the public and guide partners in their decision-making on the implementation of the Action Plan.

This assessment will first identify the main stakeholders that could be affected by or involved in the implementation of the recovery measures listed in Tables 1 to 3 of the Action Plan. Section 2.2 then examines whether these measures could involve incremental costs to stakeholders. Lastly, Section 2.3 presents an overview of the benefits of implementing the Action Plan.

2.1 Stakeholder profile

The Blue Whale recovery measures set out in Tables 1 to 3 are grouped into three types of broad strategies: research and monitoring, conservation, and outreach. The types of stakeholders that would take part in the implementation of the Action Plan are also identified in these tables.

Research and monitoring

DFO's main partners in carrying out the research and monitoring activities are universities (e.g., University of Quebec at Rimouski, Dalhousie University), governmental (e.g., Transport Canada) and non-governmental (e. g., Mingan Island Cetacean Study) organizations.

Conservation

The implementation of conservation measures would involve a number of stakeholders, including the federal and provincial governments, non-governmental organizations, and the private sector. Several private sector industries could be affected by the implementation of conservation measures. In particular, noise reduction measures could have repercussions for industries whose activities involve shipping, marine construction, and seismic exploration (Table 2 – Measure 24). Initiatives to enhance the security systems of tankers and reduce the risk of collision between Blue Whales and ships may also have an impact on the shipping industry (Table 2 – Measures 25 and 27).

Outreach

Outreach activities would be conducted primarily by the federal government in collaboration with non-governmental organizations and the whale watching industry.

2.2 Socioeconomic costs of implementing the Action Plan

Many of the measures identified in the Action Plan are initiatives underway within the federal government and its partners, and these measures are expected to continue even in the absence of the Action Plan. Although the measures set out in the Action Plan could affect some stakeholders identified above, their implementation would not systematically result in incremental socioeconomic costs to these stakeholders.

There is not enough information to quantify the incremental socioeconomic costs that could result from implementing the Action Plan for the Blue Whale. Therefore, the potential costs of the Action Plan are evaluated qualitatively because most of the available information is qualitative.

Research and monitoring

Of the 38 recovery measures in the action plan, 23 measures involve research and monitoring activities. Many of these research projects are an extension of projects already being carried out by DFO and its partners. Certain projects go beyond the scope of the Blue Whale Recovery Strategy and include the acquisition of knowledge that can be applied to several species. It is therefore realistic to think that many of the research activities listed in Tables 1 to 3 would be carried out by DFO and its partners, even in the absence of the Action Plan.

DFO-led research and monitoring would be funded through the Department's regular programs and would not mean incremental costs to DFO. Measures undertaken by other organizations (universities, NGOs, research institutes) could be funded in part by existing federal government programs. However, additional costs could be incurred by local and regional stakeholders who chose to become involved in Blue Whale recovery efforts.

There is not enough information at this stage to quantify these costs, but they would vary depending on the extent of the research activities undertaken.

Conservation

The Action Plan identifies eight conservation measures to implement mitigation and monitoring measures for activities that could disrupt the recovery of the Blue Whale in its Canadian range. Most of these measures fall within the framework of initiatives that are already underway within the federal government; the implementation of these measures therefore will not involve any incremental costs to the government.

One of the conservation measures aimed at reducing the risk of collisions between the Blue Whale and ships in the St. Lawrence Estuary (Table 2 – Measure 27) could lead to additional costs for the shipping industry. As details on the implementation of these measures are not known, it is not possible to estimate the incremental costs, if any, to the shipping industry.

The implementation of conservation measures is not expected to generate any additional costs to the other stakeholders.

Outreach

The awareness activities included in the Action Plan are all activities that are currently underway and are intended to protect several species of marine mammals. Therefore, realistically, these activities would be carried out even in the absence of the Action Plan for the Blue Whale. Consequently, awareness activities are not expected to generate incremental costs to the federal government or any of the stakeholders.

2.3 Benefits of implementing the Action Plan

The implementation of the measures outlined in this Action Plan will contribute positively to the achievement of the long-term goal of the Northwest Atlantic Blue Whale Recovery Strategy, which is to reach a total of 1,000 mature individuals in the population.

The benefits of the recovery of the Blue Whale are difficult to quantify. However, the Act recognizes that “wildlife, in all its forms, has value in and of itself and is valued by Canadians for aesthetic, cultural, spiritual, recreational, educational, historical, economic, medical, ecological and scientific reasons” (SARA 2002). Self-sustaining and healthy ecosystems with their various elements in place, including species at risk, contribute positively to the livelihoods and the quality of life of all Canadians. A review of the literature confirms that Canadians value the preservation and conservation of species in and of themselves. Measures taken to preserve a species, such as habitat protection and restoration, are also valued. In addition, the more measures contribute to the recovery of a species, the higher the value the public ascribes to such measures (Loomis and White 1996; Fisheries and Oceans Canada 2008).

Specifically, a study estimating the economic benefits of marine mammal recovery in the St. Lawrence Estuary reveals that Canadians would be willing to pay $229 annually per household for a multi-species recovery strategy resulting in a measurable improvement in the status of species at risk for a number of marine mammals, including the Blue Whale (Boxall et al. 2012).

The implementation of the Action Plan should also generate benefits beyond the recovery of the Blue Whale. The acquisition of knowledge and the development of conservation measures should benefit several other marine mammal species.

2.4 Distributional impacts

Many different stakeholders will be involved in implementing the recommendations set out in this Action Plan. Given that most of the measures set out in the plan relate to existing programs and are a continuation of activities already underway, the incremental costs to DFO and its partners should be minimal.

The benefits of implementing the Blue Whale Action Plan will be enjoyed by the Canadian society as a whole, given the economic value that Canadians attach to the recovery of the species and the protection of its habitat.

3. Measuring progress

The recovery objectives presented in the Recovery Strategy propose a method for defining and measuring progress made toward achieving population and distribution objectives.

A report on the implementation of the Action Plan (under s. 55 of SARA) will be prepared to assess the progress made towards the implementation of the recovery measures.

A report on the ecological and socioeconomic impacts of the Action Plan (under s. 55 of SARA) will be prepared to provide information on the monitoring of the species' recovery and its long term viability, and on the implementation of the Action Plan.

4. References

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Appendix A: Effects on the environment and other species

A Strategic Environmental Assessment (SEA) is conducted on all SARA recovery planning documents under SARA and in accordance with the Cabinet Directive on the Environmental Assessment of Policy, Plan and Program Proposals. The purpose of an SEA is to incorporate environmental considerations into the development of public policies, plans, and program proposals to support environmentally sound decision-making and to evaluate whether the outcomes of a recovery planning document could affect the environment in any way or the achievement of any of the Federal Sustainable Development Strategy's goals or targets.

Recovery planning is intended to benefit species at risk and biodiversity in general. However, it is recognized that implementation of action plans may inadvertently have environmental impacts beyond the intended benefits. The planning process based on national guidelines directly incorporates consideration of all environmental impacts, with a particular focus on the potential impacts on non-target species or habitats. The results of the SEA are incorporated directly into the action plan itself, but are also summarized below in this statement.

The threats affecting the Blue Whale also weigh on several marine mammal species that share its range. Measures aimed at reducing the impact of threats to the Blue Whale should therefore also benefit these species. Research intended to better understand krill production and behaviour and could lead to conservation measures will also be positive for all levels of the food chain.

Appendix B: Record of cooperation and consultation

This document was prepared with the participation of DFO researchers working on the Blue Whale. Representatives of the Saguenay-St. Lawrence Marine Park also participated, because the species is often present within its boundaries. The expertise of the Mingan Island Cetacean Study, which has been collecting observational data on whales for over three decades and which acts as curator of the Blue Whale photo-identification catalogue, was also solicited.

The document has been reviewed by the different divisions in the five relevant DFO administrative regions and by national headquarters. It was also sent for comment to provincial governments and Indigenous groups present within the range of this Blue Whale population. The non-governmental organizations, the shipping and fishing industries and the commercial marine life observations activities were also consulted.

SUBMISSION TO THE

NUNAVUT WILDLIFE MANAGEMENT BOARD AND NUNAVIK MARINE REGION WILDLIFE BOARD

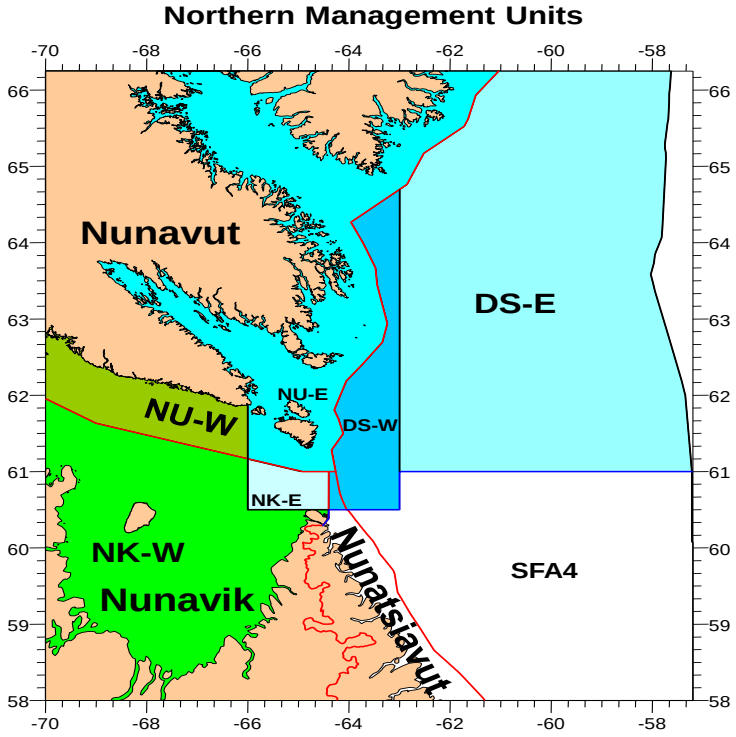
FOR

Information: X **Decision:** **Recommendation:**

Issue: Total Allowable Catch levels for Northern (*Pandalus borealis*) and Striped (*Pandalus montagui*) Shrimp for the 2020/21 season in the Western and Eastern Assessment Zones

Map:

Blue areas – Eastern Assessment Zone
Green areas – Western Assessment Zone





Northern shrimp (*Pandalus borealis*)



Striped shrimp (*Pandalus montagui*)

Background

Two shrimp species (*Pandalus montagui* and *Pandalus borealis*) occur in the Northern shrimp fishery that takes place in the Davis Strait and eastern Hudson Strait, which includes parts of the Nunavut Settlement Area (NSA) and the Nunavik Marine Region (NMR). Total Allowable Catch (TAC) for each species is set for two distinct science assessment zones, Western Assessment Zone (WAZ) and Eastern Assessment Zone (EAZ) (see Map). TAC is then distributed into management units as per defined sharing arrangements.

For each species of shrimp, decisions and recommendations on TAC and harvest levels in the WAZ and EAZ, are required annually from both the Nunavut Wildlife Management Board (NWMB) and the Nunavik Marine Region Wildlife Board (the Boards). However, the timing of the consultative and co-management processes and the availability of approved science information to inform the Boards' decision making presents a challenge every year.

Fisheries and Oceans Canada's (DFO) Science sector conducts full stock assessments on a two-year cycle with updates in interim years. Timing of the shrimp science survey, coupled with the time necessary to analyze the data does not allow for earlier release of approved information.This year's update using 2019 survey data is scheduled for release in February 2020. In a letter from the Boards in 2015, it was resolved that any "precipitous change in biomass" (defined as any increase or decrease, greater than 25%) for either species in the WAZ or EAZ would necessitate further decisions and recommendations from the Boards (see Appendix 1). In these instances, DFO provides an addendum to the Boards to reconsider decisions and recommendations upon availability of new science information.

A precipitous change in biomass has been observed for at least one of the four shrimp stocks consistently in each of the past seven years. For example, in the WAZ, precipitous changes in fishable biomass have occurred every year for Montagui, and more than half of the time for Borealis since 2014. In the EAZ, the Montagui fishable biomass has seen changes in fishable biomass between -16.3% and + 380% since at least the 2012 survey.

In anticipation of a precipitous change for at least one stock in the 2019 survey and to simplify the decision-making process, Board staff recommended that DFO submit the 2020 Briefing Note on TAC levels for Northern and Striped shrimp in the EAZ and WAZ once approved science information becomes available.

Applicable to NWMB only: In the event Nunavut's allocation for either species increases or decreases equal to or greater than 15%, NWMB Allocation Policy for Commercial Marine Fisheries is triggered. This could affect the sub-allocation decisions of the NWMB already approved by the Minister for 2020/21.

Summary of Request

This Briefing Note will be accompanied by an addendum prior to the March Board meetings that will include approved science results as well as a consultation summary from the Northern Shrimp Advisory Committee meeting (March 5th, 2020) as soon as they become available.

As such, this Briefing Note is intended as a placeholder for:

1) Decisions on TAC for both species in the WAZ
2) Recommendations on TAC for both species in the EAZ, and decisions on harvest levels within NU/NK East
3) Sharing decisions, which can be implied through TAC and harvest level decisions and recommendations:
    a. Decisions on sharing arrangements for Nunavut and Nunavik in the WAZ
    b. Decisions on sharing arrangements within the NU/NK East management units
    c. Recommendations on the distribution of TAC in the EAZ between the NU/NK East and offshore Davis Strait management units

Prepared by: Fisheries Resource Management, Fisheries and Oceans Canada

Date: February 7, 2020

Appendices

APPENDIX 1 – Nunavut Wildlife Management Boards and Nunavik Marine Region Wildlife Board decisions and recommendations concerning Northern and Striped shrimp total allowable catches and quota in the Eastern and Western Assessment Zones *(March 27, 2015)*

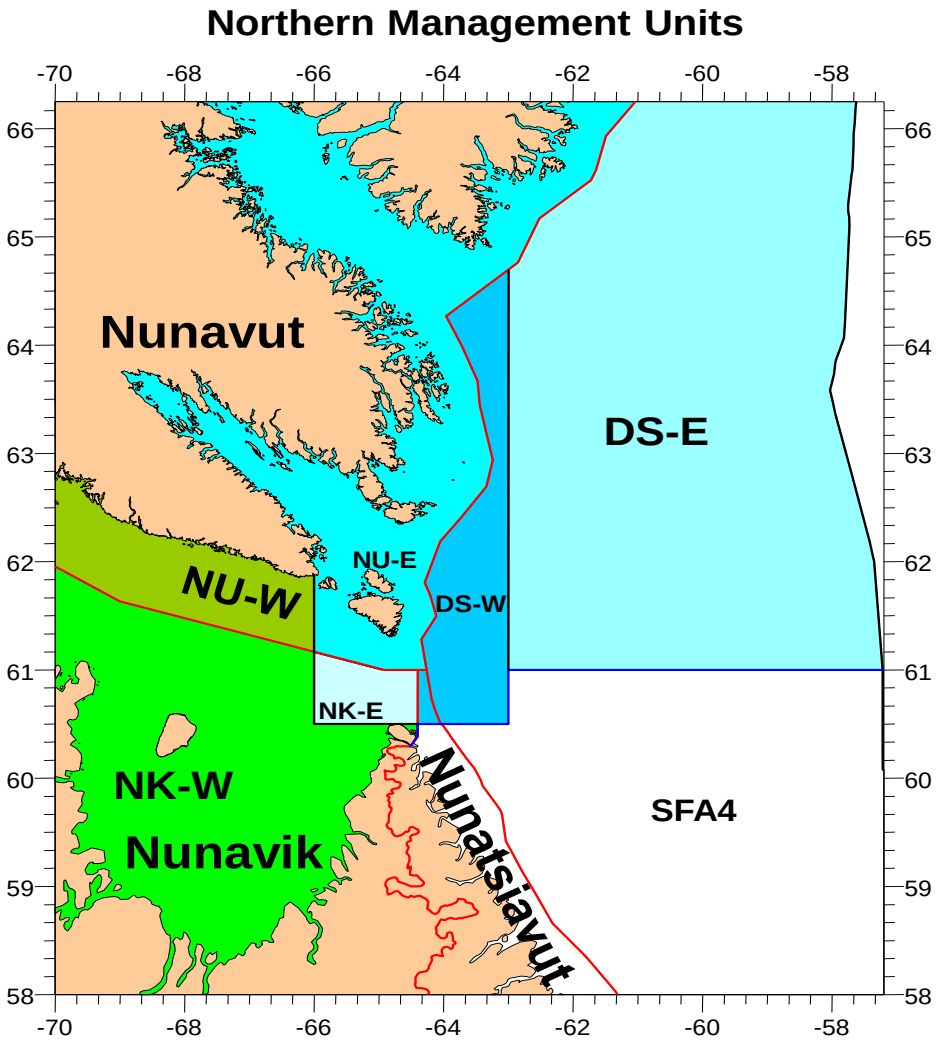
ADDENDUM TO THE SUBMISSION TO THE

NUNAVUT WILDLIFE MANAGEMENT BOARD AND NUNAVIK MARINE REGION WILDLIFE BOARD
FOR

Information: **Decision:** X **Recommendation: X**

Issue: 2020/21 Total Allowable Catch levels for Northern (*Pandalus borealis*) and Striped (*Pandalus montagui*) Shrimp in the Eastern and Western Assessment Zones

Map:
Blue areas – Eastern Assessment Zone.
Green areas – Western Assessment Zone.



Background

The Department submitted a Briefing Note to the Nunavut Wildlife Management Board and the Nunavik Marine Region Wildlife Board (the Boards) in February 2020 as a placeholder for their joint decisions and recommendations on two species of shrimp in the Western Assessment Zone (WAZ) and Eastern Assessment Zone (EAZ). The Science results from the 2019 multi species survey that will inform the 2020/21 Total Allowable Catches (TACs) were not available at the time of submission. The Department anticipated that precipitous changes (greater than 25%) in fishable biomass for one or more stocks might be observed, which would require an Addendum to be sent to the Boards.

Results from the 2019 survey are now available and indicate precipitous changes in fishable biomass for both species in the EAZ. *P. montagui* decreased by 59.3%, while *P. borealis* increased by 102.8%. The results for the WAZ indicate declines of fishable biomass for both *P. montagui* (19.5%) and *P. borealis* (3.4%) (Appendix 1).

The results of the Science update submitted through this Addendum (summary at Appendix 2) will present the Boards with the information necessary to provide recommendations and decisions to the Minister for the 2020/21 fishery.

Western Assessment Zone – For Decision

Background Information

The WAZ occurs partially within the Nunavut Settlement Area (NSA) and partially within the Nunavik Marine Region (NMR). A new science survey for the WAZ began in 2014. While the survey time series was being established, the Boards' decisions were to maintain the TACs for both species in the WAZ. This resulted in exploitation rates (ERs) that ranged between 8% and 19.3% for *P. montagui,* and 7.3% and 19.8% for *P. borealis* (Appendix 3). Given the range of ERs during this time, the Department indicated that it was reasonable to establish 2019/20 TACs within the range of past ERs. The Boards' decisions in 2019/20 was to increase the TACs for both species to achieve a 15% ER.

The Department has previously communicated its commitment to develop a Precautionary Approach (PA) for both stocks in the WAZ. A Science peer-reviewed process will be undertaken in the spring, 2020 to develop a Limit Reference Point (LRP) for each stock. Resource Management will then work with Science, the Boards' staff and Nunavut and Nunavik industries to establish an Upper Stock Reference point (USR) and Harvest Decision Rules (HDRs) for each stock. All decisions on the PA, other than the establishment of the LRP which is unilaterally established by Science, will go to the Boards for decision. The Department will endeavor to finalize the full PA for both stocks for application to the 2021/22 TAC setting process, which coincides with the next full stock assessment for this area.

WAZ *P. borealis*

- The 2019/20 TAC was 3,163t (15% ER), an increase of 52% from 2018/19.
- The 2019 survey indicates a fishable biomass decline of 3.4%, following a significant (101.1%) increase from the 2018 survey. The stock declined 20% and 54% in the 2017 and 2016 surveys, respectively.

- Maintaining the current TAC in 2020/21 would result in an ER of 15.5%.
- Maintaining the 15% ER in 2020/21 would result in a TAC of 3,057t (a decrease of 106t (3.4%)).

WAZ *P. montagui*

- The 2019/20 TAC was 11,975t (15% ER), increased by 95% from 2018/19.
- The 2019 survey indicates a 19.5% decrease of fishable biomass, following a significant increase (77.7%) in the 2018 survey.
- A rollover of the current TAC would result in an ER of 18.6%.
- A rollover of the 15% ER would result in a TAC of 9,640t, a decrease of 19.5%.

Primary Considerations for the Boards' Decisions for the 2020/21 Fishery

- Science cannot detect trends for either stock at this time. There is no PA for either stock in the WAZ, i.e. the stock statuses are unknown.
- The development of reference points, coupled with observed significant fluctuations in biomass indicators may require TAC reductions in the future.
- A rollover of the current TACs would result in ERs within the previous ranges since 2013 for both species.
- The WAZ has generally been managed in the order of a 10% ER, however ERs for both stocks have been above this level since the 2017/18 fishery.
- A 20% ER for stocks in the Healthy Zone is the accepted maximum rate to maintain Marine Stewardship Council (MSC) certification.

Recommendation for the WAZ:

The Department requests that the Boards take into account the primary considerations as noted above in their decisions for TAC, Total Allowable Take (TAT) and Total Allowable Harvest (TAH) levels in the WAZ. The Department maintains its view from 2019/20 that the Boards could continue to establish the combined TAT and TAH levels at an ER that falls within the range since 2015/16 (7.3% - 19.8% for *P. borealis*, 8% - 19.3% for *P. montagui*) without impacting the sustainability of the stocks. A table is included at Appendix 3 to illustrate possible scenarios and ranges for each species.

Eastern Assessment Zone – For Decision and Recommendation

Background Information

The EAZ falls partially within the NSA, partially within NMR and partially outside of both. While the *P. borealis* stock is in the Healthy Zone of the Department's PA Framework, there is continued uncertainty associated with the *P. montagui* stock, which is currently in the Cautious Zone.

The 2019 science survey results indicate precipitous changes in fishable biomass for both species in the EAZ. In the EAZ, *P. montagui* is the directed fishery and *P. borealis* is taken as a bycatch species in the NU/NK East management units, while the reverse is true in the offshore Davis Strait management units. A separate decision note is currently with the Boards to define *P. borealis* as a directed species within the NU/NK E management units.

EAZ *P. montagui*
Since 2012, the *P. montagui* resource has fluctuated between the Healthy and Cautious Zones of the PA framework, while the fishable biomass has changed precipitously (up and down) every year since 2012. The status of the resource within the PA framework continues to be uncertain.

The TAC for this stock has been 840t since 2014, with the fishable biomass ranging between 3,534t and 24,957t. The current fishable biomass is 8,503t.

- The 2019/20 TAC was 840t and the ER was 4%.
- The fishable biomass decreased by 59.3% in the 2019 survey.
- Maintaining the current TAC (840t) would result in an ER of 9.9%.
- Applying a 15% increase would equal a TAC of 966t, resulting in an ER of 11.4%.
- The Boards, Nunavut and Nunavik industry and the offshore fleet have consistently recommended to maintain the TAC at 840t since 2014.

2020/21 TAC Options for EAZ P. montagui:

Option 1: The Boards could consider recommending a 15% increase to the *P. montagui* TAC, resulting in a TAC of 966t and an ER of 11.4%

Option 2 (Recommended): Maintain the TAC at 840t (9.9% ER)

The Department requests decisions from the Boards on harvest levels within the NSA and NMR.

EAZ – *P. borealis*
The Science update results indicate a significant increase (102.8%) in fishable biomass to 95,138t, following a 19.6% increase in fishable biomass last year. The stock remains in the Healthy Zone of the PA framework. This stock has been certified as sustainable by the Marine Stewardship Council (MSC).

- The 2019/20 TAC was 8,610t and the ER was 18.4%, increased from 7,840t (20% ER) in 2018/19.
- Maintaining the current TAC would result in an ER of 9.1%.
- A 15% increase in TAC would result in a TAC of 9,901t (+1,292t) 10.4% ER.
- A 20% increase (+1,722t) would result in a TAC of 10,332t (10.9% ER).
- A 25% increase (2,153t) would result in a TAC of 10,763t (11.3% ER).
- A 15% ER would result in a TAC of 14,271t, a 65.7% increase.

2020/21 TAC Options for EAZ P. borealis

Option 1: Increase the TAC by 15% (+1,292t) to 9,901t (10.4% ER).
Option 2: Increase the TAC by 20% to 10,332t (10.9% ER), given the significant increase in fishable biomass and the resulting low ER.

The Department requests decisions from the Boards on harvest levels within the NSA and NMR.

Northern Shrimp Advisory Committee

The Northern Shrimp Advisory Committee (NSAC) will meet on March 5, 2020. At this meeting, the Department will consult with the offshore fleet and Nunavut and Nunavik industry on TACs in the EAZ. TACs in the EAZ and WAZ will be discussed with Nunavut and Nunavik industry at the Indigenous Pre-Meeting of NSAC on March 4. Options and any recommendations presented to the Boards in this Briefing Note will be shared at one or both meetings.

Summary of Request

The Department is seeking the following decisions and recommendations from the Boards for the 2020/21 fishery:

1) A decision on TACs, TAH (NSA) and TAT (NMR) levels for both species in the WAZ, which infers the sharing arrangement between Nunavut and Nunavik.
2) The Department requests for the EAZ:
a) A recommendation on TACs for both species
b) A decision on TAH and TAT levels for, and sharing arrangements between, the Nunavut /Nunavik East management units for both species
c) Recommendations on the distribution of TACs between the Nunavut /Nunavik East and offshore Davis Strait management units.

Prepared by: Ecosystems and Fisheries Management, Fisheries and Oceans Canada

Date: February 27, 2020

APPENDIX 1

[Science Response 2020/014: Update of stock status indicators for Northern Shrimp, Pandalus Borealis, and Striped Shrimp, Pandalus montagui, in the Western and Eastern Assessment Zones, January 2020]

Science Response 2020/014

SUMMARY: Update of stock status indicators for Northern Shrimp, *Pandalus Borealis*, and Striped Shrimp, *Pandalus montagui*, in the Western and Eastern Assessment Zones, January 2020

Update of Indicators

Eastern Assessment Zone – *P. borealis*

Fishery
The total catch of *P. borealis* in the EAZ reported in the Canadian Atlantic Quota Report (CAQR), as of 7 January 2020, was 4,687 t, which is 56% of the TAC (Table 1, Figure 2). The 2019/20 fishery runs until 31 March 2020, thus catch records should be considered preliminary for 2019/20.

Biomass
The fishable biomass index increased by 102.8% from 2018 to 2019 and is now at the highest level (95,138 t) since the time series began (Table 2, Figure 3a). The female SSB index showed an increase of 74.0% and is currently at the second highest level (57,143 t) (Table 2, Figure 3b).

Exploitation
The reported exploitation rate (ER) index for 2019/20, as of 7January 2020, was 4.9% (Figure 4a). Since the fishery was still open at the time of the meeting, the reported ER may be higher at the end of the season. Should the entire TAC be taken this fishing season, the potential ER index for 2019/20 would be 8.8% (Figure 4b). The long term average of the potential ER is 15.4%, which is near the base target ER of 15% in the Healthy Zone for the EAZ (DFO, 2018).

Current Outlook
The female SSB index for *P. borealis* in the EAZ is well within the Healthy Zone of the PA Framework (Figure 5).

Eastern Assessment Zone – *P. montagui*

Fishery
The total catch of *P. montagui* in the EAZ, as of 7 January 2020, was about 113 t (Table 1, Figure 6) and has been declining since 2001. The 2019/20 fishery runs until 31 March 2020, thus catch records are preliminary for 2019/20.

Biomass
Biomass indices for *P. montagui* in the EAZ have oscillated around the long term mean, with the exception of a particularly high biomass reported in 2012 (Figure 7). Both the fishable biomass and the female SSB indices decreased in 2019 to 8,503 t and 4,415 t, respectively, and were below the long term mean (Table 3, Figure 7a,b).

Exploitation
The reported ER index for 2019/20 was very low, 1.0%, due to low catches reported in the CAQR as of 7 January 2020 (Figure 8a). The potential ER index for this stock would be 9.9% if the entire TAC is taken (Figure 8b).

Current Outlook
The female SSB index in the EAZ has declined in 2019 placing the stock in the Cautious Zone (Figure 9). Given the wide fluctuations in biomass indices for *P. montagui* observed in the past (e.g., between years 2011, 2012 and 2013, and also last year) the status of this resource is considered uncertain.

Western Assessment Zone – *P. borealis*

While all survey years are presented, only the last six years of survey data can be considered in the WAZ assessment because of the change in the surveys, resulting in the start of a new time series.

Fishery
As of 7 January 2020, the CAQR records show that about 620 t, which equals to 19.6% of the TAC, have been taken (Table 1, Figure 10).

Biomass
The fishable biomass and female SSB indices decreased from 2018 to 2019 by 3.4% and 8.1%, respectively (Table 4, Figure 11a,b). The fishable biomass index in 2019 was 20,378 t, which was in the close proximity of the time series mean. The female SSB index was 11,845 t, which was above the time series mean.

Exploitation
The reported ER index for 2019/20 was relatively low, 3.4%, due to low catches reported in the CAQR as of 7 January 2020 (Figure 12a). As a consequence of the decline in the fishable biomass in 2019, the potential ER index has increased to about 15.5% (Figure 12b).

Current Outlook
Currently, there is no PA framework for *P. borealis* in the WAZ. The establishment of reference points for this resource is planned for 2020, to be implemented in 2021 stock assessment. Historical records show that the TAC for this stock has rarely been fully taken.

Western Assessment Zone – *P. montagui*

While all survey years are presented, only the last six years of survey data can be considered in the WAZ assessment because of the change in the surveys, resulting in the start of a new time series.

Fishery
The total catch of *P. montagui* was 6,884 t, which is 57.5% of the TAC as per 7 January 2020 CAQR (Table 1, Figure 13). The 2019/20 fishery runs until 31 March 2020 thus catch records should be considered preliminary for the 2019/20 season.

Biomass
The fishable biomass index decreased by 19.5% from 2018 to 2019, with 64,268 t observed in 2019 (Table 5, Figure 14a), which was above the time series mean. A more pronounced biomass decrease (37.2%) was observed for the female SSB index, with 29,079 t estimated in 2019, which was in the close proximity of the time series mean (Figure 14b).

Exploitation
Along with decreasing fishable biomass, the reported ER index in 2019/20 increased to 11.3% (Figure 15a). If the entire TAC was taken the potential ER index would be 18.6% (Figure15b).

Current Outlook
Currently, there is no PA framework for *P. montagui* in the WAZ. The establishment of reference points for this resource is planned for 2020, to be implemented in 2021 stock assessment. Historical records show that the TAC for this stock has often been nearly fully taken. With the recently increased TAC it is unlikely that it will be fully taken in 2019.

Conclusions

Eastern Assessment Zone (EAZ)

Pandalus borealis

- Currently, the *Pandalus borealis* resource is in the Healthy Zone of the Precautionary Approach Framework.
- In 2019, the fishable biomass and female spawning stock biomass indices recorded relatively large increases; the fishable biomass is at the highest level while the female spawning stock biomass is at the second highest level since the time series began.
- The potential Exploitation Rate (ER) index for 2019/20 is 8.8%. That is below both the long term mean of the potential ER (15.4%) and the base target ER of 15% in the Healthy Zone for the EAZ.

Pandalus montagui

- *Pandalus montagui* biomass indices have fluctuated widely in the past, adding to the uncertainty about the status of the stock in the EAZ.
- Following this year's decrease in the biomass, the *Pandalus montagui* resource is currently in the Cautious Zone of the Precautionary Approach Framework.
- The potential exploitation rate index if the entire TAC is taken in 2019/20 would be 9.9%.

Western Assessment Zone (WAZ)

Pandalus borealis

- The status of the stock is currently uncertain, as there is no Precautionary Approach Framework for *Pandalus borealis* in the WAZ.
- Both the fishable biomass and female spawning stock biomass indices declined slightly from 2018 to 2019.
- The reported exploitation rate index for 2019/20 is 3.4%. The current TAC equates to a potential exploitation rate index of 15.5%.

Pandalus montagui

- The status of the stock is currently uncertain, as there is no Precautionary Approach Framework for *Pandalus montagui* in the WAZ.
- Both the fishable biomass and female spawning stock biomass indices decreased from 2018 to 2019.
- The reported exploitation rate index for 2019/20 is 11.3%; the potential exploitation rate index for 2019/20 is 18.6%.

APPENDIX 3

Past Total Allowable Catches, Fishable Biomass and Exploitation Rates in the Western Assessment Zone by Fishing Year Since the New Survey

WAZ		2019/20	2018/19	2017/18	2016/17	2015/16
Montagui	FB (t)	79,834	44,915	31,724	55,194	77,078
	TAC (t)	11,975	6,138	6,138	6,138	6,138
	ER	15%	13.7%	19.3%	11.1%	8%
Borealis	FB (t)	21,088	10,487	13,116	28,532	21,713
	TAC (t)	3,163	2,080	2,080	2,080	2,080
	ER	15%	19.8%	15.9%	7.3%	9.6%

FB – Fishable Biomass
TAC – Total Allowable Catch
ER – Exploitation Rate

Possible Scenarios / Ranges for 2020/21

	Montagui				Borealis			
	TAC	Quota Change	Change in TAC	ER	TAC	Quota Change	Increase in TAC	ER
Rollover TAC	**11,975t**	**0**	**0**	18.6%	**3,168t**	**0**	**0**	15.5%
Rollover ER	9,640t	-2,335t	-19.5%	15%	3,057t	-106t	-3.4%	15%
Max ER*	12,404t	+429t	+3.6%	19.3%	4,035t	+872t	+27.6%	19.8%
Min ER*	**5,141t**	-6,834t	-57%	8%	**1,488t**	-1,675t	-53%	7.3%

*Based on past ranges

March 27th 2015

The Honourable Gail Shea
Minister of Fisheries and Oceans
15th Floor, Centennial Towers
200 Kent Street
Ottawa, Ontario
K1A 0E6

Dear Minister Shea:

Re: Nunavut Wildlife Management Board and Nunavik Marine Region Wildlife Board decisions and recommendations concerning Northern and Striped shrimp total allowable catches and quotas in the Eastern and Western Assessment Zones

1. NWMB AND NMRWB DECISIONS AND RECOMMENDATIONS

The Nunavut Wildlife Management Board (NWMB) and the Nunavik Marine Region Wildlife Board (NMRWB) recently held a joint written public hearing to consider harvest limits for Northern and Striped shrimp in the Western Assessment Zone and methods for determining harvest limits in the Eastern Assessment Zone. The Board initiated this process prior to the availability of scientific information on the available biomass for either species to avoid the delays that were encountered for the 2014-15 fishing season.

During their respective decision-making meetings, the Boards reviewed all of the relevant written arguments and evidence provided through the written public hearing[1]. Having made complementary decisions and recommendations, the NWMB and NMRWB are providing this joint letter. The Boards' decisions and recommendations are set out immediately below.

[1] All of the relevant documents and written submissions received and considered by the Boards are publicly available for download from the NWMB's website (www.nwmb.com).

1.1 Quota and Total Allowable Take decisions

RESOLVED that, pursuant to Section 5.6.4 of the Nunavut Land Claims Agreement, the NWMB approve the following shrimp quota levels in the Nunavut West and Nunavut East Management Units for a two year term (2015-16 to 2016-17 inclusive):

1. *For Pandalus montagui shrimp:*
    a. *A quota of 3,069 tonnes in the Nunavut West Management Unit within the Nunavut Settlement Area; and*
    b. *A quota of 301 tonnes in the Nunavut East Management Unit within the Nunavut Settlement Area; and*
2. *For Pandalus borealis shrimp:*
    a. *A quota of 1,040 tonnes in the Nunavut West Management Unit within the Nunavut Settlement Area; and*
    b. *A by-catch quota of 183 tonnes in the Nunavut West Management Unit within the Nunavut Settlement Area.*

RESOLVED that, pursuant to Section 5.2.3 of the Nunavik Inuit Land Claims Agreement, the NMRWB approve the following Total Allowable Take for shrimp in the Nunavik West and Nunavik East Management Units for a two year term (2015-16 to 2016-17 inclusive):

1. *For Pandalus montagui shrimp:*
    a. *A Total Allowable Take of 3,069 tonnes in the Nunavik West Management Unit within the Nunavik Marine Region; and*
    b. *A Total Allowable Take of 129 tonnes in the Nunavik East Management Unit within the Nunavik Marine region; and*
2. *For Pandalus borealis shrimp:*
    a. *A Total Allowable Take of 1,040 tonnes in the Nunavik West Management Unit within the Nunavik Marine Region; and*
    b. *A by-catch Total Allowable Take of 46 tonnes in the Nunavik East Management Unit within the Nunavik Marine Region.*

1.2 Total Allowable Catch Recommendations

RESOLVED that, pursuant to Section 15.3.4 and 15.3.7 of the Nunavut Land Claims Agreement and Section 5.4.4 of the Nunavik Inuit Land Claims Agreement, the NWMB and the NMRWB recommend the following Total Allowable Catch levels in the Western Assessment Zone and Eastern Assessment Zone for a two year term (2015-16 to 2016-17 inclusive):

1. *For Pandalus montagui shrimp:*
    a. *A Total Allowable Catch of 6,138 tonnes in the Western Assessment Zone; and*
    b. *A Total Allowable Catch of 840 tonnes in the Eastern Assessment Zone; and*
2. *For Pandalus borealis shrimp:*

a. A Total Allowable Catch of 2,080 tonnes in the Western Assessment Zone; and

b. A Total Allowable Catch of 8,250 tonnes in the Eastern Assessment Zone, subject to the following conditions:

1. *That the resulting exploitation rate, based on the most recent science advice, does not exceed 20% when the biomass index for either species is in the Healthy Zone of the Precautionary Approach, 15% in the Cautious Zone, or 10% in the Critical Zone.*

FURTHER RESOLVED that, pursuant to Section 15.3.4 and 15.3.7 of the Nunavut Land Claims Agreement and Section 5.4.4 of the Nunavik Inuit Land Claims Agreement, the NWMB and the NMRWB recommend defining a "precipitous change in biomass", a change that would necessitate further recommendations from the Board, as any change greater than 25%.

2. HEARING SUBMISSIONS

The Boards received two submissions, from Makivik Corporation and the Government of Nunavut Department of Environment. Both submissions supported maintaining the Total Allowable Catch for both species in the Western Assessment Zone at 2014-15 levels. The Government of Nunavut Department of Environment also supported maintaining the Total Allowable Catch for both species in the Eastern Assessment Zone, while Makivik Corporation suggested consideration for an increase in the Total Allowable Catch for Northern shrimp and supported maintain the Total Allowable Catch for Striped shrimp in the Eastern Assessment Zone.

3. NWMB and NMRWB CONSIDERATIONS

In reaching the above decisions and recommendations, the Boards carefully considered the submissions from Makivik Corporation and the Government of Nunavut Department of Environment, as well as input from the Northern Shrimp Advisory Committee, including a suggestion from the Northern Coalition and Makivik Corporation that applying a 10% exploitation rate for Striped shrimp in the Western Assessment Zone would be beneficial to fishers in Nunavut and Nunavik. The Boards also considered the most recent science information presented by Fisheries and Oceans Canada at the Northern Shrimp Advisory Committee meeting in Montréal.

The Boards feel that maintaining the Total Allowable Catch levels for both species in the Eastern Assessment Zone, and for Northern shrimp in the Western Assessment Zone, addresses recommendations provided by hearing parties through the Boards' written hearing process. In addition, applying a cautious 10% exploitation rate to a two-year average of the most recent fishable biomass estimates for Striped shrimp in the Western Assessment Zone provides for a moderate increase in the Total Allowable Catch while

recognizing that no information on the health of this stock is currently available to support a higher exploitation rate.

The decisions and recommendations made by the Boards ensure sustainable harvest of Northern and Striped shrimp in the Eastern and Western Assessment Zones, making use of Fisheries and Oceans Canada's most recent scientific information, while incorporating input from industry stakeholders and co-management partners. The Boards also felt it appropriate to make these decisions and recommendations for a two-year term (2015-16 to 2016-17 inclusive) as no new science information on the health of the stocks will be available for the Western Assessment Zone during that time, and decisions and recommendations made for the Eastern Assessment Zone are conditional on the health of the stocks.

4. JUSTIFICATION FOR THE BOARDS' DECISIONS AND RECOMMENDATIONS

The Boards' decisions and recommendations:

1. Are justified pursuant to Section 5.3.3(a) of the *Nunavut Land Claims Agreement* and Section 5.5.3(a) of the *Nunavik Inuit Land Claims Agreement* – the restrictions limit Inuit harvesting of shrimp in the Nunavut Settlement Area and the Nunavik Marine Region only to the extent necessary to effect the valid conservation purposes of:
    a. Maintaining vital healthy shrimp populations capable of sustaining harvesting needs as defined in *Nunavut Land Claims Agreement* Article 5 (Section 5.1.5(c)) and *Nunavik Inuit Land Claims Agreement* Article 5 (Section 5.1.5(b)); and
    b. Maintaining the natural balance of ecological systems within the Nunavut Settlement Area and the Nunavik Marine Region (*Nunavut Land Claims Agreement* and *Nunavik Inuit Land Claims Agreement* Section 5.1.5(a));

2. Satisfy the requirements of *Nunavut Land Claims Agreement* Section 5.3.4 and *Nunavik Inuit Land Claims Agreement* Section 5.5.4.1 for (i) the NWMB and the Minister to take account of shrimp harvested outside the Nunavut Settlement Area, and (ii) the NMRWB and the Minister to take account of shrimp harvested outside the Nunavik Marine Region, by persons resident elsewhere;

3. Ensure that shrimp harvesting inside both the Nunavut Settlement Area and the Nunavik Marine Region remains within sustainable catch levels, does not raise conservation concerns, and is consistent with the precautionary fisheries management approach for these fisheries.

5. CONCLUSION

Madame Minister, the Boards hereby forward their decisions and recommendations to you, for your consideration pursuant to the relevant terms of the *Nunavut Land Claims Agreement* and the *Nunavik Inuit Land Claims Agreement*. Please be assured that the NWMB and the NMRWB will continue to work collaboratively with the Department and other co-management partners in ensuring that the management of shrimp in the Nunavut Settlement Area and the Nunavik Marine Region fully aligns with the terms of *Nunavut Land Claims Agreement* Article 5 and *Nunavik Inuit Land Claims Agreement* Article 5.

If you or your officials have any questions with respect to the contents of this letter, please do not hesitate to contact the NWMB and the NMRWB at your convenience.

Yours sincerely,

Ben Kovic
Chairperson
Nunavut Wildlife Management Board

Josepi Padlayat
Chairperson
Nunavik Marine Region Wildlife Board

cc. Leigh Edgar, Senior Resource Management Officer, Fisheries and Oceans Canada

Fisheries and Oceans Canada | Pêches et Océans Canada
Ecosystems and Oceans Science | Sciences des écosystèmes et des océans

Canadian Science Advisory Secretariat
Central and Arctic Region **Science Response 2020/014**

UPDATE OF STOCK STATUS INDICATORS FOR NORTHERN SHRIMP, *PANDALUS BOREALIS,* AND STRIPED SHRIMP, *PANDALUS MONTAGUI,* IN THE WESTERN AND EASTERN ASSESSMENT ZONES, JANUARY 2020

Context

Fisheries and Oceans Canada (DFO) Resource Management has requested an update on the stock status of the two species of shrimp, Northern Shrimp (*Pandalus borealis*) and Striped Shrimp (*P. montagui*), in the Western Assessment Zone (WAZ) and Eastern Assessment Zone (EAZ). The last Zonal Peer Review (ZPR) for the WAZ and EAZ, which fully assessed the stock status, took place in February 2019 (DFO 2019). The full assessments and the updates follow the framework developed in 2007 for Northern Shrimp off Labrador and the northeastern coast of Newfoundland (DFO 2007a). The basis of this update is a series of previously reported fishery-independent surveys and fishery data, and new survey and catch data from the 2019/20 fishing season.

This Science Response Report results from the Science Response Process (SRP) of January 28, 2020 for the Northern and Striped Shrimp Update for the Eastern and Western Assessment Zones, and Striped Shrimp Update for Shrimp Fishing Area (SFA) 4.

Background

The EAZ and WAZ (Figure 1) were adopted in 2011 as the basis for assessing the status of shrimp in SFA 2 and SFA 3 (DFO 2011). The combined boundary of the EAZ and WAZ is equivalent to the combined areas of SFAs 2 and 3 (subsequently redefined as SFAs Davis Strait, Nunavut and Nunavik) and their corresponding Management Units (Figure 1) implemented in the 2013/14 fishing season.

Two exploitation rates are presented for each assessment zone and species because the total allowable catch (TAC) is not generally taken. Exploitation rate refers to the realized rate based on reported catch, while the potential rate is calculated as though the TAC had been fully taken.

In the EAZ, the first two years of survey data (2006–2007) are not considered comparable with the rest of the time series because of poor trawl performance and incomplete sampling coverage in the Resolution Island survey area. These years are not considered when assessing trends in the indices from the EAZ.

In 2014, the Central and Arctic Region reorganized the surveys conducted within the region. For shrimp, DFO stopped conducting the WAZ survey; since then, the area has been surveyed during the joint DFO-Northern Shrimp Research Foundation survey so that the WAZ, EAZ and SFA 4 (NAFO 2G) survey areas are all sampled with the same ship, gear and at the same time of year. While this resulted in restarting the time series in the WAZ, the future benefits to the assessment of shrimp outweighs this shortcoming. It should be noted that while all historical data are presented in this report, the two surveys are not directly comparable, as the surveys for the two zones were conducted with different ships, gear and at a different time of the year.

Resource status in the EAZ was evaluated within a Precautionary Approach (PA) framework (DFO 2006). Reference points (RP) were based on the geometric mean of female spawning stock biomass (SSB) during a seemingly productive time period. The Limit Reference Point (LRP) is 30% of the mean and the Upper Stock Reference (USR) is 80% of the mean. RPs for SFA 2 were developed based on estimates from available surveys (2006-2008) at that time (DFO 2009) and implemented in the Integrated Fisheries Management Plan (IFMP; DFO 2007b). These RPs were subsequently used in the EAZ when stock areas changed. Currently, there are no RPs for the WAZ.

Buffered random sampling was applied to allocation of sampling stations within the depth strata (Kingsley et al. 2004).

Upper and lower confidence intervals used in biomass and exploitation rate calculations, were estimated by resampling statistics (bootstrapping; Bruce et al. 2000).

Analysis and Response

Update of Indicators

Eastern Assessment Zone – *P. borealis*

Fishery

The total catch of *P. borealis* in the EAZ reported in the Canadian Atlantic Quota Report (CAQR), as of 7 January 2020, was 4,687 t, which is 56% of the TAC (Table 1, Figure 2). The 2019/20 fishery runs until 31 March 2020, thus catch records should be considered preliminary for 2019/20.

Biomass

The fishable biomass index increased by 102.8% from 2018 to 2019 and is now at the highest level (95,138 t) since the time series began (Table 2, Figure 3a). The female SSB index showed an increase of 74.0% and is currently at the second highest level (57,143 t) (Table 2, Figure 3b).

Exploitation

The reported exploitation rate (ER) index for 2019/20, as of 7January 2020, was 4.9% (Figure 4a). Since the fishery was still open at the time of the meeting, the reported ER may be higher at the end of the season. Should the entire TAC be taken this fishing season, the potential ER index for 2019/20 would be 8.8% (Figure 4b). The long term average of the potential ER is 15.4%, which is near the base target ER of 15% in the Healthy Zone for the EAZ (DFO 2018).

Current Outlook

The female SSB index for *P. borealis* in the EAZ is well within the Healthy Zone of the PA Framework (Figure 5).

Eastern Assessment Zone – *P. montagui*

Fishery

The total catch of *P. montagui* in the EAZ, as of 7 January 2020, was about 113 t (Table 1, Figure 6) and has been declining since 2001. The 2019/20 fishery runs until 31 March 2020, thus catch records are preliminary for 2019/20.

Biomass

Biomass indices for *P. montagui* in the EAZ have oscillated around the long term mean, with the exception of a particularly high biomass reported in 2012 (Figure 7). Both the fishable biomass and the female SSB indices decreased in 2019 to 8,503 t and 4,415 t, respectively, and were below the long term mean (Table 3, Figure 7a,b).

Exploitation

The reported ER index for 2019/20 was very low, 1.0%, due to low catches reported in the CAQR as of 7 January 2020 (Figure 8a). The potential ER index for this stock would be 9.9% if the entire TAC is taken (Figure 8b).

Current Outlook

The female SSB index in the EAZ has declined in 2019 placing the stock in the Cautious Zone (Figure 9). Given the wide fluctuations in biomass indices for *P. montagui* observed in the past (e.g., between years 2011, 2012 and 2013, and also last year) the status of this resource is considered uncertain.

Western Assessment Zone – *P. borealis*

While all survey years are presented, only the last six years of survey data can be considered in the WAZ assessment because of the change in the surveys, resulting in the start of a new time series.

Fishery

As of 7 January 2020, the CAQR records show that about 620 t, which equals to 19.6% of the TAC, have been taken (Table 1, Figure 10).

Biomass

The fishable biomass and female SSB indices decreased from 2018 to 2019 by 3.4% and 8.1%, respectively (Table 4, Figure 11a,b). The fishable biomass index in 2019 was 20,378 t, which was in the close proximity of the time series mean. The female SSB index was 11,845 t, which was above the time series mean.

Exploitation

The reported ER index for 2019/20 was relatively low, 3.4%, due to low catches reported in the CAQR as of 7 January 2020 (Figure 12a). As a consequence of the decline in the fishable biomass in 2019, the potential ER index has increased to about 15.5% (Figure 12b).

Current Outlook

Currently, there is no PA framework for *P. borealis* in the WAZ. The establishment of reference points for this resource is planned for 2020, to be implemented in 2021 stock assessment. Historical records show that the TAC for this stock has rarely been fully taken.

Western Assessment Zone – *P. montagui*

While all survey years are presented, only the last six years of survey data can be considered in the WAZ assessment because of the change in the surveys, resulting in the start of a new time series.

Fishery

The total catch of *P. montagui* was 6,884 t, which is 57.5% of the TAC as per 7 January 2020 CAQR (Table 1, Figure 13). The 2019/20 fishery runs until 31 March 2020 thus catch records should be considered preliminary for the 2019/20 season.

Biomass

The fishable biomass index decreased by 19.5%[1] from 2018 to 2019, with 64,268 t observed in 2019 (Table 5, Figure 14a), which was above the time series mean. A more pronounced biomass decrease (37.2%) was observed for the female SSB index, with 29,079 t estimated in 2019, which was in the close proximity of the time series mean (Figure 14b).

Exploitation

Along with decreasing fishable biomass, the reported ER index in 2019/20 increased to 11.3% (Figure 15a). If the entire TAC was taken the potential ER index would be 18.6% (Figure15b).

Current Outlook

Currently, there is no PA framework for *P. montagui* in the WAZ. The establishment of reference points for this resource is planned for 2020, to be implemented in 2021 stock assessment. Historical records show that the TAC for this stock has often been nearly fully taken. With the recently increased TAC it is unlikely that it will be fully taken in 2019.

Conclusions

Eastern Assessment Zone (EAZ)

Pandalus borealis

- Currently, the *Pandalus borealis* resource is in the Healthy Zone of the Precautionary Approach Framework.
- In 2019, the fishable biomass and female spawning stock biomass indices recorded relatively large increases; the fishable biomass is at the highest level while the female spawning stock biomass is at the second highest level since the time series began.
- The potential Exploitation Rate (ER) index for 2019/20 is 8.8%. That is below both the long term mean of the potential ER (15.4%) and the base target ER of 15% in the Healthy Zone for the EAZ.

Pandalus montagui

- *Pandalus montagui* biomass indices have fluctuated widely in the past, adding to the uncertainty about the status of the stock in the EAZ.
- Following this year's decrease in the biomass, the *Pandalus montagui* resource is currently in the Cautious Zone of the Precautionary Approach Framework.

[1] Erratum February 2020 – 17.5% now reads 19.5%

- The potential exploitation rate index if the entire TAC is taken in 2019/20 would be 9.9%.

Western Assessment Zone (WAZ)

Pandalus borealis

- The status of the stock is currently uncertain, as there is no Precautionary Approach Framework for *Pandalus borealis* in the WAZ.
- Both the fishable biomass and female spawning stock biomass indices declined slightly from 2018 to 2019.
- The reported exploitation rate index for 2019/20 is 3.4%. The current TAC equates to a potential exploitation rate index of 15.5%.

Pandalus montagui

- The status of the stock is currently uncertain, as there is no Precautionary Approach Framework for *Pandalus montagui* in the WAZ.
- Both the fishable biomass and female spawning stock biomass indices decreased from 2018 to 2019.
- The reported exploitation rate index for 2019/20 is 11.3%; the potential exploitation rate index for 2019/20 is 18.6%.

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Approved by

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(Approved January 30, 2020)

(Erratum: February 19, 2020)

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Appendix 1. Tables

Table 1. Nominal reported catches (t) for the Eastern Assessment Zone and Western Assessment Zone for Pandalus borealis *and* P. montagui*.*

Year	Eastern Assessment Zone		Western Assessment Zone	
	P. borealis	***P. montagui***	***P. borealis***	***P. montagui***
2019*	4687	113	620	6884
2018	6198	234	1307	5531
2017	6488	233	918	5609
2016	6667	358	643	5660
2015	4816	59	353	4616
2014	4972	401	847	5836
2013	6793	1075	973	4775
2012	5555	1173	13	1105
2011	7687	135	0	857
2010	6908	483	57	345
2009	5159	564	0	0
2008	5184	808	0	0
2007	6359	1832	0	0
2006	6028	925	0	0
2005	6387	1427	-	0
2004	5842	2301	-	0
2003	5617	1217	-	0
2002	5695	3081	-	0
2001	6275	3867	-	0
2000	5718	4238	-	0
1999	5465	3780	-	0
1998	5372	3360	-	0
1997	5870	3050	-	0
1996	33467	3058	-	0
1995	2489	3192	-	0
1994	456	154	-	0
1993	68	0	-	0
1992	1210	1	-	0
1991	1150	623	-	0
1990	1634	174	-	5
1989	3133	1265	-	10
1988	2873	603	-	13
1987	0	0	-	0

Table 1. continued

Year	Eastern Assessment Zone		Western Assessment Zone	
	P. borealis	***P. montagui***	***P. borealis***	***P. montagui***
1986	50	483	-	0
1985	0	0	-	0
1984	0	0	-	0
1983	21	0	-	0
1982	46	0	-	0
1981	1	9	-	2
1980	487	103	-	3
1979	1	58	-	25

** Catch based on CAQR as of 7 January 2020. Since the fishery is still open the catch is preliminary for 2019.*

Table 2. Fishable and female spawning stock biomass estimates for Pandalus borealis *in the Eastern Assessment Zone for the 2006-2019 surveys. LCL and UCL are the lower and upper 95% confidence limits. Year over year (YOY) change indicates the relative change in comparison to the previous year.*

Year	Biomass	YOY change (%)	Weight (tonne)		
			Mean	LCL	UCL
2019	Fishable	102.8	95138	48333	146788
2018	Fishable	19.6	46900	36344	58928
2017	Fishable	-40.2	39198	30225	48907
2016	Fishable	-17.0	65570	42137	93569
2015	Fishable	56.5	78984	50852	106962
2014	Fishable	1.5	50458	38914	62340
2013	Fishable	-17.9	49697	38427	60631
2012	Fishable	-22.9	60534	43074	79960
2011	Fishable	10.5	78530	23900	135037
2010	Fishable	-9.8	71065	40234	108703
2009	Fishable	54.3	78755	48850	110115
2008	Fishable	17.9	51053	37117	66708
2007	Fishable	32.0	43306	31015	58346
2006	Fishable	-	32816	21969	44152
2019	Female SS	74.0	57143	28420	87654
2018	Female SS	32.4	32842	23548	44126
2017	Female SS	-28.8	24800	19888	30252
2016	Female SS	-42.8	34827	24220	46979
2015	Female SS	78.7	60869	33379	88386
2014	Female SS	6.3	34069	25157	43000
2013	Female SS	-22.2	32049	26762	37607
2012	Female SS	-13.8	41190	29498	54383
2011	Female SS	9.1	47807	13470	82926
2010	Female SS	12.7	43800	19025	79665
2009	Female SS	40.5	38856	23122	56820
2008	Female SS	-0.2	27653	22507	39368
2007	Female SS	64.8	27698	19249	39007
2006	Female SS	-	16805	10523	23026

Table 3. Fishable and female spawning stock biomass estimates for Pandalus montagui *in the Eastern Assessment Zone for the 2006-2019 surveys. LCL and UCL are the lower and upper 95% confidence limits. Year over year (YOY) change indicates the relative change in comparison to the previous year.*

Year	Biomass	YOY change (%)	Weight (tonne)		
			Mean	LCL	UCL
2019	Fishable	-59.3	8503	3930	13948
2018	Fishable	-16.3	20895	12617	29450
2017	Fishable	81.0	24957	17246	32311
2016	Fishable	124.7	13792	6452	21126
2015	Fishable	-63.0	6137	3445	8629
2014	Fishable	371.0	16600	11203	22084
2013	Fishable	-87.8	3524	1738	6208
2012	Fishable	272.7	28845	8582	48946
2011	Fishable	4.3	7740	2871	14285
2010	Fishable	-52.7	7423	5714	9290
2009	Fishable	6.9	15679	6190	29774
2008	Fishable	203.8	14667	7287	21973
2007	Fishable	81.0	4828	3389	6673
2006	Fishable	-	2667	210	5122
2019	Female SS	-68.0	4415	1742	7275
2018	Female SS	-19.8	13806	9362	20052
2017	Female SS	64.4	16537	9866	23250
2016	Female SS	159.4	10056	2986	17280
2015	Female SS	-69.5	3877	2085	5452
2014	Female SS	357.1	12696	8834	16622
2013	Female SS	-88.2	2778	1301	4949
2012	Female SS	653.8	23552	6218	40985
2011	Female SS	-46.3	3124	1599	4721
2010	Female SS	-33.7	5819	4509	7136
2009	Female SS	-17.7	8776	4205	13955
2008	Female SS	440.9	10660	4269	17047
2007	Female SS	-7.7	1971	903	3490
2006	Female SS	-	2134	50	4219

Table 4. Fishable and female spawning stock biomass estimates for Pandalus borealis *in the Western Assessment Zone. Year over year (YOY) change indicates the relative change in comparison to the previous year. Note 2014 represents a start of the new time series and values are not directly comparable to previous years. LCL and UCL are the lower and upper 95% confidence limits.*

Year	Biomass	YOY change (%)	Weight (tonnes)		
			Mean	LCL	UCL
2019	Fishable	-3.4	20378	12852	29080
2018	Fishable	101.0	21088	12627	33452
2017	Fishable	-20.0	10487	5073	17185
2016	Fishable	-54.0	13116	7867	18868
2015	Fishable	31.4	28532	18531	39501
2014	Fishable	-1.3	21713	14353	31046
2013	Fishable	11.7	21999	15906	28518
2011	Fishable	26.7	19692	12468	27961
2009	Fishable	6.4	15544	7613	25529
2007	Fishable	-	14615	4907	28872
2019	Female SS	-8.1	11845	7529	16299
2018	Female SS	147.0	12884	7121	19203
2017	Female SS	-34.9	5216	3045	7676
2016	Female SS	-45.5	8015	4780	11590
2015	Female SS	19.5	14710	9270	20379
2014	Female SS	25.8	12309	8792	16398
2013	Female SS	53.5	9785	7106	12829
2011	Female SS	66.1	6377	4182	8909
2009	Female SS	18.8	3840	1154	7479
2007	Female SS	-	3231	1687	5361

Table 5. Fishable and female spawning stock biomass estimates for Pandalus montagui *in the Western Assessment Zone. Year over year (YOY) change indicates the relative change in comparison to the previous year. Note 2014 represents a start of the new time series and values are not directly comparable to previous years. LCL and UCL are the lower and upper 95% confidence limits.*

Year	Biomass	YOY change (%)	Weight (tonnes)		
			Mean	LCL	UCL
2019	Fishable	-19.5	64268	29711	112173
2018	Fishable	77.7	79835	34057	132111
2017	Fishable	41.6	44915	29179	63381
2016	Fishable	-42.5	31724	19507	44908
2015	Fishable	-28.4	55194	35769	76429
2014	Fishable	68.9	77078	44854	111562
2013	Fishable	-36.2	45647	32899	59438
2011	Fishable	53.3	71558	40264	108612
2009	Fishable	-13.6	46673	25756	73342
2007	Fishable	-	54044	17007	99461
2019	Female SS	-39.2	29079	14930	45581
2018	Female SS	57.8	47834	19926	81534
2017	Female SS	62.1	30305	18830	43434
2016	Female SS	-31.6	18691	11090	27334
2015	Female SS	-29.7	27324	18282	37041
2014	Female SS	44.2	38875	23553	55849
2013	Female SS	-17.2	26955	18616	35736
2011	Female SS	80.8	32549	20296	46119
2009	Female SS	-6.6	17999	9775	28160
2007	Female SS	-	19277	5668	36606

Appendix 2. Figures

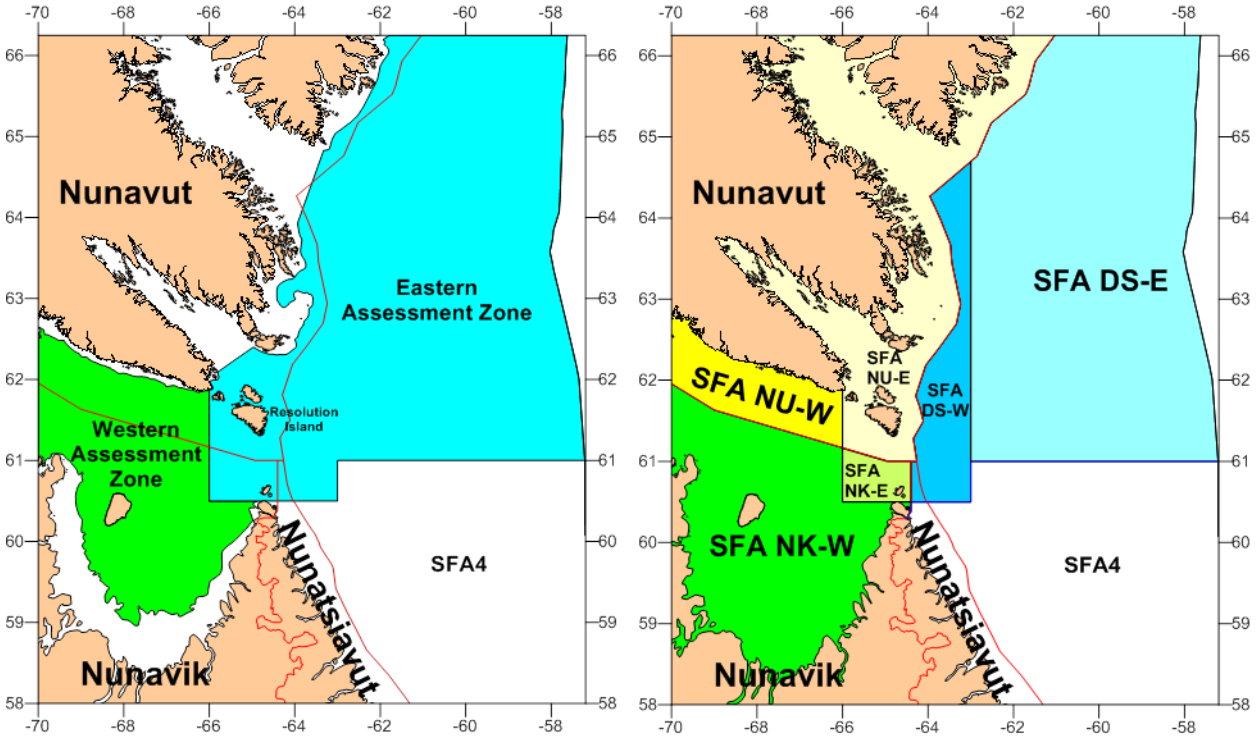


Figure 1. Location of the Western and Eastern assessment zones (left panel) and corresponding Shrimp Fishing Area (SFA) management units (right panel). Boundaries of the Nunavut (NU), Nunavik (NK) and Nunatsiavut Land Claims Areas are identified with red lines. Abbreviations for Davis Strait (DS), East (E) and West (W) are used.

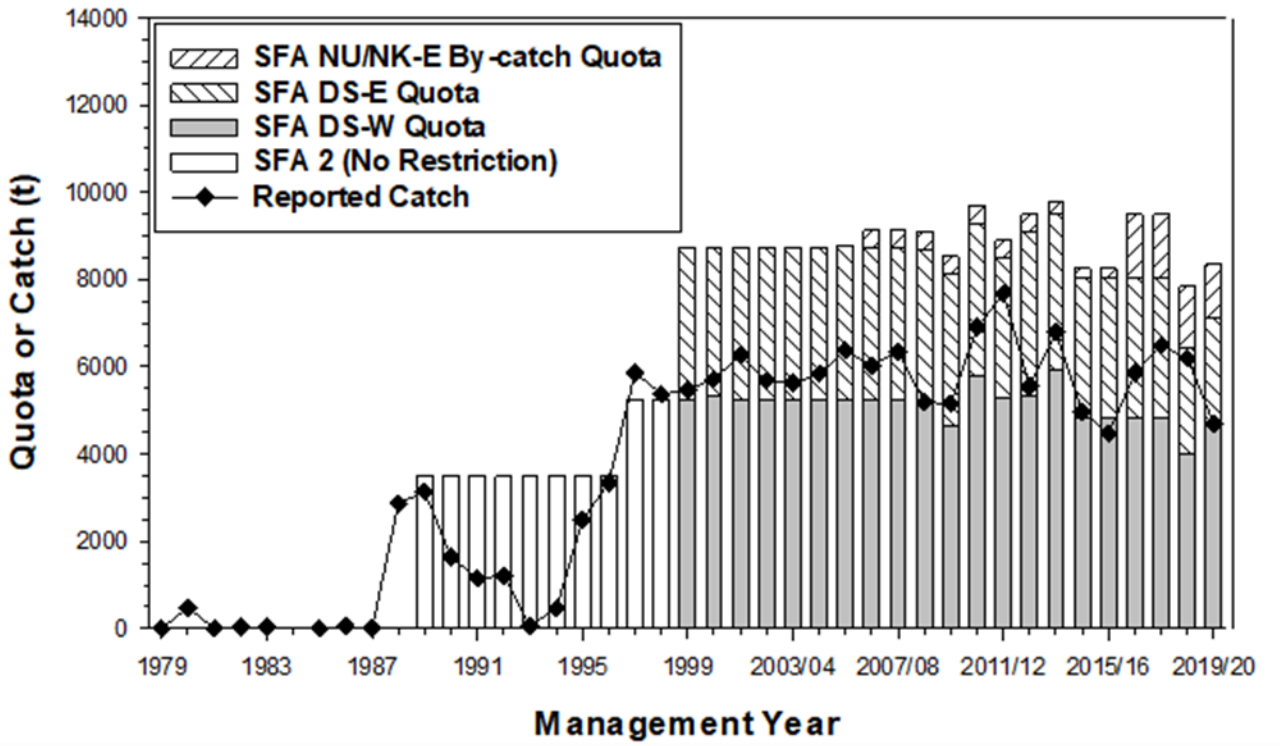


Figure 2. Eastern Assessment Zone Pandalus borealis TAC and catch recorded in the CAQR. Catch based on CAQR as of January 7, 2020; since fishery is still open the catch is not complete for 2019/20. Quota for 1999-2012/13 renamed to correspond to new management areas.

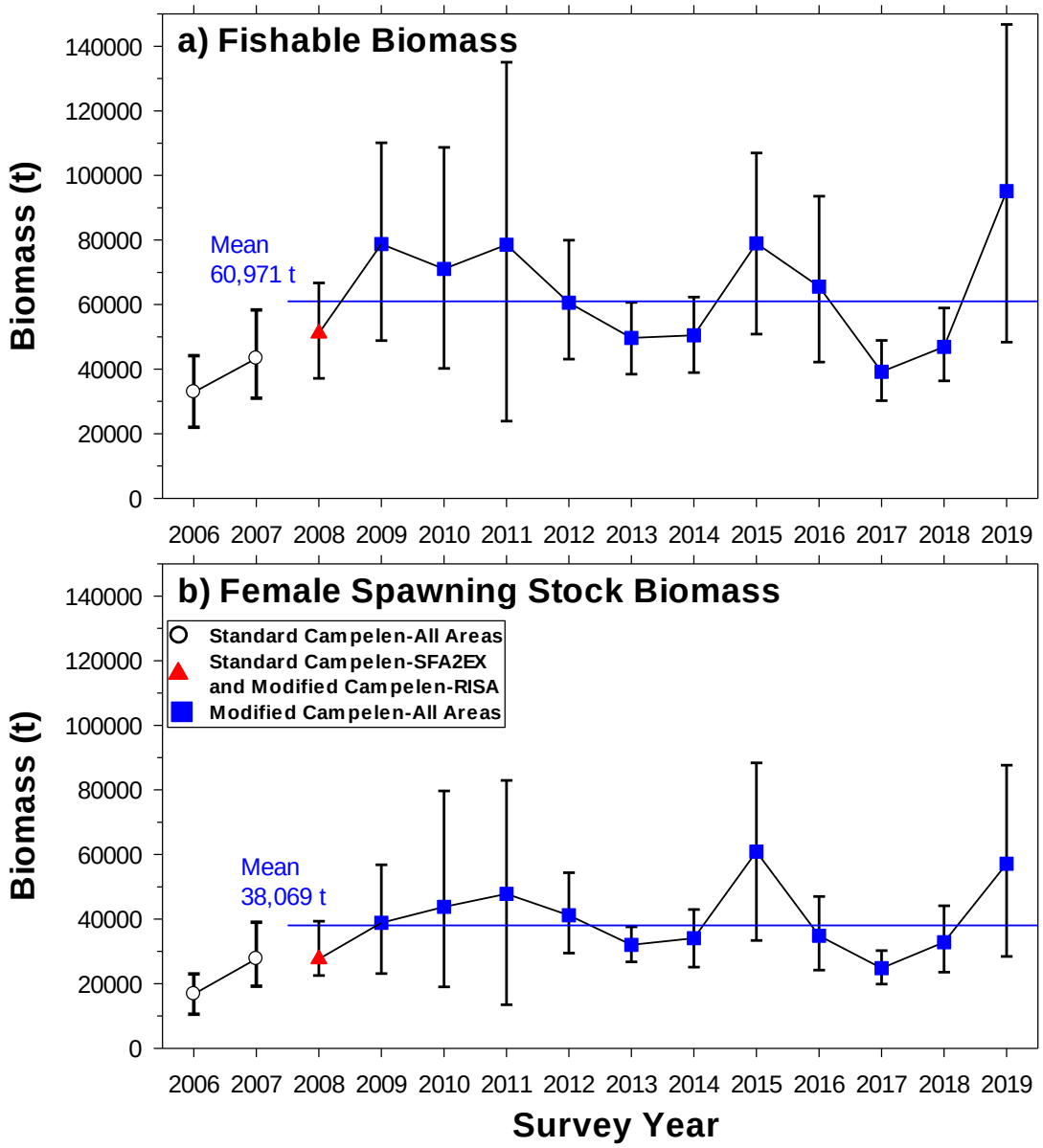


Figure 3. Eastern Assessment Zone Pandalus borealis a) fishable and b) female spawning stock biomass indices for the survey years 2006-2019. Error bars are 95% confidence ranges.

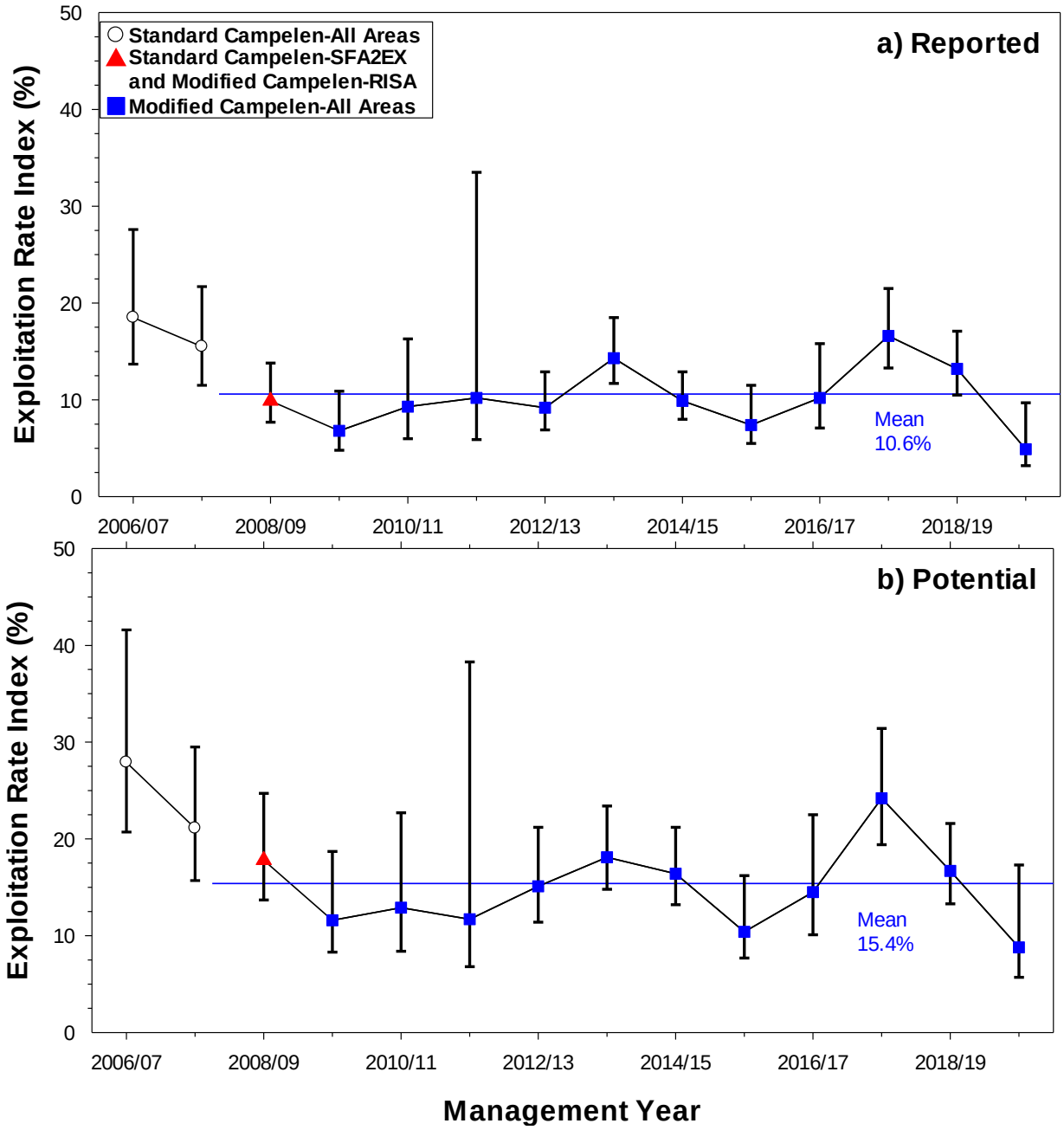


Figure 4. Eastern Assessment Zone Pandalus borealis a) reported and b) potential exploitation rate indices for the period of 2006/07-2019/20. Error bars are 95% confidence ranges.

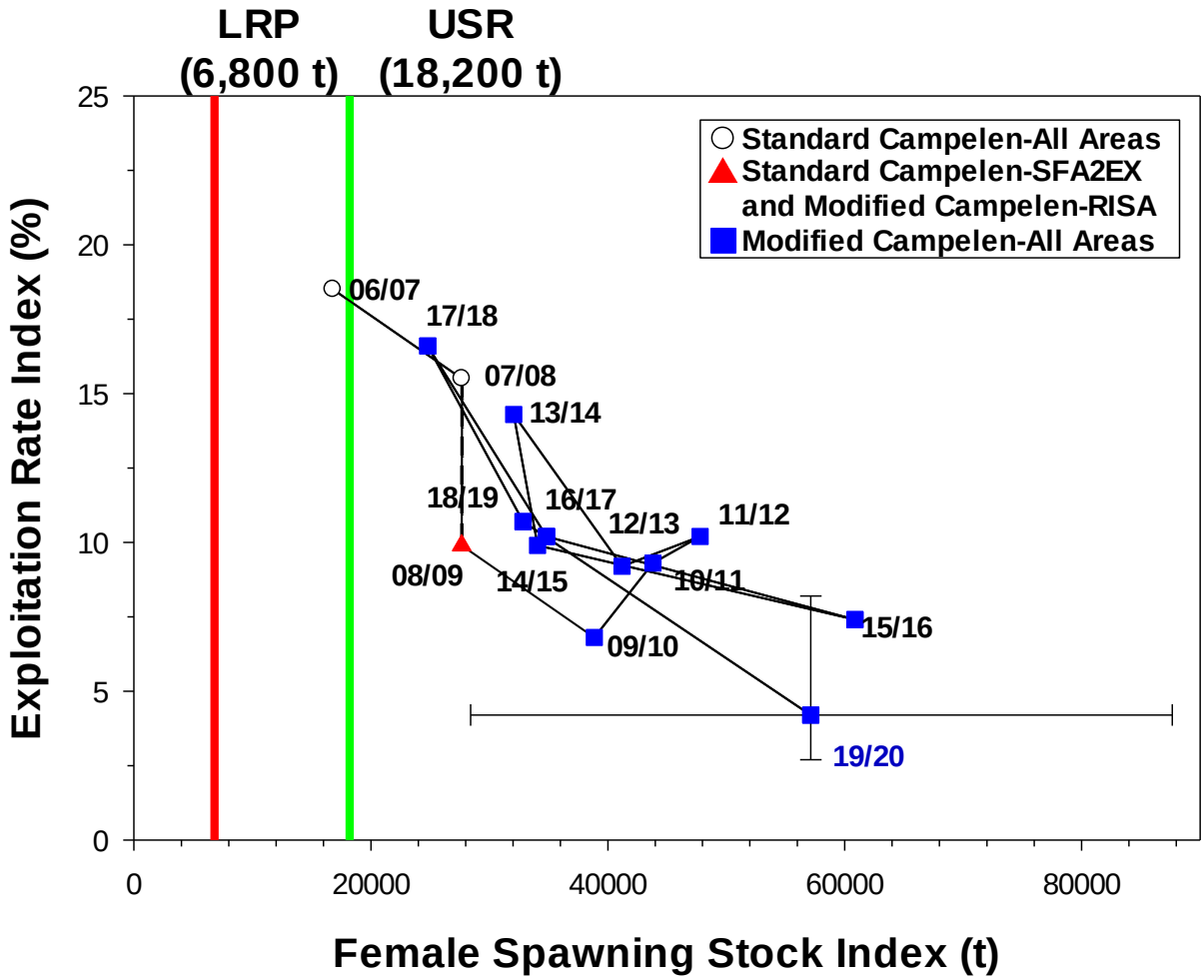


Figure 5. Eastern Assessment Zone trajectory of Pandalus borealis female spawning stock biomass and exploitation rate indices in relation to reference points. USR=Upper Stock Reference and LRP=Limit Reference Point. Error bars are 95% confidence ranges.

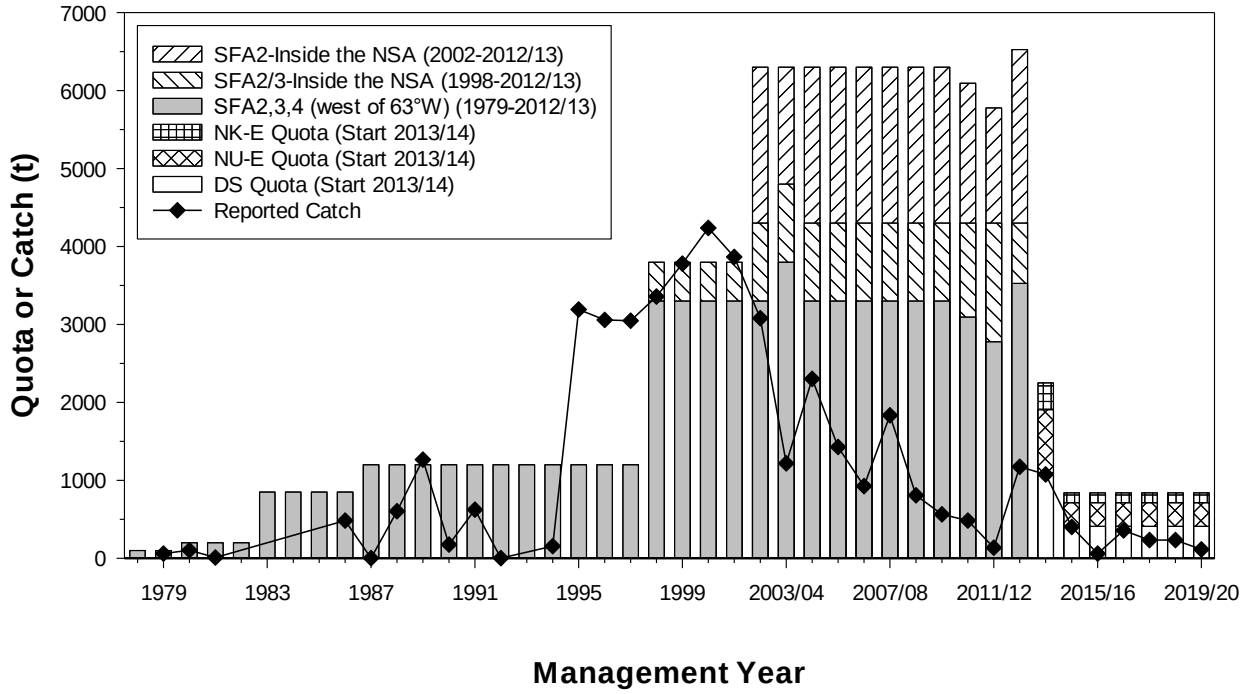


Figure 6. Eastern Assessment Zone Pandalus montagui TAC and catch recorded in the CAQR. Catch based on CAQR as of January 7, 2020. Since fishery is still open the catch is not complete for 2019/20. New management units were implemented for the 2013/14 season.

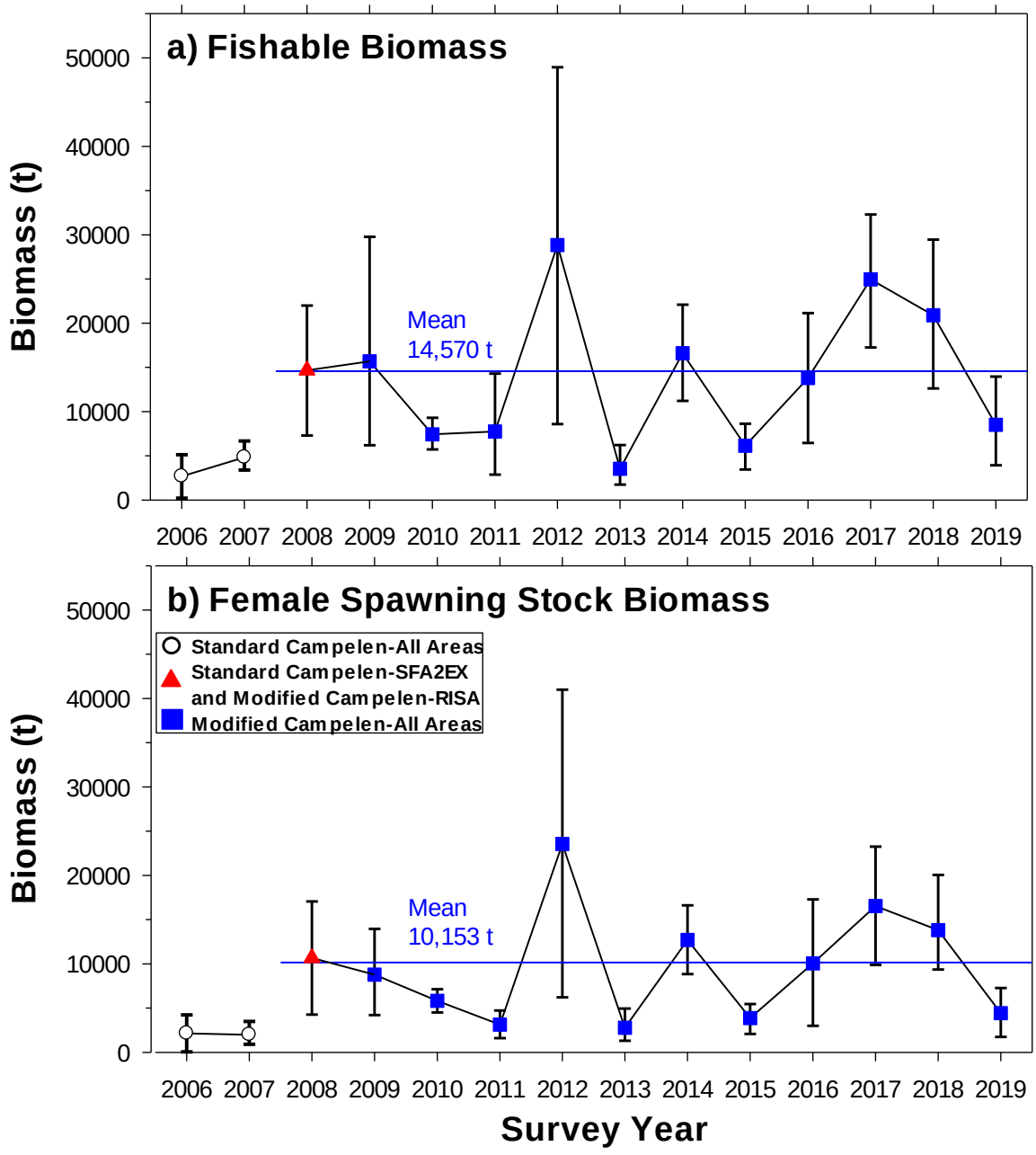


Figure 7. Eastern Assessment Zone Pandalus montagui a) fishable and b) female spawning stock biomass indices for the survey years 2006-2019. Error bars are 95% confidence ranges.

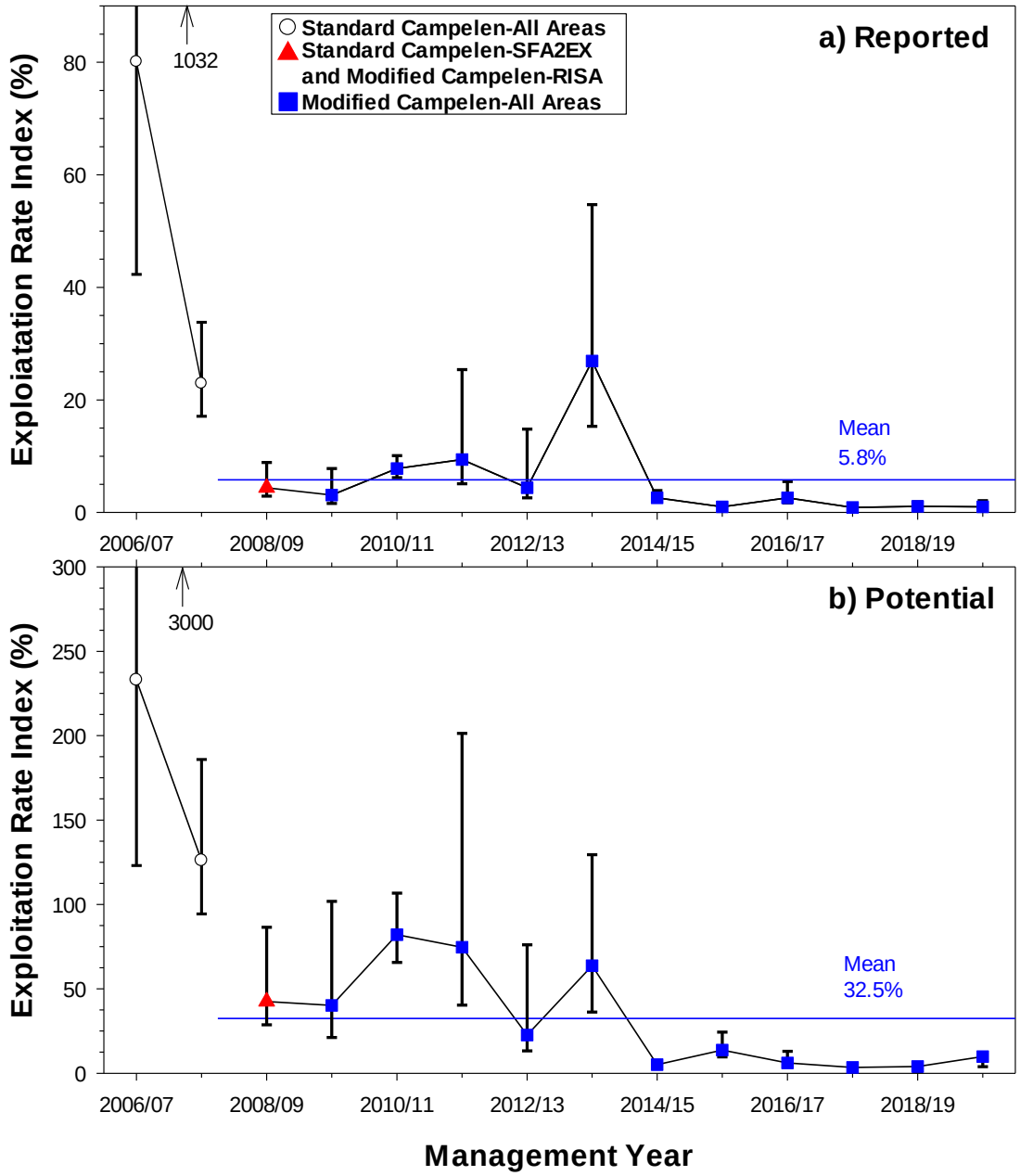


Figure 8. Eastern Assessment Zone Pandalus montagui a) reported and b) potential exploitation rate indices for 2006/07-2019/20. Error bars are 95% confidence ranges.

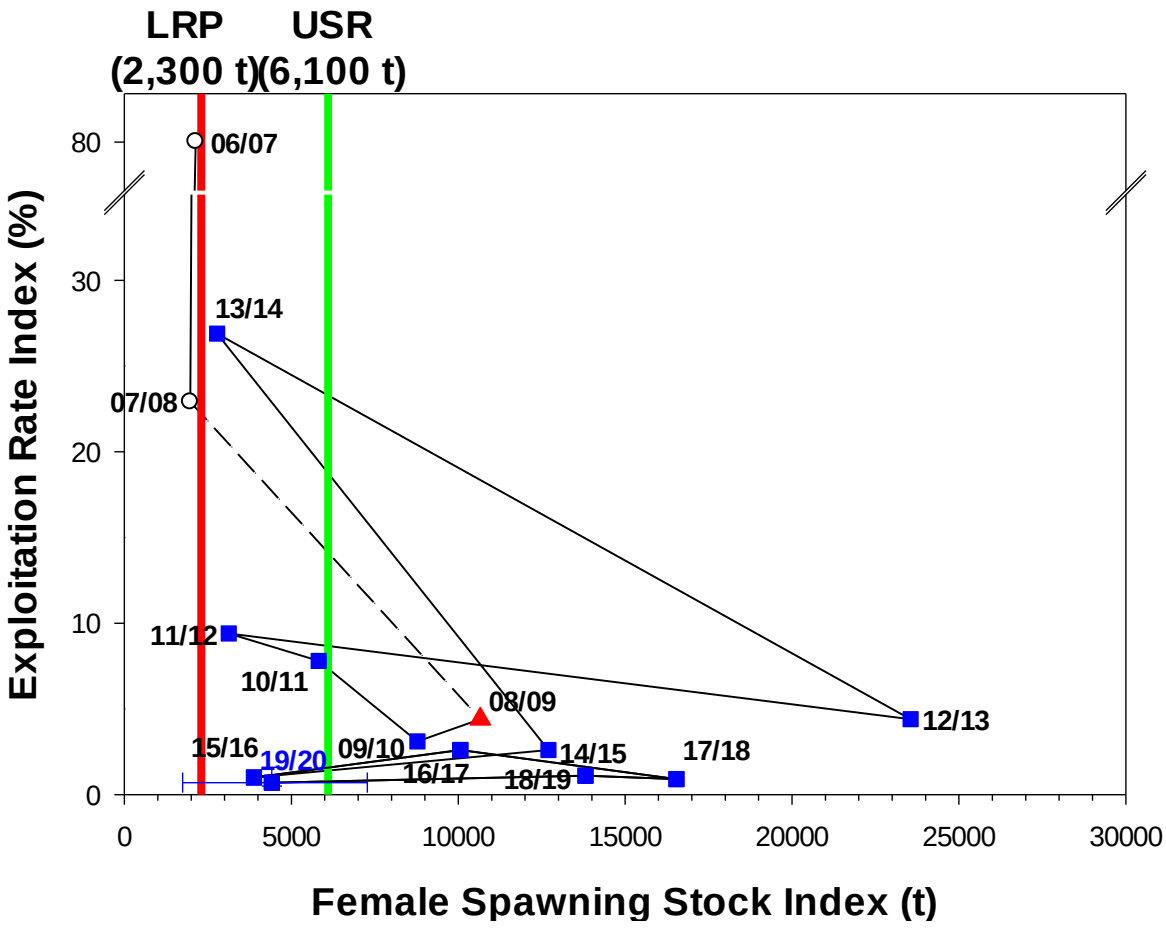


Figure 9. Eastern Assessment Zone trajectory of Pandalus montagui female spawning stock biomass and exploitation rate indices in relation to reference points. USR=Upper Stock Reference and LRP=Limit Reference Point.

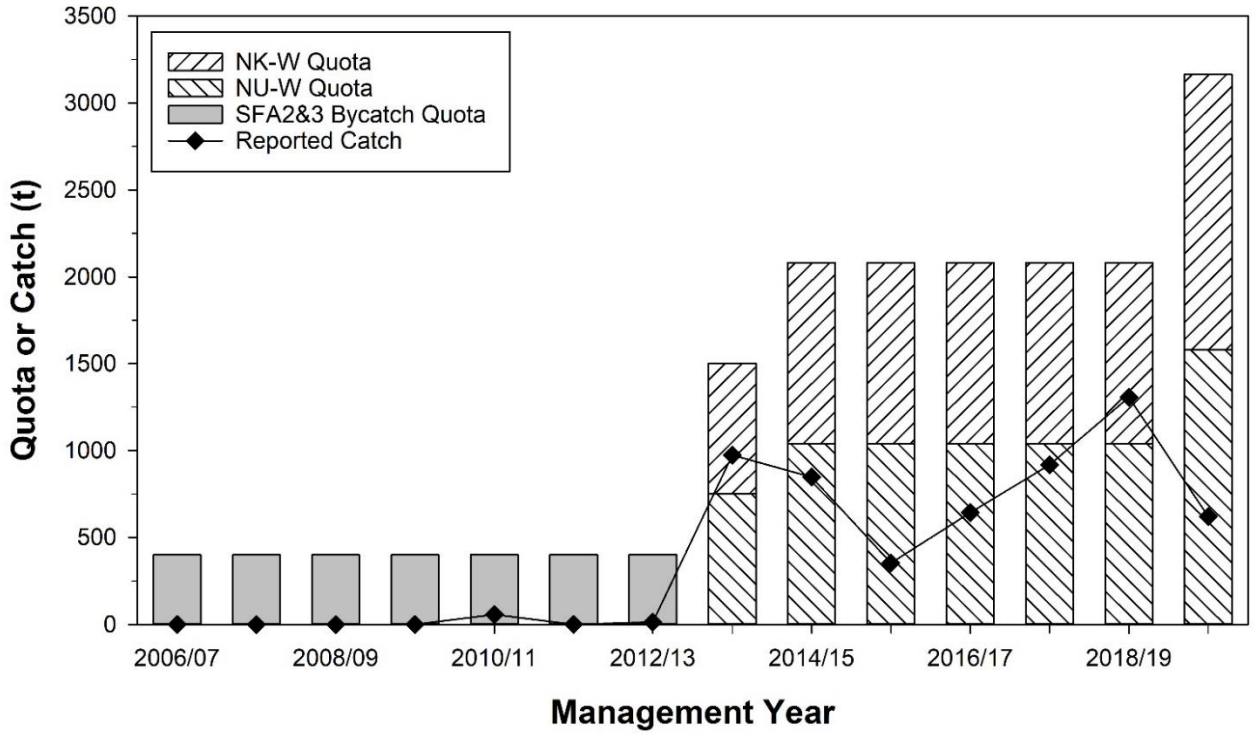


Figure 10. Western Assessment Zone Pandalus borealis TAC and catch recorded in the CAQR. Catch based on CAQR as of January 7, 2020; since the fishery is still open the catch is not complete for 2019/20. New management units were implemented for the 2013/14 season.

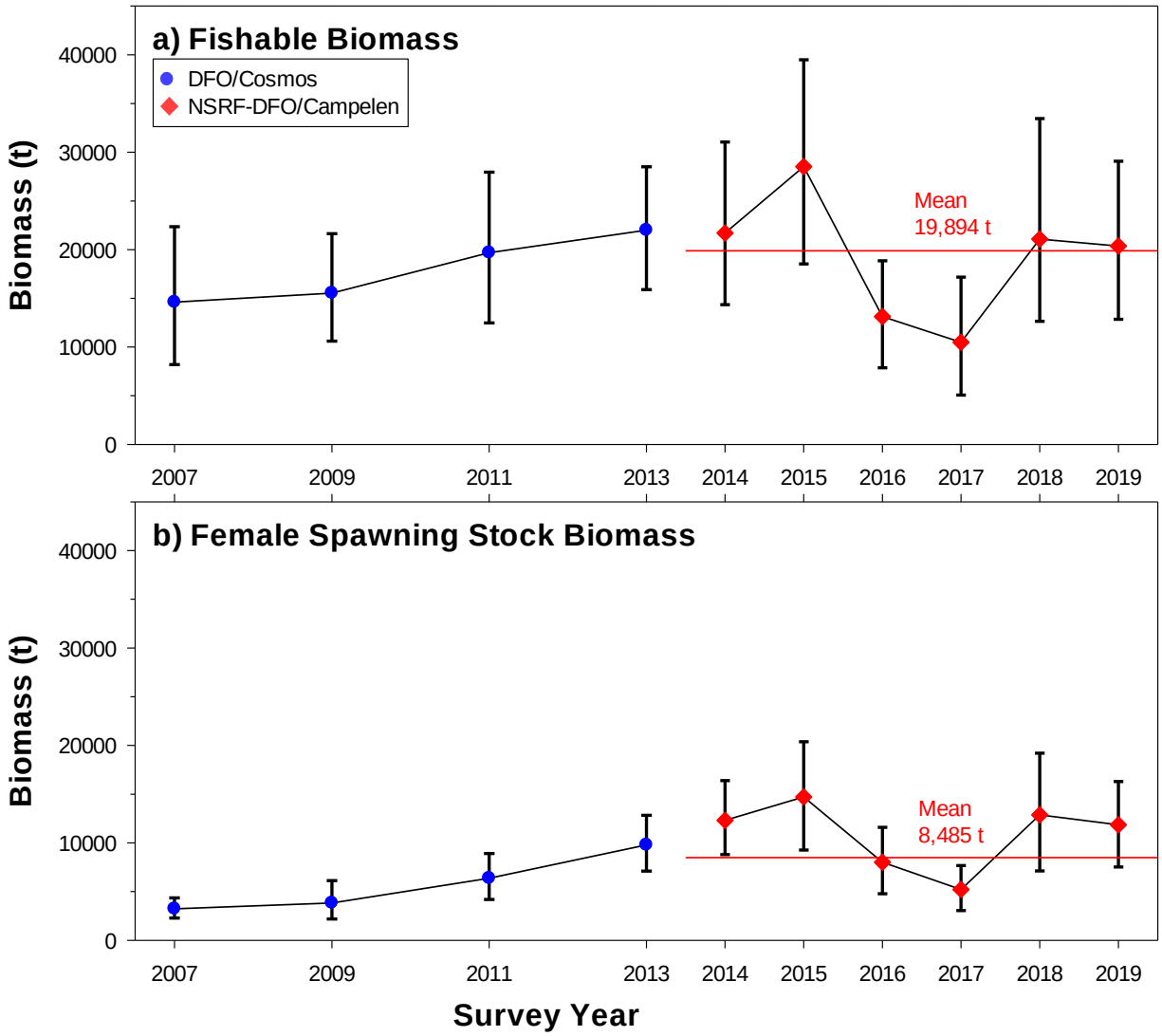


Figure 11. Western Assessment Zone Pandalus borealis, a) fishable biomass and b) female spawning stock biomass indices for the four years of DFO/Cosmos surveys and six years conducted by the NSRF-DFO/Campelen. Biomass indices from the two surveys are not directly comparable. 2014 represents the start of a new time series for the WAZ. Error bars are 95% confidence ranges.

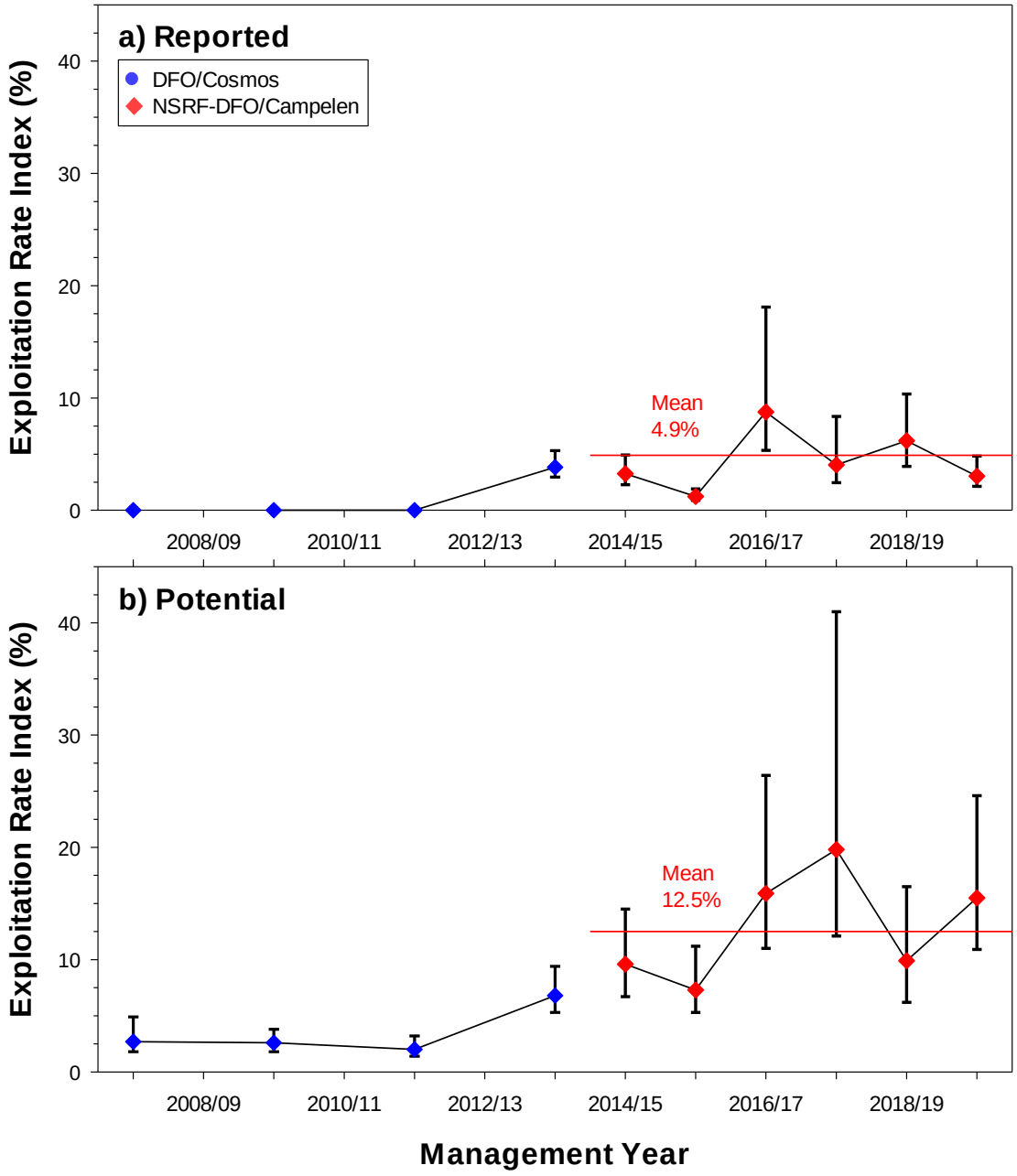


Figure 12. Western Assessment Zone Pandalus borealis a) reported and b) potential exploitation rate indices for the four years of DFO/Cosmos surveys and six years conducted by the NSRF-DFO/Campelen. Exploitation rate indices from the two surveys are not directly comparable. 2014 represents the start of a new time series for the WAZ. Error bars are 95% confidence ranges.

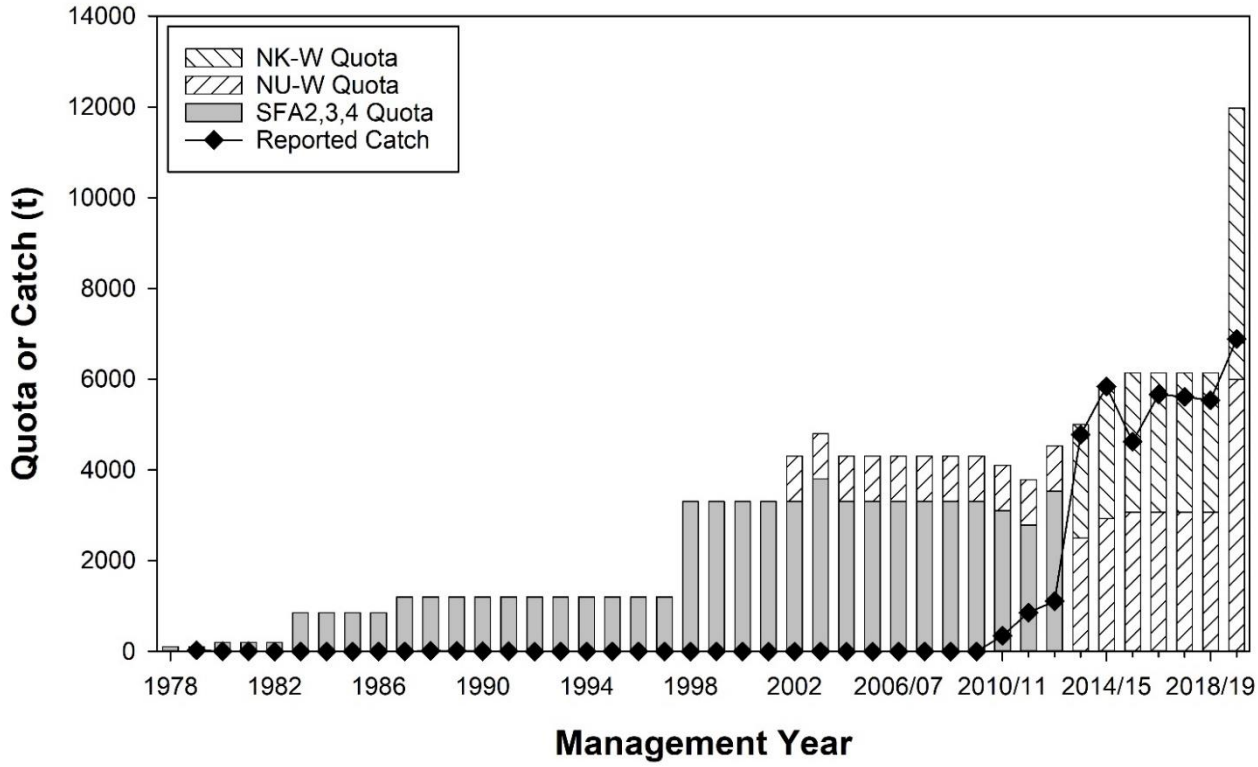


Figure 13. Western Assessment Zone Pandalus montagui TAC and catch recorded in the CAQR. Catch based on CAQR as of January 7, 2020; since fishery is still open the catch is not complete for 2019/20. New management units implemented for the 2013/14 season.

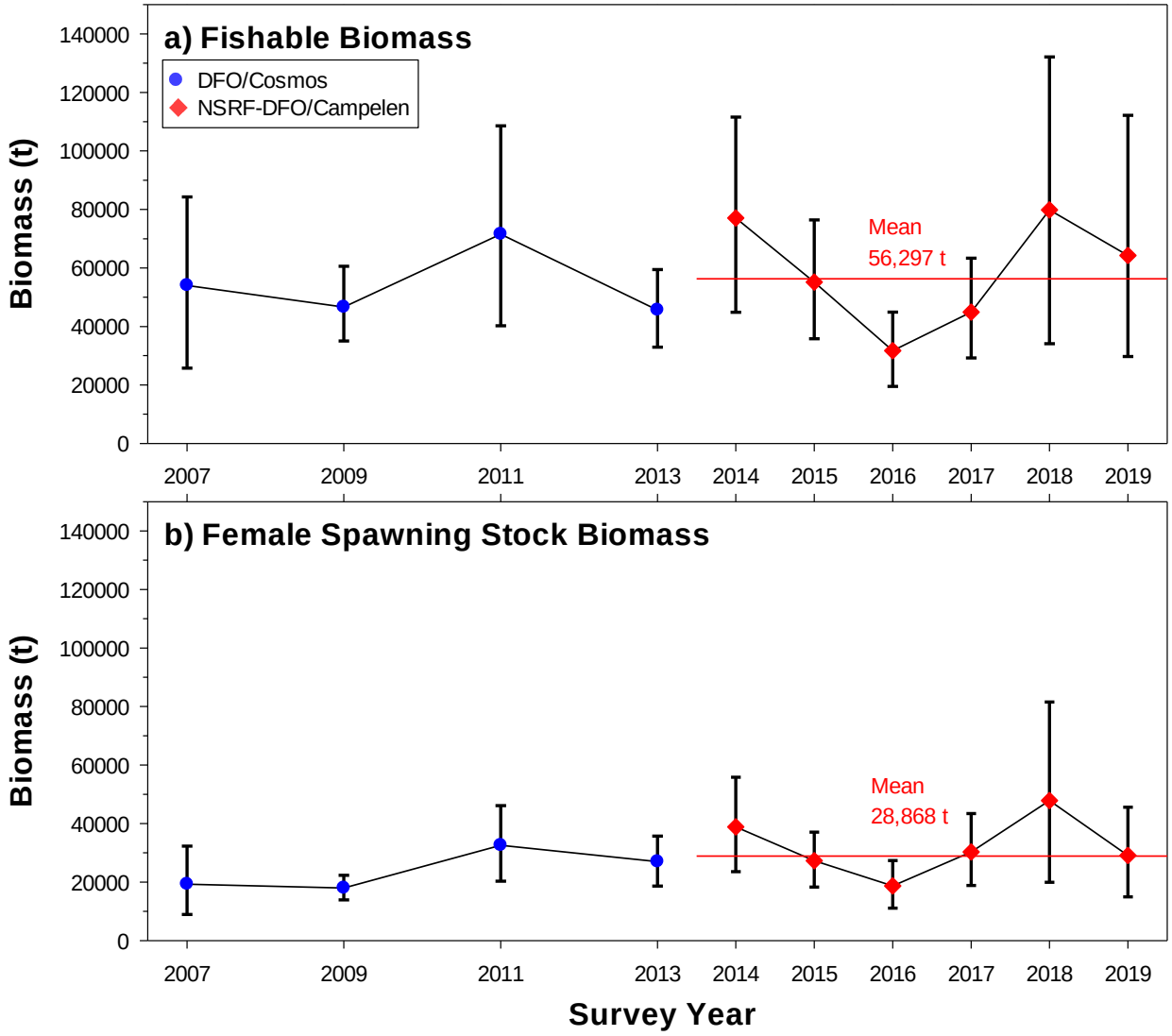


Figure 14. Western Assessment Zone Pandalus montagui, a) fishable biomass and b) female spawning stock biomass indices for the four years of DFO/Cosmos surveys and six years conducted by the NSRF-DFO/Campelen. Biomass indices from the two surveys are not directly comparable. 2014 represents the start of a new time series for the WAZ. Error bars are 95% confidence ranges.

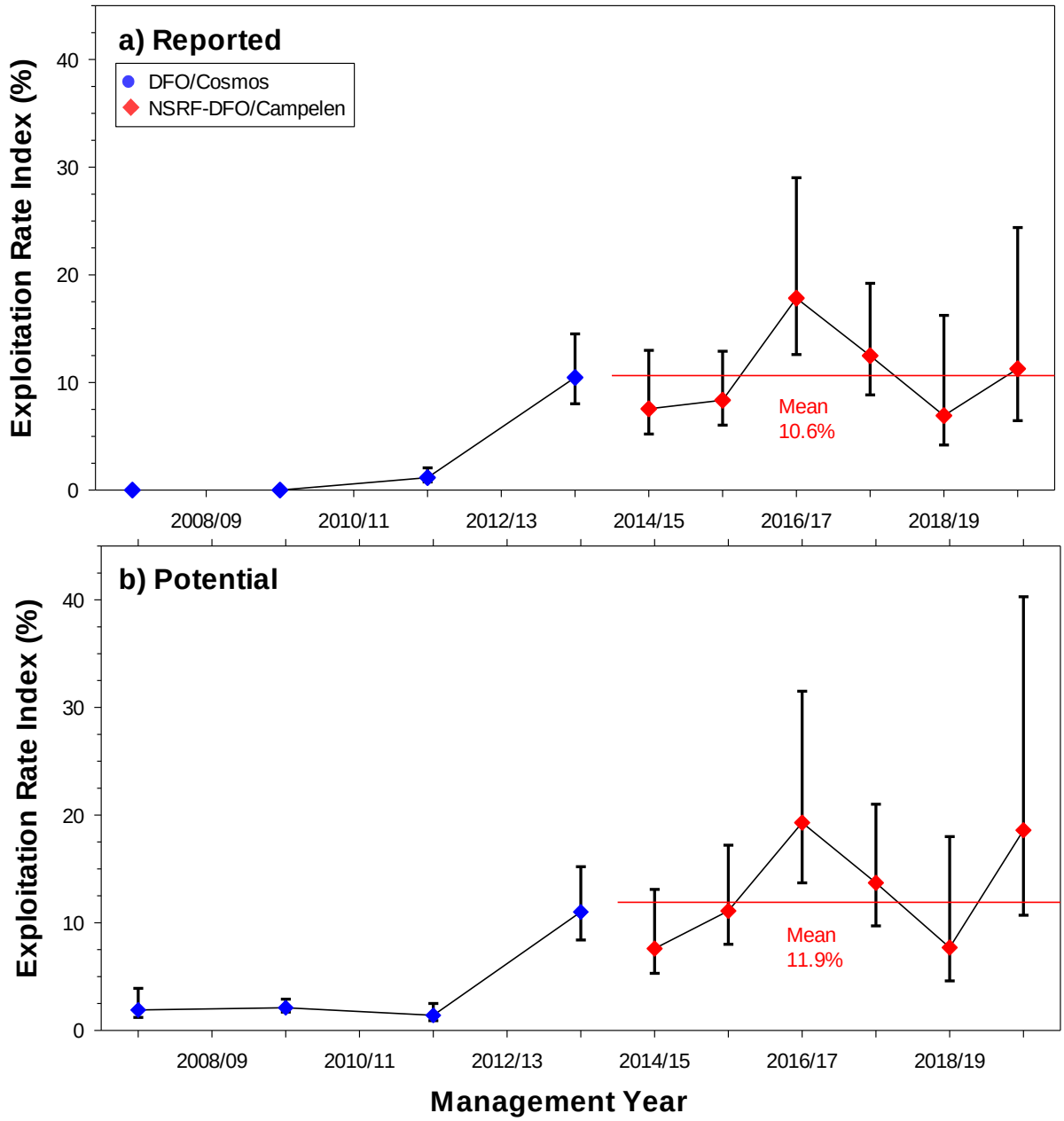


Figure 15. Western Assessment Zone Pandalus montagui a) reported and b) potential exploitation rate indices for the four years of DFO/Cosmos surveys and six years conducted by the NSRF-DFO/Campelen. Exploitation rate indices from the two surveys are not directly comparable. 2014 represents the start of a new time series for the WAZ. Error bars are 95% confidence ranges.

This Report is Available from the:

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Internet address: www.dfo-mpo.gc.ca/csas-sccs/

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DFO. 2020. Update of stock status indicators for Northern Shrimp, *Pandalus borealis,* and Striped Shrimp, *Pandalus montagui,* in the Western and Eastern Assessment Zones, January 2020. DFO Can. Sci. Advis. Sec. Sci. Resp. 2020/014. (Erratum: February 2020)

Aussi disponible en français :

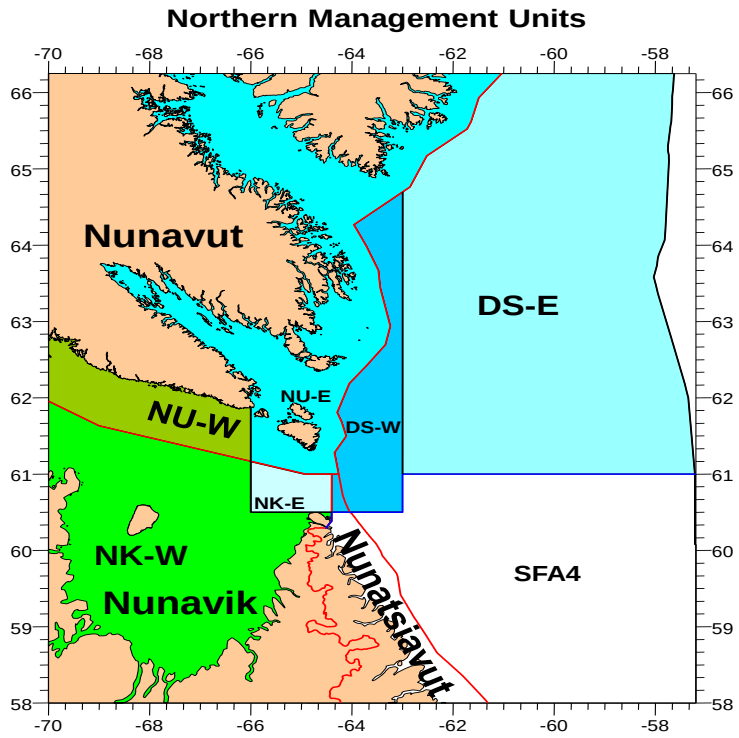
MPO. 2020. Mise à jour des indicateurs de l'état des stocks des crevettes nordiques, Pandalus borealis*, et les crevettes ésopes,* Pandalus montagui*, dans les zones d'évaluation ouest, janvier 2020. Secr. can. de consult. sci. du MPO, Rép. des Sci. 2020/014. (Erratum : février 2020)*

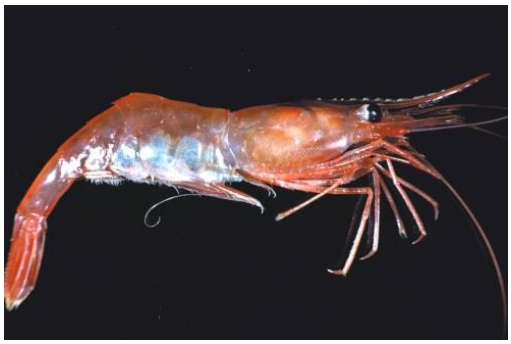
SUBMISSION TO THE
NUNAVUT WILDLIFE MANAGEMENT BOARD AND NUNAVIK MARINE REGION WILDLIFE BOARD
FOR

Information: **Decision:** X **Recommendation:** X

Issue: Decisions and recommendations of Arctic Cod Bycatch limits in the Northern and Striped Shrimp fishery within and adjacent to the settlement areas

Map:
Blue areas – Eastern Assessment Zone
Green areas – Western Assessment Zone





Northern shrimp (*Pandalus borealis*)



Striped shrimp (*Pandalus montagui*)



Arctic Cod (*Boreogadus saida*)

Background

Fisheries and Oceans Canada (DFO) has engaged with the Nunavut Wildlife Management Board and Nunavik Marine Region Wildlife Board (the Boards) on the subject of Arctic Cod bycatches in the Northern Shrimp fishery, beginning first in Fall of 2018. Based on the Science and catch information available for Arctic Cod (see Appendix 1), Resource Management (RM) assessed that permitting higher bycatches would not represent a significant conservation concern for this species. Conditions of Licence (COL) were amended to that effect in the 2018/19 and 2019/20 in the Western Assessment Zone (WAZ) (Appendix 2). Most recently, the Department submitted a Briefing Note on Arctic Cod bycatch management measures for Information at the Boards' December 2019 meeting (Appendix 3).

The Department committed to seeking science advice on a sustainable overall bycatch limit of Arctic Cod prior to the 2019 season. A Canadian Science Advisory Secretariat (CSAS) process was conducted in July 2019 (see Science Information).

In addition, the Department committed to undertaking consultations on a longer-term management approach for Arctic Cod bycatch with the offshore fleet, Nunavut and Nunavik industry and the Boards' staff for the WAZ, Eastern Assessment Zone (EAZ), as well as Shrimp Fishing Area (SFA) 1 (the North). Consultations were completed in January 2020 (see Consultation Summary).

The Department is now returning to the Boards for a decision and recommendation on Arctic Cod bycatch limits within and adjacent to the settlement areas, as appropriate, for implementation in the 2020/21 fishery.

Consultation Summary

In January 2020, the Department held two conference calls seeking input on the development of a COL to address Arctic Cod bycatch in the North. A list of participants is available at Appendix 4.

The Department proposed to limit Arctic Cod bycatch to the greater of 5% by weight of catch of shrimp or 200kg, based on an average of the previous six tows for all three areas. The proposed condition would be consistent with amendments implemented in the WAZ for the past two seasons (see Appendix 2).

Industry jointly and unanimously proposed to limit Arctic Cod bycatch to the greater of 10% by weight of catch of shrimp or 200kg in all areas, based on an average of the previous six tows (Appendix 5). A limit of 10% by weight of catch of shrimp is consistent with the current Arctic Cod bycatch provision in SFA 1 (Appendix 2).

Science Information

Pertinent science information on Arctic Cod was provided to the Boards in the Briefing Note for Information at their December meeting, and is available at Appendix 1. Publications from the July 2019 CSAS peer review process including Proceedings, a Research Document (Summary at Appendix 6) and a Science Advisory Report (Summary at Appendix 7), are now available.

Considering the relatively small total mortality (less than 0.1% of the stock annually as proposed above based on predators' requirements) of Arctic Cod stemming from the Eastern Canadian Arctic shrimp fishery, it can be assumed that the impact of shrimp trawling on the Arctic Cod population is minimal.

Options

1) Establish an Arctic Cod bycatch limit of the greater of 5% by weight of catch of shrimp or 200kg, averaged over the previous six tows, in all areas.

2) Establish an Arctic Cod bycatch limit of the greater of 10% by weight of catch of shrimp or 200kg, averaged over the previous six tows, in all areas.

The Boards could decide and/or recommend, as appropriate, on bycatch limits that differ in each area, and /or that differ in amounts offered above.

Summary of Request

Considering the above, the Department is seeking from the Boards, for implementation beginning in the 2020/21 fishery:

1) A decision on Arctic Cod bycatch limits within the settlement areas (WAZ, and NU/NK-E) and a recommendation on Arctic Cod bycatch limits in areas adjacent to the settlement areas.

Prepared by: Fisheries Resource Management, Fisheries and Oceans Canada

Date: February 7, 2020

Appendices

Appendix 1 – Historical bycatches in the Northern Shrimp Fishery, Arctic Cod

Appendix 2 - Condition of Licence Amendments for Northern Shrimp (2017-2019)

Appendix 3 – Briefing Note (For Information): Implementation of Arctic Cod Bycatch Management Measures in the 2019/20 Northern and Striped Shrimp fishery in the Western Assessment Zone

Appendix 4 – Consultation Participants List (*January 2020*)

Appendix 5 – Joint Industry Response on Arctic Cod Bycatch Management Measures and Establishing Revised Conditions of License (COL)

Appendix 6 - Summary: Assessment of potential impacts of bycatch mortality on the Arctic Cod *(Boreogadus saida)* populations from the Northern *(Pandalus borealis)* and Striped *(Pandalus montagui)* Shrimp fisheries in Shrimp Fishing Areas 1, 2, and 3 (Research Document 2019/073)

Appendix 7 - Summary: Review of Arctic Cod *(Boreogadus saida)* Bycatch in Canadian Arctic Shrimp Fisheries (Science Advisory Report 2020/007)

Appendix 8 – Research Document 2019/073: Assessment of potential impacts of bycatch mortality on the Arctic Cod *(Boreogadus saida)* populations from the Northern *(Pandalus borealis)* and Striped *(Pandalus montagui)* Shrimp fisheries in Shrimp Fishing Areas 1, 2, and 3

Appendix 9 – Science Advisory Report 2020/007: Review of Arctic Cod *(Boreogadus saida)* Bycatch in Canadian Arctic Shrimp Fisheries

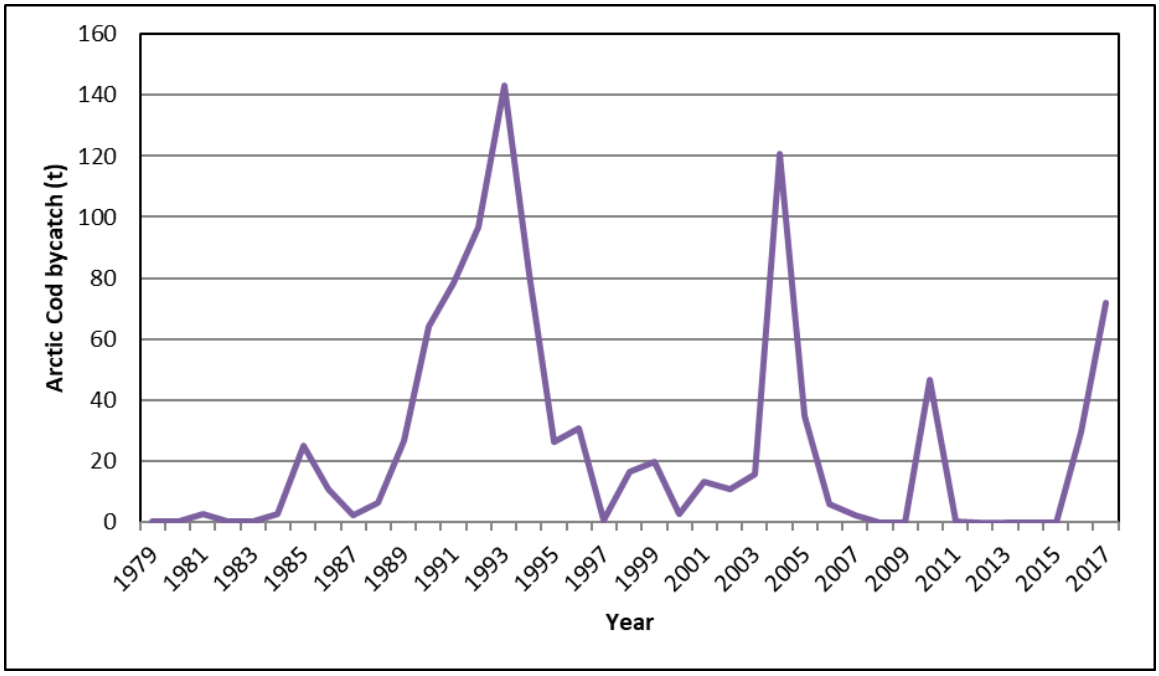


Figure 1. Arctic Cod bycatch in SFA 1 for 1979–2018.

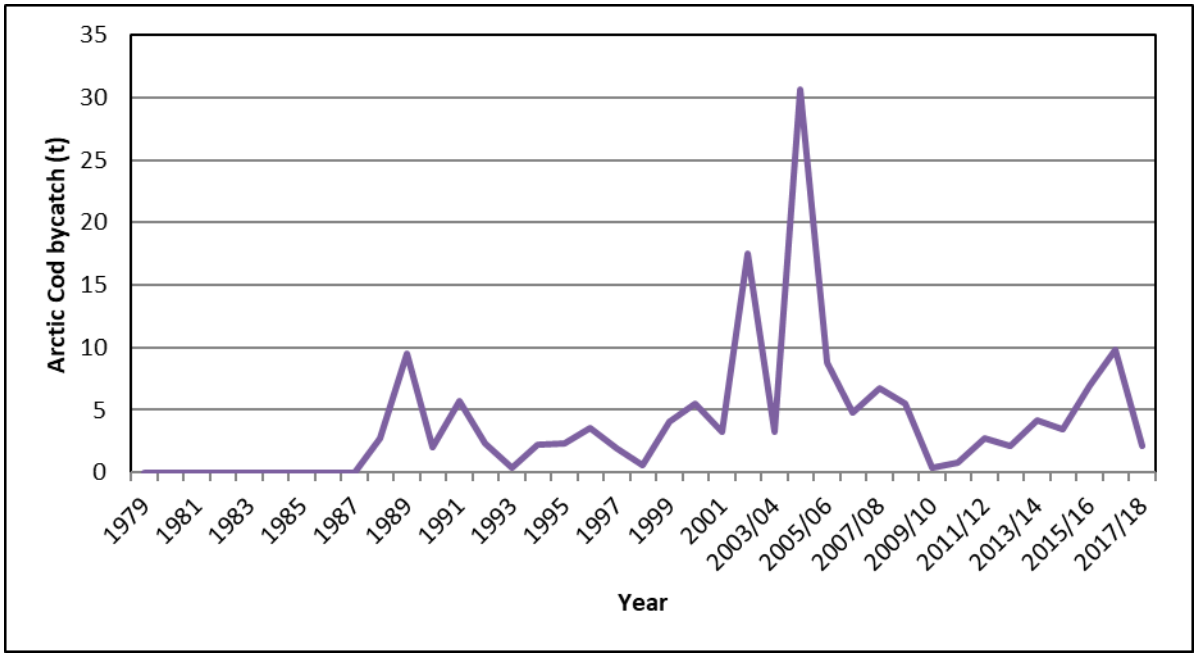


Figure 2. Arctic Cod bycatch in SFA 2 (Eastern Assessment Zone) for 1979–2018[1]

[1] Shrimp fishery management cycle changed from calendar year to fiscal year starting in 2003.

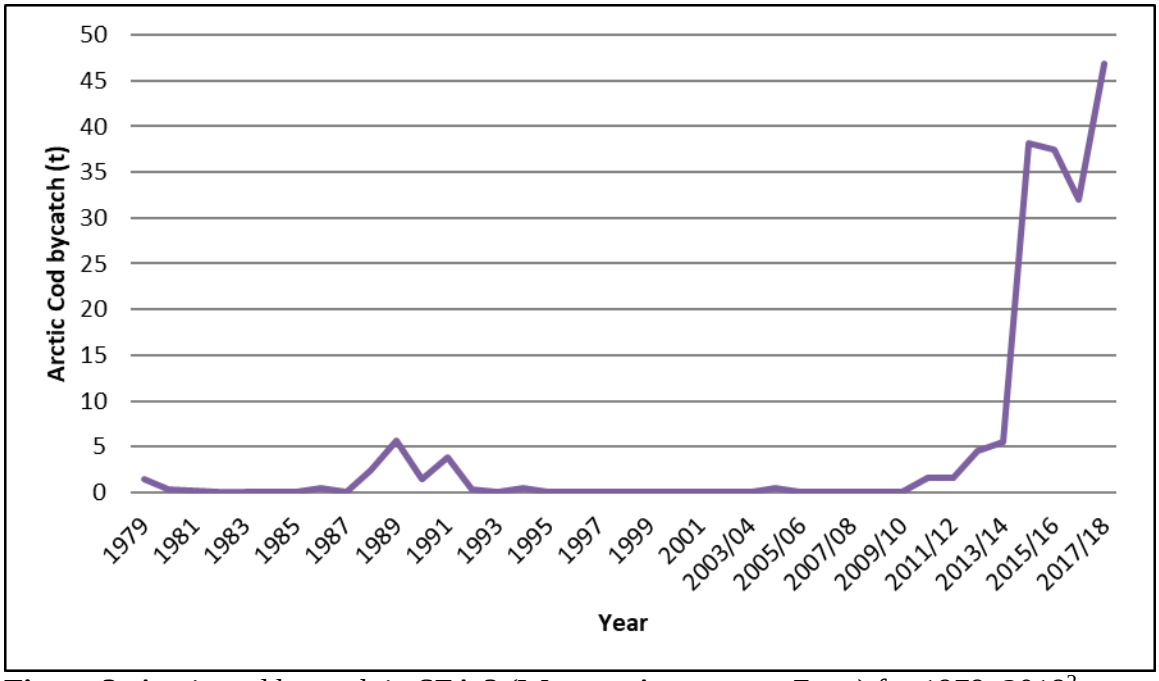


Figure 3. Arctic cod bycatch in SFA 3 (Western Assessment Zone) for 1979–2018[2].

Table 1. Arctic Cod Catch data in SFA 1, EAZ and WAZ for 2018-19 to 2019-20 (as of January 30, 2020). *Data is considered preliminary.*

	2019-20 (as of January 30, 2020)	**2018-19**
SFA 1	12.389	0.410
EAZ	12.103	12.935
WAZ	41.670	61.975

[2] Shrimp fishery management cycle changed from calendar year to fiscal year starting in 2003.

APPENDIX 2

Shrimp Fishing Area	**Year of Condition of Licence (COL) Implementation**	**Condition of Licence (bycatch move-away provision)**
		5.2 ***"****If* ***total by-catches of all groundfish species*** *in any haul exceed the* ***greater of 2.5 percent by weight of the catch of shrimp or 100 kg****, the licence holder or vessel operator must immediately change fishing area by a minimum of ten (10) nautical miles from any position of the previous tow in an effort to avoid further by-catches of all groundfish…"*
SFA 1	2017 - Present	***5.2.1*** *"Notwithstanding section 5.2 above,* ***while fishing in Shrimp Fishing Area 1****, if* ***total by-catches of all groundfish species exceed 10% by weight of the catch of shrimp over the previous six tows,*** *the licence holder or vessel operator must immediately change fishing area by a minimum of ten (10) nautical miles from any position of the previous six tows in an effort to avoid further by-catches of all groundfish…"*
Western Assessment Zone	2018/19 season (interim basis) 2019/20 season (interim basis)	***5.2.2*** *"Notwithstanding section 5.2 above, while fishing in the waters of Management Units Nunavut West and/or Nunavik West,* ***if total by-catches of Arctic Cod exceed the greater of 5 percent by weight of the catch of shrimp or 200kg, averaged over the previous six tows,*** *the licence holder or vessel operator must immediately change fishing area by a minimum of ten (10) nautical miles from any position of the previous six tows in an effort to avoid further by-catches of Arctic Cod."*

SUBMISSION TO THE
NUNAVUT WILDLIFE MANAGEMENT BOARD AND NUNAVIK MARINE REGION WILDLIFE BOARD
FOR

Information: X **Decision:** **Recommendation:**

Issue: Implementation of Arctic Cod Bycatch Management Measures in the 2019/20 Northern and Striped Shrimp fishery in the Western Assessment Zone

Resource Management Information

In 2018-19 (October), industry reported to Fisheries and Oceans Canada (DFO) that elevated bycatch levels of Arctic cod were being caught consistently in the Western Assessment Zone (WAZ) (see map at Appendix 1). These catches triggered move-away provisions as required by Conditions of Licence (COL) for shrimp harvesters in this area. In order to continue to successfully prosecute the fishery, industry requested that DFO amend COL to allow higher bycatches. Based on the Science and catch information available for Arctic cod (see Appendix 2), Resource Management (RM) assessed that permitting higher bycatches would not represent a significant conservation concern for this species. RM implemented industry's proposed amendment for Arctic cod (Appendix 3) for the remainder of the season, following conversations with staff from both the Nunavut and Nunavik Boards (the Boards) and DFO Science.

Further, the Department committed to seeking science advice on a sustainable overall bycatch limit of Arctic cod in the WAZ, Eastern Assessment Zone (EAZ) and Shrimp Fishing Area (SFA) 1. A Canadian Science Advisory Secretariat (CSAS) peer review process was conducted July 2019.

In 2019-20 (September), increased Arctic cod bycatches were being recorded in the WAZ. DFO accepted industry's request to re-instate the 2018-19 COL for Arctic cod bycatch for the WAZ, following discussion with the Boards and DFO Science. The condition is in effect for the remainder of the season (i.e. on an interim basis).

Decisions to amend COL in 2018-19 and 2019-20 were consistent with the relevant clauses of the Nunavut and Nunavik Inuit Land Claims Agreements, whereby the need to modify COL to address higher incidences of Arctic cod bycatches was considered to be based on 'urgent and unusual circumstances'. Following the 2018-19 COL amendment and recognizing the need to ensure the sustainability of Arctic cod, the ecological importance of the species and to avoid urgent COL amendments in the future, the Department committed to undertaking consultations on a longer-term management approach with the offshore fleet, Nunavut and Nunavik industry and the Boards' staff for EAZ, WAZ as well as SFA 1. At the time of this submission, consultations with the relevant stakeholders are anticipated to begin in November.

Science Information

Arctic cod (*Boreogadus saida*) is a ubiquitous species occurring in a wide range of habitats in the Arctic. They are considered seasonal migrants that are known to use

different habitats throughout the year (e.g., summer aggregations, under-ice habitat use). Large aggregations of Arctic cod have been reported in both nearshore and offshore areas. Young cod live and move around at various depths in the water until reaching age 1+, after which they move down and stay closer to the bottom of the ocean for the rest of their life. Being large enough, they become regular bycatch in Shrimp trawl fisheries, which suggests that Shrimp and Arctic cod share the same habitat. Arctic cod plays a pivotal role in the marine ecosystem, providing food for numerous species of seabirds, marine mammals, and fishes.

Data for Arctic cod is collected through at-sea observers and fishery logbooks, however its population status is not formally assessed by Science, and thus is unknown. The Department conducted a CSAS peer review process in July 2019 to provide advice on Arctic cod bycatch limits in Northern Shrimp fisheries in the WAZ, EAZ and SFA 1. Participants included representatives from DFO Science and RM, and the Boards.

Estimates of the potential Arctic cod biomass in the ecosystem were derived based on the requirements to meet the energetic needs of higher trophic level predators (whales, seals, birds, fishes), which translated to 500,000 to 1,000,000 t of Arctic cod annually. The estimates are highly uncertain due to the absence of a survey dedicated to Arctic cod, limited availability of life history data, and patchy spatial and temporal distribution of Arctic cod. This uncertainty leads to low confidence in determining the impacts of removal. If the estimates are taken at face-value then the percentage of Arctic cod removed from the total biomass through the shrimp fishery is likely very low, however given the considerable uncertainty, precaution is advised.

Next Steps

Once the consultation process is complete, the Department will return to the Boards to seek decisions and advice (as appropriate) on Arctic cod bycatch COL at their March 2020 meeting for implementation beginning in the 2020-21 season.

Outcomes of the Arctic cod bycatch discussions will be presented to members of the Northern Shrimp Advisory Committee at the next annual meeting (March 2020).

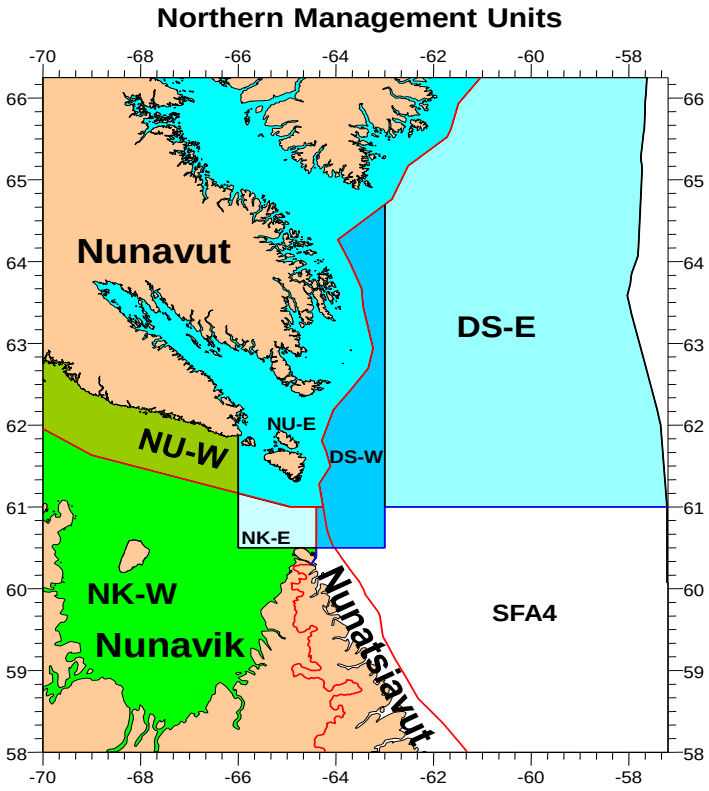
Prepared by: Fisheries and Resource Management, Fisheries and Oceans Canada

Date: November 1, 2019

Appendices
Appendix 1 – Map
Appendix 2 – Historical Bycatches, Arctic cod
Appendix 3 –2018-19 and 2019-20 Amendment to Northern Shrimp Licence

Appendix 1

Blue areas – Eastern Assessment Zone
Green areas – Western Assessment Zone



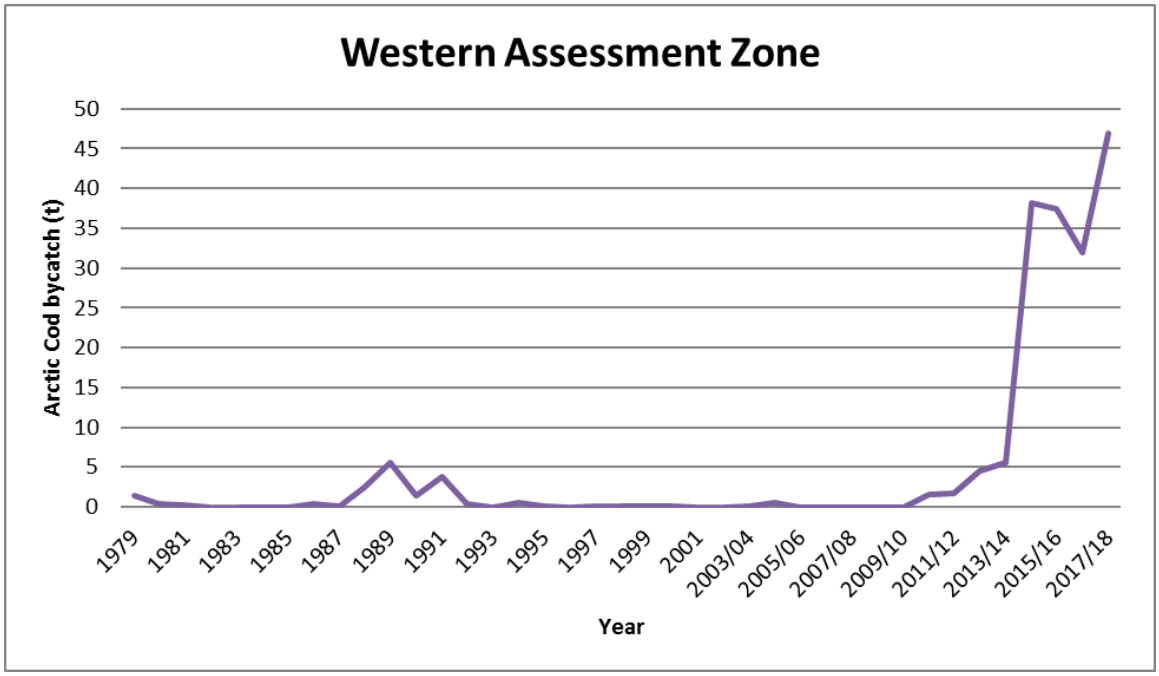


Figure 1. Arctic cod bycatch in SFA 3 (Western Assessment Zone) for 1979–2018[1].

[1] . Shrimp fishery management cycle changed from calendar year to fiscal year starting in 2003.

APPENDIX 3

9/26/2019

Please note that the licence for Northern Shrimp is amended as follows:

5.2.2 Notwithstanding section 5.2 above, while fishing in the waters of Management Units Nunavut West and/or Nunavik West, if total bycatches of Arctic Cod exceed the greater of 5 percent by weight of the catch of shrimp or 200kg, averaged over the previous six tows, the licence holder or vessel operator must immediately change fishing area by a minimum of ten (10) nautical miles from any position of the previous six tows in an effort to avoid further bycatches of Arctic Cod. If after moving, the total bycatches of Arctic Cod exceed the greater of 5 percent by weight of the catch of shrimp, or 200kg, averaged over the previous six tows, the vessel must continue to move 10 nautical miles from any position of the six previous tows to avoid by-catch. The licence holder or vessel operator must record in the logbook the active avoidance measures taken in response to excessive Arctic Cod bycatch. The licence holder or vessel operator must also record in the logbook the position (latitude and longitude) at the time of Arctic Cod bycatch, as well as the quantity caught by weight in kilogram.

This amendment is valid from the date of issuance to March 31, 2020.

APPENDIX 4

In January 2020, the Department held two conference calls seeking input on the development of a COL to address Arctic Cod bycatch in the North. A list of participants is available below:

**Not present on second consultation call.*

Wojciech Walkusz – DFO Science
Sheri Friesen - DFO Resource Management C&A
Angela Young - DFO Resource Management C&A
Martin Henri - DFO Resource Management NL
Courtney D'Aoust - DFO Resource Management NHQ
Leigh Edgar - DFO Resource Management NHQ*
Derek Mahoney - DFO Resource Management NHQ

Amber Giles – Nunavut Wildlife Management Board
Jason Akearok – Nunavut Wildlife Management Board*
Denis Ndeloh - Nunavut Wildlife Management Board

Frankie Jean-Gagnon – Nunavik Marine Region Wildlife Board*

Bruce Chapman – Canadian Association of Prawn producers
Alastair O'Reilly – Northern Coalition
Jerry Ward - Qikiqtaaluk Corporation
Chris Flanagan – Baffin Fisheries Coalition
Brian Burke – Nunavut Fisheries Association*
Brian McNamara – Newfound Resources Ltd.
Peter Rose – Makivik Corporation

Nunavut Fisheries Association

CANADIAN ASSOCIATION OF PRAWN PRODUCERS

NORTHERN COALITION

Joint Industry Response on Arctic Cod Bycatch Management Measures and Establishing Revised Conditions of License (COL)

January 20, 2020

Introduction

This paper outlines a joint industry position, as agreed by the Nunavut Fisheries Association (NFA), Canadian Association of Prawn Producers (CAPP), and Northern Coalition (NC), with respect to DFO's request for input on the establishment of revised Conditions of License (COL) with respect to Arctic cod and groundfish bycatch in the northern Canadian shrimp fishery. Combined, NFA, CAPP and NC represent 100% of the active players in the shrimp fishery in the areas of interest, i.e. Shrimp Fishing Area (SFA) 1, the Eastern Assessment Zone (EAZ), and the Western Assessment Zone (WAZ).

Fisheries and Oceans Canada (DFO) has initiated consultations on a longer-term management approach for Arctic cod bycatch in SFA1, EAZ and WAZ, inclusive of the distribution of a Discussion Paper on January 2, 2020 and the holding of a conference call with stakeholders on January 7, 2020. CSAS Research Document 2019/073, from the July 2019 peer review process, has subsequently been made available to stakeholders.

Since 2017, amendments have been made to COLs in both SFA 1 and the WAZ to address bycatch levels of Arctic cod over the established COL for groundfish (in any haul exceed the greater of 2.5 percent by weight of the catch of shrimp or 100 kg). For SFA 1 since 2017 the COL has been changed to "total by-catches of all groundfish species exceed 10% by weight of the catch of shrimp over the previous six tows". In WAZ, for both the 2018/19 and 2019/20 seasons the COL was adjusted to "if total by-catches of Arctic Cod exceed the greater of 5 percent by weight of the catch of shrimp or 200 kg, averaged over the previous six tows".

DFO has requested input and recommendations from stakeholders with respect to the following variables for the COL: management unit affected, species included in the COL, bycatch limit, and number of tows (hauls). The following pages outline industry's recommendations on these variables for the COL, preceded by industry's concerns regarding what it views as overstatement of the potential impacts of Arctic cod bycatch.

Impact of Arctic Cod Bycatch

It is the position of industry that the past, current and potential level of Arctic cod bycatch under any of the proposed scenarios is small enough to have minimal impact on this resource. As such, none of the proposed scenarios would have a significant impact on the sustainability of the species.

DFO science identifies Arctic cod as a ubiquitous species occurring in a wide range of habitats in the Arctic, as seasonal migrants that can be found in large aggregations in both nearshore and offshore areas. It is also recognized that Arctic cod plays a pivotal role in the marine ecosystem, providing food for numerous species of seabirds, marine mammals, and fishes. Based on an energetic analysis DFO science estimates that 500,000 t to 1,000,000 t of Arctic cod are utilized annually by higher trophic level predators (whales, seals, birds, fishes), indicating that the actual biomass must be much higher.

Although DFO identifies Arctic cod as having a pivotal role in the ecosystem, the population status of this species is not formally assessed, and available data is collected through at-sea observers and fishery logbooks. This data was provided in graphical format in the Discussion Paper and indicates that the for the three areas in question combined the level of bycatch has been at most around 150 t (early 1990s and 2004). Data provided for more recent years indicates that the bycatch has been even lower, at no more than 75 t over the past couple of years (even with the adjusted COLs in SFA 1 and the WAZ). Based on the average shrimp catch of 15,397 tons over the period 2007 – 2017, peak Arctic Cod bycatch levels of 150 tons place bycatch levels at only about 1 percent of the directed fishery.

In the CSAS Research Document, the following is stated: "Considering the relatively small total mortality (less than 0.1% of the stock annually as proposed above based on predators' requirements) of Arctic Cod stemming from the Eastern Canadian Arctic shrimp fishery, it can be assumed that the impact of shrimp trawling on the Arctic Cod population is minimal. It should also be noted that the Arctic Cod bycatch is not retained by fishing vessels and gets discarded, thus, the biomass is not removed from the ecosystem.". On the January 7th conference call DFO indicated that Arctic cod bycatch in the past has not exceeded 0.01% of the estimated predator consumption, an extremely low level. In the discussion it was pointed out that even if the predator consumption estimates are off by a factor of 10, the bycatch would be at most 0.1% of predator consumption, which DFO agreed should not be considered a level for concern.

For the fishing industry, the history of encountering relatively elevated levels of Arctic cod bycatch can at best be referred to as spotty, especially in SFA 1 and the EAZ which have a longer history of fishing than the WAZ. Industry notes that even these minor elevations in Arctic Cod bycatch were demonstrated to be episodic and that no adverse effects on the stock or predators were noted. Additionally, industry experience in the WAZ has indicated that Arctic cod bycatch levels can be higher when the fishery starts in that area but that the bycatch drops off to minimal levels later in the season. The facts of the actual bycatch show that Arctic cod bycatch is extremely low and should not be an issue of concern.

COL Recommendations

NFA, CAPP and NC have consulted with their members and provide the following joint recommendations on the issues identified by DFO:

- *Management Unit:* To have the same COL for each of the impacted management units, i.e. SFA 1, EAZ, and WAZ, subject to ensuring that each area has as adequate bycatch level;
- *Species:* A separate COL to be implemented for each of Arctic cod and other groundfish;
- *Bycatch Limit:*
    - For Arctic cod: the greater of 200 kg or 10% of shrimp weight;
    - For Other Groundfish: the greater of 100 kg or 2.5% of shrimp weight;
- *Number of Tows (Hauls):* Each limit to be calculated based on averaging results over the most recent six tows

In addition, although bycatch levels to date have been extremely low, to mitigate concerns that may arise if bycatch levels demonstrate a significant increase, industry is suggesting that a clause be added to the IFMP with an annual threshold of 1,000t on total Arctic cod bycatch that would trigger a review of the COL for the following year. For example, if the total Arctic cod bycatch in the three areas exceeds 1,000 t or 500 t is any one area, the COL will be subject to review for the following year. This will ensure that the total bycatch remains at levels that should not impact on the overall availability of Arctic cod for predator consumption (1,000/500,000 or 0.2%) and provide for the level of caution recommended by DFO. Note as well that 1,000 tons of Arctic Cod bycatch, roughly ten times historic levels, would still constitute less than 6.5% of the directed fishery.

Research Document 2019/073

SUMMARY: Assessment of potential impacts of bycatch mortality on the Arctic Cod (*Boreogadus saida*) populations from the Northern (*Pandalus borealis*) and Striped (*Pandalus montagui*) Shrimp fisheries in Shrimp Fishing Areas 1, 2, and 3

AUTHORS: Wojciech Walkusz, Sheila Atchison, Kevin Hedges, and David Deslauriers

Arctic Cod (*Boreogadus saida*) is considered a key forage species in Arctic marine ecosystems due to its pivotal role in the food web, serving as prey for numerous marine animals (seals, whales, birds, and fishes) and being an important consumer of secondary production (zooplankton). In recent years (i.e., since 2017), shrimp fishing vessels operating in Shrimp Fishing Areas 1 (Baffin Bay) and 3 (Hudson Strait), have occasionally reported large amounts (400–2300 kg per tow) of Arctic Cod bycatch. Fisheries and Oceans Canada (DFO) Resource Management approached DFO Science seeking advice on ecologically and biologically-responsible Arctic Cod removal levels in individual Shrimp Fishing Areas (SFAs) in the north.

This research document reviews the Arctic Cod biology and ecology, considers distributional patterns, and analyzes historical bycatches in the Canadian Eastern Arctic shrimp fisheries. An attempt was made to quantify Arctic Cod population size in the area of interest. Due to the limited data available for this analysis, the ecosystem requirements (i.e., consumption demands of Arctic Cod predators) were used as an indirect estimate of the population size. Based on recent estimates for fish, bird, seal, and whale populations in Baffin Bay/Davis Strait, the Arctic Cod biomass requirement for ecosystem maintenance is greater than 500,000 t Arctic Cod annually, assuming 10% of all Northwest Atlantic marine mammal populations are utilizing the area of interest. While this is considered conservative, it provides a general estimate as to the order of magnitude of the Arctic Cod biomass held in the ecosystem.

By contrasting the size of the estimated Arctic Cod population with the bycatch levels, the assumption was made that the impact of bycatch removal in each Shrimp Fishing Area on the Arctic Cod population is minimal; less than 0.1% of the stock annually based on predators' requirements.With a limited scope of the Arctic Cod biomass data and a high degree of uncertainty surrounding the biomass indices, ecologically and biologically-responsible Arctic Cod removal levels in individual Shrimp Fishing Areas (SFAs) cannot be established at present. Therefore, when amending the conditions of licence in response to the elevated Arctic Cod bycatch which would result in increased removals, caution is advised.

Science Advisory Report 2020/007

SUMMARY: Review of Arctic Cod (*Boreogadus saida*) Bycatch in Canadian Arctic Shrimp Fisheries

- The shrimp fishery in the Canadian Arctic is an important resource for Inuit of Nunavut and Nunavik and the commercial shrimp industry in Shrimp Fishing Area 1 (SFA 1) and the Eastern and Western Assessment Zones (EAZ/WAZ). In general, a positive correlation between the total shrimp catch and Arctic Cod (*Boreogadus saida*) bycatch has been observed.
- Due to insufficient data, Science Advice could not be provided in regards to a "cap" for Arctic Cod removal and specifications of the "move away" provision.
- Due to the scarcity of data and the patchy spatial and temporal distribution of Arctic Cod, there is high uncertainty in the biomass index estimates obtained from the surveys that are not designed to target Arctic Cod. This uncertainty leads to low confidence in determining the impacts of Arctic Cod removal by the shrimp fishery. If the biomass index estimates are considered accurate, then the percentage of Arctic Cod removed from the total biomass is likely very low but given the high uncertainty, precaution is advised.
- The absence of a dedicated survey and the limited data on life history of Arctic Cod preclude the use of the Guidance Related to Bycatch and Discards in Canadian Commercial Fisheries (DFO 2012) to determine a sustainable catch limit.
- Canada is committed domestically and internationally to implementing conservation and management measures to address incidental bycatch, including Arctic Cod in the Northern and Striped Shrimp fisheries in the Eastern Canadian Arctic.
- Arctic Cod is a small bodied, short-lived forage fish with an atypical life history for gadoids as it occupies the pelagic zone for a portion of its life beyond the larval and juvenile stages. Despite these characteristics, Arctic Cod is specified as groundfish in the Atlantic Fishery Regulations and therefore "move away" provisions in the offshore Northern shrimp Conditions of Licence apply.
- Arctic Cod transfers energy from lower to higher trophic levels and thus is considered a pivotal species in the Arctic marine ecosystem, providing food for numerous species of seabirds, marine mammals, and fishes. A substantial total biomass of Arctic Cod is required for ecosystem maintenance.
- Arctic Cod have a circumpolar distribution and are considered seasonal migrants that use different habitats throughout the year (e.g., summer aggregations, under-ice habitat use).
- Continued reporting of both target and bycatch species from the At-Sea Observer program and vessel logbooks will be necessary to provide future Science Advice regarding any species caught in this fishery.
- Dedicated research is needed on Arctic Cod biology, ecology, population dynamics, and ecosystem modelling to better understand their pivotal role in the food web. This would also allow for greater certainty in biomass index estimates to improve Science Advice on sustainable bycatch removals by the shrimp fishery.

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Canadian Science Advisory Secretariat (CSAS)

Research Document 2019/073

Central and Arctic Region

Assessment of potential impacts of bycatch mortality on the Arctic Cod (*Boreogadus saida*) populations from the Northern (*Pandalus borealis*) and Striped (*Pandalus montagui*) Shrimp fisheries in Shrimp Fishing Areas 1, 2, and 3

Wojciech Walkusz, Sheila Atchison, Kevin Hedges, and David Deslauriers

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January 2020

Canada

Foreword

This series documents the scientific basis for the evaluation of aquatic resources and ecosystems in Canada. As such, it addresses the issues of the day in the time frames required and the documents it contains are not intended as definitive statements on the subjects addressed but rather as progress reports on ongoing investigations.

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ABSTRACT

Arctic Cod (*Boreogadus saida*) is considered a key forage species in Arctic marine ecosystems due to its pivotal role in the food web, serving as prey for numerous marine animals (seals, whales, birds, and fishes) and being an important consumer of secondary production (zooplankton). In recent years (i.e., since 2017), shrimp fishing vessels operating in Shrimp Fishing Areas 1 (Baffin Bay) and 3 (Hudson Strait), have occasionally reported large amounts (400–2300 kg per tow) of Arctic Cod bycatch. Fisheries and Oceans Canada (DFO) Resource Management approached DFO Science seeking advice on ecologically and biologically-responsible Arctic Cod removal levels in individual Shrimp Fishing Areas (SFAs) in the north. This research document reviews the Arctic Cod biology and ecology, considers distributional patterns, and analyzes historical bycatches in the Canadian Eastern Arctic shrimp fisheries. Also, an attempt was made to quantify Arctic Cod population size in the area of interest. Due to the limited data available for this analysis, the ecosystem requirements (i.e., consumption demands of Arctic Cod predators) were used as an indirect estimate of the population size. By contrasting the size of the estimated Arctic Cod population with the bycatch levels, the assumption was made that the impact of bycatch removal in each Shrimp Fishing Area on the Arctic Cod population is minimal. With a limited scope of the Arctic Cod biomass data and a high degree of uncertainty surrounding the biomass indices, ecologically and biologically-responsible Arctic Cod removal levels in individual Shrimp Fishing Areas (SFAs) cannot be established at present. Therefore, when amending the conditions of licence in response to the elevated Arctic Cod bycatch which would result in increased removals, caution is advised.

INTRODUCTION

Arctic Cod (*Boreogadus saida*; Figure 1) is considered a key (pivotal) forage species in Arctic marine ecosystems (Bradstreet et al. 1986). As a pelago-benthic dweller it occurs in both the pelagic realm and near the ocean floor (Geoffroy et al. 2016).



Figure 1. Arctic Cod (Boreogadus saida). Photo credit: Claude Nozères, DFO.

Larval and juvenile Arctic Cod concentrate mainly in the upper water column, taking advantage of the zooplankton (Copepoda) food base (Geoffroy et al. 2016). Upon reaching a certain age and length (age 1+, approx. 60 mm; Walkusz et al. 2013.) individuals descend to deeper depths and remain demersal for the rest of their life (Majewski et al. 2016). In benthic habitats, larger Arctic Cod feed on Amphipods and small fishes (Walkusz et al. 2013). Since younger and older individuals occur in both pelagic and benthic realms (Figure 2), it is difficult to study an entire Arctic Cod population as doing so would require the simultaneous use of pelagic and demersal fishing gear. Recently, hydroacoustic methods have proven useful for studying Arctic Cod populations; however, hydroacoustic signals still require ground-truthing to validate the remote observations.

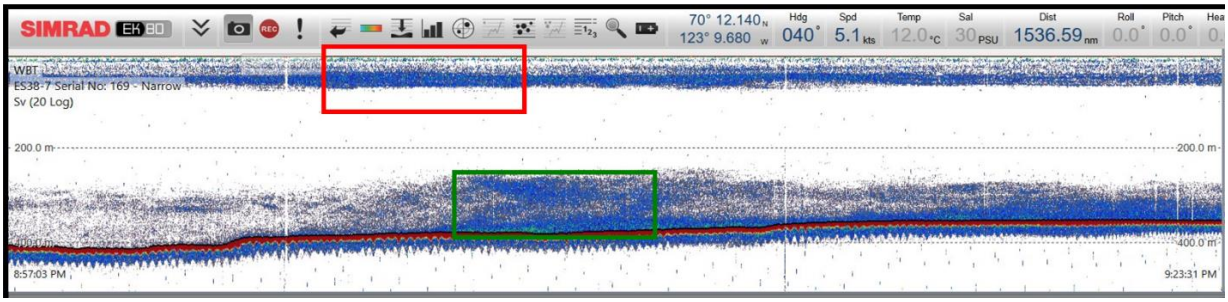


Figure 2. Echogram recorded with SIMRAD EK-80 acoustic system (38 kHz) at a 353 m station in the Amundsen Gulf. The red rectangle (top) indicates a subsurface aggregation of young-of-the year fish, while the green rectangle (bottom) indicates a benthic aggregation of larger individuals. Note the vertical extension (thickness, 80 – 100 m) of each of the aggregations in contrast to the sampling capacity of fishing gear (few meters vertical opening). Courtesy of Andy Majewski (DFO, data unpublished).

Arctic Cod is extremely important in Arctic marine ecosystems as food for numerous marine animals (seals, whales, birds, and fishes) and as an important consumer of secondary production (zooplankton). Due to its key linking role in food webs, Arctic Cod is also of interest

to Indigenous Peoples who directly profit from healthy populations of marine resources, through subsistence harvests and/or commercial fishing. The intermediary position of Arctic Cod in Arctic marine food webs is reflected in the relatively large number of scientific projects devoted to understanding its distribution, feeding, and life cycle. Through these observations, Arctic Cod has been found in dense aggregations offshore (Majewski et al. 2016) and in dense nearshore schools (Welch et al. 1996). This patchy distribution pattern might increase the risk to Arctic Cod populations from commercial fishing activities when fishing locations overlap with areas of high Arctic Cod density.

Since 2017, shrimp fishing vessels operating in Shrimp Fishing Areas (SFA) 1 (Baffin Bay) and 3 (Hudson Strait), have occasionally reported large amounts (400–2300 kg per tow) of Arctic Cod bycatch. In Eastern Canada, Arctic Cod is listed as a groundfish species (Atlantic Fishery Regulations 1985), which means that elevated amounts of Arctic Cod bycatch can trigger a standard "move away" licence provision, as per the Conditions of Licence (DFO 2018), which states: "*In the event that the total incidental catch of all groundfish species in any set exceeds the greater of 2.5% or 100 kg total weight, the licence holder/operator must immediately change the vessel's fishing area by a minimum of 10 nautical miles from any coordinate during the last tow*". High occurrences of Arctic Cod in bycatch, while not common, pose a significant burden on the fishing industry and presently unknown ecological consequences. With limited time to harvest the allotted shrimp catch each year (because of a relatively short open-water period and long transit times from southern ports of origin), the fishing industry in the Eastern Arctic has asked Resource Management for increased flexibility for Arctic Cod bycatch, with move away provisions triggered based on amounts caught averaged over a number of consecutive tows.

As a result, DFO Resource Management approached DFO Science seeking advice on ecologically and biologically-responsible Arctic Cod removal levels in individual SFAs.

Given the absence of a comprehensive Arctic Cod stock assessment, the purpose of this report is to discuss ecologically and biologically tolerable levels for Arctic Cod removals in SFAs 1-3 and if it is possible to create a "cap'' system for the total annual bycatch level.

REVIEW OF ARCTIC COD BIOLOGY AND ECOLOGY

Arctic Cod is a relatively small fish (maximum size: 400 mm, mean: 140 mm; Matley et al. 2013) with a maximum life span of seven years. It sometimes co-occurs with Polar Cod (*Arctogadus glacialis*), which is similar in appearance, and the two species can be mistakenly identified for each other. Arctic Cod spawns in winter (Hop et al. 1995) and the larvae hatch between April and June depending on geographical location (Bouchard and Fortier 2011). Larval Arctic Cod feed initially on smaller prey items (e.g., Copepoda nauplii, Rotifers), advancing to larger prey items as they grow (e.g., *Calanus* copepods; Walkusz et al. 2011). Juvenile fish (approx. 35 mm in length) continue feeding on Copepods. After reaching the size of descent (approx. 50 mm; Falk-Petersen et al. 1986, Majewski et al. 2016) Arctic Cod adopt a demersal life and in addition to *Calanus* copepods start feeding on Amphipods and fishes, including cannibalism. Arctic Cod is considered a schooling fish (Hop et al. 1997), however, "aggregating fish" seems a more appropriate term considering the dense aggregations of different size/age individuals and non-unidirectional movement observed by Geoffroy et al. (2011, 2016).

DISTRIBUTIONAL PATTERNS AND BIOMASS INDICES

Arctic Cod is widely distributed in the Arctic. It is often dispersed in the water column (Figure 2) and is therefore hard to properly quantify using any one type of direct sampling gear (either demersal or pelagic). Walkusz et al. (2019) calculated Arctic Cod biomass indices for SFAs 1, 2,

and 3 based on biomass estimates from demersal scientific surveys only (2005–2017). These biomass estimates (maximum 138 t, 47,000 t, and 30,000 t in SFA 1, 2, and 3, respectively) were certainly underestimated as Arctic Cod can essentially occupy the entire water column and its distribution is extremely patchy. Arctic Cod has been observed in large nearshore schools in Barrow Strait (Welch et al. 1996), with aggregations being estimated to have a biomass of 20,000 t. Also, Welch et al. (1992) claimed that nearshore Arctic Cod aggregations along the Canadian Arctic Archipelago are common and were estimated to be approximately 75,000 t. Using acoustic methods that integrate biomass in the water column and near the bottom, Benoit et al. (2008) recorded large aggregations of Arctic Cod in Franklin Bay, with average biomass being 11.2 kg m^{-2} (equal to 11,200 t km^{-2} assuming continuous distribution) from February to April, with the maximum reaching 55 kg m^{-2} (equal to 55,000 t km^{-2} assuming continuous distribution). These high densities were assumed to be localized. Using similar methods, Geoffroy et al. (2011) detected a large winter aggregation in the Amundsen Gulf. They calculated that in February the biomass peaked at 0.732 kg m^{-2} (equal to 732 t km^{-2} assuming continuous distribution); however, the aggregation was most likely confined to the northern portion of the Amundsen Gulf.

ECOSYSTEM REQUIREMENTS

Using predator populations to estimate food base requirements has been used in marine research. For example Stenson (2013) estimated the energy requirements of individual prey populations required to sustain Harp Seal population. Walkusz et al. (2013) showed that for the Canadian Beaufort Shelf (area of 63,000 km^2), biomass calculated from demersal trawl surveys only accounts for a small fraction of all Arctic Cod biomass needed to meet the bio-energetic requirements of the ecosystem (i.e., feeding by seals, whales, birds, and fishes). Similar conclusions were presented by Welch et al. (1992) who claimed that biomass estimates from ‘dispersed’ fish produce significantly underestimated values. Walkusz et al. (2013) estimated that using the conservative assumption of approximately 20,000 beluga whales that consume a total of 440 t of fish per day and 500,000 ringed/bearded seals that consume a total of 2,500 t of fish per day require a total of 3,000 t of Arctic cod daily to sustain their predators' needs in the Beaufort Sea. It means that 500,000–1,000,000 t of fish are consumed over the course of the year (whales and birds are absent from the area after freeze-up). This amount, while high, would not be exceptional, considering Welch et al. (1992) estimated that 148,000 t of Arctic Cod is consumed annually in Lancaster Sound (area of 98,000 km^2).

Based on recent estimates for fish, bird, seal, and whale populations in Baffin Bay/Davis Strait (Table 1), Arctic Cod biomass requirement for ecosystem maintenance is similar (or higher) than the Beaufort Sea (i.e., > 500,000 t Arctic Cod annually, assuming 10% of all Northwest Atlantic marine mammal populations utilizing the area of interest). While this approach most likely puts the estimate of Arctic Cod biomass required to sustain their predators on the conservative side, it provides a general estimate as to the order of magnitude of the Arctic Cod biomass held in the ecosystem.

Table 1. Species and abundances of known Arctic Cod predators present in the Baffin Bay/Davis Strait area (source: Treble 2017, NIRB 2018).

Species	Abundance
Fishes (t)	
Greenland Halibut	200,000
Birds (individuals)	
Thick-billed Murre	860,000
Little Auk (dovekie)	30,000,000
Northern Fulmar	Not quantified but sizeable
Seals (individuals)	
Ringed seal	1,200,000
Bearded seal	Not quantified, but considered very abundant
Harp seal	7,400,000 in the Northeast Atlantic
Whales (individuals)	
Beluga whale	20,000
Narwhal	45,000

ANALYSIS OF HISTORICAL BYCATCHES

Arctic Cod, which is similar in size to shrimp, is a common bycatch species in the Eastern Canadian Arctic shrimp fishery. While the amount of Arctic Cod bycatch in a single tow is usually low, large catches are occasionally reported. Arctic Cod catches have no economic value and are discarded at sea.

Historical records for Arctic Cod bycatch in SFA 1 ranging between zero in years with no fishing to 143 t in 1993 (Figure 3; Walkusz et al. 2019). In SFA 2, the peak Arctic Cod bycatch was 31 t in 2004/05 (Figure 4).

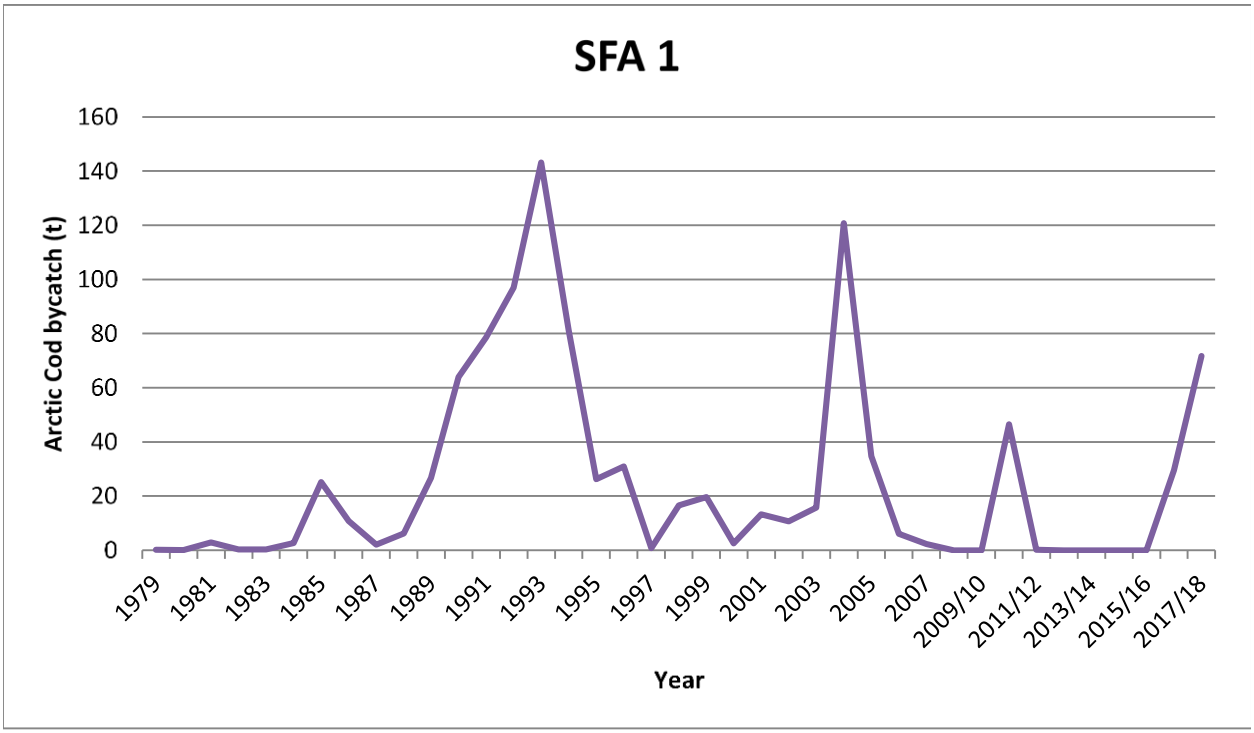


Figure 3. Arctic Cod bycatch in SFA 1 for 1979–2018 (Walkusz et al. 2019).

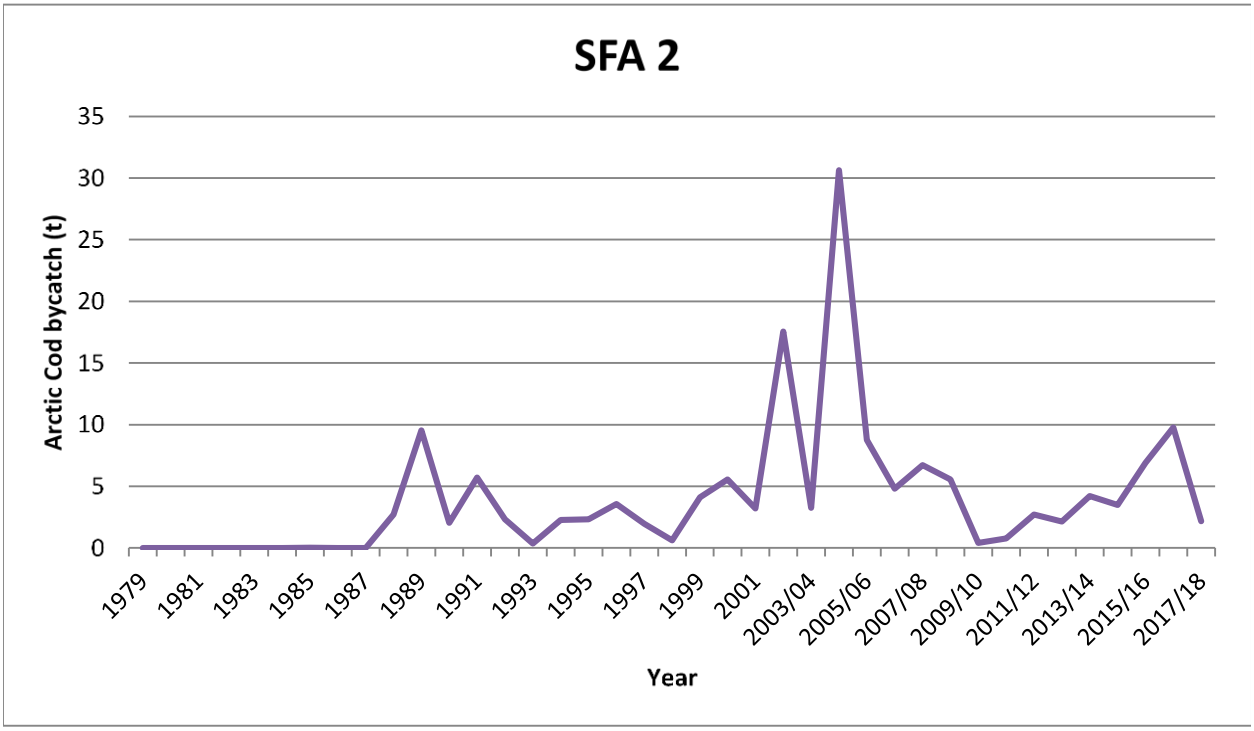


Figure 4. Arctic Cod bycatch in SFA 2 for 1979-2018. Shrimp fishery management cycle changed from calendar year to fiscal year starting in 2003.

In SFA 3, incidental catches of Arctic Cod were low until recent years, when 47 t was caught in 2018 (Figure 5). The size of Arctic Cod catches is heavily related to aggregating processes, therefore incidental catches will reflect fluctuations in these processes.

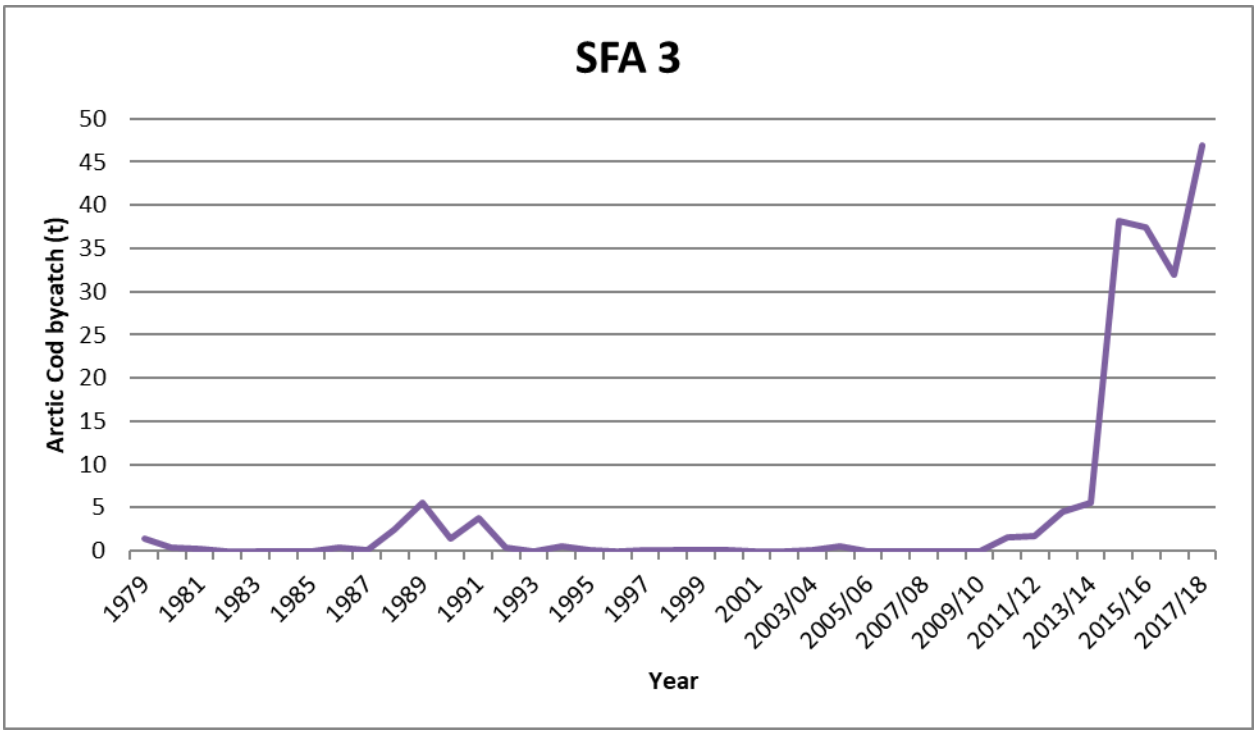


Figure 5. Arctic Cod bycatch in SFA3 for 1979–2018. Shrimp fishery management cycle changed from calendar year to fiscal year starting in 2003.

UNCERTAINTIES OF ANALYSIS

Overall lack of knowledge of Arctic Cod biology in the studied area.

While general biology of Arctic Cod has been studied extensively in various Arctic locations, its biology is poorly understood in the geographic area considered in this review. That limitation applies to the timing of descent of juvenile Arctic Cod from pelagic to benthic habitats (i.e., when they become susceptible to mortality due to the shrimp fishery). Multi-seasonal sampling along with length analyses of individuals caught would provide insight into the ontogenetic vertical migrations of Arctic Cod.

Insufficient data collection for the proper biomass index analysis.

In this analysis, the biomass index was based solely on the benthic catches; however, Arctic Cod is considered a pelago-benthic dweller. The lack of information on the pelagic portion of the population can lead to significant underestimates of the biomass. Application of acoustic methods along with pelagic trawl sampling would address this knowledge gap.

Insufficient data on distribution and abundance of Arctic Cod predators.

Analysis of predation pressure on Arctic Cod was done using published abundances of predators with the assumption that a portion of the predator population (i.e., 10%) would be present in the area of interest. Using this assumption, the biomass of Arctic Cod required to sustain its predators was estimated. While this generalization provides some insight into Arctic

Cod abundance, it is not a direct measure of fish biomass and the uncertainty associated with this approach can be significant.

Potential observer data bias

All offshore vessels operating in the area of interest are obliged by the Conditions of Licence, to have an At Sea Observer (ASO) onboard. The data collected by the ASO is meant to be fishery independent; however, it can be expected that there are times when particular tows are not monitored due to the limitations of having only one ASO onboard, which may create bias in the information reported.

DISCUSSION

Considering the relatively small total mortality (less than 0.1% of the stock annually as proposed above based on predators' requirements) of Arctic Cod stemming from the Eastern Canadian Arctic shrimp fishery, it can be assumed that the impact of shrimp trawling on the Arctic Cod population is minimal. It should also be noted that the Arctic Cod bycatch is not retained by fishing vessels and gets discarded, thus, the biomass is not removed from the ecosystem.

With a limited scope of the Arctic Cod biomass data and a high degree of uncertainty surrounding the biomass indices, ecologically and biologically-responsible Arctic Cod removal levels in individual Shrimp Fishing Areas (SFAs) cannot be established at present. Therefore, when amending the conditions of licence in response to elevated Arctic Cod bycatch which would result in increased removals, caution is advised.

In order to answer the question of the ecologically and biologically-responsible Arctic Cod removal levels in individual SFAs, the following would have to take place:

- Study of Arctic Cod biology/ecology including migratory patterns, aggregating events, and vertical distribution patterns (population split between pelagic and benthic habitats); this could be achieved by a dedicated survey that would combine acoustic survey with pelagic and benthic trawl sampling to ground truth the acoustic data; and,
- Study of Arctic Cod role in the ecosystem, including its role as a consumer (of zooplankton) and food for higher trophic levels (fish, seals ,whales, birds); this could be achieved by studies of Arctic Cod stomach contents and biomarkers (stable isotopes and fatty acids), and through a better assessment of the marine mammals and bird populations in the area.

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Fisheries and Oceans Canada | Pêches et Océans Canada
Ecosystems and Oceans Science | Sciences des écosystèmes et des océans

Central and Arctic Region

Canadian Science Advisory Secretariat
Science Advisory Report 2020/007

REVIEW OF ARCTIC COD (*BOREOGADUS SAIDA*) BYCATCH IN CANADIAN ARCTIC SHRIMP FISHERIES



*Arctic Cod (*Boreogadus saida*).*

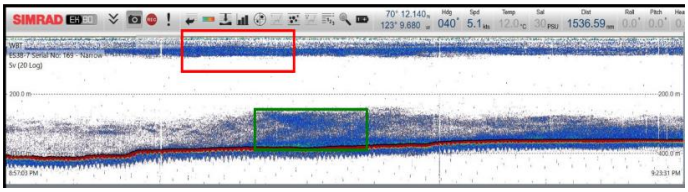


Figure 1. Echogram recorded with SIMRAD EK-80 acoustic system (38 kHz) at a 353 m station in the Amundsen Gulf. The red rectangle (top) indicates a subsurface aggregation of young-of-the-year fish, while the green rectangle (bottom) indicates a benthic aggregation of larger individuals. Note the vertical extension (thickness, 80–100 m) of each of the aggregations in contrast to the sampling capacity of fishing gear (few meters vertical opening). Courtesy of Andy Majewski (DFO, data unpublished).

Context:

*Incidental bycatch and discard of non-targeted species occur in many fisheries. An objective of an Ecosystem Approach to Fisheries Management is to control incidental mortality of non-targeted species. Arctic Cod (*Boreogadus saida*) is a ubiquitous species occurring in a wide range of habitats in the Arctic. Given this widespread distribution and tendency to form large aggregations, it is a common bycatch species in various northern fisheries including the Northern and Striped Shrimp fisheries in the Eastern Canadian Arctic.*

Fisheries and Oceans Canada (DFO) Resource Management requested that DFO Science provide advice on a sustainable overall bycatch limit of Arctic Cod (in tonnes) for Shrimp Fishing Area 1 and the Eastern and Western Assessment Zones (EAZ and WAZ) as well as establishing suitable references to indicate when that mortality is unacceptable. In providing the requested advice, DFO Science was asked to consider the current "move away" provision on commercial licences.

*This Science Advisory Report is from the July 3–4, 2019 meeting on Advice on Arctic Cod (*Boreogadus saida*) Bycatch Limits in Northern Shrimp Fisheries in the Canadian Arctic. Additional publications from this meeting will be posted on the Fisheries and Oceans Canada (DFO) Science Advisory Schedule as they become available.*

February 2020

Canada

SUMMARY

- The shrimp fishery in the Canadian Arctic is an important resource for Inuit of Nunavut and Nunavik and the commercial shrimp industry in Shrimp Fishing Area 1 (SFA 1) and the Eastern and Western Assessment Zones (EAZ/WAZ). In general, a positive correlation between the total shrimp catch and Arctic Cod (*Boreogadus saida*) bycatch has been observed.
- Due to insufficient data, Science Advice could not be provided in regards to a “cap” for Arctic Cod removal and specifications of the “move away” provision.
- Due to the scarcity of data and the patchy spatial and temporal distribution of Arctic Cod, there is high uncertainty in the biomass index estimates obtained from the surveys that are not designed to target Arctic Cod. This uncertainty leads to low confidence in determining the impacts of Arctic Cod removal by the shrimp fishery. If the biomass index estimates are considered accurate, then the percentage of Arctic Cod removed from the total biomass is likely very low but given the high uncertainty, precaution is advised.
- The absence of a dedicated survey and the limited data on life history of Arctic Cod preclude the use of the Guidance Related to Bycatch and Discards in Canadian Commercial Fisheries (DFO 2012) to determine a sustainable catch limit.
- Canada is committed domestically and internationally to implementing conservation and management measures to address incidental bycatch, including Arctic Cod in the Northern and Striped Shrimp fisheries in the Eastern Canadian Arctic.
- Arctic Cod is a small bodied, short-lived forage fish with an atypical life history for gadoids as it occupies the pelagic zone for a portion of its life beyond the larval and juvenile stages. Despite these characteristics, Arctic Cod is specified as groundfish in the Atlantic Fishery Regulations and therefore “move away” provisions in the offshore Northern shrimp Conditions of Licence apply.
- Arctic Cod transfers energy from lower to higher trophic levels and thus is considered a pivotal species in the Arctic marine ecosystem, providing food for numerous species of seabirds, marine mammals, and fishes. A substantial total biomass of Arctic Cod is required for ecosystem maintenance.
- Arctic Cod have a circumpolar distribution and are considered seasonal migrants that use different habitats throughout the year (e.g., summer aggregations, under-ice habitat use).
- Continued reporting of both target and bycatch species from the At-Sea Observer program and vessel logbooks will be necessary to provide future Science Advice regarding any species caught in this fishery.
- Dedicated research is needed on Arctic Cod biology, ecology, population dynamics, and ecosystem modelling to better understand their pivotal role in the food web. This would also allow for greater certainty in biomass index estimates to improve Science Advice on sustainable bycatch removals by the shrimp fishery.

INTRODUCTION

The shrimp fishery in the Eastern Arctic operates in Shrimp Fishing Areas 1–3 (SFA 1–3; Figure 2). SFA 1 is located in Northwest Atlantic Fisheries Organization (NAFO) Division 0A within Baffin Bay and SFA 2 falls within Davis Strait. For the purpose of the shrimp stock assessment process, SFA 2 is analogous to the EAZ (Eastern Assessment Zone) (DFO 2017). SFA 3 is located in Hudson Strait and is analogous to the WAZ (Western Assessment Zone). The fishery in SFA 1 operates on a calendar year basis (i.e., January 1 to December 31). Historically, SFAs 2 and 3 were also managed on a calendar year basis, however, a new policy was adopted in 2003 that implemented a fiscal year management cycle (i.e., April 1 to March 31).

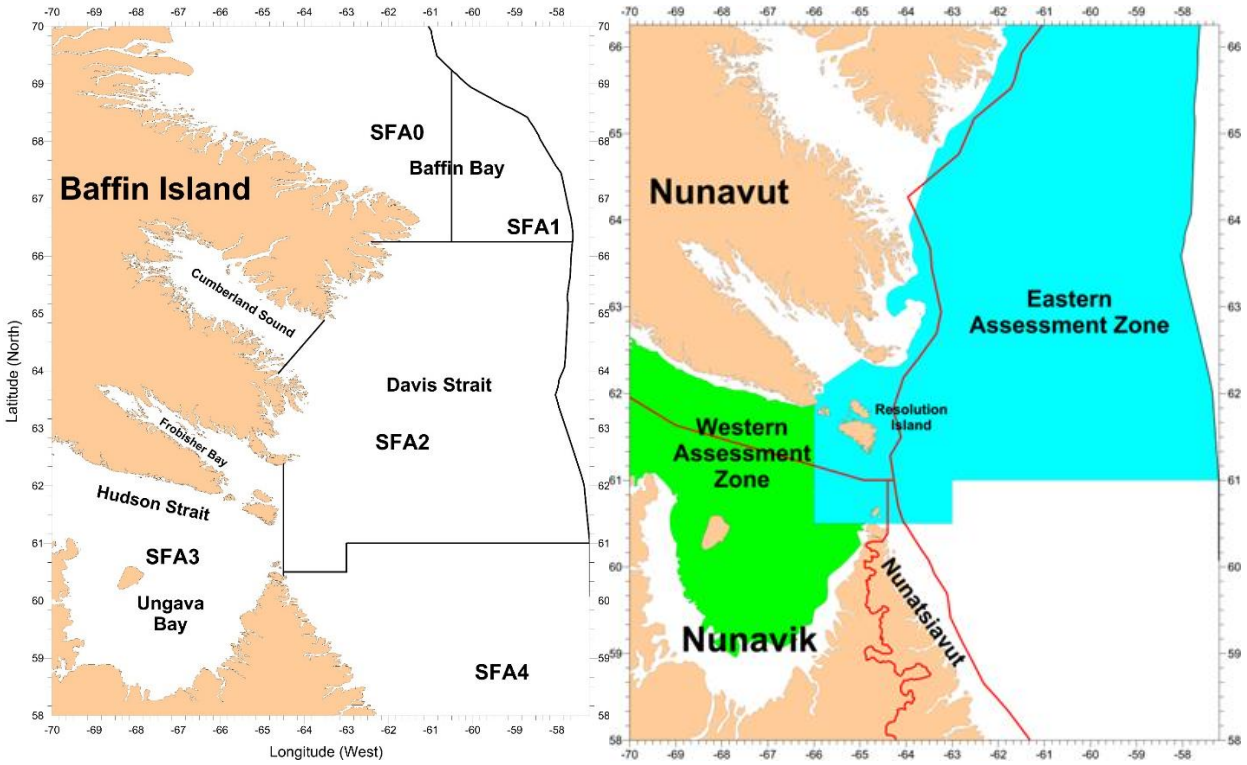


Figure 2. Location of Shrimp Fishing Areas (SFAs) used until 2013 and Western and Eastern Assessment Zones used since 2013.

Since 2017, shrimp fishing vessels operating in Shrimp Fishing Areas 1 (Baffin Bay) and 3 (Hudson Strait), have occasionally reported large amounts (400–2,300 kg per tow) of Arctic Cod bycatch. In Eastern Canada, Arctic Cod is listed as a groundfish species (Atlantic Fishery Regulations 1985), which means that elevated amounts of Arctic Cod bycatch can trigger a standard "move away" provision, as per the Northern and Striped Shrimp Conditions of Licence, which states: "*In the event that the total incidental catch of all groundfish species in any set exceeds the greater of 2.5% or 100 kg total weight, the licence holder/operator must immediately change the vessel's fishing area by a minimum of 10 nautical miles from any coordinate during the last tow*".

High occurrences of Arctic Cod bycatch, while not common, pose a significant burden on the fishing industry and have unknown ecological consequences. With limited time to harvest the allotted shrimp catch each year due to the relatively short open-water period and long transit

times from southern ports of origin, the fishing industry in the Eastern Arctic has asked DFO Resource Management for increased flexibility in Arctic Cod bycatch, with “move away” provisions triggered by the amount of Arctic Cod bycatch averaged over a number of consecutive tows rather than triggered by the amount of bycatch in one tow.

As a result, DFO Resource Management approached DFO Science seeking Science Advice on ecologically and biologically-responsible Arctic Cod removal levels in individual Shrimp Fishing Areas (SFAs). Given the absence of a comprehensive Arctic Cod stock assessment, the purpose of this process is to discuss ecologically and biologically acceptable levels for Arctic Cod removals in SFA 1, EAZ, and WAZ and whether it is possible to identify a “cap’’ for the total annual bycatch level of Arctic Cod for the three areas.

Arctic Cod Biology

Arctic Cod is a relatively small fish (mean size: 140 mm, maximum size: 400 mm; Matley et al. 2013) with a maximum life span of seven years. Arctic Cod spawns in winter (Hop et al. 1995) and the larvae hatch between April and June depending on geographical location (Bouchard and Fortier 2011). Larval Arctic Cod feed initially on smaller prey items (e.g., *Copepoda nauplii*, Rotifers) and prey on larger items as they grow (e.g., *Calanus copepods*; Walkusz et al. 2011). Juvenile fish (~35 mm in length) feed on copepods. After reaching the size of descent (~50 mm; Falk-Petersen et al. 1986, Majewski et al. 2016), Arctic Cod adopts a demersal life and, in addition to *Calanus* copepods, starts feeding on amphipods and fishes, including cannibalism. Once associated with the bottom, Arctic Cod becomes part of the demersal community, along with Northern and Striped Shrimp, and is incidentally caught in the shrimp fishery.

ASSESSMENT AND ANALYSIS

Arctic Cod Historical Catches

All vessels fishing for shrimp in the Eastern Canadian Arctic are required, as a condition of their licence, to have an At-Sea Observer (ASO) present on board at all times (i.e., 100% observer coverage). Data on bycatch (e.g., species caught, total weight caught for each species, measurements from individual animals) are collected by dedicated personnel (ASO) during shrimp fishing trips. Data collected by ASO are independent from the fishery records (logbooks) kept by the vessel’s captain and include information about both the target and bycatch species. Based on the data collected by ASO, Walkusz et al. (2020a) found a positive correlation (with the exception of SFA 2 where no correlation was established) between the amount of shrimp caught and the amount of Arctic Cod bycatch.

The fishery does not retain the incidentally caught Arctic Cod, thus, contrary to other fisheries in which bycatch is landed, the shrimp fishery returns the biomass to the sea. However, since the commercially executed fishing tows are 2–3 h in duration, the survival of released Arctic Cod is expected to be low.

Arctic Cod Population Biomass Estimates

Arctic Cod is considered a schooling fish (Hop et al. 1997), however, “aggregating fish” seems a more appropriate term considering the dense aggregations of different size/age individuals and non-unidirectional movement observed by Geoffroy et al. (2011, 2016; Figure 1). Arctic Cod is often dispersed throughout the water column and is therefore hard to properly quantify using any one type of directed sampling gear (either demersal or pelagic).

A biomass index of bottom-dwelling Arctic Cod was estimated using data from scientific surveys. Available data were combined from surveys targeting Northern and Striped Shrimp (200–600 m depth range) and groundfish, in particular Greenland Halibut (400–1,500 m depth range). The groundfish surveys conducted by DFO in Div. 0A (SFA 1) and Div. 0B (SFA 2) used an Alfredo III trawl with 20 mm cod-end mesh. Groundfish surveys are not conducted in SFA 3. Initial stock assessment (2006–2013) surveys for Northern and Striped Shrimp in SFA 3 were conducted by DFO with a Cosmos trawl with 12.8 mm cod end mesh. Since 2006 in SFA 2 and 2014 in SFA 3, surveys were designed by DFO and conducted by the Northern Shrimp Research Foundation (NSRF) using a Campelen 1800 trawl with 12.8 mm cod end mesh. All of the aforementioned surveys are strictly demersal and lack information on pelagic zone.

The results of these demersal surveys were used to quantify Arctic Cod biomass in SFAs 1–3, which resulted in an estimated biomass index that does not exceed 70,000 t in all SFAs combined (Walkusz et al. 2020b; Figures 3–5). This estimate likely represents a greatly underestimated index because of the scarcity of data, the patchiness of Arctic Cod occurrence, and the fact that only the demersal component of the ecosystem was sampled during the surveys.

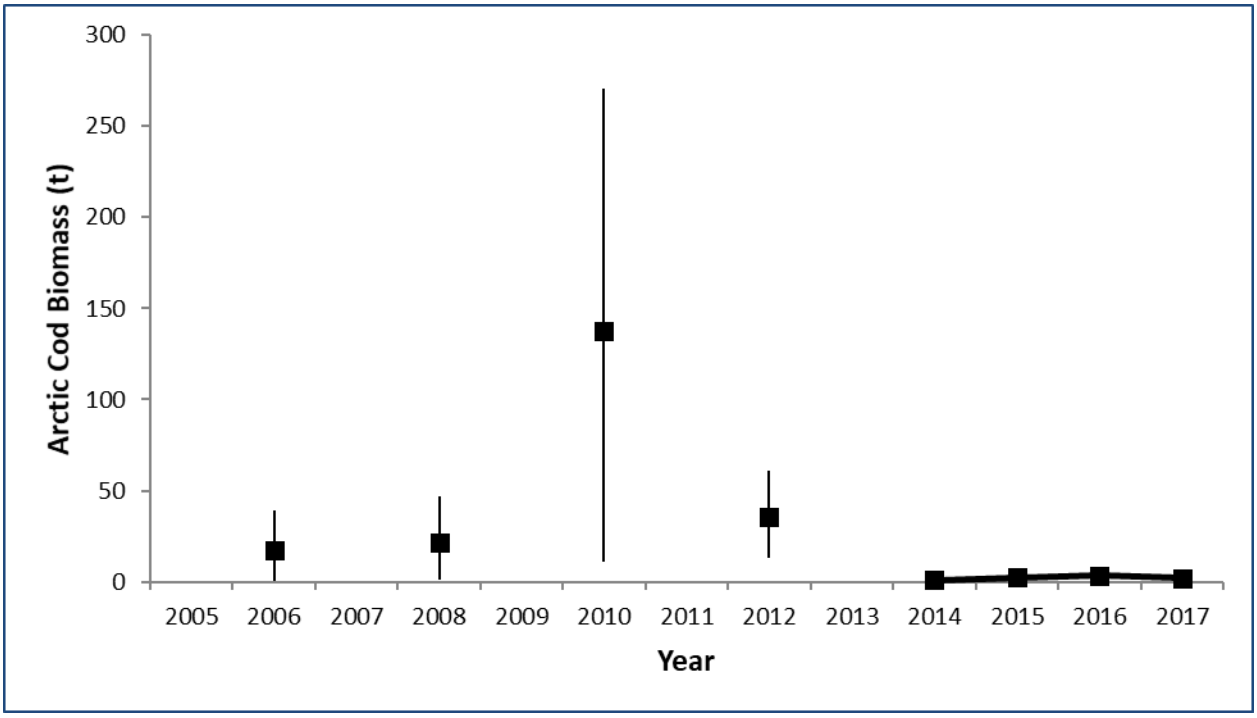


Figure 3. Biomass index of bottom-dwelling Arctic Cod from the DFO Groundfish Survey in Div. 0A (SFA 1) for 2005–2017. Bars indicate standard deviation of the Arctic Cod biomass index. Note that the scale of Arctic Cod Biomass differs between SFAs (i.e., Figures 3–5).

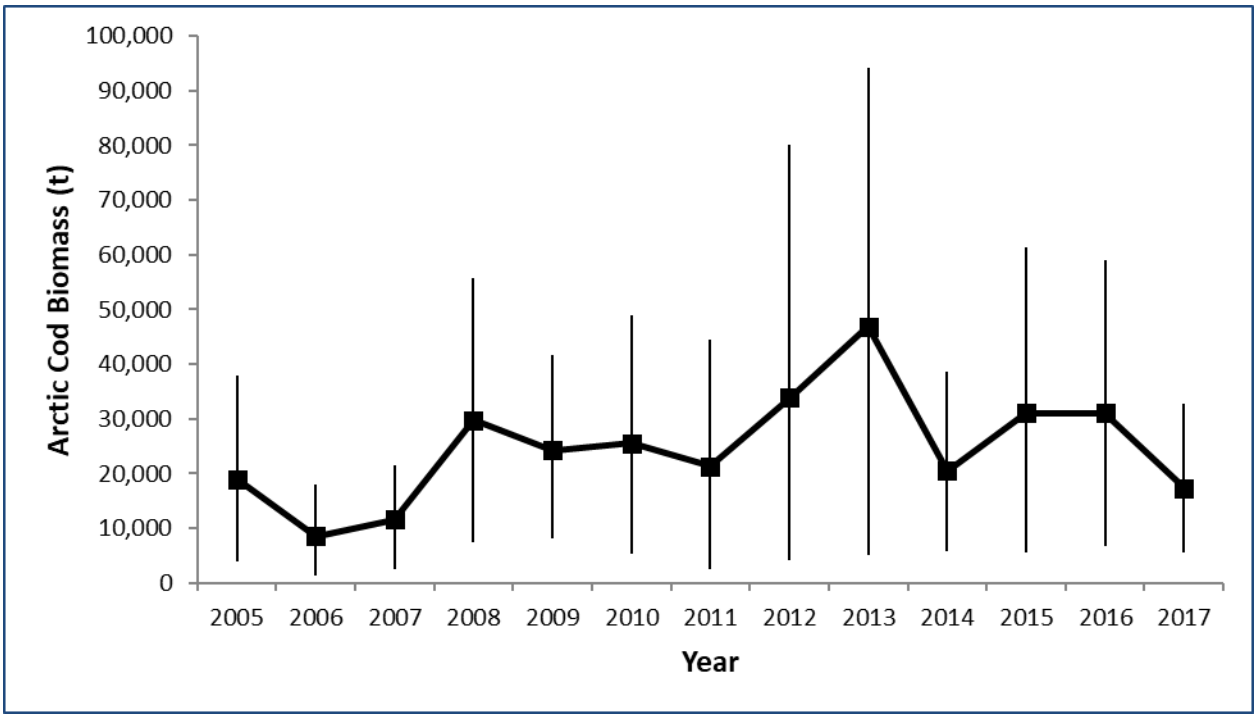


Figure 4. Biomass index of bottom-dwelling Arctic Cod from the Northern Shrimp Research Foundation (NSRF) survey in SFA 2 for 2005–2017. Bars indicate standard deviation of the Arctic Cod biomass index. Note that the scale of Arctic Cod Biomass differs between SFAs (i.e., Figures 3–5).

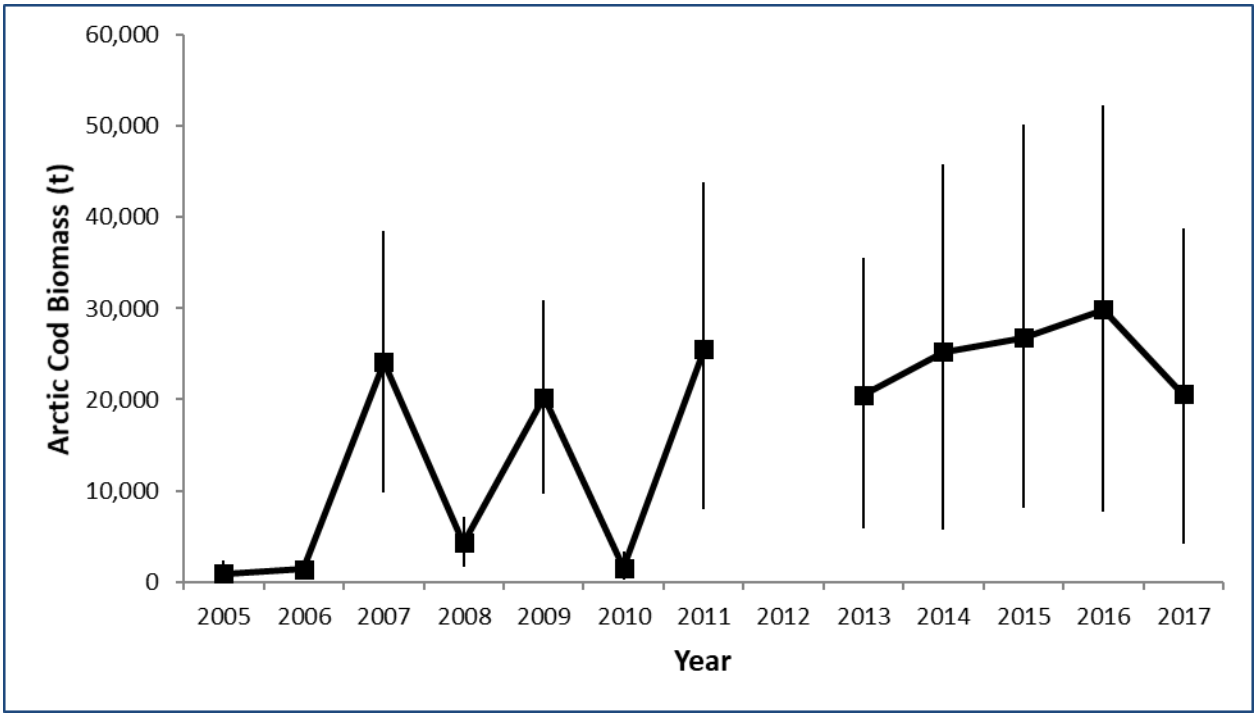


Figure 5. Biomass index of bottom-dwelling Arctic Cod in SFA 3 from the NSRF survey for 2005–2017. Bars indicate standard deviation of the Arctic cod biomass index. Note that the scale of Arctic Cod Biomass differs between SFAs (i.e., Figures 3–5).

This underestimation most likely stems from the fact that Arctic Cod is a pelago-benthic fish and an unknown portion of its population may reside in the water column during the survey. Since Arctic Cod tend to aggregate, the surveys may not detect the aggregations because a given survey is a ''snap-shot'' of fish biomass at a specific time as opposed to an active tracking approach. Finally, Arctic Cod migrations are poorly understood in the Canadian Eastern Arctic, which can lead to surveys missing large cohorts of fish at certain times of the year.

By using recent estimates for fish, bird, seal, and whale populations in Baffin Bay/Davis Strait, Walkusz et al. (2020b) found that the Arctic Cod biomass requirement for ecosystem maintenance is > 500,000 t Arctic Cod annually. While this approach most likely produced a conservative estimate of the Arctic Cod biomass required to sustain its predators, it provides a general estimate of the order of magnitude of the Arctic Cod biomass required by the ecosystem.

Sources of Uncertainty

Overall lack of knowledge of Arctic Cod biology in the areas of interest.

While the general biology of Arctic Cod has been studied extensively in various Arctic locations, its biology is poorly understood in the geographic areas considered in this review. The lack of information on the timing of descent of juvenile Arctic Cod from pelagic to benthic habitats (i.e., when they become susceptible to fishing mortality in the shrimp fishery) represents therefore a significant knowledge gap. Multi-seasonal sampling along with length analyses of individuals caught would provide an insight into the ontogenetic timing of vertical migrations of Arctic Cod.

Insufficient data collection for biomass index analysis.

In this analysis, the biomass index was based solely on the benthic catches; however, Arctic Cod is considered a pelago-benthic species. Consequently, the lack of information on the pelagic portion of the population likely leads to significant underestimates of the Arctic Cod biomass. Application of acoustic methods (e.g., echosounder) along with pelagic trawl sampling would address this knowledge gap.

Insufficient data on distribution and abundance of Arctic Cod predators.

Analysis of predation pressure on Arctic Cod was conducted using published abundances of predators with the assumption that a portion of the predator population (i.e., 10%) would be present in the areas of interest. Using this assumption, the biomass of Arctic Cod required to sustain its predators was estimated. While this generalization provides some insight into Arctic Cod abundance, it is not a direct measure of fish biomass and the uncertainty associated with this approach is significant.

Potential observer data bias.

All offshore vessels operating in the areas of interest are obliged by the Conditions of Licence to have an At-Sea Observer (ASO) onboard. The data collected by the ASO is meant to be fishery independent; however, it can be expected that particular tows are not monitored due to the limitations of having only one ASO onboard, which may create an underestimation bias in the information reported.

CONCLUSIONS AND ADVICE

Considering the relatively small total fishing mortality of Arctic Cod stemming from the bycatch of the Northern shrimp fishery in the Eastern Canadian Arctic, i.e., less than 0.1% of the estimated Arctic Cod stock annually as estimated using predators' requirements, it can be assumed that the impact of the shrimp fishery on the Arctic Cod population is minimal in each of the three areas.

Consequently, bycatch mortality is unlikely to result in negative ecosystem impacts (i.e., predator requirements). However, given the high uncertainty in the Arctic Cod biomass index estimates, precaution is advised. Given the scarcity of data, Science cannot currently provide an ecologically and biologically acceptable Arctic Cod bycatch removal limit for the areas of interest.

Considering the methods used in shrimp fishery (e.g., length of the tow, characteristics of the fishing gear, processing of the catch), the probability of survival for incidentally caught Arctic Cod is low.

A dedicated sampling program to learn more about the species' biology and an acoustic survey to study the spatial and temporal distribution of Arctic Cod is strongly recommended to better inform future management decisions.

LIST OF MEETING PARTICIPANTS

All participants at this science peer review meeting are expected to participate as objective and knowledgeable individuals on the subject matter under review; not advocates or representatives of any interest group.

Name	Organization/Affiliation
Eva Enders (Chair)	DFO – Science, Central and Arctic Region
Joclyn Paulic	DFO – Science, Central and Arctic Region
Shelia Atchison	DFO – Science, Central and Arctic Region
Sheri Friesen	DFO – Resource Management, Central and Arctic Region
Hannah Murphy	DFO – Science, Newfoundland and Labrador Region
David Deslauriers	DFO – Science, Central and Arctic Region
Susan Thompson	DFO – Science, National Capital Region
Robert Moshenko	Nunavik Marine Region Wildlife Board
Amber Giles	Nunavut Wildlife Management Board
Leigh Edgar	DFO – Resource Management, National Capital Region
Ross Tallman	DFO – Science, Central and Arctic Region
Wojciech Walkusz	DFO – Science, Central and Arctic Region

SOURCES OF INFORMATION

This Science Advisory Report is from the July 3–4, 2019 meeting on Advice on Arctic Cod (*Boreogadus saida*) Bycatch Limits in Northern Shrimp Fisheries in the Canadian Arctic. Additional publications from this meeting will be posted on the Fisheries and Oceans Canada (DFO) Science Advisory Schedule as they become available.

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THIS REPORT IS AVAILABLE FROM THE:

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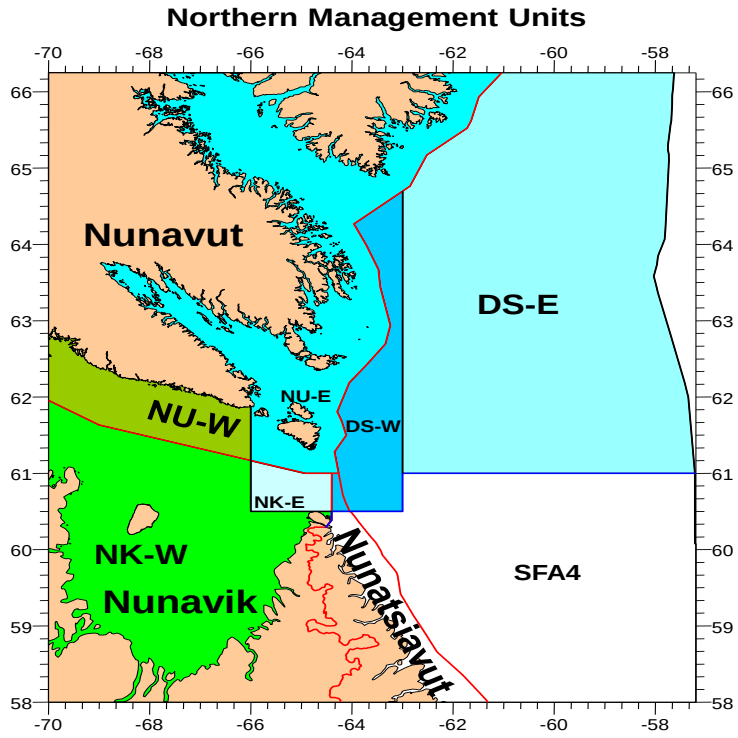
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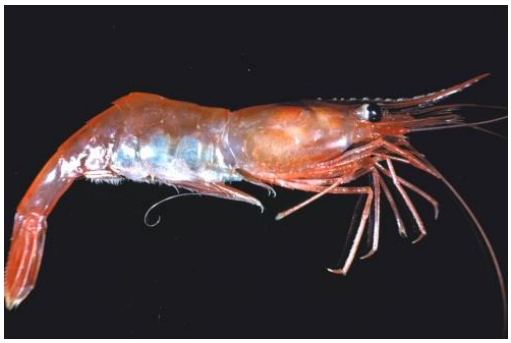
SUBMISSION TO THE
NUNAVUT WILDLIFE MANAGEMENT BOARD AND NUNAVIK MARINE REGION WILDLIFE BOARD
FOR

Information: **Decision:** X **Recommendation:**

Issue: Removing Bycatch Designation for *Pandalus borealis* in Nunavut and Nunavik East

Map:
Blue areas – Eastern Assessment Zone
Green areas – Western Assessment Zone





Northern shrimp (*Pandalus borealis*)

Background

Two shrimp species (*Pandalus montagui* and *Pandalus borealis*) occur in the Northern shrimp fishery that takes place in the Davis Strait and eastern Hudson Strait, which includes parts of the Nunavut Settlement Area (NSA) and the Nunavik Marine Region (NMR). Total Allowable Catch for each species is set for two distinct science assessment zones, Western Assessment Zone (WAZ) and Eastern Assessment Zone (EAZ) (see Map).

The boundary line separating the Nunavut / Nunavik East (NU/NK E), and Davis Strait West (DSW) management units in the EAZ functions to delineate the NSA and the NMR waters from the offshore area of Davis Strait (see Map). Nunavut and Nunavik have Borealis allocations on both sides of the boundary line. Given that catches for Nunavut and Nunavik allocations are recorded in the management unit in which the tow began, having both a directed and bycatch designation for the same species is problematic.

The Department has been approached by industry in the past to request that the Borealis bycatch designation be removed. This bycatch designation was originally decided by the Nunavut Wildlife Management Board and the Nunavik Marine Region Wildlife Board (the Boards) in 2012 to align with the management regime prior to the 2013 boundary change (when Borealis was considered to be a bycatch fishery in the former SFA 3, now the WAZ). The purpose of this change for Borealis in NU/NK E would be to allow for cleaner accounting of catches and consistency in reporting across management units in the EAZ.

Science Information

The stock assessment for Borealis and Montagui is done at the spatial scale of the EAZ, not the management unit, and does not differentiate between directed and bycatch fisheries. From a fisheries science perspective, whether resource removal occurs through directed fishing or bycatch is irrelevant; both are simply viewed as a removal of the resource from the system. Therefore, a change of bycatch designation for either Borealis or Montagui would be purely administrative, and have no impact on the resource in the EAZ.

Consultation Summary

The Department recently approached Nunavut and Nunavik industry to confirm their support for pursuing a change of designation for Borealis in NU/NK E from bycatch to directed species.

Summary of Request

The Department is seeking from the Boards:

1) A decision to change the designation for Borealis from bycatch to directed species in NU/NK E.

Prepared by: Fisheries Resource Management, Fisheries and Oceans Canada

Date: February 7, 2020

Appendices

Appendix 1- Consultation Summary (January 2020)

APPENDIX 1

Consultation Summary (January 2020)

The Department solicited via email industry's support to pursue the change of designation for Borealis from bycatch to directed species in NU/NK E.

There was unanimous support for pursuing this change, with responses received from the following stakeholders:

- Peter Rose – Makivik Corporation
- Brian Burke, Northern Fisheries Alliance (on behalf of Qikiqtaaluk Corporation and Baffin Fisheries Coalition)

SUBMISSION TO THE

NUNAVUT WILDLIFE MANAGEMENT BOARD

FOR

Information: **Decision: X** **Recommendation: X**

Issue: Total Allowable Catch levels for Northern Shrimp (*Pandalus borealis*) for the 2020 season in Shrimp Fishing Area 0



Northern shrimp (*Pandalus borealis*)

Background

A fishery for Northern shrimp (*Pandalus borealis*) exists in Shrimp Fishing Area (SFA) 0, located in Baffin Bay. SFA 0 is immediately adjacent to and partially within the Nunavut Settlement Area (NSA) (see map at Appendix 1).

Given the location of the fishery, decisions and recommendations on Total Allowable Catch (TAC) and harvest levels for Borealis in SFA 0 are requested from the Nunavut Wildlife Management Board (NWMB). The NWMB sets harvest levels within the NSA and provides advice on the overall TAC.

The TAC in SFA 0 has been 500 t since 1996, available to the offshore fleet. No catches have been recorded since the onset of this fishery. The Nunavut Inuit have access to the SFA 0 fishery via the Qikiqtaaluk Corporation's offshore licence, and through 50% ownership of the offshore Unaaq licence. Nunavut has not expressed interest in being granted any direct access in this area given the small biomass and the absence of catch since this fishery began.

NWMB staff have requested that DFO engage with the Board on TAC decisions for SFA 0 for 2020 through the March Board meeting.

Science Information

Regular stock assessment surveys for Northern Shrimp are not conducted in SFA 0 as there has never been an active fishery in the area. SFA 0 was last assessed in 2010 based on surveys in 2006 and 2008 (Canadian Advisory Report 2010/024) (Summary in Appendix 2).

These surveys indicated that biomass indices were low. The fishable biomass index was 750 t (2006) and 1,100 t (2008) with female spawning stock biomass index of 580 t (2006) and 800 t (2008). A competitive TAC of 500 t, if fully taken, would result in an exploitation rate index of 40% (2008) to 70% (2006) based on the observed biomass at that time.

With only two surveys, no biomass trends can be determined and current biomass levels and recruitment status remain uncertain. The area is not currently fished and based on the observed biomass, future prospects for a fishery are limited. Should industry express interest in fishing in this area, requests for science advice can be considered. There are no plans for future surveys at this time.

Recommendation

It is recommended that the TAC for SFA 0 be rolled over at 500 t for 2020 with no change in access.

Summary of Request

The Department is requesting from the Boards:

1) Decisions on harvest levels within the NSA and a recommendation on overall TAC for SFA 0.

Prepared by: Fisheries Resource Management, Fisheries and Oceans Canada

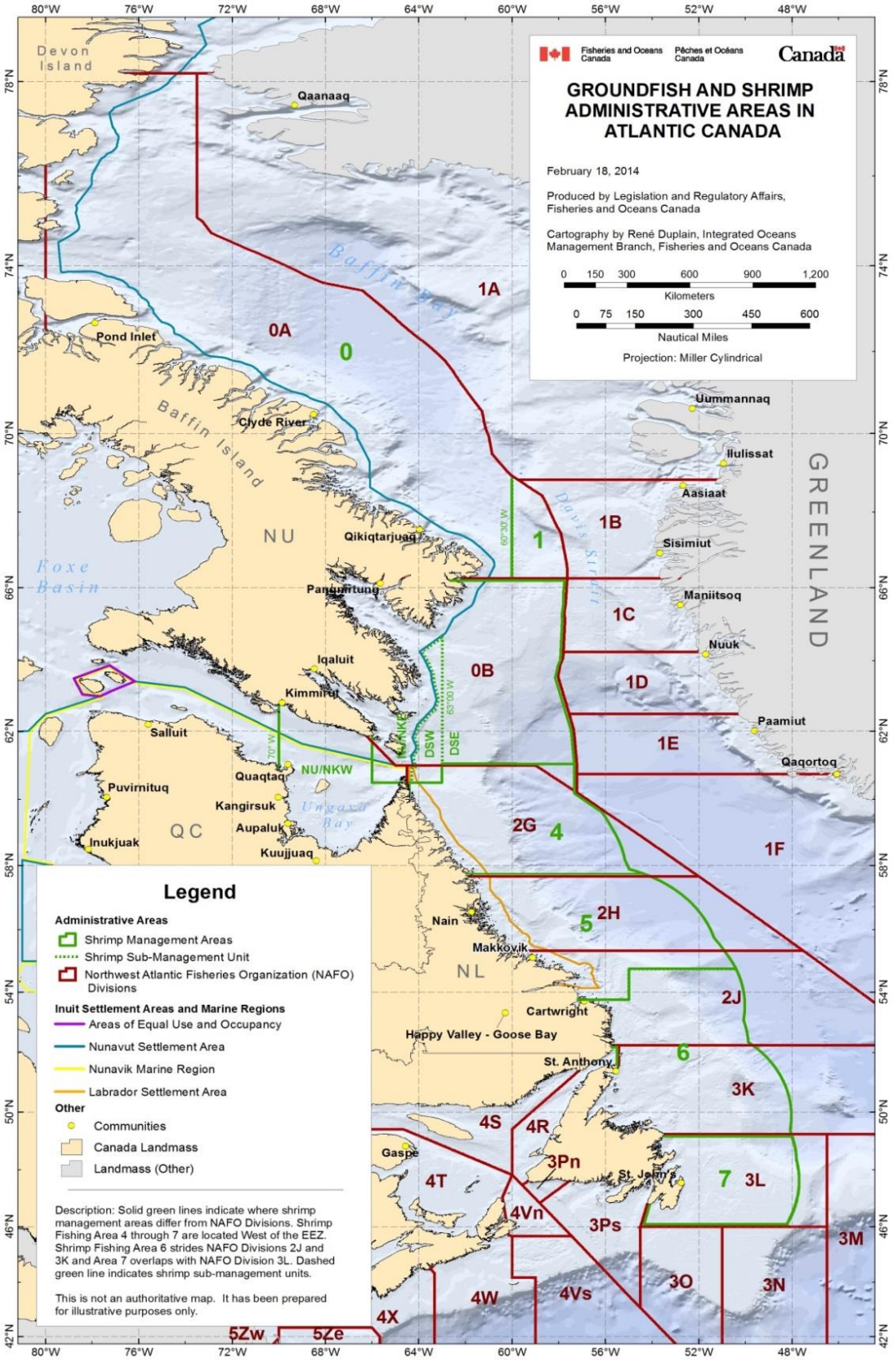
Date: February 7, 2020

Appendices

Appendix 1 – Map of groundfish and shrimp administrative areas in Atlantic Canada (including Shrimp Fishing Area 0)

Appendix 2 – Summary: Assessment of Northern Shrimp (*Pandalus borealis*) in SFA 0, 2, 3 and Striped Shrimp (*Pandalus montagui*) in SFA 2, 3 and 4 west of 63°W (Science Advisory Report 2010/024)

APPENDIX 1


Fisheries and Oceans Canada
Pêches et Océans Canada
Canada
GROUNDFISH AND SHRIMP ADMINISTRATIVE AREAS IN ATLANTIC CANADA
February 18, 2014
Produced by Legislation and Regulatory Affairs, Fisheries and Oceans Canada
Cartography by René Duplain, Integrated Oceans Management Branch, Fisheries and Oceans Canada
0 150 300 600 900 1,200
Kilometers
0 75 150 300 450 600
Nautical Miles
Projection: Miller Cylindrical
Legend
Administrative Areas
Shrimp Management Areas
Shrimp Sub-Management Unit
Northwest Atlantic Fisheries Organization (NAFO) Divisions
Inuit Settlement Areas and Marine Regions
Areas of Equal Use and Occupancy
Nunavut Settlement Area
Nunavik Marine Region
Labrador Settlement Area
Other
Communities
Canada Landmass
Landmass (Other)
Description: Solid green lines indicate where shrimp management areas differ from NAFO Divisions. Shrimp Fishing Area 4 through 7 are located West of the EEZ. Shrimp Fishing Area 6 strides NAFO Divisions 2J and 3K and Area 7 overlaps with NAFO Division 3L. Dashed green line indicates shrimp sub-management units.
This is not an authoritative map. It has been prepared for illustrative purposes only.
Devon Island
Qaanaaq
Pond Inlet
Clyde River
Baffin Island
Baffin Bay
Foxe Basin
NU
QC
NL
Qikiqtarjuaq
Pangnirtung
Iqaluit
Kimmirut
Salluit
Quaqtaq
Puvirnituq
Kangirsuk
Aupaluk
Inukjuak
Kuujjuaq
Ungava Bay
Nain
Makkovik
Cartwright
Happy Valley - Goose Bay
St. Anthony
Gaspe
St. John's
Davis Strait
GREENLAND
Uummannaq
Ilulissat
Aasiaat
Sisimiut
Maniitsoq
Nuuk
Paamiut
Qaqortoq
60°30'W
65°00'W
70°W
NU/NKW
NK
DSW
DSE
0A
0
1A
1
1B
1C
1D
1E
1F
0B
2G
4
2H
5
2J
6
3K
4S
4R
3Pn
4T
4Vn
3Ps
7
3L
3M
4W
4Vs
3O
3N
4X
5Zw
5Ze
80°W
76°W
72°W
68°W
64°W
60°W
56°W
52°W
48°W
78°N
74°N
70°N
66°N
62°N
58°N
54°N
50°N
46°N
42°N

Science Advisory Report 2010/024

SUMMARY: Assessment of Northern Shrimp (*Pandalus borealis*) in SFA 0, 2, 3 and Striped Shrimp (*Pandalus montagui*) in SFA 2, 3 and 4 west of 63°W

SFA 0 – *Pandalus borealis*

Fishery

- No fishery in recent years.

Biomass

- Resource status is based on two surveys conducted in 2006 and 2008.
- Fishable biomass index was 750 t (2006) and 1,100 t (2008).
- Female spawning stock biomass index was 580 t (2006) and 800 t (2008).

Recruitment

- Recruitment is uncertain.

Mortality

- Competitive TAC of 500 t could result in a potential exploitation rate index of 40%-70% based on the observed biomass. A lower TAC is recommended.

Current Outlook and Future Prospects

- Future prospects for a fishery are limited.
- There are no plans for future surveys in this area.

SUBMISSION TO THE
NUNAVUT WILDLIFE MANAGEMENT BOARD
March 2020

FOR

Information: X **Decision:**

Issue: Cambridge Bay Arctic Char

Les Harris – Science
Tyler Jivan and Dylan Turchyn – Resource Management

Fisheries Management Update:

- Commercial harvesting occurred at 5 sites [Ekalluktok, Paliryuak (Surrey), Halokvik (Thirty-Mile), Jayko, and Lauchlan (Byron Bay) rivers]. As per the management measures outlined in the Integrated Fisheries Management Plan (approved in 2014), daily reporting and quota management is conducted by Kitikmeot Foods to ensure there is no over-harvest; a plant sampling program collects fishery-dependent biological data; and fishers are to capture catch-per-unit effort, bycatch and discard information using commercial logbooks.

2019 Commercial Harvest Statistics

Fishery Site (Common Name)	Commercial Quota Kg, round weight	2019 Commercial Harvest Kg, round weight	2019 % Landed vs Quota
Ekalluk R. (Wellington)	20,000	16,699	83
Halovik (30 Mile)	5,000	5,061	101
Jayko	17,000	12,481	73
Paliryuak (Surrey R.)	9,100	8,884	98
Lauchlan R. (Byron Bay)	9,100 (*5,000)	5,061	101
Grand Total	**56,100**	**48,186**	**86**

**Targeted Quota*

- Lauchlan River is currently harvested at a reduced, targeted, commercial rate of 5,000kgs. This is consistent with the conservation-based management approach proposed by the Cambridge Bay Arctic Char IFMP Working Group, and supported by the NWMB at its June 6 2017 decision following its written public hearing concerning the commercial quota for Lauchlan River char. Harvest monitoring and reporting is in place,

supported by the Working Group's commitment to shared stewardship and best management practices.

- Kitikmeot Foods Ltd. has intentionally reduced the targeted harvest at Ekalluk and Jayko given the increased harvest at Lauchlan River. This ensures the fish plant does not exceed its processing capacity.

- The Cambridge Bay IFMP (Integrated Fisheries Management Plan) was first implemented in 2014 for commercially harvested Arctic Char, making it the first for this species in Canada. An IFMP is intended to be reviewed and updated every 5 to reflect and address current developments and new information from a biological and fishery standpoint. Work is currently being done by the Cambridge Bay Arctic Char IFMP Working Group to renew and update the previous IFMP, and will be presented to the NWMB for review and approval prior to being implemented in advance of the 2020 commercial fishing season.

Science:

- The Cambridge Bay commercial plant sampling program (fishery-dependent sampling) was once again successful providing DFO with biological data and samples from 200 Arctic char for each commercially fished waterbody.

- DFO successfully conducted fishery-independent sampling of 200 Arctic char at the Lauchlan River in early July to coincide with the commercial harvest of char from this system. Biological data were recorded and samples were collected for genetics, diet, contaminants and marine microplastics assessments from all fish.

- The above data will be vital for an assessment of the health of this fishery planned for 2023 (requires minimum of 5 years of data collection).

- The long-term acoustic tagging/monitoring work is in its seventh year. Our acoustic array has now included nearly 150 stations and we have tagged close to 500 char in the region. This year all marine acoustic equipment was recovered as was all equipment in our two freshwater lakes where we are looking and fine-scale movements/habitat use.

- 30 Arctic char were tagged at the Lauchlan River in 2019.

Community engagement (Science/Resource Management):

- Numerous visits/meetings with the EHTO over the summer field season (June-Aug 2019).
- A complete summary and review of Science research programs was presented at the KRWB annual general meeting (Sept. 2019).

- A complete summary and review of Science research programs and fisheries management initiatives was presented at the EHTO AGM (Jan. 2020).
- A pre-season engagement meeting with the EHTO, Kitikmeot Foods, and commercial fishers and DFO took place in July 2019. Discussion focused on the importance of accurate and complete commercial logbook information, including bycatch and discard data.
- The annual post-season Integrated Fisheries Management Plan (IFMP) Working Group meeting that included the EHTO, DFO, Kitikmeot Foods, commercial fishers, elders and other resource users took place in Feb. 2010.

Prepared by: Les Harris – Fisheries and Oceans Canada

Date: February 7, 2020

SUBMISSION TO THE
NUNAVUT WILDLIFE MANAGEMENT BOARD
March 2020

FOR

Information: X **Decision:**

Issue: Department of Fisheries and Oceans Canada – Updates

Updates:

Staffing:

- Anika Bychok joined Fisheries and Oceans (DFO) Northern Operations in November 2019 as a Senior Fisheries Management Biologist.

Marine Mammals:

1) Narwhal:

- In January 2020, DFO Science met with the Nunavut Wildlife Management Board (NWMB), Nunavut Tunngavik Inc. (NTI), Qikiqtaaluk Wildlife Board (QWB), and affected Hunters and Trappers Organizations (HTOs) in Winnipeg to discuss the design of the proposed 2020 East Baffin Island, Admiralty Inlet, and Eclipse Sound narwhal aerial survey.
- Narwhal harvest tag returns and harvest numbers must be submitted by HTOs to DFO by the end of the harvest season, March 31, 2020. Harvest data will be reconciled prior to the 2020 harvest tag order and carry-overs will be calculated.

2) Walrus:

- A Ministerial decision is expected by February 14, 2020 on the NWMB's approval of 76 walrus sport hunts for 2020.
- DFO will not be submitting a Request for Decision to the NWMB in 2020 to establish Total Allowable Harvest (TAH) levels for walrus management units in Nunavut.
- A Nunavut walrus working group meeting is being planned for March 13, 2020 in Iqaluit to discuss harvest reporting and community-based monitoring programs.
- In partnership with the Hall Beach HTO, the community-based catch monitoring program for walrus in Hall Beach is expected to continue in 2020.
- In partnership with the Aivitt HTO, the community-based catch monitoring program for walrus in Coral Harbour is launching in 2020.
- DFO received few reports from the 2019 walrus sport hunt and is continuing to follow up with outfitters to receive this information required under the license conditions, and with the aim to improve reporting in the upcoming season.

3) Cumberland Sound Beluga:

- A total of 41 beluga were reported harvested in Pangnirtung in the summer of 2019.
- On May 14, 2019, a meeting was held in Pangnirtung with representatives from the

Pangnirtung HTO, NTI, NWMB, DFO, and QWB. DFO proposed that a Cumberland Sound Beluga Working Group be reconvened with co-management partners to review existing material, identify knowledge gaps, and determine a path forward to ensure sustainable management of this population. All co-management partners agreed to starting the working group.

- The working group met on October 9, 2019 and January 29, 2020. A community meeting was also held in Pangnirtung on January 29th. The next meeting is tentatively scheduled for June 2020.

4) Bowhead:

- DFO has received reporting information for 2019 bowhead harvests in Coral Harbour, Naujaat, and Igloolik. DFO is still awaiting a final report from the 2019 harvest in Pont Inlet.
- DFO has been advised that the host communities for the 2020 bowhead harvest in the Qikiqtaaluk Region will be Qikiqtarjuaq and Hall Beach.

5) Harvest Reporting:

- DFO has requested harvest updates for beluga, walrus, bowhead, and narwhal from HTOs for the 2019 harvest season. Information provided by the HTOs will be used to finalize harvest data by the end of this season. Reports of total marine mammal hunting mortality (landed and lost) are essential to develop reliable advice on sustainable harvests.
- DFO urges continued reporting of unusual marine mammal occurrences and events e.g. beached carcass, ice entrapments, etc.
- Timely and accurate reporting is required under the Fisheries Act, Marine Mammal Regulations, and the Nunavut Agreement. It is strongly recommended that co-management organizations emphasize the importance of harvest reporting and monitoring.

***Arctic Char**:*

1) Kivalliq Region:

- In February 2019, a workshop was held in Rankin Inlet to identify Arctic char research interests and commercial fisheries development priorities for each Kivalliq community. Participants of the meeting included representatives from all Kivalliq community HTOs, the Government of Nunavut, Kivalliq Wildlife Board, NWMB, Kivalliq Arctic Foods, NTI, DFO Resource Management, and DFO Science.
- The workshop identified a desire by the communities to resolve Arctic char diet from Kivalliq stocks. A community-based sampling program was proposed where samples would be collected from select waterbodies in each community. A total of 341 samples were collected and sent to DFO for analysis. Diet analyses are currently underway.
- The 2019 commercial harvest was around 6,500 lbs and involved only a few waterbodies. Given the low amount of harvest, Kivalliq Arctic Foods intends on buying Arctic char from Kitikmeot Foods Ltd. out of Cambridge Bay.
- A follow-up meeting is being planned for 2020 for DFO and all Kivalliq communities and stakeholders to discuss the progress achieved in 2019 and develop a collaborative plan moving forward.

2) Pangnirtung:

- 22,426 kg of Arctic char was reported harvested during the 2019 summery fishery, with 20,607 kg coming from the exploratory waterbodies and 1,819 kg coming from the commercial waterbodies.
- The Pangnirtung HTO advised DFO that they will begin issuing licences for the 2019-20 winter fishery as of January 21, 2020.

Greenland Halibut (Turbot):

1) Cumberland Sound Turbot Fishery:

- The Pangnirtung HTO requested that the commercial licence for the 2020 Winter Turbot Fishery be issued on January 21, 2020.
- DFO met with interested Pangnirtung Turbot fishers on January 28, 2020 to discuss logbooks and licence conditions, and to answer questions from fishers.

2) 2019 Offshore Fishery:

- A total of 9,551 mt was harvested in Northwest Atlantic Fisheries Organization (NAFO) Division 0A.
- A total of 4,944 mt was harvested in NAFO Division 0B by Nunavut licence holders.

3) Eastern Arctic Groundfish Stakeholders Advisory Committee:

- The annual meeting of the Eastern Arctic Groundfish Stakeholders Advisory Committee (EAGSAC) will be held in Iqaluit on February 25-26, 2020.

4) Marine Stewardship Council Certification:

- As of December 2019, the SA0 Turbot fishery obtained Marine Stewardship Council (MSC) sustainability certification.

Northern Shrimp:

1) For the Nunavut fishing industry in Shrimp Fishing Areas adjacent to Nunavut (2019/20):

- A total of 2.1 mt was harvested in Davis Strait East.
- A total of 1,619 mt was harvested in Davis Strait West.
- No fishing occurred in Shrimp Fishing Area 1.
- A total of 34 mt was harvested in the Eastern Assessment Zone.
- A total of 4,556 mt was harvested in the Western Assessment Zone.

2) Northern Shrimp Advisory Committee:

- The annual meeting of the Northern Shrimp Advisory Committee (NSAC) will take place in Halifax on March 4-5, 2020.

Prepared by: Iqaluit Office – Fisheries and Oceans Canada

Date: February 7, 2020

7 February 2020

Nunavut Wildlife Management Board
3rd Floor Allavik Building
P.O. Box 1379
Iqaluit, NU X0A 0H0
Email: tsataa@nwmb.com

NWMB'S REGULAR MEETING NO. RM 001-2020: FINAL DRAFT MANAGEMENT PLANS FOR QAQSAUQTUUQ AND IKKATTUAQ MIGRATORY BIRD SANCTUARIES FOR NWMB'S APPROVAL

The Qaqsauqtuuq (East Bay) and Ikkattuaq (Harry Gibbons) Migratory Bird Sanctuaries, located on Southampton Island, were established in 1959. As required by the *Nunavut Agreement*, an *Inuit Impact and Benefit Agreement for National Wildlife Areas and Migratory Bird Sanctuaries in the Nunavut Settlement Area* (*IIBA*) was first concluded in 2006 and renegotiated in 2016. Nunavut Tunngavik Inc., the three Regional Inuit Associations, and the federal Minister of the Environment (Environment and Climate Change Canada) signed the *IIBA*. The *IIBA* created co-management committees for these protected areas in Nunavut.

Inuit, from Coral Harbour, and Environment and Climate Change Canada co-manage the Qaqsauqtuuq and Ikkattuaq Migratory Bird Sanctuaries through the Irniurviit Area Co-Management Committee (ACMC).

Part of the Irniurviit ACMC's mandate is to write management plans for the Migratory Bird Sanctuaries (*IIBA* s.*3.2.3(b)* and *3.5*). The Irniurviit ACMC completed draft management plans and consulted with the community of Coral Harbour and other interested parties on the drafts (*IIBA s.3.5.*6).

The Irniurviit ACMC hereby recommends to the NWMB for approval the attached Final Draft Management Plans for Qaqsauqtuuq and Ikkattuaq Migratory Bird Sanctuaries, in accordance with the NWMB's decision-making role for Conservation Area management plans (*IIBA s.3.6.1*).

Sincerely,

Noah Kadlak
Chair, Irniurviit ACMC

Attachments:

1. Document “Qaqsauqtuuq Migratory Bird Sanctuary Management Plan: Final Draft, January 2020”
2. Document “Ikkattuaq Migratory Bird Sanctuary Management Plan: Final Draft, January 2020”
3. Presentation “Qaqsauqtuuq (East Bay) and Ikkattuaq (Harry Gibbons) Migratory Bird Sanctuaries – Final Draft Management Plans for Nunavut Wildlife Management Board’s Approval”
4. Document “2016 to 2023 Inuit Impact and Benefit Agreement for National Wildlife Areas and Migratory Bird Sanctuaries in the Nunavut Settlement Area”
5. Document “MBS management plans review comments and consultation record”

cc. Nunavut Tunngavik Incorporated: Qilak Kusugak and Pacome Lloyd
Kivalliq Inuit Association: Madeline Kaludjak and Michael Tucktoo

Environment and Climate Change Canada
Environnement et Changement climatique Canada



2020

QAQSAUQTUUQ MIGRATORY BIRD SANCTUARY MANAGEMENT PLAN

[January 2020]

Acknowledgements:

Current and former members of the Irniurviit Area Co-management Committee (Irniurviit ACMC) developed the following management plan. Members are: Noah Kadlak, Kevin Angootealuk, Jean-Francois Dufour, Willie Adams, Annie Ningeongan, Louisa Kudluk, Armand Angootealuk, Darryl Nakoolak, Willie Eetuk, and Randy Kataluk.

Chris Grosset (Aarluk Consulting Ltd.) and Kim Klaczek prepared the outline, document inventory and early drafts. Susan M. Stephenson (CWS) and Kevin J. McCormick (CWS) drafted an earlier version of the management plan in 1986. Ron Ningeongan (Kivalliq Inuit Association, Community Liaison Officer) and Cindy Ningeongan (Interpreter) contributed to the success of the establishment and operation of the Irniurviit ACMC. Suzie Napayok (Tusaajiit Translations) translated into Inuktitut all ACMC documents leading to and including this management plan. Jim Leafloor (CWS), Paul Smith (ECCC), and Grant Gilchrist (ECCC) contributed information and expert review throughout the management planning process. The Irniurviit ACMC and CWS also wish to thank the community of Coral Harbour and all the organizations and people who reviewed this document at any part of the management planning process.

Copies of this Plan are available at the following addresses:
Environment and Climate Change Canada
Public inquiries centre
Fontaine Building 12th floor
200 Sacré-Coeur Blvd
Gatineau, QC. K1A 0H3
Telephone: 819-938-3860
Toll-free: 1-800-668-6767 (in Canada only)
Email: ec.enviroinfo.ec@canada.ca

Environment and Climate Change Canada – Canadian Wildlife Service
Northern Region
3rd Floor, 933 Mivvik Street
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Environment and Climate Change Canada Protected Areas website**:**
https://www.canada.ca/en/environment-climate-change/services/national-wildlife-areas.html

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About Environment and Climate Change Canada's Protected Areas and Management Plans

What are Environment and Climate Change Canada Protected Areas?

Migratory Bird Sanctuaries are established under the authority of the *Migratory Birds Convention Act, 1994* and provide a refuge for migratory birds in the marine and terrestrial environment. Environment and Climate Change Canada establishes marine and terrestrial National Wildlife Areas for the purposes of conservation, research and interpretation. National Wildlife Areas are established to protect migratory birds, species at risk, and other wildlife and their habitats. National Wildlife Areas are established under the authority of the *Canada Wildlife Act* and are, first and foremost, places for wildlife.

How has the federal government's investment from Budget 2018 helped manage and expand Environment and Climate Change Canada's National Wildlife Areas and Migratory Bird Sanctuaries?

The Nature Legacy represents a historic investment over five years of $1.3B and will help ECCC expand its National Wildlife Areas and migratory bird sanctuaries to contribute to Canada's biodiversity targets and increase ECCC's capacity to manage its protected areas.

ECCC will be conserving more areas, and have more resources to effectively manage and monitor the habitats and species who reside in its protected areas

What is the size of the Environment and Climate Change Canada Protected Areas Network?

The current Protected Areas Network consists of 55 National Wildlife Areas and 92 Migratory Bird Sanctuaries, comprising more than 14 million hectares across Canada.

What is a management plan?

A management plan provides the framework in which management decisions are made. They are intended to be used by Environment and Climate Change Canada staff to guide decision-making, notably with respect to permitting. Management is undertaken in order to maintain the integrity of the protected area and to maintain the attributes for which the protected area was established. Environment and Climate Change Canada prepares a management plan for each protected area in consultation, or co-written with Indigenous peoples, and in consultation with the public and other stakeholders. In the Nunavut Settlement Area, the management plan is written in partnership with Nunavut Inuit.

A management plan specifies activities that are allowed and identifies other activities that may be undertaken under the authority of a permit. It may also describe the necessary improvements needed in the habitat, and specify where and when these improvements should be made. A management plan identifies Indigenous rights and allowable practices specified under land claims agreements. Further, measures carried out for the conservation of wildlife must be consistent with any law respecting wildlife in the province or territory in which the protected area is situated.

What is Protected Area Management?

Management includes monitoring wildlife, maintaining and improving wildlife habitat, periodic inspections, enforcement of regulations, as well as the maintenance of facilities and infrastructure. Research is also an important activity in protected areas; hence, Environment and Climate Change Canada staff carries out or coordinates research in some sites.

The series

Environment and Climate Change Canada will write management plans for all of the Migratory Bird Sanctuaries administered by the Department. This template can also be used by other agencies and departments to write management plans for Migratory Bird

Sanctuaries in other jurisdictions. These management plans will be initially reviewed 5 years after the approval of the first plan, and every 10 years thereafter.

To learn more

To learn more about Environment and Climate Change Canada's protected areas, please visit our website at https://www.canada.ca/en/environment-climate-change/services/national-wildlife-areas.html or contact the Canadian Wildlife Service.

Qaqsauqtuuq Migratory Bird Sanctuary

The Qaqsauqtuuq Migratory Bird Sanctuary (Qaqsauqtuuq MBS) is located 35 km east of Coral Harbour on Southampton Island within the Kivalliq Region of Nunavut. The Qaqsauqtuuq MBS includes the marine waters of East Bay, a 50 km-long inlet, and most of the lowland habitat west towards Native Bay. The MBS is mostly within the Boothia Foxe Shield and is underlaid with limestone. Poorly drained, flat, sedge meadow lowlands with irregularly shaped shallow lakes and raised beaches surround East Bay. The dominant vegetation of the sedge meadows consists of sedge, cotton-grass, and a variety of mosses. Sedge-willow meadows are characterized by sedge, cotton-grass, bog-rush and willows border lake edges. Disintegrated limestone outcrops break up the sedge lowland as the elevation increases towards Native Bay. Granite outcrops occur in the northern portion of the MBS. A small rocky island, Qikiqtakuluk, is located in East Bay about 5 km from the south shore.

In 1957, Environment and Climate Change Canada's Canadian Wildlife Service (CWS) proposed the establishment of a sanctuary at East Bay to protect the main nesting areas of lesser snow geese from disturbance from potential prospecting and tourist activities on Southampton Island. CWS established the East Bay MBS in 1959. Salliqmiut, present-day Inuit from Coral Harbour, have traditionally referred to the MBS area as "Qaqsauqtuuq" meaning "two loons" for the abundant loon-nesting habitat in the northern portion of the sanctuary. The Irniurviit ACMC proposed an official name change to the MBS in 2015 to recognize the use of its traditional Inuit language name and hereafter refers to the MBS as Qaqsauqtuuq MBS.

Importance of the Qaqsauqtuuq MBS

Recent aerial photo survey results estimate that the MBS and adjacent areas support a nesting population of 234,000 combined light geese (~2% of the lesser snow goose mid-continent population). An estimated 5,000 nesting Atlantic brant (3% of the population) used the MBS in the past, but current use is unknown. The largest single eider colony in the Canadian Arctic is located at Qikiqtakuluk. In some years, up to 8,000 common eider nests are found on the island, representing 5% of the *borealis* population. Lowland areas of the MBS once provided habitat to some of the highest densities of shorebirds recorded in the Canadian Arctic (e.g. red phalarope, ruddy turnstone, and white-rumped sandpiper).

Over ninety species of birds have been recorded in the MBS. Common breeding species include red-throated and Pacific loon, cackling goose, Sabine's and herring gull, parasitic and long-tailed jaeger, semipalmated and black-bellied plover, king eider, long-tailed duck, tundra swan, and Arctic tern. Arctic nesting shorebirds use the MBS as a stopover site during their north and southbound migration.

There are twenty-two species at risk (listed under the federal *Species at Risk Act* or assessed by the COSEWIC) confirmed or suspected to use Qaqsauqtuuq MBS for at least part of the year. The MBS also provides important habitat to polar bear, barren-ground caribou, beluga whale, and walrus.

There is a long history of Inuit use of the MBS. Traditionally, Inuit travelled there to harvest seals, walrus, and whales and to trap Arctic foxes. There are several known archaeological and cultural sites within the MBS, but only one has been officially registered. The Qaqsauqtuuq MBS is more accessible during the winter, and Salliqmiut will occasionally harvest polar bears for subsistence and guide sport hunters there.

Co-Management and Approval Process

As required by the *Nunavut Agreement* (*NA*), an *Inuit Impact and Benefit Agreement for National Wildlife Areas and Migratory Bird Sanctuaries in the Nunavut Settlement Area* (*IIBA*) was first concluded in 2006 for a seven-year term and renegotiated in 2016 for an additional seven years. *Article 3* (Co-Management) of the *IIBA* states the following objectives:

a) effective co-management of NWAs and MBSs by Inuit and CWS in accordance with the NA, and particularly Articles 9 and 5 of the NA;
b) decision-making for NWAs and MBSs that is substantially informed and influenced by Inuit Qaujimajatuqangit; and
c) local Inuit involvement in the planning and management of NWAs and MBSs.

CWS manages the Qaqsauqtuuq MBS in partnership with the Irniurviit Area Co-Management Committee (Irniurviit ACMC) of Coral Harbour, Nunavut. The ACMC provides advice on all aspects of MBS management, including all significant policy decisions affecting the MBS. This includes advising on the management plan, permit applications, any research conducted within the MBS, the management and protection of wildlife and wildlife habitat, and visitor use. The Irniurviit ACMC has six members, three appointed by the Kivalliq Inuit Association (KivIA), and three appointed by the

federal Minister of the Environment. Five of the members are from Coral Harbour and when possible appointed from Community Lands and Resources Committee; the remaining member is a CWS employee.

As per the *IIBA*, the Irniurviit ACMC prepared the management plan for Qaqsauqtuuq MBS in consultation with Inuit, the Kivalliq Inuit Association, Nunavut Tunngavik Incorporated (NTI) and local interested parties in Coral Harbour. The ACMC shall recommend the completed management plan to the Nunavut Wildlife Management Board (NWMB) for approval in accordance with *s.5.2.34(c)* and *s.5.3.16* of the *NA*. The ACMC shall provide the KivIA and NTI with a copy of the completed management plan when it sends the plan to the NWMB (*IIBA s.3.6.2*). In accordance with the decision-making process set forth in the *NA*, if the NWMB or the Minister rejects, in whole or part, the completed management plan and returns it to the ACMC for reconsideration, the ACMC shall reconsider the management plan and re-submit it to the NWMB for final decision. Once the Minister has accepted the management plan, the Minister shall proceed forthwith to do all things necessary to implement it.

For greater certainty, nothing in this management plan shall be construed so as to abrogate or derogate from the protection provided for existing Indigenous or treaty rights of the Indigenous peoples of Canada by the recognition and affirmation of those rights in *Section 35* of the *Constitution Act, 1982.*

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LIST OF ABBREVIATIONS

ACMC	Area Co-Management Committee
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CWA	*Canada Wildlife Act*
CWS	Environment and Climate Change Canada's Canadian Wildlife Service
IIBA	*Inuit Impact and Benefit Agreement for National Wildlife Areas and Migratory Bird Sanctuaries in the Nunavut Settlement Area*
CIRNAC	Crown-Indigenous Relations and Northern Affairs Canada
DFO	Fisheries and Oceans Canada
ECCC	Environment and Climate Change Canada
GN	Government of Nunavut
HTO	Hunters and Trappers Organization
IHT	Inuit Heritage Trust
IOL	Inuit-Owned Lands
IQ	Inuit Qaujimajatuqangit
KivIA	Kivalliq Inuit Association
MBCA	*Migratory Birds Convention Act*
MBS	Migratory Bird Sanctuary
MBSR	*Migratory Bird Sanctuary Regulations*
NIRB	Nunavut Impact Review Board
NA	*Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada*, also known as *Nunavut Agreement*
NPC	Nunavut Planning Commission
NTI	Nunavut Tunngavik Incorporated
NuPPAA	*Nunavut Planning and Project Assessment Act*
NWA	National Wildlife Area
NWMB	Nunavut Wildlife Management Board
SARA	*Species at Risk Act*

1 DESCRIPTION OF THE PROTECTED AREA

The Qaqsauqtuuq MBS was established in 1959, under the *Migratory Birds Convention Act, 1994* (*MBCA*), for the protection and conservation of migratory birds. The Qaqsauqtuuq MBS encompasses approximately 1,124 km^2 of terrestrial and marine areas on Southampton Island, Nunavut (Figure 1). The eastern boundary of the sanctuary is the junction of East Bay and Foxe Channel. The boundary extends approximately 60 km inland and includes the flat sedge meadows and raised beach ridges surrounding East Bay. Figure 1 also illustrates an existing boundary error, which is further explained in Appendix 1. For developing this management plan, subsequent figures show the corrected MBS boundary.

The sanctuary supports breeding habitat for nationally significant populations (defined as greater than 1%) of lesser snow goose (*Chen caerulescens*), Atlantic brant (*Branta bernicla hrota*), and common eider (*Somateria mollissima borealis*). Over ninety species of birds have been recorded, including nine species at risk (listed under the federal *Species at Risk Act* or assessed by the COSEWIC). The Qaqsauqtuuq MBS also serves as year-round or seasonal habitat for thirteen mammal and fish species at risk.

Since 2000, a significant amount of research has been conducted on waterfowl, gulls, eiders, and a variety of shorebirds at Qaqsauqtuuq MBS. The two research stations located within the MBS are important sites for monitoring long-term changes in abundance and distribution of many migratory bird species. The Qaqsauqtuuq MBS is also an important area for marine mammals, in particular beluga whale (*Delphinapterus leucas*), bearded and ringed seal (*Erignathus barbatus* and *Pusa hispida*), and walrus (*Odobenus rosmarus rosmarus*).

The *MBCA* and the *Migratory Bird Sanctuary Regulations* (*MBSR*) allow authorizations to access Qaqsauqtuuq MBS. Only Nunavut Inuit have right of access for the purpose of subsistence harvest and do not require a permit to carry out activities related to subsistence harvesting. For all other users (i.e. non-Inuit), the standard prohibitions under the *MBSR* apply, except under the authority of a permit issued by Environment and Climate Change Canada's Canadian Wildlife Service (CWS). Prohibitions include 1) hunting migratory birds, 2) disturbing or destroying the nest of a migratory bird, 3) the possession of a live migratory bird, carcass, skin, nest or egg of a migratory bird, 4) the possession of firearms or other hunting appliances.

Table 1: Qaqsauqtuuq Migratory Bird Sanctuary Summary Information

Protected Area Designation	**Migratory Bird Sanctuary**
Criteria for Protected Area Designation	An area will be considered suitable for the establishment of a Migratory Bird Sanctuary if it meets one or more of the following criteria: 1. It supports populations that are concentrated, for any part of the year, in order to meet one or several essential needs; as such, the area figures prominently in the requirement for the management of regional populations of migratory birds. 2. The area is vulnerable to area-specific threats. As a significant portion of the populations could be affected, threats may include intensive hunting, exploration, development, etc. Such key habitat sites could include areas for nesting, moulting, wintering or staging. 3. It supports populations that occupy habitats of restricted geographical area and that are vulnerable to human disturbance. Areas that support threatened, endangered or rare species are examples. 4. It regularly supports at least 1% of a population of one species or subspecies. In Nunavut, the Northwest Territories and Yukon (north of the Arctic Circle for Yukon), national population totals (when known) will be used as benchmarks. South of the Arctic Circle (including southern Yukon), the provincial or regional population status of featured species will be used.
Criteria Met by this Protected Area	1, 2, 3, 4
Province or Territory	Nunavut
Region	Kivalliq
Associated Communities	Coral Harbour
Latitude/Longitude	64°00’ N / 82° 00’ W
Size	1,124 km^2, including 286 km^2 of marine habitat
Elevation (m)	Sea level to 122 m
Year Established (Gazetted)	1959

Protected Area (PA) Designation Criteria	Historically: Established to protect the main nesting areas of the lesser snow goose (3% of population) and Atlantic brant (3% of population) Currently: Area supports over 2% of the mid-continent population of lesser snow goose, 1% of Atlantic brant population (assumed), and 5% of the common eider *borealis* population
Protected Area Classification System	Category A, high conservation value, species or critical habitat conservation
International Union for Conservation of Nature (IUCN) Classification	Category 1b (Wilderness Area)
Order in Council Number	P.C. 1959-629 (SOR/74-514)
Directory of Federal Real Property (DFRP) Number	N/A
Inuit Owned Lands (Parcel ID)	**Parcel ID** / **Rights** / **Total Area (km^2)** CH-13 / Surface / 1,734km^2
Additional Designation	• East Bay/Native Bay Important Bird Area (NU023) • Important Areas for Birds in Nunavut (Site 16) • Key Terrestrial Habitat Site for Migratory Birds (NU Site 44) • Key Marine Habitat Site for Migratory Birds (NU Site 24)
Faunistic and Floristic Importance	• Meets Important Bird Area criteria for Globally Significant: Waterfowl Concentrations; Continentally Significant: Congregatory Species • 5% of *borealis* common eiders breed here • 2% of mid-continent snow geese breed here • 3% of Atlantic brant bred here previously • Significant summer calving, molting and foraging habitat beluga • Important polar bear denning and summer foraging habitat • Important barren-ground caribou calving and summer foraging grounds • Important summer foraging habitat for walrus
Invasive Species	None Confirmed
Species at Risk	**Listed under the federal Species at Risk Act (SARA)** <u>Endangered:</u> Ivory gull (*Pagophila eburnean*)

	Red knot (*Calidris canutus rufa*) Threatened: Bank swallow (*Riparia riparia*) Barn swallow (*Hirundo rustica*) Northern wolffish (*Anarhichas denticulatus*) Ross's gull (*Rhodostethia rosea*) Spotted wolffish (*Anarhichas minor*) Special Concern: Atlantic wolffish (*Anarhichas lupus*) Peregrine falcon (*Falco peregrinus tundrius*) Polar bear (*Ursus maritimus*) Red-necked phalarope (*Phalaropus lobatus*) Short-eared owl (*Asio flammeus*) Wolverine (*Gulo gulo*) **Assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC)** Threatened: Barren-ground caribou (*Rangifer tarandus*) Lumpfish (*Cyclopterus lumpus*) Special Concern: Atlantic walrus (*Odobenus rosmarus rosmarus*) Beluga whale (*Delphinapterus leucas*) Bowhead whale (*Balaena mysticetus*) Harris' sparrow (*Zonotrichia querula*) Narwhal (*Monodon monoceros*) Ringed seal (*Pusa hispida*) Thorny skate (*Amblyraja radiate*)
Management agency	Environment and Climate Change Canada's Canadian Wildlife Service in partnership with the Irniurviit ACMC.
Public access & use	Nunavut Inuit have a free and unrestricted right of access for the purpose of harvesting to all lands, waters and marine areas within the MBS (as set forth in Article 5 of the *IIBA* and subject to *s.5.7.18* of the *Nunavut Agreement*). Permits may be required for Inuit commercial activities. Non-Inuit may access the MBS for recreational or other purposes with appropriate permits as per the *MBCA.*

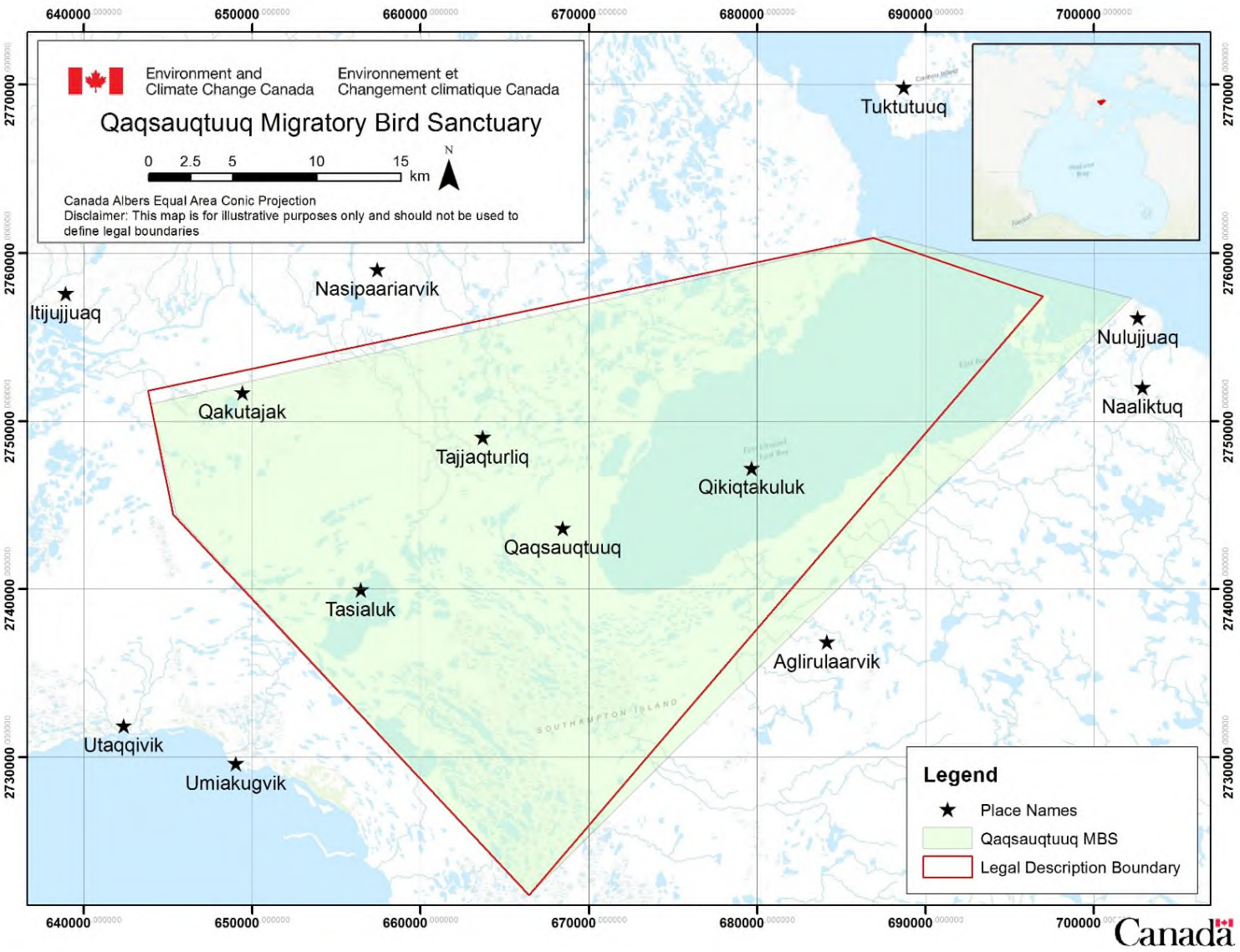


Figure 1: Location of the MBS and traditional place names (adapted from Inuit Heritage Trust data).

1.1 Regional Context

The Qaqsauqtuuq MBS (64°00'N, 82°00'W) is located on the southeast part of Southampton Island, a large island at the northern extent of Hudson Bay. Southampton Island is part of the Kivalliq Region in Nunavut, Canada. Coral Harbour, approximately 30 km from the MBS, is the only settlement on the island and has a population of approximately 891 (Statistics Canada, 2016 Census of Population).

The MBS includes the marine waters of East Bay, a 50-km-long inlet, and most of the lowland habitat west towards Native Bay. The eastern edge of the MBS is the junction of East Bay and Foxe Channel.

Southampton Island, including the MBS, is largely undeveloped and undisturbed. Subsistence harvesting continues to be important cultural, social, and economic activity for Salliqmiut (Section 3.2 and 3.3). The main transportation on the island is by snowmobile and dog sleigh in the winter and all-terrain vehicle (ATV) and boat in the summer. The remoteness of the area and the absence of vehicle infrastructure or facilities make transportation into the MBS difficult without the use of an aircraft.

Qaqsauqtuuq MBS overlaps the Wager Bay Plateau and Southampton Island Plain ecoregions (Table 2). The mean annual temperature is approximately -11°C (summer mean of 2°C; winter mean of -23°C). These ecoregions have a predominantly mid-arctic ecoclimate. Frost and snow can be expected in all months except July. Waters along the south coast of Southampton Island are open most of the year contributing to a relatively high amount of moisture. The annual precipitation in Coral Harbour is 302.9 mm, somewhat higher than areas on the mainland of Nunavut.

Table 2: Physiographic and Ecological Classifications of the MBS.

Physiographic Region	Canadian Shield
Geological Province	Hudson Bay Platform Churchill Province
EcoZone	2 Northern Arctic 3 Southern Arctic
EcoProvince	2.5 Boothia-Foxe Shield 3.2 Keewatin Lowlands
EcoRegion	2.5.30 Wager Bay Plateau 3.2.46 Southampton Island Plain
EcoDistrict (Land Resource Areas)	2.5.30.130 East Bay and Islands 3.2.46.184 Fisher Strait and Islands
Marine Bioregion	Hudson Bay Complex

1.2 Historical Background

Inuit reported the goose colony at East Bay to Alan Loughrey of CWS in 1952. CWS biologists conducted aerial reconnaissance surveys in 1952 (A. Loughrey) and 1955 (F. G. Cooch), followed by 2 years of ground-based studies (T.W. Barry). In 1957, an establishment proposal was submitted to protect the main nesting areas of lesser snow geese and Atlantic brant from potential prospecting and tourist activities (Cooch & Barry, 1957). The establishment proposal identified “Kouksauktow” as the Inuit place name for the area, describing it as the Bay of red-throated loons (Cooch & Barry, 1957). On May 21, 1959, the East Bay MBS was established by Order-In-Council (P.C. 1959-629).

A draft management plan was prepared in 1986 prior to the creation of the territory of Nunavut and the signing of an *IIBA* (Stephenson & McCormick, 1986).

1.3 Land Ownership and Interests

The terrestrial portion of the MBS is almost entirely located on Inuit Owned Land (IOL). The single IOL parcel covering the MBS, CH-13, holds surface rights only (Figure 2). Federal crown land is limited to the southwestern corner of the MBS and at Qikiqtakuluk. IOL is private land managed by

the Kivalliq Inuit Association (KivIA) on behalf of, and for the benefit of all Inuit. The federal Minister of Crown-Indigenous Relations and Northern Affairs Canada under the *Territorial Lands Act*, holds all subsurface rights. The land surrounding the MBS is a mixture of federal crown land and IOL.

CWS is responsible for the management and protection of migratory birds, nests and eggs everywhere they occur, and for migratory bird habitat on federal crown land within the MBS. Habitat management on IOL within the MBS is the responsibility of the KivIA.

The IOL ends at the ordinary high water mark (*NA s.19.8.13*). The seafloor and marine areas extending beyond the IOL boundary is federal jurisdiction.

Fisheries and Oceans Canada (DFO) selected the nearshore waters around Southampton Island and Chesterfield Inlet as an area of interest (AOI). This marks the beginning of a Marine Protected Area (MPA) establishment process. The Southampton Island AOI currently includes the marine waters of the Qaqsauqtuuq MBS, however DFO and their partners will determine the final boundary of a potential MPA following further assessments and extensive consultation.

1.4 Facilities and Infrastructure

There are nine government-owned structures within the MBS (Table 3). ECCC maintains two long-term research stations. Dr. Paul Smith (Wildlife and Landscape Science Division, Science and Technology Branch) maintains and operates the mainland camp. Shorebird research is the focus of this camp. There are four permanent structures: a sleeping cabin, a storage cabin, a lab cabin, and an outhouse. The island camp at Qikiqtakuluk focusses primarily on eider research. Infrastructure at the island camp includes a sleeping cabin, a lab cabin, seven observation blinds, and an outhouse. Dr. Grant Gilchrist (Wildlife and Landscape Science Division, Science and Technology Branch) is responsible for the island camp.

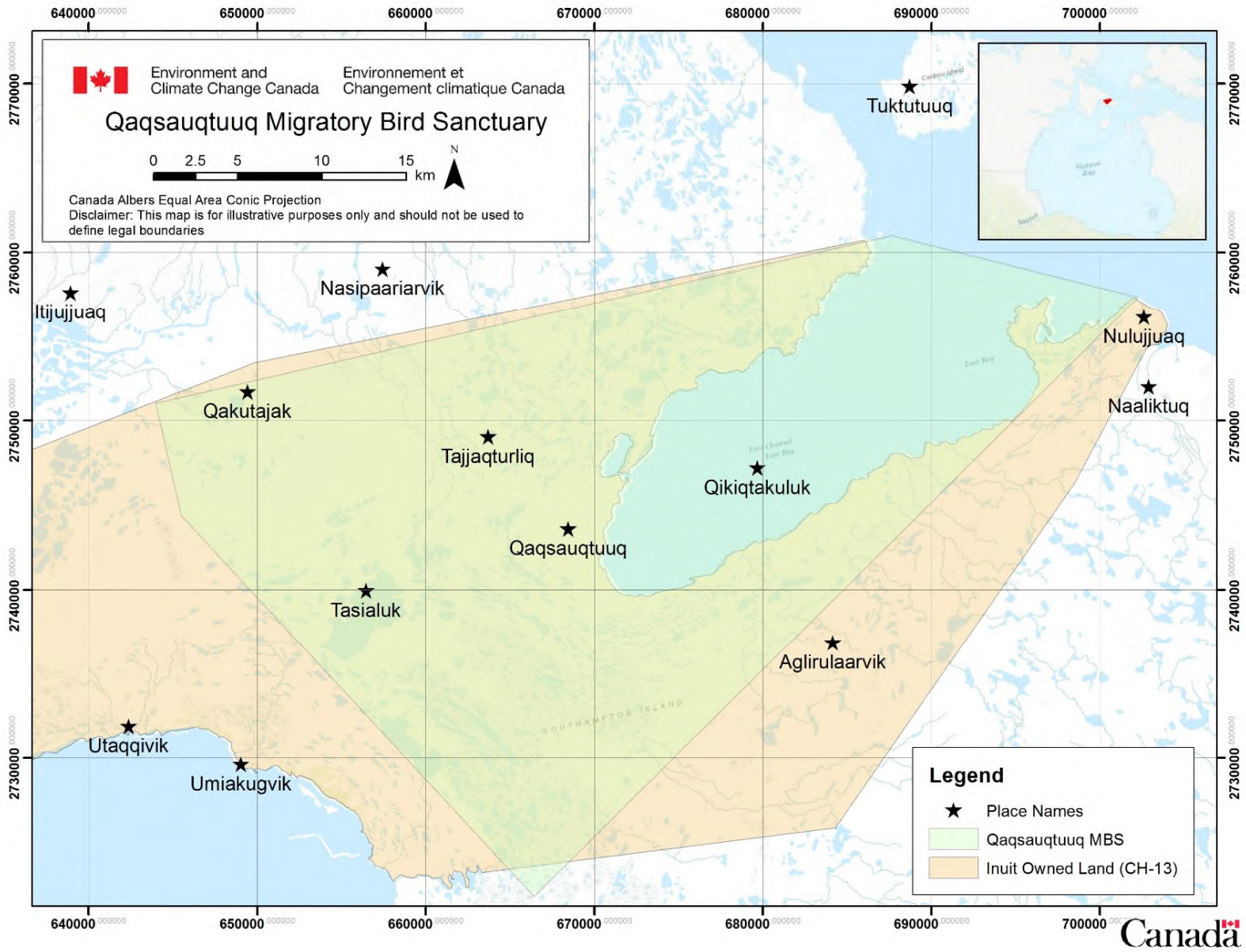


Figure 2: Inuit-Owned Lands within the MBS.

Table 3: Facilities & Infrastructure in the MBS

Type (identifying name)	Condition	Approximate Size (feet)	When Built	Responsibility	Location
Sleeping cabin - mainland camp	Good	16 x 24	2008	ECCC	63° 59' 14", -81° 41' 44"
Storage cabin - mainland camp	Good	12 x 16	2004	ECCC	63° 59' 14", -81° 41' 44"
Kitchen cabin - mainland camp	Good	16 x 24	2013	ECCC	63° 59' 14", -81° 41' 44"
Outhouse – mainland camp	Good	4 x 4	2008	ECCC	63° 59' 14", -81° 41' 44"
Sleeping cabin – island camp	Good	16 x 24	2001	ECCC	64° 01' 47", -81° 47' 17"
Lab cabin – island camp	Good	16 x 24	2010	ECCC	64° 01' 47", -81° 47' 17"
Outhouse – island camp	Good	4 x 4	1998	ECCC	64° 01' 47", -81° 47' 17"
7 Observation blinds – island camp	Good	4 x 4	1998-2012	ECCC	64° 01' 47", -81° 47' 17"
Storage box – goose camp	Good	4 x 8	Unknown	OMNR	63° 57' 35", -81° 51' 17"

2 ECOLOGICAL RESOURCES

2.1 Terrestrial and Freshwater Habitats

Qaqsauqtuuq MBS includes the marine waters of East Bay, a 50 km-long inlet, and most of the lowland habitat west towards Native Bay. Poorly drained, flat, sedge meadow lowlands with irregularly shaped shallow lakes and raised beaches surround East Bay. Most of the MBS, except the northwest corner, is below 30 m in elevation. Drainage is poor and standing water may remain in some areas all summer.

Fontaine et al. (2011) developed a land cover classification of all Southampton Island providing an important baseline from which habitat change can be monitored. Twenty-one habitat types were identified within the MBS. However, for the purpose of this plan, these habitat types were grouped into four broad habitat classes. Water represents 39% of the habitat in the MBS followed by vegetated tundra, both wet (32%) and moist (13%), and 16% is dry unvegetated (i.e. sand, mud, gravel, or bedrock; Figure 3).

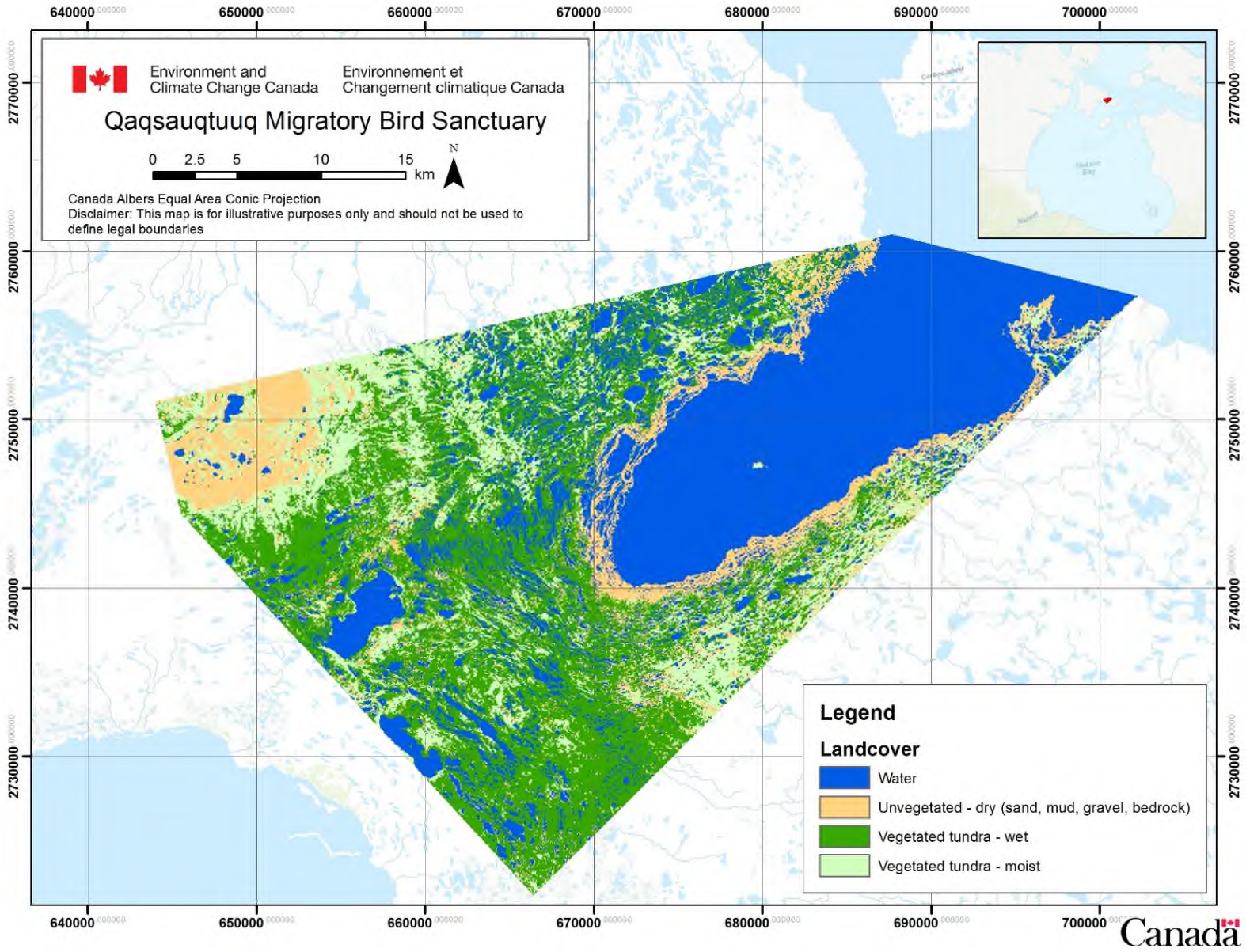


Figure 3: Main habitat classes within the MBS (adapted from Fontaine and Mallory, 2011).

2.2 Birds

The Qaqsauqtuuq MBS is located in Bird Conservation Region 3 – Arctic Plains and Mountains (Environment Canada, 2013). Both its marine and terrestrial habitats support a wide variety of birds. Over ninety species of birds use the MBS, and about half breed within the MBS.

2.2.1 Geese

A large population of lesser snow geese (*Anser caerulescens*) breeds within the colony at East Bay, one of several colonies on Southampton Island. In 2014, the light goose population (i.e. combined lesser snow and Ross's geese) was approximately 234,000 nesting geese (J. Leafloor, CWS, personal communication). Ross's goose (*Anser rossii*) numbers have increased substantially on Southampton Island since the 1970s (Kerbes, et al., 2014), and they account for an increasing proportion of the combined light goose population based on recent banding records. Ross's geese accounted for <1% of all light geese banded annually on Southampton Island before 1980 (Kerbes, et al., 2014), but represent approximately 12.5% of all light geese banded from 2009-2018 (J. Leafloor, CWS, personal communication).

The lesser snow goose population in the colony at East Bay represents close to 2% of the mid-continent population. The colony historically extended beyond the boundaries of the Qaqsauqtuuq MBS (Figure 4; Cooch & Barry, 1957) and now forms one contiguous goose nesting area with the colony near Coral Harbour, which established in the mid-1980s (Figures 4 and 5; Kerbes, et al., 2006).

Lesser snow geese remain an important source of food to Salliqmiut, and particularly in years when caribou were extirpated or scarce on Southampton Island (Carter, et al., 2018). Lesser snow geese arrive in late May to early June, and begin nesting almost immediately on islands and exposed beach ridges, usually 5m above the high tide level (Nissley, 2016; Abraham & Ankney, 1986). After hatching in mid-July and during the flightless period, they disperse inland towards Native Bay and eastward along the south shore as far as Nulujjuaq (M'Clure Point; Abraham & Ankney, 1986). Non-breeding lesser snow geese leave Southampton Island as early as mid-August, and breeding geese depart in late August or early September (Sutton, 1932).

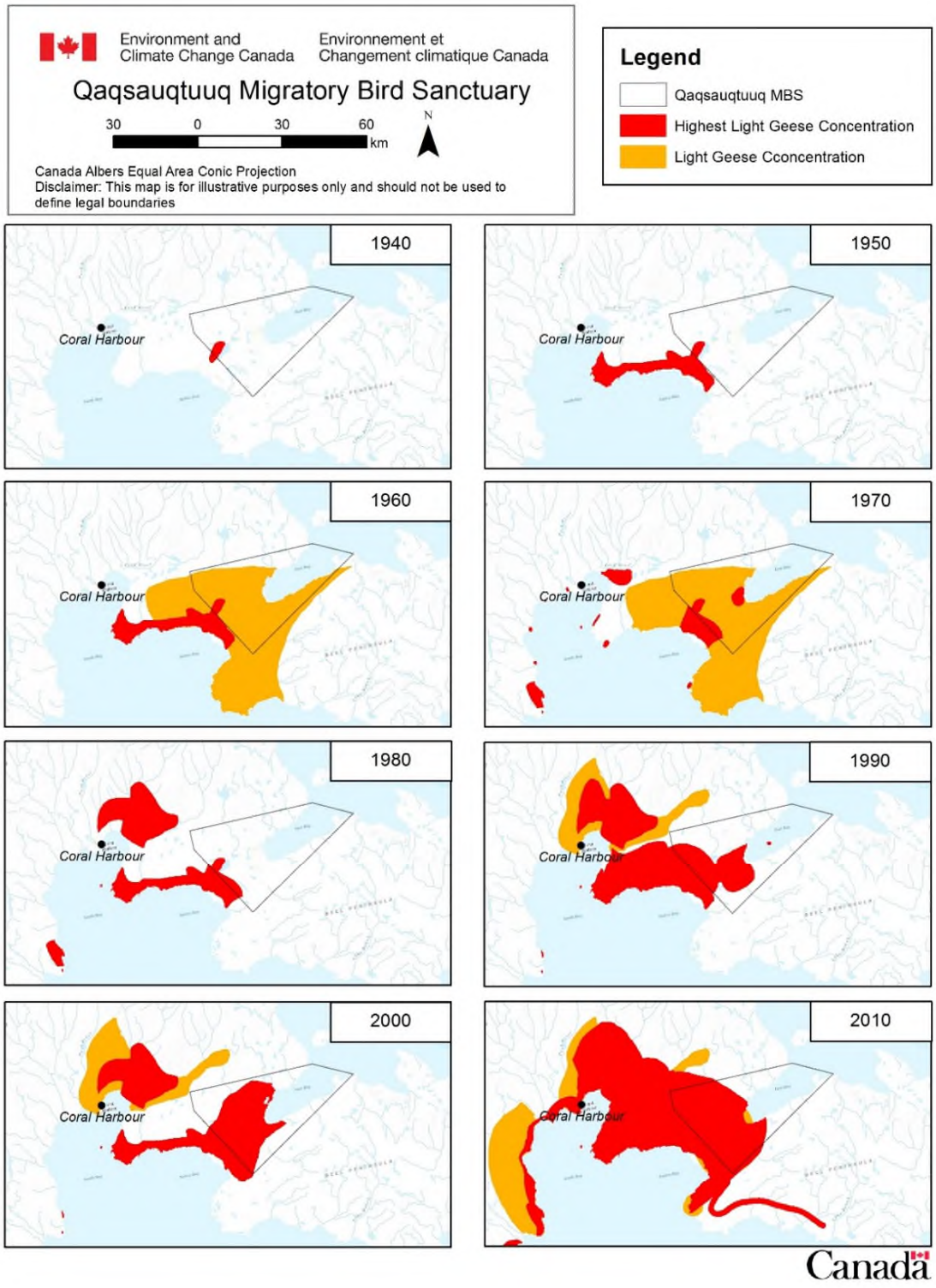


Figure 4: Inuit knowledge on the distribution of light geese within the MBS (adapted from Carter et al. 2018). Areas of concentration represent the collective knowledge of 21 study participants.

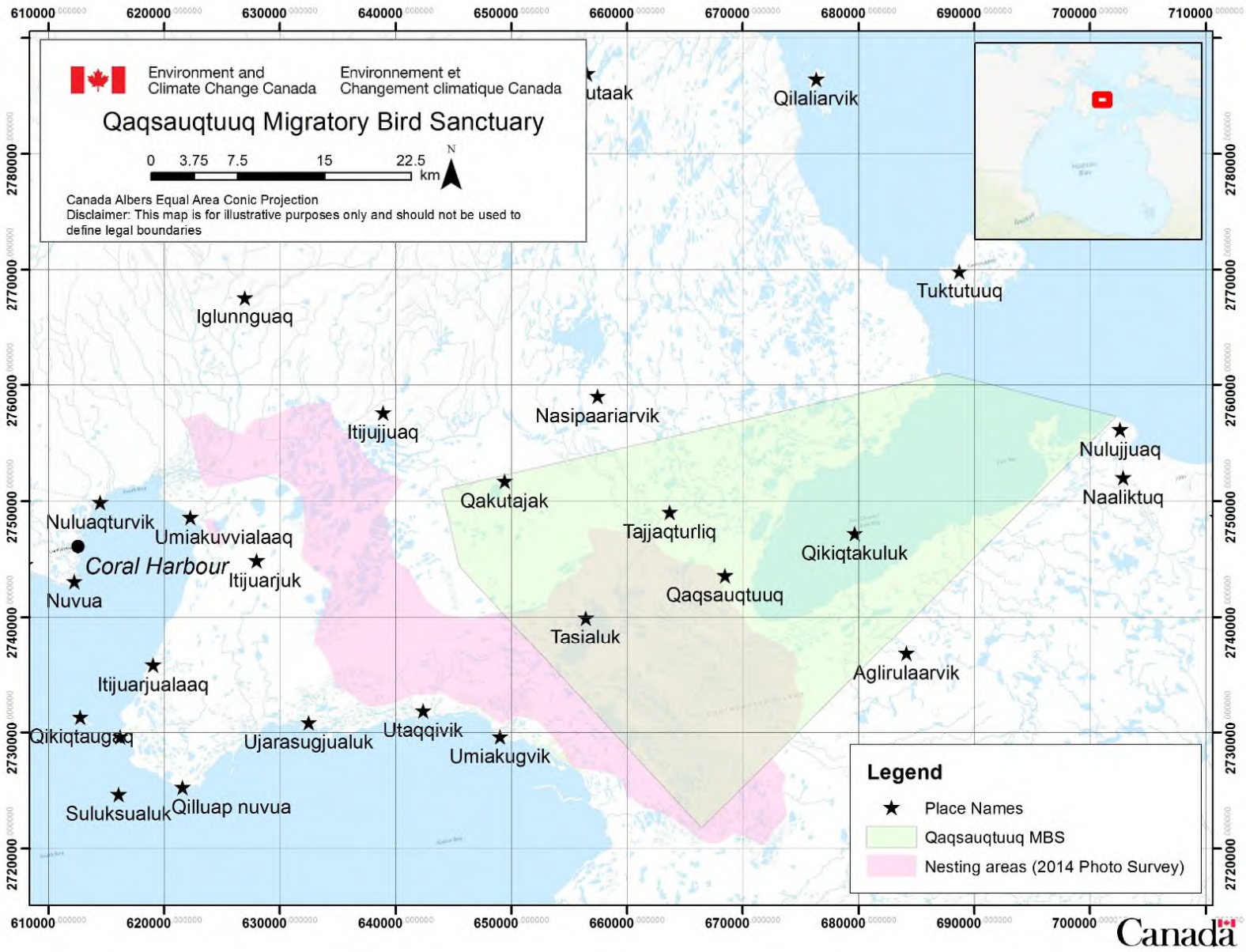


Figure 5: Light geese nesting areas delineated during the 2014 Southampton Island aerial photo surveys.

Qaqsauqtuuq MBS also provides important habitat for Atlantic brant (*Branta bernicla hrota*). Cooch (1957) estimated approximately 5,000 brant in the MBS at establishment, representing approximately 3% of the Atlantic brant population at the time (Atlantic Flyway Council, 2011). The Foxe Basin is the main breeding grounds for Atlantic brant (Atlantic Flyway Council, 2011). During coastal surveys of the Foxe Basin and northern Hudson Bay in 1979, observers recorded the highest sighting frequencies of brant at East Bay (15.7 brant/km; Gaston, et al., 1986). These numbers likely underestimate brant abundance in the area, as they were made by a single observer (Reed, et al., 1980). Ground-based surveys at the main nesting area in the MBS recorded a significant decrease in nesting brant abundance over the last 30 years (Sharp & Abraham, 2010; Nissley, 2016). It is unclear what percentage of the Atlantic brant population currently uses Qaqsauqtuuq MBS and whether similar trends are observed at other key breeding areas of the Foxe Basin. Overall, the population size of Atlantic brant has remained stable over the last few decades, based on winter surveys (Dufour, et al., 2019).

Brant arrive about 2 weeks later than other geese (Nissley, 2016). Brant prefer coastal areas and nest below 5 m of elevation between the high tide line and the first terraces (Abraham & Ankney, 1986). Nests are more common at the head of East Bay. Eggs hatch in mid to late July, and broods disperse along the entire shoreline (Abraham & Ankney, 1986).

High densities of cackling geese (*Branta hutchinsii*) also breed in the MBS. Recent studies indicate that cackling geese numbers have increased significantly since 1980 (Nissley, 2016; Sharp & Abraham, 2010). Cackling geese arrival and nesting phenology closely resembles that of snow geese. However, their preferred nesting habitat within the MBS overlaps both that of snow geese and brant (Nissley, 2016).

2.2.2 Eiders

Common eiders (*Somateria mollissima*) are an integral component of northern ecosystems and one of the most heavily harvested birds in the Arctic, particularly in northern Canada and western Greenland. Common eiders are an important source of food for Salliqmiut (Henri, 2007; Henri, et al., 2018). Qikiqtakuluk supports Arctic Canada's largest single colony of common eiders, with as many as 8,000 nests recorded in 2005 and 2006 (Figure 1; Descamps, et al., 2012). The colony primarily supports the northern subspecies (*borealis*) of common eiders, although individuals of the Hudson Bay subspecies (*sedentaria*) also nest in small numbers. This single site represents at least 5% of

the *borealis* population in some years. The population and nesting success of eiders at Qikiqtakuluk fluctuates greatly and is influenced by several factors (Section 5 - Common Eider population). Eiders arrive in late May to early June and their eggs hatch in early to mid-July. Males generally leave the colony by early July (Abraham & Ankney, 1986). Females and young begin leaving the MBS around mid-August, but some tagged individuals have remained until mid-October (Mosbech, et al., 2006).

Common eider movements at the colony have been studied with satellite transmitters since 2001 (Mosbech, et al., 2006). Hudson Strait is an important moulting area and migration corridor. Common eiders winter either in the Gulf of St. Lawrence and Newfoundland, or on the western coast of Greenland (Mosbech, et al., 2006).

King eiders (*Somateria spectabilis*) are also common breeders in the MBS. In contrast, king eiders are not colonial and often nest inland beside freshwater lakes and ponds as well as on the coast. King eiders nesting in the MBS have also been tracked by satellite in recent years (2003-2013), and the timing of their movements shows similar phenology to common eiders. However, king eider moulting, staging and wintering areas are quite distinct with most wintering off the coast of Greenland (Janssen & Gilchrist, 2013).

2.2.3 Shorebirds

Shorebird populations are showing widespread declines across North America (Gratto-Trevor, et al., 2011). The Qaqsauqtuuq MBS holds a high diversity of shorebird species and supports some densities characteristic of high quality habitats in the eastern Arctic. Red phalarope (*Phalaropus fulicarius*) is the most common shorebird. It occurs in breeding densities of up to 36 birds/km^2 searched (Dickie, et al., 2014), but densities vary widely in recent years. Similarly, ruddy turnstones (*Arenaria interpres*) had the highest breeding densities known in their range in the early 2000s (14-18 birds/km^2; Perkins, et al., 2007), but are now less common. White-rumped sandpiper (*Calidris fuscicollis*) breeding densities vary widely across years (6-34 birds/km^2; Dickie, et al., 2014). Salliqmiut report declines in the abundance of shorebirds, particularly red phalarope, dunlin, and other sandpipers (Carter, et al., 2018). Once frequently observed in high densities in the spring, shorebirds are now rare near Coral Harbour.

Other common species that breed within the MBS include black-bellied plover (*Pluvialis squatarola*), semipalmated plover (*Charadrius semipalmatus*), American golden-plover (*Pluvialis dominica*) and to a lesser extent, dunlin (*Calidris alpina*) and semipalmated sandpiper (*Calidris*

pusilla). Purple sandpiper (*Calidris maritimus*) is less common but also breeds in the MBS. The area is used regularly for breeding, foraging and staging by the endangered *rufa* red knot (*Calidris canutus rufa*; (Lathrop, et al., 2018). Whimbrel (*Numenius phaeopus*), Baird's sandpiper (*Erolia bairdii*), and American golden-plover pass through the MBS during migration.

2.2.4 Other waterbirds

The Qaqsauqtuuq MBS is named after the red-throated loon (*Gavia stellata*), which is particularly abundant throughout the breeding season. Other common waterbirds associated with wetlands and ponds in the MBS include herring gull (*Larus argentatus*), Arctic tern (*Sterna paradisaea*), both parasitic and long-tailed jaeger (*Stercorarius parasiticus* and *S. longicaudus*), Sabine's gull (*Xema sabini*), Pacific loon (*Gavia pacifica*), long-tailed duck (*Clangula hyemalis*), tundra swan (*Cygnus columbianus*), and northern pintail (*Anas acuta*). All of these species breed in the MBS. Qikiqtakuluk supports a small colony of approximately 200-300 pairs of black guillemot (*Cepphus grylle*).

Salliqmiut have expressed concerns over the lower abundance of some of these species, particularly Arctic terns and loons (Carter, et al., 2018). No surveys have been conducted to estimate loon or other waterbird populations within or outside the MBS on Southampton Island.

2.3 Other Wildlife

2.3.1 Terrestrial Mammals

Ten species of terrestrial mammals occur or are likely to occur in the Qaqsauqtuuq MBS. Southampton Island is recognized for its high density of Arctic fox (*Alopex lagopus*). Arctic fox numbers, however, fluctuate with the cycles of its primary prey species collared and brown lemmings (*Dicrostonyx groenlandicus* and *Lemmus sibiricus*; Parker, 1974).

Barren-ground caribou (*Rangifer tarandus*) were once common on Southampton Island, but by 1955 overharvesting had caused this species to become locally extirpated (Sutton, 1932). In 1967, biologists transferred caribou to Southampton Island from neighbouring Coats Island (Manning, 1967; Parker, 1975). Since re-introduction, abundance peaked at 30,000 caribou in 1997. The Southampton Island herd has increased between the 2013 and 2015 surveys. The population is approximately 12,300 individuals (Campbell & Boulanger, 2015). The area surrounding East Bay and extending to Native Bay, which overlaps the MBS, is summer range habitat (Parker, 1975). Qaqsauqtuuq MBS also overlies portions of the traditional Southampton Island caribou calving

grounds to the northeast (Nunavut Planning Commission, 2000). Recent information suggests that important caribou calving grounds now surround the community of Coral Harbour and overlap the western portion of the MBS (Nunavut Planning Commission, 2012).

Wolves (*Canis lupus*) were once numerous, but were extirpated from Southampton Island by local harvesters due to their impact on the declining caribou. The last resident wolf was shot in 1937 (Manning, 1942). Wolves and red foxes (*Vulpes vulpes*) are a rare sighting. Only a couple of wolverines (*Gulo gulo*) have ever been trapped on Southampton Island. These three species occasionally cross Roes Welcome Sound from the mainland.

Arctic hare (*Lepus arcticus*) occur on higher terrain within the MBS near Nulujjuaq. There was an observation of an ermine (*Mustela erminea*) at Qikiqtakuluk in 2015.

2.3.2 Marine Mammals

Nine marine mammal species occur in the waters of East Bay during the summer. Four species of seal (*Pusa hispida*, *Erignathus barbatus*, *Phoca vitulina*, and *Pagophilus groenlandicus*), walrus (*Odobenus rosmarus*), polar bear (*Ursus maritimus*), beluga whale (*Delphinapterus leucas*), narwhal (*Monodon monoceros*) and bowhead whale (*Balaena mysticetus*) occupy areas along Southampton Island's coast and the offshore waters of Hudson Bay (Sutton, 1932; Bird, 1953; KivIA Mapping Tool; Stephenson & Hartwig, 2010).

Observations of large groups of beluga whale and walrus are regular in the MBS (Latour, et al., 2008; Allison, 1977; Irniurviit ACMC, 2017). Beluga whale use the shallow areas of East Bay during summer to rub their skin against the rough material to help the molt. East Bay is also a feeding and calving area for beluga whale (KivIA Mapping Tool).

Polar bears commonly move through the MBS. An important summer and denning area exists along most of the eastern coast of Southampton Island (Urquhart & Schwcinsburg, 1984; Riewe, 1992; KivIA Mapping Tool; Stephenson & Hartwig, 2010). Inuit knowledge suggests that the polar bear population increased from 2004-2012, while mark-recapture studies, satellite telemetry data and annual aerial surveys over the past two decades suggest that the Foxe Basin subpopulation is stable. Salliqmiut and researchers have noticed an increase in the frequency of polar bear observations within the MBS.

2.3.3 Freshwater and Marine Fish

The numerous lakes, ponds, rivers, and bays in the MBS supply freshwater and marine habitat for a variety of fish. A comprehensive fish inventory is lacking for the MBS. However, at least 80 species of anadromous and marine fish, including five species at risk, have the potential to occur in the MBS (Table 4; Coad and Reist, 2004).

2.4 Vegetation

A series of terraces separated by raised beaches occur along the south shores of East Bay. *Carex subspathacea* and *Saxifraga tricuspidata* dominate the lowest terrace (Abraham & Ankney, 1986). *Pucinellia phryganodes,* once very abundant, has largely disappeared leaving bare mud along much of the south shore. Sedges, grasses, and dwarf willow occur most commonly on the higher, inland terraces. The most frequent species are *Carex misandra*, *C. bigelowii*, *Arctagrostis latifolia*, and *Dupontia fischerii*. On the beach ridges, the dominant vegetation is *Dryas integrifolia*, *Salix reticulata* and several lichen species (Abraham and Ankney 1986).

Mosses are common along the edges of lakes, along streams and floodplains, as are sedges (*Carex bigelowii, C. artrofusca,* and *C. misandra*) and willows (*Salix arcticus* and *S. reticulata*).

Stephenson and McCormick (1986) compiled a provisional list of plant species from various sources. The list includes two algae, seven fungi, 23 lichens, 28 bryophytes, and 145 vascular plants species.

2.5 Species at Risk

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assesses the conservation status of species in Canada. There are six categories used during the COSEWIC assessment. In order from most at risk to least at risk, the categories are Extinct, Extirpated, Endangered, Threatened, Special Concern, and Not at Risk.

The federal *Species at Risk Act* (*SARA*) establishes Schedule 1, as the official list of wildlife species at risk. Following a consultation process, the Governor in Council on the recommendation of the federal Minister of the Environment decides on whether species should be added to Schedule 1.

Twenty-two species at risk (either COSEWIC-assessed or *SARA*-listed) occur or have the potential to occur within Qaqsauqtuuq MBS (Table 4).

Table 4: Species at risk in the MBS.

Common and scientific names of species	Status in Canada		Presence in Qaqsauqtuuq MBS
	COSEWIC-assessed	SARA-listed	
Birds			
Ivory gull *Pagophila eburnea*	Endangered	Endangered	Confirmed
Red knot *Calidris canutus rufa*	Endangered	Endangered	Confirmed
Ross's gull *Rhodostethia rosea*	Threatened	Threatened	Confirmed
Bank swallow *Riparia riparia*	Threatened	Threatened	Confirmed
Barn swallow *Hirundo rustica*	Threatened	Threatened	Confirmed
Harris's sparrow *Zonotrichia querula*	Special Concern	No Status	Confirmed
Red-necked phalarope *Phalaropus lobatus*	Special Concern	Special Concern	Confirmed
Short-eared owl *Asio flammeus*	Special Concern	Special Concern	Confirmed
Peregrine falcon *Falco peregrinus*	Not at Risk	Special Concern	Confirmed
Mammals			
Caribou, barren-ground population *Rangifer tarandus*	Threatened	No Status	Confirmed
Atlantic walrus (Central/Low Arctic population) *Odobenus rosmarus rosmarus*	Special Concern	No Status	Confirmed
Beluga whale (Western Hudson Bay population) *Delphinapterus leucas*	Special Concern	No Status	Confirmed
Bowhead whale (Eastern Canada-West Greenland population) *Balaena mysticetus*	Special Concern	No Status	Confirmed
Narwhal (*Monodon monoceros*)	Special Concern	No Status	Potential
Polar bear *Ursus maritimus*	Special Concern	Special Concern	Confirmed

Common and scientific names of species	Status in Canada		Presence in Qaqsauqtuuq MBS
	COSEWIC-assessed	SARA-listed	
Ringed seal *Pusa hispida*	Special Concern	No Status	Confirmed
Wolverine *Gulo gulo*	Special Concern	Special Concern	Potential
Fishes			
Lumpfish *Cyclopterus lumpus*	Threatened	No Status	Potential
Northern wolffish *Anarhichas denticulatus*	Threatened	Threatened	Potential
Spotted wolffish *Anarhichas minor*	Threatened	Threatened	Potential
Atlantic wolffish *Anarhichas lupus*	Special Concern	Special Concern	Potential
Thorny skate *Amblyraja radiate*	Special Concern	No Status	Potential

2.6 Invasive Species

Human activity has resulted in species occurring beyond their natural range (Canadian Endangered Species Conservation Council, 2011). The Government of Nunavut has designated 14 species of vascular plants as exotic within Nunavut. None of these species are invasive or a threat to Nunavut's biodiversity. There are no known non-native or invasive plant species within the boundary of the Qaqsauqtuuq MBS.

3 CULTURAL RESOURCES

The focus of a MBS is the conservation of migratory birds and their habitat, but the *IIBA* recognizes that people are also part of the environment. Inuit knowledge and Inuit Qaujimajatuqangit (IQ) provide valuable information regarding the lands, waters, and resources specific to the area, which can lead to more informed decision-making. Accordingly, this section describes past and present land use in the MBS and the surrounding region and includes a review of the known tangible and intangible cultural resources.

Travel routes, place names and knowledge of weather and the ways of animals are a few examples of intangible heritage, while archaeological sites, artifacts, structures (i.e. caches, fox traps, fish weirs, kayak stands, and inuksuit), and the remains of past habitations are all part of the tangible heritage of Inuit land use. Intangible resources are difficult to identify, as there is no physical manifestation of the resource. It is important to remember that there are stories, place names, songs, and traditions associated with many of these archaeological sites.

3.1 Cultural Resources Inventory and Interpretative Materials Study

The Inuit Land Use and Occupancy Project (INAC, 1976) report explained and mapped the historical development of Inuit occupancy over much of the surface of Nunavut (including sea ice). The Nunavut Atlas (Riewe, 1992) refined this by showing the most intensively used lands, those which were visited by Inuit every year before the centralization of people into their present communities, along with those lands which were visited regularly, though not necessarily every year. Although valuable resources, the Inuit Land Use and Occupancy Project and the Nunavut Atlas focus on subsistence practices rather than other cultural practices.

NTI has obligations under *Article 6* of the *IIBA* to prepare inventories of resources important to Inuit for MBSs and NWAs in Nunavut. The purpose of the inventories is to support the management of each protected area, aid the development of interpretive materials, document information of cultural importance to Inuit, and support the development and use of official Inuit language names in management of these protected areas. The Irniurviit ACMC will revise Section 3 of this management plan when an inventory is completed and made available for the Qaqsauqtuuq MBS.

3.2 Historical Inuit Land Use

Inuit have inhabited Southampton Island for thousands of years. Historically, Inuit lived in areas near hunting grounds for marine mammals (Bird, 1953). Early houses were made of snow or sod, depending on the season. Inuit later settled in permanent winter villages with homes made from stone, bone, and sod. During the summer, Inuit moved into skin tents held down by rocks (Collins, 1956).

Inuit made tools from chipped stone, bone, antler, ivory and wood (some tipped in iron); and had a well-developed artistic carving culture. Harpoons, kayaks, and umiaks were used for hunting. Light and heat came from harvested oil.

Explorer journals and diaries refer to Southampton Island as early as the 1600s, but there are few records about the resident Sallirmiut ("island people" or "people living on the island"). After the 1860s, whalers frequented the waters of Roes Welcome Sound. Inuit provided the whalers with food and clothing and helped with various whaling activities (Van Stone, 1960).

In the winter of 1902-1903 disease struck, killing nearly the entire Sallirmiut population on Southampton Island. Whalers likely introduced the disease. With no one to assist the whaling boats, whalers brought Inuit from Repulse and Wager Bay in 1908 to Southampton Island to work in the industry.

In 1924, the Hudson's Bay Company (HBC) relocated its post from Coats Island to Coral Harbour and Inuit (originally from Southern Baffin) were transferred along with the post. Fox trapping became an important source of income for Inuit who needed to purchase goods from the HBC (tea, ammunition, etc.). In the 1940s, Americans built an Air Force Base just outside of Coral Harbour. Later, federal programs such as education, health and the opportunity for wage employment drew most of the scattered camps along the coastline into the settlement of Coral Harbour.

Prior to the establishment of the HBC in Coral Harbour, the Sallirmiut of Southampton Island led a migratory lifestyle moving annually from camp to camp generally following game. They depended almost exclusively on the sea for survival, hunting marine mammals such as seals, whales, and walrus (Bird, 1953; Collins, 1956). Before the goose colonies had become of interest to researchers, marine mammal harvesters traditionally visited the MBS. The HBC's demand for arctic fox pelts, however, prompted Inuit to establish trap-lines and travel inland. Fox trapping and polar bear hunting became important sources of income during winter. Fishing and sealing provided much of the fresh

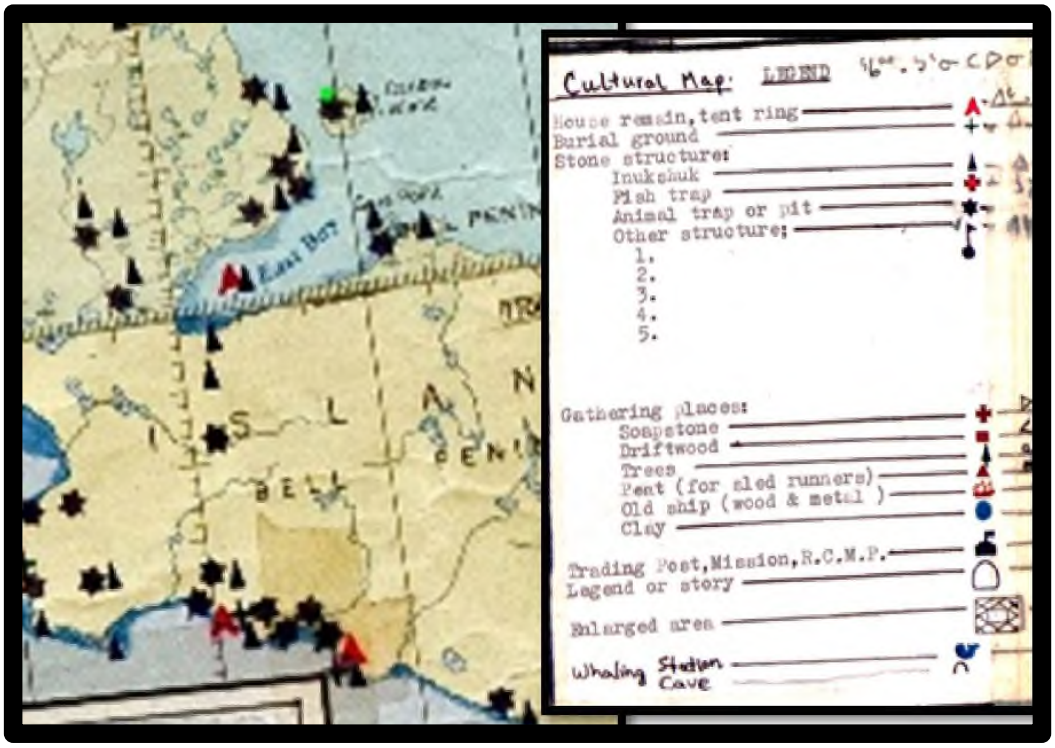
meat, caribou, and birds to a lesser extent. Traditional trap-lines of Salliqmiut, or present-day Inuit of Coral Harbour, run throughout the southern region of the island, including within the MBS along the East Bay coastlines (Figure 6).

Southampton Island has numerous archaeological sites, cultural features, and artifacts. In 1983, J. Reid registered an archaeological site (LaHf-1) within the MBS. The site is a campsite with tent rings, large caches, and sod houses and is located at Qikiqtakuluk. Reid also reported ruins at Nulujjuaq. The Nunavut Atlas identifies several other archaeological sites and recent campsites within the Qaqsauqtuuq MBS (Figure 6). An occupancy map featuring the region around East Bay also identifies a number of inuksuk and animal traps or pits within the boundaries of the MBS (Source: William Kemp, NTI's cultural resources inventory consultant; Figure 6).

The northern boundary of the MBS intersects with the southern wintering range of caribou and the spring and summer migration routes. As a caribou harvesting area, it is likely to find living sites, blinds, inuksuit, and other cultural features within this area. Since Inuit would have harvested caribou along with their trapping pursuits, associated caches are also very likely. Salliqmiut identified several place names within the MBS, demonstrating intimate knowledge of the area and its abundance of wildlife (Figure 1; Table 5).

Table 5: Traditional place names in the MBS (adapted from Inuit Heritage Trust data).

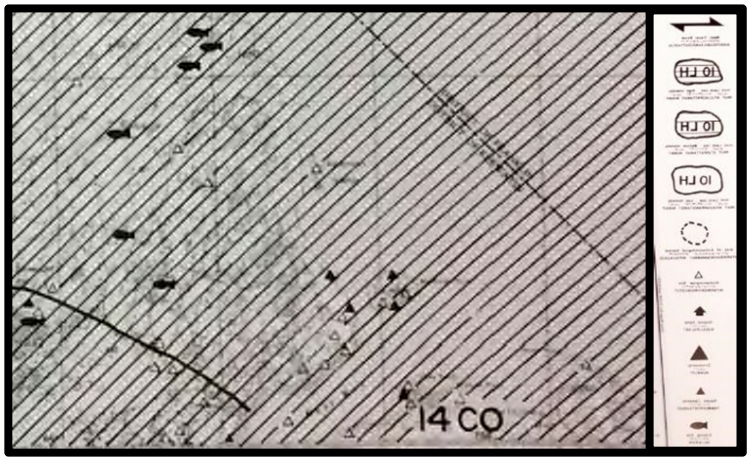
Roman	Inuktitut	Feature	Official Name	Explanation
Itijuarjualaaq	ᐃᑎᓛᐊᖅᓛᐊᓪᓚᖅ	Bench		Steep-sided bench feature
Umiakugvik	ᐅᒥᐊᑯᓴᒃ	Point	Umiakuvik Point	Place to leave the boat and begin to travel inland
Utaqqivik	ᐅᑕᖅᑭᓴᒃ	Camp		Place to wait in spring for birds to nest and lay eggs. Camping area
Aglirulaarvik	ᐊᒡᓕᕐᓭᖅᓴᒃ	Ridge Section		Name has to do with jaw trembling or chattering when a person is chilled with the cold
Naaliktuq	ᓇᓕᒃᑐᖅ	River Section		Part of the river that bulges into a concave shape in winter
Nulujjuaq	ᓄᓗᑦᓛᐊᖅ	Point	M’Clure Point	Buttocks
Qikiqtakuluk	ᖁᑭᖅᑕᑯᓗᒃ	Island		Nesting place for eiders
Itijujjuaq	ᐃᑎᔨᓛᐊᖅ	Cliff	Big Cliff Corner	Big corner. The steepest part at the end of the cliff
Nasipaariarvik	ᓇᓱᓯᓚᐊᖅᓴᒃ	Hill		A lookout. The only slightly high point in this low-lying area
Qakutajak	ᖃᑯᑕᕆᒃ	Hill	Qakutajaq Hill	White rocks and limestone gravel
Qaqsauqtuuq	ᖃᖅᓴᐅᖅᑐᖅ	Breeding Ground		Means two loons. Part of the MBS, includes part of the bay. All kinds of migratory birds: snow and Canada geese, eiders. People used to gather eggs here
Tajjaqturliq	ᑕᑦᖅᑐᕐᓕᖅ	Plateau		Place where people used to go caribou hunting
Tasialuk	ᑕᓯᐊᓗᒃ	Lake	Tasialuk Lake	There are land-locked char here



Source: NTI, 2014



Source: Inuit Land Occupancy Project. INAC, 1976



Source: Nunavut Atlas. Riewe, 1992

Figure 6: Historical Inuit land use of Southampton Island.

3.3 Current Inuit Land Use

Today, Salliqmiut still rely on the meat and skins of wild animals for subsistence purposes. Subsistence harvesting is a species-based seasonal activity on Southampton Island, including gathering eggs, goose hunting, and hunting of land and sea mammals including polar bear, caribou, seals, whales, and walrus (Figure 7). Salliqmiut do not commonly travel as far as Qaqsauqtuuq MBS for goose and egg harvesting as these are now available much closer to the community (Figures 4 and 5).

However, Salliqmiut still use the MBS for camping and harvesting activities periodically. Camping typically occurs within the far eastern portion of the MBS along the coast, outside of the main bird nesting and feeding areas. Salliqmiut hunt fox, caribou, and waterfowl within the MBS. Qaqsauqtuuq MBS is used infrequently for polar bear hunts (subsistence and sport hunts) and to harvest other marine mammals.

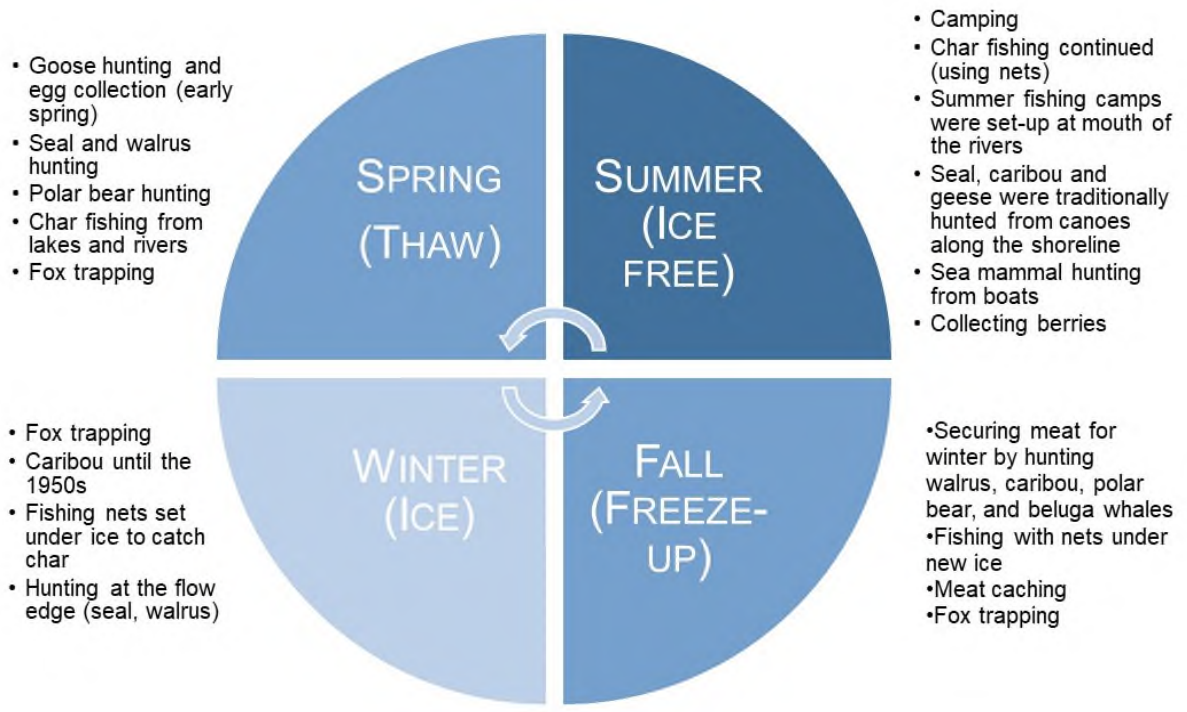


Figure 7: Past and current seasonal subsistence harvesting activities on Southampton Island.

4 GOALS AND OBJECTIVES

4.1 Vision

The vision for the MBS is:

> *The Qaqsauqtuuq MBS is managed to ensure the long-term conservation and protection of the land and water for all wildlife, Inuit rights, and their heritage while considering Inuit Qaujimajatuqangit in all decisions.*

The long-term vision for the management of the Qaqsauqtuuq MBS takes into account these values:

- Conservation of wildlife and protection of their habitat, including migratory birds and species at risk;
- Protection of archaeological and cultural resources (as per *Article 2 – IIBA*);
- Inuit rights to use and harvest; and ensuring Inuit benefits (as per *Article 2 – IIBA*);
- Recognition of IQ principles in conservation, management, research decisions;
- Increase awareness of the importance of the MBS;

4.2 Goals and Objectives

The management goals for the Qaqsauqtuuq MBS are critical to achieve and maintain the vision (Table 6). The Irniurviit ACMC developed management objectives in Table 6 to (i) meet the goals, and (ii) address management challenges and threats to the Qaqsauqtuuq MBS (Section 5.0 – Management Considerations).

The goals appear in order of importance to the ACMC.

Table 6: Management Goals and Objectives.

Goals	Objectives
Goal 1**:** Protect the land and water for all wildlife, Inuit rights and heritage	Objective 1.1: Work towards converting the MBS to a National Wildlife Area to ensure it is best suited to co-management and to the year-round protection of habitat for all wildlife, and especially species at risk. Objective 1.2: Encourage and support research or monitoring, including the collection of Inuit Qaujimajatuqangit, which informs the management of the MBS or serves to fill knowledge gaps. Objective 1.3: Coordinate with and support partner organizations (IHT/GN/NTI) to document the cultural resources within the MBS. Objective 1.4: Increase awareness of the MBS and the significance of the natural and cultural resources within the MBS.
Goal 2**:** Ensure local awareness, participation and benefits	Objective 2.1: Develop a communication plan with Salliqmiut to facilitate sharing information and knowledge, discuss concerns, and input into research priorities. Objective 2.2: Encourage Salliqmiut employment and mentorship in research and monitoring and increase awareness of opportunities. Objective 2.3: Increase local awareness of permitted activities within the MBS.
Goal 3**:** Minimize the impacts of human activities on the natural and cultural resources	Objective 3.1: Ensure everyone follows the permitting processes. Objective 3.2: Promote best practices to minimize the disturbance or destruction of natural and cultural resources. Objective 3.3: Participate in regional processes or initiatives that support the conservation of the MBS and surrounding areas.

4.3 Evaluation

CWS will conduct annual monitoring within the limits imposed by the availability of financial and human resources. The Irniurviit ACMC will review the management plan 5 years after its initial approval and review and update it every 10 years thereafter. The evaluation will be a review of management activities for the MBS and data obtained from the monitoring and research projects. CWS and the ACMC will then establish priorities for action and allocate resources.

5 MANAGEMENT CONSIDERATIONS

Presently, there are no significant or immediate threats to the Qaqsauqtuuq MBS. Habitat is mostly intact, and the MBS is relatively isolated. However, the following management considerations have the potential to affect the MBS.

Light geese population and habitat

When CWS established the MBS in 1959, it was one of a few relatively small goose colonies throughout northern Canada and had approximately 24,300 light geese (Cooch & Barry, 1957). The colony at East Bay extends beyond the boundaries of the MBS and now forms one contiguous goose nesting area with the colony near Coral Harbour (Figures 4 and 5). Most recent surveys in 2014 estimated over 289,700 nesting light geese within these two colonies (J. Leafloor, CWS, personal communication). At a continental scale, populations of light geese experienced exponential growth over the past 50 years and are now "overabundant" in Canada and the United States. Midcontinent snow geese, which includes geese nesting on Southampton Island, averaged 12.6 million adults (Alisauskas, et al., 2018a), and Ross's geese averaged 1.6 million adults from 2006-2015 (Alisauskas, et al., 2018b).

Increases in population size have led to concerns about potential impacts to the Arctic's coastal and lowland habitats caused by the foraging activities of large numbers of geese (Batt, 1997). Studies on Southampton Island report alteration of foraging habitats used by geese in coastal lowlands in the colony at East Bay (Carter, et al., 2018; Fontaine & Mallory, 2011). Habitat changes are similar to that observed in the Hudson Bay Lowlands (Jano, et al., 1998; Kotanen & Jefferies, 1997). ECCC researchers are currently studying habitat loss due to grubbing and over-grazing to understand what effect it may have on other bird species in terms of reduced food availability and loss of nesting habitat (Flemming, et al., 2016). The impact on other wildlife species is still unclear.

Common eider population

Common eiders are an integral component of arctic ecosystems and are an important part of the subsistence harvest in northern Canada and western Greenland (Harms, 2011; Henri, 2007). Concerns about overharvesting on eider wintering grounds in western Greenland in the 1990s resulted in new harvest regulations. By 2002, Greenland had harvest quotas in place. The eider

colony at Qikiqtakuluk subsequently rebounded but concerns over its fate remain as eiders face other threats.

The largest known outbreak of avian cholera in common eiders occurred at Qikiqtakuluk in 2005 and has been present every year since to varying degrees. This virulent disease resulted in declines ranging from 33-56% in the abundance of eiders over a 3-year period from 2006-2008 (Buttler, 2009; Iverson, 2015; Descamps, et al., 2009). The number of females dying from avian cholera has steadily declined since 2009 (Iverson, 2015). Inuit from communities near affected eider colonies in Nunavut had never observed large die-offs due to infectious disease before (Henri, et al., 2018). Salliqmiut have suggested that the presence of the disease at Qikiqtakuluk is a result of nesting eiders being too numerous and causing them to move to other areas, including closer to the community. Henri (2007) documented similar Inuit knowledge about natural processes regulating large populations.

In recent years, ECCC researchers have recorded polar bear predation of eider eggs and chicks. In 1997, predation by two polar bears resulted in near complete destruction of the eider colony at Qikiqtakuluk. These bears ate over 14,000 eider eggs in seven days (Gilchrist & Heise, 1997). In 2012 and 2015, predation led to the total reproductive failure of the colony (Gilchrist & Jassen, 2015; Dey, et al., 2018; Dey, et al., 2019). A decline in nest success has prevented the eider colony from recovering following the avian cholera outbreak and harvesting regulations in Greenland.

Climate Change

Climate change, by itself and acting together with other factors, is playing a role in observed changes to habitat in the Qaqsauqtuuq MBS. Changes to the extent and duration of sea and freshwater ice, permafrost and snow cover, as well as increased air temperatures measured across the Arctic is leading to growing habitat shifts and corresponding responses in species (CAFF, 2010). For example, progressive earlier ice break-up in Hudson Bay has forced polar bears ashore much earlier (Lunn, et al., 2016) leading to documented increases in predation of eider nests in the MBS (Iverson, et al., 2014) and other breeding birds on Southampton and Coats Islands (Smith, et al., 2010). A warming climate will equally increase the likelihood of eiders breeding in a given year and the numbers of eggs laid allowing their populations to be maintained (Dey, et al., 2018).

Other observations of habitat changes in the MBS include drying of the land, lower water levels, and erosion in some places. These habitat changes were documented in other studies in the Arctic (Smol & Douglas, 2007; Kokelj, et al., 2005) and linked to climatic warming. Salliqmiut are also observing new species and changes to the distribution and migration patterns of other species (Carter, et al., 2018).

Community participation and awareness

In general, Salliqmiut feel well engaged with respect to research activities in Qaqsauqtuuq MBS. However, Salliqmiut have expressed concerns about the recurring presence of researchers and the greater need for the inclusion of Inuit Qaujimajatuqangit in both research and management decisions. Salliqmiut also want to fully benefit and participate in economic and other opportunities arising from the management of the MBS. The successful co-management of the MBS depends on addressing these challenges.

Human Activities

There is increased interest in natural resource development and the establishment of new shipping routes through the Foxe Channel. An approved mining project plans to use approximately 100 ships per year through the Foxe Channel in support of their operations. Although this planned shipping is delayed until 2025, the future threat of an oil spill entering the MBS is a concern.

Salliqmiut have also expressed interest in developing two ATV trails that may have impacts on the MBS. The first proposed route is adjacent to the boundary avoiding the extensive wetlands in the western portion of the MBS and continuing along the southern border to the coast near Nulujjuaq. The other proposed route would enter the Qaqsauqtuuq MBS from the northwest area near Qakutajak and proceed to the northern shore of East Bay.

Improved access to the Qaqsauqtuuq MBS could lead to increased interest in local outfitting and tourism opportunities. There is also the potential for increased ship-based ecotourism in the MBS to observe the abundance of marine mammals. These future considerations will need careful planning to minimize impacts to wildlife and their habitat in the MBS.

Table 7: Summary of management considerations and approaches.

Management Consideration	Corresponding Goals/Objectives from Table 6	Management Approaches
Converting MBS to a National Wildlife Area to ensure it is best suited to co-management and to the year-round protection of habitat for all wildlife, and especially species at risk	1.1, 1.2, 1.3, 1.4	6.1 Cultural Resources Management 6.2 Wildlife and Wildlife Habitat Management 6.3 Monitoring and Research 6.4 Public Awareness and Information Management
Light geese population which could be causing habitat alteration and negatively affecting other wildlife	1.2	6.2 Wildlife and Wildlife Habitat Management 6.3 Monitoring and Research
Avian cholera outbreaks affecting the common eider population	1.2	6.2 Wildlife and Wildlife Habitat Management 6.3 Monitoring and Research
Polar bear predation affecting the common eider population	1.2	6.2 Wildlife and Wildlife Habitat Management 6.3 Monitoring and Research
Salliqmiut concerns about research	2.1	6.4 Public Awareness and Information Management
Salliqmiut concerns about inclusion of Inuit Qaujimajatuqangit in research and management decisions	2.1	6.4 Public Awareness and Information Management 6.3 Monitoring and Research

Management Consideration	Corresponding Goals/Objectives from Table 6	Management Approaches
Salliqmiut concerns about benefitting and participating in economic and other opportunities arising from the management of the MBS	2.2	6.4 Public Awareness and Information Management
Effects of climate change on management of the MBS	1.2	6.3 Monitoring and Research
Increased shipping in Foxe Channel and risks of oil spills	1.2, 3.2, 3.3	6.3 Monitoring and Research 6.4 Public Awareness and Information Management
Potential ATV access trails inside and adjacent to MBS	2.3, 3.1, 3.2, 3.3	6.4 Public Awareness and Information Management
Potential increased interest in sport hunting/outfitting with increased access	2.3, 3.1, 3.2	6.4 Public Awareness and Information Management
Potential ship-based ecotourism in East Bay	1.2, 3.1, 3.2, 3.3	6.4 Public Awareness and Information Management

6 MANAGEMENT APPROACHES

CWS, in partnership with the Irniurviit ACMC, will manage the Qaqsauqtuuq MBS by focusing on four main management approaches: Cultural Resource Management (Section 6.1), Wildlife and Wildlife Habitat Management (Section 6.2), Monitoring and Research (Section 6.3), and Public Awareness and Information Management (Section 6.4). These approaches will support meeting the vision, goals, and objectives of this management plan while being cognizant of the management considerations. CWS will implement these management actions through the annual work planning process, as human and financial resources allow.

6.1 Cultural Resources Management

6.1.1 Cultural and Heritage Resources

The management of the Qaqsauqtuuq MBS will include the protection of archaeological and cultural heritage of Inuit (*IIBA s.2.1.7*). This includes protection and conservation of archaeological sites, artifacts, and cultural sites of importance to Inuit. All activities within the MBS must comply with the requirements of the *Nunavut Archaeological and Palaeontological Sites Regulations* and *Article 33* of the *NA*. If any permittee encounters a new archaeological site, specimen, or artifact, they will photograph it and records its geographic coordinates. This information must then be provided to the Government of Nunavut's Department of Culture and Heritage, the Inuit Heritage Trust, and NTI as soon as reasonably practicable.

The management of the Qaqsauqtuuq MBS should avoid social and cultural disruption to Inuit and their relationship with and use of the lands (including IOL), the waters, and the resources of the MBS (*IIBA* s*.2.1.4*). The management of the MBS will preserve, support, and promote the use of traditional place names and the use of Inuit-language (*IIBA* s*.2.1.6*). CWS and the Irniurviit ACMC will seek information from NTI with respect to Archaeological Sites, and Cultural Sites of Importance to Inuit obtained through the inventories conducted under *s.6.4-6.7* of the *IIBA*, when necessary to manage the MBS.

CWS and the ACMC will need field surveys, conducted by qualified professionals, to document, assess, and preserve cultural resources within the MBS. This will help inform management decisions.

6.1.2 Wildlife Areas of Importance to Inuit

NTI will identify Wildlife Areas of Importance to Inuit within the Qaqsauqtuuq MBS, through *Article 6* of the *IIBA*, and provide them to CWS. These areas shall be managed in cooperation with other agencies having jurisdiction over wildlife and in a manner consistent with *Article 5* of the *NA* (*IIBA s.12.2*). In managing the MBS and Wildlife Areas of Importance to Inuit, CWS shall:

(1) Minimize disturbance to wildlife and wildlife habitat, and promote the maintenance of vital, healthy wildlife populations;
(2) Make all reasonable efforts, consistent with the Minister's jurisdiction under the *MBCA* and *SARA* to respect the cultural significance of Wildlife Areas of Importance to Inuit, taking into account any Inuit Qaujimajatuqangit documented and presented to it by Inuit, the Irniurviit ACMC and other knowledgeable parties;
(3) Investigate public concerns regarding the protection or management of wildlife and document the response, or refer the matter to the wildlife management agency having jurisdiction; and,
(4) As appropriate, consult Inuit organizations about issues pertaining to the effective management of wildlife and wildlife habitat within the MBS.

6.1.3 Place Names

An objective of the *IIBA* (*s.2.1.6*) is to document Inuit place names and promote the use of these place names in the management of the protected area. Place names were documented on two occasions for Southampton Island (2006 and 2012). CWS and the Irniurviit ACMC will also promote any additional information collected and will incorporate revisions brought to their attention.

6.2 Wildlife and Wildlife Habitat Management

6.2.1 Change in designation of the protected area

Although the current level of protection of the Qaqsauqtuuq MBS serves well for migratory bird species, other species at risk and wildlife would benefit from year round protection. A National Wildlife Area would provide better protection for all wildlife and cultural resources, and better enable CWS to meet its commitments under the *IIBA*. There are criteria for designation of an area as a National Wildlife Area that the Qaqsauqtuuq MBS meets (Section 8).

The Irniurviit ACMC wholly supports the designation change. The ACMC has written letters to CWS, NTI, and KivIA (06 July 2015) formally requesting CWS pursue the option of a status change. *Article 13* of the *IIBA* outlines this process and includes (but is not limited to) notification and consultation with NTI, KivIA, the associated communities and the ACMC, and will involve the establishment of an assessment group to consider the status change. A boundary change discussion may accompany this process.

6.2.2 Overabundant Light Geese

The severity, extent, and ecological impacts of overgrazing geese within the Qaqsauqtuuq MBS are not well understood, but CWS is considering all viable management approaches and tools to address the issue. Light geese are an over-abundant species, and studies have documented some impacts on the habitat within the MBS near the colony (Carter, et al., 2018; Fontaine & Mallory, 2011). Liberal hunting regulations designed to increase light goose harvest in the midcontinent region of Canada and the United States have been in place since 1999. Though harvests have increased substantially, growth of goose populations have outpaced increases in harvest, and harvest rates have actually declined overall. Nonetheless, there is evidence that recruitment of young geese has declined over time as the population has grown, and population growth has levelled off on its own in recent years (Ross, et al., 2017).

The Irniurviit ACMC supports several strategies to increase the local harvest of light geese. These include the promotion of harvest, inter and intra community sharing, sport hunting and commercial opportunities (Carter, et al., 2018). However, the ACMC also recognizes that light geese are important components of the ecosystem and wildlife heritage within the Qaqsauqtuuq MBS. Ongoing research and monitoring are key to help understand the dynamics of breeding geese and other species within the Qaqsauqtuuq MBS. The Irniurviit ACMC will base its advice on the best available knowledge, and support a wide range of research and monitoring. ECCC researchers are investigating concerns about the effects of habitat loss on other species of migratory birds and other ecosystem components.

6.2.3 Common Eider Colony

Factors such as avian cholera, polar bear predation, harvest levels, climate, contaminants, and habitat and food resources should continue to be priorities for ongoing research and monitoring of

eiders. These factors have significant management implications for eider populations, both in the MBS and across the Arctic (Dey, et al., 2018; Iverson, 2015; Provencher, et al., 2014). As the largest single common eider colony in the Canadian Arctic and having a long-term research station, Qikiqtakuluk offers a unique opportunity to investigate the various factors influencing eider populations.

6.2.4 Species at Risk

When a species is listed under the federal *Species at Risk Act*, a recovery strategy (for species listed as 'Endangered' or 'Threatened') or a management plan (for species listed as 'Special Concern') is developed for that species. These recovery documents describe the habitats that species at risk need to survive.

Knowledge of habitat use by species at risk in the Qaqsauqtuuq MBS will aid in the development and implementation of recovery documents. The MBS will protect habitat that species at risk need to survive and recover to healthy population sizes. A change in designation of the Qaqsauqtuuq MBS from a Migratory Bird Sanctuary to a National Wildlife Area (Section 8) will aid in the year-round protection of this area for all wildlife (in particular non-bird species at risk; Table 4).

6.2.5 Non-native and Invasive Species

There are no observations or records of non-native (introduced) or invasive species of concern within the boundary of the MBS. As climate change alters Arctic ecosystems and enables greater human activity, biological invasions are likely to increase. CWS, in consultation with the Irniurviit ACMC, will develop an action plan should any monitoring detect the presence of invasive species.

6.2.6 Harvesting

The Irniurviit ACMC recognizes that hunting is an important source of food, income, and connectivity to the land for Inuit. In this regard, the ACMC will increase local awareness of permitted activities in the MBS (*Section 7.1*) to help dispel past and currently perceived infringements to Inuit rights to harvest. The management of the Qaqsauqtuuq MBS shall be consistent with Inuit harvesting rights under the *NA* as per the *IIBA s.2.1.5*. Management of hunting activities for waterfowl and other game birds will be consistent with the *NA*, the *MBCA*, and its associated regulations.

6.2.7 Air Traffic

Seasonally (i.e. when birds are present), air traffic above the Qaqsauqtuuq MBS will be managed to avoid and minimize flights in sensitive areas and during vulnerable periods (migration, nesting and moulting). Specifically, air traffic will:

(1) Keep a minimum flight altitude of 650 m (2,100 ft.);
(2) Plan flight paths to avoid known concentrations of birds (e.g., bird colonies, moulting areas) by a lateral distance of at least 1.5 km;
(3) If avoidance is not possible, maintain a minimum flight altitude of 1,100 m (3,500 feet) over areas where birds are known to concentrate; and,
(4) Avoid staging areas used by flocks of coastal waterfowl and seaducks during spring and fall migration by a lateral distance of 3 km.

Depending on the nature of the work being conducted, these minimum flight altitudes may not be practical (e.g., wildlife surveys) and will be considered during the permitting process.

6.2.8 Marine Traffic

CWS and the Irniurviit ACMC will manage the marine habitat in Qaqsauqtuuq MBS in consultation with federal, territorial, and local governments and agencies, as well as local fishermen/harvesters. This will minimize impacts to marine habitat from vessels travelling through the waters within and adjacent to the MBS.

Year-round, vessels should:

(1) Comply with the *Arctic Shipping Pollution Prevention Regulations* of the *Arctic Waters Pollution Prevention Act (1985)*;
(2) Not dump bilge water, exchange ballast water or dump sewage within the MBS boundary;
(3) Minimize noise emissions (such as sudden engine noise from acceleration and avoiding using horns) from vessels within 1 km of the MBS (subject to safety considerations); and,
(4) Consult with the CWS office in Iqaluit before project commencement to discuss ship routing and appropriate emergency preparedness requirements.

Seasonally (i.e. when birds are present), all vessels will, at a minimum:

(1) Avoid activity near nesting birds (May-August);
(2) Keep a 500 m setback distance from aggregations of birds and/or colonies (ECCC, 2016).

Larger vessels are at high risk of grounding from the submerged reefs at the mouth of East Bay. Cruise ships should anchor outside the MBS and proceed with smaller vessels (e.g. zodiacs).

6.3 Monitoring and Research

Effective and efficient monitoring requires a coordinated approach and will be carried out through liaison with researchers and partner agencies in a manner that contributes to the goals and objectives outlined in this plan and relevant recovery documents for species at risk.

In order of priority, ongoing monitoring and research needs include:

(1) The distribution and abundance of light geese, and the annual survival and harvest rates influencing the population;
(2) The nature, intensity and geographic extent of habitat change as well as the rate of recovery of habitat;
(3) The distribution and abundance of common eiders and factors influencing the population, including polar bear predation, avian cholera and other diseases, contaminants, habitat and food resource requirements;
(4) Surveys to document Archaeological sites in the MBS;
(5) The distribution and abundance of shorebirds and other waterbirds; and,
(6) The impacts of climate change on ecosystems and species, including changes to their distribution, reproduction, and survival.

The Irniurviit ACMC will consider unsolicited monitoring and research activities for permitting when it:

(1) Contributes to research priorities identified by Salliqmiut;
(2) Increases knowledge of the abundance and distribution of ecological resources within the MBS to mitigate potential impacts from planned human activities;
(3) Improves knowledge of IQ and cultural resources and heritage; and,
(4) Informs about the effects of habitat change on other wildlife populations.

CWS and the Irniurviit ACMC will examine proposals to ensure compatibility with management goals and objectives. The Irniurviit ACMC does not support projects that require extensive collecting, excessive depletion of any population, and significant disturbance of animals or disruption of habitat. The Irniurviit ACMC will encourage researchers to integrate or collect IQ as part of their project proposals. Applicants must submit all monitoring and research proposals to Environment and Climate Change Canada's Canadian Wildlife Service. Refer to Section 7 of this management plan for information related to permitting. Permit holders are required to provide a summary of findings to the Irniurviit ACMC and report on any identified issues that have the potential to affect the management of the species and habitats.

6.4 Public Awareness and Information Management

The Irniurviit ACMC plays a key role in promoting the Qaqsauqtuuq MBS and facilitating dialogue and understanding surrounding management of the MBS between Salliqmiut, researchers, Inuit organizations, government, and industry. Increasing awareness among Salliqmiut and the public about the MBS will be an annual and ongoing management responsibility of the ACMC.

6.4.1 Local awareness and understanding

For the successful co-management of the MBS, the Irniurviit ACMC will need to balance the monitoring and research needs of the MBS with Salliqmiut concerns. The ACMC will develop a communication plan, in consultation with Salliqmiut, to increase local awareness of current and permitted activities in the MBS as well as disseminating any important health or safety issues. One objective of the plan could be to provide regular and meaningful opportunities to share information and knowledge among users, and to discuss concerns and evaluate research priorities. This may also involve facilitating a community workshop. The Irniurviit ACMC will also encourage permit applicants to translate project summaries and annual reports as a standard recommendation for permit approval in order to increase accessibility to Salliqmiut.

6.4.2 Public Awareness

CWS and the Irniurviit ACMC will promote the natural, cultural and heritage resources of Qaqsauqtuuq MBS to Salliqmiut, Nunavummiut, visitors to Nunavut and all Canadians (*IIBA s.6.1.1(d)*). NTI will develop interpretive materials, such as signs, displays, brochures, and other information about the natural and cultural resources in and around the MBS (*IIBA s.6.8.1*). The primary purpose of interpretative materials is to facilitate the development of environmentally sustainable tourism and guiding in and around the MBS.

All materials (written, audio and video) to educate or inform the public about the MBS will be available in the Inuit Languages (*IIBA s.6.2.1*). CWS and the ACMC will also preserve Inuit language by supporting and promoting it in the management of the MBS. For example, maps, signs, or interpretive materials will feature traditional place names. All materials should incorporate IQ, with special regard to the MBS's physical features, ecology, wildlife, and Inuit heritage and culture (*IIBA s.6.8.4*) and will be reviewed by CWS, to ensure the accuracy of the biological and ecological information contained within the interpretive materials (*IIBA s.6.8.5*).

If CWS displays information on the Qaqsauqtuuq MBS, it will make use of visitor centres or similar facilities in Coral Harbour (e.g. airport) in accordance with *s.6.9.1* of the *IIBA*. Information may also be made available online through the Government of Canada's website or an ACMC-hosted website.

6.4.3 Student Initiatives

Student initiatives such as youth participation in research and the management of the Qaqsauqtuuq MBS is an important component in fostering a close relationship with the land as well as promoting conservation-related work. CWS has agreements in place to hire, train, and mentor Inuit students (*IIBA s.9.2*). CWS also co-operates with the GN in the development of materials and information designed to explain conservation-related jobs, career and business opportunities to Nunavut youth (*IIBA s.9.2.1*). ECCC is a participating federal department in the Inuit Learning Development Program, which aims to help Nunavut Inuit develop skills for potential employment in the federal public service in Nunavut. The Irniurviit ACMC will encourage permit applicants to hire Inuit students and Nunavut youth (e.g. Nunavut Sivuniksavut, Inuit Mentoring Program and Inuit Field Research Assistant Program) as a standard recommendation for permit approval. The Irniurviit ACMC will also support other initiatives that serve to build local capacity for youth to participate in research and management of the MBS.

6.4.4 Tourism Activities

In accordance with the *IIBA*, NTI administers funds to build capacity among Inuit Tourism Providers in Coral Harbour and develop effective community-based tourism services. These services include training or mentoring for interested Inuit Tourism Providers; developing local services for tourists; and developing strategies, tourism packages, and marketing plans (*IIBA s.7.2*). The Irniurviit ACMC recognizes tourism as a legitimate land use and supports sustainable tourism operations within the Qaqsauqtuuq MBS. The season, location, and intensity of the tourism activity are subject to periodic review. CWS and the ACMC may impose limits if deemed necessary to avoid adverse impacts on the ecological and cultural resources within the MBS. Tourism activities within the MBS may also be subject to other applicable licenses or authorizations under the *Nunavut Travel and Tourism Act*, the *Nunavut Wildlife Act,* the *Nunavut Archaeological and Paleontological Sites Regulations,* and the *Nunavut Planning and Project Assessment Act.* Inuit should fully benefit from and fully participate in the economic and other opportunities arising from the management of the MBS (*IIBA s.2.1.3*).

6.4.5 Camps

The Irniurviit ACMC will maintain a list of existing cabins (camps) within the Qaqsauqtuuq MBS. If a visitor wishes to visit an outpost camp, the ACMC shall advise the visitor on the appropriateness of the visit and provide owner contact information to seek permission of use (*IIBA s.5.5.5)*.

New outpost camps in the MBS are permitted subject to the approval of the appropriate HTO or HTOs (*NA s.7.2.2*). Inuit intending to establish a new outpost camp in the Qaqsauqtuuq MBS shall discuss the intended location of the camp with the Aiviit HTO and the Irniurviit ACMC, to minimizing impacts on wildlife or wildlife habitat (*IIBA s.5.5.4*). At this time, the Irniurviit ACMC has identified no areas were the establishment of a new outpost camp would be inconsistent with the conservation of wildlife and wildlife habitat, including the maintenance of healthy wildlife populations (*IIBA s.5.5.2*). ECCC staff and the ACMC may inspect camps and other permanent infrastructure periodically to ensure they are in good condition and there is no negative impact on the habitat around them.

6.4.6 Inuit Owned Lands

Inuit Owned Lands within the MBS will be managed in accordance with *Article 4* of the *IIBA* which states that the natural resource values will be maintained. *Article 4* also defines the roles and responsibilities of the KivIA and the Minister in managing IOL within the MBS, outlines the dispute resolution process and ensures access considerations (by CWS agents, employees and contractors), as well as access across the MBS to IOL.

6.4.7 Compliance Promotion

Promotion of compliance with the laws, regulations, and agreements related to protected areas in Nunavut is a key tool in managing these protected areas. CWS and the ACMC will conduct compliance promotion through sharing information to increase public awareness and education about the protected area, the legislation, and policies affecting the area and the goals and objectives for management of the area.

Management actions for compliance promotion in Qaqsauqtuuq MBS should include:

- Distribution of this management plan;
- Implementation of the communication plan developed in consultation with Salliqmiut;
- Installing signage at primary entry points to the MBS;

- Ensuring information is available at strategic locations in Coral Harbour;
- Ensuring marine traffic is aware that they may require a permit to access the waters of the MBS;
- Ensuring air traffic is aware that they may require a permit to land within the boundaries of the MBS;
- Ensuring Salliqmiut and the public, including local businesses, are aware that permits may be required for certain activities within the MBS;
- Encouraging Salliqmiut and the public to report illegal activities within the MBS or involving migratory birds to CWS or another authority (see Section 10 for contacts); and,
- Encouraging regular patrol visits or desktop patrols (such as reviewing track log files from marine vessels or aircraft) of the MBS.

6.4.8 Regional Processes and Initiatives

While outside influences are not within the scope of this management plan or the mandate of the Irniurviit ACMC, participation in regional processes or initiatives may be essential for effective management of the MBS and for the conservation of migratory birds and other wildlife.

The Irniurviit ACMC may participate, as a party or through public input opportunities, in regional regulatory processes. These may include:

- Review of projects, as defined under *NuPPAA*, that may affect wildlife and habitat within the MBS; and,
- Nunavut Land Use Plan and future revisions.

Other initiatives and opportunities occasionally arise to further regional conservation of migratory birds and other wildlife, including:

- Establishment of conservation areas in the Kivalliq region; and,
- NWA Strategy and Action Plan (*IIBA s.3.4.3*).

The ACMC will discuss and determine its level of participation in these processes and initiatives on a case-by-case basis. The level of risks to the MBS, potential conservation benefits, and capacity may influence the extent of the ACMC's involvement. Other unanticipated opportunities may warrant the ACMC's participation as well.

7 AUTHORIZED ACTIVITIES, PROHIBITED ACTIVITIES AND ACCESS

The *MBCA* is the regulatory framework that protects migratory birds, and their nests and eggs, from destruction, collection, disturbance, and injury. The *MBSR* stem from the *MBCA*, enable the establishment of MBSs, and provide the basis for their management. The *MBSR* set out activities that are prohibited *(MBSR s.3-5,* and *s.10*) and provide authority to the Minister of the Environment to authorize or permit activities in MBSs that are otherwise prohibited (*MBSR s.9*).

As provided for in the *NA* and subject to certain limitations, “Inuit have a free and unrestricted right of access for the purpose of harvesting to all lands, waters and marine areas within the Nunavut Settlement Area” (*NA s.5.7.16*). This includes the Qaqsauqtuuq MBS. The *NA* also exempts Inuit from the requirement to obtain a permit to harvest migratory birds and engaging in activities reasonably incidental to the harvesting of migratory birds in a MBS.

This management plan, the *IIBA*, and ECCC’s Policy when Considering Permitting or Authorizing Prohibited Activities in Protected Areas Designated Under the *Canada Wildlife Act* and *Migratory Birds Convention Act, 1994* will guide the authorization or permitting of activities in the Qaqsauqtuuq MBS.

The *MBSR* do not allow the following activities except under authority of a permit (note the Inuit harvesting exception mentioned above):

- No person shall hunt migratory birds.
- No person shall disturb destroy or take the nests of migratory birds.
- No person shall have in his possession a live migratory bird, or a carcass, skin, nest, or egg of a migratory bird.
- No person shall have in his possession any firearm or hunting appliance.
- No person shall permit their cat or dog to run at large,
- No person shall carry on any activity that is harmful to migratory birds or their eggs, nests or habitat of migratory birds.

7.1 Authorizations

7.1.1 Authorizations by Permit

Under the *MBSR* and upon application, the Minister of the Environment may authorize a prohibited activity under the *MBSR* through the issuance of a permit. That activity must meet one or both of the following purposes and pre-conditions as described in ECCC's *Policy when Considering Permitting or Authorizing Prohibited Activities in Protected Areas Designated Under the Canada Wildlife Act and Migratory Birds Convention Act, 1994.*

Purposes:

- The activity is not harmful to migratory birds, their eggs, nests, or habitats; or
- The activity is not inconsistent with the purpose and criteria used for which the MBS was established and is consistent with the most recent management plan for the MBS.

Pre-conditions:

- Alternatives to the project/activity have been considered, and;
- Mitigation measures have been considered and adopted.

Terms and conditions governing the activity, which the Minister considers necessary for protecting and minimizing the impact of the authorized or permitted activity on migratory birds and their habitat, may be added to a permit. Refer to Section 7.1.7 for more information on permits.

7.1.2 Nunavut Inuit Activities Authorized Without a Permit

Nunavut Inuit have a right of access to MBSs, without fee or permit, for the following activities:

- Harvesting and activities incidental (*NA s.5.7.18* and *IIBA s.5.2*),
- Removal of up to 50 cubic yards of carving stone within the MBS and any amount from IOL within the MBS (*NA s.19.9.4* and *IIBA s.5.4*), and
- Establishment of new outpost camps (so long as consistent with Section 6.4.5, *IIBA s.5.5*, as well as the *NA*).

The *IIBA* (*s.5.3*) gives Inuit a further right of access without permit to guide sport hunters in or across the Sanctuary, and to carry a firearm for self-protection or the protection of clients. It also extends the right of access without permit for harvesting and covers activities that are reasonably incidental to harvesting.

Non-Inuit cannot be assigned this right of access and exemptions, even if harvesting rights are assigned to that person pursuant to *NA s.5.7.35*.

7.1.3 Nunavut Inuit Activities Authorized Only By Permit

Commercial ventures or businesses require a permit to conduct commercial activities within the MBS even if the commercial venture or business is Nunavut Inuit-owned. The one exception to commercial activities is guiding sports hunters or sport fishermen. A Nunavut Inuit guide does not require a permit, but the non-Inuit hunters or fishermen he or she is guiding do require a permit. Refer to Section 7.1.5 for non-Inuit. Other types of guiding (eco-tourism, canoeing, etc.) by Nunavut Inuit may require a permit. Refer to Section 7.1.7 for more information on permits.

7.1.4 Non-Inuit Activities Authorized Without a Permit

All activities, including entry and access, may require a permit for non-Inuit when migratory birds are present (April through October), and at any time of year if the activities may result in the destruction of migratory bird habitat. This applies even if harvesting rights are assigned to that person under *s.5.7.35* of the *NA*. Refer to Section 7.1.7 for more information on permits.

7.1.5 Non-Inuit Activities Authorized Only By Permit

Non-Inuit must have a permit to carry a firearm in a MBS. Non-Inuit also require a permit to shoot and have dead migratory birds in their possession. This includes non-Inuit hunters on guided hunts for any wildlife species (even when the guide is a Nunavut Inuk and he or she does not require a permit; *IIBA s.5.3.1*; Section 7.1.2). Refer to Section 7.1.7 for more information on permits.

7.1.6 Activities Authorized by Permit on Inuit Owned Lands

The *MBCA* and its Regulations apply on Inuit Owned Lands that are within MBSs. The Minister of the Environment may issue permits to undertake activities on Inuit Owned Lands, in consultation with

the Kivalliq Inuit Association. There is a special process for determining whether to issue a MBS permit on Inuit Owned Lands, where the Kivalliq Inuit Association expressly supports the permit application. *Article 4* of the *IIBA* describes this process.

In addition to the MBS permit, a proponent must also obtain permission from the Kivalliq Inuit Association to enter any Inuit Owned Lands within the MBS.

7.1.7 CWS Permit Application Process

For project proposals located in the Qaqsauqtuuq MBS, the CWS is a regulatory authority under the *Nunavut Planning and Project Assessment Act,* which defines Nunavut's integrated regulatory system. All project proposals in Nunavut must be first submitted to the Nunavut Planning Commission (NPC). The NPC assesses project proposals for conformity with the Keewatin Land Use Plan and sends a conformity determination and any recommendations to the CWS. The NPC also sends the project proposal, with its determination and any recommendations, to the Nunavut Impact Review Board (NIRB) for screening, unless the project proposal is exempt. The NIRB determines whether the project has the potential to result in significant ecosystemic or socio-economic impacts and whether further review is required. The NIRB submits a screening decision report to the CWS.

The CWS cannot issue a permit until it has received either a positive conformity determination with notification that the project is exempt from screening from the NPC or a positive screening assessment from the NIRB stating that the project may proceed. In addition, in its role to advise the Minister on all aspects of the planning and management of the MBS, the Irniurviit ACMC reviews CWS permit applications and provides recommendations prior to CWS issuing a permit (*IIBA s.3.3*). Figure 8 illustrates the permitting process.

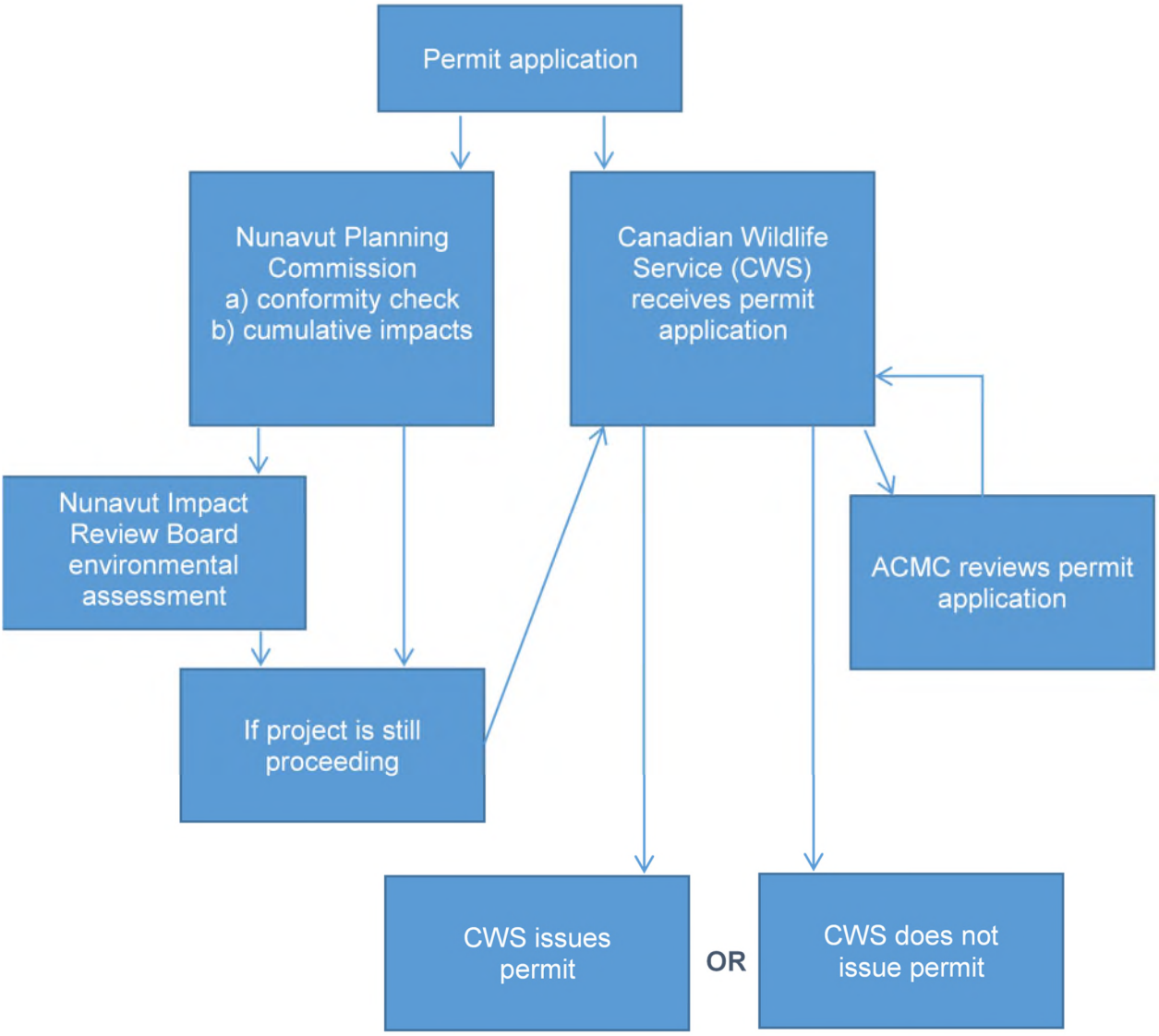


Figure 8: Migratory Bird Sanctuary permit application process.

Permit requests must be made to:

Canadian Wildlife Service
Environment and Climate Change Canada
Prairie and Northern Region
PO Box 1870
Qilaut Building, 933 Mivvik Street, 3rd Floor
Iqaluit, NU X0A 0H0

Email: ec.nupermisscf-cwspermitnu.ec@canada.ca

Contact ec.nupermisscf-cwspermitnu.ec@canada.ca or 1-800-668-6767 (in Canada only) if you have any questions, comments, or concerns about federal wildlife permits in Nunavut or if you need assistance completing an application form.

7.2 Other Federal and Territorial Authorizations and Permits

Depending on the type of activity, other federal or territorial authorizations or permits may be required to undertake an activity in the Qaqsauqtuuq MBS. For example, research may require a Scientific Research Licence from the Nunavut Research Institute or a Wildlife Permit from the Government of Nunavut – Department of Environment. Contact your regional federal and territorial permitting offices for more information.

8 SITE DESIGNATION

Qaqsauqtuuq is currently a Migratory Bird Sanctuary; however, the year-round protection afforded to the wildlife and cultural resources as a National Wildlife Area would be better.

The original designation of the conservation area as a MBS suited the species conservation at the time, protecting the snow goose colony during the breeding season. However, over the past 60 years, the needs for conservation of other nationally important migratory bird populations, other wildlife habitat and wildlife at risk, as well as Inuit cultural resources of the area have changed.

When CWS established the MBS in 1959, federal tools to protect federal land that had value as habitat for wildlife were limited. The *Canada Wildlife Act* did not receive Royal Assent until 1973. This *Act* allows for the creation, management and protection of NWAs for wildlife research activities, conservation, or interpretation.

An area must meet at least one of the below criteria for proposal as a NWA. Qaqsauqtuuq MBS currently meets three of the criteria for designation as a NWA (Table 8).

Table 8: Criteria assessment for the designation of Qaqsauqtuuq as a NWA.

Criteria for eligibility as a NWA (ECCC 2017b)	Qaqsauqtuuq criteria assessment
1. The area supports at least 1% of the Canadian population of a species or subspecies of migratory bird or species at risk[1].	✓ Over 2% of the Canadian population of lesser snow goose nests within the MBS ✓ Over 5% of the common eider *borealis* population nests within the MBS ✓ Over 1% of the Atlantic brant population may be nesting within the MBS based on historical surveys
2. The area supports an appreciable assemblage[2] of species or subspecies of migratory birds or species at risk, or an appreciable number of individuals of any one or more of these species or subspecies where total populations are not known or the assemblage represents a regionally significant area.	✓ 13 species at risk listed under the federal *Species at Risk Act*, and an additional 8 COSEWIC assessed species ✓ Over 90 different species of birds have been recorded to use the MBS ✓ Approximately 200,000 breeding and non-breeding marine birds use the MBS each year ✓ Lowlands have supported some of the highest recorded densities of red phalaropes, ruddy turnstones, and white-rumped sandpipers in the Canadian Arctic. ✓ Arctic nesting shorebirds use the MBS as a stop-over site during north and southbound migration ✓ Significant summer calving, molting and foraging habitat for several hundred beluga whales (Western Hudson Bay population) ✓ Important polar bear denning and summer foraging habitat ✓ Important barren-ground caribou calving and summer foraging grounds ✓ Important summer foraging habitat for walrus (Central-Low Arctic population, North and West Hudson Bay DU)
3. The area has been identified as critical habitat for a listed migratory bird or other species at risk population, subspecies, or species.	Not applicable.
4. The area is a rare or unusual wildlife habitat of a specific type in a biogeographic region, or has special value for maintaining the genetic and ecological diversity of a region because	✓ Supports the single largest common eider colony in the Canadian Arctic

Criteria for eligibility as a NWA (ECCC 2017b)	Qaqsauqtuuq criteria assessment
of the wide range, quality, and uniqueness of its flora and fauna[3].	
5. The area possesses a high potential for restoration or enhancement, now or in the future, such that wildlife populations could be increased or managed to meet national objectives.	Not applicable.

[1] This criterion includes areas on which species or subspecies depend to complete any part of their life cycle, such as nesting, feeding, migration, and wintering areas.

[2] An "appreciable assemblage" of species or subspecies would be a grouping that, in relative terms, is generally accepted as being sufficient to warrant conservation action, such as waterfowl.

[3] This criterion allows for habitats that always have been rare in a region, as well as habitats reduced to a remnant of their former extent.

In addition to the above criteria, the Qaqsauqtuuq MBS is a site of international research and an important long-term monitoring site for geese, eiders and shorebirds as well as a variety of other bird species. Table 9 summarizes the research and monitoring history in the MBS from available permitting files and a literature review.

Table 9: Summary of research and monitoring in the MBS.

Year	Researcher Last Name (Organization)	Purpose or Topic
1952	Loughrey (Canadian Wildlife Service, ECCC)	Aerial reconnaissance
1955	Cooch (Canadian Wildlife Service, ECCC)	Aerial waterfowl reconnaissance
1956-1957	Barry (Canadian Wildlife Service, ECCC)	Goose research
1966	Kerbes (Canadian Wildlife Service, ECCC)	Goose research
1972-1973	Kerbes (Canadian Wildlife Service, ECCC)	Photo survey of goose colony
1979	Reed, Dupuis (Canadian Wildlife Service, ECCC)	Photo survey of goose colony
1979-1980	Abraham, Ankney (Ontario Ministry of Natural Resources, University of Western Ontario)	Goose, Gull, Tern research
1987	Unknown	Terrain Surveys
1992	Caswell (Canadian Wildlife Service, ECCC)	Goose research
1997	Kerbes (Canadian Wildlife Service, ECCC)	Photo survey of goose colony
1997-2002	Gilchrist, Wayland, Mallory (Canadian Wildlife Service, ECCC)	Eider, contaminants and water chemistry
1999-2001	Bazin (Canadian Wildlife Service, ECCC)	Goose research
1999-2019	Gilchrist (Science and Technology Branch, ECCC)	Bird research (Eiders, seabirds, shorebirds, landbirds), disease, contaminants, polar bear.
2002-2003	Perkins (University of Maine)	Shorebird research
2002-2020	Leafloor (Canadian Wildlife Service, ECCC)	Goose research
2003-2019	Smith (Science and Technology Branch, ECCC)	Shorebird research
2005-2008	Caswell (Canadian Wildlife Service, ECCC)	Goose research
2007-2009	Pienitz (University Laval)	Limnology and hydrology
2008-2013	Gaston (Science and Technology Branch, ECCC)	Seabird research
2011	Leafloor (Canadian Wildlife Service, ECCC)	Waterfowl surveys
2014-2015	Nissley, Williams (University of Delaware)	Goose research

Year	Researcher Last Name (Organization)	Purpose or Topic
2014-2020	Rausch (Canadian Wildlife Service, ECCC)	Shorebird research
2017-2019	Gurney (Science and Technology Branch, ECCC)	Bird contaminants research

A National Wildlife Area designation would also help protect areas of cultural and historical importance like former settlements and traditional camping areas that the Irniurviit ACMC would like to see better preserved. The spirit and intent of the *IIBA* was to provide a framework for managing conservation areas in Nunavut for all wildlife and cultural resources. However, a MBS designation does not offer the legislation with which to carry out these management activities, while that of a NWA does.

The Irniurviit ACMC wholly supports the designation change. The ACMC sent letters to CWS, NTI and KivIA (06 July 2015) formally requesting that CWS pursue the option of a status change. *Article 13* of the *IIBA* outlines this process. It includes, but is not limited to, notification and consultation with NTI, KivIA, Salliqmiut, and the ACMC, and will involve the establishment of an assessment group to consider the status change.

Consultations on potential boundary changes should accompany the conversion process. There have been past recommendations to consider changing the MBS boundary (CACNMP, 1990; Allison, 1977). Additional cultural and heritage sites located just outside the current MBS boundary as well as important caribou calving and polar bear denning habitat may be considerations. Various surveys would be required to inform a boundary change to maximize protection and conservation outcomes for cultural and wildlife resources.

9 SECURITY, HEALTH AND SAFETY

In the case of environmental emergencies, please contact the Canadian Environmental Emergencies Notification System for the Northwest Territories and Nunavut:
1-867-920-8130.

CWS will protect the health and safety of the public by informing users and visitors of any known or anticipated hazards or risks, using all reasonable means. Further, CWS staff will take all necessary precautions to protect their own health and assure their safety as well as that of their co-workers. However, any person or group must make all reasonable efforts to inform themselves of risks and hazards and must be prepared and self-sufficient. Natural areas contain some inherent dangers. All should be aware that CWS staff do not regularly patrol or offer services for public safety in Migratory Bird Sanctuaries.

Any person or group should report all incidents within the Qaqsauqtuuq MBS to the below offices, and may request anonymity:

- Royal Canadian Mounted Police detachment in Coral Harbour: 867-925-0123, or during an emergency 867-925-1111
- Government of Nunavut Wildlife Office in Coral Harbour: 867-925-8823
- Environment and Climate Change Canada's Wildlife Enforcement Office (Yellowknife or Iqaluit): ec.dalfnord-wednorth.ec@canada.ca
- Environment and Climate Change Canada's Canadian Wildlife Service Permitting Office (Iqaluit): ec.nupermisscf-cwspermitnu.ec@canada.ca
- Any member of the Irniurviit ACMC in Coral Harbour

9.1 Avian Cholera

The largest known outbreak of avian cholera in common eiders occurred at Qikiqtakuluk in 2005 and has been present every year since. In people, the risk of disease from avian cholera is very low. However, everyone should take precautions when handling any birds found sick or dead, including the down of those birds. For up-to-date information, contact the Canadian Cooperative Wildlife Health Centre at 1-800-567-2033.

9.2 Bear Kills

Any person that kills a bear within the MBS, because of an emergency or accident, must report it as soon as possible. The primary contacts are the Government of Nunavut's Wildlife Conservation Officer in Coral Harbour (867-925-8823) and Environment and Climate Change Canada's Canadian Wildlife Service Permitting Office (ec.nupermisscf-cwspermitnu.ec@canada.ca). Disposal of any valuable parts of wildlife killed in an emergency, illegal, or accidental kill should be in accordance with *s.5.6.55* of the *NA*. Compensation to the Aiviit HTO for a bear kill within the MBS will follow *s.12.3* of the *IIBA*. Persons entering the MBS should take training in bear awareness and firearms safety, or have a bear monitor accompany them.

10 ENFORCEMENT

For the administration of the *MBCA and MBSR*, ECCC Wildlife Officers possess the powers of a police constable. Designated territorial Conservation Officers and the Royal Canadian Mounted Police have the authorization to enforce the *MBSR* under the *MBCA*.

ECCC Wildlife Officers monitor compliance with authorizations and permits issued under the *MBCA* and the *MBSR* on an ongoing basis and will initiate investigations as required. ECCC Wildlife Officers also universally enforce the *MBSR* for prohibited activities without a permit, and when necessary, will lay charges.

In the Qaqsauqtuuq MBS, the general prohibitions of the *SARA* (*s.32* and *s.33*) apply everywhere for migratory birds and aquatic species, and to all wildlife species on parcels of federal lands and waters. These prohibitions apply to all species listed on Schedule 1 as extirpated, endangered, or threatened. It is illegal to kill, harm, harass, capture, or take individuals of such listed species, and to damage or destroy their residences. If CWS identifies critical habitat of a listed species within the MBS, there is a requirement to publish a description of that habitat in the *Canada Gazette*. *Section 58* of the *SARA* prohibits the destruction of critical habitat.

Anyone can report suspected illegal activities within the Qaqsauqtuuq MBS to any federal or territorial wildlife officer, RCMP detachment, CWS at (ec.nupermisscf-cwspermitnu.ec@canada.ca) or directly to any of the Irniurviit ACMC members in Coral Harbour.

11 PLAN IMPLEMENTATION

CWS and the Irniurviit ACMC will implement the management plan over a 10-year period. Implementation will be contingent on annual work planning, as well as human and financial resources. CWS and the ACMC will favor an adaptive management approach.

The ACMC will direct implementation efforts based on the mutual commitment of all parties involved (*IIBA s.2.1.9*). CWS will evaluate the implementation of the plan five years after initial acceptance and every ten years thereafter based on the management activities identified in Table 10. This section of the management plan does not replace annual work planning but helps establish priorities.

CWS and the ACMC will review data obtained from monitoring and research projects, and use it to inform future management decisions. When appropriate, they will also consult Salliqmiut. CWS will also use this information to evaluate federal contributions towards achieving the goals of the protected area, including future designation goals.

Table 10: Five-year management plan implementation schedule.

Activity	Year				
	1	2	3	4	5
Advise the Minister of Environment, as appropriate, on all aspects of management planning; carefully considering any Inuit Qaujimajatuqangit brought forward by members (*IIBA s.3.3*).	X	X	X	X	X
Fulfill the other functions of the ACMC set forth in the *IIBA*, including advising on: • The NWA Strategy and Action Plan for Nunavut (*IIBA s.3.4*); • Management Plans (*IIBA s.3.5 to 3.7*); • Regional Inuit Association-Supported Permit Applications (*IIBA s.4.3*); • Camps and cabins in Qaqsauqtuuq MBS (*IIBA s.5.5*); • The inventories of resources important to Inuit, including oral history projects, archaeological projects and Inuit Language place names (*IIBA s.6.4 to 6.7*); • Research within Qaqsauqtuuq MBS (*IIBA s.10.2*) • CWS's role in the protection of Archaeological Sites, Artifacts and Specimens and Cultural Sites of Importance to Inuit (*IIBA s.11.3*); • The management and protection of wildlife and wildlife habitat within the Qaqsauqtuuq MBS (*IIBA s.12.2*); • The Establishment, Enlargement, Status Change, Reduction or Disestablishment of Qaqsauqtuuq MBS, as appropriate (*IIBA s.13.5*); and • Visitor use of Qaqsauqtuuq MBS (*IIBA s.14.2* and *14.4*).	X	X	X	X	X
Encourage and support research or monitoring, including the collection of IQ, which informs the management of the Qaqsauqtuuq MBS or serves to fill gaps.	X	X	X	X	X
Develop a communication plan, in consultation with Salliqmiut, to increase local awareness of current and permitted activities in the MBS, important health of safety issues, and provide meaningful opportunities to have discussions among users.	X	X	X		
Implement local communication plan.			X	X	X
Increase public awareness of the importance of the Qaqsauqtuuq MBS for all wildlife and cultural resources.			X	X	X
Document and report incidents of illegal activities.	X	X	X	X	X
Participate in regional processes or initiatives that support the conservation of the MBS and surrounding areas	X	X	X	X	X
Maintain a list of existing cabins with the MBS and coordinate with the Aiviit HTO	X	X	X	X	X

11.1 Management Plan Amendment

CWS may amend a management plan at any time. Any government or person affected by this management plan may propose an amendment by contacting CWS (*IIBA s.3.7.1*). Management plans and any subsequent revisions are subject to the approval of the Nunavut Wildlife Management Board.

The Irniurviit ACMC will finalize any revisions or changes to the management plan. CWS will then coordinate external consultation and review of the plan. Any changes to the review process and approval steps will be in accordance with *s.5.3.34(c)* and *s.5.3.16* of the *NA.*

11.2 Management Authorities

The authority of the federal Minister of the Environment under the *MBCA* and *MBSR* allows ECCC to establish and manage MBSs. CWS administers this authority within ECCC. In Nunavut, Inuit have a significant role in the decision making of wildlife and wildlife habitat through the *NA*. The Irniurviit ACMC enacts many provisions of the *NA* and *IIBA* as the advisory committee responsible for the day-to-day management of the Qaqsauqtuuq MBS.

12 COLLABORATION

The ultimate success of this management plan depends on collaboration and consultation between CWS, Salliqmiut, other federal agencies and departments, the Government of Nunavut, non-government organizations; who by virtue of their objectives, have a role to play in the protection of the Qaqsauqtuuq MBS and the long-term conservation of wildlife species and their habitats. This includes collaboration in research, land management, and wildlife and fisheries management. Successful implementation and operation of programs, research projects, monitoring, and protection described for the MBS would not be possible without these formal and informal collaborative arrangements. The Irniurviit ACMC and CWS will ensure coordination of efforts.

12.1 Inuit and Public Partners

The Irniurviit ACMC will advise on the management of migratory bird populations in consultation with regional institutions of public government (i.e. NWMB, NPC, and NIRB) as well as local resource co-management boards and authorities. The NWMB plays a key role in wildlife management within Nunavut including regulating harvesting activities within the MBS. Other local and regional partners include the Kivalliq Inuit Association, the Kivalliq Wildlife Board, the Aiviit HTO, the Hamlet of Coral Harbour, the Paqqutiit Elders Committee, the Inuit Heritage Trust, and Travel Nunavut.

12.2 Government of Nunavut

The GN Department of Environment - Wildlife Management Division has a legislated mandate for the management of terrestrial wildlife species in Nunavut. In addition to the *Nunavut Wildlife Act*, the Wildlife Management Division is responsible for fulfilling government responsibilities under a wide range of federal legislation and both national and international agreements and conventions, including on-going responsibility for the co-management of Nunavut wildlife as obligated under the *NA*. One of the primary goals of the Division is to achieve a balanced approach to wildlife management that meets legislative requirements, uses both science and IQ and reflects the values and needs of Nunavummiut.

The GN Department of Culture Heritage develops and implements policies, programs, and services. These services aim to strengthen and the culture, language, heritage, and physical activity

of Nunavummiut. The GN Department of Culture and Heritage maintains close working relationships with the professional archaeology and palaeontology communities, with Nunavut communities, with the Inuit Heritage Trust, and with other territorial and federal government agencies.

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APPENDICES

APPENDIX A: LEGAL DESCRIPTION

The legal description as copied directly from the *Migratory Bird Sanctuary Regulations* (*C.R.C., c. 1036*; 1958) is as follows:

"*East Bay Bird Sanctuary*

All those portions of Southampton Island and the waters of Hudson Bay, in the District of Keewatin, in the Northwest Territories, said portions being more particularly described as follows:

COMMENCING at the centre of the observation monument on Gore Point, said monument being a 15 foot triangular wood beacon; THENCE, northwesterly in a straight line to the most southerly extremity of a small unnamed island at latitude sixty-four degrees eight minutes and longitude eighty-one degrees thirty-four and one-half minutes; THENCE, due west to longitude eighty-two degrees thirty minutes; THENCE, due south to latitude sixty-four degrees four minutes; THENCE, southeasterly in a straight line to a point at latitude sixty-three degrees fifty minutes and longitude eighty-two degrees ten minutes; THENCE, northeasterly in a straight line to the point of commencement said portions containing together 450 square miles, approximately.

All being described with reference to the latest appropriate map sheets of the National Topographic Series on a scale of 8 miles to 1 inch, available on the 2nd day of March, 1959."

There is an error in the legal land description in the *MBSR* that should be corrected (see bolded text for correction).

"*East Bay Bird Sanctuary*

All those portions of Southampton Island and the waters of Hudson Bay, in the District of Keewatin, in the Northwest Territories, said portions being more particularly described as follows:

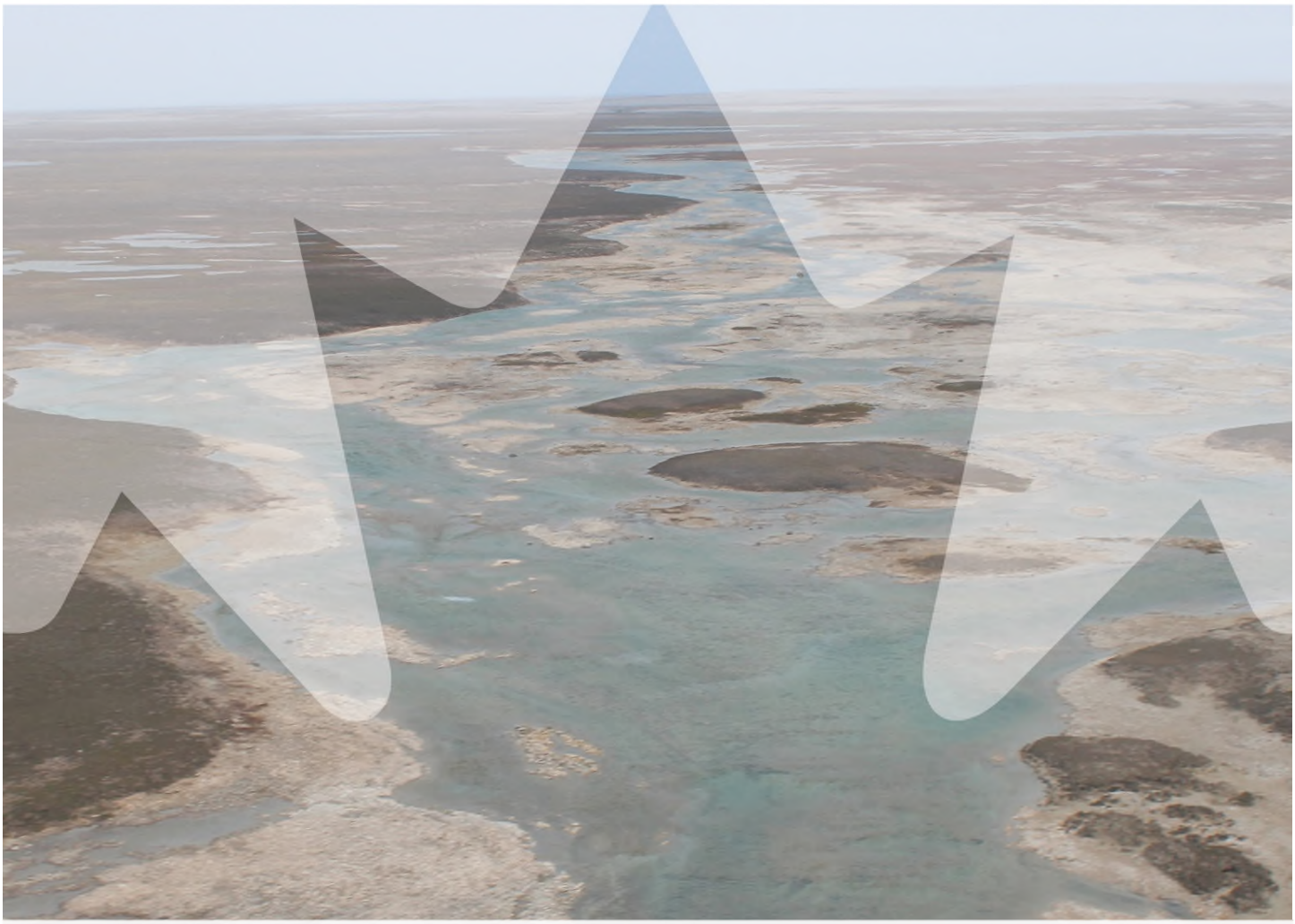
COMMENCING at the centre of the observation monument on ***M'Clure Point at latitude sixty-four degrees four minutes and longitude eighty-one degrees and seventeen minutes****, said monument being a 15 foot triangular wood beacon; THENCE, northwesterly in a straight line to the most southerly extremity of a small unnamed island at latitude sixty-four degrees eight minutes and longitude eighty-one degrees thirty-four and one-half minutes; THENCE, due west to longitude eighty-two degrees thirty minutes; THENCE, due south to latitude sixty-four degrees four minutes; THENCE, southeasterly in a straight line to a point at latitude sixty-three degrees fifty minutes and*

longitude eighty-two degrees ten minutes; THENCE, northeasterly in a straight line to the point of commencement said portions containing together 450 square miles, approximately.

All being described with reference to the latest appropriate map sheets of the National Topographic Series on a scale of 8 miles to 1 inch, available on the 2nd day of March, 1959."

The establishment proposal refers to an "*observation monument at Gore Point located at 64^{o}4'N and 81^{o}17'W***"** (Cooch & Barry, 1957). When mapped, these geographic coordinates represent Nulujjuaq, also known as M'Clure Point. This error is exacerbated in the *MBSR* by only referring to this location by place name (i.e. "Gore Point") without including geographic coordinates. Salliqmiut refer to Nulujjuaq as Gore Point in English. Older maps in the literature, including the 1986 draft management plan, also identify M'Clure Point as Gore Point (Parker, 1975; Abraham & Ankney, 1986; Dupuis, 1979; Stephenson & McCormick, 1986). The significant elevation difference between these two locations is also suggestive that the elevated M'Clure Point was the intended boundary location, as it is a more suitable location for an observation monument. Figure 1 illustrates the difference between the boundary taken directly from the description in the *MBSR* and the correct MBS boundary. This boundary error will be officially corrected. The boundaries in Figure 1 are for clarity and display purposes. All other figures in this management plan show the correct MBS boundary.

Environment and Climate Change Canada
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2020

IKKATTUAQ MIGRATORY BIRD SANCTUARY MANAGEMENT PLAN

[January 2020]

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About Environment and Climate Change Canada's Protected Areas & Management Plans

What are Environment and Climate Change Canada Protected Areas?

Migratory Bird Sanctuaries are established under the authority of the *Migratory Birds Convention Act, 1994* and provide a refuge for migratory birds in the marine and terrestrial environment. Environment and Climate Change Canada establishes marine and terrestrial National Wildlife Areas for the purposes of conservation, research and interpretation. National Wildlife Areas are established to protect migratory birds, species at risk, and other wildlife and their habitats. National Wildlife Areas are established under the authority of the *Canada Wildlife Act* and are, first and foremost, places for wildlife.

How has the federal government's investment from Budget 2018 helped manage and expand Environment and Climate Change Canada's National Wildlife Areas and Migratory Bird Sanctuaries?

The Nature Legacy represents a historic investment over five years of $1.3B and will help ECCC expand its National Wildlife Areas and Migratory Bird Sanctuaries to contribute to Canada's biodiversity targets and increase ECCC's capacity to manage its protected areas.

ECCC will be conserving more areas, and have more resources to effectively manage and monitor the habitats and species who reside in its protected areas

What is the size of the Environment and Climate Change Canada Protected Areas Network?

The current Protected Areas Network consists of 55 National Wildlife Areas and 92 Migratory Bird Sanctuaries, comprising more than 14 million hectares across Canada.

What is a management plan?

A management plan provides the framework in which management decisions are made. They are intended to be used by Environment and Climate Change Canada staff to guide decision-making, notably with respect to permitting. Management is undertaken in order to maintain the integrity of the protected area and to maintain the attributes for which the protected area was established. Environment and Climate Change Canada prepares a management plan for each protected area in consultation, or co-written with Indigenous peoples, and in consultation with the public and other stakeholders. In the Nunavut Settlement Area, the management plan is written in partnership with Nunavut Inuit.

A management plan specifies activities that are allowed and identifies other activities that may be undertaken under the authority of a permit. It may also describe the necessary improvements needed in the habitat, and specify where and when these improvements should be made. A management plan identifies Indigenous rights and allowable practices specified under land claims agreements. Further, measures carried out for the conservation of wildlife must be consistent with any law respecting wildlife in the province or territory in which the protected area is situated.

What is Protected Area Management?

Management includes monitoring wildlife, maintaining and improving wildlife habitat, periodic inspections, enforcement of regulations, as well as the maintenance of facilities and infrastructure. Research is also an important activity in protected areas; hence, Environment and Climate Change Canada staff carries out or coordinates research in some sites.

The series

Environment and Climate Change Canada will write management plans for all of the Migratory Bird Sanctuaries administered by the Department. This template can also be used by other agencies and departments to write management plans for Migratory Bird

Sanctuaries in other jurisdictions. These management plans will be initially reviewed 5 years after the approval of the first plan, and every 10 years thereafter.

To learn more

To learn more about Environment and Climate Change Canada's protected areas, please visit our website at https://www.canada.ca/en/environment-climate-change/services/national-wildlife-areas.html or contact the Canadian Wildlife Service.

Ikkattuaq Migratory Bird Sanctuary

The Ikkattuaq Migratory Bird Sanctuary (Ikkattuaq MBS) is located at the northern extremity of Hudson Bay within the Kivalliq Region of Nunavut on Southampton Island. Situated 110 km southwest of Coral Harbour, the Ikkattuaq MBS is within the drainage basin of Ikkattuap kuunga (Boas River). The MBS includes the delta and estuary of Ikkattuap kuunga, the adjacent tidal flats in Bay of God's Mercy, and surrounding lowland areas. The MBS is underlaid with limestone and covered with glacial drift and beach deposits. Most of the MBS lies below 60 m of elevation. Flowing southward through the area, Ikkattuap kuunga cuts across an extensive sedge meadow lowland and forms a braided delta 5 km wide and 13 km long. Extensive tidal flats, at least 13 km wide, occur along the coastline. Scattered throughout the sedge lowlands are numerous lakes bordered by sedge-willow meadows. Dominant vegetation on the sedge lowlands includes sedge, cotton-grass, bog-rush and a variety of mosses and willows. Lichens and sedges are representative of higher elevations.

In 1957, Environment and Climate Change Canada's Canadian Wildlife Service (CWS) proposed the establishment of a sanctuary at Ikkattuap kuunga to protect the main nesting areas of lesser snow geese from disturbance from potential prospecting and tourist activities on Southampton Island. CWS established the Harry Gibbons MBS in 1959. Salliqmiut, present-day Inuit from Coral Harbour, have traditionally referred to the MBS area as "Ikkattuaq" meaning "flat shallow area" for the extensive tidal flats. The Irniurviit ACMC proposed an official name change to the MBS in 2015 to recognize the use of its traditional Inuit language name and hereafter refers to the MBS as Ikkattuaq MBS.

Importance of the Ikkattuaq MBS

Recent aerial photo survey results estimate that the MBS and adjacent areas supports a nesting population of 690,000 combined light geese (>5% of the lesser snow goose mid-continent population). The greatest concentration occurs around the delta of Ikkattuap kuunga. The grassy islands of the braided delta provide an abundance of nesting sites. The sedge lowlands that extend beyond the sanctuary boundaries provide good feeding and moulting habitat. An estimated 6,000 nesting Atlantic brant (4% of the population) used the MBS in the past, but current use is unknown. Cackling goose, Ross's goose, common eider, king eider, long-tailed duck and tundra swan also nest in the sanctuary.

Fifty species of birds have been recorded in the MBS but the presence of more species is very likely. Common breeding species include Pacific and red-throated loon, Sabine's and herring gull, parasitic and long-tailed jaeger, ruddy turnstone, and red phalarope. Historical accounts and more recent studies on bird movements indicate that the tidal flats of the Ikkattuaq MBS are an important fall stopover site for several species of Arctic nesting shorebirds.

There are thirteen species at risk (listed under the federal *Species at Risk Act* or assessed by the COSEWIC) confirmed or suspected to use Ikkattuaq MBS for at least part of the year. The MBS also provides important summer habitat for polar bear and barren-ground caribou have used some portions as calving grounds in the past.

There is a long history of Inuit use of the MBS. Traditionally, Inuit lived and travelled there to harvest seals, walrus, and whales and to trap Arctic foxes. There are several known archaeological and cultural sites within the MBS, but none are officially registered. The Ikkattuaq MBS is more accessible during the winter, and Salliqmiut will occasionally harvest polar bears for subsistence and guide sport hunters there. There is also infrequent use of the MBS for Arctic char fishing.

Co-Management and Approval Process

As required by the *Nunavut Agreement* (*NA*), an *Inuit Impact and Benefit Agreement for National Wildlife Areas and Migratory Bird Sanctuaries in the Nunavut Settlement Area* (*IIBA*) was first concluded in 2006 for a seven-year term and renegotiated in 2016 for an additional seven years. *Article 3* (Co-Management) of the *IIBA* states the following objectives:

a) effective co-management of NWAs and MBSs by Inuit and CWS in accordance with the *NA*, and particularly Articles 9 and 5 of the *NA*;
b) decision-making for NWAs and MBSs that is substantially informed and influenced by Inuit Qaujimajatuqangit; and
c) local Inuit involvement in the planning and management of NWAs and MBSs.

CWS manages the Ikkattuaq MBS in partnership with the Irniurviit Area Co-Management Committee (Irniurviit ACMC) of Coral Harbour, Nunavut. The ACMC provides advice on all aspects of MBS management, including all significant policy decisions affecting the MBS. This includes advising on the management plan, permit applications, any research conducted within the MBS, the management and protection of wildlife and wildlife habitat, and visitor use. The Irniurviit ACMC has six members, three appointed by the Kivalliq Inuit Association (KivIA), and three appointed by the

federal Minister of the Environment. Five of the members are from Coral Harbour and when possible appointed from Community Lands and Resources Committee; the remaining member is a CWS employee.

As per the *IIBA*, the Irniurviit ACMC prepared the management plan for Ikkattuaq MBS in consultation with Inuit, the Kivalliq Inuit Association, Nunavut Tunngavik Incorporated (NTI) and local interested parties in Coral Harbour. The ACMC shall recommend the completed management plan to the Nunavut Wildlife Management Board (NWMB) for approval in accordance with *s.5.2.34(c)* and *s.5.3.16* of the *NA*. The ACMC shall provide the KivIA and NTI with a copy of the completed management plan when it sends the plan to the NWMB (*IIBA s.3.6.2*). In accordance with the decision-making process set forth in the *NA*, if the NWMB or the Minister rejects, in whole or part, the completed management plan and returns it to the ACMC for reconsideration, the ACMC shall reconsider the management plan and re-submit it to the NWMB for final decision. Once the Minister has accepted the management plan, the Minister shall proceed forthwith to do all things necessary to implement it.

For greater certainty, nothing in this management plan shall be construed so as to abrogate or derogate from the protection provided for existing Indigenous or treaty rights of the Indigenous peoples of Canada by the recognition and affirmation of those rights in *Section 35* of the *Constitution Act, 1982*.

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LIST OF ABBREVIATIONS

ACMC	Area Co-Management Committee
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CWA	*Canada Wildlife Act*
CWS	Environment and Climate Change Canada's Canadian Wildlife Service
IIBA	*Inuit Impact and Benefit Agreement for National Wildlife Areas and Migratory Bird Sanctuaries in the Nunavut Settlement Area*
CIRNAC	Crown-Indigenous Relations and Northern Affairs Canada
DFO	Fisheries and Oceans Canada
ECCC	Environment and Climate Change Canada
GN	Government of Nunavut
HTO	Hunters and Trappers Organization
IHT	Inuit Heritage Trust
IOL	Inuit-Owned Lands
IQ	Inuit Qaujimajatuqangit
KivIA	Kivalliq Inuit Association
MBCA	*Migratory Birds Convention Act*
MBS	Migratory Bird Sanctuary
MBSR	*Migratory Bird Sanctuary Regulations*
NIRB	Nunavut Impact Review Board
NA	*Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada, also known as Nunavut Agreement*
NPC	Nunavut Planning Commission
NTI	Nunavut Tunngavik Incorporated
NuPPAA	*Nunavut Planning and Project Assessment Act*
NWA	National Wildlife Area
NWMB	Nunavut Wildlife Management Board
SARA	*Species at Risk Act*

1 DESCRIPTION OF THE PROTECTED AREA

The Ikkattuaq MBS was established in 1959, under the federal *Migratory Birds Convention* Act, 1994 (*MBCA*), for the protection and conservation of migratory birds. The 1,433 km^2 MBS is located at the northern extent of the Hudson Bay on Southampton Island, Nunavut. The MBS extends 50 km along its axis and is 40 km at its widest point (Figure 1).

The Ikkattuaq MBS is within the drainage basin of Ikkattuap kuunga, and includes the delta, estuary, the adjacent tidal flats in the Bay of God's Mercy, and surrounding lowland areas. The grassy islands of the delta provide abundant nesting sites for a diversity of bird species, including waterfowl, shorebirds, and several other species of coastal and inland waterbirds. The sedge lowlands provide important feeding and molting habitat for geese.

The sanctuary supports breeding habitat for nationally significant populations (defined as greater than 1%) of lesser snow goose (*Anser caerulescens*) and Atlantic brant (*Branta bernicla hrota*). Over fifty species of birds have been recorded in or near the MBS but the presence of more is very likely. Thirteen species at risk (listed under the federal *Species at Risk Act* or assessed by the COSEWIC) occur or have the potential to occur within the MBS. The Ikkattuaq MBS also serves as year-round and seasonal habitat for nineteen species of marine and terrestrial mammals.

Little research has taken place in the MBS since the 1950s and there are no permanent research camps. Recent tracking studies indicate that Arctic nesting shorebirds use Ikkattuaq MBS as an important stopover site during southbound migration. This finding is consistent with historical accounts of bird use of the MBS but also highlights how little we know about the MBS's contribution to conservation, with the exception of its importance to the goose population.

The *MBCA* and the *Migratory Bird Sanctuary Regulations* (*MBSR*) allow authorizations to access Ikkattuaq MBS. Only Nunavut Inuit have right of access for the purpose of subsistence harvest and do not require a permit to carry out activities related to subsistence harvesting. For all other users (i.e. non-Inuit), the standard prohibitions under the *MBSR* apply, except under the authority of a permit issued by Environment and Climate Change Canada's Canadian Wildlife Service (CWS). Prohibitions include 1) hunting migratory birds, 2) disturbing or destroying the nest of a migratory bird, 3) the possession of a live migratory bird, carcass, skin, nest or egg of a migratory bird, 4) the possession of firearms or other hunting appliances.

Table 1: Ikkattuaq Migratory Bird Sanctuary Summary Information

Protected Area Designation	**Migratory Bird Sanctuary**
Criteria for Protected Area Designation	An area will be considered suitable for the establishment of a Migratory Bird Sanctuary if it meets one or more of the following criteria: 1. It supports populations that are concentrated, for any part of the year, in order to meet one or several essential needs; as such, the area figures prominently in the requirement for the management of regional populations of migratory birds. 2. The area is vulnerable to area-specific threats. As a significant portion of the populations could be affected, threats may include intensive hunting, exploration, development, etc. Such key habitat sites could include areas for nesting, moulting, wintering or staging. 3. It supports populations that occupy habitats of restricted geographical area and that are vulnerable to human disturbance. Areas that support threatened, endangered or rare species are examples. 4. It regularly supports at least 1% of a population of one species or subspecies. In Nunavut, the Northwest Territories and Yukon (north of the Arctic Circle for Yukon), national population totals (when known) will be used as benchmarks. South of the Arctic Circle (including southern Yukon), the provincial or regional population status of featured species will be used.
Criteria Met by this Protected Area	1, 2, 3, 4
Province or Territory	Nunavut
Region	Kivalliq
Associated Communities	Coral Harbour
Latitude/Longitude	63°45’ N / 85°40’ W
Size	1,433 km^2, including 190 km^2 of marine habitat
Elevation (m)	Sea level to 60 m
Year Established (Gazetted)	1959

Protected Area (PA) Designation Criteria	Historically: Established to protect the main nesting areas of the lesser snow goose (10% of population), Atlantic brant (4% of population) Currently: Area supports over 5% of the mid-continent population of lesser snow goose, 1% the Atlantic brant population (assumed)
Protected Area Classification System	Category A, high conservation value, species or critical habitat conservation
International Union for Conservation of Nature (IUCN) Classification	Category 1b (Wilderness Area)
Order in Council Number	P.C. 1959-629 (SOR/74-514)
Directory of Federal Real Property (DFRP) Number	N/A
Inuit Owned Lands (Parcel ID)	**Parcel ID** / **Rights** / **Total Area (ha)** CH-06 / Surface / 714km^2
Additional Designations	▪ Boas River and Associated Wetlands Important Bird Area (NU022) ▪ Important Areas for Birds in Nunavut (Site 13) ▪ Boas River International Biological Program Site (Site 6-5) ▪ Key Terrestrial Habitat Site for Migratory Birds (NU Site 43)
Faunistic and Floristic Importance	• Meets Important Bird Area criteria for Globally Significant: Congregatory Species, Waterfowl Concentrations • 5% of mid-continent snow geese breed here • 4% of Atlantic brant bred here previously • Used as an important stop-over site during the southbound migration of Arctic nesting shorebirds • Important polar bear summer habitat • Barren-ground caribou used portions as calving grounds in the past
Invasive Species	None Confirmed
Species at Risk	**Listed under the federal *Species at Risk Act* (*SARA*)** Endangered: Red knot (*Calidris canutus rufa*) Special Concern:

	Peregrine falcon (*Falco peregrinus/tundrius*) Polar bear (*Ursus maritimus*) Red-necked phalarope (*Phalaropus lobatus*) Short-eared owl (*Asio flammeus*) Wolverine (*Gulo gulo*) **Assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) essed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC)** <u>Threatened:</u> Barren-ground caribou (*Rangifer tarandus*) Lumpfish (*Cyclopterus lumpus*) <u>Special Concern:</u> Atlantic walrus (*Odobenus rosmarus rosmarus*) Beluga whale (*Delphinapterus leucas*) Bowhead whale (*Balaena mysticetus*) Narwhal (*Monodon monoceros*) Ringed seal (*Pusa hispida*)
Management agency	Environment and Climate Change Canada's Canadian Wildlife Service in partnership with the Irniurviit ACMC.
Public access & use	Nunavut Inuit have a free and unrestricted right of access for the purpose of harvesting to all lands, waters and marine areas within the MBS (as set forth in *Article 5* of the *IIBA* and subject to *s.5.7.18* of the *Nunavut Agreement*). Permits may be required for Inuit commercial activities. Non-Inuit may access the MBS for recreational or other purposes with appropriate permits as per the *MBCA*.

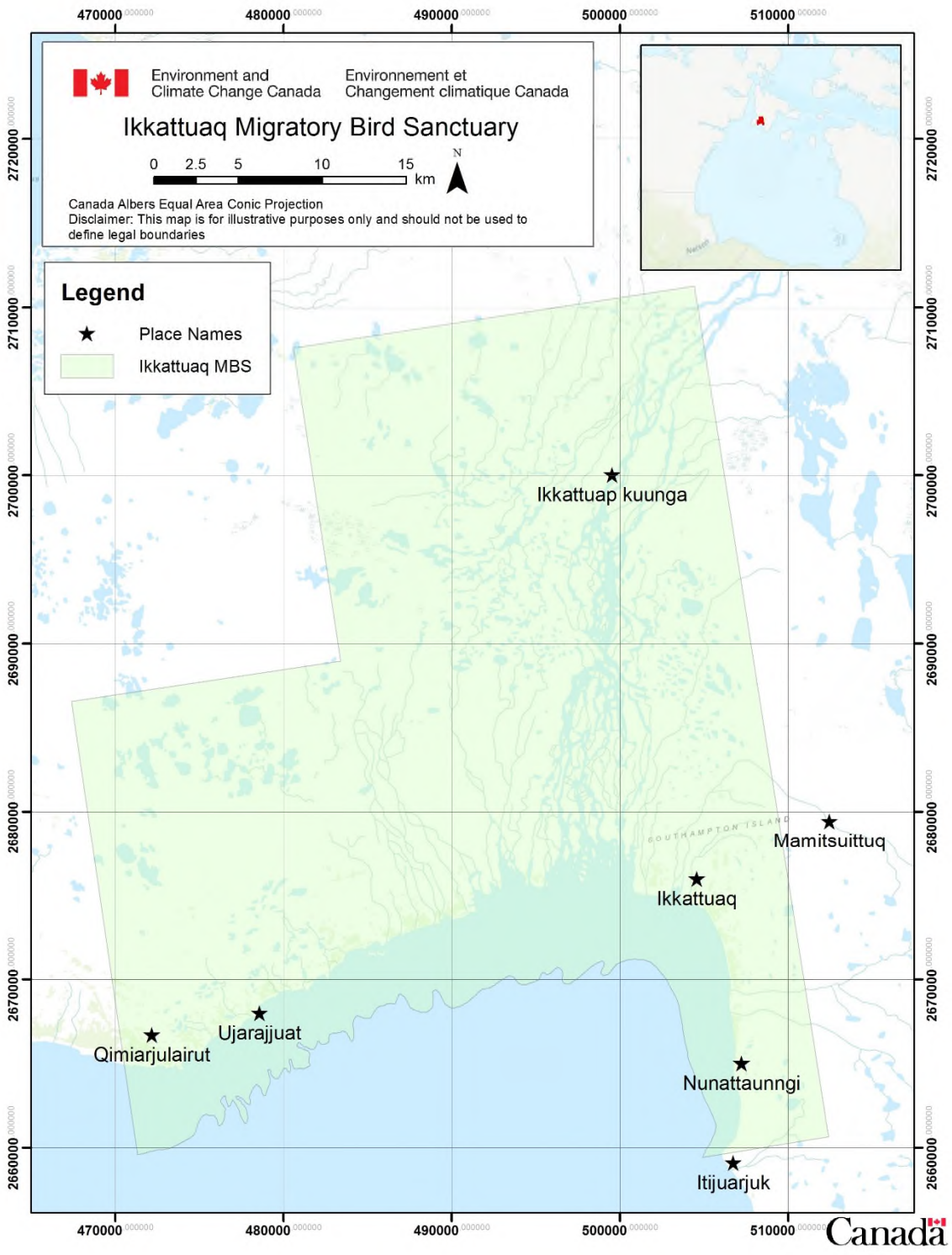


Figure 1: Location of the MBS and traditional place names (adapted from Inuit Heritage Trust data).

1.1 Regional Context

The Ikkattuaq MBS (63°45'N, 85°40'W) is located on the southwestern part of Southampton Island, a large island at the northern extent of Hudson Bay, in the Kivalliq Region of Nunavut. The MBS is about 110 km from the only settlement on the island, the community of Coral Harbour, which has a population of approximately 891 individuals (Statistics Canada, 2016).

The main feature of the MBS is Ikkattuap kuunga, which drains into the Bay of God's Mercy. A series of hills borders the MBS to the east, and raised beaches to the west. The MBS includes approximately 45 km of coastline and the extensive tidal flats and sedge lowlands associated with Ikkattuap kuunga. The terrain is relatively flat with most of the area below an elevation of 60 m.

Southampton Island, including the MBS, is largely undeveloped and undisturbed. Subsistence harvesting continues to be an important cultural, social and economic activity for Salliqmiut (Section 3.2 and 3.3). The main transportation on the island is by snowmobile or dog sleigh in the winter and all-terrain vehicle (ATV) and boat in the summer. The remoteness of the area and the absence of vehicle infrastructure or facilities make transportation into the MBS difficult without the use of an aircraft.

Ikkattuaq MBS is within the Southampton Island Plain ecoregion (Table 2). The mean annual temperature is approximately -11°C (summer mean of 2°C; winter mean of -23°C). This ecoregion has a predominantly mid-arctic ecoclimate. Frost and snow can be expected in all months except July. Waters along the south coast of Southampton Island are open most of the year contributing to a relatively high amount of moisture. The annual precipitation in Coral Harbour is 302.9 mm, somewhat higher than areas on the mainland of Nunavut.

Table 2: Physiographic and Ecological Classifications of the MBS

Physiographic Region	Canadian Shield
Geological Province	Hudson Bay Platform
EcoZone	3 Southern Arctic
EcoProvince	3.2 Keewatin Lowlands
EcoRegion	3.2.46 Southampton Island Plain
EcoDistrict (Land Resource Areas)	3.2.46.185 Boas River
Marine Bioregion	Hudson Bay Complex

1.2 Historical Background

The goose colony at Ikkattuap kuunga was the most thoroughly studied colony in the Canadian Arctic between the early 1930s and late 1950s. Approximately 20,000 geese were banded in the area between 1952 and 1958. The colony was of great interest to biologist as “blue geese” and “snow geese” were believed to cross-breed there (Cooch & Barry, 1957). Back then, the two color morphs were believed to be separate species. In 1957, CWS proposed the establishment of a MBS to protect the colony at Ikkattuap kuunga and protect important breeding grounds for brant, which was then listed as endangered, and the only second known breeding location of Ross’s goose in the Canadian Arctic.

On May 21, 1959, the Ikkattuap kuunga area was established as the Harry Gibbons Migratory Bird Sanctuary by Order-In-Council (P.C. 1959-629). The sanctuary was named in honour of Harry Gibbons Unainnuk (c. 1900-1954). Unainnuk was born at Wager Bay and worked for the Hudson Bay Company, U.S. Army, and the RCMP. He was awarded a coronation medal in 1933 for his services as a guide and interpretor to many scientists (Cooch, 1957).

A draft management plan was prepared in 1986 prior to the creation of the territory of Nunavut and the signing of an *IIBA* (Stephenson & McCormick, 1986).

1.3 Land Ownership and Interests

The MBS is largely on federal crown land with the exception of a parcel of Inuit Owned Land (IOL) in the southeast corner (CH-06, Surface rights; Figure 2). IOL is private land managed by the Kivalliq Inuit Association (KivIA) on behalf of, and for the benefit of all Inuit. The federal Minister of Crown-Indigenous Relations and Northern Affairs Canada under the *Territorial Lands Act*, holds all subsurface rights. The land surrounding the MBS is a mixture of crown land and IOL.

CWS is responsible for the management and protection of migratory birds, nests and eggs everywhere they occur, and for migratory bird habitat on federal crown land within the MBS. Habitat management on IOL within the MBS is the responsibility of the KivIA.

The IOL ends at the ordinary high water mark (*NA s.19.8.13*). The seafloor and marine areas extending beyond the IOL boundary is federal jurisdiction.

Fisheries and Oceans Canada (DFO) selected the nearshore waters around Southampton Island and Chesterfield Inlet as an area of interest (AOI). This marks the beginning of a Marine Protected Area (MPA) establishment process. The Southampton Island AOI currently includes the marine waters of Ikkattuaq MBS, however DFO and their partners will determine the final boundary of a potential MPA following further assessments and extensive consultation.

1.4 Facilities and Infrastructure

There is one cabin in the MBS owned by the Aiviit Hunters and Trapper's Organization (HTO) located at Ujarajjuat (Figure 1; Table 3). The building is approximately 10 years old and used during the ice season to support harvesting activities, in particular polar bear hunting.

Table 3: Facilities & Infrastructure in the MBS

Type (identifying name)	Condition	Approximate Size (feet)	When Built	Responsibility	Location
Sleeping cabin	Unknown	10 x 10	2008	Aiviit HTO	63° 39' 17", -86° 09' 42"

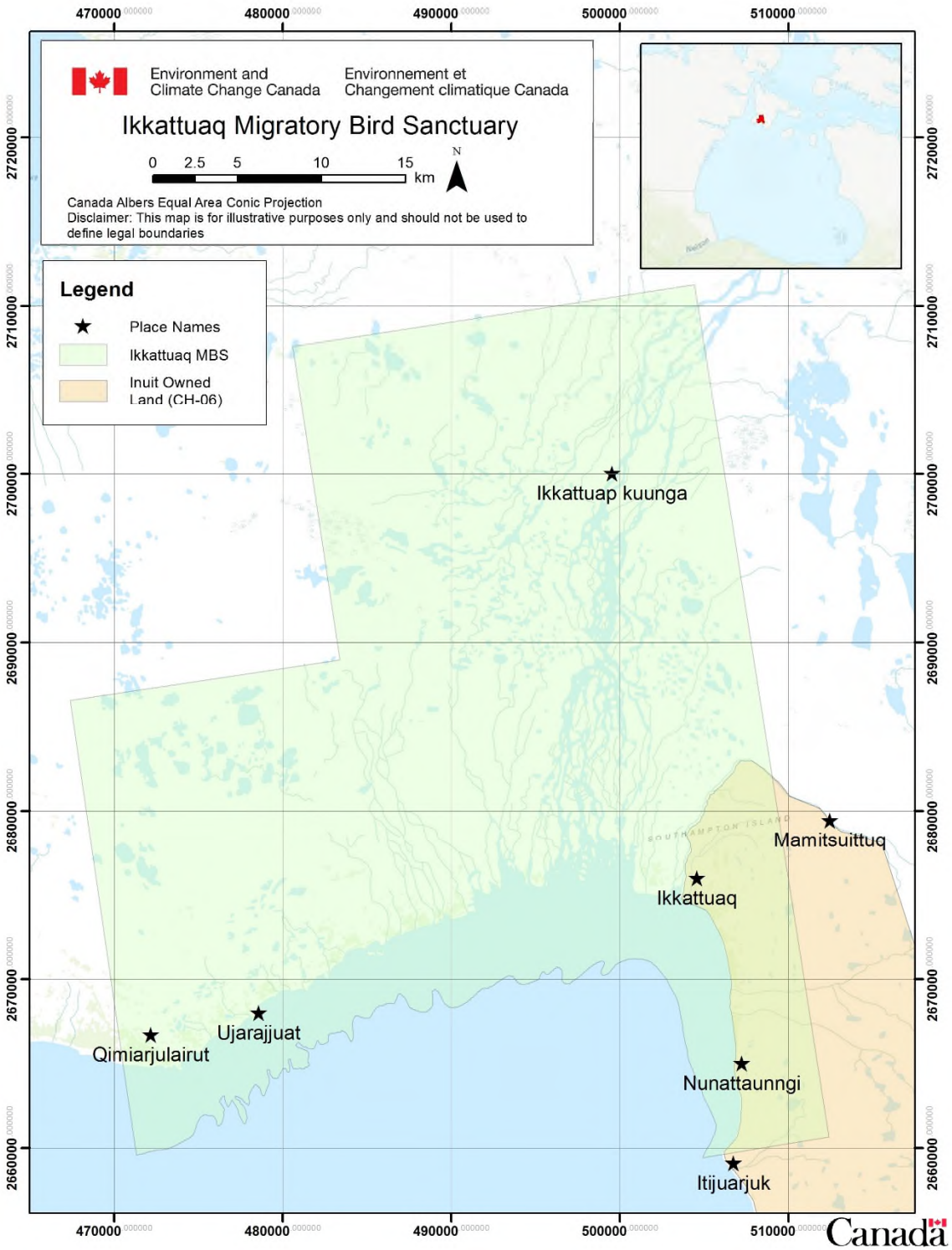


Figure 2: Inuit-Owned Lands within the MBS.

2 ECOLOGICAL RESOURCES

2.1 Terrestrial and Aquatic Habitats

With its headwaters located near the center of Southampton Island, Ikkattuap kuunga is the largest river on the island. The river channel is broad, ill defined, and shallow; being only a few meters above sea level. Ikkattuap kuunga cuts across extensive sedge meadow lowland and forms a braided delta 5 km wide and 13 km long before emptying into the Bay of God's Mercy. Low tide exposes broad mud flats 13 km or more in width along the coastline (Latour, 2008). Lowlands are generally less than 30 m in elevation and scattered by numerous lakes.

Fontaine et al. (2011) developed a land cover classification for all of Southampton Island providing a valuable baseline from which habitat changes can be monitored. Twenty habitat types were identified within the Ikkattuaq MBS. However, for the purpose of this plan, these habitat types were grouped into four broad habitat classes. The majority of habitat in the MBS is vegetated tundra, both moist (35%) and wet (28%), followed by 20% dry unvegetated (i.e. sand, mud, gravel, or bedrock) and 18% water (Figure 3).

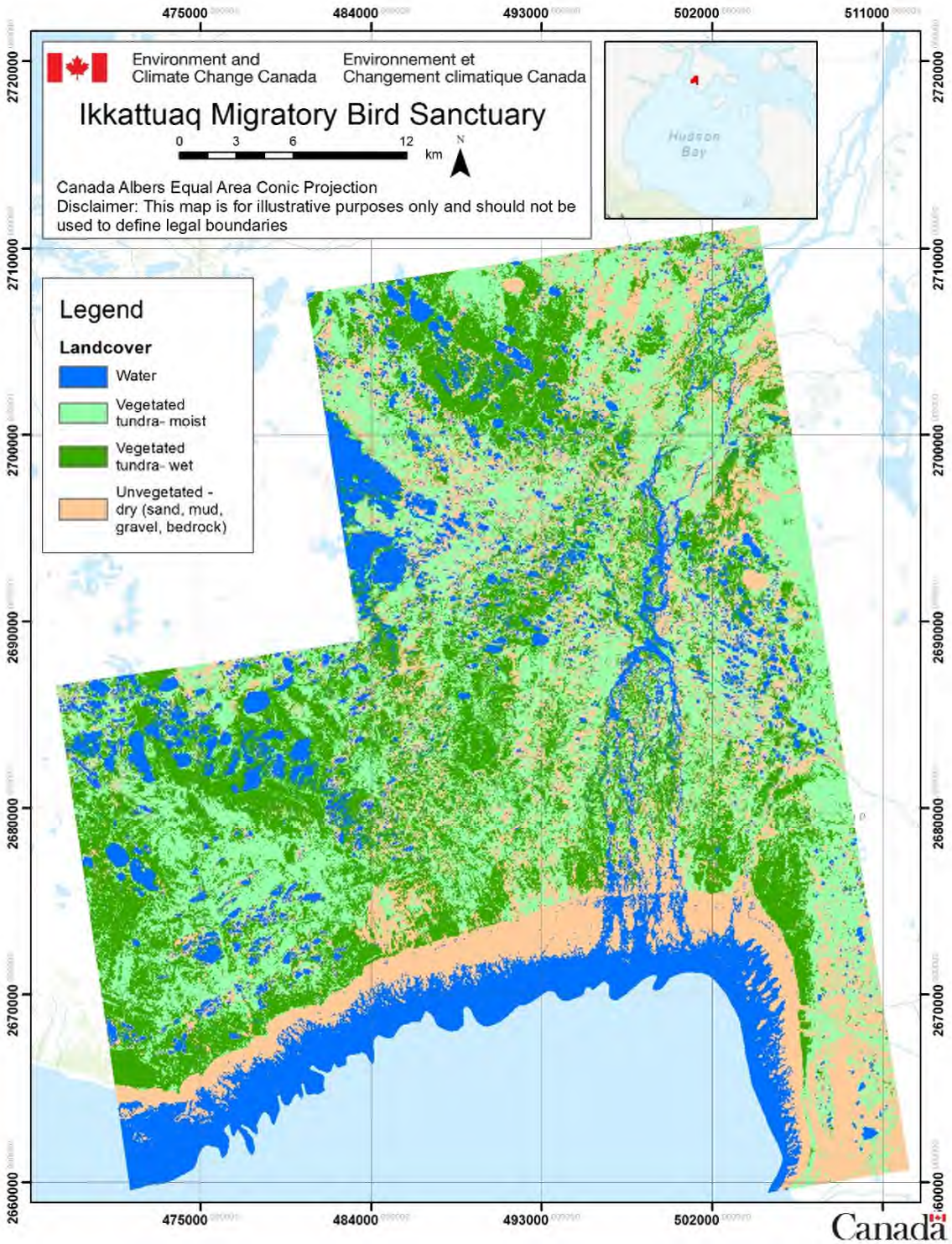


Figure 3: Main habitat classes within the MBS (adapted from Fontaine and Mallory, 2011).

2.2 Birds

The Ikkattuaq MBS is located in Bird Conservation Region 3 – Arctic Plains and Mountains (Environment Canada, 2013). Both its terrestrial and coastal habitats support a wide variety of birds. Over fifty species of birds use the MBS, and at least half breed within the MBS or surrounding areas. As there has been little research since the 1950s and few visitors in the MBS during the breeding season, it is very likely that more bird species are present. The avian community is likely as diverse as other inventoried lowland habitats on Southampton Island.

2.2.1 Geese

The MBS provides ideal nesting habitat for geese. A large population of lesser snow geese (*Anser caerulescens*) breeds within the colony at Ikkattuap kuunga, one of several colonies on Southampton Island. In 2014, the light goose population (i.e. combined lesser snow and Ross's geese) was approximately 689,700 nesting geese (J. Leafloor, CWS, personal communication). Ross's goose (*Anser rossii*) numbers have increased substantially on Southampton Island since the 1970s (Kerbes, et al., 2014), and they account for an increasing proportion of the combined light goose population based on recent banding records. Ross's geese accounted for <1% of all light geese banded annually on Southampton Island before 1980 (Kerbes, et al., 2014), but represent approximately 12.5% of all light geese banded from 2009-2018 (J. Leafloor, CWS, personal communication).

The lesser snow goose population in the colony at Ikkattuap kuunga represents over 5% of the mid-continent population. The area occupied by nesting geese at the colony has changed over time and currently extends beyond the boundaries of the Ikkattuaq MBS (Figures 4 and 5). In some years (e.g. in 1997-2004), the colony formed a contiguous goose nesting area with the colony at Ell Bay, which was established in the early 1970s (Kerbes, 1975).

Lesser snow geese remain an important source of food for Salliqmiut, and particularly in years when caribou was extirpated or scarce on Southampton Island (Carter, et al., 2018). Lesser snow geese arrive in mid-May to early June and begin nesting almost immediately on islands or drier uplands near and between long shallow waterbodies (Sutton, 1931; Bray, 1943). After hatching in mid-July and during the flightless period, they move inland up Ikkattuap kuunga and scatter over the western lowlands (Cooch, 1957; Bray, 1943; Parker & Ross, 1973). Non-breeding lesser snow

geese leave Southampton Island in mid-August, and breeding geese depart in late August or early September (Sutton, 1932).

Ikkattuaq MBS also provides important habitat for Atlantic brant (*Branta bernicla hrota*). Cooch (1957) estimated approximately 6,000 brant in the MBS at establishment, representing approximately 4% of the Atlantic brant population at the time (Atlantic Flyway Council, 2011). The Foxe Basin is the main breeding grounds for Atlantic brant (Atlantic Flyway Council, 2011). During coastal surveys of the Foxe Basin and northern Hudson Bay in 1979, observers recorded moderate numbers of brant around Bay of God's Mercy (Gaston, et al., 1986). A significant decrease in the abundance of nesting brant has been recorded at Qaqsauqtuuq (East Bay) MBS on Southampton Island over the last 30 years (Sharp & Abraham, 2010; Nissley, 2016). It is unclear what percentage of the Atlantic brant population currently uses the Ikkattuaq MBS and whether the local breeding population has followed recent trends observed at other key nesting areas.

Brant arrive about 2 weeks later than other geese on Southampton Island (Nissley, 2016). Brant prefer coastal areas along the mouth of Ikkattuap kuunga, nesting below the territory of the other geese on the small islands, which rise above mud flats, and shallow channels of fresh water at low tide (Bray, 1943). Eggs hatch in mid to late July and flightless brant walk out onto the tidal flats (Cooch & Barry, 1957).

Cackling geese (*Branta hutchinsii*) are also common in the MBS. Cackling geese arrival and nesting phenology closely resembles that of snow geese. Numbers of cackling geese have increased significantly in other parts of Southampton Island since 1979–1980 (Nissley, 2016; Sharp & Abraham, 2010). The status of cackling geese in the Ikkattuaq MBS is unknown.

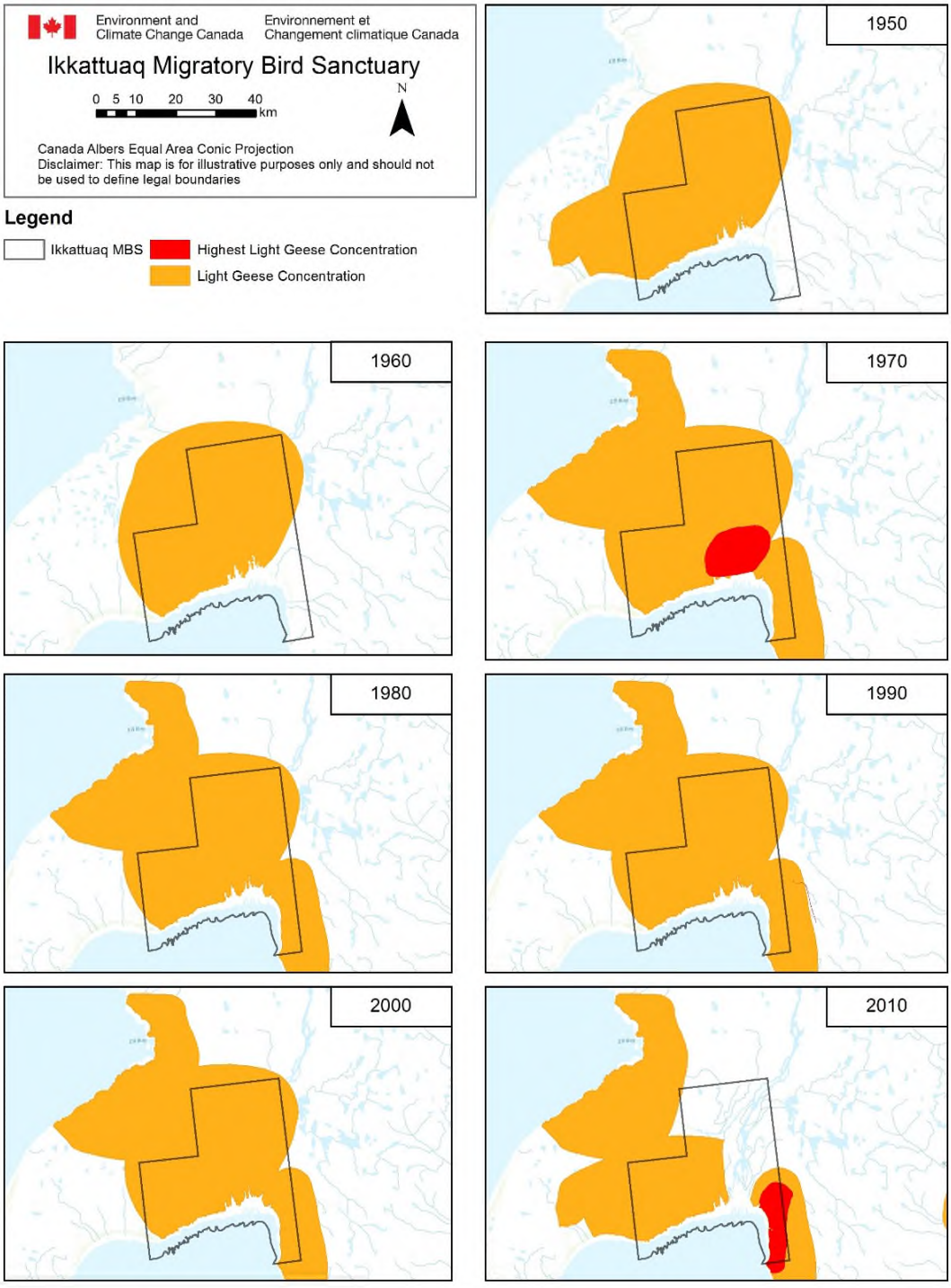


Figure 4: Inuit knowledge on the distribution of light geese within the MBS (adapted from Carter et al. 2018). Areas of concentration represent the collective knowledge of 21 study participants.

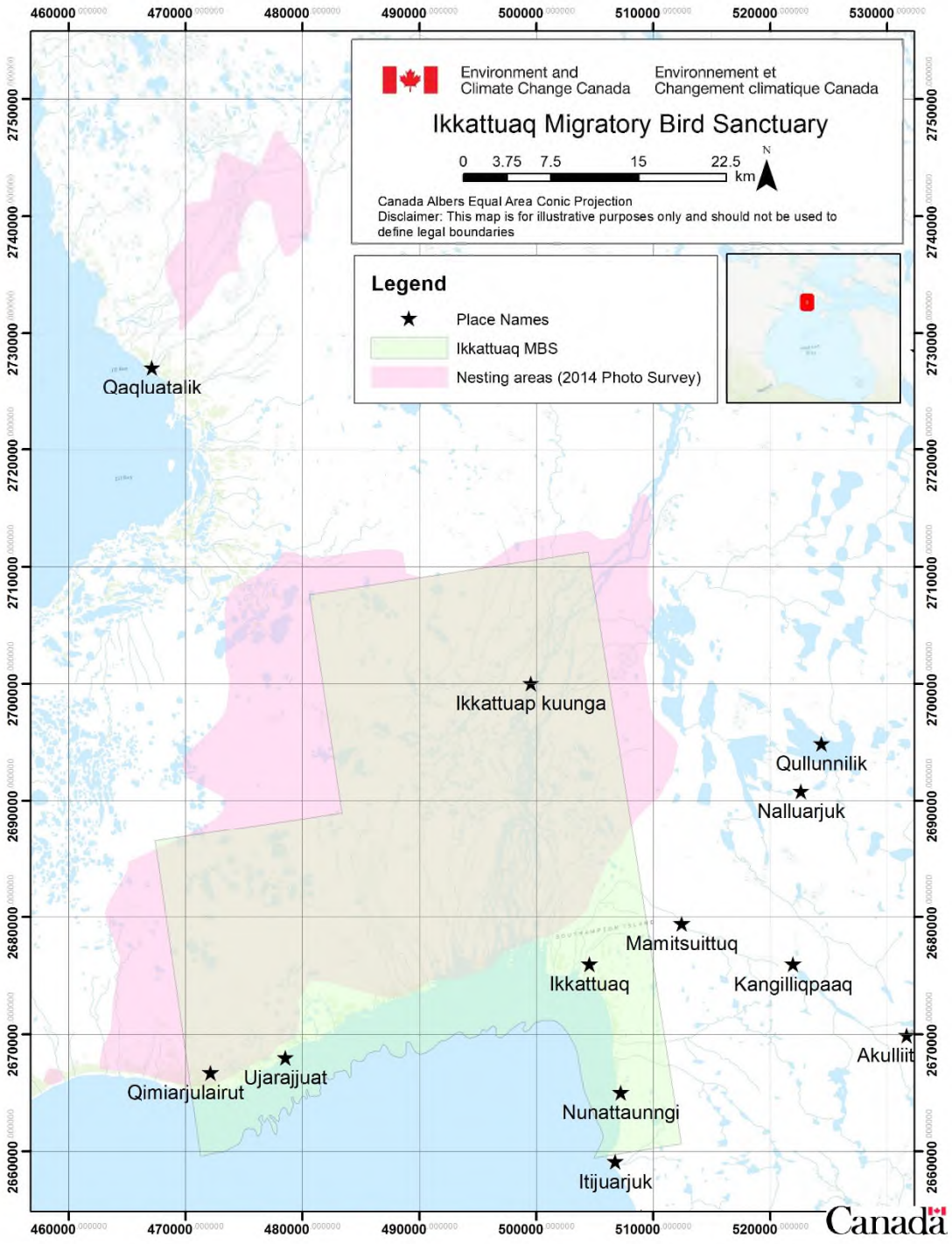


Figure 5: Light geese nesting areas delineated during the 2014 Southampton Island aerial photo surveys.

2.2.2 Shorebirds

Shorebird populations are showing widespread declines across North America (Gratto-Trevor, et al., 2011). Breeding densities within the Ikkattuaq MBS are unknown, but are likely comparable to other lowland areas of Southampton Island which have been surveyed (Smith, et al., 2012). Red phalarope (*Phalaropus fulicarius*), semipalmated sandpiper (*Calidris pusilla*), dunlin (*Calidris alpina*), and white-rumped sandpiper (*Erolia fuscicollis*) are among the most common species (Bray, 1943). Other species suspected to breed within the MBS include black-bellied plover (*Squatarola squatarola*), semipalmated plover (*Charadrius semipalmatus*), American golden-plover (*Pluvialis dominica*), ruddy turnstone (*Arenaria interpres*), and red knot (*Calidris canutus*).

Salliqmiut report declines in the abundance of shorebirds on Southampton Island, particularly red phalarope, dunlin, and other sandpipers (Carter, et al., 2018). Salliqmiut used to see shorebirds frequently and in high densities in the spring near Coral Harbour, but those sightings are now rare.

Historical accounts report important use of the tidal flats at Ikkattuaq MBS by shorebirds during southbound migration until the end of August (Bray, 1943). The list of migrants includes ruddy turnstones, dunlin, red phalarope, white-rumped sandpiper, red knots, semipalmated sandpiper, and pectoral sandpiper. Recent findings from migration studies of Arctic nesting shorebirds support historical accounts. Both whimbrel (*Numenius phaeopus*) and black-bellied plover (*Pluvialis squatarola*) were tracked through Ikkattuaq MBS on their southbound migration with the use of satellite transmitters (J. Rausch, CWS, personal communication). Technology is not yet available for smaller bodied shorebirds.

2.2.3 Other birds

Other common birds known to breed in the MBS include herring gull (*Larus thaveri*), Arctic tern (*Sterna paradisaea*), both parasitic and long-tailed jaeger (*Stercorarius parasiticus* and *S. longicaudus*), Sabine's gull (*Xema sabini*), red-throated and Pacific loon (*Gavia stellata and G. pacifica*), long-tailed duck (*Clangula hyemalis*), tundra swan (*Cygnus columbianus*), and northern pintail (*Anas acuta*).

Salliqmiut have expressed concerns over the lower abundance of some of these species, particularly Arctic terns and loons (Carter, et al., 2018). Mamitsuittuq is a spring migration route for thousands of rock ptarmigan (*Lagopus mutus*) heading east.

2.3 Other Wildlife

2.3.1 Terrestrial Mammals

Ten species of terrestrial mammals occur or have the potential to occur in the Ikkattuaq MBS. Southampton Island is recognized for its high density of Arctic fox (*Alopex lagopus*). Arctic fox numbers, however, fluctuate with the cycles of its primary prey species collared and brown lemmings (*Dicrostonyx groenlandicus* and *Lemmus sibiricus*; Parker, 1974).

Barren-ground caribou (*Rangifer tarandus*) were once common on Southampton Island, but by 1955 overharvesting had caused this species to become locally extirpated (Sutton, 1932). In 1967, biologists transferred caribou to Southampton Island from neighboring Coats Island (Manning, 1967; Parker, 1975). Since re-introduction, abundance peaked at 30,000 caribou in 1997. The Southampton Island herd has increased between the 2013 and 2015 surveys. The population is approximately 12,300 individuals (Campbell & Boulanger, 2015). Most of the Ikkattuaq MBS is summer range habitat (Parker, 1975). However, caribou are not common; the area is too wet and gravelly. At least historically, the northwestern portion of the Ikkattuaq MBS overlapped the Southampton Island caribou calving grounds (Nunavut Planning Commission, 2000). Recent information suggests that important caribou calving grounds now surround the community of Coral Harbour further to the east (Nunavut Planning Commission, 2012).

Wolves (*Canis lupus*) were once numerous, but were extirpated from Southampton Island by local harvesters due to their impact on the declining caribou. The last resident wolf was shot in 1937 (Manning, 1942). Wolves and red foxes (*Vulpes vulpes*) are a rare sighting. Only a couple of wolverines (*Gulo gulo*) have ever been trapped on Southampton Island, but one was observed at Ikkattuap kuunga within the MBS in 2002 (Fontaine & Mallory, 2011). These three species occasionally cross Roes Welcome Sound from the mainland.

Arctic hare (*Lepus arcticus*) is not common within the MBS, and is generally found on higher terrain. Ermine (*Mustela erminea*) could also be present in the MBS. There was an observation of one on the east side of Southampton Island in 2015.

2.3.2 Marine Mammals

Nine marine mammal species occur in the waters of the Bay of God's Mercy, and therefore may be present in Ikkattuaq MBS. The nearby Roes Welcome Sound polynya is a wintering area for

beluga whale (*Delphinapterus leucas*), and harbor seal (*Phoca vitulina*). Harbor seals commonly haul out in the MBS at low tide. Bearded seal (*Erignathus barbatus*), are present year round in the Bay of God's Mercy. The summer aggregation range of the bowhead whale (*Baleena mysticetus*) includes the Bay of God's Mercy, where it occasionally feeds (Latour et al., 2008; Fontaine and Mallory, 2011).

The coastal lowlands of the MBS are important feeding areas for polar bear (*Ursus maritimus*) during the summer months (Fontaine, 2011). Polar bear may be found year-round and have known denning sites within the MBS, including Qimiarjulairut and near Itijuarjuk (Manico Point). Inuit knowledge suggests that the polar bear population increased from 2004-2012, while mark-recapture studies, satellite telemetry data and annual aerial surveys over the past two decades suggest that the Foxe Basin subpopulation is stable. Salliqmiut and researchers have noticed an increase in the frequency of polar bear observations.

2.3.3 Freshwater and Marine Fish

The numerous lakes, ponds, rivers, and bays in the MBS supply freshwater and marine habitat for a variety of fish. A comprehensive fish inventory is lacking for the MBS. However, at least 40 species of anadromous and marine fish, including one species at risk, have the potential to occur in the MBS (Table 4; Coad and Reist, 2004).

2.4 Vegetation

The most common vegetation community in the Ikkattuaq MBS is sedge-heath transition. Sedges are dominant, although *Arctagrostis latifolia*, *Luzula nivalis*, and *Juncus albescens* are also common. *Dryas integrifolia*, *Salix reticulate*, and lichens are restricted to drier areas. Upright willows such as *Salix richardsonii* and *S. arctica* predominate the sedge-willow meadows, but sedges are also abundant. Sedges, such as *Carex misandra* and *C. bigelowii* are the dominant species in patterned ground tundra. In drier areas, *Dryas spp.* is the sub-dominant species, whereas in damp areas it is willow (*Salix arctica* and *S. reticulata*).

Stephenson and McCormick (1986) compiled a provisional list of plant species from various sources. The list includes two algae, seven fungi, 23 lichens, 28 bryophytes and 103 vascular plants species.

2.5 Species at Risk

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assesses the conservation status of species in Canada. There are six categories used during the COSEWIC assessment. In order from most at risk to least at risk, the categories are Extinct, Extirpated, Endangered, Threatened, Special Concern, and Not at Risk.

The federal *Species at Risk Act* (*SARA*) establishes Schedule 1, as the official list of wildlife species at risk. Following a consultation process, the Governor in Council on the recommendation of the federal Minister of the Environment decides on whether species should be added to Schedule 1.

Thirteen species at risk (either COSEWIC-assessed or *SARA*-listed) occur or have the potential to occur within Ikkattuaq MBS (Table 4).

Table 4: Species at risk in the MBS

Common and scientific names of species	Status in Canada		Presence in Ikkattuaq MBS
	COSEWIC-assessed	SARA-listed	
Birds			
Red knot *Calidris canutus rufa*	Endangered	Endangered	Confirmed
Red-necked phalarope *Phalaropus lobatus*	Special Concern	Special Concern	Potential
Short-eared owl *Asio flammeus*	Special Concern	Special Concern	Potential
Peregrine falcon *Falco peregrinus*	Not at risk	Special Concern	Confirmed
Mammals			
Caribou, barren-ground population *Rangifer tarandus*	Threatened	No Status	Confirmed
Atlantic walrus (Central/Low Arctic population) *Odobenus rosmarus rosmarus*	Special Concern	No Status	Confirmed
Beluga whale (Western Hudson Bay population) *Delphinapterus leucas*	Special Concern	No Status	Confirmed
Bowhead whale (Eastern Canada-West Greenland population) *Balaena mysticetus*	Special Concern	No Status	Confirmed

Common and scientific names of species	Status in Canada		Presence in Ikkattuaq MBS
	COSEWIC-assessed	SARA-listed	
Narwhal *Monodon monoceros*	Special Concern	No Status	Potential
Polar bear *Ursus maritimus*	Special Concern	Special Concern	Confirmed
Ringed seal *Pusa hispida*	Special Concern	No Status	Confirmed
Wolverine *Gulo gulo*	Special Concern	Special Concern	Confirmed
Fishes			
Lumpfish *Cyclopterus lumpus*	Threatened	No Status	Potential

2.6 Invasive Species

Human activity has resulted in species occurring beyond their natural range (Canadian Endangered Species Conservation Council, 2011). The Government of Nunavut has designated 14 species of vascular plants as exotic within Nunavut. None of these species are invasive or a threat to Nunavut's biodiversity. There are no known non-native or invasive plant species within the boundary of the Ikkattuaq MBS.

3 CULTURAL RESOURCES

The focus of a MBS is the conservation of migratory birds and their habitat, but the *IIBA* also recognizes that people are part of the environment. Inuit knowledge and Inuit Qaujimajatuqangit (IQ) provide valuable information regarding the lands, waters, and resources specific to the area, which can lead to more informed decision-making. Accordingly, this section describes past and present land use in the MBS and surrounding region and includes a review of the known tangible and intangible cultural resources.

Travel routes, place names and knowledge of weather and the ways of animals are a few examples of intangible heritage, while archaeological sites, artifacts, structures (i.e. caches, fox traps, fish weirs, kayak stands, and inuksuit), and the remains of past habitations are all part of the tangible heritage of Inuit land use. Intangible resources are difficult to identify, as there is no physical manifestation of the resource. It is important to remember that there are stories, place names, songs, and traditions associated with many of these archaeological sites.

3.1 Cultural Resources Inventory and Interpretative Materials Study

The Inuit Land Use and Occupancy Project (INAC, 1976) report explained and mapped the historical development of Inuit occupancy over much of the surface of Nunavut (including sea ice). The Nunavut Atlas (Riewe, 1992) refined this by showing the most intensively used lands, those which were visited by Inuit every year before the centralization of people into their present communities, along with those lands which were visited regularly, though not necessarily every year. Although valuable resources, the Inuit Land Use and Occupancy Project and the Nunavut Atlas focus on subsistence practices rather than other cultural practices.

NTI has obligations under *Article 6* of the *IIBA* to prepare inventories of resources important to Inuit for MBSs and NWAs in Nunavut. The purpose of the inventories is to support the management of each protected area, aid the development of interpretive materials, document information of cultural importance to Inuit, and support the development and use of official Inuit language names in the management of these protected areas. The Irniurviit ACMC will revise Section 3.0 of this management plan when an inventory is completed and made available for the Ikkattuaq MBS.

3.2 Historical Inuit Land Use

Inuit have inhabited Southampton Island for thousands of years. Historically, Inuit lived in areas near hunting grounds for marine mammals (Bird, 1953). Early houses were made of snow or sod, depending on the season. Inuit later settled in permanent winter villages with homes made from stone, bone, and sod. During the summer, Inuit moved into skin tents held down by rocks (Collins, 1956).

Inuit made tools from chipped stone, bone, antler, ivory and wood (some tipped in iron); and had a well-developed artistic carving culture. Harpoons, kayaks, and umiaks were used for hunting. Light and heat came from harvested oil.

Explorer journals and diaries reference Southampton Island as early as the 1600s, but there are few records about the resident Sallirmiut ("island people" or "people living on the island"). After the 1860s, whalers frequented the waters of Roes Welcome Sound. Inuit provided the whalers with food and clothing and helped with various whaling activities (Van Stone, 1960).

In the winter of 1902-1903 disease struck, killing nearly the entire Sallirmiut population on Southampton Island. Whalers likely introduced the disease. With no one to assist the whaling boats, whalers brought Inuit from Repulse and Wager Bay in 1908 to Southampton Island to work in the industry.

In 1924, the Hudson's Bay Company (HBC) relocated its post from Coats Island to Coral Harbour and Inuit (originally from Southern Baffin) were transferred along with the post. Fox trapping became an important source of income for Inuit who needed to purchase goods from the HBC (tea, ammunition, etc.). In the 1940s, Americans built an Air Force Base just outside of Coral Harbour. Later, federal programs such as education, health and the opportunity for wage employment drew most of the scattered camps along the coastline into the settlement of Coral Harbour. In 1951, a settlement with a population of 12 was still present near Itijuarjuk on the shores of Bay of God's Mercy within Ikkattuaq MBS (Bird, 1953).

Prior to the establishment of the HBC in Coral Harbour, the Sallirmiut of Southampton Island led a migratory lifestyle moving annually from camp to camp generally following game. They depended almost exclusively on the sea for survival, hunting marine mammals such as seals, whales, and walrus (Bird, 1953; Collins, 1956). Before the goose colonies had become of interest to researchers, marine mammal harvesters traditionally visited the MBS. The HBC's demand for Arctic fox pelts,

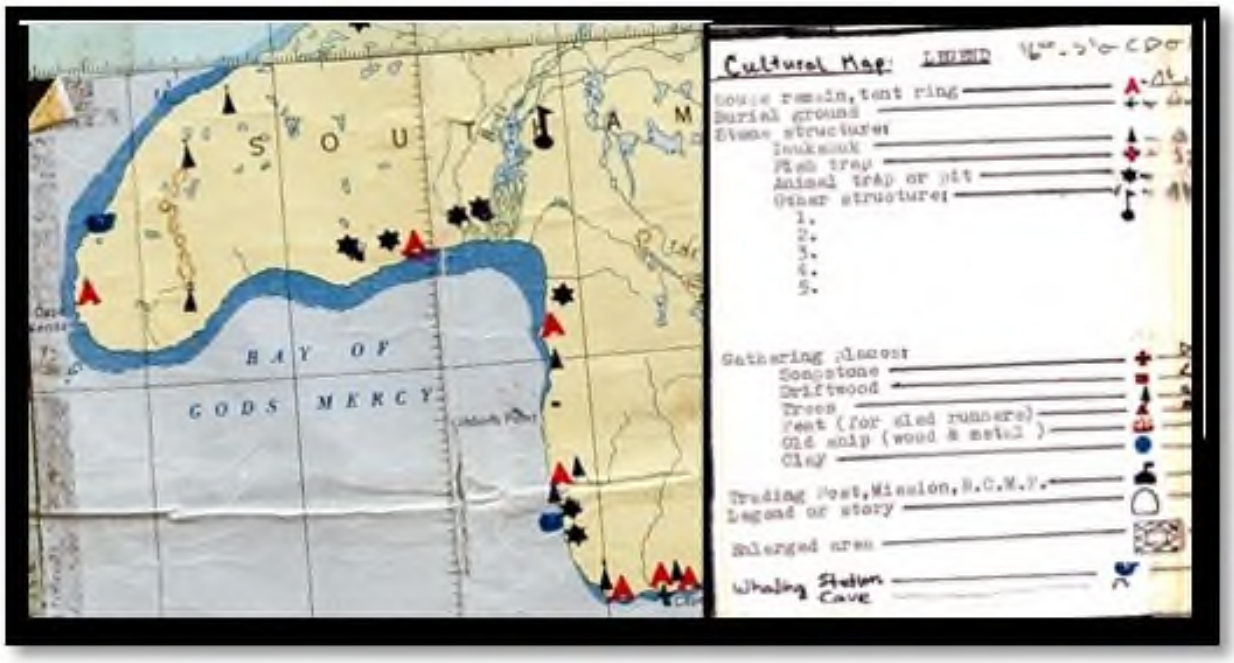
however, prompted Inuit to establish trap-lines and travel inland. Fox trapping and polar bear hunting became important sources of income during winter. Fishing and sealing provided much of the fresh meat, caribou, and birds to a lesser extent. Present-day Inuit from Coral Harbour, or Salliqmiut, traditional trap-lines ran throughout the southern region of the island, including within the MBS along the the coastline of Bay of God's Mercy (Figure 6).

Southampton Island has numerous archaeological sites, cultural features, and artifacts. In 1983, J. Reid reported two archaeological sites (KjHq-1 & KjHq-2) just outside the MBS boundary. The sites are a burial site and sod houses, both located at Itijuarjuk. The Nunavut Atlas identifies several other archaeological sites and recent campsites within the Ikkattuaq MBS (Figure 6). An occupancy map featuring the region around Bay of God's Mercy also identifies a number of animal traps or pits, and house remains or tent rings within the boundaries of the MBS (Source: William Kemp, NTI's cultural resources inventory consultant; Figure 6).

A significant cultural site containing dozens of animal traps and pits made of shale plates (possibly for geese), a kayak rack and more unknown structures exists along a ridge northeast of Itijuarjuk. This site has no official record, but the Irniurviit ACMC is working with the Government of Nunavut's Department of Culture and Heritage to have it registered and properly inventoried. Salliqmiut identified several place names within the Ikkattuaq MBS, demonstrating intimate knowledge of the area and its abundance of wildlife (Figure 1; Table 5).

Table 5: Traditional place names in the MBS (adapted from Inuit Heritage Trust data)

Roman	Inuktitut	Feature	Official Name	Description
Qimiarjulairut	ᖃᐱᐊᕐᓪᓚᐃᑉᑦ	Esker		The end of a gravelly ridge
Ujarajjuat	ᐅᔾᕿᕐᕐᐊᑦ	Point	Ikatuaq Point	Rocks, limestone.
Ikkattuaq	ᐃᖅᑲᑐᐊᖅ	Tidal Area	From Itijuarjuk to Ujarjjuat	Shallows
Ikkattuap kuunga	ᐃᖅᑲᑐᐊᕐ ᑯᐅᖏᓪ	River	Lower Boas River up to officially-named Tasialuk Lake	Named for the effect of the tide on the river
Mamitsuittuq	ᒪᒥᑦᑐᐃᑦᑐᖅ	River Selection		Current. Always open. Never “heals”. Many char here.
Itijuarjuk	ᐃᑎᔨᐊᕐᕕᒃ	Cliff		Steep-sided hill. Landmark.
Nunattaunngi	ᓄᓇᑦᑕᐅᖏᖓᑎ	Camp		Not a good camping area.



Source: NTI, 2014



Source: Inuit Land Occupancy Project. INAC, 1976



Source: Nunavut Atlas. Riewe, 1992

Figure 6: Historical Inuit land use of Southampton Island.

3.3 Current Inuit Land Use

Today, Salliqmiut still rely on the meat and skins of wild animals for subsistence purposes. Subsistence harvesting is a species-based seasonal activity on Southampton Island. It includes gathering eggs, goose hunting, and hunting of land and sea mammals like polar bear, caribou, seals, whales, and walrus (Figure 7). Salliqmiut do not commonly travel as far as Ikkattuaq MBS for goose and egg harvesting as these are now available much closer to the community.

However, Salliqmiut still use the MBS for camping and harvesting activities periodically. Although rare, some Salliqmiut harvest geese within the MBS in spring before Ikkattuap kuunga melts while travelling there to fish for Arctic char (*Salvelinus alpinus*) at Mamitsuittuq (Unhealing Brook). The Ikkattuaq MBS is used regularly for polar bears hunts (subsistence and sport hunts), especially in the fall.

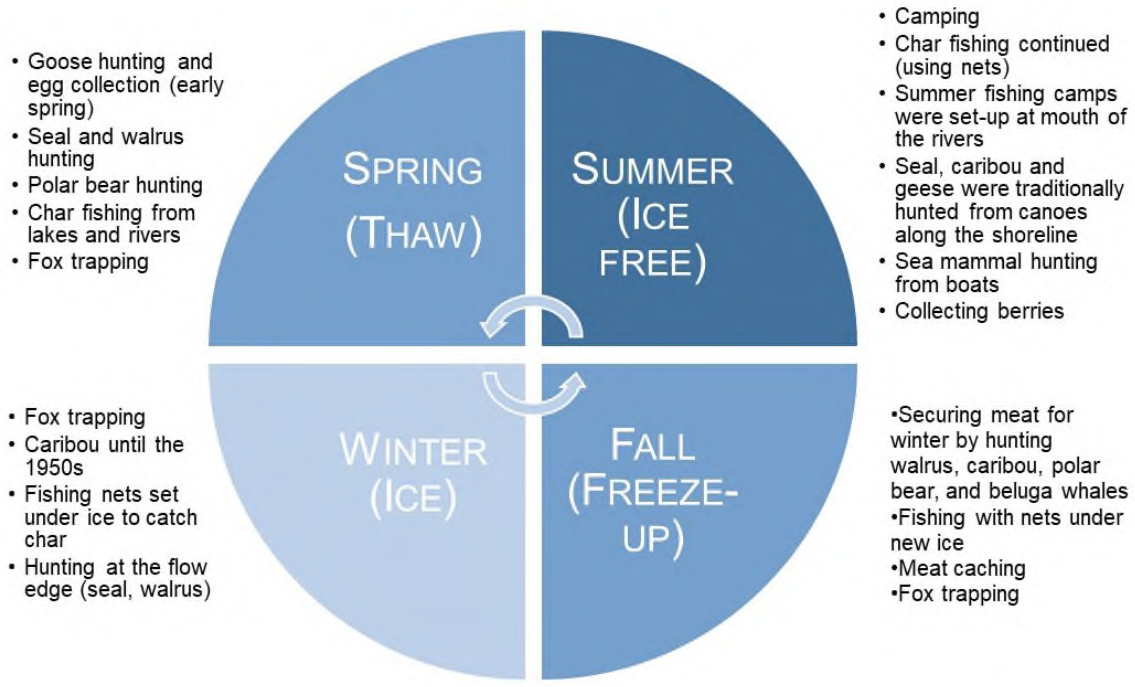


Figure 7: Past and current seasonal subsistence harvesting activities on Southampton Island.

4 GOALS AND OBJECTIVES

4.1 Vision

The vision for the MBS is:

> *The Ikkattuaq MBS is managed to ensure the long-term conservation and protection of the land and water for all wildlife, Inuit rights and their heritage while considering Inuit Qaujimajatuqangit in all decisions.*

The long-term vision for the management of the Ikkattuaq MBS takes into account these values:

- Conservation of wildlife and protection of their habitat, including migratory birds and species at risk;
- Protection of archaeological and cultural resources (as per *Article 2 – IIBA*);
- Inuit rights to use and harvest; and ensuring Inuit benefits (as per *Article 2 – IIBA*);
- Recognition of IQ principles in conservation, management, research decisions;
- Increase awareness of the importance of the MBS;

4.2 Goals and Objectives

The management goals for the Ikkattuaq MBS are critical to achieve and maintain the vision (Table 6). The Irniurviit ACMC developed the management objectives in Table 6 to (i) meet the management goals, and (ii) address management challenges and threats to the MBS (Section 5.0 – Management Considerations).

The goals appear in order of importance to the ACMC.

Table 6: Management Goals and Objectives.

Goals	Objectives
Goal 1**:** Protect the land and water for all wildlife, Inuit rights and heritage	Objective 1.1: Work towards converting the MBS to a National Wildlife Area to ensure it is best suited to co-management and to the year-round protection of habitat for all wildlife, and especially species at risk. Objective 1.2: Encourage and support research or monitoring, including the collection of Inuit Qaujimajatuqangit, which informs the management of the MBS or serves to fill knowledge gaps. Objective 1.3: Coordinate with and support partner organizations (IHT/GN/NTI) to document the cultural resources within the MBS. Objective 1.4: Increase awareness of the MBS and the significance of the natural and cultural resources within the MBS.
Goal 2**:** Ensure local awareness, participation and benefits	Objective 2.1: Develop a communication plan with Salliqmiut to facilitate sharing information and knowledge, discuss concerns, and input into research priorities. Objective 2.2: Encourage Salliqmiut employment and mentorship in research and monitoring and increase awareness of opportunities. Objective 2.3: Increase local awareness of permitted activities within the MBS.
Goal 3**:** Minimize the impacts of human activities on the natural and cultural resources	Objective 3.1: Ensure everyone follows the permitting processes. Objective 3.2: Promote best practices to minimize the disturbance or destruction of natural and cultural resources. Objective 3.3: Participate in regional processes or initiatives that support the conservation of the MBS and surrounding areas.

4.3 Evaluation

CWS will conduct annual monitoring within the limits imposed by the availability of financial and human resources. The Irniurviit ACMC will review the management plan 5 years after its initial approval and review and update it every 10 years thereafter. The evaluation will be a review of management activities for the MBS and data obtained from the monitoring and research projects. CWS and the ACMC will then establish priorities for action and allocate resources.

5 MANAGEMENT CONSIDERATIONS

Presently, there are no significant or immediate threats to the Ikkattuaq MBS. Habitat is mostly intact, and the MBS is relatively isolated. However, the following management considerations have the potential to affect the MBS.

Light geese population and habitat

When CWS established the MBS in 1959, it was one of a few relatively small goose colonies throughout northern Canada and had approximately 28,000 light geese (Cooch & Barry, 1957). The colony at Ikkattuap kuunga extends beyond the boundaries of the MBS, and from 1997 until more recently, formed one contiguous goose nesting area with the colony at Ell Bay (Kerbes, et al., 2014). Most recent surveys in 2014 estimated over 689,700 nesting light geese in the colony at Ikkattuap kuunga (J. Leafloor, CWS, personal communication). At a continental scale, populations of light geese experienced exponential growth over the past 50 years and are now “overabundant” in Canada and the United States. Midcontinent snow geese, which includes geese nesting on Southampton Island, averaged 12.6 million adults (Alisauskas, et al., 2018a), and Ross’s geese averaged 1.6 million adults from 2006-2015 (Alisauskas, et al., 2018b).

Increases in population size have led to concerns about potential impacts to the Arctic’s coastal and lowland habitats caused by the foraging activities of large numbers of geese (Batt, 1997). Studies on Southampton Island report alteration of foraging habitats used by geese in coastal lowlands near the colony at Ikkattuap kuunga (Carter, et al., 2018; Fontaine and Mallory, 2011). Habitat changes are similar to that observed in the Hudson Bay Lowlands (Jano, et al., 1998; Kotanen and Jefferies, 1997). ECCC researchers are currently studying habitat loss due to grubbing and over-grazing to understand what effect it may have on other bird species in terms of reduced food availability and loss of nesting habitat (Flemming, et al., 2016). The impact on other wildlife species is still unclear.

Climate Change

Climate change, by itself and acting together with other factors, is playing a role in observed changes to habitat in the Ikkattuaq MBS. Changes to the extent and duration of sea and freshwater ice, permafrost and snow cover, as well as increased air temperatures measured across the Arctic is leading to growing habitat shifts and corresponding responses in species (CAFF, 2010). For

example, progressive earlier ice break-up in Hudson Bay has forced polar bears ashore much earlier (Lunn, et al., 2016) leading to documented increases in predation of breeding bird nests on Southampton and Coats Islands (Smith, et al., 2010).

Other observations of habitat changes in the MBS include drying of the land, lower water levels, and erosion in some places. These habitat changes were documented in other studies in the Arctic (Smol & Douglas, 2007; Kokelj, et al., 2005) and linked to climatic warming. Salliqmiut are also observing new species and changes to the distribution and migration patterns of other species (Carter, et al., 2018).

Community participation and awareness

Salliqmiut have expressed concerns about disruption from aircrafts supporting research and the greater need for the inclusion of Inuit Qaujimajatuqangit in both research and management decisions. Salliqmiut also want to fully benefit and participate in economic and other opportunities arising from the management of the Ikkattuaq MBS. The successful co-management of the MBS depends on addressing these challenges.

Human Activities

Interest in natural resource development has increased significantly across the Canadian Arctic. Geologists identified a high-grade limestone deposit near the southern boundary of the MBS and exploration activities are likely to continue to determine the economic potential of the resource. Limestone is an important product for gold extraction during mining and this deposit could serve Kivalliq gold mines as a local source.

Approximately 43 ships per year pass south of Southampton Island on the way to the Kivalliq mainland. These ships take supplies and fuel to local communities and mine sites. The threat of an oil spill entering the Ikkattuaq MBS is a concern due to the strong currents in the Bay of God’s Mercy.

Salliqmiut have also expressed interest in developing an ATV trail that may have impacts on the MBS. The proposed route crosses Ikkattuap kuunga and ends near the Aiviit HTO cabin on the western portion of the MBS coastline. Improved access to the Ikkattuaq MBS could lead to increased interest in local outfitting and tourism opportunities. These future considerations will need careful planning to minimize impacts to wildlife and their habitat in Ikkattuaq MBS.

Table 7: Summary of management considerations and approaches.

Management Consideration	Corresponding Goals/Objectives from Table 6	Management Approaches
Converting MBS to a National Wildlife Area to ensure it is best suited to co-management and to the year-round protection of habitat for all wildlife, and especially species at risk	1.1, 1.2, 1.3, 1.4	6.1 Cultural Resources Management 6.2 Wildlife and Wildlife Habitat Management 6.3 Monitoring and Research 6.4 Public Awareness and Information Management
Light geese population which could be causing habitat alteration and negatively affecting other wildlife	1.2	6.2 Wildlife and Wildlife Habitat Management 6.3 Monitoring and Research
Salliqmiut concerns about research	2.1	6.4 Public Awareness and Information Management
Exploration and development of limestone deposit adjacent to MBS	1.2, 1.3, 3.2, 3.3	6.3 Monitoring and Research 6.4 Public Awareness and Information Management
Salliqmiut concerns about inclusion of Inuit Qaujimajatuqangit in research and management decisions	2.1	6.4 Public Awareness and Information Management 6.3 Monitoring and Research
Salliqmiut concerns about benefitting and participating in economic and other opportunities arising from the management of the MBS	2.2	6.4 Public Awareness and Information Management

Management Consideration	Corresponding Goals/Objectives from Table 6	Management Approaches
Effects of climate change on management of the MBS	1.2	6.3 Monitoring and Research
Increased shipping to the Kivalliq mainland and risks of oil spills	1.2, 3.2, 3.3	6.3 Monitoring and Research 6.4 Public Awareness and Information Management
Potential ATV access trail inside the MBS	2.3, 3.1, 3.2, 3.3	6.4 Public Awareness and Information Management
Potential increased interest in sport hunting/outfitting with increased access	2.3, 3.1, 3.2	6.4 Public Awareness and Information Management

6 MANAGEMENT APPROACHES

CWS, in partnership with the Irniurviit ACMC, will manage the Ikkattuaq MBS by focusing on four main management approaches: Cultural Resources Management (Section 6.1), Wildlife and Wildlife Habitat Management (Section 6.2), Monitoring and Research (Section 6.3), and Public Awareness and Information Management (Section 6.4). These approaches will support meeting the vision, goals, and objectives of this management plan while being cognizant of the management considerations. CWS will implement these management actions through the annual work planning process, as human and financial resources allow.

6.1 Cultural Resources Management

6.1.1 Cultural and Heritage Resources

The management of the Ikkattuaq MBS will include the protection of archaeological and cultural heritage of Inuit (*IIBA s.2.1.7*). This includes protection and conservation of archaeological sites, artifacts, and cultural sites of importance to Inuit. All activities within the MBS must comply with the requirements of the *Nunavut Archaeological and Palaeontological Sites Regulations* and *Article 33* of the *NA*. If any permittee encounters a new archaeological site, specimen, or artifact, they will photograph it and records its geographic coordinates. This information must then be provided to the Government of Nunavut's Department of Culture and Heritage, the Inuit Heritage Trust, and NTI as soon as reasonably practicable.

The management of the Ikkattuaq MBS should avoid social and cultural disruption to Inuit and their relationship with and use of the lands (including IOL), the waters, and the resources of the MBS (*IIBA s.2.1.4*). The management of the MBS will preserve, support, and promote the use of traditional place names and the use of Inuit-language (*IIBA s.2.1.6*). CWS and the Irniurviit ACMC will seek information from NTI with respect to Archaeological Sites, and Cultural Sites of Importance to Inuit, obtained through the inventories conducted under *s.6.4-6.7* of the *IIBA*, when necessary to manage the MBS.

CWS and the ACMC will need field surveys, conducted by qualified professionals, to document, assess, and preserve cultural resources within the MBS. This will help inform management decisions.

6.1.2 Wildlife Areas of Importance to Inuit

NTI will identify Wildlife Areas of Importance to Inuit within the Ikkattuaq MBS, through *Article 6* of the *IIBA,* and provided them to CWS. These areas shall be managed in cooperation with other agencies having jurisdiction over wildlife and in a manner consistent with *Article 5* of the *NA* (*IIBA s.12.2*). In managing the MBS and Wildlife Areas of Importance to Inuit, CWS shall:

(1) Minimize disturbance to wildlife and wildlife habitat, and promote the maintenance of vital, healthy wildlife populations;
(2) Make all reasonable efforts, consistent with the Minister's jurisdiction under the *MBCA* and *SARA* to respect the cultural significance of Wildlife Areas of Importance to Inuit, taking into account any Inuit Qaujimajatuqangit documented and presented to it by Inuit, the Irniurviit ACMC and other knowledgeable parties;
(3) Investigate public concerns regarding the protection or management of wildlife and document the response, or refer the matter to the wildlife management agency having jurisdiction; and,
(4) As appropriate, consult Inuit organizations about issues pertaining to the effective management of wildlife and wildlife habitat within the MBS.

6.1.3 Place Names

An objective of the *IIBA* (*s.2.1.6*) is to document Inuit place names and promote the use of these place names in the management of the protected area. Place names were documented on two occasions for Southampton Island (2006 and 2012). CWS and the Irniurviit ACMC will also promote any additional information collected and will incorporate revisions brought to their attention.

6.2 Wildlife and Wildlife Habitat Management

6.2.1 Change in designation of the protected area

Although the current level of protection of the Ikkattuaq MBS serves well for migratory bird species, other species at risk and wildlife would benefit from year round protection. A National Wildlife Area would provide better protection for all wildlife and cultural resources, and better enable CWS to meet its commitments under the *IIBA*. There are criteria for designation of an area as a National Wildlife Area which the Ikkattuaq MBS meets (Section 8).

The Irniurviit ACMC wholly supports the designation change. The ACMC has written letters to CWS, NTI, and KivIA (06 July 2015) formally requesting CWS pursue the option of a status change. *Article 13* of the *IIBA* outlines this process and includes (but is not limited to) notification and consultation with NTI, KivIA, the associated communities and the ACMC, and will involve the establishment of an assessment group to consider the status change. A boundary change discussion may accompany this process.

6.2.2 Overabundant Light Geese

The severity, extent, and ecological impacts of overgrazing geese within the Ikkattuaq MBS are not well understood, but CWS is considering all viable management approaches and tools to address the issue. Light geese are an over-abundant species, and studies have documented some impacts on the habitat within the MBS near the colony (Carter, et al., 2018; Fontaine and Mallory, 2011). Liberal hunting regulations designed to increase light goose harvest in the midcontinent region of Canada and the United States have been in place since 1999. Though harvests have increased substantially, growth of goose populations have outpaced increases in harvest, and harvest rates have actually declined overall. Nonetheless, there is evidence that recruitment of young geese has declined over time as the population has grown, and population growth has levelled off on its own in recent years (Ross, et al., 2017).

The Irniurviit ACMC supports several strategies to increase the local harvest of light geese. These include the promotion of harvest, inter and intra community sharing, sport hunting and commercial opportunities (Carter, et al., 2018). However, the ACMC also recognizes that light geese are important components of the ecosystem and wildlife heritage within the Ikkattuaq MBS. Ongoing research and monitoring are key to help understand the dynamics of breeding geese and other species within the Ikkattuaq MBS. The Irniurviit ACMC will base its advice on the best available knowledge and support a wide range of research and monitoring. ECCC researchers are investigating concerns about the effects of habitat loss on other species of migratory birds and other ecosystem components.

6.2.3 Species at Risk

When a species is listed under the federal *Species at Risk Act*, a recovery strategy (for species listed as ‘Endangered’ or ‘Threatened’) or a management plan (for species listed as ‘Special

Concern') is developed for that species. These recovery documents describe the habitats that species at risk need to survive.

Knowledge of habitat use by species at risk in the Ikkattuaq MBS will aid in the development and implementation of recovery documents. The MBS will protect habitat that species at risk need to survive and recover to healthy population sizes. A change in designation of the Ikkattuaq MBS from a Migratory Bird Sanctuary to a National Wildlife Area (Section 8) will aid in the year-round protection of this area for all wildlife (in particular non-bird species at risk; Table 4).

6.2.4 Non-native and Invasive Species

There are no observations or records of non-native (introduced) or invasive species of concern within the boundary of the MBS. As climate change alters Arctic ecosystems and enables greater human activity, biological invasions are likely to increase. CWS, in consultation with the Irniurviit ACMC, will develop an action plan should any monitoring detect the presence of invasive species.

6.2.5 Harvesting

The Irniurviit ACMC recognizes that hunting is an important source of food, income, and connectivity to the land for Inuit. In this regard, the ACMC will increase local awareness of permitted activities in the MBS (Section 7.1) to help dispel past and currently perceived infringements to Inuit rights to harvest. The management of the Ikkattuaq MBS shall be consistent with Inuit harvesting rights under the *NA* as per the *IIBA s.2.1.5*. Management of hunting activities for waterfowl and other game birds will be consistent with the *NA*, the *MBCA*, and its associated regulations.

6.2.6 Air Traffic

Seasonally (i.e. when birds are present), air traffic above the Ikkattuaq MBS will be managed to avoid and minimize flights in sensitive areas and during vulnerable periods (migration, nesting and moulting). Specifically, air traffic will:

(1) Keep a minimum flight altitude of 650 m (2,100 ft.);
(2) Plan flight paths to avoid known concentrations of birds (e.g., bird colonies, moulting areas) by a lateral distance of at least 1.5 km;
(3) If avoidance is not possible, maintain a minimum flight altitude of 1,100 m (3,500 feet) over areas where birds are known to concentrate; and,

(4) Avoid staging areas used by flocks of coastal waterfowl and seaducks during spring and fall migration by a lateral distance of 3 km.

Depending on the nature of the work being conducted, these minimum flight altitudes may not be practical (e.g., wildlife surveys) and will be considered during the permitting process.

6.2.7 Marine Traffic

CWS and the Irniurviit ACMC will manage the marine habitat in Ikkattuaq MBS in consultation with federal, territorial, and local governments and agencies, as well as local fishermen/harvesters. This will minimize impacts to marine habitat from vessels travelling through the waters within and adjacent to the MBS.

Year-round, vessels should:

(1) Comply with the *Arctic Shipping Pollution Prevention Regulations of the Arctic Waters Pollution Prevention Act (1985)*;
(2) Not dump bilge water, exchange ballast water or dump sewage within the MBS boundary;
(3) Minimize noise emissions (such as sudden engine noise from acceleration and avoiding using horns) from vessels within 1 km of the MBS (subject to safety considerations); and,
(4) Consult with the CWS office in Iqaluit before project commencement to discuss ship routing and appropriate emergency preparedness requirements.

Seasonally (i.e. when birds are present), all vessels will, at a minimum:

(1) Avoid activity near nesting birds (May-August);
(2) Keep a 500 m setback distance from aggregations of birds and/or colonies (ECCC, 2016)

6.3 Monitoring and Research

Effective and efficient monitoring requires a coordinated approach and will be carried out through liaison with researchers and partner agencies in a manner that contributes to the goals and objectives outlined in this plan and relevant recovery documents for species at risk.

In order of priority, ongoing monitoring and research needs include:

(1) The distribution and abundance of light geese, and the annual survival and harvest rates influencing the population;
(2) The nature, intensity and geographic extent of habitat change as well as the rate of recovery of habitat;

(3) Surveys to document Archaeological sites in the MBS;
(4) The distribution and abundance of shorebirds and other waterbirds; and,
(5) The impacts of climate change on ecosystems and species, including changes to their distribution, reproduction, and survival.

The Irniurviit ACMC will consider unsolicited monitoring and research activities for permitting when it:

(1) Contributes to research priorities identified by Salliqmiut;
(2) Increases knowledge of the abundance and distribution of ecological resources within the MBS to mitigate potential impacts from planned human activities;
(3) Improves knowledge of IQ and cultural resources and heritage; and,
(4) Informs about the effects of habitat change on wildlife populations.

CWS and the Irniurviit ACMC will examine proposals to ensure compatibility with management goals and objectives. The Irniurviit ACMC does not support projects that require extensive collecting, excessive depletion of any population, and significant disturbance of animals or disruption of habitat. The Irniurviit ACMC will encourage researchers to integrate or collect IQ as part of their project proposals. Applicants must submit all monitoring and research proposals to Environment and Climate Change Canada's Canadian Wildlife Service. Refer to Section 7 of this management plan for information related to permitting. Permit holders are required to provide a summary of findings to the Irniurviit ACMC and report on any identified issues that have the potential to affect the management of the species and habitats.

6.4 Public Awareness and Information Management

The Irniurviit ACMC plays a key role in promoting the Ikkattuaq MBS and facilitating dialogue and understanding surrounding management of the MBS between Salliqmiut, researchers, Inuit organizations, government, and industry. Increasing awareness among Salliqmiut and the public about the MBS will be an annual and ongoing management responsibility of the ACMC.

6.4.1 Local awareness and understanding

For the successful co-management of the MBS, the Irniurviit ACMC will need to balance the monitoring and research needs of the MBS with Salliqmiut concerns. The ACMC will develop a communication plan, in consultation with Salliqmiut, to increase local awareness of current and permitted activities in the MBS as well as disseminating any important health or safety issues. One

objective of the plan could be to provide regular and meaningful opportunities to share information and knowledge among users, and to discuss concerns and evaluate research priorities. This may also involve facilitating a community workshop. The Irniurviit ACMC will also encourage permit applicants to translate project summaries and annual reports as a standard recommendation for permit approval in order to increase accessibility to Salliqmiut.

6.4.2 Public Awareness

CWS and the Irniurviit ACMC will promote the natural, cultural and heritage resources of the Ikkattuaq MBS to Salliqmiut, Nunavummiut, visitors to Nunavut and all Canadians (*IIBA* s.*6.1.1(d)*). NTI will develop interpretive materials, such as signs, displays, brochures, and other information about the natural and cultural resources in and around the MBS (*IIBA s.6.8.1*). The primary purpose of interpretative materials is to facilitate the development of environmentally sustainable tourism and guiding in and around the MBS.

All materials (written, audio and video) to educate or inform the public about the MBS will be available in the Inuit Languages (*IIBA s.6.2.1*). CWS and the ACMC will also preserve Inuit language by supporting and promoting it in the management of the MBS. For example, maps, signs, or interpretive materials will feature traditional place names. All materials should incorporate IQ, with special regard to the MBS's physical features, ecology, wildlife, and Inuit heritage and culture (*IIBA s.6.8.4*) and will be reviewed by CWS, to ensure the accuracy of the biological and ecological information contained within the interpretive materials (*IIBA s.6.8.5*).

If CWS displays information on the Ikkattuaq MBS, it will make use of visitor centres or similar facilities in Coral Harbour (e.g., airport) in accordance with *s.6.9.1* of the IIBA. Information may also be available online through the Government of Canada's website or an ACMC hosted website.

6.4.3 Student Initiatives

Student initiatives such as youth participation in research and the management of the Ikkattuaq MBS is an important component in fostering a close relationship with the land as well as promoting conservation-related work. CWS has agreements in place to hire, train, and mentor Inuit students (*IIBA s.9.2*). CWS also co-operates with the GN in the development of materials and information designed to explain conservation-related jobs, career and business opportunities to Nunavut youth *(IIBA s.9.2.1*). ECCC is a participating federal department in the Inuit Learning Development

Program, which aims to help Nunavut Inuit develop skills for potential employment in the federal public service in Nunavut. The Irniurviit ACMC will encourage permit applicants to hire Inuit students and Nunavut youth (e.g. Nunavut Sivuniksavut, Inuit Mentoring Program, and Inuit Field Research Assistant Program) as a standard recommendation for permit approval. The Irniurviit ACMC will also support other initiatives that serve to build local capacity for youth to participate in research and management of the MBS.

6.4.4 Tourism Activities

In accordance with the *IIBA*, NTI administers funds to build capacity among Inuit Tourism Providers in Coral Harbour and develop effective community-based tourism services. These services include training or mentoring for interested Inuit Tourism Providers; developing local services for tourists; and developing strategies, tourism packages, and marketing plans (*IIBA* s.7.2). The Irniurviit ACMC recognizes tourism as a legitimate land use and supports sustainable tourism operations within the Ikkattuaq MBS. The season, location, and intensity of the tourism activity are subject to periodic review. CWS and the ACMC may impose limits if deemed necessary to avoid adverse impacts on the ecological and cultural resources within the MBS. Tourism activities within the MBS may also be subject to other applicable licenses or authorizations under the *Nunavut Travel and Tourism Act*, the *Nunavut Wildlife Act*, the *Nunavut Archaeological and Paleontological Sites Regulations*, and the *Nunavut Planning and Project Assessment Act*. Inuit should fully benefit from and fully participate in the economic and other opportunities arising from the management of the MBS (*IIBA s.2.1.3*).

6.4.5 Camps

The Irniurviit ACMC will maintain a list of existing cabins (camps) within the Ikkattuaq MBS. If a visitor wishes to visit an outpost camp, the ACMC shall advise the visitor on the appropriateness of the visit and provide owner contact information to seek permission of use (*IIBA s.5.5.5*).

New outpost camps in the MBS are permitted subject to the approval of the appropriate HTO or HTOs (*NA* s.*7.2.2*). Inuit intending to establish a new outpost camp in the Ikkattuaq MBS shall discuss the intended location of the camp with the Aiviit HTO and the Irniurviit ACMC, to minimizing impacts on wildlife or wildlife habitat (*IIBA s.5.5.4*). At this time, the Irniurviit ACMC has identified no areas were the establishment of a new outpost camp would be inconsistent with the conservation of

wildlife and wildlife habitat, including the maintenance of healthy wildlife populations (*IIBA s.5.5.2*). ECCC staff and the ACMC may inspect camps and other permanent infrastructure periodically to ensure they are in good condition and there is no negative impact on the habitat around them.

6.4.6 Inuit Owned Lands

Inuit Owned Lands within the MBS will be managed in accordance with *Article 4* of the *IIBA* which states that the natural resource values will be maintained. *Article 4* also defines the roles and responsibilities of the KivIA and the Minister in managing IOL within the MBS, outlines the dispute resolution process and ensures access considerations (by CWS agents, employees and contractors), as well as access across the MBS to IOL.

6.4.7 Compliance Promotion

Promotion of compliance with the laws, regulations, and agreements related to protected areas in Nunavut is a key tool in managing these protected areas. CWS and the ACMC will conduct compliance promotion by sharing information to increase public awareness and education about the protected area, the legislation and policies affecting the area, and the goals and objectives for management of the area.

Management actions for compliance promotion in Ikkattuaq MBS should include:

- Distribution of this management plan;
- Implementation of the communication plan developed in consultation with Salliqmiut;
- Installing signage at primary entry points to the MBS;
- Ensuring information is available at strategic locations in Coral Harbour;
- Ensuring marine traffic is aware that they may require a permit to access the waters of the MBS;
- Ensuring air traffic is aware that they may require a permit to land within the boundaries of the MBS;
- Ensuring Salliqmiut and the public, including local businesses, are aware that permits may be required for certain activities within the MBS;
- Encouraging Salliqmiut and the public to report illegal activities within the MBS or involving migratory birds to CWS or another authority (see Section 10 for contacts); and,

- Encouraging regular patrol visits or desktop patrols (such as reviewing track log files from marine vessels or aircraft) of the MBS.

6.4.8 Regional Processes and Initiatives

While outside influences are not within the scope of this management plan or the mandate of the Irniurviit ACMC, participation in regional processes or initiatives may be essential for effective management of the MBS and for the conservation of migratory birds and other wildlife.

The Irniurviit ACMC may participate, as a party or through public input opportunities, in regional regulatory processes. These may include:

- Review of projects, as defined under *NuPPAA*, that may affect wildlife and habitat within the MBS; and,
- Nunavut Land Use Plan and future revisions.

Other initiatives and opportunities occasionally arise to further regional conservation of migratory birds and other wildlife, including:

- Establishment of conservation areas in the Kivalliq region; and,
- NWA Strategy and Action Plan (*IIBA s.3.4.3*).

The ACMC will discuss and determine its level of participation in these processes and initiatives on a case-by-case basis. The level of risks to the MBS, potential conservation benefits, and capacity may influence the extent of the ACMC's involvement. Other unanticipated opportunities may warrant the ACMC's participation as well.

7 AUTHORIZED ACTIVITIES, PROHIBITED ACTIVITIES AND ACCESS

The *MBCA* is the regulatory framework that protects migratory birds, and their nests and eggs, from destruction, collection, disturbance, and injury. The *MBSR* stem from the *MBCA* and enable the establishment of MBSs. The *MBSR* provide the basis for their management. The *MBSR* set out activities that are prohibited (*MBSR s.3-5*, and *s.10*) and provide authority to the Minister of the Environment to authorize or permit activities in MBSs that are otherwise prohibited (*MBSR s.9*).

As provided for in the *NA* and subject to certain limitations, “Inuit have a free and unrestricted right of access for the purpose of harvesting to all lands, waters and marine areas within the Nunavut Settlement Area” (*NA s.5.7.16*). This includes the Ikkattuaq MBS. The *NA* also exempts Inuit from the requirement to obtain a permit to harvest migratory birds and engaging in activities reasonably incidental to the harvesting of migratory birds in a MBS.

This management plan, the *IIBA*, and ECCC’s Policy when Considering Permitting or Authorizing Prohibited Activities in Protected Areas Designated Under the *Canada Wildlife Act* and *Migratory Birds Convention Act, 1994* will guide the authorization or permitting of activities in the Ikkattuaq MBS.

The *MBSR* do not allow the following activities except under authority of a permit (note the Inuit harvesting exception mentioned above):

- No person shall hunt migratory birds.
- No person shall disturb destroy or take the nests of migratory birds.
- No person shall have in his possession a live migratory bird, or a carcass, skin, nest or egg of a migratory bird.
- No person shall have in his possession any firearm or hunting appliance.
- No person shall permit their cat or dog to run at large,
- No person shall carry on any activity that is harmful to migratory birds or their eggs, nests or habitat of migratory birds.

7.1 Authorizations

7.1.1 Authorizations by Permit

Under the *MBSR* and upon application, the Minister of the Environment may authorize a prohibited activity under the *MBSR* through the issuance of a permit. That activity must meet one or both of the following purposes and pre-conditions as described in ECCC’s Policy when Considering

Permitting or Authorizing Prohibited Activities in Protected Areas Designated Under the *Canada Wildlife Act* and *Migratory Birds Convention Act, 1994*.

Purposes:

- The activity is not harmful to migratory birds, their eggs, nests, or habitats; or
- The activity is consistent with the purpose and criteria used for which the MBS was established and is consistent with the most recent management plan for the MBS.

Pre-conditions:

- Alternatives to the project/activity have been considered, and;
- Mitigation measures have been considered and adopted.

Terms and conditions governing the activity, which the Minister considers necessary for protecting and minimizing the impact of the authorized or permitted activity on migratory birds and their habitat, may be added to a permit. Refer to Section 7.1.7 for more information on permits.

7.1.2 Nunavut Inuit Activities Authorized Without a Permit

Nunavut Inuit have a right of access to MBSs, without fee or permit, for the following activities:

- Harvesting and activities incidental (*NA s.5.7.18* and *IIBA s.5.2*),
- Removal of up to 50 cubic yards of carving stone within the MBS and any amount from IOL within the MBS (*NA s.19.9.4* and *IIBA s.5.4*), and
- Establishment of new outpost camps (so long as consistent with Section 6.4.5, *IIBA s.5.5,* as well as the *NA*).

The *IIBA* (*s.5.3*) gives Inuit a further right of access without permit to guide sport hunters in or across the Sanctuary, and to carry a firearm for self-protection or the protection of clients. It also extends the right of access without permit for harvesting and covers activities that are reasonably incidental to harvesting.

Non-Inuit cannot be assigned this right of access and exemptions, even if harvesting rights are assigned to that person pursuant to *NA s.5.7.35*.

7.1.3 Nunavut Inuit Activities Authorized Only By Permit

Commercial ventures or businesses require a permit to conduct commercial activities within the MBS even if the commercial venture or business is Nunavut Inuit-owned. The one exception to commercial activities is guiding sports hunters or sport fishermen. A Nunavut Inuit guide does not require a permit, but the non-Inuit hunters or fishermen he or she is guiding do require a permit. Refer to Section 7.1.5 for non-Inuit. Other types of guiding (eco-tourism, canoeing, etc.) by Nunavut Inuit may require a permit. Refer to Section 7.1.7 for more information on permits.

7.1.4 Non-Inuit Activities Authorized Without a Permit

All activities, including entry and access, may require a permit for non-Inuit when migratory birds are present (April through October), and at any time of year if the activities may result in the destruction of migratory bird habitat. This applies even if harvesting rights are assigned to that person under *s.5.7.35* of the *NA*. Refer to Section 7.1.7 for more information on permits.

7.1.5 Non-Inuit Activities Authorized Only By Permit

Non-Inuit must have a permit to carry a firearm in a MBS. Non-Inuit also require a permit to shoot and have dead migratory birds in their possession. This includes non-Inuit hunters on guided hunts for any wildlife species, even when the guide is a Nunavut Inuk that does not require a permit (*IIBA s.5.3.1*; Section 7.1.2). Refer Section 7.1.7 for more information on permits.

7.1.6 Activities Authorized by Permit on Inuit Owned Lands

The *MBCA* and its Regulations apply on Inuit Owned Lands that are within MBSs. The Minister of the Environment may issue permits to undertake activities on Inuit Owned Lands, in consultation with the Kivalliq Inuit Association. There is a special process for determining whether to issue a MBS permit on Inuit Owned Lands, where the Kivalliq Inuit Association expressly supports the permit application. *Article 4* of the *IIBA* describes this process.

In addition to the MBS permit, a proponent must also obtain permission from the Kivalliq Inuit Association to enter any Inuit Owned Lands within the MBS.

7.1.7 CWS Permit Application Process

For project proposals located in the Ikkattuaq MBS, the CWS is a regulatory authority under the *Nunavut Planning and Project Assessment Act,* which defines Nunavut's integrated regulatory system. All project proposals in Nunavut must be first submitted to the Nunavut Planning Commission (NPC). The NPC assesses project proposals for conformity with the Keewatin Land Use Plan and sends a conformity determination and any recommendations to the CWS. The NPC also sends the project proposal, with its determination and any recommendations, to the Nunavut Impact Review Board (NIRB) for screening, unless the project proposal is exempt. The NIRB determines whether the project has the potential to result in significant ecosystemic or socio-economic impacts and whether further review is required. The NIRB submits a screening decision report to the CWS.

The CWS cannot issue a permit until it has received either a positive conformity determination with notification that the project is exempt from screening from the NPC or a positive screening assessment from the NIRB stating that the project may proceed. In addition, in its role to advise the Minister on all aspects of the planning and management of the MBS, the Irniurviit ACMC reviews CWS permit applications and provides recommendations prior to CWS issuing a permit (*IIBA s.3.3*). Figure 8 illustrates the permitting process.

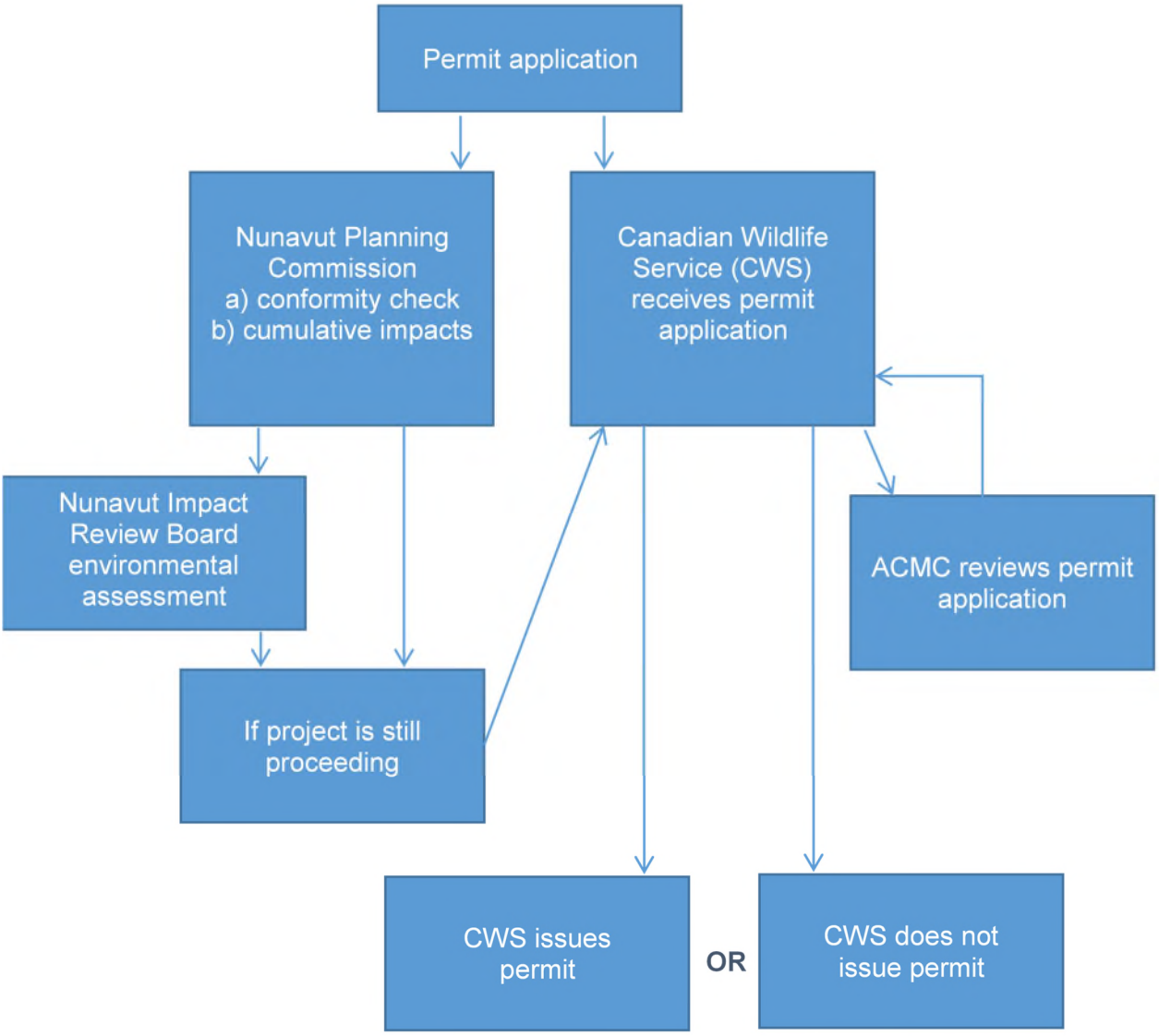


Figure 8: Migratory Bird Sanctuary permit application process.

Permit requests must be made to:

Canadian Wildlife Service
Environment and Climate Change Canada
Prairie and Northern Region
PO Box 1870
Qilaut Building, 933 Mivvik Street, 3rd Floor
Iqaluit, NU X0A 0H0
Email: ec.nupermisscf-cwspermitnu.ec@canada.ca

Contact ec.nupermisscf-cwspermitnu.ec@canada.ca or 1-800-668-6767 (in Canada only) if you have any questions, comments, or concerns about federal wildlife permits in Nunavut or if you need assistance completing an application form.

7.2 Other Federal and Territorial Authorizations and Permits

Depending on the type of activity, other federal or territorial authorizations or permits may be required to undertake an activity in the Ikkattuaq MBS. For example, research may require a Scientific Research Licence from the Nunavut Research Institute or a Wildlife Permit from the Government of Nunavut – Department of Environment. Contact your regional federal and territorial permitting offices for more information.

8 SITE DESIGNATION

Ikkattuaq is currently a Migratory Bird Sanctuary; however, the year-round protection afforded to the wildlife and cultural resources as a National Wildlife Area would be better.

The original designation of the conservation area as a MBS suited the species conservation at the time, protecting the snow goose colony during the breeding season. However, over the past 60 years, the needs for conservation of other nationally important migratory bird populations, other wildlife habitat and wildlife at risk, as well as Inuit cultural resources of the area have changed.

When CWS established the MBS in 1959, federal tools to protect federal land that had value as habitat for wildlife were limited. The *Canada Wildlife Act* did not receive Royal Assent until 1973. This *Act* allows for the creation, management and protection of NWAs for wildlife research activities, conservation or interpretation.

An area must meet at least one of the below criteria for proposal as a NWA. Ikkattuaq MBS currently meets three of the criteria for designation as a NWA (Table 8).

Table 8: Criteria assessment for the designation of Ikkattuaq as a NWA.

Criteria for eligibility as a NWA (ECCC 2017b)	Ikkattuaq criteria assessment
1. The area supports at least 1% of the Canadian population of a species or subspecies of migratory bird or species at risk[1].	✓ Over 5% of the Canadian population of lesser snow goose nests within the MBS ✓ Over 1% of the Atlantic brant population may be nesting within the MBS based on historical surveys
2. The area supports an appreciable assemblage[2] of species or subspecies of migratory birds or species at risk, or an appreciable number of individuals of any one or more of these species or subspecies where total populations are not known or the assemblage represents a regionally significant area.	✓ Six species at risk listed under the federal *Species at Risk Act,* and an additional seven COSEWIC assessed species ✓ Over 50 different species of birds have been recorded to use the MBS ✓ Extensive tidal flats are used as an important stop-over site during the southbound migration of Arctic nesting shorebirds ✓ Important polar bear summer habitat ✓ Includes traditional barren-ground caribou calving grounds
3. The area has been identified as critical habitat for a listed migratory bird or other species at risk population, subspecies or species.	Not applicable.
4. The area is a rare or unusual wildlife habitat of a specific type in a biogeographic region, or has special value for maintaining the genetic and ecological diversity of a region because of the wide range, quality and uniqueness of its flora and fauna[3].	✓ Extensive tidal flats are used as an important stopover site during the southbound migration of Arctic nesting shorebirds

Criteria for eligibility as a NWA (ECCC 2017b)	Ikkattuaq criteria assessment
5. The area possesses a high potential for restoration or enhancement, now or in the future, such that wildlife populations could be increased or managed to meet national objectives.	Not applicable.

[1] This criterion includes areas on which species or subspecies depend to complete any part of their life cycle, such as nesting, feeding, migration and wintering areas.

[2] An "appreciable assemblage" of species or subspecies would be a grouping that, in relative terms, is generally accepted as being sufficient to warrant conservation action, such as waterfowl.

[3] This criterion allows for habitats that always have been rare in a region, as well as habitats reduced to a remnant of their former extent.

In addition to the above criteria, the Ikkattuaq MBS has a long history of research, particularly for geese. Table 9 summarizes the research and monitoring history in the MBS from available permitting files and a literature review.

Table 9: Summary of research and monitoring in the MBS

Year	Researcher Last Name (Organization)	Purpose or Topic
1934	Manning (Royal Geographical Society and British Museum)	Bird research/Expedition
1936	Bray, Manning (British-Canadian Arctic Expedition)	Bird research/Expedition
1952-1953	Cooch (Canadian Wildlife Service, ECCC)	Goose research – Snow goose
1953, 1956-1957	Barry (Canadian Wildlife Service, ECCC)	Goose research –Brant
1961	MacInnes (University of Western Ontario)	Goose research – Cackling goose
1966	Kerbes (Canadian Wildlife Service, ECCC)	Waterfowl surveys
1972-1973	Kerbes (Canadian Wildlife Service, ECCC)	Photo survey of goose colony
1979	Reed, Dupuis (Canadian Wildlife Service, ECCC)	Photo survey of goose colony
1984	MacNeil (Parks Canada)	Field Surveys
1987	Unknown	Terrain Surveys
1991-1995	Caswell (Canadian Wildlife Service, ECCC)	Goose research
1997	Kerbes (Canadian Wildlife Service, ECCC)	Photo survey of goose colony
1999-2001	Bazin (Canadian Wildlife Service, ECCC)	Goose research
2003-2004	Smith (Science and Technology Branch, ECCC)	Shorebird research
2005-2008	Caswell (Canadian Wildlife Service, ECCC)	Goose research
2009-2020	Leafloor (Canadian Wildlife Service, ECCC)	Goose research

Year	Researcher Last Name (Organization)	Purpose or Topic
2011	Leafloor (Canadian Wildlife Service, ECCC)	Waterfowl surveys
2014-2020	Rausch (Canadian Wildlife Service, ECCC)	Shorebird research

A National Wildlife Area designation would also help protect areas of cultural and historical importance like gravesites, former settlements and traditional camping areas that the Irniurviit ACMC would like to see better preserved. The spirit and intent of the *IIBA* was to provide a framework for managing conservation areas in Nunavut for all wildlife and cultural resources. However, a MBS designation does not offer the legislation with which to carry out these management activities, while that of a NWA does.

The Irniurviit ACMC wholly supports the designation change. The ACMC sent letters to CWS, NTI and KivIA (06 July 2015) formally requesting that CWS pursue the option of a status change. *Article 13* of the *IIBA* outlines this process. It includes, but is not limited to, notification and consultation with NTI, KivIA, Salliqmiut, and the ACMC, and will involve the establishment of an assessment group to consider the status change.

Consultations on potential boundary changes should accompany the conversion process. There have been past recommendations to consider changing the MBS boundary (CACNMP, 1990; Allison, 1977). Additional cultural and heritage sites located just outside the current MBS boundary as well as important polar bear denning and barren-ground caribou habitat may be considerations. Various surveys would be required to inform a boundary change to maximize protection and conservation outcomes for cultural and wildlife resources.

9 SECURITY, HEALTH AND SAFETY

In the case of environmental emergencies, please contact the
Canadian Environmental Emergencies Notification System
for the Northwest Territories and Nunavut:

1-867-920-8130.

CWS will protect the health and safety of the public by informing users and visitors of any known or anticipated hazards or risks, using all reasonable means. Further, CWS staff will take all necessary precautions to protect their own health and assure their safety as well as that of their co-workers. However, any person or group must make all reasonable efforts to inform themselves of risks and hazards and must be prepared and self-sufficient. Natural areas contain some inherent dangers. All should be aware that CWS staff do not regularly patrol or offer services for public safety in Migratory Bird Sanctuaries.

Any person or group should report all incidents within the Ikkattuaq MBS to the below offices, and may request anonymity:

- Royal Canadian Mounted Police detachment in Coral Harbour: 867-925-0123, or during an emergency 867-925-1111
- Government of Nunavut Wildlife Office in Coral Harbour: 867-925-8823
- Environment and Climate Change Canada's Wildlife Enforcement Office (Yellowknife or Iqaluit): ec.dalfnord-wednorth.ec@canada.ca
- Environment and Climate Change Canada's Canadian Wildlife Service Permitting Office (Iqaluit): ec.nupermisscf-cwspermitnu.ec@canada.ca
- Any member of the Irniurviit ACMC in Coral Harbour

9.1 Bear Kills

Any person that kills a bear within the MBS, because of an emergency or accident, must report it as soon as possible. The primary contacts are the Government of Nunavut's Wildlife Conservation Officer in Coral Harbour (867-925-8823) and Environment and Climate Change Canada's Canadian Wildlife Service Permitting Office (ec.nupermisscf-cwspermitnu.ec@canada.ca). Disposal of any

valuable parts of wildlife killed in an emergency, illegal, or accidental kill should be in accordance with *s.5.6.55* of the *NA*. Compensation to the Aiviit HTO for a bear kill within the MBS will follow *s.12.3* of the *IIBA*. Persons entering the MBS should take training in bear awareness and firearms safety, or have a bear monitor accompany them.

10 ENFORCEMENT

For the administration of the *MBCA and MBSR*, ECCC Wildlife Officers possess the powers of a police constable. Designated territorial Conservation Officers and the Royal Canadian Mounted Police have the authorization to enforce the *MBSR* under the *MBCA*.

ECCC Wildlife Officers monitor compliance with authorizations and permits issued under the *MBCA* and the *MBSR* on an ongoing basis and will initiate investigations as required. ECCC Wildlife Officers also universally enforce the *MBSR* for prohibited activities without a permit, and when necessary, will lay charges.

In the Ikkattuaq MBS, the general prohibitions of the *SARA* (*s.32* and *s.33*) apply everywhere for migratory birds and aquatic species, and to all wildlife species on parcels of federal lands and waters. These prohibitions apply to all species listed on Schedule 1 as extirpated, endangered, or threatened. It is illegal to kill, harm, harass, capture, or take individuals of such listed species, and to damage or destroy their residences. If CWS identifies critical habitat of a listed species within the MBS, there is a requirement to publish a description of that habitat in the *Canada Gazette*. *Section 58* of the *SARA* prohibits the destruction of critical habitat.

Anyone can report suspected illegal activities within the Ikkattuaq MBS to any federal or territorial wildlife officer, RCMP detachment, CWS at (ec.nupermisscf-cwspermitnu.ec@canada.ca) or directly to any of the Irniurviit ACMC members in Coral Harbour.

11 PLAN IMPLEMENTATION

CWS and the Irniurviit ACMC will implement the management plan over a 10-year period. Implementation will be contingent on annual work planning, as well as human and financial resources. CWS and the ACMC will favor an adaptive management approach.

The ACMC will direct implementation efforts based on the mutual commitment of all parties involved (*IIBA s.2.1.9*). CWS will evaluate the implementation of the plan five years after initial acceptance and every ten years thereafter based on the management activities identified in Table 10. This section of the management plan does not replace annual work planning but helps establish priorities.

CWS and the ACMC will review data obtained from monitoring and research projects, and use it to inform future management decisions. When appropriate, they will also consult Salliqmiut. CWS will also use this information to evaluate federal contributions towards achieving the goals of the protected area, including future designation goals.

Table 10: Five-year management plan implementation schedule.

Activity	Year				
	1	2	3	4	5
Advise the Minister of Environment, as appropriate, on all aspects of management planning; carefully considering any Inuit Qaujimajatuqangit brought forward by members (*IIBA s.3.3*).	X	X	X	X	X
Fulfill the other functions of the ACMC set forth in the *IIBA*, including advising on: • The NWA Strategy and Action Plan for Nunavut (*IIBA s.3.4*); • Management Plans (*IIBA s.3.5 to 3.7*); • RIA-Supported Permit Applications (*IIBA s.4.3*); • Camps and cabins in Ikkattuaq MBS (*IIBA s.5.5*); • The inventories of resources important to Inuit, including oral history projects, archaeological projects and Inuit Language place names (*IIBA s.6.4 to 6.7*); • Research within Ikkattuaq MBS (*IIBA s.10.2*) • CWS's role in the protection of Archaeological Sites, Artifacts and Specimens and Cultural Sites of Importance to Inuit (*IIBA s.11.3*); • The management and protection of wildlife and wildlife habitat within the Ikkattuaq MBS (*IIBA s.12.2*); • The Establishment, Enlargement, Status Change, Reduction or Disestablishment of Ikkattuaq MBS, as appropriate (*IIBA s.13.5*); and • Visitor use of Ikkattuaq MBS (*IIBA s.14.2* and *14.4*).	X	X	X	X	X
Encourage and support research or monitoring, including the collection of IQ, which informs the management of the Ikkattuaq MBS or serves to fill gaps.	X	X	X	X	X
Develop a communication plan, in consultation with Salliqmiut, to increase local awareness of current and permitted activities in the MBS, important health or safety issues, and provide meaningful opportunities to have discussions among users.	X	X	X		
Implement local communication plan.			X	X	X
Increase public awareness of the importance of the Ikkattuaq MBS for all wildlife and cultural resources.			X	X	X
Document and report incidents of illegal activities.	X	X	X	X	X
Participate in regional processes or initiatives that support the conservation of the MBS and surrounding areas	X	X	X	X	X
Maintain a list of existing cabins with the MBS and coordinate with the Aiviit HTO	X	X	X	X	X

11.1 Management Plan Amendment

CWS may amend a management plan at any time. Any government or person affected by this management plan may propose an amendment by contacting CWS (*IIBA s.3.7.1*). Management plans and any subsequent revisions are subject to the approval of the Nunavut Wildlife Management Board.

The Irniurviit ACMC will finalize any revisions or changes to the management plan. CWS will then coordinate external consultation and review of the plan. Any changes to the review process and approval steps will be in accordance with *s.5.3.34(c)* and *s.5.3.16* of the *NA*.

11.2 Management Authorities & Mandates

The authority of the federal Minister of the Environment under the *MBCA* and *MBSR* allows ECCC to establish and manage MBSs. CWS administers this authority within ECCC. In Nunavut, Inuit have a significant role in the decision making of wildlife and wildlife habitat through the *NA*. The Irniurviit ACMC enacts many provisions of the *NA* and *IIBA* as the advisory committee responsible for the day-to-day management of the Ikkattuaq MBS.

12 COLLABORATION

The ultimate success of this management plan depends on collaboration and consultation between CWS, Salliqmiut, other federal agencies and departments, the Government of Nunavut, non-government organizations; who by virtue of their objectives, have a role to play in the protection of the Ikkattuaq MBS and the long-term conservation of wildlife species and their habitats. This includes collaboration in research, land management, and wildlife and fisheries management. Successful implementation and operation of programs, projects, and protection described for the MBS would not be possible without these formal and informal collaborative arrangements. The Irniurviit ACMC and CWS will ensure coordination of efforts.

12.1 Inuit and Public Partners

The Irniurviit ACMC will advise on the management of migratory bird populations in consultation with regional institutions of public government (i.e. NWMB, NPC, and NIRB) as well as local resource co-management boards and authorities. The NWMB plays a key role in wildlife management within Nunavut including regulating harvesting activities within the MBS. Other local and regional partners include the Kivalliq Inuit Association, the Kivalliq Wildlife Board, the Aiviit HTO, the Hamlet of Coral Harbour, the Paqqutiit Elders Committee, the Inuit Heritage Trust, and Travel Nunavut.

12.2 Government of Nunavut

The GN Department of Environment - Wildlife Management Division has a legislated mandate for the management of terrestrial wildlife species in Nunavut. In addition to the *Nunavut Wildlife Act*, the Wildlife Management Division is responsible for fulfilling government responsibilities under a wide range of federal legislation and both national and international agreements and conventions, including on-going responsibility for the co-management of Nunavut wildlife as obligated under the *NA*. One of the primary goals of the Division is to achieve a balanced approach to wildlife management that meets legislative requirements, uses both science and IQ and reflects the values and needs of Nunavummiut.

The GN Department of Culture and Heritage develops and implements policies, programs, and services. These services aim to strengthen the culture, language, heritage, and physical activity of Nunavummiut. The GN Department of Culture and Heritage maintains close working relationships

with the professional archaeology and palaeontology communities, with Nunavut communities, with the Inuit Heritage Trust, and with other territorial and federal government agencies.

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APPENDICES

APPENDIX A: LEGAL DESCRIPTION

The legal description as copied directly from the *Migratory Bird Sanctuary Regulations* (*C.R.C., c. 1036*; 1958) is as follows:

"Harry Gibbons Bird Sanctuary

All those portions of Southampton Island and the waters of Hudson Bay, in the District of Keewatin, in the Northwest Territories, said portions being more particularly described as follows:

COMMENCING at a point at the mean low tide water mark of said Island at Manico Point on a due east-west line passing through the most westerly extremity of said Point; THENCE, due east to longitude eighty-five degrees thirty minutes; THENCE, due north to latitude sixty-four degrees; THENCE, due west to longitude eighty-six degrees; THENCE, due south to latitude sixty-three degrees fifty minutes; THENCE, due west to longitude eighty-six degrees twenty minutes; THENCE, due south to the mean low tide water mark of said Island; THENCE, easterly and southerly along the last-described water mark to the point of commencement, said portions containing together 575 square miles, approximately.

All being described with reference to the latest appropriate map sheet of the National Topographic Series on a scale of 8 miles to 1 inch, available on the 2nd day of March, 1959."

The legal land description in the *Migratory Bird Sanctuary Regulations* is accurate and no corrections are required.

ᖃᖅᖢᐅᖅᑐᑎᒥ (East Bay-ᒥ) ᐊᓚᓗ ᐃᒃᑐᐊᖏᒥ (ᕼᐃᐅᓇ ᒧᐸᓴᒥ) ᑎᓴᒥᐊᖃᖏᕐᓱᒃ -

ᑭᓴᓪᓕᖅᐸᒥᒃ ᑎᑎᕋᖅᓯᒪᓕᖅᑐᑦ ᐊᐅᓪᓚᑎᓂᕐᒧᑦ ᐸᖏᓐᓄᑦᓯᐊᕐᓂᖅᓴᐃᑦ ᖃᖅᖢᐅᖅᑐᑎᒥᒃ ᐊᓚᓗ ᐃᒃᑐᐊᖏᒥᒃ ᑎᓴᒥᐊᖃᖏᕐᓱᓐᓂ ᐅᒪᔨᓕᓚᔪᖏᐊᑲᑯᓗᒃ ᐊᓐᓕᖅᑕᐅᔨᕐᓴᐅᑕᐅᓪᓗᓂᒃ

QAQSAUQTUUQ (EAST BAY) AND IKKATTUAQ (HARRY GIBBONS) MIGRATORY BIRD SANCTUARIES -

Final Draft Management Plans for Nunavut Wildlife Management Board's Approval

ᓄᓇᕗᑦ ᐅᒪᔨᓕᓚᔪᖏᐊᑲᑯᓗᒃ ᑲᑎᒪᓂᓵᓐᓚᓱᓐᓂᒃ ᑲᑎᒪᓂᓐᓇᓐ, ᓇᔭᐅᑎᓕᒃ RM 001-2020, ᐃᖃᓗᐃᑦ, 11 ᐄᓕᔪ, 2020

NWMB RM 001-2020, Iqaluit, 11 March 2020

ᐃᖏᓂᐅᖏᖅ ᐊᐅᓚᓕᔪᖏᐊᑲᑯᓗᒃ ᐃᓕᓴᕐᓂᖅ

IRNIURVIIT AREA CO-MANAGEMENT COMMITTEE

ᐅᓂᖅᑲᓕᐊᓂᖅ ᑕᒪᐃᓐᓂᖅ ᑐᑭᓯᑎᕆᑎᑭᐊᕐᓂᖅ
Presentation Overview

- ᖃᐅᔨᒪᑎᕆᑎᓴᐸᑎᖅᓴᐃᓕᕆ ᓴᓐᓂᐊᖅᑕᐅᓯᒪᓂᖏᓐᓂᖅ ᓄᓇᐃᕆ ᓄᓇᕗᓴᒥ
- ᑕᑯᖅᓴᐅᑎᕆᑎᔪᕆ ᐃᓗᓕᖏᓐᓂᖅ ᑎᑎᕆᖅᑕᐅᓯᒪᓂᖏᓐᓂᖅ ᓯᓕ ᐊᐅᓪᓕᕆᓂᕐᑎᓂᕐᒧᑦ ᐸᓇᐅᑎᖅᓴᓂᖅ



ᒥᑎᕕᖅ Common Eider

- Information on protected areas in Nunavut
- Show you the content of the Draft Management Plans



ᑐᖕᕕᑎᑎᓵᖅ Ruddy Turnstone

ᖃᐅᔨᒪᑎᑦᑎᓕᐊᕈᑎᑦ ᑲᓇᑕᒥ
ᐅᒪᔨᖃᖅᖁᐅᑎᑕᐅᔨᓂᒃ ᐊᓚᒪᓗ
ᑎᖏᒥᐊᖃᖅᖁᐅᑎᑕᐅᔨᓂᒃ ᓄᓇᕗᓚᒥ

Information on National Wildlife Areas and Migratory Bird Sanctuaries in Nunavut

ᐊᓂᑎᓪᓗᖅᐸᐃᑦ ᑲᓇᑕᒥ ᓄᓪᓕᐅᕐᓂᓗ
ᐊᓯᔾᔨᖅᐸᓪᓚᐊᓂᖏᓐᓂᑦ ᑲᓇᑕᒥ
Environment and Climate Change Canada

ᐱᔾᔨᑕᐅᓂᖅᑎᑦ ᐱᓚᑦᖃᑎᒋᔭᑕᐅᓂᖅᓂᕐᒧᑦ:

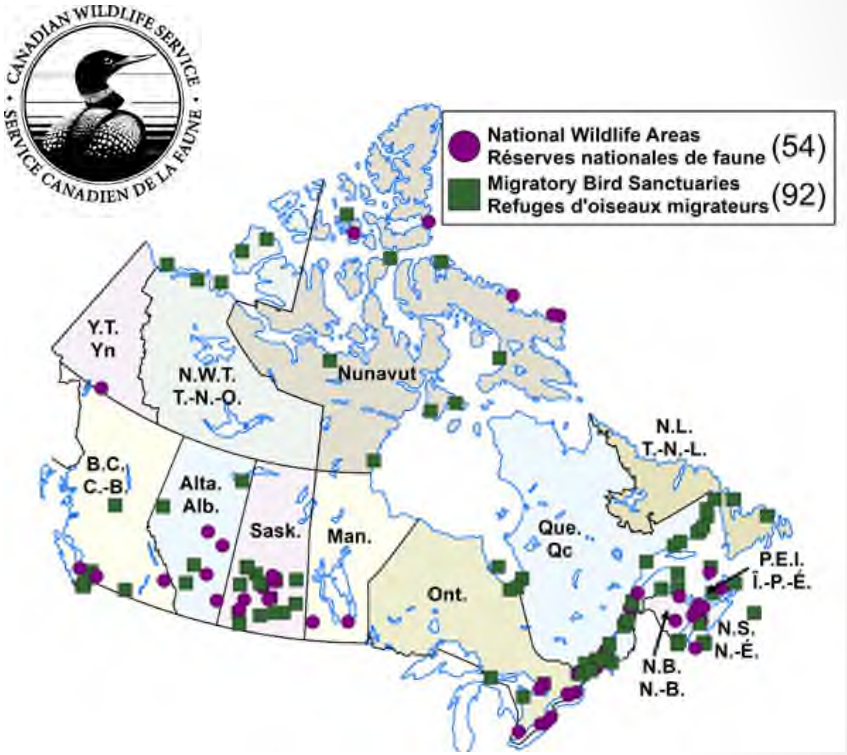
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- ᖃᐅᔨᓴᖅᑕᐅᖃᑕᑦᐊᖅᓂᖅᑎᓄᑦ
- ᑐᑭᓯᓇᖅᓯᑎᑕᐅᔪᑦᐊᖃᖅᓂᖅᑎᓄᑦ

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Purpose of Network

- Conservation
- Research
- Interpretation

National Wildlife Areas (NWA)
Migratory Bird Sanctuaries (MBS)



ᐊᖑᓕᓂᖅᑎᑦ 12 ᒥᓕᒃᖑᓪ
ᐄᐃᐊᖅᑕᓂᖅ ᑕᒪᖏᖅ ᓄᑎᓪᓗᓕᑦ
ᐊᖑᓕᖑᓕᑦ
12 million hectares in total

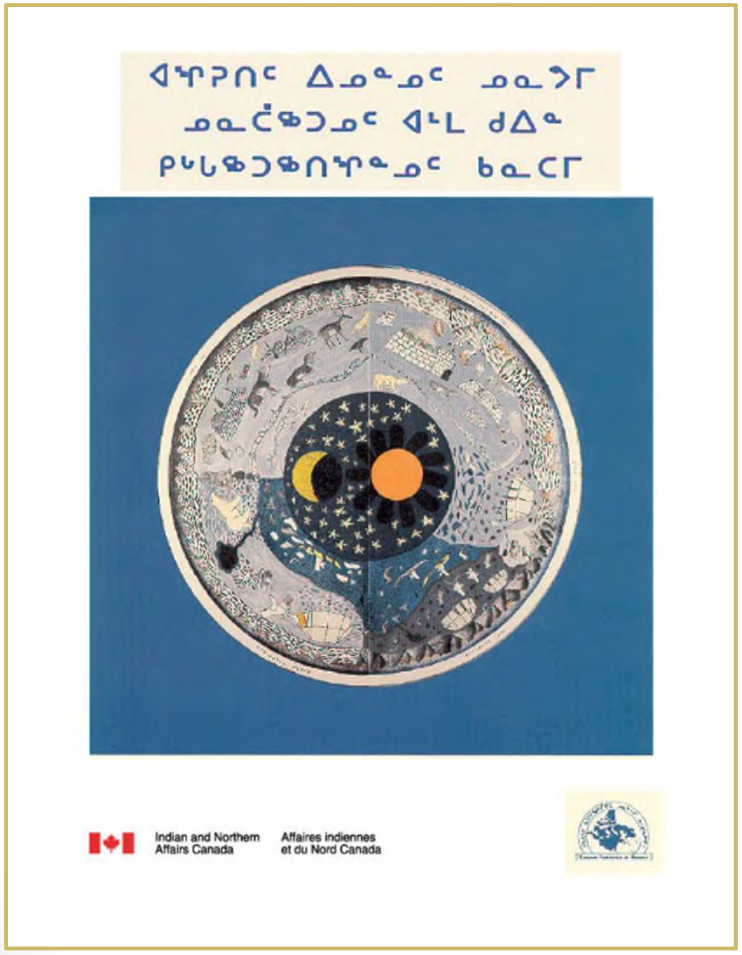
ᐊᓂᑎᓕᓵᕐᓯᐊᖏᑦ ᑲᓇᑕᒥ ᓯᓚᐅᔪᓐᓇ ᐊᓱᓴᖅᐸᔪᓕᐊᓂᖓᓂᑦ ᑲᓇᑕᒥ
Environment and Climate Change Canada

	ᑎᖅᒥᐊᖅᑲᓇᐃᑦ ᓴᓗᐅᔨᒪᕐᓇᖅᑐᑦ	ᑲᓇᑕᒥ ᐅᒪᔨᖅᑲᓇᐃᑦ ᓴᓗᐅᔨᒪᕐᓇᖅᑐᑦ
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ᒪᓕᒐᖅᑎᔪᑦ	*ᑎᖅᒥᐊᖏᓪᓕᓚᓂᓂᕿᑲᖅ ᑲᑎᒪᖏᓐᓄᐊᕐᑕᐅᔨᒪᔨᓂᑦ ᒪᓕᒐᐃᑦ*	*ᑲᓇᑕᒥ ᐅᒪᔨᓕᓚᓂᓂᖏᓪᓗᑦ ᒪᓕᒐᐃᑦ*

	MBS	NWA
Protection Focus	Migratory birds	All wildlife
Protection Period	Nesting/breeding season	Year-round
Legal Basis	*Migratory Birds Convention Act*	*Canada Wildlife Act*

ᐃᓄᐃᑦ ᐊᖏᑐᕐᑕᐅᓯᒪᓂᖅᐸᓂᖅ ᐱᓕᕆᓂᕐᑕᐅᔨᓐᓇᖅᑐᓂᒃᑲᓂᕐᓗ ᐊᖏᕈᓐᓇ (2008; 2016)

Inuit Impact and Benefit Agreement (2008; 2016)





ᐃᓄᐃᑦ ᐊᖏᑐᖅᑕᐅᓯᒪᓂᖅᐸᓄᓄᑦ ᐱᓵᓕᕐᑕᐅᔨᓴᖅᑐᓂᒃᑐᓂᒃ ᐊᖏᑎᑦᑎᐊᓕ (2008; 2016)

Inuit Impact and Benefit Agreement (2008; 2016)

- ᐃᓱᒪᓕᐅᑭᑕᐅᓴᖅᑐᑦ ᐱᒻᓱᑎᖅᑲᖅᑐᑦ ᑎᖅᑭᐊᖅᑲᐃᓂᒃ ᐊᒪᓗᓗ ᐅᒪᔨᖅᑲᐃᓂᒃ ᓴᖅᑭᔨᒥᒃ ᐃᓄᐃᑦ ᖃᐅᔨᒪᔭᖅᑐᖅᑲᖅᖢᑦ ᐃᓄᐃᑦ ᖃᐅᔨᓴᖅᑲᖅᑲᓐᓂᖅᓯᒪᔪᖅ

- ᐃᓕᑕᒫᒃᐅᓱᒪᓴᑦ ᐊᐅᓪᓚᑎᐅᖅᑕᐅᒃᓗᐊᖅᑲᓂᖅᑭᑦ ᐃᓄᐃᑦ ᑎᖅᑭᐊᖅᑲᐃᓂᒃ ᐊᒪᓗᓗ ᐅᒪᔨᖅᑲᐃᐅᔨᓂᒃ ᐱᒻᒪᓗᐅᓂᖅᑭᑦ ᐊᖏᑎᑦᑎᐊᓕ ᐃᓄᐃᑦ ᑎᖅᑭᐊᖅᑲᐃᓂᒃᑐᓂᒃ: ᐊᐅᓪᓚᑎᐅᖅᑕᐅᓂᖅᓴᓪᒧᑦ ᑲᑎᕕᔪᕐᓇᑦ

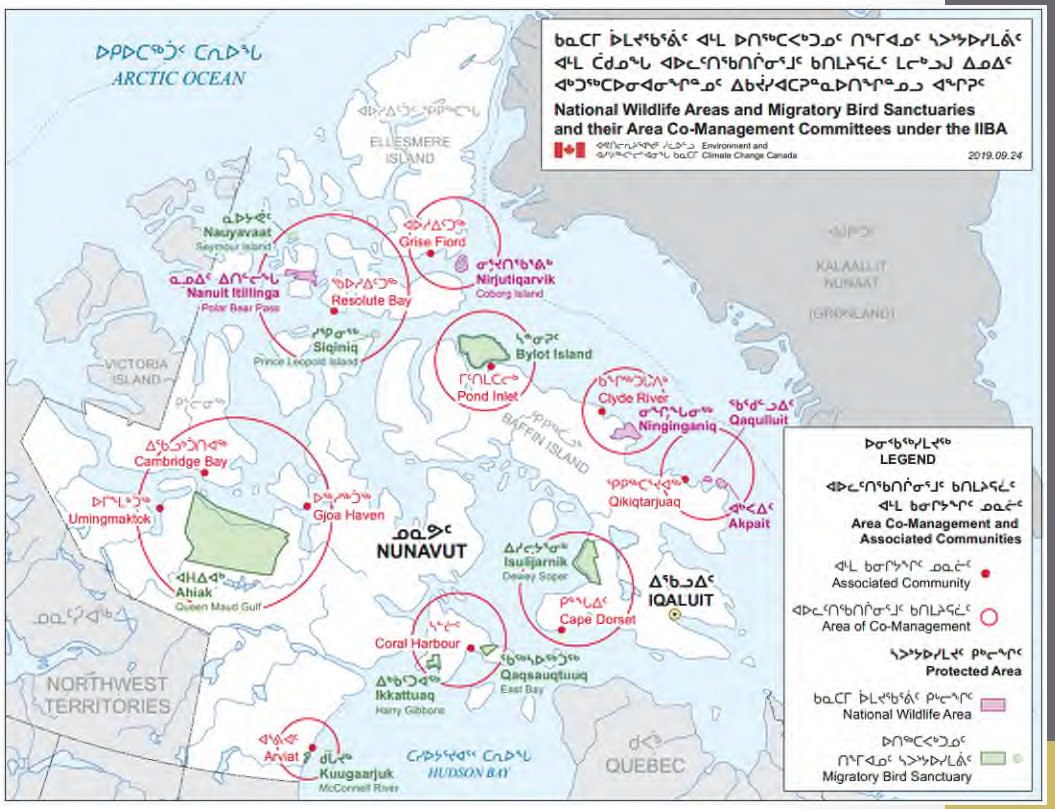
- Decisions for Migratory Bird Sanctuaries and National Wildlife Areas strongly influenced by **Inuit Qaujimajatuqangit**

- Guarantees co-management of Migratory Bird Sanctuary and National Wildlife Areas
  Important feature: **Area Co-Management Committees**

ᐊᐅᓪᓗᕆᐅᖅᑕᐅᓂᖏᓐ ᑲᑎᒪᔨᕋᓪᓕᐅᑦ
Area Co-Management Committees (ACMCs)

- 9-ᖃᓄᑦ ᐊᐅᓪᓗᕆᐅᖅᑕᐅᓂᖏᓐ ᑲᑎᒪᔨᕋᓱᒃᑐᖅᑎᑦ ᓄᓇᕗᒻᒥ, ᐊᐅᓪᓗᕆᐅᖅᑕᐅᓯᒪᔪᑦ 13-ᖃᓄᓂᒃ ᓴᓇᔨᓂᐊᖅᑕᐅᓕᒫᖅᓂᐊᓂᒃ ᓄᓇᓂᒃ
- ᑲᑎᒪᔨᖅᓯᖃᓪᓚᑎᒃ ᑕᒪᓕᒪᓂᒃ 5 ᐃᓄᖃᓂᒃ ᖁᓂᑭᖏᑐᓂ ᓄᓇᓕᓂᖃᖅᓯᒪᔪᓂᒃ ᐊᓪᒪᓗ ᐃᓕᖁᖃᓗᑎᒃ ᐊᑕᐅᓯᕆᑦ 1 ᑲᓇᑕᒥ ᐅᒪᔨᓕᕆᔨᒋᑦ ᐱᓕᕆᓚᖏᑐᓂ (ᐊᓯᑎᓕᕆᔨᒋᐊᓂᒃ ᓯᓚᐅᒪᓗ ᐊᓯᔨᕐᓴᒪᓕᐊᓂᖏᓐᓂᒃ)

- 9 ACMCs were created in Nunavut to co-manage the 13 protected areas
- Made up of 5 people from the associated community and 1 from Canadian Wildlife Service (Environment and Climate Change Canada)



ᐊᐅᓪᓕᑎᕆᐅᖏᑕᐅᓂᖅᓯᒪᓂ ᑲᑎᒪᔨᖏᓪᓕᓂ
Area Co-Management Committees (ACMCs)

- ᐃᖅᓂᐅᕆᖃᑦᓂᓪ ᐊᐅᓪᓕᑎᕆᐅᖏᑕᐅᓂᖅᓯᒪᓂ ᑲᑎᒪᔨᖏᓐᓇᖅᑐᓂ ᑲᑎᒪᔨᖅᓯᓪᓕᐅᖅᓴᓂ 2012-ᒥ
- ᑕᓪᓕᒪᓂᒃ 5 ᑲᑎᒪᔨᖏᖅᓴᓂ ᓴᓪᓕᖅᑎᐅᑕᓂᒃ
  - ᓄᐊ ᑲᓪᓚᒃ (ᐃᒃᓯᐊᐅᑕᖅ)
  - ᐊᓂ ᓂᖏᐅᓐᓚᓐ
  - ᔭᐃᓴ ᑲᓪᓚᒃ
  - ᐅᐃᓕ ᐊᑕᒪᓴ
  - ᐊᑕᐅᓯᖅ ᐃᓄᖏᖏᑦᑐᖅ
- ᐊᑕᐅᓯᖅᑎᒃ 1 ᑲᓇᑕᒥ ᐅᒪᔨᓕᓚᔨᒃᑯᑦ ᐱᓕᓚᐃᖏᓐᓂ ᑲᑎᒪᔨᖏᓚᐅᙱᑦ: ᐸᐅᓵ-ᐃᐊᐟ ᑐᐅᐊ (ᐃᒃᓯᐊᐅᑕᐅᐸ ᑐᖏᓕᓕᖏᓂᒃ)
- ᐃᑲᔨᖅᑕᐅᔨᖅ ᐅᒧᖏᒐ ᑲᓇ ᓂᖏᐅᓐᓚᓐ (ᑭᐊᓕᓕᖅᒥ ᐃᓄᐃᑦ ᑲᑐᐸᔨᖅᑎᑭᑦ)

- Irniurviit ACMC was formed in 2012
- 5 members from Coral Harbour
  - Noah Kadlak (Chair)
  - Annie Ningeongan
  - Louisa Kudluk
  - Willie Adams
  - Vacant
- 1 member from Canadian Wildlife Service: JF Dufour (Vice-Chair)
- Supported by Ron Ningeongan (KIA)



2012



2018

ᐃᖏᓂᐅᕐᕕᐊᑦ
ᐊᐅᓪᓗᓯᐅᖅᑕᐅᓂᖓᓪᓕᒃ
ᑲᑎᒪᔨᖏᓪᓗᒃ

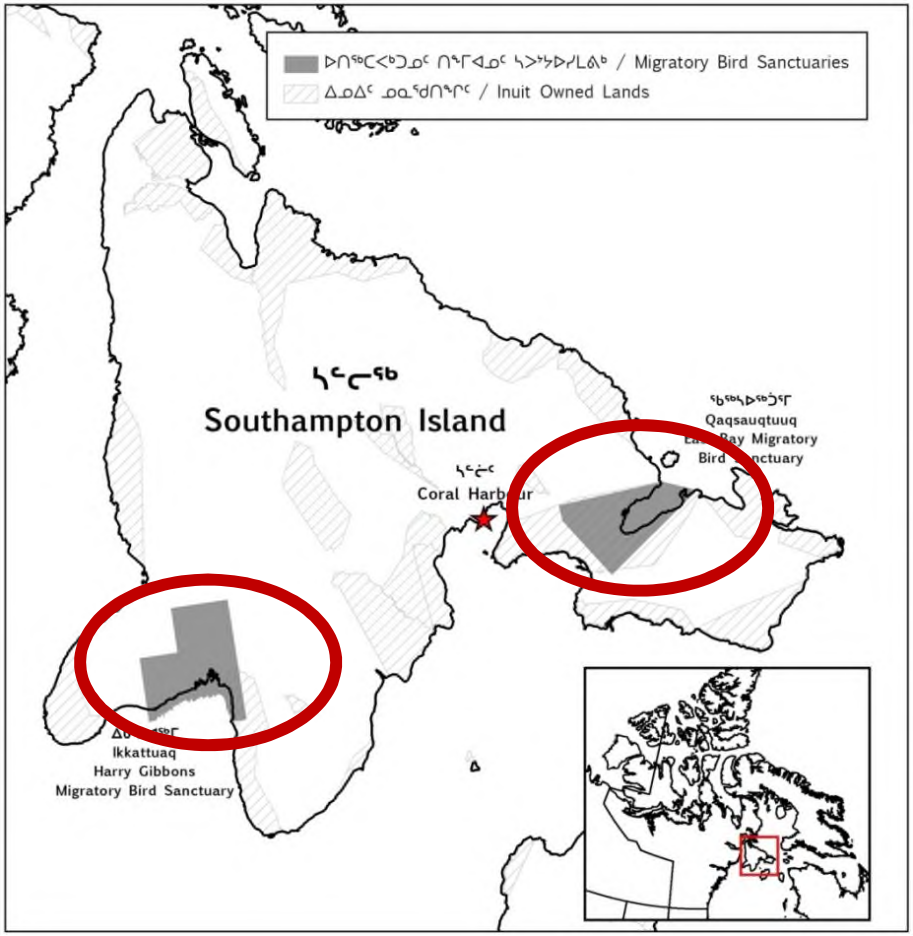
IRNIURVIIT AREA
CO-MANAGEMENT
COMMITTEE

ᒪᖏᕐᒧᑐᖅ ᑎᖕᒥᐊᖅᑲᓇᐃᖅ
ᓴᓂᓂᐊᖅᑕᐅᓯᒪᖕᓇᐅᔪᓕᑎᒃ:

- ᖃᖅᖁᓇᐅᖅᑐᖅᒥ
- ᐃᒃᑐᑕᐊᖅᒥ

Two Migratory Bird Sanctuaries:

- Qaqsauqtuuq
- Ikkattuaq



ᐊᐅᓪᓗᓂᐅᖅᑕᐅᓂᖏᑦ ᑲᑎᒪᔨᖏᓪᓕᓪᓂ
Area Co-Management Committees (ACMCs)

ᐊᐅᓪᓗᓂᐅᖅᑕᐅᔾᔨᓂ ᑲᑎᒪᔨᖏᓪᓕᓯᓪᓂ
ᐃᒪᓐᓇᐃᓕᐅᖅᑕᕐᓂᓕᕆᖅᑐᑦ:

- ᐅᖅᐅᓴᔨᕆᕕᖅᑎᐅᖅᑕᕐᓂᔭᓐᓄᑦ ᒥᓂᔾᑕᒧᑦ ᑕᒪᐃᓐᓇᓂᕆᕕᖅ ᐱᔾᔪᑎᖅᖅᑐᓂᑦ ᑎᓪᒥᐊᖅᕿᓐᓂᓂᑦ/ᐅᒪᔪᖅᕿᓐᓂᓂᑦ ᐊᐅᓪᓗᓂᑎᓂᕐᒥᑦ
- ᖃᐅᒥᖅᑕᐊᖅᑕᕐᓂᔭᓐᓄᑦ ᐱᔪᓐᓇᐅᑎᑦᓴᑕᕐᓂᔪᓐᓇᕐᓂᖏᑦ ᐅᑦᑐᖅᑕᐊᖅᑎᓂᑦ ᑐᑦᔪᖅᑐᐅᑎᓂᑦ
- **ᓴᓇᖅᑕᕐᓂᔭᓐᓄᑦ ᐊᐅᓪᓗᓂᑎᑦᔪᑎᑦᓴᓂᑦ ᐸᖅᓇᐅᑎᓂᑦ**



ACMC will:

- advise the Minister on all aspects of MBS/NWA management
- review permit applications
- **develop Management Plans**



ᐊᐅᓪᓗᒍᓐᓇᖅ ᐸᖅᓇᐅᑎᖏᑦ
Management plans

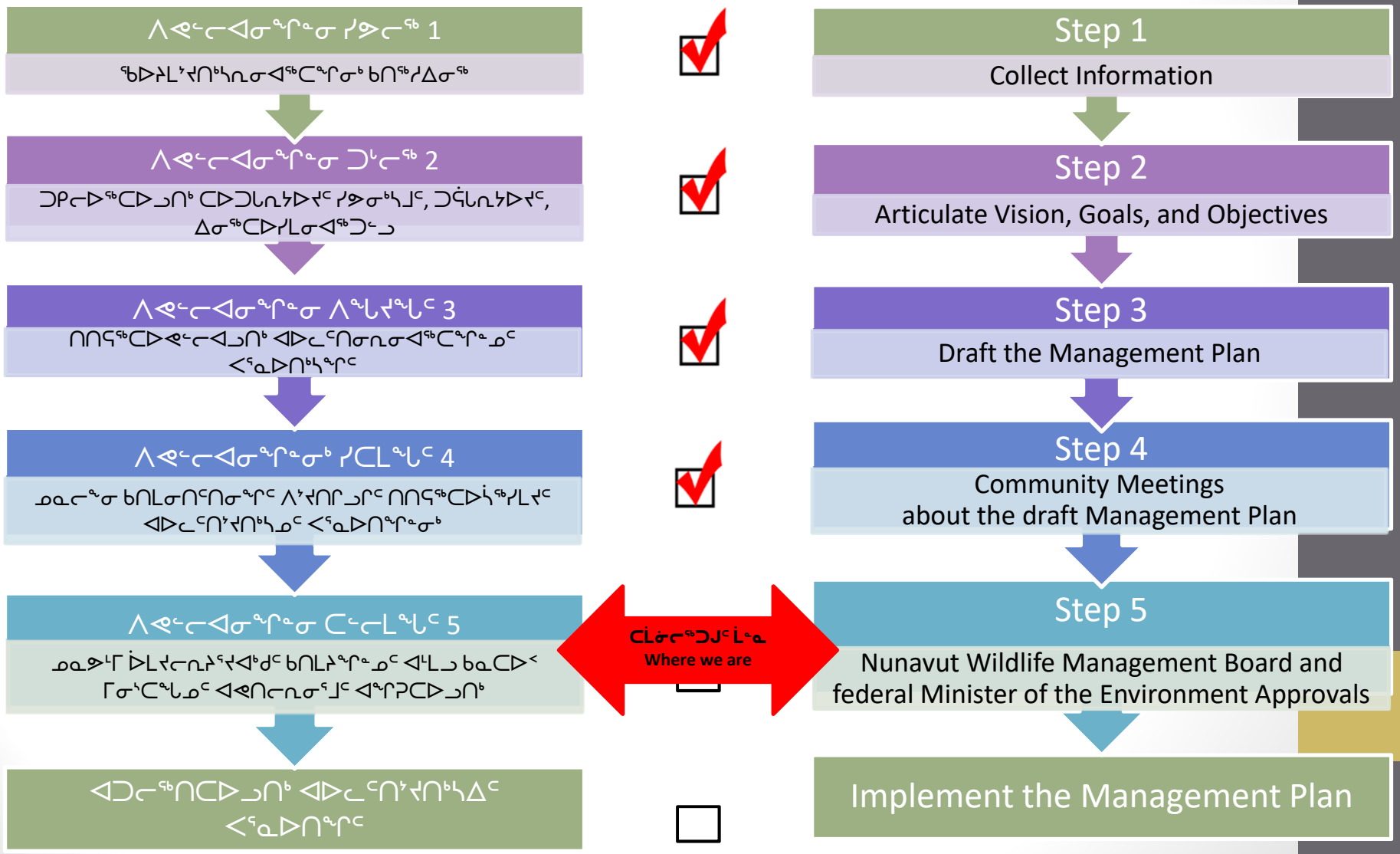
- ᐱᔨᓇᐅᑕᐅᕙᒃᑐᑦ ᐊᐅᓪᓗᒍᑦᑏᐅᖅᑕᐅᓂᖅᓗᒍ ᑲᑎᒪᔨᕆᓪᓕᑦ ᐅᖃᐅᔨᖅᑭᓇᖅᓂᖏᓐᓂᒃ ᑕᑯᑎᑦᑎᔨᓇᖅᓂᖅᓗ ᑕᐅᑐᑎᓴᖏᓐᓂᒃ ᖃᓄᐃᓕᓐᖏᓴᕆᐊᖃᖅᓂᖏᓐᓂᒃ ᓴᐳᓂᐊᖅᑕᐅᔨᒪᔨᑦ
- ᓇᓗᓇᐃᔭᐃᔨᐅᕙᓪᓗᑎᒃ ᒪᓕᒃᑕᐅᓂᐊᖅᑐᓂᒃ ᐃᔨᒪᓕᐅᖅᑎᐅᕙᓐᓂᖅ ᐱᔪᒥᑎᖃᖅᑐᓂᒃ ᓴᐳᓂᐊᖅᑕᐅᔨᒪᔨᓂᒃ ᓄᓇᓂᒃ
- ᐅᓂᒃᑲᖅᐸᒃᑐᑦ ᐱᓕᒪᓗᐅᓂᖏᓐᓂᒃ ᐃᓕᓐᖅᔨᑐᑎᖅᑐᑦ ᐊᕐᕌᒍᖅᑐᑦᓯᓗ ᖃᖅᑎᖏᓐᓂᒃ ᖃᓄᖅ ᐱᓕᓐᖅᔨᓇᓐᖏᓐᓂᒃ ᓄᓇᖏᑦ

- Allows the Area Co-Management Committees to share their vision of the protected area
- Guides decision making for the protected area
- Describes important cultural and environmental aspects
- States which activities are permitted and not permitted





ᐊᐅᓪᓗᐊᓂᖅᓴᐃᓪᓕᐅᑎᓪ: ᐱᓕᕆᐊᖓᓂᒃᓕᐊᖅᑕᐃᓇᓱᓂᖅ Management Plans: *Steps*



ᐊᐅᓪᓗᒍᓂᐊᕐᓗᒃ
ᐸᖁᐅᓯᐅᖅᐸᑦᓂᐊᓪᓚᐅᖁᓂᖏᑦ
ᐊᒻᒪᓗ ᐊᖏᑎᑐᑎᒃᑲᒧᐃᓱᖏᑦ

Management Plan Preparation and Approval

ᐃᓄᐃᑦ ᐊᑲᑐᖅᑕᐅᔪᓕᓂᖅᑭᓂᓄᑦ ᐱᓱᕆᓪᓕᖅᑐᐃᓐᓇᑦᑐᓂᓪᓗ ᐊᖏᑭᑭᑎ
Inuit Impact and Benefit Agreement

ᐊᐅᓪᓚᑦᑎᐹᐊᖅᓴᓄᑦ ᕿᖏᐅᑎᑦ ᐱᓕᕆᔨᐅᓂᖅ

- 3.5.4 ᑎᑎᕋᖅᑕᐅᓗᑎᑉ ᐊᖏᕐᓂᖅᑕᐅᓗᑎᑉ ᐊᐅᓪᓚᑦᑎᐹᐊᖅᓴᓄᑦ ᕿᖏᐅᑎᑦ, ᐅᓄᐊ ᐊᐅᓪᓚᑦᑎᕆᐊᖃᕐᓗᑦ ᑲᑎᒪᔨᕋᓱᑦ ᐃᓕᓴᕐᑎᑕᐅᔪᑦ ᐃᓄᐃᑦ ᖃᐅᔨᓴᑐᖃᖅᑕᖏᑦ ᑐᓴᕐᓂᓕᕆᓕᕐᑕᐅᔪᑦ ᐃᓚᒋᔭᐅᔪᓐᓇᑦ.
- 3.5.5 ᐅᓄᐊ ᐊᐅᓪᓚᑦᑎᕆᐊᖃᕐᓗᑦ ᑲᑎᒪᔨᕋᓱᑦ ᖁᒥᖅᑭᐊᖃᖅᑎᖅᑎᖅᓯᓗᑎᑉ ᐅᖃᖅᖃᐊᖃᖅᑎᖅᓯᓗᑎᑉ ᐊᖑᑎᓗᒍ ᐃᓄᐃᑦ ᑲᑎᒪᔨᕋᓱᑦ ᐃᓄᐃᑦ ᑲᑎᒪᔨᕋᓱᑦ ᐃᓕᓴᕐᑎᑕᐅᔪᑦ, ᐊᒻᒪᓗ ᓄᓇᕗᑦ ᑐᓴᖏᓐᓄᑦ ᑎᒥᖓ, ᐱᖁᔪᓕᐅᓴᖏᓂᖓᓂ ᐅᖁᑎᑎᑐᑎᒍ ᐊᐅᓪᓚᑦᑎᐹᐊᖅᓴᓄᑦ ᕿᖏᐅᑎᑦ.
- 3.5.6 ᒪᓕᕆᐊᓕᖅ ᓴᓇᖁᐅᓂᐊᖃᖅᑐᓂ ᕿᖏᐅᑎᓂ ᐊᒻᒪᓗ ᑭᓇᐅᖁᖃᖅᑐᑎᓂᖅ, ᐅᓄᐊ ᐊᐅᓪᓚᑦᑎᕆᐊᖃᕐᓗᑦ ᑲᑎᒪᔨᕋᓱᑦ ᑎᑎᕋᖅᑕᐅᓗᑎᑉ ᐊᖏᕐᓂᖅᑕᐅᓗᑎᑉ ᕿᖏᐅᑎᑦ ᒪᓕᕆᓪᓗᒍ ᖃᓄᖅᑭᑐᖅᑕᐅᓗᑎᑉ ᐊᐅᓪᓚᑦᑎᐹᐊᖅᓴᓄᑦ ᕿᖏᐅᑎᑦ ᖁᒥᖅᑭᐊᖃᖅᑎᖅᓯᓗᑎᑉ ᐅᖃᖅᖃᐊᖃᖅᑎᖅᓯᓗᑎᑉ.

MANAGEMENT PLAN PREPARATION

- 3.5.4 In preparing Management Plans, the ACMCs shall carefully consider any *Inuit Qaujimajatuqangit* brought forward by a member.
- 3.5.5 The ACMC shall consult the relevant RIA, and NTI, before completing the draft Management Plan.
- 3.5.6 Subject to its work plan and budget, the ACMC may prepare the Management Plan according to whatever process it deems appropriate and it may consult as it deems appropriate.

ᐃᓄᐃᑦ ᐊᖏᑕᖅᑕᐅᓯᒪᓂᖅᐸᑦᓄᓇᓕᒃ ᐱᓕᕆᔨᑦᑕᐅᔭᕆᓇᖅᑕᑦᓂᓪᓗ ᐊᖓᔪᖅᑎᑦ
Inuit Impact and Benefit Agreement

3.5.7 ᐅᓄᐊ ᐊᐅᓪᓚᑦᑎᐊᑎᒃᓴᓄᑦ ᐸᖁᓇᐅᑎᑦ ᐃᓪᓚᖅᓂᐊᖅᑐᑦ ᓇᓗᓇᐃᔭᑦᑎᐊᖅᓯᒪᔨᓂᒃ ᐅᓄᓂᖓ:

(a) ᐱᓵᔨᑎᖓᑦ ᑲᓇᑕᒥ ᐅᒪᔨᖅᑲᓐᓇᑦ ᐅᕝᕙᓕᓂᑦ ᐅᑎᖅᑕᐸᑦᑐᓄᑦ ᑎᖓᒥᐊᓄᑦ ᓴᓵᐳᓕᒫᒃ;

(b) ᐊᐅᓪᓚᑦᑎᐊᑕᐅᔨ ᑐᖏᖓᓐᖓᑦ ᐊᒻᒪᓗ ᑐᑭᓯᐅᑉᐸᑎᑦᑎᓕᕆᓂᖅᐸᑦᑐᑦ;

(c) ᓄᓇᖓᓐ ᐊᒻᒪᓗ ᐱᐅᔨᑐᖅᖓᓐᓂ ᐃᒻᒪᑲᓪᓚᒃ ᖃᓄᐃᓕᖓᓂᖓᓐ ᐊᒻᒪᓗ ᐃᓗᓕᖓᑦ ᐃᓗᐊᓂ ᑦᑲᒃᑯᐊ ᑲᑎᒪᔨᖏᑦ ᐅᕝᕙᓕᓂᑦ ᐅᑎᖅᑕᐸᑦᑐᓄᑦ ᑎᖓᒥᐊᓄᑦ ᓴᓵᐳᓕᒫᒃ ᐊᐅᓚᓂᖓᑦ;

(d) ᐊᑐᐊᖏᐃᑦ ᐅᓄᐊᓗ ᑐᑭᒧᐊᔪᑕᐅᓂᐊᖅᐸᑦᑐᑦ ᐊᐅᓚᑦᑎᐊᑕᐅᔨᓄᑦ ᑲᑦᓄᓂᖓᓐ ᖃᓄᐃᓕᖓᑦ ᓂᕿᑎᓄᑦ ᖃᓄᐃᓕᖓᑦ ᐅᓪᓗᕆᔨᑕᐅᓂᐊᖅᐸᑦᑐᑦ ᐊᐅᓚᑦᑎᐊᑕᐅᔨᓄᑦ ᓴᓵᐳᓕᒫᒃ ᓴᓵᐳᓕᒫᒃ;

(e) ᐅᓪᓗᖓᑦ ᐊᑐᓚᖅᑎᑕᐅᕐᒪᑦᓴᖓᑦ ᐊᐅᓚᑦᑎᐊᑕᐅᔨᑦ ᐸᖁᓇᐅᑎᖓᑦ ᖃᓄᐃᓕᓚᐅᖅᑕᐸᑦᑐᑦ ᑭᓯᓂᖓᑦ.

3.5.7 The Management Plan shall include a description of:

(a) the purposes of the NWA or MBS;

(b) management goals and objectives;

(c) the natural and cultural history and the context within which the NWA or MBS operates;

(d) policies that will guide the management of the NWA or MBS;

(e) a schedule to implement Management Plan action items.

ᐃᓄᐃᑦ ᐊᖏᑐᖅᑕᐅᓯᒪᓂᖅᐹᓪᓕᐊᓂᑦ
ᐱᓵᓴᓕᑕᐅᔨᓴᓕᖅᑐᓄᓪᓗ ᐊᖅᑎᕈᑎ
Inuit Impact and Benefit Agreement

3.5.8 ᑕᐃᒃᓂᓂ ᓄᓇᑕᒥ ᐅᒪᔨᖅᑎᒋᐊᑦ ᐅᓵ�??ᓕᓂᓂ ᐅᑎᖅᑕᐸᑦᑐᓄᑦ ᑎᖅᒥᐊᓄᑦ ᓴᓗᐃᑦᐅᓯᒪᔪᓂ ᐃᓕᖅᑐᖅᑐᑦ ᐃᓄᐃᑦ ᓄᓇᒋᐊᑎᖅᑎᑦ, ᐊᐅᓕᑦᑎᐹᑎᖅᓴᓄᑦ ᐸᒋᓇᐅᑎᑦ ᒪᓕᑦᑎᐊᑦᑎᐊᒋᓂᖅᑐᑦ ᐊᒻᒪᓗ ᐅᖃᖅᓯᒪᓗᑎᒃ ᓇᓪᓕᐊᓂᖅᑐᓂᒃ ᐃᓄᐃᑦ ᓄᓇᒋᐊᑎᖅᑎᓯᓂ.

3.5.8 Where an NWA or MBS includes IOL, the Management Plan shall reflect and address any special issues arising from the presence of the IOL.

ᐃᓄᐃᑦ ᐊᖏᑐᖅᑕᐅᓯᒪᓂᖅᐹᓂᑦ ᐱᓕᕆᓂᖅᑕᐅᔪᓐᓇᖅᑐᓄᑦᓗ ᐊᖅᑭᑦᑎᐊᕐᓂᖅ

Inuit Impact and Benefit Agreement

ᐊᐅᓪᓚᑦᑎᐊᑎᒃᓴᓄᑦ ᕿᖏᐅᑎᑦ ᐊᖅᑭᑦᑕᕆᔨᒪᓂᖅᓄᖅ

3.6.1 ᐊᐅᓪᓚᑦᑎᖃᑎᒋᔭᖅᑐᑦ ᑲᑎᒪᔨᕆᓪᓚᑦ ᐊᑐᓪᖏᑦᑕᐅᔾᔨᓗᑎᒃ ᐱᓕᕐᓂᑎᐊᖅᓯᒪᔪᑦ ᐊᐅᓪᓚᑦᑎᐊᑎᒃᓴᓄᑦ ᕿᖏᐅᑎᑦ ᑕᒃᓯᓄᖅᓱᒃ ᓄᓇᕗᒻᒥ ᐅᒪᔪᓕᕐᓇᔨᕐᔪᐊᑲᓯᓄᖅ ᐊᖅᑭᑦᑕᐅᓗᑎᒃ ᒪᓕᒐᓗᔫ ᐊᖅᑭᑦᑎᐊᓂᖅ 5.2.34 (c) ᐊᒻᒪᓗ 5.3.16 *ᓄᓇᕗᒻᒥᒃ ᓄᓇᕈᑎᑎᓄᑦ ᐊᖅᑭᑦᑎᐊᓂᖅ.*

3.6.2 ᐅᓯᐊ ᐊᐅᓪᓚᑦᑎᖃᑎᒋᔭᖅᑐᑦ ᑲᑎᒪᔨᕆᓪᓚᑦ ᑐᓂᔪᓂᕐᒧᑦ ᐊᑐᑎᔪᓄᑦ ᐊᕐᕌᒃᑐᖅᓯᒪᔪᑦ ᐃᓄᐃᑦ ᑲᑐᔾᔨᖃᑎᒋᔭᖅᑐᑦ ᐊᒻᒪᓗ ᓄᓇᕗᑦ ᑐᓴᖅᓱᒃ ᑎᒥᖅᑏ ᑕᕐᕋᖅᓱᓂ ᐱᓕᕆᖃᑎᒌᓕᕐᒪᑦᑐᑦ ᐊᐅᓪᓚᑦᑎᐊᑎᒃᓴᓄᑦ ᕿᖏᐅᑎᑦ ᐅᓯᐊᓗ ᐊᐅᓪᓚᑦᑎᓕᕐᒪᑐᓂ ᕿᖏᐅᑎᑦ ᓄᓇᕗᒻᒥ ᐅᒪᔪᓕᕐᓇᔨᕐᔪᐊᑲᓯᓄᑦ.

MANAGEMENT PLAN APPROVAL

3.6.1 The ACMCs shall recommend completed Management Plans to the NWMB for approval in accordance with sections 5.2.34(c) and 5.3.16 of the *NLCA.*

3.6.2 The ACMC shall provide the relevant RIA and NTI with a copy of the completed Management Plan when it sends the Plan to the NWMB.

ᐃᓄᐃᑦ ᐊᑲᑐᖅᑕᐅᓯᒪᓂᖅᐹᓂᓄᑦ ᐱᓵᓴᓕᐅᔪᓐᓇᖅᑐᓄᓪᓗ ᐊᖏᑎᑕᐅᑎ
Inuit Impact and Benefit Agreement

3.6.3 ᑕᐃᒪᓗ, ᒪᓕᒃᓗᒍ ᐃᓱᒪᓕᐅᓇᓵᓕᐊᔨᑦ ᐅᖃᖅᓱᒪᔪᑦ ᐊᖏᑎᑕᐅᑎᑦ 5.2.34(c) ᐊᒻᒪᓗ 5.3.17 ᑎᑭᒃᓗᒍ 5.3.23 ᓄᓇᕗᒻᒥᒃ ᓄᓇᑕᑭᑎᓄᑦ ᐊᖏᑎᑕᐅᑎᑦ, ᐅᓂᐊ ᓄᓇᕗᒻᒥ ᐅᒪᔪᓕᓇᓵᖅᓯᐊᕐᓂᖅᓂᑦ ᐅᓴᐅᓂᑦ ᐊᑲᒃᖢᑕᐅᑦ, ᑕᒪᖏᒃ ᐅᓴᓵᓐᓂᑦ ᐃᓕᓐᓄ, ᐱᔨᑦᑎᐊᖏᒪᔪᖅ ᐊᐅᓕᑎᑎᐊᕐᕕᓄᑦ ᐸᖃᐅᑎᑦ ᐊᒻᒪᓗ ᐸᖃᐅᑎ ᐅᑎᖏᓗᓂ ᑕᒃᓂᓄᖑᓐᓂᖏᖏᑦ ᖃᑎᒪᔨᕆᓕᑦ ᐃᓂᒪᑭᐅᑎᐊᒃᓂᖏᑦᑐᑦ, ᐊᒃᑐᑎᔪᑦ ᐊᐅᓕᑎᑎᐊᕐᕕᓄᑦ ᖃᑎᒪᔨᕆᓕᑦ ᐃᓂᒪᑎᑎᐊᖏᑕᐅᑦ ᐸᖃᐅᑎᑦ ᐊᒻᒪᓗ ᑐᓂᖃᓂᓂᑕᑦ ᑕᒃᓂᓄᖑᓐᓂᖏᖏᑦ ᐅᓴᐅᓂᑦ

3.6.3 If, in accordance with the decision-making process set forth in subsection 5.2.34(c) and sections 5.3.17 through 5.3.23 of the *NLCA,* the NWMB or the Minister rejects, in whole or part, a completed Management Plan and the Plan is returned to an ACMC for reconsideration, the relevant ACMC shall re-consider the Plan and re-submit it to the NWMB.

ᐃᓄᐃᑦ ᐊᖏᑐᖅᑕᐅᔪᓕᒐᓱᐊᓂᓄᑦ ᐱᓵᓴᓪᓗᑕᐅᔨᓴᓇᖅᑐᓄᓐᓂᓗ ᐊᓱᐊᑭᑎ
Inuit Impact and Benefit Agreement

3.6.4 ᒪᓕᒃᓵᔪᒍ 8.4.13 ᓄᓇᕗᔪᓕᖅ ᓄᓇᑕᐹᑎᓄᑦ ᐊᓱᐊᐹᑎᑦ, ᐃᓚᒪᑎᕆᐅᔨᑦ ᐊᐅᓪᓕᐊᑎᐅᕆᓴᓄᑦ ᕿᖏᐅᑎᑦ ᒪᓕᒃᓂᓂᐊᖏᖅᑐᖅ ᐊᑐᑕᖏᖅᑐᖅ ᐊᐅᓪᓕᐊᑎᐅᔨᓂᖅ ᐊᐅᓪᓕᐊᑎᖏᑐᒥᑦ ᐅᑎᒪᔨᕐᓂᑦ, ᐊᑐᖏᓂᑦ ᐊᑐᑕᖏᖅᑐᔨᑦ ᐱᔨᒪᔨᑦ ᐊᔪᒥᓱᓄᑦ ᐅᕝᕙᓚᓂᑦ ᑎᒥᐅᔨᓄᑦ.

3.6.4 In accordance with section 8.4.13 of the *NLCA,* approved Management Plans shall be based on the recommendations of the relevant ACMCs, taking into account the recommendations of other interested persons or bodies.

3.6.5 ᑕᐃᒪᓗ ᒥᓂᑦ ᐊᖏᑐᖅᕿᒍ ᐊᐅᓪᓕᐊᑎᐅᕆᓴᓄᑦ ᕿᖏᐅᑎᑦ, ᒥᓂᑦ ᐱᒋᐊᖏᑎᓂᓪᓂᐊᖏᑕᖓ ᑲᔪᓯᖏᓐᓇᐊᓕᓕᑦ ᑕᑯᔪᐊ ᐊᑐᑎᖅᖁᑦ ᐊᑐᓕᖅᑕᐅᔪᐊᓕᑦ ᕿᖏᐅᑎᑦ.

3.6.5 Once the Minister has accepted a Management Plan, the Minister shall proceed forthwith to do all things necessary to implement the Plan.

ᐃᓗᓕᓐᖏᑦ ᑎᑎᕐᖃᑕᐅᔭᓕᓕᐊᔾᑦ ᓂᓕ ᐊᐅᓪᓚᑦᑎᐸᕐᓴᖅᑦ ᕿᖏᐅᖅ% ᖃᖃᓴᐅᖃᑉᑐᕐᒧᑦ ᐊᓚᒪᓗ ᐃᑲᑦᑐᐊᕐᒧᑦ ᑎᖏᒥᐊᖃᕐᐸᖏᓐᓂᑦ

Content of the Draft Management Plans for the Qaqsauqtuuq and Ikkattuaq Migratory Bird Sanctuaries

ᐃᓗᓕᓐᖏᑦ ᐊᐅᓪᓚᑎᑦᑎᐸᒋᑎᖅᑲᐃᑦ ᓯᖏᐅᑎᒃ
Content of the Management Plans

- ᐅᓂᖅᑲᑦᑎᐊᖅᑐᑦ ᑎᖏᒥᐊᖅᖏᓐᓇᑦ ᖃᓄᐃᓕᓐᖑᓂᖏᓪᓂᖅ
- ᐊᓭᑎᖑᓂ ᓄᓇᒥᐅᑕᐃᓕᓴᐅ ᐅᒪᔪᐃᓕᓴᐅ ᐱᑕᖅᖏᓂᖏᓪᓂᖅ ᑕᒪᓂ
- ᐱᐅᔪᑐᖅᖅᑎᒍᑦ ᐊᓭᑎᒥᐅᑕᖏᓐᖏᑦ ᔪᓇᑕᖅᖏᓂᖏᓪᓕᓴᐅ
- ᑕᐅᑐᒪᓱᐅᔪᑦ, ᑐᖃᓱᓱᐅᔪᑦ ᐊᓚᒪᓗ ᐱᓕᓱᐊᓂᔪᒪᓂᐊᖅᑐᑦ
- ᐊᐅᓪᓚᑎᓂᕐᒧᑦ ᐃᓕᒪᖏᖅᔪᐅᑭᑎᖏᑦᑲᐃᑦ - ᔪᓇᑐᐃᓵᖏᑲᐃᑦ ᐃᓕᒪᖏᖅᔪᐅᑭᑕᐅᓂᖏᓪᑎᑦ ᐊᐅᓪᓚᑎᓂᕐᒧᑦ ᑎᖏᒥᐊᖅᖏᓐᓄᓂᓂ

- Description of the Migratory Bird Sanctuaries
- Ecological resources
- Cultural resources
- Vision, goals and objectives
- Management Considerations – things to consider in managing the Migratory Bird Sanctuaries





ᐱᓪᓕᐅᓴᖅ **Black Guillemot**



ᐃᓗᓕᓐᖏᑦ ᐊᐅᓪᓚᑎᐱᑎᖅᓴᐃᑦ ᐸᖕᓇᐅᑎᓂᑦ
Content of the Management Plans

- ᐊᐅᓪᓚᑎᓂᖕᒪᑦ ᖃᓄᐃᓕᓐᖓᓂᐊᖕᓂᖏᑦ - ᖃᓄᐃᓕᓐᐅᖕᓂᐊᖕᒪᖓᑕ ᑎᑭᐅᑎᕐᒪᓂᖕᒪᑦ ᑐᖓᒪᓗᐅᔪᓄᑦ ᐊᓱᒪᓗ ᐱᓕᕆᐊᖅᐊᓂᔪᒪᓂᐊᖅᑐᑐᓄᑦ
- ᐊᖏᕈᑕᐅᓯᒪᔪᑦ ᐱᓕᕆᐊᖅᔨᓇᖕᓂᖅ ᑎᑭᓯᒪᖕᓇᐅᔪᖏᓐᓄᑦ ᐱᔨᓇᐅᑎᖃᕆᐊᖅᑐᑦ ᐊᓱᒪᓗ ᑭᓇᐅᔭᖓᑦ ᐱᔨᓇᐅᑎᖃᕆᐊᖅᖢᓂᖅᑐᑦ
- ᓄᓇᐃᑦ ᖃᓄᐃᓕᓐᖓᔪᒥᒃ ᑎᒃᓯᐊᖅᑕᐅᓯᒪᓂᖏᑦ: ᐃᔨᓇᐅᔪᖅ ᑎᓪᒥᐊᖅᖃᕐᖢᐅᑎᑕᐅᔪᖅ
- ᐊᐅᓪᓚᑎᐱᑎᖅᓴᐃᑦ ᐸᖕᓇᐅᑎᓂᑦ ᐊᑐᓪᖅᑎᑦᑕᐅᓂᖏᑦ ᐊᓱᒪᓗ ᐱᓕᕆᐊᖅᑐᑐᓂᖏᑦ

- Management Approaches – what we will do to achieve the goals and objectives
- Authorized Activities and Access – what activities require a permit, who requires a permit
- Site designation: currently a Migratory Bird Sanctuary
- Management Plan implementation and collaboration







ᖃᓄᖅ ᐱᓂᓪᓕᐊᒋᐊᓕᓚᐅᖅᓯᒪᓐᒪᓐᓂᑦ
Historical Background





ᖃᓄᐃᓕᐅᖅ 1959-ᓴᑎᓪᓗᒍ ᓴᓇᓂᐊᖅᑕᐅᓇᓯᑎᒃ ᖃᓴᐃᐃᑦ, ᓂᕆᓪᓇᐃᓪᓗ

“ᖃᓄᐃᓕᐅᖅ” - ᖃᓄᐃᓕᐅᖅᑐᓪᓗᒍᒃ ᑕᓯᕋᐊᖅ ᑕᒪᓂ

ᑎᑎᕋᖅᑕᐅᓭᓪᓗᐊᓂᖅᑎᑦ ᓯᓚ ᐊᐅᓪᓚᑦᑎᓗᒃᓴᐃᑦ ᐸᕋᐅᓕᖅᑎᑦ

- Established in 1959 to protect Snow Geese and Brant from disturbance
- “Kouksauktow” – Bay of red-throated loons
- Draft management plan in 1986



ᖃᓄᐃᓕᐅᖅ Red-throated loon

ᖃᓄᖅ ᖃᐅᔨ
Snow goose

ᐃᒃᑲᑦᑐᐊᖅᑎ ᑎᓪᓗᐊᖃᕐᓇᒃ
Ikkattuaq

- ᐱᓪᓕᖅᑎᑕᐅᓚᐅᖅᓯᒪᔪᖅ 1959-ᓴᑎᓪᓗᒍ
  ᓴᐅᓂᐊᖅᑕᐅᓇᓯᓚᑎᒃ ᒃᓴᐃᐃᑦ, ᖃᐅᔨᑦ, ᓂᕆᓪᓇᐃᓪᓗ
- ᐄᐃᐅᓕ ᑭᐱᓪᓴ ᐅᓇᐃᓪᓄᒃ
- ᑎᑎᕋᖅᑕᐅᓭᓪᓗᐊᓂᖅᑎᑦ ᓯᓚ ᐊᐅᓚᑦᑎᓗᒃᓴᐃᑦ ᐸᕋᐅᓕᖅᑎᑦ

- Established in 1959 to protect “Blue” Goose, Snow Goose and Brant from disturbance
- Harry Gibbons Unainnuk (c. 1900-1954)
- Draft management plan in 1986

ᓄᓇᖅᑐᑦ ᑕᐅᓂᓂᒃ ᖃᓄᐃᓕᓐᖅᓯᓂᖅᑐᑦ
Landscape





ᐃᑲᑦᑐᐊᖅᑎ ᑎᖅᑎᐊᖃᖅᖁᓕᑲ
Ikkattuaq

- ᐊᖏᕐᓂᓕᑲ 1,433-ᓂᑲ ᓴᓂᒧᑦ ᑐᑭᒧᑉᓗ ᑭᐸᑦᓴᓐᖅᑐᑎᑲ ᑕᒪᐃᓐᓂ ᑭᓯᒥᑕᓕᖅᓂᑲ, ᐊᓚᒪᓗ 190 ᓴᓂᒧᑦ, ᑐᑭᒧᑉᓗ ᑕᒪᐃᓐᓂᑲ ᑭᓯᒥᑕᓂᑲ ᑕᓗᐅᖏᒥ ᐃᒪᐃᑦ
- ᐳᐊᓴᐅᐸ-Boas ᑯᖏᓚ ᓄᓇᐅᐸ ᐃᓗᑐᓂᖏᓐᓄᑦᑐᖅ ᐊᓚᒪᓗ ᐊᑭᐊᓄᓴᓭᑎᑲ ᑎᓂᖏᓂᐊᓗᓄᖅᑐᑦ ᓭᓴᒥ ᑕᐅᓂᓐᓂᐸ ᐃᑲᑦᑐᐊᐸ ᑕᓗᐅᖏᓐ
- ᓄᓇᖏᓚ ᖃᖃᓴᖃᖏᓕᑦᑐᖅ (ᑕᒫᓂ <60m ᑭᑕᒥᑲ ᐊᖏᕐᓂᖏᒥ) ᐃᒪᐃᓴᖅᖁᖃᑦᑎᐊᖏᕐᑐᐊᓗᓇᓗᓂᓗ

- 1,433 km^2, includes 190 km^2 of marine waters
- Boas River delta and the adjacent tidal flats in the Bay of God’s Mercy
- Land is flat (<60m) & poorly drained

ᖃᖅᖁᓴᐅᖅᑐᖅᑎ ᑎᖅᑎᐊᖃᖅᖁᓕᐅᓂᖏᓐᓄᑦ
Qaqsauqtuuq

- ᐊᖏᕐᓂᓕᑲ 1,124-ᓂᑲ ᓴᓂᒧᑦ ᑐᑭᒧᑉᓗ ᑭᐸᑦᓴᓐᖅᑐᑎᑲ ᑕᒪᐃᓐᓂ ᑭᓯᒥᑕᓕᖅᑎᑲ, ᐃᓕᖃᖅᓯᓂᓗ 286-ᓂᑲ ᑭᐸᑦᓴᓐᓂ ᑕᒪᐃᓐᓂᑲ ᑕᓗᐅᖏᒥ ᐃᒪᖁᓂᑲ
- ᖃᖅᖁᓴᐅᖅᑐᖅᑎ, ᑕᑭᓂᖃᖅᑎᑎᕐᒥᑲ 50-km ᑭᓯᒥᑕᓕᖅᑎᑲ ᑲᖏᕐᓄᖃᖅᖁᖃᖅᓄᖅ
- ᓄᓇᖏᓚ ᖃᖃᓴᖃᖏᓕᑦᑐᖅ (ᑕᒫᓂ <120m ᑭᑕᒥᑲ ᐊᖏᕐᓂᓕᑲ) ᐃᒪᐃᓴᖅᖁᖃᑦᑎᐊᖏᕐᓄᐊᓗᓇᓗᓂᓗ

- 1,124 km^2, includes 286 km^2 of marine waters
- East Bay, a 50-km-long inlet
- Land is flat (<120m) & poorly drained



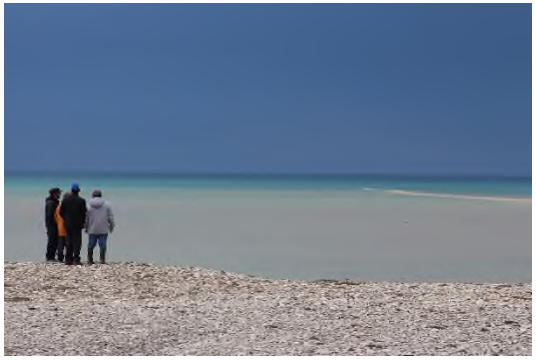
ᓄᓇᖅᑐᑦ ᑕᐅᔭᓂᒃᑯᓂᖅ
Landscape

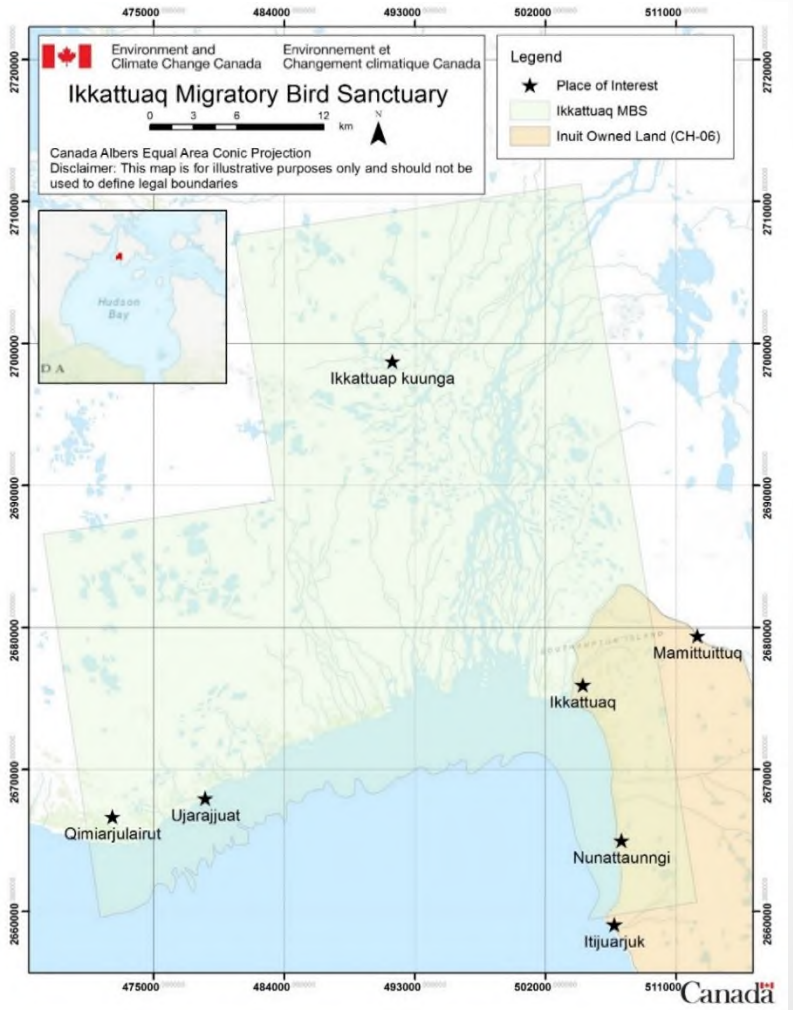




ᐃᖃᓪᓗᐊᖅᑎ ᑎᖅᑎᐊᖅᑐᖃᖅ
Ikkattuaq

- ᑕᒪᕆᒃᓴᒃ ᑕᒪᓐᓇ ᓄᓇ ᑲᓇᑕᐅᔨᑦ ᓴᓇᒪᓐᓂᒃᑯᐊᓂᖅ ᓄᓇᕐᔪᑎᑎᕆᔨᓐᓂ
- ᐊᑕᐅᓯᖅ ᑭᓪᓚᐸᓐᓂᕐᒥᖅ ᐃᓄᖅᓄᑦ ᓄᓇᕐᔪᑎᑎᕆᐅᓯᖅ
    - ᓄᓇᐅᔨᑦ ᖃᖅᓴᓂᑕᓂᕐᓄᑦ ᐱᓯᓇᐅᑎᖃᖅᑐᐊᓯᖅ
- Mostly federal crown land
- 1 parcel of Inuit Owned Land
    - Surface rights





ᓄᓇᖅᑐᑦ ᑕᐅᔭᓂ ᖃᓄᐃᓕᖅᑎᑦ

Landscape






ᖃᖅᓴᐅᔪᒃ ᑎᖅᑕᐊᖃᖅᓯᐅᓂᖅᓯᓂ

Qaqsauqtuuq

- ᑕᒪᖁᑲᓴᐃᑦ ᓄᓇᖅᑦ ᑕᒫᓂ ᐃᓄᖅᓄᑦ ᓄᓇᕐᒪᑎᖅᑲᐅᔪᑦ
  - ᓄᓇᐅᔨ ᖃᖅᓱᓂᑐᑐᓂᒃ ᐱᓵᓇᐅᑎᖃᕐᓯᐅᔪᖅ
- ᑕᕆᐅᖁᒥ ᐃᒪᐃᑦ ᐊᓚᓗ ᖁᑭᖅᑕᑯᓗᒃ - ᑲᓇᑕᐅᔨ ᒪᓪᒪᖅᓵᓄᑦ ᓄᓇᒥ
- Mostly Inuit Owned Land
  - Surface rights
- Marine waters and Qikiqtakuluk - federal



ᐊᐢᑎᖏᓂ ᓄᓇᒥᐅᑕᐃᓪᓗ ᐅᒪᔨᐃᓪᓗ ᐱᑕᖅᖃᑐᑦ ᑕᒪᓂ
Ecological Resources

ᐃᒃᑲᑦᑐᐊᖅᒥ ᑎᖏᒥᐊᖅᓴᒃ
Ikkattuaq

- ᓄᓕᐊᖏᐅᓴᖏᓂᖓ ᑕᒪᓂ ᑲᓇᑕᓕᒫᒥ ᐱᓪᒪᓚᐅᓂᖅᑐᖅ ᐱᑕᖅᐃᓕᓇᕐᓇᖏᓐᓂᓕᓂᖅᐳᑦ (5% ᐳᕆᓕᑎᒋᑐᑦ) ᓂᖏᓕᓇᐃᓪᓗ (1% ᐳᕆᓕᑎᒋᑐᑦ)
- ᐱᓪᒪᓚᐊᓗᔭᖅ ᑎᑭᓯᒪᑲᐃᓇᖏᖅᑕᑦᑕᖏᓂᓕᖏᑦ ᐊᓯᖏᓕᓄᑦᓂᐊᓂᖏᓕ ᓯᖁᖅᐸᓯᐅᓂᖏᑦᑎᓯᔪᓯᑦ ᑎᖏᒥᐊᑦ
- ᐅᖓᑕᓂᒋᒥᔪᑦ >50 ᐊᐠᔨᑦᖏᑦᑐᑎᑦ ᑎᖏᒥᐊᑖᕆᐊჲᑦ ᑕᒪᓂᓯᖓᖏᒥᔪᑦ
- ᖃᓄᐅᔪᑦ 13 ᐅᒪᔨᐃᑦ ᐊᒥᓯᖏᓗᔭᐊᓕᖏᓂᖏᑦ

- Breeding habitat for nationally significant populations of Snow Geese (5%) and Brant (1%)
- Important stopover site in fall for shorebirds
- >50 species of birds
- 13 species at risk



ᓂᖏᓕᓇᐃᑦ **Brant**



ᖃᖏᒍ **Snow Goose**

ᐊᐢᑎᖏᓂ ᓄᓇᒥᐅᑕᐃᓪᓗ ᐅᒪᔨᐃᓪᓗ ᐱᑕᖅᖃᖅᑐᑦ ᑕᒪᓂ
Ecological Resources

ᐃᒃᑲᑐᐊᖅᒥ ᑎᖏᒥᐊᖅᖃᕐᓂᖅ
Ikkattuaq

- 19-ᖏᔪᑦ ᐊᓴᒋᖏᑐᑐᑎᑦ ᐊᒪᒪᒃᑎᑦᑎᐸᒃᑐᑦ ᐱᐊᕆᖏᑦᓂᒃ ᓄᓇᒥᐅᑕᐃᑦ ᐅᒪᔨᐃᑦ ᑕᒪᓐᓇᑦ
- ᓇᓄᖅᓯᖅ ᐊᐅᓴᒃᑯᑦ ᐊᓚᒪᓗ ᑕᒪᓂ ᐃᒡᓗᖅᓴᐅᓯᖏᓪᓗᑎᒃ ᓇᓄᕐᓄᑦ
- ᓇᓪᓴᖅᑐᖅᖏᑦᑐᕈᐅᑕᓄᑦ ᑐᒃᑐᖅᕆᖅᓴᐅᐸᒃᑐᖅ, ᐃᓕᖏᑦᓗ ᓄᕐᕆᕆᐅᖅᑕᑦᑕᖅᓯᒪᔪᓗᑎᒃ
- ᓇᑦᓯᖅᑕᖅᖅᑐᖅ ᐊᓚᒪᓗ ᐊᕐᕆᒃᑕᖅᖅᑐᖅ

- 19 species of mammals
- Polar bear summer and denning habitat
- Barren-ground caribou summer range, portions used as calving grounds in the past
- Seals and Bowhead whale



ᓇᓄᖅ **Polar Bear**



ᑐᕐᑐ **Caribou**

ᐊᐢᑎᖏᓂ ᓄᓇᒥᐅᑕᐃᓪᓗ ᐅᒪᔨᐃᓪᓗ ᐱᑕᖅᑐᖅᑐᑦ ᑕᒪᓂ
Ecological Resources

ᖃᖅᓴᐅᖅᑐᑎᒥ ᑎᖏᒥᐊᖅᖁᕕᐅᓂᖏᓂ
Qaqsauqtuuq

- ᓄᓕᐊᖁᕕᐅᔪᖅᑐᖅ ᐱᓕᓚᐅᕕᔾᒥᒃ ᑲᓇᑕᒥ ᐊᒥᓱᓄᓕ ᑲᖏᖅᓄᓕ (2% ᐳᓴᓂᑎᖏᓂᑕᓄᓕ), ᒥᑎᖁᓄᓕ (5% ᐳᓴᓂᑎᓄᓕ) ᓂᖁᓕᖁᖁᓄᓪᓗ (1% ᐳᓴᓂᑎᑦᑕᓐᓄᓕ)
- ᑲᓇᑕᐅᐸ ᐅᑭᐅᖅᑕᖅᑐᑐᓂᓗᒃᑮᖏᓂ ᐊᖏᕐᓭᖏᖅᖁᖅ ᒥᑎᖅᑕᖃᖁᕕᐅᔪᓐᓂᖅ
- ᐅᖏᓪᓕᓂᒃᓕᕆᔨᓕᑦ >90 ᐊᐢᔨᑲᖏᑦᑐᑎᑲᑦ ᑎᖏᐊᓚᐱᐅᑦ ᑕᒪᓂᓕᒃᓴᖏᖅᓕᕆᔨᓕᑦ
- Breeding habitat for nationally significant populations of Snow Geese (2%), Common Eider (5%) and Brant (1%)
- Arctic Canada’s largest single colony of Common Eiders
- >90 species of birds



ᒥᑎᐹᖅ Common Eider



ᓴᐅᖁᖅ Red Phalarope

ᐊᐢᑎᖏᓂ ᓄᓇᒥᐅᑕᐃᓪᓗ ᐅᒪᔨᐃᓪᓗ ᐱᑕᖅᖃᖅᑐᑦ ᑕᒪᓂ
Ecological Resources

ᖃᖅᖁᐅᖅᑐᖅᒥ ᑎᖏᒥᐊᖅᖁᐅᓂᖏᓂ
Qaqsauqtuuq

- ᖁᓕᐅᔨᑦ 22 ᐅᒪᔨᐃᑦ ᐊᒥᓱᖏᓪᓗᐊᓕᖁᓂᖏᑦ
- ᓄᓇᖁᓇᑦ ᐃᒡᓗᖅᖁᐅᓴᐅᑐᑦ (ᔪᑎᖅᖁᐅᓴᐅᑐᑦ) ᐊᐅᔪᓄᑦᓗ ᓂᖏᔪᖅᔪᐅᖁᐅᓴᐅᑐᖅ ᓄᓇᖁᓇᑦ
- ᓄᓪᓚᐃᐅᓴᐅᑐᑎᒥᐅᑕᓄᑦ ᑐᑲᑐᖅᖁᐅᓴᐅᑐᖅ, ᓄᖁᓗᐃᐅᓴᓄᓗ, ᓄᔨᖅᑕᐅᓴᐅᑐᖁᓗ ᐊᐅᔪᐅᓂᖏᓂ
- ᖁᓇᓗᒃᑖᓄᑦ ᐅᖃᓕᖅᑲᖅᔪᒪᔪᑦ (ᐃᕆᓪᓂᖁᓂ), ᐊᒥᔪᖅᑕᖅᔪᑎᒃᓗ, ᓂᖏᔪᖅᔪᐅᖁᐅᓴᐅᔪᓂᓗ ᑕᒪᑲᔪᓇᖏᒃ
- ᐊᐃᐃᖅᑕᓕᑲ ᐊᐅᔪᑲᔪᑦ ᑕᒪᐢᓇ

- 22 species at risk
- Polar bear denning and summer foraging habitat
- Barren-ground caribou calving and summer range
- Beluga calving, molting and foraging habitat
- Walrus summer foraging habitat



ᐊᐃᐃᖅ Walrus



ᖃᓪᓚᖅ Beluga

ᐊᐢᕈᑎᖏᓂ ᓄᓇᒥᐅᑕᐃᓪᓗ ᐅᒪᔨᐃᓪᓗ ᐱᑕᖃᖅᑐᑦ ᑕᒫᓂ
Cultural Resources



ᐃᓄᐃᑦ ᓴᓪᓕᐅᕐᓂ ᖃᐅᖅᑕᒪᓗᐊᖏᖅᑕᑦᑕᕐᓂᑯᓕᖅᓴᓂ ᑕᐅᓴᓴᒪᓕᕆᐅᓕᖅᑐᓂ ᐊᕐᕿᒍᓂ

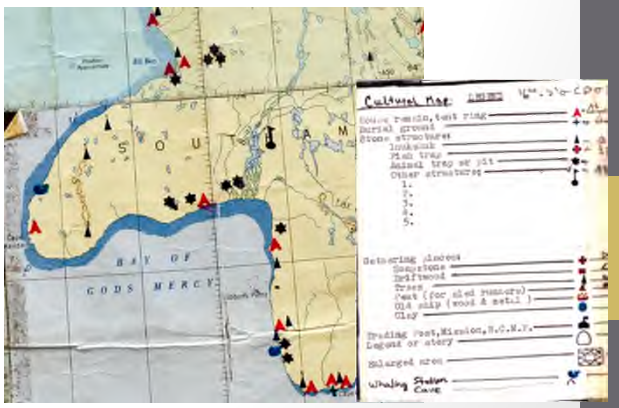
- ᐊᒥᓱᒪᒪᓕᕆᐅᕐᓂᒃ ᖃᐅᔨᒪᓴᐅᔨᕐᑎᑦ ᑕᐃᔾᓱᒪᓂᓂᑕᖃᕐᓂᐊᕐᓂᖅ, ᐃᓄᖃᕐᓂᐊᕐᓚᐅᕐᓂᖏᓐᓂᕐᓂᖅ, ᐃᓕᓴᕐᓯᑐᖃᕐᓂᖅᓴ ᓇᓗᓇᐃᑯᑕᐃᑦ ᐱᑕᖃᖅᑐᑦ ᐊᑐᓗ ᐱᓴᓯᑎᐃᓂᖃᕐᓂᐊᕐᓂᖅᓱᓂ ᑕᐅᕐᓂᓐᓇ ᓄᓇᖓ

- ᑕᐃᔾᓱᒪᓂᓂᑕᐃᑦ ᖃᖓᓂᓂᑕᐃᑦ ᒥᑭᓂᑕᐃᑦ ᑎᑭᑎᐊᖃᕐᓂᐊᕐᓚᐅᕐᖅᑐᑦ ᑕᐅᕐᓂᓄᓐ



Inuit have lived on Southampton Island for thousands of years

- Numerous known archaeological sites, cultural features & artifacts in the area
- Historic trap lines



ᐊᐢᓂᑎᓂᓄ ᓄᓇᒥᐅᑕᐃᓪᓗ ᐅᒪᔨᐃᓪᓗ ᐱᑕᖅᑲᖅᑐᑦ ᑕᒪᓄ Cultural Resources



- ᐊᒥᔨᐊᓗᐃᑦ ᔨᓕ ᐃᓄᖅᕿᐅᓂᒪᐅᖅᑐᖅᑐᒃᓗᐃᑦ ᔨᓕ ᑎᑎᕿᑕᐅᔨᒪᖏᑦᑐᑦ
- ᐊᑕᐅᔨᕿᒃ 1 ᑎᑎᕿᑕᐅᔨᒪᓕᖅᑐᖅ ᒪᓕᒐᖅᑎᒍᑦ ᓄᓇᖏ ᑕᐅᓂᓄ ᖃᐹᖅᑕᑯᓗᒃ
- ᒪᕆᐣ 2 ᑎᑎᕿᑕᐅᔨᒪᓕᖅᑐᖅ ᒪᓕᒐᖅᑎᒍᑦ ᓄᓇᕗᑦ ᖁᓂᒃᑯᖏᓐᓂᑦ ᐃᓕᔨᐊᕆᔨᒃᑯᑦ

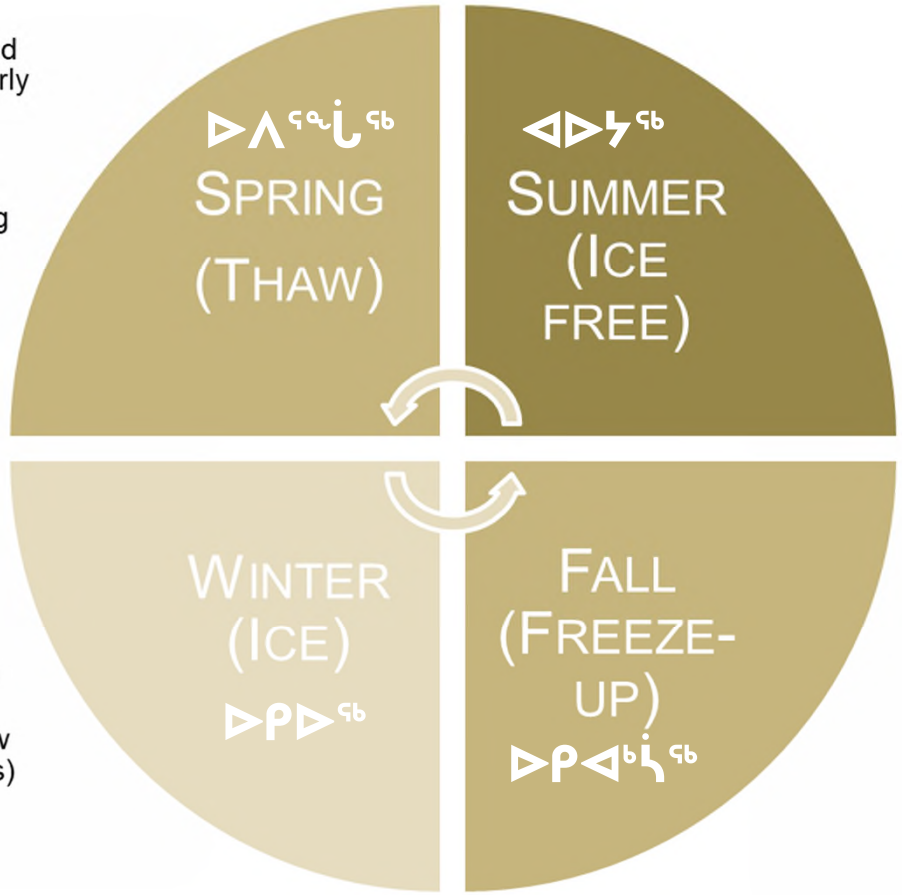
- Many archaeological sites remain unregistered
- 1 registered site on Qikiqtakuluk
- 2 registered sites near Itijuarjuk





ᑕᐃᔨᓯᒪᓂᑐᓄᖅᑎᒃ ᐃᓐᓇᒧᑦᓗ ᐃᓄᖅᓄᑦ ᓄᓇᖅᑎᑦ ᐊᑐᖅᑕᐅᖅᑕᕐᑐᖅᑐᑦ ᐃᓅᔨᐸᑎᖅᓴᓄᐅᓕᖅᓂᕐᒧᑦ

Past and current subsistence land uses



- Goose hunting and egg collection (early spring)
- Seal and walrus hunting
- Polar bear hunting
- Char fishing from lakes and rivers
- Fox trapping

- Camping
- Char fishing continued (using nets)
- Summer fishing camps were set-up at mouth of the rivers
- Seal, caribou and geese were traditionally hunted from canoes along the shoreline
- Sea mammal hunting from boats
- Collecting berries

- Fox trapping
- Caribou until the 1950s
- Fishing nets set under ice to catch char
- Hunting at the flow edge (seal, walrus)

- Securing meat for winter by hunting walrus, caribou, polar bear, and beluga whales
- Fishing with nets under new ice
- Meat caching
- Fox trapping

ᑕᐃᓴᓯᓂᑐᖅᓯᒪᖅ ᐃᓐᓇᒧᑦᓗ ᐃᓄᖅᓄᑦ ᓄᓇᖅᑎᑦ ᐊᑐᖅᑕᐅᖅᑕᕐᑐᖅᑐᑦ ᐃᓅᔨᐸᑎᖅᓴᓂᐅᕙᖅᓂᕆᒧᑦ

Past and current subsistence land uses

ᐅᓪᓗᒥᐅᓕᖅᑐᖅ, ᐊᑐᖅᑕᐅᕙᒃᑐᖅ ᓯᓚ ᐊᐅᓪᓚᐸᖅᓯᒪᓂᖅᓴᓂᐅᕙᖅᓂᕆᒧᑦ ᐊᖅᑐᓯᒪᔪᓴᖅᐱᐅᕙᖅᓂᕆᒧᑦᓗ ᐃᓚᓂᑯᓂᖅ ᖃᐅᑎᑯᓂᖅ

- ᐊᖅᓯᓇᓯᖅᑏᑦ ᖃᑐᐸᖅᑎᑎᒋᖅᓂᑦ ᐃᒡᓗᓕᕆᓚᖅᑐᑦ ᑕᐅᕙᓂ ᐃᖅᑦᑐᐊᒥᒃ ᐊᑐᖅᑕᐅᖅᑕᕐᑐᖅᑐᑦ ᐊᖅᓯᓇᓯᖅᑐᓄᓕᓂ, ᐱᓗᐊᖅᑐᒥᖅ ᓇᓂᐊᖅᓯᒪᔪᓄᓕᓂ



Today, used for camping & harvesting activities periodically

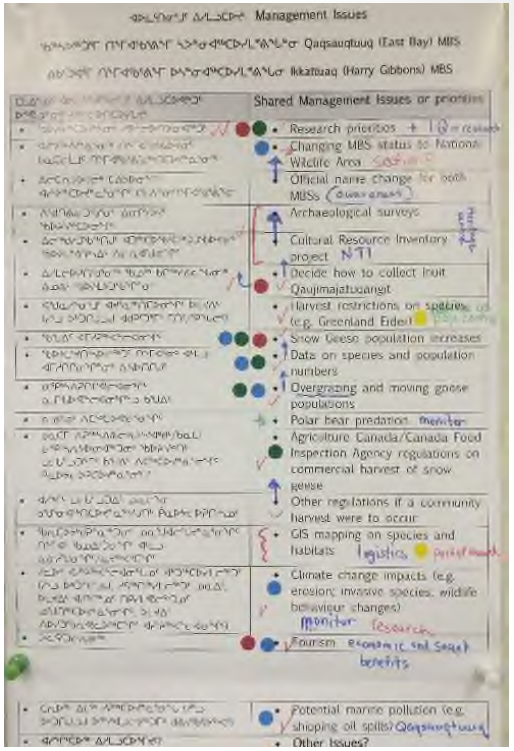
- HTO cabin located in Ikkattuaq used to support harvesting activities, in particular polar bear hunting

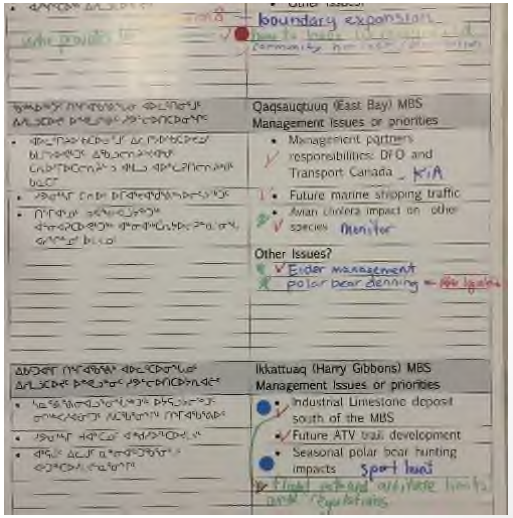


ᐊᐅᓪᓚᓂᖅ ᐃᓱᒪᖏᖅᓯᐅᑭᑎᖏᓚᐃᓪ
Management Considerations

ᐊᐅᓪᓚᓂᖅ ᐃᓱᒪᖏᖅᓯᐅᑭᑎᖏᓚᐃᓪ
ᐱᔨᔾᑎᖅᖅᓴᓪ ᑕᐃᒃᑯᓂᖓ
ᖃᐅᔨᒪᔨᐅᔨᓗᐊᖅᖅᑐᓂᒃ ᐃᓗᐊᓂ
ᐊᓚᓗ ᐊᕐᓗᓐᓯᓂᑐᓂᒃ,
ᓴᓴᓂᐊᖅᑕᐅᓱᒪᓂᓯᓂᓂ ᓄᓇᐃᓪ
ᐋᖏᐅᒪᓪᑎᐊᖅᑐᒥᒃ
ᐊᐅᓪᑕᐅᔨᓂᓕᖅᓯᐊᖏᒪᑕ

Management considerations are things we need to be aware of within, and surrounding, the protected area in order to effectively manage it





ᐊᐅᓪᓗᓂᔭᕐᓗᑎ ᐃᓕᓴᖅᓯᐅᑕᑎᓴᐃᑦ Management Considerations

ᐱᑕᖅᖃᑐᖅᓯᓪᓗᒍ ᐱᒻᒪᓚᐅᔨᓂᖅ ᐄᓐᓇᕆᐅᑎᑭᓕᓐᓂᒃ ᐅᓗᓚᐊᓇᑕᐅᔨᓂᖅ, ᑭᓯᐊᓂᓕᑕᐅᖅ:

1. ᑎᓪᓗᐊᖅᖃᕐᐅᓂᓪᓗᑎᑦ ᐃᓕᑕᑦᓴᐅᓂᓪᓚᑦ ᑎᒃᓯᐊᖅᑕᐅᓯᒪᓂᖅ
    - ᓴᐳᓐᓂᐊᖅᑕᐅᓯᒪᑦᑎᐊᒃᑲᓂᓚᐊᖅᖃᖅᑐᖅ
    - ᑎᓪᓗᐊᕐᓂᓐᓇᐅᔨᓐᓂᖅᑐᖅ
2. ᑲᔪᐃᑦ ᐊᒥᓯᓂᑦ ᐊᒻᒪᓗ ᓄᓇᒋᖅᑕᑦᓂᓂᓪᓚᑦ
    - ᐊᒥᓯᓗᐊᓕᖅᑐᑦ
    - ᐅᒪᔨᕐᓂᒃ ᐊᓯᖏᓐᓂᒃ ᐊᒃᑐᖅᓯᓀᓕᓕᐊᖏᒪᑕ ᐱᔭᕇᑕᐅᓗᑎᒃ ᓇᒻᒪᖏᑦᑐᒥᒃ

No significant or immediate threats, but:

1. MBS designation
    - need better protection
    - not just birds
2. Light geese population and habitat
    - too many
    - impact on other species



ᑐᑦᑐ Caribou





ᖃᓕᓗᒃ Beluga





ᑲᖏᒍ ᖃᐅᔨᖅ Snow goose

ᐊᐅᓪᓕᓂᐅᓐᓴᑦ ᐃᓱᒪᖏᖅᓯᐅᑕᑎᖏᓚᐃᓪᑦ
Management Considerations

3. ᓯᓚᐅᐟ ᐊᓯᔨᖅᐸᑦᓪᓕᐊᓂᖅ
   - ᐊᖏᑐᖅᑕᐅᓴᑦᓪᓕᐊᓴᑦ ᐅᐠᔨᕐᓇᖅᓯᖅᓯᒪᓕᑕ
   - ᐊᐅᓪᓕᓂᐅᓂᖅᖃᕐᑎᑦᑕᓄᑦ
4. ᓄᓇᓗᑦ ᐃᓄᐃᑦ ᐃᓪᓕᐅᕆᓪᓚᐊᖅᖅᑐᑦ ᐊᓖᒪᓗ ᖃᐅᔨᒪᕆᓪᓚᐊᖅᖅᓯᑎᖏ
   - ᖃᐅᔨᔨᖅᑕᐅᔪᓂᖅ
   - ᐃᓪᓕᑎᕐᐅᕆᓪᓚᐊᖅᖃᕐᓂᕐᓂᖏ ᐊᑐᖅᑕᐅᓗᑎᖏ ᐃᓄᐃᑦ ᖃᐅᔨᒪᔨᑐᖅᖃᕐᑐᓂ ᓄᓇᓕᕐᓂ ᐃᑲᔪᕐᓂᖅᓂᕐᓂᐊᖏᓪᓕᑕ

3. Climate Change
   - effects are noticed
   - out of our control
4. Community participation and awareness
   - research
   - inclusion of Inuit Qaujimajatuqangit
   - local benefits







ᐊᐅᓪᓗᓂᔭᕐᒪᑦ ᐃᓕᒪᖏᖅᓯᐅᑕᑎᖏᖅᓱᐃᓪᓗᑦ
Management Considerations

5. ᑭᓇᐯᓐᓄᑐᐃᓐᓇᖅ ᐱᓕᕆᐊᖓᔪᓐᓕᐊᔪᑦ
   - ᐅᒥᐊᕐᔪᐊᖏᖅᖢᓕᓕᐊᓕᕐᓂᖅ
   - ᐊᒥᓯᑭᖅᖢᓕᓕᐊᓂᖓᑦ ᑎᑭᑦᖢᓕᓕᖅᑐᑦ
   - ᐊᑭᓴᑎᑦᑎᔪᓂᖅ ᐊᖓᔪᓇᓯᖓᐊᑭᐅᔨᔪᓐᓂᕐᒪᑦ
6. ᖃᐅᔨᒪᔭᐅᔭᕆᐊᓕᑦ ᐱᑕᖃᖓᓐᓂᖓᑦ
   - ᐱᐅᓯᑐᖃᕐᒥᔪᑦ ᐊᔪᑎᖓᓄᓂ ᓄᓇᒥᐅᑕᐃᓕᓐᓗ ᐅᒪᔨᐃᓕᓐᓗ ᐱᑕᖃᕐᓂᖓᑦ, ᐱᓗᐊᖅᑐᒥᐅ ᐃᓄᖃᕐᓇᐅᔪᓕᒪᐅᕐᓂᖓᓂᓂᑲ ᖃᐅᒪᔨᑐᖃᐃᓐ
   - ᑕᕆᐅᒥᐅᑕᓂᑲ ᐅᒪᔨᖓᑦ, ᐃᖃᓗᓕᕆᐃᓕᓐᓗ ᐊᕐᔪᑎᖓᑦᑐᑦ

5. Human Activities
   - shipping
   - increased access
   - sport hunting
6. Information missing
   - Cultural resources, especially archaeology
   - marine habitat, fish







ᐊᐅᓪᓗᓂᔭᕐᓗᑦ ᐃᓱᒪᖏᖅᓯᐅᑕᑎᖏᓚᐃᓪᓗᑦ (ᖃᖅᖏᖏᖅᑐᕐᕆᓂᖅ) Management Considerations (*Qaqsauqtuuq only*)



ᐅᓪᓚᐊᓇᑕᐅᓂᖅᐳᑦ ᒥᑎᕕᖅᖏᓚᐊᓄᑦ ᖃᐅᖅᑕᓯᔪᓐᓇᖅ

- ᓄᓂᔪᖏᕐᓂᕐᒥᒃ ᑎᖅᒥᐊᕐᓄᑦ ᐊᓂᓂᐊᖅᑕᓚᖏᐅᓂᒃᑐᑦ
- ᓇᓄᐃᑦ

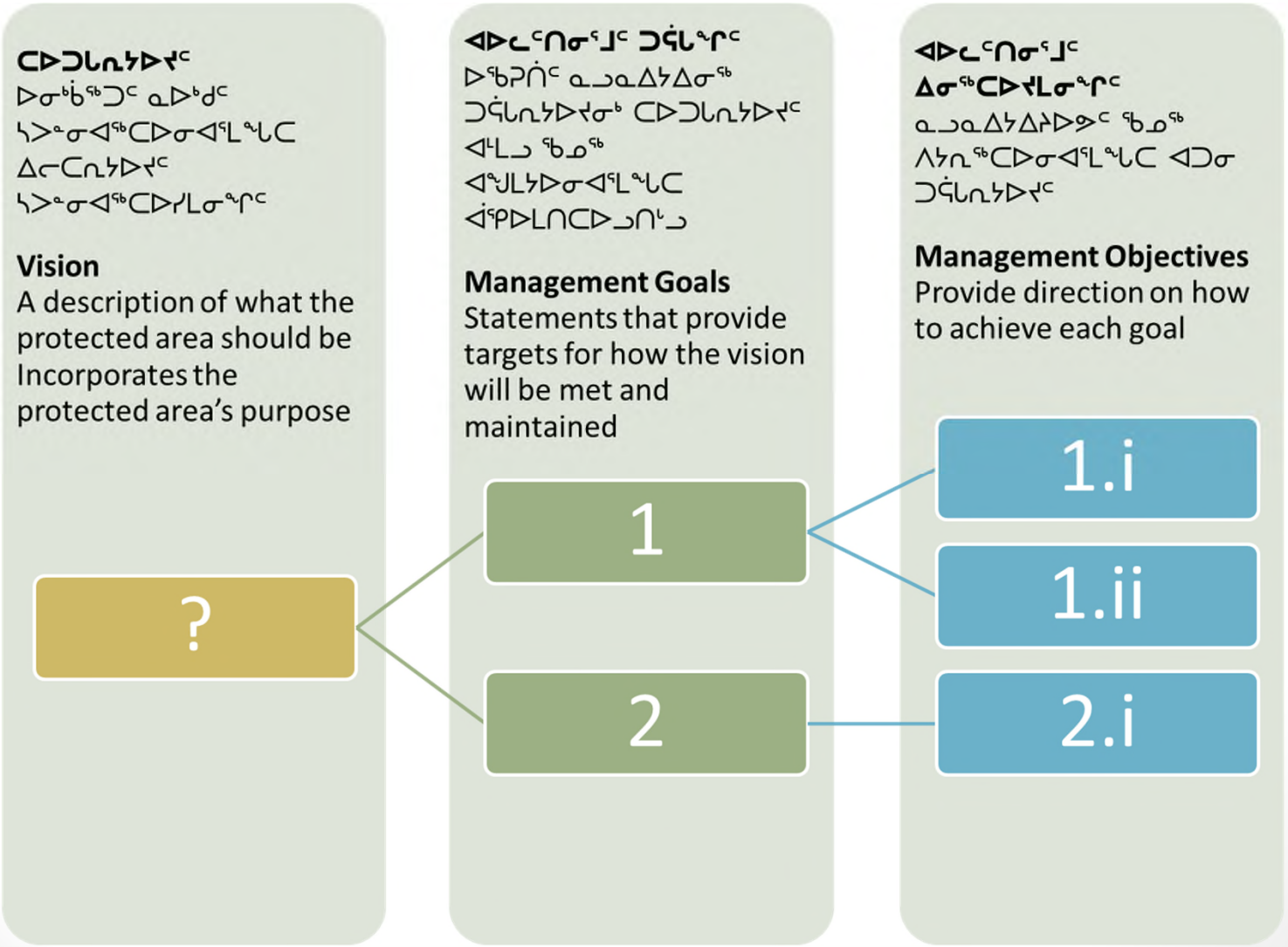
Threats to eider colony at Qikiqtakuluk

- Avian cholera
- Polar bear

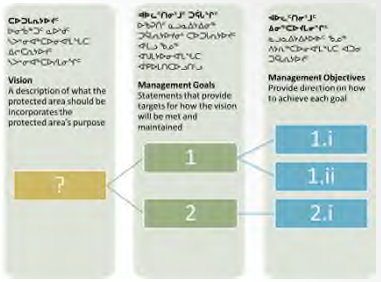


ᓇᓄᖅ **Polar Bear**

ᑕᐅᑐᒪᓗᓴᐅᔪᑦ, ᑐᕐᒪᓗᓴᐅᔪᑦ, ᐃᓂᖏᑕᐅᔪᒪᔪᓪᓚ
Vision, Goals, and Objectives



ᑕᐅᑐᓗᐅᔪᖅ ᑎᓐᒥᐊᖅᑲᐃᓐᓇᓂ ᓴᓂᓂᐊᖅᑕᐅᔪᓚᐃᓐᓇᓂ
Vision for the MBSs



“ᑎᓐᒥᐊᖅᑲᓕᑦ ᓴᓂᓂᐊᖅᑕᐅᔪᓚᐃᓐᓇᑎᑦ ᐊᐅᓪᑕᐅᓂᐊᖅᑐᑦ ᐅᓱᐹᖅᑐᑦᑎᐊᕈᓚᓂᕐᒧᑦ ᐊᑯᓂᐅᓂᐊᖅᑐᖅ ᓴᓂᓂᐊᖅᑕᐅᓂᖏᓐᓄᓂ ᓄᓇᖏᑦ ᐊᓴᒪᓗ ᐃᒪᐃᑦ ᑕᒪᐃᓐᓄᓂ ᐱᑕᖅᑲᓗᑎᒃ ᐅᒪᔪᕐᓄᓂ, ᐃᓄᐃᑦ ᐱᔪᓐᓇᐅᑎᖅᑲᓕᖏᓐᓄᓂ, ᐱᑕᖅᐃᓐᓇᕐᓂᖏᓐᓄᑐᓗ ᑕᐃᒪᓐᓂ ᐃᓅᓂᕆᓂᖅ, ᐃᓕᒪᓴᕐᔪᐊᑦᑎᓐᓇᕐᓂᑦ ᐊᑐᖅᑕᓂᕐᓗᑎᒃ ᐃᓄᐃᑦ ᖃᐅᔨᒪᔪᑐᖅᑕᖅᓂᑦ ᑕᒪᐃᓐᓂᕐᒪᑦᑎᐊᖅ ᐃᓕᓴᐅᔪᑦᑎᐊᕐᓂᖅᑕᖅᓂᒃ.”

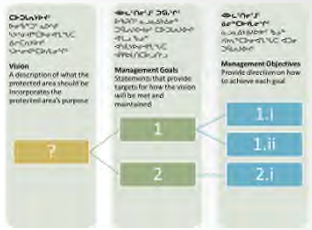
“The MBSs will be managed to ensure the long-term conservation and protection of the land and water for all wildlife, Inuit rights and their heritage while considering Inuit Qaujimajatuqangit in all decisions.”


© Jason Caswell

ᑎᓴᓐᓂᐊᖅ Arctic Fox

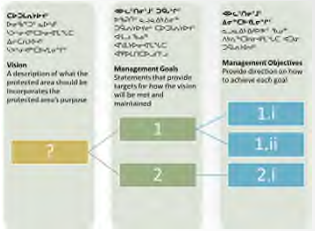


ᐊᐅᓪᓂᐹᓂᒃ ᑐᖏᓐᓂᒃ
Management Goals



*“ᑎᓕᒋᐊᖅᑲᓇᑦ ᓴᓇᓂᐊᖅᑕᐅᓂᒡᓕᐊᖅᓯᒪᔪᓂᑦ ᐊᐅᓚᑕᐅᓂᐊᖅᑐᑦ ᐅᖃᖅᑐᑎᐊᕈᒪᓂᖅᓯᑦ ᐊdᓂᐅᓂᐊᖅᑐᖅ ᓴᓇᓂᐊᖅᑕᐅᓂᖅᓂᓇᓂ ᓄᓇᖅᑦ ᐊᓚᒐ ᐃᒪᐃᑦ ᑕᒪᐃᓇᓂᑦ ᐱᑕᖅᑐᑎᓂᑦ ᐅᓪᓗᓂᑦ, ᐃᓄᐃᑦ ᐱᔨᓇᐅᑎᖅᑲᖅᖢᓂᓇᓂᑦ, ᐱᑕᖅᐃᓇᖅᓂᖅᖢᓂᓇᓂᑦ ᑕᐃᒪᖅᑎᑦ ᐃᓕᓴᕐᕕᒃ ᐃᓄᐃᑦ ᖃᐅᔨᓚᕐᖅᑕᐅᓂᖅᑐᑦ ᑕᒪᐃᓇᓂᑦ ᐊᑐᖅᑕᕐᕕᐊᖅ ᐃᓕᓴᕐᓂᐊᖅᑐᓂᑦ ᑕᒪᐃᓇᓂᑦ ᐃᓄᐃᑦ ᖃᐅᔨᓚᐅᖅᑐᓂᑦ ᑕᒪᐃᓇᓂᑦ ᐊᑐᖅᑕᕐᕕᐊᖅ ᐃᓕᓴᕐᓂᐊᖅᑐᓂᑦ ᑕᒪᐃᓇᓂᑦ ᐱᑕᖅᑐᑎᐊᕈᒪᓂᖅᓯᑦ ᐊᐅᓚᑕᐅᓂᐊᖅᑐᑦ ᐃᓄᐃᑦ ᖃᐅᔨᓚᐅᖅᑐᓂᑦ ᑕᒪᐃᓇᓂ

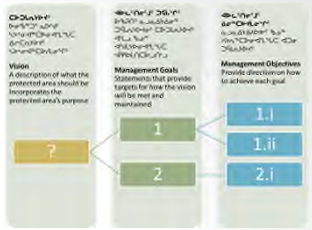
ᐊᐅᓪᓗᓂᔪᓐᓇᖅ ᐃᓂᖅᑕᐅᔪᒪᓂᖅᑎᑦ
Management Objectives



ᓴᓕᓂᖅᑕᐅᓂᖅᑎᑦ ᐃᓕᓴᕐᓂᐊᓂᖅ ᑲᓇᙵᓂᖅ ᑲᑎᒪᔨᓂᖅ ᐃᒪᐃᑦ ᐅᑭᐅᖅᑕᐅᔪᒪᓂᖅᑎᑦ ᑕᐃᔭᑯᓐᓚ ᑲᑎᒪᔨᓂᖅᑎᑦ ᐃᒪᐃᑦ ᐅᑭᐅᖅᑕᐅᔪᒪᓂᖅᑎᑦ ᑕᐃᔭᑯᓐᓚ ᑲᑎᒪᔨᓂᖅᑎᑦ ᐃᒪᐃᑦ ᐅᑭᐅᖅᑕᐅᔪᒪᓂᖅᑎᑦ ᑕᐃᔭᑯᓐᓚ ᑲᑎᒪᔨᓂᖅᑎᑦ ᐃᒪᐃᑦ ᐅᑭᐅᖅᑕᐅᔪᒪᓂᖅᑎᑦ ᑕᐃᔭᑯᓐᓚ

ᓴᓕᓂᖅᑕᐅᓂᖅᑎᑦ ᓄᓇᓕᖕᒥ ᐃᓕᓴᕐᓂᐊᓂᖅ ᑲᑎᒪᔨᓂᖅᑎᑦ ᐃᒪᐃᑦ ᐅᑭᐅᖅᑕᐅᔪᒪᓂᖅᑎᑦ ᑕᐃᔭᑯᓐᓚ

ᐊᐅᓪᓕᓂᐊᓪᓗᑦ ᐃᓂᖅᑕᐅᔪᓂᖏᑦ
Management Objectives



ᐅᓴᖅᑐᑦᑎᐊᓂᖅ ᓄᓇᓕᑦ ᖃᐅᔨᒪᔨᐅᑎᑦᑎᐊᖅᑕᕐᓂᖅᓗᑦ ᐸᕐᓇᐅᑎᓴᓂᖅ ᐊᑐᑎᖅᑕᕐᓂᐊᖅᑐᓂᖅ ᖃᐅᔨᒪᑎᑦᑎᐊᖅᑕᕐᓂᖅᓗᑦ ᐊᒻᒪᓗ ᖃᐅᔨᒪᔨᐅᑎᑦᑎᐊᖅᑕᕐᓂᖅᑎᑦ ᖃᐅᔨᓴᐅᓯᓕᐊᔪᓂᖅ, ᐅᖃᓕᒫᖅᑐᓂᖅᓴᓇᓱᓗ ᐃᔪᒪᓕᑕᐅᓂᖓᓂ ᐃᓄᖅᓄᑦ ᐊᒻᒪᓗ ᐃᓄᐃᑦ ᐃᔪᒪᓕᕆᖅᓂᖓᓂ, ᖃᐅᔨᓴᖅᑕᐅᓂᐊᖅᑐᓂᖅ ᔪᓚᑦᓂᐅᑎᑕᐅᓂᐊᖅᑐᓂᖅ ᐱᓕᕆᓂᖅᓂᓂ

ᐱᔨᒥᓴᐃᖅᑕᕐᓴᓗᑎᖅ ᓴᓪᓂᕐᒥᐅᑕᓂᖅ ᐃᖅᓚᐃᓴᖅᑕᐅᓯᕐᓂᖅᓂᓂᖅ ᐊᒻᒪᓗ ᐃᔪᒥᖅᓴᐃᓴᐅᖅᑕᐅᓯᕐᓂᖅᓂᓂᖅ ᐱᓴᐊᖅᑕᖅᑐᓂᖅ ᖃᐅᔨᓴᖅᑕᐅᓂᐊᖅᑐᓂᖅ ᐊᒻᒪᓗ ᓇᐅᑦᑎᖅᑕᐅᖅᑕᕐᓂᐊᖅᑐᓂᖅ

ᖃᐅᔨᒪᔨᐅᓂᖅᓴᐅᑦᓴᓗᑎᖅ ᓄᓇᕐᓂ ᐱᓕᕆᐃᐅᔨᓇᖅᑐᓯᕐᓂᖅᓂᓂᖅ ᑎᓐᒥᐊᖅᑲᖅᓴᐃᐅᔨᑦ ᓴᓐᓂᐊᖅᑕᐅᔪᒪᖅᓯᕐᓂᖅᓂᓂ

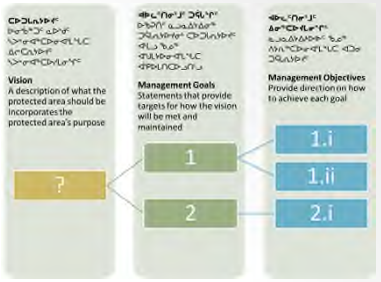
Ensure local awareness, participation and benefits

Develop a communication plan to facilitate information and knowledge sharing, discuss concerns and input into research priorities

Encourage Salliqmiut employment and mentorship in research and monitoring

Increase local awareness of permitted activities within the MBSs

ᐊᐅᓪᓕᓂᐊᓕᒃ ᐃᓂᖅᑕᐅᔪᒪᓂᖅᑎᑦ
Management Objectives



ᐊᖏᑐᕈᓂᕐᔪᖏᑎᑦᑎᑦ ᐃᓕᒪᐃᓐᓇᕐᓂᖅ ᑭᒪᔭᖏᑐᖅ ᐅᖃᐅᔾᔨᒌᖕᖏᑦ

ᐅᔾᔨᖅᑐᑦᑎᐊᕐᓇᕐᔪᓂᖅᑎᑦ ᖃᐅᔨᓴᖅᑎᑦᑎᓂᖅ ᐊᑐᖅᑕᐅᔨᒪᔨᖅᑎᑦᑎᓂᖅ, ᐅᑭᐅᖅᑕᐅᔪᒪᓂᖅᑎᑦᑎᓂᖅ, ᒪᑐᐊᖅᑎᑦᑎᓂᖅ

ᐊᖏᑐᕈᓂᕐᔪᖏᑎᑦᑎᓂᖅ ᐃᓕᒪᐃᓐᓇᕐᓂᖅ ᑭᒪᔭᖏᑐᖅ ᐅᖃᐅᔾᔨᒌᖕᖏᑦ ᐅᖃᐅᓯᒪᔭᕐᓂᖅ ᐃᓕᓴᕐᓂᖅ ᐊᑐᖅᑕᐅᔨᒪᔨᖅᑎᑦᑎᓂᖅ

ᐊᐅᓪᓕᓂᖅᓯᓐᓂ ᖃᓄᐃᓕᓴᕐᓂᓱᐊᕐᓯᓐᓂ
Management Approaches

ᐊᐅᓪᓕᓂᖅᓯᓐᓂᒃ ᖃᓄᐃᓕᓴᕐᓂᓱᐊᖅᑐᑦ ᐅᖃᐅᓯᖃᓕᓯᐅᕙᒃ
ᖃᓄᐃᓕᓴᐅᑭᑕᐅᓂᐊᓕᓴᖅᑐᓂᒃ ᐊᒃᓯᑭᑕᐅᔨᓐᓇᖅᑐᓂᒃ ᐊᐅᓪᓕᓂᕆᓯᓐᓂᕐᒧᑦ,
ᐊᖏᓚᕆᐅᓗᑎᒍᓗ ᐊᐅᓪᓕᓂᖅᓂᕐᒧᑦ ᐱᓕᕆᐊᖏᐊᓂᔪᓚᓯᔨᑦ

- ᐱᐅᓯᑐᖅᓴᒍᑦ ᐊᐸᑎᓐᓴᓂ ᓄᓇᒥᐅᑕᓐᓂᑦ ᐊᓚᒪᓗ ᐅᓚᔨᐃᑦ ᐱᑕᖅᑎᓂᓐᓂᑦ
- ᐅᓚᔨᐃᓪᓗ ᐅᓚᔨᑎᓂᓗ ᓇᔨᓴᕆᐅᕙᐸᓐᓂᓂᓐᓂᒃ ᐊᐅᓪᓕᓂᖅᓂᖅ
- ᓇᐅᑦᑎᖅᑐᐊᖅᑕᐅᖅᑕᑕᐃᓇᖅᓂᑦ ᐊᓚᒪᓗ ᖃᐅᔨᓴᖅᑕᐅᖅᑕᓴᖅᓂᑦ
- ᐃᓄᓕᒋᓂᒃ ᖃᐅᔨᓴᒪᑦᑎᐸᓪᓕᐊᓂᖅ ᐊᓚᒪᓗ ᖃᐅᔨᓴᓕᐅᔨᕐᓴᐅᓂᖅᑐᓂᒃ ᐊᐅᓪᓕᓂᐸᓐᓂᖅ

Management Approaches outline ways to address the Management Challenges, while meeting the Management Goals

- Cultural Resources Management
- Wildlife and wildlife habitat Management
- Monitoring and Research
- Public Awareness and Information Management

ᐊᐅᓪᓂᐊᓂᖅᓯᓂᖅ ᖃᓄᐃᓕᓐᓄᑦᓯᐊᖏᓂᖅ Management Approaches

ᐱᐅᓯᑐᖃᖅᑎᒍᑦ ᐊᕐᕌᑎᓄᑦ ᓄᓇᒥᐅᑕᓂᖅᑐᑦ ᐊᓚᒐᓗ ᐅᒪᔨᐃᑦ ᐱᑕᖃᖏᓂᖅᑐᑦ

ᐅᖃᓕᖅᑐᑦᑎᐊᖃᑕᖏᓂᖅ ᓴᐳᓂᓂᐊᖅᑕᐅᓂᖅᑐᓂᓂᒃ ᐃᓄᖅᖃᖏᐅᕐᓂᐅᔪᓐᓇᖅᑐᖅᑐᑦ ᖃᑭᒋᐃᓂᖅᖃᖏᓂᖅᑐᑦ, ᐃᓄᐃᓪᓗ ᐅᖃᐅᔾᔨᑐᖅᑐᑦ, ᐃᓄᐃᓪᓗ ᓄᓇᒥᓂᒃ ᐃᒪᖏᑎᖅᑐᓂᓗ ᑕᐃᔭᐳᑐᖅᑐᑦ, ᐃᓕᓴᐅᕐᓕᓪᓕᐊᓗᑎᒃ ᖃᐅᔨᒪᔭᐅᕐᓕᓪᓕᐊᔨᓄᑦ, ᑎᑎᕋᖅᑕᐅᕐᓕᓪᓕᐊᖃᑦᑕᐃᓐᓇᓪᓗᑎᒃ ᐊᒪᓚᓗ ᓄᓇᖓᐊᓕᐅᖃᑦᑕᕋᓗᑎᒃ

Cultural Resources Management

Ensure preservation of archeological sites, Inuit language, and Inuit place names and add to knowledge through inventory and mapping projects

ᐊᐅᓪᓕᓂᐅᖅᓯᒪᓂᖅ ᖃᓄᐃᓕᓴᖅᓯᐊᕐᓯᖅᓯᒪᓂᑦ Management Approaches

ᐅᒪᔨᐃᑦᓗ ᐅᒪᔨᕐᓄᑦᓗ ᓇᔨᕕᓴᐅᕙᖅᓯᖅᓯᒪᓂᖅ ᐊᐅᓪᓕᓂᐅᖅᓯᖅ

- ᐊᓯᔾᔨᖅᑕᐅᓗᓂᓂ ᐃᓕᑕᕕᓴᐅᓂᖅᓴᓄᑦ ᑎᒃᑯᐊᖅᑕᐅᓯᒪᓂᖅᓴ ᖃᓇᑕᒥ ᐅᒪᔨᖅᓴᕐᐃᐅᓂᕐᒧᑦ, ᐱᔭᔨᑕᐅᔨᓐᓇᕐᒪᑦ ᐊᓯᔾᔨᖅᑕᐅᔨᓐᓇᕐᓂᖅᓂᓂᒃ ᑭᓪᓕᖅᓴᕐᐃᐅᓂᖅᓯᒪᓂᑦ
- ᐊᒥᓱᓴᖅᓂᒃ ᖃᓄᐃᓕᓕᐅᑕᐅᓂᐊᖅᑐᓂᒃ ᐃᑲᔨᖅᓯᐃᓗᓐᓂᑎᒃ ᐊᐅᓪᓕᑎᒃᔨᐅᑎᑲᓄᑦ ᖃᖅᓴᐃᑦ ᐊᒥᓱᓂᖅᓯᖅᓂᒃ
  - ᐱᔨᒥᓴᐃᓂᖅ ᓄᓇᓕᖅᓂ ᖃᖅᓴᓯᓯᐅᖅᑕᑕᕕᔨᓐᓂᕐᒥᒃ, ᑐᓂᐅᖅᐃᖅᑕᑕᐅᑎᐊᓐᓂᖅ ᐊᐃᑦᑐᓐᓴᒃᓗᑎᒃ ᐃᓄᖅᑎᑎᓄᓗᓄᑎᒃ ᐊᖅᓯᓓᑕᕕᔨᓐᓇᖅᑐᑕᕕᓴᐅᓂᖅ ᐊᓗᒪᓗ ᑭᓇᐅᔭᓕᐅᑕᐅᔨᓐᓇᖅᑐᑕᕕᓴᐅᓂᖅ ᐊᑐᑭᓐᓇᖅᑐᑕᕕᓴᐅᓂᖅ ᐊᑐᔨᒪᓗ ᖃᐅᔨᓴᓂᒃ ᖃᐅᔨᓴᖅᑕᐅᓐᓇᓕᓕᐅᑕᐅᓂᖅ
- ᐊᒃᑐᖅᑕᐅᓂᕐᓗᒃᑎᑦᑎᑕᐃᓕᒪᕐᐊᕐᓂᖅ ᑕᓇᐅᒃᓯᒃ ᐅᒥᐊᕐᔪᐊᕐᓂᒃ ᖃᖅᓱᑕᓯᐅᑦᓯᓕᕐᓂᖅᓴᓄᑦ ᐅᒪᔨᐃᑦ ᐱᓕᕐᓂᑦ

Wildlife and wildlife habitat Management

- Change designation to National Wildlife Area, which may involve a boundary change
- Support several strategies to manage goose population
  - Promote local harvest, sharing, sport hunting, and commercial opportunities, ongoing research
- Mitigate marine and air traffic impacts on wildlife

ᐊᐅᓪᓕᓂᖅᓯᓐᓂᖅ ᖃᓄᐃᓕᓴᕐᓯᐊᕐᓯᓐᓂᒃ
Management Approaches

ᓇᐅᑦᑎᖅᑐᑕᐊᖅᑕᐅᖃᑦᑕᐃᓐᓇᕐᓯᓐᓂᒃ ᐊᓪᓚᓗ ᖃᐅᔨᓴᖅᑕᐅᖃᑦᑕᕐᓯᓐᓂᒃ

- ᐃᑲᔪᖅᓭᐃᓂᖅ ᑲᔪᓭᓐᓂᖅᓂᑉ ᖃᐅᔨᓴᖅᑕᐅᓕᕐᓂᐊᔪᑦ ᐊᓪᓚᓗ ᓇᐅᑦᑎᖅᑐᖅᑕᐅᓴᖅᑐᖃᑦᑕᕐᓯᓐᓂᒃ, ᑎᑎᕐᖅᑕᐅᓕᕐᓂᐊᓗᑎᑦᓗ ᐃᓗᖃᖏᕐᕕᐅᓕᐅᖅᑐᑦ ᖃᑭᒪძᕕᓂᖃᖏᕐᕕᐅᔪᑦ
- ᐃᑲᔪᖅᓭᖅᑕᐅᓗᑎᑉ ᓴᓂᓕᕆᐅᑕᓗᑦ ᖃᐅᔨᓴᖅᑕᐅᕐᔪᐊᕐᓇᔪᑦ ᓭᓄᓂᓕᐅᕐᔪᐊᕐᓂᓗᑎᑉ
- ᐱᐅᓱᕈᐊᖅᑕᐅᓗᑎᑉ ᖃᐅᔨᒪᓴᓱᑦ ᐊᓕᑎᒥᑉ ᐅᒪᔪᓚᕆᐅᓕᖅᑐᑦ ᐊᒪᓗ ᐱᐅᓱᑐᖃᖅᑎᒍᑦ ᐊᓕᑎᖏᓐᓂᒃ ᓄᓇᒥᐅᑕᕐᓂᑦ ᐊᒪᓗ ᐅᒪᔪᐃᑦ ᐱᑕᖃᕐᓯᓐᓂᒃ

Monitoring and Research

- Support ongoing research and monitoring, document archaeological sites
- Support Salliqmiut research priorities
- Improve knowledge of ecological and cultural resources in the MBSs

ᐊᐅᓪᓂᓂᖅᓯᓐᓄ ᖃᓄᐃᓕᖅᑐᓂᒃᑯᓂᖅ
Management Approaches

ᐃᓄᓕᒻᓂᖅ ᖃᐅᔨᒪᑎᑦᑎᐊᓪᓕᐊᓂᖅ ᐊᓪᒪᓗ ᖃᐅᔨᒪᕗᐅᔪᕐᓂᖅᓯᓐᓄᑦ ᐊᐅᓪᓂᐊᖅᓂᖅ

- ᓴᖅᑭᑎᑦᑎᓗᑎᑦ ᑐᓴᐅᒪᕗᐅᑎᑦᑎᖃᑦᑕᕐᓂᕐᒧᑦ ᕿᕐᓇᐅᑎᐸᓴᓂᖅ ᐊᓪᒪᓗ ᐱᐃᐸᓴᖃᖅᑎᑕᐅᐊᖅᓂᕐᓂᓄᑦ ᐃᓄᐃᑦ ᑐᓴᐅᒪᑎᑦᑎᖃᑕᑭᓇᕐᓂᕐᒥᐸᑦ ᖃᐅᔨᒪᕗᖅᑭᓪᓂᕐᓂᖅᓯᓐᓄᑦ, ᖃᐅᔨᒪᕗᖅᓂᕐᓂᓪᓗ ᓄᓇᒧᖏᐅᐊᐸᑐᓄᑦ, ᐅᖃᐅᔨᔪᐅᔪᓇᖃᖅᑎᑕᕐᓗᑎᓪᓗ ᐃᔪᒪᓗᑕᐅᔪᑦ ᐃᓄᖅᓄᑦ ᐊᓪᒪᓗ ᖃᐅᔨᓴᖃᑕᐅᓂᐊᖅᑐᑐᓂᖅᓯᓐᓄᑦ ᔪᐊᓕᓐᓂᐊᐅᑎᑕᐅᓂᐊᖅᑐᑐᓂᖅᓯᓐᓄᑦ
- ᐱᔪᒥᓴᐃᓂᖅ ᐃᑲᔪᖅᔪᐃᐊᖅᓂᕐᓗᓪᓗ ᐃᓄᖅᓂᑦ ᐊᓪᒪᓗ ᐃᓄᖅᓂᑦ ᐃᓕᓴᓂᐊᖅᑎᑕᐅᔪᓂᑦ ᐱᖃᑕᐅᔪᒪᓂᖅᓂᑦ ᓄᓇᓕᖅᓂ ᐊᔪᖅᑭᐃᓂᖅᓯᓐᓄᑦ ᐊᑐᖅᓂᖃᕐᓇᖅᑎᑕᐅᓇᖅᓂᖅᓂᑦ
- ᐃᑲᔪᖅᔪᐃᐊᓂᖅ ᑲᔪᔭᖅᓇᑭᖅᑐᓂᑦ ᐊᑐᖅᑕᐅᓂᖅᓇᑭᖅᑐᓂᑦ ᐅᓪᓗᒥ ᑎᖅᑕᐊᖅᑲᐃᖅᓂᖅ ᐊᐅᓪᓂᐊᖅᓂᖅᓯᓐᓄᑦ ᐃᓗᓐᓂᐊᓂᖅ

Public Awareness and Information Management

- Develop a communication plan and provide opportunities to share information and knowledge among users, discuss concerns and research priorities
- Encourage and support Inuit and Inuit student initiatives to build local capacity
- Support sustainable tourism operations within the MBSs

ᐊᐅᓪᓕᓂᐅᖅᓯᖅ ᖃᓄᐃᓕᖅᓱᓕᐊᕐᓯᖅ
Management Approaches

ᐃᓄᓕᒻᒥᐅᖅ ᖃᐅᔨᒪᑎᑦᑎᐊᕐᓕᐊᓂᖅ ᐊᖏᒪᓗ ᖃᐅᔨᒪᓴᐅᔪᖅᓴᐅᓂᖅᓯᖅᓄᑦ ᐊᐅᓪᓕᓂᑎᐊᕐᓂᖅ

- ᑎᑎᕆᖅᑕᐅᔪᒪᓗᑎᑦ ᓄᓇᒋᑦᑕᖅᑐᕆᐊᐅᓪᐊᕐᑐᑦ, ᖃᐅᐸᐊᖅᑕᐅᖃᖅᑎᑦᑕᕆᓗᑎᒃᓗ ᐊᖏᔪᓇᔪᓰᑦ ᑲᑐᔨᖃᑎᒋᖅᓯᖅᓄᑦ ᑎᑦᔨᕆᐊᑎᒋᓄᑦ ᑕᐃᔪᑯᐊ ᓄᑕᓂᓂᑦ ᑐᔪᔪᕐᐅᑎᑦ ᑎᖅᑎᐊᖃᖅᕆᒋᑦᑐᒪᓂᖅᓯᖅᓄᑦ, ᖃᐅᔨᕆᖅᑕᐅᖃᑕᕆᓕᑎᓐᓗ ᐃᓐᓇᓂᓪᓕᐅᔪᖏᖅ
- ᒪᓪᓕᐊᖃᑕᕆᓂᖅᑎᑦ ᐱᔨᒥᕆᐃᐃᓂᖅ - ᑐᕆᐅᒪᑎᑦᑎᖃᑕᕆᓗᑎᒃ ᖃᐅᔨᒪᓴᐅᓪᓕᐊᖅᑐᓂᒃ ᒪᓪᓚᓪᓀᔨᓂᒃ ᐊᒻᒪᓗ ᒪᓪᓚᓵᓗᑐᓴᐅᐊᖅᑐᓂᒃ, ᐊᐅᓪᓕᓂᑎᓂᕐᒧᓵᓗ ᑐᖏᓚᓀᓴᐅᔨᔨᓂᒃ ᐊᒻᒪᓗ ᐱᓪᓀᐊᖏᓂᔪᒪᔨᓂᒃ

Public Awareness and Information Management

- Maintain list of camps, assess new requests inside MBSs with HTO and inspect periodically
- Compliance promotion – share information about laws and regulations, management goals and objectives

ᐊᖏᑭᑕᐅᓯᒪᔪᑦ ᐱᓕᕆᐊᖓᔪᓂᓐᓄᑦ ᑎᑭᓯᒪᖓᐊᖅᓂᓐᓄᑦᑐᓕᓗ
Authorized Activities and Access



- ᐃᓄᐃᑦ **ᐱᔨᖅᓇᐅᑎᖏᕆᐊᖏᖅᑎᑕᐅᖅᖁᓕᑦ** ᑎᑭᓯᒪᔨᖅᓇᓐᓄᑦᓂᓄ ᑎᖅᑕᐊᖏᖅᓴᑦ ᓄᓇᖅᑐᓄᑦ, ᐱᐅᓯᑐᖏᑎᒃ ᐊᑐᓂᐊᖏᑎᓪᓗᑎᑦ, ᓯᑦᓗ ᐊᖓᔪᓇᖅᓂᖅᖁᖅᑐᓂᓄ, ᓴᓇᖅᖁᐊᖓᕆᓴᒃ ᐅᓴᕋᐃᓴᐃᓂᖅᖁᖅᑐᓂᓄ, ᓄᓇᒥᑕᖏᑐᓴᖅᑐᓂᓄ (ᒪᓕᒐᖅᑎᑦ ᒪᓕᒐᓗᑎᑦ ᓄᓇᕗᓴᒥ ᓄᓇᑕᑭᑎᓄᑦ ᐊᖅᑭᑐᑎᑦ ᐊᒡᒪᓗ ᐃᓄᐃᑦ ᐊᒃᑐᖏᑕᐅᓯᒪᓂᖅᑐᓄᑦ ᐃᑲᔪᓯᐊᕐᓂᖅᑐᓄᑦ ᐊᖅᑭᑐᑎᑦ)
- ᐃᓄᐃᑦ **ᐱᔨᖅᓇᐅᑎᖏᕆᐊᖏᖅᑎᑕᐅᖅᖁᓕᑦ** ᑎᑭᓯᒪᔨᖅᓇᓐᓄᑦ ᑎᖅᑕᐊᖏᖅᓴᑦ ᓄᓇᖅᑐᓄᑦ ᐊᖅᑭᑐᑎᖅᑕᐃᔨᓂᖅᑐᓄᑦ ᐅᕝᕙᓚᐅᔪᓂᑦ ᐃᖏᓪᓗᓯᐅᑦᑎᐊᓂᖅᑐᓄᑦ

- Inuit **do not** require a permit to enter the MBSs for traditional activities, including harvesting, removal of carving stone, setting up camps *(Nunavut Agreement* and IIBA)
- Inuit **do not** require a permit to enter the MBSs when working as a hunting or fishing guide



ᐊᖏᑭᑕᐅᓕᕆᓂ ᐱᓕᕆᐊᖏᔪᓐᓇᖅᓂᖅ ᑎᑭᓕᒫᐅᔪᓐᓇᖅᓂᖏᑦᓗ
Authorized Activities and Access

- ᑕᒪᖅᓂᒃ ᐃᓄᒡᒪᓗᐅᖏᑦᑐᑦ **ᐱᔪᓐᓇᐅᑎᖅᑲᖅᑎᑕᐅᔭᑦ** ᑎᑭᓕᔪᓐᓇᖅᓂᖅ ᑎᖏᒥᖅᑲᖅᕕᖓᓄᑦ (ᓄᓇᖏᑦᓂᓄᓐᓂᑦ ᐃᒪᖅᔪᑎᖏᑦᓂᓄᓐᓂᑦ) ᑕᐃᒃᑯᐊᓗ ᐱᔪᓐᓇᐅᑎᖅᑲᖅᑲᖅᑐᑦ ᐃᓄᒡᒪᓗᐅᖏᑦᑐᑦ ᐊᑭᓐᓇᒃᑐᓂᒃᑐᒥᒃ ᐊᖏᔪᓇᓕᐊᑭᓴᓇᒃᑐᑦ, ᖃᐅᔨᓴᖅᑎᓗᑦ, ᐳᓪᓕᑎᓪᓗ ᓂᐅᖅᑕᐊᑦ

- ᑕᒪᖅᑭᒃ ᑭᓇᐅᔭᓪᓕᐅᑎᖃᖅᓂᖅᓗᑦ ᐱᓪᓚᐊᖃᖅᓂᖅᓗᓴᓪᓕᓂᑦ ᐱᓪᓚᓂᖅᓗᑦ (ᐃᓄᐃᑦ ᐊᒻᒪᓗ ᐃᓄᒡᒪᓗᐅᖏᑦᑐᑦᖃᖅ ᓇᖏᑭᓂᖅ ᐱᓪᓚᐃᖅᑯᑎᖃᖅᑐᑦ **ᐱᔪᓐᓇᐅᑎᖅᑲᖅᑎᑕᐅᔭᑦ**. ᑕᐃᒪᓇᔨᖏᑦᑐᑐᓄᑦ ᐃᓄᐃᑦ ᐊᖏᔪᓇᓕᐊᑭᓴᑦ ᐊᒻᒪᓗ ᐃᖃᓪᐊᖅᑭᒪᓕᕆᑦ

- All non-Inuit **do** require a permit to enter the MBSs (land or water) including non-Inuit sport hunters, researchers and tourists

- All commercial or business activities (Inuit and non-Inuit owned businesses) **do** require a permit. Except for Inuit hunting and fishing guides



ᐱᔨᓇᐅᑎᖅᑕᐅᔨᓇᓂᓐᓕᒃ
Permit Authorizations

- ᐱᔨᓇᐅᑎᓂᒃ ᑐᓂᔭᐅᔨᓇᖅᑐᑦ ᐃᒪᓇᐃᒃᑯᑎᒃ:
  - ᐱᓕᕆᐊᕆᔪᒪᔭᒃᓕᑦ ᓯᕐᖅᑎᕆᓗᑕᐅᓂᐊᖏᓕᑐᑐᒋᐊᕈᑎᒃ ᑎᖏᒥᐊᖅᓄᑦ, ᒪᓇᓂᖏᓇᓄᑦ, ᐅᓪᓗᖏᓇᓄᑦ, ᓇᔨᖅᐸᒃᑕᖏᓇᓄᓪᓗ ᐊᒻᒪᓗ/ᐅᕐᓂᓗᓇᓚᑦ
  - ᐱᓕᕆᐊᕆᓂᐊᖅᑕᖏᑦ ᒪᓕᑎᐊᕈᑎᒃ ᐱᑕᖅᕈᑕᐅᓂᖏᓄᓄᑦ ᑎᖏᒥᐊᖅᑲᐃᑦ ᐊᒻᒪᓗ ᐊᐅᓪᓚᑎᐅᑎᒃᓴᐃᑦ ᑕᐃᒃᑯᐊ ᕿᖏᓇᐅᑎᒃᓴᖏᑦ
- Permits may be issued if:
  - The activity is not harmful to migratory birds, eggs, nests, or habitats and/or
  - The activity is consistent with the purpose of the MBSs and their management plans



ᓱᓴᓕᐊᖅᓯᐊᖅ White-rumped Sandpiper





ᓴᐅᖅᑐᖅ Red Phalarope

ᐱᓯᓂᓇᐅᑎᖅᑭᑕᐅᓯᓂᓇᖅᓂᕐᓂᑦ
Permit Authorizations

- ᐃᓄᐃᑦ ᐱᓯᓂᓇᐅᑎᖅᑏᐊᖅᖃᑦ ᑎᑭᓕᒪᓯᓂᓇᖅᓂᖅ ᑎᓐᒥᐊᖅᖁᕕᓂᓄᑦ ᐅᖅᑐᑭᓂᓇᖅᐳᑦ ᐱᓇᓕᓴᑎᖅ ᖃᓇᑕᒥ ᐅᒪᓯᓪᓗᓵᖅᓄᑦ ᐱᓕᑎᑕᐃᓕᓴᐅᓂᓂᖅ:

ec.nupermisscf-cwspermitnu.ec@canada.ca

ᐃᖅᓴᓐᓂ ᐃᖅᓇᐃᕆᖁᕕᖅ: 867-975-4636

- ᐃᖁᓂᐅᖁᕕᖅᓄᑦ ᐊᐅᓪᓚᑎᐅᖅᑕᐅᓂᖁᑦ ᖃᑎᒪᓕᕆᓪᓕᐅᑦ ᖁᒥᖁᑭᐊᖅᑎᐅᐳᑦ ᑕᒪᐃᓂᓂᑎᐊᖅ ᐅᖅᑐᑭᑎᓂᖅ ᐱᓯᓂᓇᐅᑎᑦᑕᕐᓂᖅᑐᓂᖅ ᐊᒻᒪᓗ ᐊᑐᓪᓚᑦᓄᓕᕐᓂᖅ ᐃᖃᓗᐃᑦ ᐅᒪᓯᓪᓗᓵᖅᓄᑦ ᐃᖅᓇᐃᕆᖁᕕᖅᓄᓪᓕᐊᓂᑦ ᐊᓂᕐᑕᐅᓂᖁᕕᖅᓄᓪᓕᐊᓂᑦ ᓇᓗᓇᐃᕆᐃᓕᓴᐅᓂᖅ

- Persons who require a permit to enter the MBSs can apply for a permit from the Canadian Wildlife Service:

ec.nupermisscf-cwspermitnu.ec@canada.ca

Iqaluit office: 867-975-4636

- The Irniurviit ACMC reviews all permit applications and provides recommendations to the Canadian Wildlife Service on whether the permit should be issued or not



ᓄᓇᖅᑐᑦ ᑎᒃᓯᐊᖅᑕᐅᓯᒪᓂᖅᑐᑦ / Site Designation

- ᖃᖅᖢᐅᖅᑐᖅ ᐊᓪᒪᓗ ᐃᑲᑦᑐᐊᖅ ᐃᓐᓇᐅᔪᖅ ᐃᓕᑕᒫᓴᐅᓯᒪᖏᒪᑦ ᑎᒃᓯᐊᖅᑕᐅᓯᒪᓕᒫᑦ ᑎᖅᑎᐊᖅᖃᖅᓴᐅᓂᖅᓗᑦ ᓴᓯᐊᓂᓕᕆᔨᖅ; ᐅᓯᐊᓂᓕ, ᐅᒪᔪᐃᑦ ᐊᓪᒪᓗ ᐱᐅᓯᑐᖅᑎᒍᑦ ᐊᐳᑎᖅᑎᒍᑦ ᐊᓪᒪᓗ ᐅᒪᔪᐃᑦ ᐱᑕᖃᖅᓂᖅᑕᑦ ᐊᐳᓂᓂᐊᖅᑕᐅᓯᒪᑦᑎᐊᖅᓂᖅᖢᐅᔪᓐᓇᖅᐳᑦ ᐃᓕᓴᐅᒪᖏᑦ ᐊᓕᖅᑐᓂᒃᓴᓂ ᓄᓇᖅ ᑕᐅᓀᓐᓇ ᑲᓇᑕᒥ ᐅᒪᔪᖅᓴᖅᓴᐅᔪᑎᑐᑦ
- ᐊᐅᓪᓕᑎᐅᕐᓴᐃᑦ ᐸᖅᓇᐅᑎᖅᑦ ᐅᖅᐅᓯᖅᓕᐳᑦ ᖃᓄᐅᓕᖅᑐᑦ ᓴᓇᓕᑕᒫᓴᐅᓂᖅᑐᑦ ᒪᓕᐢᑕᐅᓯᒪᓂᖅᑐᓄᑦ ᑲᑎᒪᓂᖅᑐᑦ ᐊᓕᖅᑐᓂᒃᓴᓂ ᐊᐅᓪᓕᑎᐅᕐᓴᐃᑦ ᐱᐅᓯ

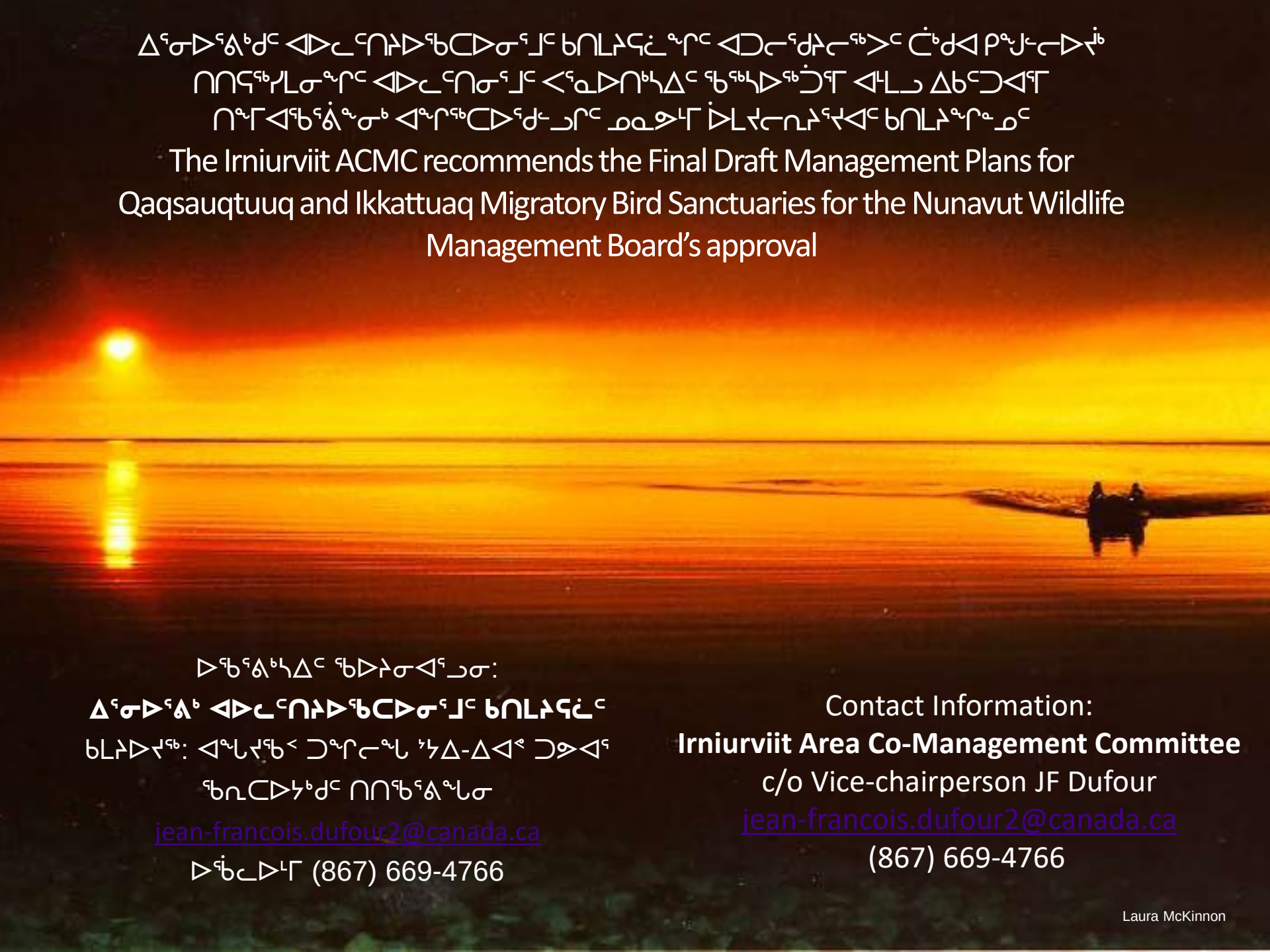
ᐊᐅᓪᓕᐊᒃᑲᐃᓕᓪ ᐸᖏᓐᓂᐅᓂᒃ ᐊᑐᓪᖅᑎᑎᓂᖅ
Management Plan Implementation

- ᐊᑐᓪᖅᑎᑕᐅᓐᓪᓚᐊᓂᖅᑐᑦ ᐊᑐᒐᒃᑲᐃᓕᓪ (ᐱᕆᒃᑲᖏᕆᐊᖅᖏᓂᔪᓂ ᑭᓇᐅᔭᐃᓪᓗᓂ)
  ᐱᔨᓴᓇᐅᑕᐅᓂᐊᖏᒪᑕ
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- Implemented as resources (time and money) allow
- Plan will be reviewed after 5 years, and then every 10 years after that

2025 / 2035



ᐃᖃᓗᖅᓯᒪᓂ ᐊᐅᓚᑎᕐᓗᐅᖏᓐᓄᓕᒫᖃᑦᑕᓂ ᑲᑎᒪᔨᖏᓚᐅᖅᑕᑦ ᑕᒻᒧᐊ ᑭᖑᓪᓚᐅᙵᖅ
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The Irniurviit ACMC recommends the Final Draft Management Plans for Qaqsauqtuuq and Ikkattuaq Migratory Bird Sanctuaries for the Nunavut Wildlife Management Board's approval

ᐅᖃᖃᓗᓴᑦ ᖃᐅᔨᓕᐊᖃᓪᓚᓂ:

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jean-francois.dufour2@canada.ca

ᐅᖃᓕᐅᓕᒥ (867) 669-4766

Contact Information:

Irniurviit Area Co-Management Committee

c/o Vice-chairperson JF Dufour

jean-francois.dufour2@canada.ca

(867) 669-4766

Laura McKinnon

2016 TO 2023 INUIT IMPACT AND BENEFIT AGREEMENT

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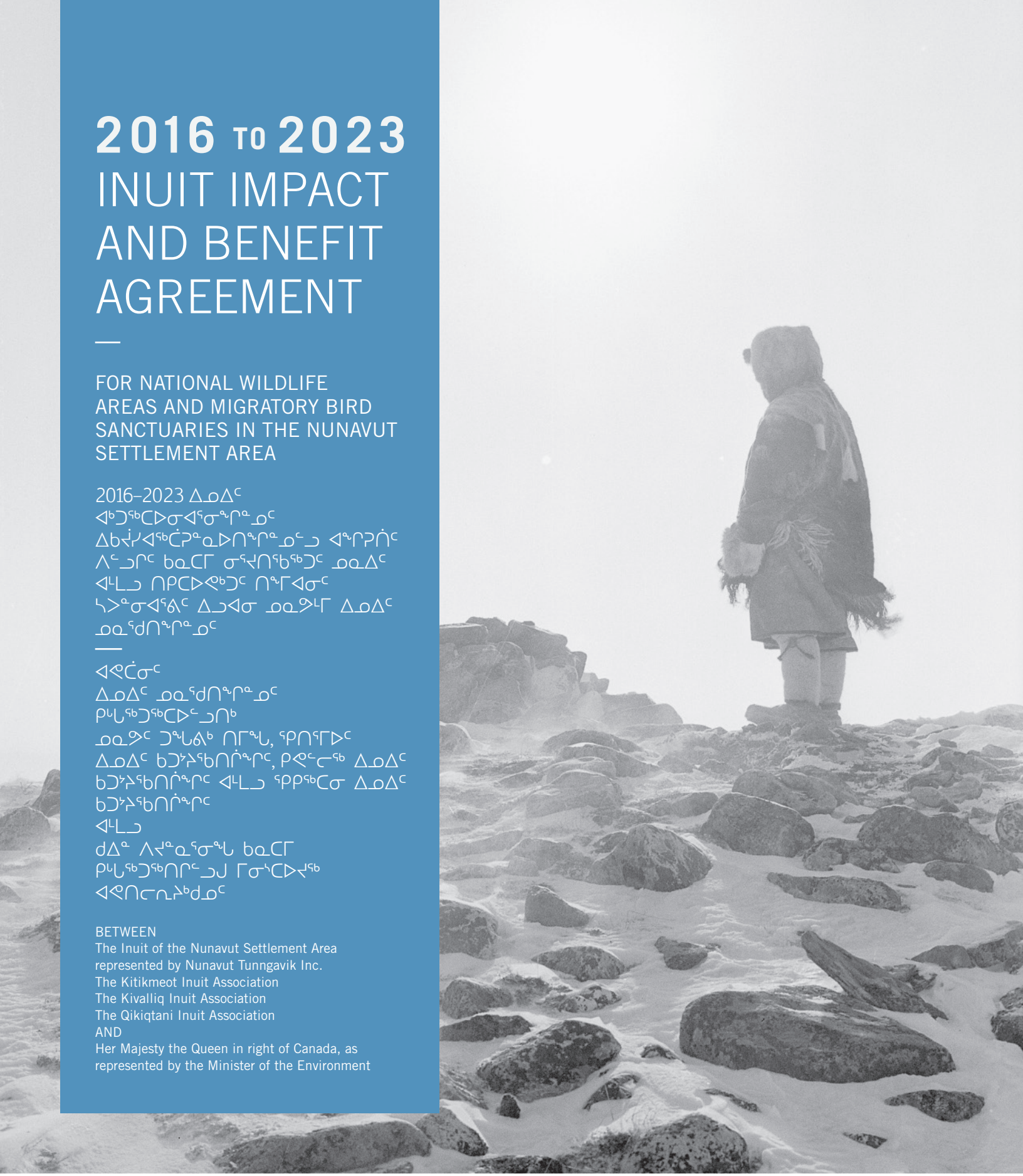
FOR NATIONAL WILDLIFE AREAS AND MIGRATORY BIRD SANCTUARIES IN THE NUNAVUT SETTLEMENT AREA

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BETWEEN
The Inuit of the Nunavut Settlement Area
represented by Nunavut Tunngavik Inc.
The Kitikmeot Inuit Association
The Kivalliq Inuit Association
The Qikiqtani Inuit Association
AND
Her Majesty the Queen in right of Canada, as
represented by the Minister of the Environment



Environment and Climate Change Canada

Environnement et Changement climatique Canada

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2016 INUIT IMPACT AND BENEFIT AGREEMENT FOR NATIONAL WILDLIFE AREAS AND MIGRATORY BIRD SANCTUARIES IN THE NUNAVUT SETTLEMENT AREA

WHEREAS National Wildlife Areas (NWAs) are established under the *Canada Wildlife Act* for the purposes of wildlife research, conservation and interpretation; and

WHEREAS Migratory Bird Sanctuaries (MBSs) are established under the *Migratory Birds Convention Act* for the purposes of protecting migratory birds and their habitat; and

WHEREAS the establishment of NWAs and MBSs has the potential both to confer benefits and to have detrimental impacts on Inuit; and

WHEREAS, under sections 9.4.1 and 8.4.4 and subject to section 9.4.2 of the *Nunavut Land Claims Agreement (NLCA)*, before an NWA or MBS is established in the Nunavut Settlement Area (NSA) after ratification of the *NLCA*, and for all NWAs and MBSs established before ratification, Inuit and the Government of Canada must negotiate, in good faith, for the purpose of concluding an Inuit Impact and Benefit Agreement (IIBA); and

WHEREAS, in accordance with sections 9.4.1 and 8.4.4 of the *NLCA*, the Parties negotiated an Umbrella IIBA for NWAs and MBSs effective August 22, 2008 (the 2008 IIBA) with a funding schedule ending March 31, 2014, and in accordance with section 8.4.7 of the *NLCA* and section 15.6.2 of the 2008 IIBA have renegotiated this IIBA, for the purpose of addressing all matters connected with NWAs and MBSs in the NSA that could reasonably confer a benefit or that could have a detrimental impact on Inuit on a Nunavut-wide, regional or local basis, and to achieve the other objectives set forth in this IIBA; and

WHEREAS in accordance with sections 9.3.2 and 9.3.7 of the *NLCA*, NWAs and MBSs are to be co-managed by Government of Canada and the Designated Inuit Organization (DIO); and

WHEREAS the Minister of the Environment is responsible before Parliament for NWAs and MBSs and has signed this IIBA with the authority and on behalf of the Government of Canada; and

WHEREAS Nunavut Tunngavik Inc. (NTI), has the responsibilities set forth under Article 39 of the *NLCA*, and the Kitikmeot Inuit Association (KitIA), the Kivalliq Inuit Association (KivIA), and the Qikiqtani Inuit Association (QIA) have the DIO responsibilities under Article 39 of the *NLCA* for negotiating this IIBA, and all of the above organizations have collectively signed this IIBA with the authority of and on behalf of all Inuit of the NSA;

NOW, THEREFORE, in consideration of the promises, terms and conditions contained herein, the Parties agree as follows:

ARTICLE 1 — DEFINITIONS

1.1 A term or phrase defined in the *NLCA* and used in the same context in this IIBA has, for the purposes of this IIBA, the same meaning as that set forth in Article 1 of the *NLCA*.

1.2 Except where the context requires otherwise, for the purpose of this IIBA:

"ACMC" means an Area Co-Management Committee, as defined below;

"Associated Community" means a community that is associated with one or more NWAs or MBSs, as set forth in Schedule 2-1;

"Area Co-Management Committee" (ACMC) means an Inuit/Government of Canada NWA or MBS co-management committee required by sections 9.3.2, 9.3.7 and 8.4.11 of the *NLCA* and by section 3.2.1 of this IIBA;

"Canada Wildlife Act" (CWA) means the *Canada Wildlife Act*, its regulations and any successor legislation relating to NWAs;

"CBC" means a Community Beneficiary Committee, as defined below;

"CLARC" means a Community Lands and Resources Committee, as defined below;

"Community Beneficiary Committee," (CBC) or "Community Lands and Resources Committee" (CLARC) means a committee established by an RIA in a Nunavut community to give advice and make recommendations to the RIA on matters related to the management and use of IOL and the other lands, waters and resources in its land use area;

"Cultural Sites of Importance to Inuit" means sites of importance to Inuit for cultural reasons that are identified in accordance with sections 6.4.3 and 6.4.4;

"*CWA*" means the *Canada Wildlife Act*, as defined above;

"CWS" means the Canadian Wildlife Service of the Government of Canada's Department of the Environment and any successor directorate, branch, agency or department that has responsibility for NWAs and MBSs;

"Department of Culture and Heritage" means the territorial Department of Culture and Heritage and any successor agency or department that has responsibility for archaeological sites and artifacts;

"DOE (Nunavut)" means the territorial Department of the Environment and any successor agency or department that has responsibility for wildlife;

"Effective Date" means the date on which this IIBA comes into force for an NWA or MBS in accordance with subsections 2.2.3;

"Enlargement" means any change in the boundaries of an NWA or MBS that would have the effect of enlarging or including new lands or waters in the NWA or MBS;

"Establishment" means the designation of an NWA or MBS under the *CWA* or *MBCA*, respectively;

"IIBA" means an Inuit Impact and Benefit Agreement, as defined below;

"IIBA Implementation Funds" means the funds provided or to be provided by the Government of Canada pursuant to sections 15.2.1;

"Interpretation" means oral translation;

"Interpretative Materials" means interpretative materials developed pursuant to Part 6.8;

"Inuit Firm" means an entity that qualifies as an Inuit firm under Article 24 of the *NLCA*;

"Inuit Impact and Benefit Agreement" (IIBA) means an IIBA as required by Part 4 of Article 8 and Part 4 of Article 9 of the *NLCA*, or this IIBA, as the context requires;

"Inuit Language" means Inuktitut or Inuinnaqtun, as the circumstances require;

"Inuit Parties" means NTI and the RIAs;

"*Inuit Qaujimajatuqangit*" means that traditional, current and evolving body of Inuit values, beliefs, experience, perceptions and knowledge regarding the environment, including land, water, wildlife and people, to the extent that people are part of the environment;

"Inuit Tourism Provider" means an Inuk or Inuit firm providing, or with an expressed interest in providing, goods or services to tourists;

"Inventories" means inventories of resources importance to Inuit that are developed pursuant to Parts 6.4 through 6.7;

"IOL" means Inuit Owned Lands, as defined in section 1.1.1 of the *NLCA*;

"Management Plan" means a management plan for an NWA or MBS, as required by sections 9.3.8 and 8.4.13 of the *NLCA* and Article 3 of this IIBA;

"*MBCA*" means the *Migratory Birds Convention Act*, as defined below;

"MBS" means a Migratory Bird Sanctuary, as defined below;

"Migratory Birds Convention Act" (MBCA) means the federal *Migratory Birds*

Convention Act, including the *Convention* attached to the *Act* as a *Schedule*, its regulations and any successor legislation relating to MBSs;

"Migratory Bird Sanctuary" (MBS) means a migratory bird sanctuary established in the NSA under the *MBCA*;

"Minister" means the federal Minister of the Environment or the Minister's designate, except where otherwise stated;

"National Wildlife Area" (NWA) means a national wildlife area established in the NSA under the *CWA*;

"*NLCA*" means the *Nunavut Land Claims Agreement*, as defined below;

"NSA" means the Nunavut Settlement Area, as defined in section 1.1.1 of the *NLCA*;

"NTI" means Nunavut Tunngavik Incorporated;

"*Nunavut Land Claims Agreement*" (*NLCA*) means the *Agreement Between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in Right of Canada* that was ratified by a vote of the Inuit of the Nunavut Settlement Area and by the *Nunavut Land Claims Agreement* Act, S.C. 1993 c. 29;

"NWA" means a National Wildlife Area, as defined above;

"Parties" means the Inuit of the NSA, as represented by Nunavut Tunngavik Inc. and the three Regional Inuit Associations, and Her Majesty the Queen in right of Canada, as represented by the Minister, and "Party" means any of the above individually;

"Regional Inuit Association" (RIA) means the Kitikmeot Inuit Association, the Kivalliq Inuit Association, or the Qikiqtani Inuit Association, as the context requires;

"Researcher" means a person holding a permit to carry out research within the boundaries of an NWA or MBS;

"Resource" means minerals and renewable energy resources;

"RIA" means a Regional Inuit Association, as defined above;

"*SARA*" means the *Species at Risk Act* as defined below;

"Species at Risk Act" (SARA) means the federal *Species at Risk Act*, its regulations and any successor legislation;

"TAH" means Total Allowable Harvest, as defined below;

"Total Allowable Harvest" (TAH) means a total allowable harvest as defined in section 5.1.1 of the *NLCA*;

"Visitor" means any person, including a commercial operator, who enters or uses an NWA or MBS, other than:

(a) an Inuk or a family member travelling with an Inuk;

(b) an individual who has been assigned harvesting rights under section 5.7.34 of the *NLCA*;

(c) an employee or contractor of the CWS or other Government of Canada department acting within the scope of his or her employment or contract; or

(d) a Researcher.

"Wildlife Areas of Importance to Inuit" means areas of importance to Inuit for wildlife and other related reasons that are identified in accordance with sections 6.4.3 and 6.4.4.

ARTICLE 2 — GENERAL PROVISIONS

2.1 PRINCIPLES

2.1.1 The unique relationship between the Inuit of Nunavut and the ecosystems of the NSA is ecological, spiritual and social in nature. *Inuit Qaujimajatuqangit* is a related body of knowledge, which is necessary to and which Inuit shall bring to responsible decision-making regarding the lands, waters and marine areas of the NSA.

2.1.2 NWAs and MBSs make an important contribution to wildlife and wildlife habitat conservation in the NSA, Canada and the world. They shall be co-managed by Inuit and CWS in accordance with the *NLCA*, this IIBA, approved Management Plans, *Inuit Qaujimajatuqangit*, scientific information and, except where inconsistent with the *NLCA*, the *Migratory Birds Convention Act*, the *Canada Wildlife Act*, the *Species at Risk Act* and other applicable legislation.

2.1.3 Inuit should fully benefit from and fully participate in the economic and other opportunities arising from the establishment and management of NWAs and MBSs.

2.1.4 The establishment and management of NWAs and MBSs should avoid social and cultural disruption to Inuit and their relationship with and use of the lands (including IOL), the waters and the resources of NWAs and MBSs.

2.1.5 The establishment and management of NWAs and MBSs shall be consistent with Inuit harvesting rights under the *NLCA*.

2.1.6 The Inuit Language should be preserved and its use should be supported and promoted in the establishment and management of NWAs and MBSs.

2.1.7 The archaeological and cultural heritage of Inuit should be protected in the establishment and management of NWAs and MBSs.

2.1.8 The opportunities for Inuit provided by this IIBA should build capacity, and encourage self-reliance and the cultural and socio-economic well-being of Inuit.

2.1.9 The implementation of this IIBA should be co-operative, in good faith, and based on the mutual commitment of the Parties.

2.2 APPLICATION

2.2.1 This IIBA, including Schedules 2-1, 3-1, 6-1, 15-1 and Appendix I, constitutes the IIBA required under Articles 8 and 9 of the *NLCA* for each NWA and MBS identified in Schedule 2-1 of this IIBA.

2.2.2 As of the Effective Date, an appendix is not required for any NWA or MBS except for the Ninginganiq NWA, which is attached as Appendix I hereto.

2.2.3 This IIBA shall come into effect and shall replace the 2008 IIBA when it has been signed by the Minister and authorized representatives of NTI and the RIAs.

2.2.4 This Agreement may be signed and dated in any number of its identically worded counterpart copies, each of which once signed and dated shall be deemed to be an original. All such counterpart copies together shall constitute one and the same instrument. Each Party agrees to provide to each of the other Parties an electronically scanned copy of their signed and dated counterpart copy, on the date of signature, by facsimile or email, as evidence of their signature. The Parties acknowledge the validity of such electronically scanned counterpart copies in bringing the IIBA into effect.

2.3 FINANCIAL APPROPRIATIONS

2.3.1 Amounts payable under this IIBA shall be subject to there being a Parliamentary appropriation for that particular purpose in the fiscal year in which the amount is payable.

2.4 AMENDMENT

2.4.1 Subject to section 2.4.2, this IIBA may be amended by written agreement of all the Parties.

2.4.2 The amendment or addition of an appendix or a provision relating to a specific NWA or MBS shall require the written agreement of CWS, NTI and the relevant RIA.

2.5 OTHER GENERAL PROVISIONS

2.5.1 This IIBA is a legally binding and enforceable agreement.

2.5.2 This IIBA is governed by the laws of Nunavut and Canada, as applicable.

2.5.3 This IIBA does not form part of the *NLCA*, and it is not a land claims agreement or treaty within the meaning of Section 35 of the *Constitution Act, 1982*.

2.5.4 Nothing in this IIBA shall be construed so as to abrogate or derogate from any aboriginal or treaty rights of Inuit.

2.5.5 This IIBA and all terms herein shall be read so as to be consistent with the *NLCA*. In the event of any inconsistency or conflict between the IIBA and the *NLCA*, the *NLCA* shall prevail to the extent of the inconsistency or conflict.

2.5.6 Nothing included in or excluded from this IIBA is intended to be used as a guide to the interpretation of the *NLCA*.

2.5.7 This IIBA is not a bilateral agreement under section 5.7.18 of the *NLCA*, and it does not establish any limitation on Inuit access rights as set forth in the *NLCA*.

2.5.8 The exclusion from this IIBA of any matter listed in Schedule 8-3 of the *NLCA* shall not be construed as an acknowledgement that the matter is not appropriate for inclusion in this or any future IIBA.

2.5.9 The Articles, Schedules and Appendix constitute this IIBA and shall be read together and interpreted as one agreement. The Preamble, Principles and Objectives in this IIBA are intended to assist in the interpretation of the IIBA.

2.5.10 This IIBA constitutes the entire agreement among the Parties and there are no oral or written representations, warranties, collateral agreements or conditions affecting this IIBA except as expressed in it.

2.5.11 There shall be no presumption that doubtful expressions in this IIBA are to be interpreted in favour of Government of Canada or the Inuit Parties.

2.5.12 There shall be Inuit Language, English and French versions of this IIBA. The English version shall be the authoritative version. Subject to their mutual consent, the Parties may during the term of the IIBA designate the Inuit Language and/or French version(s) to be authoritative as well.

2.5.13 Nothing in this IIBA shall affect the rights or the ability of Inuit to participate in and benefit from programs for Nunavut residents, Inuit or aboriginal people.

2.5.14 No member of the House of Commons shall be admitted to any share or part of this IIBA by any benefit arising therefrom.

2.5.15 Time is of the essence in performing all provisions of this IIBA.

2.5.16 Use of the singular in this IIBA includes the plural.

2.5.17 When the Minister designates one or more persons to act in the place of the Minister or delegates a responsibility under this IIBA, CWS shall provide notice of the designation or delegation to the Inuit Parties, and the Minister shall remain responsible for the performance of all designated and delegated responsibilities.

2.5.18 When NTI designates one or more organizations to act in its place or delegates a responsibility under this IIBA, it shall provide notice of the designation or delegation to the Minister and the RIAs, and it shall remain responsible for the performance of all delegated responsibilities.

2.5.19 This IIBA enures to the benefit of and binds the Parties and their successors and assigns.

2.5.20 No Party may transfer any responsibility or obligation under this IIBA from a person or body identified in the IIBA as having that responsibility or obligation to another person or body, without notice to and the approval of the other Parties, such approval not to be unreasonably withheld. Once such approvals are given, the transferee is deemed to be a successor or assign of the Party for the purposes of the IIBA.

2.5.21 The failure of a Party to enforce a provision of this IIBA does not constitute a waiver of the provision or affect the Party's right to enforce the provision at a later date.

2.5.22 If any provision of this IIBA is found by a court of competent jurisdiction to be invalid, that provision shall be deemed to be severed from the IIBA, the remainder of the IIBA shall continue in full force, and the Parties shall make best efforts to amend the IIBA to remedy the invalidity or replace the invalid provision.

2.5.23 The Minister shall consult the Inuit Parties when proposed changes to the *CWA*, *MBCA* or *SARA* may affect NWAs or MBSs.

2.6 CONSULTATION

2.6.1 A duty to consult, identified in this IIBA, shall include, at a minimum:

(a) notice of the matter in sufficient form and detail to allow the party being consulted to prepare its views;

(b) a reasonable period of time for the party being consulted to prepare its views and an opportunity to discuss those views with the consulting party; and

(c) full and fair consideration of any views presented.

2.6.2 A duty to consult individual Inuit, identified in this IIBA, shall also include, at a minimum:

(a) reasonable and culturally appropriate consultation techniques, which facilitate the sharing of views by unilingual and other Inuit;

(b) interpretation and translation of relevant materials, as required; and

(c) except where otherwise decided by the relevant ACMC, a summary of the consultation process in English and the Inuit Language.

2.7 UNDERTAKING IN FULFILMENT OF OBLIGATIONS

2.7.1 The Parties shall take all steps that are necessary to give full effect to the provisions of this IIBA.

2.8 NOTICE

2.8.1 Except as otherwise expressly permitted or required, any communications, notices or demands made or given by a Party under this IIBA shall be in writing and shall be: a) delivered personally (in which case the notice shall be considered received on the day of the delivery); or b) mailed by registered mail, return receipt requested (in which case the notice shall be considered received on the seventh business day following the day on which it was registered in a post office; or c) sent by facsimile confirmation transmission (in which case the notice shall be considered received on the second business day

following the facsimile transmission); or d) sent by electronic mail, read receipt requested (in which case the notice shall be considered received on the day following the day of delivery).

2.8.2 Notices shall be sent to the following addresses in the case of personal communication, communication by mail, communication by facsimile or by electronic mail, unless otherwise stipulated in this IIBA or indicated by the Parties in writing:

If to the Government of Canada:
Regional Director
Environmental Stewardship Branch
Canadian Wildlife Service
Prairie and Northern Region
Environment Canada
9250 49th Street, Edmonton, AB T6B 1K5
(780) 951-8850
(780) 495-2615 (fax)
david.ingstrup@canada.ca

If to Nunavut Tunngavik Inc.:
Chief Executive Officer, Nunavut Tunngavik Inc., Box 638
Iqaluit, Nunavut X0A 0H0
(867) 975-4900
(867) 975-4949 (fax)
jtarreak@tunngavik.com

If to the Kitikmeot Inuit Association:
Executive Director, Kitikmeot Inuit Association, Box 18
Cambridge Bay, Nunavut X0B 0C0 (867) 983-2458
(867) 983-2701 (fax)
execdir@kitia.ca

If to the Kivalliq Inuit Association:
Executive Director
Kivalliq Inuit Association, Box 340
Rankin Inlet, Nunavut X0C 0G0
(867) 645-2810
(867) 645-3855 (fax)
gkarlik@kivalliqinuit.ca

If to the Qikiqtani Inuit Association:
Executive Director
Qikiqtani Inuit Association, Box 1340
Iqaluit, Nunavut X0A 0H0
(867) 975-8400
(867) 979-3238 (fax)
nbeveridge@qia.ca

2.8.3 In the case of notices by e-mail, the notice shall be sent to the person occupying the position identified in this section at the time of the notice, unless the Parties notify each other otherwise.

2.8.4 In the event of any disruption of postal service, notices shall be delivered personally, or sent by facsimile or by electronic mail.

NWAs and MBSs to Which This IIBA Applies
Schedule 2-1 (Section 2.2.1)

NWAs and MBSs	Associated Communities
1. Akpait NWA	Qikiqtarjuaq
2. Bylot Island MBS	Pond Inlet
3. Dewey Soper MBS	Cape Dorset
4. East Bay MBS	Coral Harbour
5. Harry Gibbons MBS	Coral Harbour
6. Ninginganiq NWA	Clyde River
7. McConnell River MBS	Arviat
8. Nirjutiqarvik NWA	Grise Fiord
9. Polar Bear Pass NWA	Resolute
10. Prince Leopold Island MBS	Resolute, Arctic Bay
11. Qaqulluit NWA	Qikiqtarjuaq
12. Queen Maud Gulf MBS	Cambridge Bay, Gjoa Haven, Omingmaktok
13. Seymour Island MBS	Resolute

ARTICLE 3 — CO-MANAGEMENT

3.1 OBJECTIVES

3.1.1 This Article has the following objectives:

(a) effective co-management of NWAs and MBSs by Inuit and CWS in accordance with the *NLCA*, and particularly Articles 9 and 5 of the *NLCA*;

(b) decision-making for MBSs and NWAs that is substantially informed and influenced by *Inuit Qaujimajatuqangit*; and

(c) local Inuit involvement in the planning and management of NWAs and MBSs.

3.2 AREA CO-MANAGEMENT COMMITTEES

Establishment and Purpose

3.2.1 Area Co-Management Committees (ACMCs) shall be maintained for each NWA or MBS or group thereof listed in Schedule 3-1.

3.2.2 Each ACMC shall base its operations in the Associated Community listed in Schedule 3-1, except that in the case of Queen Maud Gulf MBS, the ACMC shall base its operations in Cambridge Bay.

3.2.3 The purposes of the ACMCs shall be to:

(a) advise the Minister, as they deem appropriate, on all aspects of the planning and management of NWAs and MBSs, in accordance with Part 3.3 of this IIBA;

(b) prepare, amend and recommend Management Plans in accordance with Parts 3.5 to 3.7 of this IIBA; and

(c) fulfill the other functions of the ACMCs set forth in the IIBA.

Appointment and Terms of Members

3.2.4 Each ACMC shall consist of six members, appointed as follows:

(a) the relevant RIA shall appoint three members, all of whom shall be members of the Associated Community's Community Lands and Resources Committee (CLARC) or Community Beneficiary Community (CBC);

(b) the Minister shall appoint three members, two of whom shall be members of the Associated Community's CLARC or CBC. The Minister's third appointment shall be an employee of CWS;

(c) where the ACMC represents more than one Associated Community, as set forth in Schedule 3-1, members of the CLARCs or CBCs of all these Associated Communities are eligible for appointment to an ACMC and the ACMC shall include at least one representative from each Associated Community's CLARC or CBC; and

(d) in the event that a CLARC member is not available to be appointed, other members may be appointed by the Minister and the relevant RIA that are not CLARC members with the agreement of the Parties.

3.2.5 ACMC members shall have demonstrable interest, knowledge or experience in conservation, wildlife, tourism, and/or Inuit culture and heritage.

3.2.6 The relevant RIA shall, after consultation with the Minister, appoint the Chair of each ACMC from among the members appointed from the CLARCs or CBCs. The CWS employee member shall serve as the Vice-Chair of the ACMC and may not also serve as the Chair.

3.2.7 ACMC members may retain their positions after their CLARC or CBC appointment ends. The terms of ACMC members shall be three (3) years.

3.2.8 The relevant RIA shall notify the Minister within thirty (30) days of the appointment or re-appointment of the CLARC or CBC in the Associated Community(ies). Within ninety (90) days of his or her receipt of the RIA's notice, the Minister shall appoint the two (2) CLARC or CBC members that he or she is responsible for appointing to each ACMC.

3.2.9 ACMC members, including the Chair and Vice-Chair, may be re-appointed to their positions.

3.2.10 The RIA or the Minister may remove ACMC members in accordance with ACMC procedures established pursuant to section 3.2.22.

3.2.11 If a member is removed from or otherwise leaves an ACMC, the RIA or the Minister who appointed that member shall, within a reasonable time, appoint a replacement member in the manner described above.

Training

3.2.12 Each ACMC shall hold periodic training and orientation workshop(s) as needed to ensure new members are adequately trained to fulfill their obligations.

3.2.13 The purpose of the workshop(s) shall be to:

(a) familiarize ACMC members with relevant legislation, the *NLCA*, NWA or MBS planning and management processes, this IIBA, and the roles and responsibilities of the ACMCs under the IIBA;

(b) develop appropriate methods to assist the Inuit members of the ACMCs in obtaining and bringing *Inuit Qaujimajatuqangit* to ACMC deliberations; and

(c) enable the members to better carry out their responsibilities under the IIBA.

3.2.14 CWS shall develop the workshop(s) in consultation with NTI, the RIAs and the ACMCs. NTI or the relevant RIA may participate in the workshop(s). The workshop(s) shall be planned, coordinated, and delivered by CWS, except that the *Inuit Qaujimajatuqangit* component of the workshop(s) shall be facilitated by the relevant RIA or NTI.

3.2.15 An all ACMCs meeting shall occur once within the term of this IIBA for a training session to exchange information, learn from each other and, to the extent possible, coordinate their work.

Operations

3.2.16 Each ACMC shall meet in person at least once a year. ACMCs may also conduct their work by teleconference and any decisions so made shall be valid.

3.2.17 ACMC meetings shall be open to the public, but ACMCs may meet *in camera* from time to time if, in the opinion of the ACMC, special circumstances so require.

3.2.18 ACMCs shall conduct their business in the Inuit Language and English, and Interpretation and translation shall be provided as requested by the members.

3.2.19 The quorum for any ACMC meeting shall be four members, at least two of whom shall be RIA appointees.

3.2.20 Members appointed to the ACMCs shall consider the interests of the Inuit of the Associated Community(ies), the region and the NSA as a whole, and the interests of the people of Nunavut and of Canada when deliberating on any matter.

3.2.21 ACMCs shall make all reasonable efforts to make their decisions by consensus (the agreement of all members). If an ACMC is unable to reach consensus on any issue, it may decide by simple majority vote. The Chair and Vice-Chair shall participate in all ACMC decision-making.

3.2.22 ACMCs shall, with the assistance of the Parties, establish procedures governing their operations, including conflict of interest guidelines and a code of conduct, and the ACMCs and the Parties shall make these procedures publicly available. Wherever reasonable and agreeable to the relevant ACMCs, these procedures shall be consistent among different ACMCs.

Budget and Work Plan

3.2.23 Prior to the conclusion of every fiscal year, each ACMC shall prepare a work plan and proposed budget for the coming year.

3.2.24 Each ACMC shall submit its proposed work plan and budget to CWS, NTI and the relevant RIA for their review and approval at the annual review in accordance with Part 15.4.

3.2.25 ACMCs may recommend changes to their work plans and budgets as circumstances change during any fiscal year. They shall submit any such revised work plans and budgets to CWS, NTI and the relevant RIA for their review and approval, within a reasonable period of time.

3.2.26 At the conclusion of each fiscal year, each ACMC shall prepare a report on the attainment of that year's work plan and on other matters as the ACMC sees fit. Each ACMC shall submit its report for the Parties' review in the annual reviews under Part 15.4.

Costs

3.2.27 ACMC budgets shall be approved in advance in accordance with sections 3.2.24 and 3.2.25. Legitimate ACMC costs are as follows:

(a) honoraria for members for ACMC work when a member is not otherwise reimbursed for that work;

(b) the ACMCs' meeting expenses, including travel, accommodation and per diem expenses at Treasury Board rates for members who must travel to attend ACMC meetings and who are not otherwise reimbursed for these expenses;

(c) expenses of RIA staff who travel to attend ACMC meetings; and

(d) other costs associated with the ACMCs' performance of their duties under this IIBA.

3.2.28 Subject to section 15.2.1, CWS shall provide NTI with IIBA Implementation Funds in the amounts identified in line 1 and line 2 of Schedule 15-1 to pay the costs of the ACMCs described in section 3.2.27. NTI's obligations to pay ACMC costs pursuant to this section are limited by and to the funding provided in lines 1 and 2 of Schedule 15-1.

Secretariat Support

3.2.29 CWS shall provide secretariat support to the ACMCs as set forth in section 3.2.30.

3.2.30 The secretariat support provided by CWS shall consist of:

(a) logistical support including the organization of ACMC meetings, teleconferences, consultations, travel and accommodations;

(b) assistance in ACMC budget preparation;

(c) administrative support and the maintenance of ACMC documents and files; and

(d) other duties of a similar nature as directed by the Chair and agreed by CWS.

3.2.31 At the request of CWS, the relevant RIA may assign a staff person to provide support for ACMC meetings. The amounts to pay for the costs associated with this RIA staff person are identified in line 1 of Schedule 15-1.

3.3 AREA CO-MANAGEMENT COMMITTEE ADVICE

3.3.1 In accordance with section 9.3.7 of the *NLCA*, an ACMC may, as it deems appropriate, advise the Minister on all matters related to NWA or MBS management. An ACMC may also, as it deems appropriate, advise the Parties and other Government of Canada organisations, departments and agencies on matters related to the management of an NWA or MBS.

3.3.2 For greater certainty, section 2.1.2 does not constrain an ACMC from providing advice to the Minister, the Parties or other Government of Canada organisations, departments and agencies as it deems appropriate, including advice on legislative change. Notwithstanding section 2.1.2, a member of an ACMC may bring to ACMC deliberations and decision-making, and otherwise express, his or her views on any matter under consideration by the ACMC, whether or not those views are consistent with legislation.

3.3.3 In formulating their advice to the Minister, ACMCs shall carefully consider *Inuit Qaujimajatuqangit* brought forward by any member.

3.3.4 The role of the ACMCs includes advising on:

(a) the NWA Strategy and Action Plan for Nunavut (Part 3.4);

(b) Management Plans (Parts 3.5 to 3.7);

(c) RIA-Supported Permit Applications (Part 4.3);

(d) the removal of carving stone from NWAs and MBSs (Part 5.4);

(e) outpost camps and Cabins in NWAs and MBSs (Part 5.5);

(f) the inventories of resources important to Inuit, including oral history projects, archaeological projects and Inuit Language place names (Parts 6.4 to 6.7);

(g) NWA and MBS research (Part 10.2);

(h) CWS's role in the protection of Archaeological Sites, Artifacts and Specimens and Cultural Sites of Importance to Inuit (Part 11.3);

(i) the management and protection of wildlife and wildlife habitat within an MBS or NWA (Part 12.2);

(j) the Establishment, Enlargement, Status Change, Reduction or Disestablishment of an MBS or NWA, as appropriate (Parts 13.3 and 13.5); and

(k) Visitor use of NWAs and MBSs, including recommended guide areas (Parts 14.2 and 14.4).

3.3.5 The Minister shall seek the advice of the relevant ACMCs on all significant policy matters directly affecting NWAs or MBSs. In all significant policy decisions, the Minister

shall carefully consider *Inuit Qaujimajatuqangit* documented and presented to the Minister by an ACMC.

3.3.6 With the exception of advice on RIA-Supported Permit Applications under section 4.3.2, which is governed by section 4.3.3, ACMC advice to the Minister is subject to the process set forth in section 3.3.7.

3.3.7 The Minister shall consider an ACMC's advice on any matter as follows:

(a) on first receipt of an ACMC's advice, the Minister shall accept and implement or reject the advice. If the Minister rejects the ACMC's advice, the Minister shall, within sixty (60) days of receiving the advice, provide written reasons to the ACMC for the rejection. If the Minister considered any additional information not in the possession of the ACMC, the Minister shall, subject to legal restrictions on disclosure, disclose that information in the written reasons;

(b) if the Minister rejects an ACMC's advice, the ACMC may reconsider its advice, and it may, within sixty (60) days of receiving the Minister's reasons for the rejection, submit revised advice;

(c) the Minister shall consider any revised advice submitted by an ACMC under subsection (b), and shall make and implement a final decision within sixty (60) days. The Minister shall provide written reasons to the ACMC, to the extent that the Minister has rejected or varied the ACMC's revised advice. The failure of an ACMC to submit revised advice to the Minister within the required time shall not prevent the Minister from making and implementing the final decision;

(d) the sixty (60) day deadlines in subsections (a), (b) and (c) above may be extended with the mutual agreement of the Minister, NTI and the relevant RIA; and

(e) the Minister's written reasons provided pursuant to this section shall address any *Inuit Qaujimajatuqangit* documented and presented to the Minister by the ACMC.

3.4 NWA STRATEGY AND ACTION PLAN

3.4.1 Within the term of the IIBA, CWS shall develop a draft NWA Strategy and Action Plan for Nunavut for consultation with the ACMCs and the relevant Inuit organizations, including the RIAs, the RWOs and NTI. The Strategy will be completed prior to the establishment of any new NWAs.

3.4.2 The Strategy shall identify potential NWAs, in addition to those which have already been established, which are required to complete an effective network of NWAs in the NSA. The Action Plan shall establish a timetable for implementing the Strategy. The timetable shall be subject to, and shall provide for, any steps to be taken pursuant to Article 13 of this IIBA.

3.4.3 In developing the Strategy and Action Plan, CWS shall carefully consider *Inuit Qaujimajatuqangit* documented and presented to it by any ACMC.

3.4.4 CWS shall present the draft Strategy and Action Plan to the Minister for approval. Any future NWA initiatives shall be consistent with the Strategy and Action Plan.

3.4.5 CWS may amend the Strategy and Action Plan in accordance with the process set forth in sections 3.4.1 through 3.4.4.

3.4.6 Funding to fulfill the obligations identified in this Part shall not be derived from IIBA Implementation Funds.

3.5 MANAGEMENT PLAN PREPARATION

3.5.1 For every NWA or MBS, a Management Plan shall be completed by CWS at the earliest possible date and no later than the dates set forth in the implementation plan pursuant to section 15.3.1.

3.5.2 In accordance with section 8.4.13 of the *NLCA*, for any NWA or MBS established after the Effective Date of this IIBA, a Management Plan shall, subject to section 3.5.3, be completed within five (5) years of the establishment of the NWA or MBS.

3.5.3 Each ACMC shall prepare the Management Plan for the MBS(s) or NWA(s) for which it is responsible under Schedule 3-1.

3.5.4 In preparing Management Plans, the ACMCs shall carefully consider any *Inuit Qaujimajatuqangit* brought forward by a member.

3.5.5 The ACMC shall consult the relevant RIA, and NTI, before completing the draft Management Plan.

3.5.6 Subject to its work plan and budget, the ACMC may prepare the Management Plan according to whatever process it deems appropriate and it may consult as it deems appropriate.

3.5.7 The Management Plan shall include a description of:

(a) the purposes of the NWA or MBS;

(b) management goals and objectives;

(c) the natural and cultural history and the context within which the NWA or MBS operates;

(d) policies that will guide the management of the NWA or MBS;

(e) a schedule to implement Management Plan action items; and

(f) items identified pursuant to sections 14.2.2 and 14.4.1.

3.5.8 Where an NWA or MBS includes IOL, the Management Plan shall reflect and address any special issues arising from the presence of the IOL.

3.5.9 In the event that a management plan already exists for an NWA or MBS, the ACMC shall review that management plan and it may, in accordance with Part 3.6, recommend amendment or replacement of that plan as it deems appropriate.

3.6 MANAGEMENT PLAN APPROVAL

3.6.1 The ACMCs shall recommend completed Management Plans to the NWMB for approval in accordance with sections 5.2.34(c) and 5.3.16 of the *NLCA*.

3.6.2 The ACMC shall provide the relevant RIA and NTI with a copy of the completed Management Plan when it sends the Plan to the NWMB.

3.6.3 If, in accordance with the decision-making process set forth in subsection 5.2.34(c) and sections 5.3.17 through 5.3.23 of the *NLCA*, the NWMB or the Minister rejects, in whole or part, a completed Management Plan and the Plan is returned to an ACMC for reconsideration, the relevant ACMC shall re-consider the Plan and re-submit it to the NWMB.

3.6.4 In accordance with section 8.4.13 of the *NLCA*, approved Management Plans shall be based on the recommendations of the relevant ACMCs, taking into account the recommendations of other interested persons or bodies.

3.6.5 Once the Minister has accepted a Management Plan, the Minister shall proceed forthwith to do all things necessary to implement the Plan.

3.6.6 The ACMC shall provide a copy of the approved Management Plan to NTI and the relevant RIA.

3.7 AMENDMENTS TO MANAGEMENT PLANS

3.7.1 Government of Canada, a DIO, any member of an ACMC, or any person whose interests are affected by a Management Plan may propose an amendment to a Management Plan to the ACMC.

3.7.2 The ACMC shall consider the proposed amendment and may recommend amendments to the Management Plan in accordance with the process set forth under Parts 3.5 and 3.6.

Area Co-Management Committees
Schedule 3-1 (Sections 3.2.1 and 3.2.2)

NWAs and MBSs	Associated Communities	Area Co-Management Committees
1. Akpait NWA and Qaqulluit NWA	Qikiqtarjuaq	Sululiit
2. Bylot Island MBS	Pond Inlet	Asungasungaaq
3. Dewey Soper MBS	Cape Dorset	Isulijarnik
4. East Bay MBS and Harry Gibbons MBS	Coral Harbour	Irniurviit
5. Ninginganiq NWA	Clyde River	Ninginganiq
6. McConnell River MBS	Arviat	Nivvialik
7. Nirjutiqarvik NWA	Grise Fiord	Nirjutiqarvik
8. Polar Bear Pass NWA, Prince Leopold Island MBS and Seymour Island MBS	Resolute	Sulukvait
9. Queen Maud Gulf MBS	Cambridge Bay, Gjoa Haven, Omingmaktok	Ahiak

ARTICLE 4 — INUIT OWNED LANDS

4.1 OBJECTIVES

4.1.1 This Article has the following objectives:

(a) maintain the natural resource values of IOL that lie within MBSs and NWAs;

(b) recognize the respective roles and responsibilities of the RIAs and the Minister in managing IOL within MBSs and NWAs;

(c) fairly and impartially resolve disputes between an RIA and CWS regarding the permitting of activities on IOL within NWAs and MBSs;

(d) ensure reasonable notice to Inuit when CWS agents, employees and contractors access IOL; and

(e) ensure reasonable access across NWAs and MBSs to IOL.

4.2 DEFINITIONS

4.2.1 For the purposes of this Article:

(a) "RIA-Supported Permit Application" means an application to CWS, made or supported in writing by an RIA, for an NWA or MBS permit to conduct an activity on IOL within an NWA or MBS where, pursuant to sections 9.3.3 or 9.3.4 of the *NLCA*, the activity requires a permit under the *CWA* or the *MBCA*; and

(b) "RIA-Supported Permit" means an RIA-Supported Permit Application approved by the Minister.

4.3 USE OF IOL PARCELS IN MBSs AND NWAs

Decision-Making Test

4.3.1 The Minister shall approve an RIA-Supported Permit Application where, in his or her opinion, acting reasonably, the proposed activity is consistent with the *CWA*, *MBCA* or *SARA*, as applicable. When evaluating an RIA-Supported Permit Application, the Minister shall consider:

(a) the potential effects of the proposed activity on local migratory bird populations and habitat, on local wildlife populations and habitat, on any endangered, threatened or extirpated wildlife species listed under *SARA*, or on those species' critical habitat, including:

(i) the nature and scale of the activity;

(ii) the location and geographic extent of the activity;

(iii) the time of year of the activity;

(iv) the duration of the activity;

(v) the likelihood of potential effects from the activity; and

(vi) the likelihood of population and habitat recovery;

(b) the social, cultural and economic importance of the activity to Inuit;

(c) the RIA's and the Associated Community's objectives in supporting the activity;

(d) whether there are financially viable and practical alternatives to carrying out the activity in the MBS or NWA;

(e) any conciliator's report under section 4.3.8 and any RIA President-Ministerial discussions under section 4.3.9;

(f) such other matters as the Minister, acting reasonably, considers relevant; and

(g) whether the activity can be accommodated within the MBS or NWA, given the above considerations.

Decision-Making Process

4.3.2 The relevant ACMC may advise the RIA and CWS on all aspects of RIA-Supported Permit Applications, including any terms and conditions that should be attached to RIA-Supported Permits.

4.3.3 The decision-making process set forth in sections 4.3.4 through 4.3.13, using the test in section 4.3.1, shall apply to all RIA-Supported Permit Applications. The process set forth in sections 3.3.6 and 3.3.7 shall not apply to ACMC advice on RIA-Supported Permit Applications.

4.3.4 An RIA-Supported Permit Application, together with any supporting documentation, shall address the factors set forth in section 4.3.1, as applicable. The RIA shall document and include in the Application any *Inuit Qaujimajatuqangit* that it believes relevant to the Application. CWS may require further information from the applicant where an RIA-Supported Permit Application is incomplete.

4.3.5 On the receipt of a complete RIA-Supported Permit Application, CWS and the RIA shall meet, within a reasonable time, in person or by teleconference, to discuss the Application.

4.3.6 If, following the section 4.3.5 discussions, either Party has concerns with the RIA-Supported Permit Application, it may give notice to the other Party that it wishes to attempt to resolve the matter through mediation. CWS and the RIA shall then retain the services of a mutually acceptable mediator and they shall, within a reasonable time, make all reasonable efforts to resolve the matter through mediation.

4.3.7 If, following the completion of the section 4.3.5 discussions and any mediation pursuant to section 4.3.6, CWS has concerns regarding the RIA-Supported Permit Application, it shall, within a reasonable time, so notify the relevant RIA and the ACMC, and it shall provide them with written documentation of its concerns. CWS's documentation shall address any *Inuit Qaujimajatuqangit* documented and presented to it by the RIA or ACMC.

4.3.8 If, after considering CWS's concerns as documented pursuant to section 4.3.7, the RIA wishes to proceed with the RIA-Supported Permit Application, it may give notice to CWS that it wishes to attempt to resolve the matter through conciliation. CWS and the RIA shall then, within a reasonable time, select a mutually acceptable conciliator and conciliation process, and the conciliator shall submit a report to the President of the RIA and the Minister.

4.3.9 If, after considering the conciliator's report under section 4.3.8, the RIA wishes to proceed with the RIA-Supported Permit Application, it may refer the Application to the President of the RIA and the Minister, who shall then, within a mutually acceptable time, discuss the Application, in person or by teleconference.

4.3.10 At the conclusion of the section 4.3.9 discussions, or earlier if the Minister is willing to approve the RIA-Supported Permit Application at an earlier point in the decision-making process, the Minister shall make his or her decision.

4.3.11 In the event that the Minister does not approve the RIA-Supported Permit Application, the Minister shall, within a reasonable time, provide the RIA with written reasons for his or her decision.

4.3.12 Nothing in this Article shall limit the legal remedies of any Party.

4.3.13 Each disputing Party shall pay its own costs of dispute resolution undertaken pursuant to this Article, and the Parties shall share equally all costs associated with the hiring of a mediator or a conciliator pursuant to sections 4.3.6 and 4.3.8.

4.3.14 Notwithstanding section 1.2, the "Minister" in subsection 4.3.1(e) and in sections 4.3.8 through 4.3.11 means the Minister, and not a Ministerial designate. For greater certainty, in section 4.3.8, the "Minister" means the Minister only in the sense that any conciliation report shall be submitted directly to the Minister and not merely to a Ministerial designate; the inclusion of "the Minister" in section 4.3.8 does not mean that the Minister rather than a designate must otherwise take part in any conciliation process.

4.4 GENERAL

4.4.1 Prior to making any decision that could substantially affect IOL within or adjacent to an NWA or MBS, CWS shall consult the relevant RIA. The RIA shall document and present to CWS any *Inuit Qaujimajatuqangit* which it believes relevant to CWS's decision. CWS shall provide written reasons for its decision. CWS's reasons shall address any *Inuit Qaujimajatuqangit* documented and presented to it by the RIA or ACMC.

4.5 IOL NOT IN SCHEDULE 9-3

4.5.1 IOL parcels which may in the future lie within a proposed NWA or MBS or an Enlargement of an NWA or MBS and which are not identified in Schedule 9-3 of the *NLCA* shall only with the written consent of the relevant RIA, or NTI if the IOL include subsurface rights, be included in the NWA or MBS. For greater certainty, any such Establishment or Enlargement is subject to an amendment to this IIBA.

4.6 CWS RESEARCH AND MANAGEMENT ACTIVITIES ON IOL

4.6.1 In accordance with section 21.5.4 of the *NLCA*, any agent, employee or contractor of CWS exercising a right of access to IOL and water on IOL in an NWA or MBS under Article 21 of the *NLCA* for legitimate Government purposes relating to the lawful delivery and management of CWS programs and the enforcement of laws is subject to subsection 21.3.12(b) and section 21.3.13 of the *NLCA*.

4.6.2 In accordance with section 21.5.7 of the *NLCA*, access to IOL by CWS personnel for the purposes of wildlife management and wildlife research is subject to the approval of the NWMB after consultation with the appropriate RWO.

4.6.3 In order to keep the relevant RIA informed of CWS actions on its lands, CWS agents, employees and contractors shall also, wherever practicable and appropriate, make all reasonable efforts to provide the RIA with written notice prior to entering on IOL. Without in any way limiting the requirements of section 4.6.2, examples when notice to an RIA may not be practicable or appropriate include animal tracking actions which necessitate unforeseeable entry onto IOL, search and rescue, other emergencies and the enforcement of laws. Where prior written notice has not been given, CWS shall provide notice to the RIAs as soon as it is practicable and appropriate after entering on IOL.

4.6.4 CWS shall provide written guidelines to all CWS agents, employees and contractors, to ensure that such individuals comply fully with section 4.6.3.

4.7 ACCESS TO IOL

4.7.1 The provisions of Part 4.3 shall also apply to a permit application to CWS made or supported by an RIA and related to access across an NWA or MBS to Resources on IOL parcels partly inside or sharing the NWA's or MBS's boundary, or to the siting of infrastructure and facilities on such IOL.

ARTICLE 5 — INUIT RIGHTS AND USES OF NWAs AND MBSs

5.1 OBJECTIVES

5.1.1 This Article has the following objectives:

(a) acknowledge Inuit rights to harvest wildlife in NWAs and MBSs as set forth in the *NLCA*;

(b) address permit requirements related to the guiding of sports hunters in NWAs and MBSs;

(c) provide for the exercise of Inuit rights to remove carving stone from NWAs and MBSs, as set forth in the *NLCA*; and

(d) provide for Inuit establishment of outpost camps in NWAs and MBSs, as set forth in the *NLCA*.

5.2 INUIT USE OF AND ACCESS TO NWAs AND MBSs

5.2.1 As set forth in Article 5 and subject to section 5.7.18 of the *NLCA*, Inuit have a free and unrestricted right of access for the purpose of harvesting to all lands, waters and marine areas within NWAs and MBSs.

5.2.2 As set forth in and subject to Article 5 of the *NLCA*, including any applicable restrictions established pursuant to that Article by the NWMB, an Inuk or an assignee under section 5.7.34 of the *NLCA* may, within an NWA or MBS, harvest wildlife and engage in activities reasonably incidental to harvesting without any form of licence, permit, tax or fee under the *CWA* or the *MBCA*.

5.2.3 For greater certainty, to the extent that it is consistent with the *NLCA*, *CWA*, *MBCA* and *SARA*, the Nunavut *Wildlife Act* shall continue to apply within NWAs and MBSs.

5.2.4 NTI may prepare an Inuit Language and English information sheet that identifies Inuit harvesting and related activities that do not require a permit in NWAs or MBSs. In this event, CWS and NTI shall discuss the information sheet. Provided that they agree on its contents, CWS shall cover the costs of translating and distributing the information sheet.

5.2.5 Before seeking NWMB approval to limit Inuit harvesting activities in an NWA or MBS, CWS shall consult NTI and the relevant ACMC in an effort to find means other than regulation to resolve disputes regarding such activities.

5.3 SPORTS HUNTER GUIDING

5.3.1 Subject to Article 5 of the *NLCA*, including any limitations established by the NWMB pursuant to that Article, an Inuk guide may, without any form of licence, permit, tax or

fee under the *CWA* or *MBCA*, guide or transport sports hunters and their equipment through an NWA or MBS to a destination within or outside the NWA or MBS. For greater certainty, this section is not intended to affect the requirement for a sports hunter to obtain any necessary permits.

5.3.2 Subject to Article 5 of the *NLCA*, including any limitations established by the NWMB pursuant to that Article, when guiding or transporting sport hunters or their equipment through an NWA or MBS to a destination within or outside the NWA or MBS, an Inuk may, without any form of licence, permit, tax or fee under the *CWA* or *MBCA*, carry and discharge firearms for self- protection or the protection of clients.

5.4 REMOVAL OF CARVING STONE

5.4.1 As set forth in and subject to sections 19.9.4 and 19.9.9 of the *NLCA*, an Inuk has the right to remove up to 50 cubic yards per year of carving stone from Crown lands within NWAs and MBSs, and any amount of carving stone from IOL within NWAs and MBSs.

5.4.2 An Inuk may exercise the right set forth in section 5.4.1, provided that the extraction and transportation of carving stone are carried out in a manner consistent with the conservation of wildlife and wildlife habitat, including the maintenance of healthy wildlife populations.

5.4.3 The relevant ACMC may advise CWS, Inuit exercising rights under sections 5.4.1 and 5.4.2 and, in the case of IOL in NWAs or MBSs, the relevant RIA, on ways of preventing and resolving disputes associated with the extraction and transportation of carving stone from NWAs and MBSs.

5.4.4 Subject to sections 5.4.1 and 5.4.2, Management Plans may identify carving stone deposits in NWAs and MBSs, and may include recommendations to guide the extraction and transportation of carving stone or to prevent or resolve disputes associated with such extraction and transportation. Such recommendations shall bind Inuit only upon agreement in an appendix to this IIBA.

5.5 NEW OUTPOST CAMPS

5.5.1 For the purposes of this Part, “new outpost camps” means outpost camps established in NWAs and MBSs from the date of the ratification of the *NLCA*.

5.5.2 Management Plans for particular NWAs and MBSs shall identify, among other things, any areas where the establishment of new outpost camps is inconsistent with the conservation of wildlife and wildlife habitat, including the maintenance of healthy wildlife populations.

5.5.3 Inuit may establish new outpost camps anywhere in an NWA or MBS except within the areas identified pursuant to section 5.5.2.

5.5.4 Pursuant to section 7.2.2. of the *NLCA*, the establishment of new outpost camps is subject to the approval of the appropriate HTO or HTOs. Inuit intending to establish a new outpost camp in an NWA or MBS shall discuss the intended location of the camp with the HTO and the appropriate ACMC, with a view to minimizing impacts, if any, on wildlife and wildlife habitat.

5.5.5 If CWS becomes aware that a Visitor wishes to visit an outpost camp, it shall direct the Visitor to consult the relevant ACMC. The ACMC shall advise the Visitor on the appropriateness of the visit.

ARTICLE 6 — INFORMATION, MATERIALS AND FACILITIES

6.1 OBJECTIVES

6.1.1 This Article has the following objectives:

(a) document the archaeological, ethnographic, and oral history records of NWAs and MBSs;

(b) identify Cultural Sites of Importance to Inuit and Wildlife Areas of Importance to Inuit;

(c) develop Interpretative Materials in support of tourism that is appropriate to NWAs and MBSs;

(d) educate Nunavut residents and Visitors about NWA and MBS resources including, in particular, Inuit cultural and heritage resources;

(e) use Inuit Language place names in the establishment and management of NWAs and MBSs; and

(f) promote the understanding of *Inuit Qaujimajatuqangit*, and other aspects of Inuit culture and heritage.

6.2 TRANSLATION REQUIREMENTS

6.2.1 In accordance with section 8.4.16 of the *NLCA*, in addition to any other translation requirements contained in this IIBA, CWS shall, at its own cost, translate and make available in the Inuit Language all written (including electronic), audio and video information produced by it to educate or inform the public about NWAs and MBSs.

6.3 PROJECTS SUBJECT TO FUNDING

6.3.1 Subject to section 15.2.1, CWS shall provide NTI with IIBA Implementation Funds in the amounts identified in lines 3 and 4 of Schedule 15-1 to prepare Inventories and Interpretative Material. NTI's obligations under Parts 6.4 through 6.8 are limited by and to the amount of funding provided.

6.4 INVENTORIES OF RESOURCES IMPORTANT TO INUIT: GENERAL PROVISIONS

6.4.1 NTI shall contract for the preparation of inventories of resources important to Inuit (the "Inventories"), following accepted contracting standards and practices, for all or some of the NWAs and MBSs identified in Schedule 6-1. These inventories

shall be initiated and completed according to the implementation plan pursuant to section 15.3.1.

6.4.2 The purposes of the Inventories are as follows:

(a) support the development of Management Plans;

(b) support the development of the Interpretative Materials described in Part 6.8;

(c) document information of cultural importance to Inuit; and

(d) support the development of official Inuit Language names for NWAs, MBSs, and places therein.

6.4.3 The Inventories shall include to the extent deemed appropriate by the Inuit Parties:

(a) Inuit oral history projects and archaeological projects as described in Parts 6.5 and 6.6 below;

(b) the identification and description of Wildlife Areas of Importance to Inuit and Cultural Sites of Importance to Inuit; and

(c) the identification of potential Inuit Language names for NWAs, MBSs and significant places therein, in the manner set forth in section 6.7.1 below.

6.4.4 Wildlife Areas of Importance to Inuit and Cultural Sites of Importance to Inuit shall be identified through such means as the oral history interviews, reviews of existing information, or consultation with local Inuit and HTOs, the NWMB, DOE (Nunavut), Department of Culture and Heritage, and the Inuit Heritage Trust. At a minimum, Wildlife Areas of Importance to Inuit reports shall include the location of each such Area and a description of its wildlife resources and their importance to Inuit.

6.4.5 Existing oral histories, archaeological and wildlife information shall be used in the Inventories, and oral history and archaeological projects shall not duplicate existing information.

6.4.6 In their preparation of the Inventories, NTI shall require its contractors to work, as appropriate, with DOE (Nunavut), Department of Culture and Heritage, the Inuit Heritage Trust, the relevant ACMC and local Inuit. All Inventory work shall comply with the requirements of the *Nunavut Archaeological and Palaeontological Sites Regulations* and Article 33 of the *NLCA*, where applicable.

6.4.7 To the extent practicable, NTI shall make Inventories available in appropriate locations in Associated Communities.

6.4.8 NTI shall make all reasonable efforts to make available to ACMCs information collected through the Inventories to support the development of Management Plans.

6.5 ORAL HISTORY PROJECTS

6.5.1 Oral history projects shall include interviews with knowledgeable elders and reviews of available databases including Schedule 6-1 NWAs and MBSs. Relevant interview topics may include, without limitation:

(a) the history of the inter-relationships among people, wildlife of the area, and harvesting patterns and locations;

(b) legends and stories;

(c) early contact; and

(d) location and description of Cultural Sites of Importance to Inuit and Wildlife Areas of Importance to Inuit.

6.5.2 Interested elders in the Associated Community(ies) shall to the extent deemed appropriate by the Inuit Parties be taken out on the land to visit archaeological sites and to provide an opportunity to obtain additional stories and information.

6.5.3 NTI shall require its contractor to provide each informant with a transcript of his or her interview in the oral history project, as well as a summary report in English and the Inuit Language.

6.5.4 In the development and distribution of oral history material under this IIBA, the Parties shall take into account the ownership and privacy interests of Inuit informants, in consultation with those informants.

6.6 ARCHAEOLOGICAL PROJECTS

6.6.1 To the extent deemed appropriate by the Inuit Parties, in consultation with CWS, archaeological projects shall include an inventory and assessment of the archaeological resources of significant parts of Schedule 6-1 NWAs and MBSs and surrounding areas, identified in consultation with Department of Culture and Heritage, the ACMCs and local Inuit. Existing inventories and assessments may be updated as part of this work.

6.6.2 Where warranted by the extent of human use and where possible within the available budget, the ACMCs may, in consultation with Department of Culture and Heritage, recommend that detailed surveys of specific, targeted areas be conducted.

6.6.3 NTI shall require its contractors to meet, before and after any archaeological work, with the ACMCs and Associated Community residents, to inform them about the inventory and assessment, to receive advice regarding possible locations for survey work, and to report on the results of their work.

6.6.4 Archaeological inventories and assessments shall be co-ordinated with oral history projects for the same area.

6.7 INUIT LANGUAGE NAMES FOR MBSs, NWAs AND PLACES THEREIN

6.7.1 As part of the Inventories, NTI shall as needed require its contractors to consult the ACMCs, knowledgeable elders and maps developed by the Inuit Heritage Trust, the Nunavut Planning Commission and the RIAs, to identify potential Inuit Language names for NWAs, MBSs and significant places therein.

6.7.2 On the basis of the information developed pursuant to section 6.7.1, NTI and the Minister shall jointly determine whatever changes are appropriate to the official names of NWAs, MBSs, and significant places therein and, consistent with sections 33.9.1 and 33.9.2 of the *NLCA*, jointly effect the appropriate changes. Official names of NWAs and MBSs shall be of the style: "[Inuit Language name] NWA" and "[Inuit Language name] MBS".

6.7.3 CWS shall include the Inuit Language names developed pursuant to section 6.7.2 on all NWA and MBS maps that it subsequently prints and distributes (on paper or electronically).

6.8 INTERPRETATIVE MATERIALS

6.8.1 NTI shall develop or contract for the development of interpretative materials, such as signs, displays, brochures, and other information about the natural and cultural resources in and around for all or some of the NWAs and MBSs identified in Schedule 6-1 (the "Interpretative Materials"). These interpretive materials shall be initiated and completed according to the implementation plan pursuant to section 15.3.1.

6.8.2 The purpose of the Interpretative Materials shall be to facilitate the development of environmentally sustainable tourism and guiding in and around NWAs and MBSs and to educate Nunavut residents and Visitors about NWA and MBS resources, including, in particular, Inuit cultural and heritage resources.

6.8.3 NTI shall develop criteria by which, Inuit Tourism Providers or other Inuit persons or entities with similar interests may access the funds identified in section 6.8.1. The criteria shall be consistent with the purpose set forth in section 6.8.2, and may include a requirement to obtain matching funds from other sources.

6.8.4 Interpretative Materials shall incorporate *Inuit Qaujimajatuqangit*, with special regard to an NWA's or MBS's physical features, ecology, wildlife, and Inuit heritage and culture.

6.8.5 CWS shall within a reasonable time review all biological and ecological information to be contained in the Interpretative Materials (exclusive of *Inuit Qaujimajatuqangit*), to ensure the accuracy of the information.

6.8.6 CWS shall include, along with any electronic or other information or promotional material it makes available to Visitors or persons inquiring about an NWA or MBS:

(a) the names and addresses of Inuit Tourism Providers in each Associated Community, as provided by NTI or the appropriate RIA;

(b) an English-Inuit Language glossary of basic phrases and terms that may be useful to Visitors;

(c) any guide-related requirements or recommendations identified pursuant to Parts 10.6 or 14.4 below; and

(d) other appropriate information promoting the NWA or MBS and the region provided by Government, tourism organizations, or Inuit businesses.

6.9 USE OF LOCAL FACILITIES

6.9.1 If CWS displays information on NWAs and MBSs, it shall make use of visitors centres and similar facilities in the Associated Communities.

Inventories and Interpretative Materials
Schedule 6-1 (Sections 6.4.1, 6.5.1, 6.6.1, 6.8.4)

NWAs and MBSs	Associated Communities
1. Akpait NWA	Qikiqtarjuaq
2. Bylot Island MBS	Pond Inlet
3. Dewey Soper MBS	Cape Dorset
4. East Bay MBS	Coral Harbour
5. Harry Gibbons MBS	Coral Harbour
6. Ninginganiq NWA	Clyde River
7. McConnell River MBS	Arviat
8. Nirjutiqarvik NWA	Grise Fiord
9. Polar Bear Pass NWA	Resolute
10. Prince Leopold Island MBS	Resolute, Arctic Bay
11. Qaqulluit NWA	Qikiqtarjuaq
12. Queen Maud Gulf MBS	Cambridge Bay, Gjoa Haven, Omingmaktok

ARTICLE 7 — TOURISM AND OTHER BUSINESS BENEFITS

7.1 OBJECTIVES

7.1.1 This Article has the following objectives:

(a) promote the economic self-reliance and cultural and social well-being of Inuit;

(b) develop appropriate tourism and other economic opportunities in and around NWAs and MBSs;

(c) provide training and on-going support to Inuit in the Associated Communities;

(d) enable Inuit to establish and maintain tourism-related businesses and careers;

(e) increase tourism-related services and local capacity within Associated Communities;

(f) increase the ecotourism value of NWAs and MBSs to Inuit; and

(g) contribute to sustainable development in the NSA.

7.2 INUIT TOURISM PROVIDERS FUND

7.2.1 NTI shall administer an Inuit Tourism Providers fund to build capacity among Inuit Tourism Providers in the Associated Communities and to develop effective community-based tourism services. Subject to section 15.2.1, CWS shall provide NTI with IIBA Implementation Funds in the amounts identified in line 5 of Schedule 15-1 for the Inuit Tourism Providers fund.

7.2.2 The fund may be distributed for the following and similar uses:

(a) training for Inuit Tourism Providers in the following areas, without limitation:

(i) developing funding proposals;

(ii) developing business plans;

(iii) developing tourism packages that meet the needs and expectations of potential clientele;

(iv) developing client services that meet the logistic needs of clientele;

(v) marketing of tourism packages and other services;

(vi) maintaining business records and accounts; and

(vii) delivering interpretation of natural and cultural resources;

(b) mentoring interested Inuit Tourism Providers by established tourism providers for the purpose of providing ongoing support, assistance and training;

(c) developing local services for tourists, and, in particular, tourists visiting from cruise ships;

(d) paying business and insurance fees and similar expenses; and

(e) developing tourism strategies, tourism packages and marketing plans, where requested by Associated Communities.

7.2.3 The fund shall be available to and for the benefit of Inuit Tourism Providers for the uses described in section 7.2.2 and in accordance with the following criteria:

(a) promotes or interprets the cultural values of the NWA or MBS, the management of wildlife in the NWA or MBS, or the conservation of migratory birds or recovery of species at risk; or

(b) promotes the development of tourism or other economic opportunities for Inuit in Associated Communities, in a way that encourages an appreciation for nature and the conservation or interpretation of wildlife in or around the NWA or MBS, and is consistent with the Management Plan for the NWA or MBS, if and where one applies.

7.2.4 NTI shall provide the Parties with an annual summary of initiatives with respect to this Article, an evaluation of the success of the initiatives and recommendations for enhancing Inuit capacity.

ARTICLE 8 — INUIT CONTRACTING AND BUSINESS OPPORTUNITIES

8.1 OBJECTIVES

8.1.1 This Article has the following objectives:

(a) promote Inuit participation in CWS Contracts to a representative level in the NSA, consistent with Article 24 of the *NLCA*; and

(b) improve the capacity of Inuit Contractors to be awarded Government of Canada Contracts.

8.2 DEFINITIONS

8.2.1 For the purposes of this Article:

(a) "Aboriginal Business" means an Aboriginal Business as that term is defined in the Government of Canada's Aboriginal Business Procurement Policy Performance Objectives (archived Contracting Policy Notice 1996-6), as amended from time to time, and includes "Inuit firm" as that term is defined in Article 24 of the *NLCA*.

(b) "Business Opportunity or Venture" means, subject to subsection (c), a Contract with a term of more than one year, or substantially the same Contract issued over more than one year:

(i) consisting of no less than sixty (60) person-days per year; or

(ii) with a Contract value of at least $20,000 per year; and

(iii) such other Contract or Contracts as CWS and the relevant DIO agree from time to time, in writing, are Business Opportunities;

(c) a Business Opportunity or Venture shall not include:

(i) a Contract intended to be performed within one 12-month period, the performance of which extends beyond one year due to delays, deficiencies or unexpected field season requirements;

(ii) employment contracts; or

(iii) such other Contract or Contracts as CWS and the relevant DIO agree from time to time, in writing, are not Business Opportunities;

(d) "Contracts" means all contracts, except contracts for Government of Nunavut employment within the meaning of Article 23 of the *NLCA*, issued by CWS with respect to an NWA or MBS, including, without limitation:

(i) contracts for the feasibility, design, development, purchase, construction, installation, improvement, operation, maintenance, repair, or removal of facilities or infrastructure related to an NWA or MBS;

(ii) contracts for the development of information or promotional material;

(iii) any procurement contracts required to be issued under this IIBA; and

(e) "Inuit Contractor" means an Inuk or Inuit Firm.

8.3 CONTRACT MANAGEMENT

8.3.1 The Parties agree that the Government of Canada Procurement Strategy for Aboriginal Business (PSAB) applies to the NSA.

8.3.2 For greater certainty, all Contracts shall conform to the requirements of the PSAB and Article 24 of the *NLCA*.

8.3.3 All Contracts shall be set aside for Aboriginal Businesses under the PSAB.

8.3.4 For all Contract requirements, CWS shall identify qualified Inuit Contractors through advertisement in the relevant community or region and, where appropriate, in northern media, and by searching the Inuit firm list maintained by NTI pursuant to section 24.7.1 of the *NLCA*.

8.3.5 CWS shall consider sole sourcing Contracts to qualified Inuit Contractors where sole sourcing is in accordance with the requirements of PSAB.

8.3.6 This Article is subject to the Nunavut Agreement-specific procurement policy, once adopted pursuant to the NTI-Government of Canada Agreement Relating to the Settlement of Litigation and Certain Implementation Matters signed March 4, 2015, as applicable.

8.4 INUIT RIGHT OF FIRST REFUSAL FOR BUSINESS OPPORTUNITIES AND VENTURES

8.4.1 Pursuant to section 8.4.9 of the *NLCA*, DIOs have a right of first refusal to operate all Business Opportunities and Ventures.

8.4.2 CWS shall provide the right of first refusal for Business Opportunities and Ventures in accordance with the procedure set forth below.

8.4.3 The DIO's right of first refusal applies to the renewal or amendment of an existing Business Opportunity or Venture where the renewal or amendment is substantially different in nature or location from the existing Contract, and to the assignment or other transfer of an existing Business Opportunity or Venture.

8.4.4 NTI shall provide CWS with a list of the DIOs designated pursuant to section 8.4.9 of the *NLCA* and the geographic area in which each DIO operates. NTI shall notify CWS of any change in a DIOs' status for this provision.

8.4.5 Where CWS intends to contract out a Business Opportunity or Venture, it shall notify the relevant DIO in writing.

8.4.6 CWS's notice under section 8.4.5 shall state a reasonable date for response from the DIO, which shall not be less than thirty (30) days from the date of the initial notice.

8.4.7 In accordance with section 8.4.9 of the *NLCA*, the DIO shall be entitled upon request to receive a list of all reports and other materials in CWS's possession relevant to the economic feasibility of the Business Opportunity or Venture.

8.4.8 If the DIO submits a response within the stated response time that conforms in all material respects to the contract requirements, CWS shall enter into a contract with the DIO for the Business Opportunity or Venture.

8.5 ANNUAL REVIEWS

8.5.1 In the Annual Review undertaken pursuant to Part 15.4 of this IIBA, CWS shall report to the Parties on all measures it has taken in accordance with this Article, Article 24 of the *NLCA* and PSAB, including relevant information on Contracts issued.

ARTICLE 9 — EDUCATION AND EMPLOYMENT

9.1 OBJECTIVES

9.1.1 This Article has the following objectives:

(a) hire, train and employ Inuit in conservation-related work opportunities;

(b) adapt CWS recruitment, hiring and employment practices to reflect Inuit cultural values and circumstances;

(c) increase opportunities for Inuit to pursue and succeed in conservation-related employment and careers; and

(d) promote Inuit participation in conservation-related employment to a representative level in the NSA, consistent with Article 23 of the *NLCA*.

9.2 INUIT MENTORING PROGRAM

9.2.1 CWS shall continue to co-operate with the Government of Nunavut in the development of materials and information designed to explain conservation-related jobs, career and business opportunities to Inuit.

9.2.2 CWS shall hire, train and mentor, in conservation-related work in association with its Nunavut and Yellowknife offices, as many Inuit interns as the funding identified in line 7 of Schedule 15-1 can reasonably accommodate, but in no event less than one Inuit intern per office, for a period of at least four months per year. For greater certainty, this commitment is in addition to existing summer student programs sponsored by the Government of Canada.

9.2.3 CWS shall provide an annual report to NTI on Inuit mentoring and intern employment status, and, where needed, shall seek the assistance of NTI and the relevant RIA to identify potential interns.

9.3 INDETERMINATE AND TERM RECRUITMENT AND HIRING PRACTICES

9.3.1 CWS shall consult NTI on the following matters regarding recruitment and hiring for indeterminate and term positions in Nunavut:

(a) policies and procedures for filling positions, including methods of advertising;

(b) hiring criteria and qualifications, including the weight to be attached to these; and

(c) job descriptions and statements of qualifications.

9.3.2 CWS shall include the following in the search criteria and job descriptions for indeterminate and term positions in the Nunavut Settlement Area:

(a) knowledge of Inuit culture, society and economy;

(b) community awareness;

(c) where appropriate, fluency in the Inuit Language;

(d) knowledge of environmental characteristics of the NSA;

(e) relevant northern experience; and

(f) knowledge of the *NLCA*.

9.3.3 CWS shall invite an NTI nominee or an RIA representative (as appropriate) to sit on the selection panel whenever new staff are hired for indeterminate positions in Nunavut.

9.3.4 When recruiting for indeterminate and term positions in Nunavut, CWS shall give preference to qualified Inuit.

9.3.5 After the Effective Date, new CWS indeterminate and term positions, the primary responsibility of which relates to NWAs and MBSs and the implementation of this IIBA, shall be located in Nunavut.

9.4 INDETERMINATE AND TERM EMPLOYMENT AND STAFF TRAINING

9.4.1 Subsequent to any hiring of an indeterminate or term Inuit employee, and to encourage the advancement of Inuit, the employee's supervisor shall, together with the employee, develop a career and training plan.

9.4.2 The career and training plan required under subsection 9.4.1 shall include, without limitation:

(a) a description of the employee's short- and long-term career goals; and

(b) measures designed to assist the employee in meeting his or her career goals.

9.4.3 The career and training plan for indeterminate employees and term employees of one year or longer shall also include:

(a) specific training to enhance the skills required for the employee's position;

(b) Inuit Language or English language training, where such training would assist the employee in performing his/her work, and where pre-existing language training courses are available; and

(c) other reasonable training opportunities, which may include on-the-job training, continuing education and educational leave.

9.4.4 The training opportunities provided under subsection 9.4.3 shall be designed to accommodate the employee's needs, including:

(a) to the extent practicable, delivering instructions in the Inuit Language;

(b) providing mentoring programs; and

(c) delivering training in Nunavut, where such training is available.

9.4.5 Funding to fulfil the obligations identified in Parts 9.3 and 9.4 shall not be derived from IIBA Implementation Funds.

9.5 SEASONAL MONITORS

9.5.1 The Parties agree to review and further consider the potential for establishing a seasonal monitors program for NWAs and MBSs at the sixth annual review scheduled under Part 15.4 of this IIBA. If they deem it appropriate, the Parties may establish such a program in future amendments or renegotiations of this IIBA.

9.6 ANNUAL REVIEWS

9.6.1 As part of the annual reviews under Part 15.4 of this IIBA, CWS shall provide the Parties with a summary of Inuit recruitment, hiring and training efforts under this Article, an evaluation of the success of the efforts, and recommendations for the next year.

ARTICLE 10 — RESEARCH

10.1 OBJECTIVES

10.1.1 This Article has the following objectives:

(a) increase Inuit participation in wildlife and wildlife habitat research and training;

(b) encourage and facilitate Inuit success in conservation and research-related employment and careers;

(c) co-management of the research permitting process by CWS and the relevant ACMCs;

(d) promote the documentation and use of *Inuit Qaujimajatuqangit* and Inuit oral histories in research;

(e) inform Associated Communities about research activities in NWAs and MBSs;

(f) prevent or minimize Researcher disruption to Inuit use and enjoyment of NWAs and MBSs; and

(g) prevent or minimize conflicts between Researchers and wildlife, where necessary, through the use of guides.

10.2 RESEARCH PERMITS

10.2.1 The relevant ACMC shall advise the Minister on all aspects of research associated with each NWA or MBS. Among other things, the ACMC shall review all applications to conduct research in the NWA or MBS, and shall advise the Minister as to the terms and conditions that should be attached to each such permit.

10.2.2 All research permits shall include a requirement that the Researcher:

(a) prepare a plain language English summary of his research;

(b) have the summary translated into the Inuit Language;

(c) provide copies of the translated summary to the relevant ACMC and other local organizations which have an interest in the research;

(d) incorporate *Inuit Qaujimajatuqangit* and/or Inuit oral histories into the research, where relevant; and

(e) be accompanied by a guide where deemed appropriate by an ACMC during the research permitting process.

10.3 INUIT FIELD RESEARCH ASSISTANTS

10.3.1 Except as otherwise agreed with the relevant RIA, CWS (including both its employees and its contractors) shall, for each field season:

(a) hire the maximum number of Inuit research assistants which each CWS field project can reasonably accommodate, and in no event less than one assistant per research project; and

(b) provide field training for the positions in subsection 10.3.1(a), as well as an oral and written evaluation of each person's performance at the termination of his or her employment.

10.3.2 CWS shall set aside IIBA Implementation Funds in the amounts identified in line 8 of Schedule 15-1 to fund the costs of the Inuit research assistant program described in section 10.3.1. For every dollar secured from sources other than IIBA Implementation Funds and paid to cover the costs of the research assistant program, CWS may expend one dollar of matching funds from IIBA Implementation Funds, to the maximum identified in line 8 of Schedule 15-1.

10.3.3 CWS shall make all reasonable efforts to secure funding, from sources other than IIBA Implementation Funds, sufficient to utilize the maximum matching funds available under Schedule 15-1.

10.3.4 The duties of Inuit research assistants hired for this program shall include scientific or resource management duties which will further their educational and career interests.

10.3.5 As part of each annual review under Part 15.4, CWS shall provide the Parties with a list of Inuit hired in conjunction with its research projects in the NSA, and recommendations for increasing Inuit research assistant employment in the next research field season.

10.4 INUIT RESEARCHERS

10.4.1 Upon the request of an Inuit Researcher, CWS shall provide the Researcher with:

(a) access to non-confidential information that is available within CWS and that could assist the Researcher in carrying out the research, including relevant research reports, proposals, data bases and other information;

(b) reasonable access to CWS facilities and equipment, if available, during the data collection and data analysis stages of the research;

(c) a waiver of all CWS fees associated with the Researcher's research activities; and

(d) where reasonable and available, access, at no cost to the Researcher, to aircraft, vehicles or water craft chartered or otherwise arranged by CWS for the purpose of managing or conducting research in an NWA or MBS.

10.4.2 For greater certainty, Inuit Researchers shall be subject to the provisions of this Article.

10.5 INUIT USE AND ENJOYMENT

10.5.1 Management Plans for NWAs and MBSs shall identify:

(a) areas in and around NWAs and MBSs seasonally used by Researchers, including sites of long-term and recurring research use; and

(b) mechanisms to minimize incompatibility of research activities with Inuit use and enjoyment of NWAs and MBSs, including recommendations or restrictions, where appropriate, on Researcher use of NWAs or MBSs.

10.5.2 Research permits shall include mechanisms identified pursuant to subsection 10.5.1(b) and any other appropriate mechanisms required to minimize the incompatibility of research activities with Inuit use and enjoyment.

10.6 RECOMMENDED OR REQUIRED GUIDE AREAS

10.6.1 Management Plans shall identify, as appropriate:

(a) areas and/or circumstances where it is recommended or required that a Researcher be accompanied by a Inuit guide; and

(b) the recommended qualifications of such guides, including recommendations as regards liability insurance.

10.6.2 The ACMC shall consult the relevant HTO on areas to be identified in a Management Plan pursuant to subsection 10.6.1(a).

10.6.3 If, after approval of a Management Plan, the relevant ACMC receives notice of an area where use of qualified guides should be recommended or required, it shall consider the matter and the process for amending the Management Plan as set forth in Part 3.7 shall apply.

10.6.4 CWS shall incorporate into its permits any guide-related permit requirements and shall attach to its permits any guide-related recommendations identified in Management Plans.

ARTICLE 11 — CULTURAL AND HERITAGE RESOURCES

11.1 OBJECTIVES

11.1.1 This Article has the following objectives:

(a) protect and conserve Archaeological Sites, Archaeological Artifacts and Cultural Sites of Importance to Inuit; and

(b) ensure all activities in MBSs and NWAs comply with the requirements of the *Nunavut Archaeological and Palaeontological Sites Regulations* and Article 33 of the *NLCA*.

11.2 DEFINITIONS

11.2.1 For the purposes of this Article:

(a) "Archaeological Artifact" has the same meaning as in the *Nunavut Archaeological and Palaeontological Sites Regulations*;

(b) "Archaeological Specimen" has the same meaning as in the *NLCA*;

(c) "Archaeological Site" means sites as defined under either the Regulations or the *NLCA*; and

(d) "*Regulations*" means the *Nunavut Archaeological and Palaeontological Sites Regulations*.

11.3 CULTURAL SITES OF IMPORTANCE TO INUIT

11.3.1 The Parties recognize that the Minister of Culture and Heritage and the Inuit Heritage Trust have the expertise and jurisdiction required to protect and conserve Archaeological Sites, Archaeological Specimens, and Archaeological Artifacts located in MBSs and NWAs.

11.3.2 NTI shall provide Department of Culture and Heritage, the Inuit Heritage Trust and CWS with the information about Archaeological Sites, and Cultural Sites of Importance to Inuit obtained through the Inventories conducted under Parts 6.4 through 6.7 of this IIBA. At a minimum, such information shall include the location of all such Sites, and a description of each Site's important cultural resources.

11.3.3 The Minister shall ensure that all CWS employees and contractors comply with the *Regulations*, and shall take all reasonable steps to ensure that permittees under the *CWA* and *MBCA* are informed of the *Regulations* and of the need to comply with them.

11.3.4 If, in the course of their field work, CWS employees or contractors encounter Archaeological Sites, Archaeological Specimens or Archaeological Artifacts which have not been identified through the Inventories associated with Parts 6.4 through 6.6 of this IIBA, they shall photograph and note the geographic coordinates of the said Sites, Specimens or Artifacts, and they shall provide this information to the Department of Culture and Heritage, the Inuit Heritage Trust and NTI as soon as reasonably practicable.

11.3.5 Upon receiving notification from any person about a concern regarding the protection or management of Archaeological Sites, Archaeological Specimens, Archaeological Artifacts or Cultural Sites of Importance to Inuit that lie within NWAs or MBSs, CWS shall advise the person to contact the Department of Culture and Heritage and the Inuit Heritage Trust immediately about the concern.

11.3.6 CWS shall consult the Department of Culture and Heritage and Inuit Heritage Trust on any further support role CWS might play, in addition to the provisions of sections 11.3.3 through 11.3.5, in the protection of Archaeological Sites, Archaeological Specimens, Archaeological Artifacts and Cultural Sites of Importance to Inuit that lie within NWAs and MBSs. The ACMCs may advise CWS on the exercise of any such role.

11.3.7 In the event that an Archaeological Site or Cultural Site of Importance to Inuit is on IOL, CWS shall inform the relevant RIA of all actions that it takes under this Article.

11.3.8 Management Plans prepared for NWAs and MBSs shall, subject to the advice of the Department of Culture and Heritage and Inuit Heritage Trust, identify the general location of Archaeological Sites and Cultural Sites of Importance to Inuit, and point out the need for all users to comply with the *Regulations* and help with the conservation of the said Sites.

11.3.9 Management Plans developed for NWAs and MBSs shall take into account the cultural and heritage values of these areas in a manner consistent with the objectives of this Article.

ARTICLE 12 — WILDLIFE RESOURCES

12.1 OBJECTIVES

12.1.1 This Article has the following objectives:

(a) protect and conserve wildlife and wildlife habitat; and

(b) appropriately compensate Inuit for emergency, accidental or illegal kills of bears in NWAs and MBSs.

12.2 WILDLIFE MANAGEMENT

12.2.1 NTI shall provide the NWMB, CWS and other relevant Government of Canada organisations, departments and agencies having jurisdiction over wildlife with the information about Wildlife Areas of Importance to Inuit which it obtains pursuant to the Article 6 Inventories.

12.2.2 On the advice of the relevant ACMCs, CWS shall identify Wildlife Areas of Importance to Inuit on all NWA and MBS maps that it prints and distributes (on paper or electronically) after the Effective Date, as the information on such Areas becomes available to it.

12.2.3 CWS shall manage NWAs and MBSs, including Wildlife Areas of Importance to Inuit, in cooperation with other Government of Canada organisations, departments and agencies having jurisdiction over wildlife and in a manner consistent with Article 5 of the *NLCA*. To this end, CWS shall:

(a) minimize disturbance to wildlife and wildlife habitat, and promote the maintenance of vital, healthy wildlife populations;

(b) make all reasonable efforts, consistent with the Minister's jurisdiction under the *CWA*, *MBCA* or *SARA*, as applicable, to respect the cultural significance of Wildlife Areas of Importance to Inuit, taking into account any *Inuit Qaujimajatuqangit* documented and presented to it by Inuit, the ACMCs and other knowledgeable parties;

(c) investigate public concerns regarding the protection or management of wildlife and document its response, or refer the matter to the wildlife management agency having jurisdiction; and

(d) as appropriate, consult Inuit organizations.

12.2.4 Subject to section 4.6.1, prior to taking management actions respecting IOL in accordance with section 12.2.3, CWS shall provide notice to the relevant RIA. CWS shall report yearly on its management actions on IOL in accordance with section 12.5.1.

12.2.5 Management Plans shall identify what, if any, further measures are needed, in addition to the provisions of sections 12.2.1 to 12.2.4, to protect and conserve the wildlife and wildlife habitat associated with NWAs and MBSs, including Wildlife Areas of Importance to Inuit.

12.2.6 For greater certainty, the ACMCs may advise the Minister on all matters related to the management and protection of wildlife and wildlife habitat within NWAs and MBSs.

12.3 EMERGENCY, ILLEGAL, OR ACCIDENTAL KILLS OF POLAR OR GRIZZLY BEARS

12.3.1 If, as the result of an emergency, an accident or illegal activity, a polar bear or a grizzly bear is killed by a CWS employee, agent or contractor, or any other person authorized by CWS to enter an NWA or MBS and they are in an NWA or MBS during travel to or from an NWA or MBS, CWS shall pay compensation from its own department funds to the HTO in the Associated Community for the tag or credit allocated for a bear.

12.3.2 CWS shall pay the HTO in the Associated Community compensation in the amount of twenty thousand dollars ($20,000) for each polar bear tag or credit forfeited by the Associated Community as a result of the bear kill, or in the case of grizzly bears, for each bear killed. CWS shall pay compensation within thirty (30) days following the date on which the HTO of an Associated Community or NTI gives its notice in accordance with 12.3.3.

12.3.3 If a bear is killed in the circumstances described in section 12.3.1, NTI shall, prior to any payment of compensation, investigate whether other sources of compensation are available. If, pursuant to its investigations, NTI concludes that (i) further action to recover from other sources is not worthwhile and (ii) compensation should be paid, it shall so notify CWS of the results of the investigations. On receipt of NTI's notice or the notice of an HTO of an Associated Community, CWS shall, subject to section 12.3.8, pay any compensation due from its own department funding.

12.3.4 If, following CWS's payment of compensation in accordance with section 12.3.3, compensation already paid by CWS to an HTO is also paid by a third party, NTI shall, verbally and in writing, request that the HTO repay the compensation previously paid by CWS. NTI shall have no further responsibility to CWS for the repayment of compensation that is within the control of an HTO.

12.3.5 Within thirty (30) days following the next amendment to the regulations or other instrument setting the next Total Allowable Harvest (TAH) for polar bears, CWS shall pay the HTO in the Associated Community twenty thousand dollars ($20,000) for each additional tag or credit forfeited by the Community, either in the year of the kill or in the following year, as a result of the bear kill. Any payment of compensation pursuant to this section shall be from CWS's own funds if the bear was killed in the circumstances described in section 12.3.1.

12.3.6 CWS shall consult the DOE (Nunavut) and the relevant HTO in determining the number of tags or credits for which compensation is due under section 12.3.5.

12.3.7 In the event that Government of Nunavut policy or Government of Nunavut-Inuit memoranda of understanding provide for payment of compensation for polar bear kills in an amount greater than $20,000, CWS shall pay the increased amount for subsequent polar bear and grizzly bear kills in accordance with this Article.

12.3.8 Where a bear is killed in the circumstances described in section 12.3.1, CWS shall ensure that information and reporting requirements in the Nunavut *Wildlife Act* are complied with.

12.3.9 For greater certainty, Article 6 of the *NLCA* shall continue to apply in NWAs and MBSs.

12.4 DISPOSAL OF VALUABLE PARTS

12.4.1 Any valuable parts of wildlife killed in an emergency, illegal, or accidental kill shall be disposed of in accordance with section 5.6.55 of the *NLCA*.

12.5 REPORTING

12.5.1 In the Annual Review undertaken pursuant to Part 15.4 of this IIBA, CWS shall report to the Parties on all measures taken in accordance with this Article. CWS shall also make its report available to the ACMCs, the relevant HTO, the relevant RWO, the NWMB and other Government of Canada organisations, departments and agencies having jurisdiction over wildlife.

ARTICLE 13 — CHANGES TO MBSs AND NWAs

13.1 OBJECTIVES

13.1.1 This Article has the following objectives:

(a) establish a flexible and effective Resource Assessment process for Establishments, Enlargements and Status Changes;

(b) provide Inuit and Government of Canada with information on the Resource potential of areas proposed for Establishment, Enlargement or Status Change, and ensure that this potential is duly considered before Establishment, Enlargement or Status Change decisions are made;

(c) ensure that Establishments, Enlargements, Status Changes, Reductions and Disestablishments occur only after consultation and, wherever possible, with the support of the Associated Communities in Nunavut, and that Inuit interests and issues such as access to IOL are fully considered in all of these initiatives;

(d) ensure that impacts and benefits for Inuit are addressed in the event of any Establishment, Enlargement, Status Change, Reduction or Disestablishment of NWAs and MBSs; and

(e) provide for Reductions and Disestablishments of NWAs and MBSs and for negotiations to exchange IOL currently within NWAs and MBSs.

13.2 DEFINITIONS

13.2.1 For the purposes of this Article:

(a) "Assessment Group" means a group of Government and Inuit representatives constituted in accordance with Part 13.4;

(b) "Disestablishment" means the repeal of an NWA or MBS;

(c) "Phase 1 Assessment" means a Resource Assessment based on the analysis of existing information;

(d) "Phase 2 Assessment" means a further Resource Assessment, based on a Phase 1 Assessment and including field studies and further analyses;

(e) "Reduction" means any change in the boundary of an NWA or MBS that would have the effect of reducing the size of the NWA or MBS or of taking lands or waters out of the NWA or MBS;

(f) "Resource Assessment" means an assessment of the Resource potential of an area, the scope of which Assessment shall be determined by an Assessment Group in accordance with Part 13.4; and

(g) "Status Change" means the conversion of an MBS to an NWA.

13.3 ESTABLISHMENT, ENLARGEMENT, STATUS CHANGE, REDUCTION AND DISESTABLISHMENT

13.3.1 CWS shall notify in writing and consult NTI, the relevant RIA, Associated Communities and, if one exists, the relevant ACMC, before making an Establishment, Enlargement, Status Change, Reduction or Disestablishment proposal to the NWMB.

13.3.2 An Assessment Group shall carry out whatever Resource Assessment its members deem appropriate, as set forth in Part 13.4, prior to CWS proposing any Establishment, Enlargement or Status Change to the NWMB.

13.3.3 Unless otherwise agreed by CWS and the appropriate Inuit Parties, and subject to sections 9.4.1 and 9.4.2 of the *NLCA*, before making any Establishment, Enlargement, Status Change, Reduction or Disestablishment following the Effective Date, CWS and the appropriate Inuit Parties shall negotiate in good faith for the purpose of concluding appropriate amendments to this IIBA.

13.4 RESOURCE ASSESSMENTS

13.4.1 Subject to section 13.4.6, prior to proposing any Establishment, Enlargement or Status Change to the NWMB, CWS shall consult the relevant Parties to this IIBA and other Government organisations, departments and agencies interested in taking part in a Resource Assessment for the proposed Establishment, Enlargement or Status Change.

13.4.2 On the basis of the consultations in 13.4.1, CWS shall convene and chair an Assessment Group. Each Assessment Group shall be responsible for determining all aspects of the Resource Assessment associated with a particular Establishment, Enlargement or Status Change. Each Assessment Group shall, as it deems appropriate:

(a) determine the geographic scope of any Resource Assessment;

(b) determine the scope of the analyses to be conducted for any Resource Assessment, including whether both Phase 1 and Phase 2 Assessments are necessary, the minerals and other Resources to be investigated, the design of such Phase 1 and 2 Assessments, and whether economic or socio-economic analyses are required in addition to a Resource Assessment;

(c) develop work plans associated with the completion of any Resource Assessment;

(d) select Government organisations, departments and agencies or contractors to carry out Phase 1 and Phase 2 Assessments, including the employment and training of

local Inuit prospectors and carvers in field work and in the evaluation of carving stone deposits;

(e) secure all funding for Phase 1 and Phase 2 Assessments, and determine the relative contribution of the members of any Assessment Group to the costs of these Assessments;

(f) determine when a Resource Assessment is complete;

(g) prepare, translate and publish Resource Assessment reports, including a summary of findings;

(h) ensure that the findings of the Resource Assessment are presented orally to Associated Communities; and

(i) undertake any further actions it deems necessary.

13.4.3 For greater certainty, CWS may terminate its participation in a Resource Assessment if, in its opinion, acting reasonably, the Establishment, Enlargement or Status Change is not consistent with the *CWA*, *MBCA* or *SARA*, as applicable, or if, in its opinion, acting reasonably, the costs of the Resource Assessment to CWS have become or are likely to become too high.

13.4.4 If CWS decides to terminate its participation in the Resource Assessment for an area proposed for an Establishment, Enlargement or Status Change, it shall not proceed with a proposal to the NWMB.

13.4.5 IIBA Implementation Funds shall not, unless otherwise agreed by the Parties, be used to fund the cost of any part of a Resource Assessment.

13.4.6 Part 13.4 shall not apply to the Ninginganiq, Qaqulluit or Akpait NWAs.

13.5 DISESTABLISHMENTS AND REDUCTIONS

13.5.1 If NTI or the relevant RIA believes that all or part of an MBS or NWA, including any IOL within it, is not contributing measurably to the purposes of the *CWA*, *MBCA* or *SARA*, as applicable, it may request a review of the existence or boundaries of the NWA or MBS.

13.5.2 On the written request of the NTI or the RIA, CWS shall, subject to available resources and within a reasonable time, undertake a section 13.5.1 review in consultation with NTI, the RIA, the relevant ACMC and the Associated Communities.

13.5.3 If the section 13.5.1 review demonstrates that all or part of the NWA or MBS, including any IOL within it, is not contributing measurably to the purposes of the *CWA*, *MBCA* or *SARA*, as applicable, considering the NWA or MBS as a whole, CWS shall, on the basis of its review and with the written support of NTI or the RIA, refer the proposed Reduction or Disestablishment to the NWMB for approval.

13.5.4 For greater certainty, nothing in this IIBA limits NTI's or an RIA's right to make a proposal directly to the NWMB for a Reduction or Disestablishment of an NWA or MBS.

13.5.5 For greater certainty, a Disestablishment or Reduction completed pursuant to this Part shall not preclude CWS from again Establishing or Enlarging an NWA or MBS, should circumstances change.

13.6 ACCESS ACROSS AN NWA OR MBS

13.6.1 The Parties recognize that a need may arise in the future to consider an access corridor across an NWA or MBS in order to facilitate developments which contribute to the social and economic well-being of the residents of Nunavut. In that event, NTI and the relevant RIA shall give CWS notice that, in their opinion, such a need exists. The Inuit Parties and the Government of Canada shall then meet within sixty (60) days for the purpose of discussing how the identified need might be addressed.

13.6.2 In accordance with section 11.5.9 of the *NLCA*, in the event that an approved land use plan has made provision for an access corridor as described in section 13.6.1 above, CWS shall conduct its activities and operations in accordance with the plan as approved.

13.7 NEGOTIATIONS TO EXCHANGE IOL

13.7.1 CWS acknowledges that certain Inuit Parties intend to initiate an exchange of some or all the IOL parcels in NWAs and/or MBSs with the Government organisations, departments and agency responsible for administering Crown lands in Nunavut. The relevant Inuit Parties shall provide CWS with written notice before initiating such an exchange.

13.7.2 CWS shall notify the relevant Inuit Parties if it has any concerns with a proposed section 13.7.1 exchange of IOL parcels. In such event, CWS and the relevant Inuit Parties shall make reasonable efforts to resolve issues of mutual concern. CWS shall not oppose an exchange, provided that the exchange is consistent with the *CWA*, *MBCA*, or *SARA*, as applicable.

ARTICLE 14 — VISITOR ACCESS AND USE

14.1 OBJECTIVES

14.1.1 This Article has the following objectives:

(a) Visitor use that is compatible with Inuit use and enjoyment of NWAs and MBSs;

(b) where appropriate, facilitate guiding by Inuit;

(c) inform Visitors about Inuit rights, use and enjoyment of NWAs and MBSs, and

(d) prevent or minimize conflicts between Visitors and wildlife.

14.2 INUIT USE AND ENJOYMENT

14.2.1 The ACMCs shall advise the Minister, and other ministers and organizations as the ACMCs deem appropriate, on all aspects of Visitor use of NWAs and MBSs, including the issuance, terms and conditions of Visitor permits and means for ensuring the compatibility of Visitor use with Inuit use and enjoyment of NWAs and MBSs. Where NWAs and MBSs incorporate IOL, the ACMCs may similarly advise the relevant RIA.

14.2.2 Management Plans for NWAs and MBSs shall identify:

(a) areas in and around NWAs and MBSs used by Inuit for harvesting, recreation and other purposes, including season of use;

(b) IOL in and around NWAs and MBSs;

(c) areas in and around NWAs and MBSs used by Visitors, including access points, routes, locations and seasons of use; and

(d) mechanisms to minimize incompatibility between Visitor activities and Inuit use and enjoyment of NWAs and MBSs and the IOL within them, including recommendations or restrictions, where appropriate, on Visitor use of NWAs or MBSs.

14.2.3 Permits issued to Visitors shall include mechanisms identified pursuant to subsection 14.2.2(d) and any other mechanism required to minimize incompatibility of Visitor activities with Inuit use and enjoyment of NWAs or MBSs and the IOL within them.

14.2.4 CWS shall provide written notice of any mechanisms identified pursuant to subsection 14.2.2(d) in any visitor centre, hotel or other appropriate place in the Associated Community.

14.2.5 Where, in the opinion of CWS or the relevant ACMC, there are bear-Visitor safety and liability issues associated with Visitor use of an MBS or NWA, permits issued by CWS shall be accompanied by materials, provided in collaboration with the ACMCs, to advise Visitors about the risk associated with their activities.

14.3 NOTICE TO VISITORS

14.3.1 CWS shall identify IOL within or adjacent to NWAs and MBSs on all maps that it prints and distributes (on paper or electronically) after the Effective Date.

14.3.2 Any information produced by CWS for use by Visitors to an NWA or MBS shall identify IOL within or adjacent to the NWA or MBS, and shall advise Visitors that, except as otherwise provided in Article 21 of the *NLCA*, persons other than Inuit may not enter, cross or remain on IOL without the consent of the relevant RIA.

14.3.3 An RIA may provide information to CWS regarding Visitor access to and use of IOL that are located within or adjacent to an NWA or MBS. Provided that the information is accurate, CWS shall include such information in any materials it distributes to Visitors.

14.4 RECOMMENDED OR REQUIRED GUIDE AREAS

14.4.1 Management Plans shall identify, as appropriate:

(a) areas and/or circumstances where it is recommended or required that a Visitor be accompanied by an Inuit guide; and

(b) the recommended qualifications of such guides, including recommendations as regards to liability insurance.

14.4.2 The ACMC shall consult the relevant HTO on areas to be identified in a Management Plan pursuant to subsection 14.4.1(a).

14.4.3 If, after approval of a Management Plan, the ACMC receives notice of other areas within which the use of qualified guides should be recommended or required, it shall consider the matter and if appropriate, take steps to amend the Management Plan as set forth in Part 3.7.

14.4.4 Where an area is identified in accordance with section 14.4.1, CWS shall provide a written notice with an explanation of any requirement for a qualified guide in any visitor centre, hotel or other appropriate place in the Associated Community, along with a list of qualified Inuit outfitters or guides and their contact numbers.

14.4.5 CWS shall incorporate into its permits any guide-related permit requirements and shall attach to its permits any guide-related recommendations identified in Management Plans.

ARTICLE 15 — IMPLEMENTATION, REVIEW AND RENEGOTIATION

15.1 OBJECTIVES

15.1.1 This Article has the following objectives:

(a) full, effective and cooperative implementation of the IIBA;

(b) periodic reviews of the IIBA to ensure that IIBA principles, objectives and obligations are being met;

(c) ongoing adaptation of the IIBA Implementation Funding Schedule (Schedule 15-1) to ensure that the principles, objectives and obligations of the IIBA are being met and being met in the most cost-effective manner; and

(d) periodic re-negotiation of the IIBA.

15.2 IIBA IMPLEMENTATION FUNDING

15.2.1 CWS shall provide NTI with nine million, two hundred thousand dollars ($9,200,000), adjusted pursuant to Schedule 15-1 and section 15.2.4, to implement the IIBA (the "IIBA Implementation Funds" or "Funds"). Subject to section 15.2.6, these Funds shall be allocated and expended over a seven (7) year period in accordance with the IIBA Implementation Funding Schedule attached as Schedule 15-1, which may be amended from time to time in accordance with section 2.4.1.

15.2.2 Subject to section 15.2.1, CWS shall provide NTI with the IIBA Implementation Funds in the amounts identified in line 6 of Schedule 15-1 for Inuit secretariat support. Inuit secretariat support funds shall be used by NTI and the RIAs to co-ordinate, plan, administer, implement, monitor and report on activities pursuant to sections 3.2.28, and 7.2.1 to 7.2.4 and to otherwise support overall IIBA planning, monitoring and reporting, to the extent funding allows.

15.2.3 CWS's payment of funding shall be initiated forthwith to NTI after the Effective Date and in accordance with the transfer payment mechanism.

15.2.4 IIBA Implementation Funds paid after the Effective Date shall be adjusted using the Final Domestic Demand Implicit Price Index (FDDIPI), in accordance with standard Government of Canada application of this Index (adjustments in the second year and following).

15.2.5 The Parties acknowledge the DIO's view that FDDIPI does not accurately reflect northern circumstances. In the event that future Government of Canada policy provides for the application, in the NSA, of an index other than FDDIPI, then, with the agreement of the Inuit Parties, the new index shall apply to this IIBA.

15.2.6 IIBA Implementation Funds not expended in any given year or at the end of the seventh year of the IIBA shall, unless otherwise agreed by the Parties, be added to the next year's funding for the same purpose.

15.3 IMPLEMENTATION PLAN

15.3.1 Implementation of this IIBA shall commence on the Effective Date, and shall proceed, to the extent practicable, in accordance with an implementation plan as developed by the Parties and reviewed annually by the Parties.

15.4 ANNUAL REVIEWS

15.4.1 The Parties shall meet in or about March of each year, commencing on the first anniversary after the signing of the IIBA, for an annual review of the implementation of the IIBA. They shall:

(a) review the IIBA Implementation Funding Schedule 15-1 and the implementation plan for the past year, and assess the Parties' performance against the IIBA's principles and objectives, the Parties' respective obligations, and available funding;

(b) subject to section 15.2.1, amend, as required, Schedule 15-1 to ensure that IIBA principles, objectives and obligations will be met and will be met in the most cost-effective manner;

(c) prepare a summary report of the results of that year's annual review and make the report available to the public; and

(d) consider any other matter which will assist with the effective implementation of the IIBA.

15.4.2 In performing the review under section 15.4.1, the Parties may seek information and advice from the ACMCs or other persons or bodies involved in the implementation of the IIBA.

15.4.3 The Parties may also undertake a mid-year review on or about October of each year to re-allocate funds and amend workplans.

15.5 AGREEMENT ON INTERPRETATION

15.5.1 The Parties agree to resolve any dispute regarding the interpretation of the IIBA or section 8.4.4 and Schedule 8-3 of the *NLCA* within the first five (5) years of the IIBA in accordance with Article 16 of the IIBA or Article 38 of the *NLCA*, as applicable.

15.6 YEAR FIVE REVIEW

15.6.1 Unless otherwise agreed, the Parties shall conduct a joint review of the implementation of the IIBA five (5) years after it is signed, in order to ensure that the objectives of section 8.4.4 of the *NLCA* and this IIBA are being met.

15.6.2 Unless otherwise agreed, the Parties shall prepare a written IIBA implementation report as part of the review conducted pursuant to section 15.6.1.

15.6.3 CWS and NTI shall jointly fund the review conducted and the report prepared pursuant to section 15.6.1.

15.7 RENEGOTIATION OF THE IIBA

15.7.1 This IIBA shall continue until it is terminated by the written consent of the Parties or until it is replaced by a new IIBA negotiated in accordance with section 15.7.2.

15.7.2 In accordance with section 8.4.7 of the *NLCA*, the Parties shall, unless otherwise agreed, renegotiate this IIBA after seven (7) years; negotiations shall commence at the beginning of year six (6).

15.7.3 The Parties shall review the IIBA implementation reports prepared pursuant to section 15.6.2, among other information sources, when determining whether renegotiation or amendment of the IIBA may be required.

IIBA Implementation Funding Schedule
Schedule 15-1 (Section 15.2.1)

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	TOTAL
1. ACMC Operation	$350,000	$350,000	$350,000	$350,000	$200,000	$200,000	$200,000	$2,000,000
2. RIA Travel (for ACMCs)	$25,000	$25,000	$25,000	$25,000	$20,000	$15,000	$15,000	$150,000
3. Cultural Resources Inventories	$300,000	$300,000	$200,000	$150,000	$150,000	$150,000	$150,000	$1,400,000
4. Interpretive Materials	$57,142	$57,142	$57,142	$57,142	$57,142	$57,142	$57,148	$400,000
5. Inuit Tourism Providers Fund[i]	$2,300,000	$300,000	$300,000	$300,000	$300,000	$300,000	$300,000	$4,100,000
6. Inuit Secretariat Support	$64,285	$64,285	$64,285	$64,285	$64,285	$64,285	$64,290	$450,000
7. Inuit Mentoring Program[ii]	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$350,000
8. Inuit Field Research Assistants[iii]	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$350,000
TOTAL	$3,196,427	$1,196,427	$1,096,427	$1,046,427	$891,427	$886,427	$886,438	$9,200,000

i. The Parties agree that this funding is divided as follows: $2,100,000 for existing projects (Arviat, Gjoa Haven, Cape Dorset), and $2,000,000 for new projects.
ii. Funds to be held by CWS pursuant to Section 9.2.2
iii. Funds to be held by CWS pursuant to Section 10.3.2

ARTICLE 16 — DISPUTE RESOLUTION

16.1 OBJECTIVES

16.1.1 This Article has the following objectives:

(a) establish a timely, cost-efficient, effective and productive dispute resolution process; and

(b) protect and, where possible, strengthen the relationships among the Parties.

16.2 DEFINITIONS

16.2.1 In this Article:

(a) "mediation" means a collaborative process in which the Parties meet and attempt, with the assistance of a mediator, to resolve issues in dispute among them; and

(b) "mediator" means a neutral and impartial facilitator with no decision-making power, who assists the Parties in negotiating a mutually acceptable settlement of issues in dispute among them.

16.3 DISPUTE RESOLUTION

16.3.1 With the exception of matters addressed under Part 4.3, disputes between the Parties pertaining to the interpretation, application or implementation of this IIBA shall be resolved as follows:

(a) in the first instance, the Parties shall make all reasonable efforts to resolve their dispute through discussion and negotiation. The Parties shall act in good faith;

(b) if the Parties are unable to resolve their dispute through discussion and negotiation, any Party may give notice to the other Party that it wishes to attempt to resolve the dispute through mediation. The Parties shall then retain the services of a mutually acceptable mediator and they shall make all reasonable efforts to resolve their dispute through mediation;

(c) if the Parties are unable to resolve their dispute through subsection 16.3.1(a), and (b) as applicable, any Party may, subject to the agreement of the other Party, refer the dispute to a mutually-acceptable arbitrator(s) and arbitration process. No Party shall unreasonably withhold agreement to refer a dispute to arbitration.

16.3.2 Nothing in this Article shall limit the legal remedies of any Party.

16.3.3 Each Party shall pay its own costs of dispute resolution undertaken pursuant to this Article, and the Parties shall share equally all costs associated with the hiring of a mediator pursuant to subsection 16.3.1(b) and with references to an arbitrator pursuant to subsection 16.3.1(c).

APPENDIX I — NINGINGANIQ NWA

1.0 INUIT OWNED LANDS

1.1 CWS shall issue the necessary permits under the *CWA* to allow the Qikiqtani Inuit Association ("QIA") or their designate(s) to build an ecotourism lodge and research facility, a Twin Otter airstrip and docking facilities on the Ninginganiq IOL in the vicinity of the easternmost point of Cape Raper.

1.2 The specific location and the construction and operation schedules related to the facilities described in subsection 1.1 shall be as agreed between QIA and CWS, in consultation with the Ninginganiq ACMC.

1.3 CWS shall consider any *Inuit Qaujimajatuqangit* respecting the matters in subsection 1.2 which QIA, the HTO or the ACMC document and present to it.

1.4 If CWS and QIA are unable to agree on the matters in subsection 1.2, the decision-making test and process as set forth in Part 4.3 of the IIBA shall apply. For greater certainty, the Part 4.3 process shall be used to determine the location and the construction and operating schedules of the facilities, and not whether the permits shall be issued.

2.0 RIGHT OF FIRST REFUSAL

2.1 The Minister shall recommend to the Governor in Council or to Parliament, as required, such legislative changes as are necessary to provide to QIA or its designate a right of first refusal to carry on outfitting or guiding operations in Ninginganiq NWA in accordance with the provisions set forth below.

2.2 Sections 2.3 to 2.7 below shall apply only where a limited entry system is in effect in Ninginganiq NWA.

2.3 If a non-Inuk or non-Inuit firm applies for an NWA permit to carry on an outfitting or guiding operation in Ninginganiq NWA, CWS shall give QIA or its designate a right of first refusal to acquire a permit to carry on a business that is substantially similar to that described in the non-Inuit application.

2.4 The right of first refusal referenced in sections 2.1 to 2.3 shall also apply to renewals or amendments of existing permits, where the renewal or amendment is substantially different in nature or location from the existing permit.

2.5 Upon receiving a permit application or letter of interest from a non-Inuk or non-Inuit firm, CWS shall provide QIA or its designate with written notice of the application or letter of interest. QIA or its designate shall have thirty (30) days after receipt of CWS's notice to give CWS written notice of its intent to exercise its right of first refusal, and ninety (90) days after giving notice to CWS to submit an application for a permit to carry on a substantially similar business.

2.6 If QIA or its designate submits a timely and acceptable application for a permit, CWS shall issue the permit to QIA or its designate.

2.7 If QIA or its designate fails to meet either the thirty (30) day notice deadline or the ninety (90) day application deadline set forth in section 4.4, CWS may issue a permit to the non-Inuk or non-Inuit firm.

2.8 Disputes regarding the permit applications described in section 2.6 above, including any terms and conditions which CWS attaches to such permits, shall be resolved in accordance with Part 4.3 of this IIBA.

SIGNATURES

HER MAJESTY THE QUEEN IN RIGHT OF CANADA

The Honourable Catherine McKenna
Minister of the Environment

Date

THE INUIT OF THE NUNAVUT SETTLEMENT AREA

Nunavut Tunngavik Incorporated:

Cathy Towtongie, President
Nunavut Tunngavik Incorporated

Date

Kitikmeot Inuit Association:

Stanley Anablak, President
Kitikmeot Inuit Association

Date

Kivalliq Inuit Association:

David Ningeongan, President
Kivalliq Inuit Association

Date

Qikiqtani Inuit Association:

Pauloosie Akeeagok, President
Qikiqtani Inuit Association

Date

Group	Comment	Contact	Invited
Salliqmiut	Invite via radio announcements and advertisements throughout the community	N/A – radio and advertisements	Radio and advertisements
Elders	Invite via radio announcement	N/A - radio	Radio and advertisements
Youth Center	Coordinator	Sarah Netser Sarahnetser@hotmail.com	Radio and advertisements
CLARC	Inactive CLARC	Ron Ningeongan clocoral@kivalliqinuit.ca	Email 24-Oct-2019
Hamlet	SAO	Leonie Pameolik munch@qiniq.com Phone : (867) 925-8867	Email 24-Oct-2019
Aiviit HTO	Manager	Natasha Hattie Ottokie Aiviit Hunters' and Trappers' Organization Coral Harbour, NU X0C 0C0 (T) 867-925-8622 aiviit@kivalliqhto.ca	Email 24-Oct-2019
Outfitters	Requested contact list from Aiviit HTO Sept 13 and Sept 19, 2019 HTO provided 2 names Sept 20; 1 name Sept 23. *HTO must ask for permission to share contact information.*	Jimmy Ningeocheak jningeocheak@yahoo.ca Aaron Emiktowt aaron_emiktowt@hotmail.com Darcy Nakoolak darcynakoolak@hotmail.ca	Email 24-Oct-2019
Cabin Owners	Requested contact list from Aiviit HTO Sept 13 and Sept 19, 2019	None in MBSs.	N/A
Kivalliq Inuit Association	Director of Implementation and Planning Implementation Officer	Annie Tattuinee atattuinee@kivalliqinuit.ca Phone: (867) 645-5732 Michael Tucktoo mtucktoo@kivalliqinuit.ca Phone: (867) 645-5743	Email 24-Oct-2019
Nunavut Planning Commission	Director of Policy and Planning	Brian Aglukark aglukark@nunavut.ca	Email 24-Oct-2019

		P.O. Box 419, Arviat, Nunavut, X0C 0E0 Phone: (867) 857-2242	
Nunavut Impact Review Board	Executive Director	Ryan Barry rbarry@nirb.ca Phone: (867) 983-4608 29 Mitik Street, PO Box 1360 Cambridge Bay, Nu X0B 0C0	Email 24-Oct-2019
Government of Nunavut – Environment	Regional Biologist, Arviat Conservation Officer in Coral Harbour	Mitch Campbell MCampbell1@gov.nu.ca Phone: (867) 857-3171 Troy Nester TNetser@gov.nu.ca 867-925-8823	Email 24-Oct-2019
Government of Nunavut – Culture and Heritage	Territorial Archaeologist	Sylvie LeBlanc SLeBlanc1@GOV.NU.CA Phone: (867) 934-2040	Email 24-Oct-2019
Kivalliq Wildlife Board	Kivalliq Regional Coordinator	Amy Kaludjak kwb@niws.ca Phone: (867) 645-4860 Nunavut Inuit Wildlife Secretariat Box 219 Rankin Inlet, NU X0C 0G0	Email 24-Oct-2019
Nunavut Water Board	Executive Director In Gjoa Haven	Stephanie Autut Phone: (867) 360-6338 PO Box 119 Gjoa Haven, NU X0B 1J0 info@nwb-oen.ca	Email 24-Oct-2019
Inuit Heritage Trust	Executive Director Traditional Place Names Manager	William Beveridge wbeveridge@ihti.ca Lynn Peplinski lpeplinski@ihti.ca	Email 24-Oct-2019
MLA Aivilik		Patterk Nester pnetser1@gov.nu.ca Phone: (867) 975-5070	Email 24-Oct-2019

CIRNAC	Director of Lands	Erik Allain erik.allain@canada.ca Phone: (867) 975-4295 Box 2200 Iqaluit, NU X0A 0H0	Email 24-Oct-2019
DFO	Oceans Program Division Manager Senior Oceans Biologist	Joel Ingram Joel.Ingram@dfo-mpo.gc.ca 204-983-5006 Charlotte Sharkey Charlotte.sharkey@dfo-mpo.gc.ca 867-979-8027	Email 24-Oct-2019
ECCC researchers		Jim Leafloor jim.leafloor@canada.ca 204-983-5258 Frank Baldwin frank.baldwin@canada.ca 204-984-6670 Paul Smith paulallen.smith@canada.ca 613-998-7362 Grant Gilchrist grant.gilchrist@canada.ca 613-998-7364 Dominique Henry Dominique.henry@canada.ca 514-496-9024	Email 24-Oct-2019 Email 25-Oct-2019
ECCC Wildlife Enforcement		Steve Allan steve.allan@canada.ca 867-669-4788 Quentin Deering quentin.deering@canada.ca 867-669-4761	Email 24-Oct-2019
Nunavut Tunngavik Inc.	Director of Implementation Assistant Director of Implementation	Qilak Kusugak qkusugak@tunngavik.com 867-975-4908 Pacome Lloyd plloyd@tunngavik.com	Email 25-Oct-2019

		867-975-4925	
Academic – University of Ottawa	Researcher – Inuit knowledge	Natalie Carter natalieacarter001@gmail.com	Email 25-Oct-2019

Archived: February 6, 2020 3:26:02 PM
From: Dufour2, Jean-François (EC)
Sent: October 24, 2019 10:58:00 AM
Cc: Noah Kadlak; Dufour2, Jean-François (EC); Ronnie Ningeongan
Bcc: SAO Coral; 'Aiviq HTA'; 'jningeocheak@yahoo.ca'; 'aaron_emiktowt@hotmail.com'; 'darcynakoolak@hotmail.ca'; 'atattuinee@kivalliqinuit.ca'; Michael Tucktoo; 'aglukark@nunavut.ca'; 'rbarry@nirb.ca'; 'MCampbell1@gov.nu.ca'; 'TNetser@gov.nu.ca'; 'SLeBlanc1@GOV.NU.CA'; Qovik Netser; 'info@nwb-oen.ca'; 'wbeveridge@ihti.ca'; 'Lynn Peplinski'; 'pnetser1@gov.nu.ca'; 'erik.allain@canada.ca'; 'Joel.Ingram@dfo-mpo.gc.ca'; 'Charlotte.sharkey@dfo-mpo.gc.ca'; Leafloor, Jim (EC); Baldwin, Frank (EC); Smith, Paul Allen (EC); Gilchrist, Grant (EC); Allan, Steve (EC); Deering, Quentin (EC); 'receptionist@nwmb.com'; Pirie-Dominix, Lisa (EC)
Subject: Irniurviit ACMC Community Meeting Invitation and Review of draft Management Plans
Sensitivity: Normal
Attachments:
IMBS MP_DRAFT2_October2019.pdf;Irniurviit ACMC Community Meeting Invitation and Review of Draft MPs.pdf;QMBS MP_DRAFT2_October2019.pdf;

Good afternoon,

Please find attached an invitation to the Irniurviit Area Co-Management Committee's community meetings 26-28 Nov 2019 in Coral Harbour. Also attached is a copy of the draft management plans for the Qaqsauqtuuq and Ikkattuaq Migratory Bird Sanctuaries for your review and feedback **by 28 November 2019**.

If you have any questions about the meetings or draft management plans, please do not hesitate to contact me.

Qujannamiik!
JF

JF Dufour
Vice-Chair, Irniurviit ACMC
jean-francois.dufour2@canada.ca / Tel: 867-669-4766

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IRNIURVIIT AREA
CO-MANAGEMENT
COMMITTEE

Archived: February 6, 2020 3:3 :14 PM
From: Dufour2, Jean-François (EC)
Sent: October 25, 2019 8:50:00 AM
Bcc: Henri, Dominique (EC); 'Natalie Carter'; 'qkusugak@tunngavik.com'; 'Pacome Lloyd'
Subject: Irniurviit ACMC Community Meeting Invitation and Review of draft Management Plans
es onse re uested: No
Sensitivity: Normal
Attachments:
IMBS MP_DRAFT2_October2019.pdf ;Irniurviit ACMC Community Meeting Invitation and Review of Draft MPs.pdf ;QMBS MP_DRAFT2_October2019.pdf ;

Good morning,

Please find attached an invitation to the Irniurviit Area Co-Management Committee's community meetings 26-28 Nov 2019 in Coral Harbour. Also attached is a copy of the draft management plans for the Qaqsauqtuuq and Ikkattuaq Migratory Bird Sanctuaries for your review and feedback **by 28 November 2019**.

If you have any questions about the meetings or draft management plans, please do not hesitate to contact me.

Qujannamiik!
JF

JF Dufour
Vice-Chair, Irniurviit ACMC
jean-francois.dufour2@canada.ca / Tel: 867-669-4766

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IRNIURVIIT AREA CO-MANAGEMENT COMMITTEE

ᐊᖏᔪᐊᓗ 24, 2019

ᑎᑎᕋᖅᑕᐅᔾᔨᓚᐊᓂᖓᓂ ᐊᐅᓚᕋᑎᓕᓐᓂᖅ ᕿᖏᓐᓄᕐᕋᐃᑦ ᑕᐅᔾᔭᓂ
ᖃᖅᖢᓴᐅᖅᑐᑎᒥ ᐊᓘᒪᓗ ᐃᑲᔪᑐᐊᖏᑦ ᑎᓐᓕᐊᖅᖃᖅᓴᓐᓄᖅ

ᖃᖅᖢᓴᐅᖅᑐᑎᒥ ᐊᓘᒪᓗ ᐃᑲᔪᑐᐊᖏᑦ ᑎᓐᓕᐊᖅᖃᖅᓴᐃᖅ, ᓴᓪᓕᐅᕐᓂ ᖁᑭᖅᑕᒧᑐᐊᓂᑐᑐᒃ, ᐱᓇᓱᒪᖅᑕᐅᓕᐅᖅᓯᒪᔨᒃᑲ ᑕᒪᓂ 1959-ᖁᑎᓪᓗᐃ. ᒪᓕᓴᕐᑕᐅᔭᕆᐊᖅᑎᖅᓂᖓᓕᓇᓂᓐᓂ ᓇᓇᕐᓕᒻᒥ ᓇᓇᑕᐸᑎᓇᓂ ᐊᖓᕈᕐᑐᕐᓂ ᐊᖏᕐᕈᓐᓇᐅᓕᐅᖅᓯᒪᔨᖏᓪᓗᒃ ᐊᐅᓚᕋᑎᓕᓐᓂᖅᓴᖅᑎᑦᑎᓂᖓᓂᓇᓂᓐᓂ ᐃᓇᓇᐃᓐᓇᖅᑐᓂ ᑲᑎᒪᔨᖏᓪᓗᒃ ᑲᑎᒪᔨᖏᓪᓗᒃᑕᑦᑎᓂᖓᓂᓇᓂᓐᓂ ᑲᑎᒪᔨᖏᓪᓗᒃᑕᑦᑎᓂᖓᓂᓇᓂᓐᓂ ᑎᑎᕋᖅᑕᐅᔾᔨᓚᐊᓂᖓᓂᓇᓂᓐᓂ ᐃᓇᓇᐃᓐᓇᖅᑐᓂ ᓇᓇᕐᓕᒻᒥ ᓇᓇᑕᐸᑎᓇ

ᐃᖃᓗᖅᓯᐅᑦ ᐊᐅᓚᑦᑎᓕᐅᕆᓂᖅᓯᒪᓂᖅ ᑲᑎᒪᔨᖏᑦᑐᑦ

IRNIURVIIT AREA CO-MANAGEMENT COMMITTEE

24 October 2019

DRAFT MANAGEMENT PLANS FOR QAQSAUQTUUQ (EAST BAY) AND IKKATTUAQ (HARRY GIBBONS) MIGRATORY BIRD SANCTUARIES

The Qaqsauqtuuq (East Bay) and Ikkattuaq (Harry Gibbons) Migratory Bird Sanctuaries, located on Southampton Island, were created in 1959. As required by the *Nunavut Agreement*, an *Inuit Impact and Benefit Agreement for National Wildlife Areas and Migratory Bird Sanctuaries in the Nunavut Settlement Area (IIBA)* was first concluded in 2006 and renegotiated in 2016. Nunavut Tunngavik Inc., the three Regional Inuit Associations, and the federal Minister of the Environment, Environment and Climate Change Canada signed the *IIBA*. The *IIBA* created co-management committees for these protected areas in Nunavut. Inuit, from Coral Harbour, and Environment and Climate Change Canada co-manage the Qaqsauqtuuq and Ikkattuaq Migratory Bird Sanctuaries through the Irniurviit Area Co-Management Committee (ACMC).

Part of the Irniurviit ACMC's mandate is to write management plans for the Migratory Bird Sanctuaries. The Irniurviit ACMC completed draft management plans and is holding community meetings **26-28 November 2019 in Coral Harbour at the Parish Hall** to discuss their content and get feedback. Everyone is welcome! Choose among these options:

Tuesday, 26 November: 7:00PM
Wednesday, 27 November: 2:00PM or 7:00PM
Thursday, 28 November: 2:00PM or 7:00PM

We realize that not everyone can attend these meetings. The Irniurviit ACMC is also welcoming input on the management plans via email. We ask that you provide all written input by **Thursday, 28 November 2019** to JF Dufour, Vice-Chair of the Irniurviit ACMC (jean-francois.dufour2@canada.ca; 867-669-4766).

Sincerely,

Noah Kadlak
Chair, Irniurviit ACMC

Community Meetings

about the draft management plans for Qaqsauqtuuq and Ikkattuaq Migratory Bird Sanctuaries

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IRNIURVIIT AREA CO-MANAGEMENT COMMITTEE



- See the content of the draft Management Plans and provide your input
- Meet the Irniurviit Area Co-management Committee members
- Refreshments will be served
- Share your knowledge and stories about Qaqsauqtuuq and Ikkattuaq
- Learn more about the Migratory Bird Sanctuaries
- Door Prizes

Everyone welcome!

Where: **Parish Hall**

When: **Nov 26 - Open House 1:30-4:30**
Nov 27 - Presentation at 2:00pm and 7:00pm
Nov 28 - Presentation at 2:00pm and 7:00pm

~ For more information call Ron Ningeongan (KIA) at 867-925-8136 ~

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ᐃᓕᓴᕐᓂᖅ | IRNIURVIIT AREA
ᐊᐅᓚᕆᑎᓴᒃᑎᑲᓂᕐᒪᑦ | CO-MANAGEMENT
ᑲᑎᒪᓴᕆᓚᓕᕆ | COMMITTEE



- ᑕᑯᓗᒋᑦ ᐃᓗᓕᖅᓯᒋᑦ ᑎᑎᕆᖃᐅᔨᓴᒃᖢᒪᓕᖅᓯᓗᑦ ᐊᐅᓚᕆᑎᓂᕐᒪᑦ ᐸᕐᓇᐅᑎᓴᑦ, ᐃᓱᒪᒋᔭᑎᑦᓗ ᐅᖃᐅᔨᓱᓚᓄᑦ
- ᑲᑎᖃᑎᒋᓗᒋᑦ ᐃᓂᓕᕆᓂᖅᓴᑦ ᐊᐅᓚᕆᑎᓴᐅᖃᖅᑕᐅᓂᕐᒪᑦ ᑲᑎᒪᓴᕆᓚᓕᖅᓯᖏᓐᓂᑦ
- ᑕᒪᐊᕐᒥᖃᖅᓂᐅᓂᖅᓯᓗᑦ ᐃᒋᑐᓂᓕᓐᓄᓗ ᑭᒋᓗ

- ᖃᐅᐅᓚᒋᔭᓂᒃ ᐅᖃᐅᔨᓱᖃᓂᐊᖅᐳᑎᑦ ᐅᓂᒃᑲᓂᓕᓐᓄᓗ ᑐᓂᒃᑲᓂᓕᓐᓄᓗ ᐅᖃᐅᔨᓱᓚᓄᑦ
- ᐃᓕᓴᐅᒋᔭᖅᓂᒃ ᐊᓪᒪᓗᑭᓇᐅᑎᓴᒃᑎᑲᓂᕐᒪᑦ
- ᖃᒃᐃᓕᒋᔭᖅᓂᒃ ᐊᒧᓱᖃᒋᓂᐊᖅᐳᑎᑦ ᑐᓂᒃᑲᓂᓕᓐᓄᓗ ᐅᓂᒃᑲᓂᓕᓐᓄᓗ

ᑕᒪᐃᓐᓂᑎᐊᖅ ᐃᓄᐃᑦ ᑐᖓᓱᓕᕆᔨᒃᑯᑦ!

ᓴᓪᓕᓐᓂ: ᐊᓱᖏᖅᑐᐃᐅᔭᒃᑯᑦ ᑲᑎᙵᖓᓂ

ᖃᒃᖓᒐ: ᓄᙵᐱᒃ 26 - ᐃᓄᖓᓄᑦ ᒪᑐᐃᖓᑎᓪᓗᑎᓂᖅ 1:30-ᒥᒃ 4:30-ᒧᑦ ᐅᑦᓗᑯᑦ
ᓄᙵᐱᒃ 27 - ᐅᓂᒃᑲᓕᐅᔨᓂᖅ 2:00-ᒥ ᐅᑦᓗᑯᑦ ᐊᓪᒪᓗ 7:00-ᒥ ᐅᖃᓄᑯᑦ
ᓄᙵᐱᒃ 28 - ᐅᓂᒃᑲᓕᐅᔨᓂᖅ 2:00-ᒥ ᐅᑦᓗᑯᑦ ᐊᓪᒪᓗ 7:00-ᒥ ᐅᖃᓄᑯᑦ

ᑐᑭᓯᐊᕆᑎᐊᒃᑲᖃᓂᑕᒪᔭᙵᓕᑦ ᐅᖃᖅᙵᐅᔨᓴᖃᖅᑐᑐᒃᖢᖅ ᖁᓕ ᓂᕆᑭᐅᓚᑦ (ᑭᓲᓕᓕᕐᒥ ᐃᓄᐃᑦ) ᐅᓲᓂ 867-925-8136

EVENT: IRNIURVIIT ACMC COMMUNITY MEETING	LOCATION: PARISH HALL
DATE: NOVEMBER 26, 2019 OPEN HOUSE	

LIST OF ATTENDEES

NAME (PRINT FIRST AND LAST NAME)	NAME (PRINT FIRST AND LAST NAME)
1 Maria Kadlak	26
2 Lucassie Nakoolak	27
3 Elizabeth Nakoolak	28
4 Louisa Kudluk	29
5 Kidlapik Alogut	30
6 Emily Eetuk	31
7 Sandy Ruttat	32
8 Anthony Katalik	33
9 Janet Panigoak	34
10	35
11	36
12	37
13	38
14	39
15	40
16	41
17	42
18	43
19	44
20	45
21	46
22	47
23	48
24	49

EVENT: IRNIURVIIT ACMC COMMUNITY MEETING	**LOCATION:** PARISH HALL
DATE: NOVEMBER 27, 2019 2PM	

LIST OF ATTENDEES

NAME (PRINT FIRST AND LAST NAME)	NAME (PRINT FIRST AND LAST NAME)
1 LOUISA KUDLUK	26
2 Mark Panipak	27
3 Elijah Katsuk.	28
4 Raymond Kudluk	29
5 ELIZABETH NA[illegible]	30
6 Emily Ettuk	31
7 Sandy Pullut	32
8 [illegible]	33
9 NOAH KATALUK	34
10 [illegible]	35
11 [illegible]	36
12	37
13	38
14	39
15	40
16	41
17	42
18	43
19	44
20	45
21	46
22	47
23	48
24	49

EVENT: IRNIURVIIT ACMC COMMUNITY MEETING	LOCATION: ~~[illegible]~~ HAMLET
DATE: NOVEMBER 27, 2019 7PM	

LIST OF ATTENDEES

	NAME (PRINT FIRST AND LAST NAME)		NAME (PRINT FIRST AND LAST NAME)
1	Wayne Kudluk	26	
2	NOAH KATALUK	27	
3	CINDY NINGEONGAN	28	
4	Logan Kadlak	29	
5	UNREAD	30	
6	Lizzie Kadlak	31	
7	LUCASSIE ALAKOMIAK	32	
8		33	
9		34	
10		35	
11		36	
12		37	
13		38	
14		39	
15		40	
16		41	
17		42	
18		43	
19		44	
20		45	
21		46	
22		47	
23		48	
24		49	

EVENT: IRNIURVIIT ACMC COMMUNITY MEETING	**LOCATION:** PARISH HALL
DATE: NOVEMBER 28, 2019 2PM	

LIST OF ATTENDEES

NAME (PRINT FIRST AND LAST NAME)	NAME (PRINT FIRST AND LAST NAME)
1	26
2	27
3	28
4	29
5	30
6	31
7	32
8	33
9	34
10	35
11	36
12	37
13	38
14	39
15	40
16	41
17	42
18	43
19	44
20	45
21	46
22	47
23	48
24	49

EVENT: IRNIURVIIT ACMC COMMUNITY MEETING	**LOCATION:** PARISH HALL
DATE: NOVEMBER 28, 2019 7PM	HAMLET

LIST OF ATTENDEES

NAME (PRINT FIRST AND LAST NAME)	NAME (PRINT FIRST AND LAST NAME)
1 Unnecd	26
2 Lizzie Shapcott	27
3 Lizzie K	28
4	29
5	30
6	31
7	32
8	33
9	34
10	35
11	36
12	37
13	38
14	39
15	40
16	41
17	42
18	43
19	44
20	45
21	46
22	47
23	48
24	49

ᑎᑎᕐᖅᑕᐅᓂᒃᑲᓂᐊᓂᖅᑭᑦ ᓄᓇ

ᐊᐅᓪᓗᑎᓂᕐᒧᑦ ᕿᕐᓇᐅᑎᖅᑲᐃᑦ

ᖃᖅᖁᐅᖅᑐᕐ ᐊᒻᒪᓗ ᐃᑲᑦᑐᐊᕐᒥ ᑎᖅᒥᐊᖃᕐᓂᐊᕐᑎᑦ

Draft Management Plans

Qaqsauqtuuq (East Bay) and Ikkattuaq (Harry Gibbons) Migratory Bird Sanctuaries

ᓴᓪᓗᖅ, ᓄᕆᐱᓗ 26-28, 2019

Coral Harbour, 26-28 November 2019

ᐃᓕᓴᕐᕕᐃᑦ ᐃᓄᐃᑦ ᐊᐅᓚᓂᖅᑐᑦᑕᐅᓂᒃᑲᓂᕐᒧᑦ ᑲᑎᒪᔨᖏᑦ

IRNIURVIIT AREA CO-MANAGEMENT COMMITTEE

ᐅᓂᒃᑲᓕᐊᓂᒃ ᑕᒪᐃᓐᓂᒃ ᑐᑭᓯᑎᕆᑎᑭᐊᕐᓂᖅ
Presentation Overview

- ᖃᐅᔨᒪᑎᕆᑎᐠᓯᑎᒃᓴᐃᓕᕆ ᓴᐳᓐᓂᐊᖅᑕᐅᓯᒪᓂᖏᓐᓂᒃ ᓄᓇᐃᕆ ᓄᓇᕗᓴᒥ
- ᑕᑯᒃᓴᐅᑎᕆᑎᔪᕆ ᐃᓗᓕᖏᓐᓂᒃ ᑎᑎᕋᖅᑕᐅᕙᓪᓕᐊᓂᖏᓐᓂᒃ ᓯᓕ ᐊᐅᓪᓚᕆᑎᓂᕐᒧᑦ ᐸᓇᐅᑎᒃᓴᓂᒃ
- ᐃᓯᒪᒋᔭᐠᓯᓐᓂᒃ ᑕᒪᒃᑯᓂᖓᓐᓄ ᑐᓴᖅᑕᐅᔨᒪᖓᓐᓄᑦ ᑎᑎᕋᑕᐅᕙᓪᓕᐊᓂᖏᓐᓂᒃ ᓯᓕ ᐊᐅᓪᓚᕆᑎᓂᕐᒧᑦ ᐸᖅᓇᐅᑎᒃᓴᐃᓕᕆ

- Information on protected areas in Nunavut
- Show you the content of the Draft Management Plans
- Get your input and comments on the Draft Management Plans



ᒥᑎᕕᒃ Common Eider



ᑐᖏᕕᑎᑕᖅ Ruddy Turnstone

ᖃᐅᔨᒪᑎᑦᑎᓕᐊᕈᑎᑦ ᑲᓇᑕᒥ
ᐅᒪᔨᖃᖅᖁᐅᑎᑕᐅᔨᓂᒃ ᐊᓚᒪᓗ
ᑎᖏᒥᐊᖃᖅᖁᐅᑎᑕᐅᔨᓂᒃ ᓄᓇᕗᓚᒥ

Information on National Wildlife Areas and Migratory Bird Sanctuaries in Nunavut

ᐊᓂᑎᓪᓗᖅᐸᐃᑦ ᑲᓇᑕᒥ ᓄᓪᓕᐅᕐᓂᓗ
ᐊᓯᔾᔨᖅᐸᓪᓚᐊᓂᖏᓐᓂᑦ ᑲᓇᑕᒥ
Environment and Climate Change Canada

ᐱᔾᔨᑕᐅᓂᖅᑎᑦ ᐱᓚᑦᖃᑎᒋᔭᑕᐅᓂᖅᓂᕐᒧᑦ:

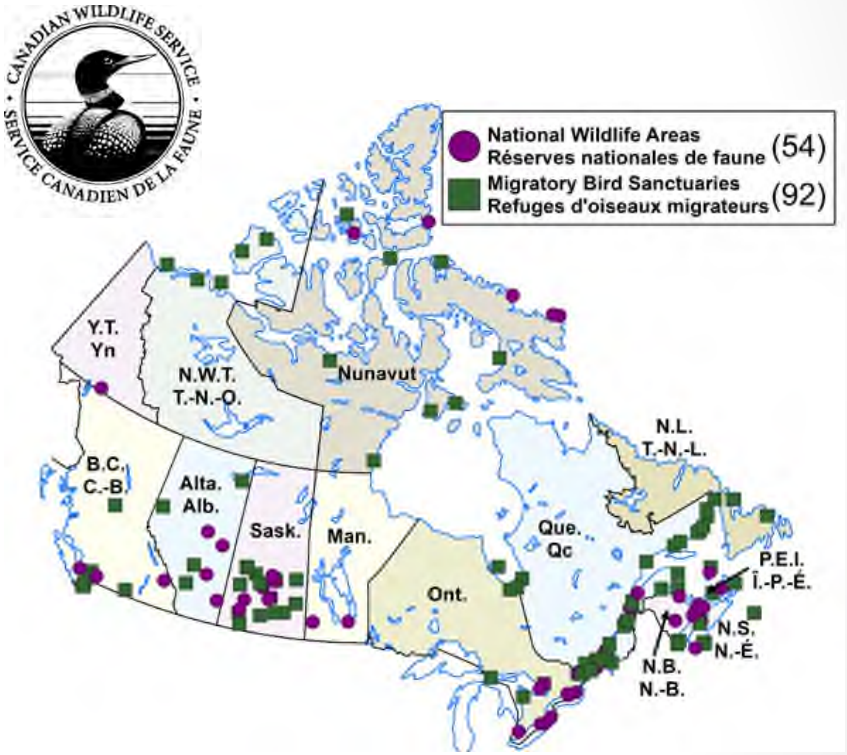
- ᓴᐳᓄᐊᖅᑕᐅᓯᒪᔪᑦᐊᖃᖅᓂᖅᑎᓄᑦ
- ᖃᐅᔨᓴᖅᑕᐅᖃᑕᑦᐊᖅᓂᖅᑎᓄᑦ
- ᑐᑭᓯᓇᖅᓯᑎᑕᐅᔪᑦᐊᖃᖅᓂᖅᑎᓄᑦ

ᓄᓇᑕᒥ ᐅᒪᔨᖃᖅᓴᑦ ᓴᐳᔾᔪᐅᓯᒪᓕᕐᓇᖅᑎᑦ
ᑎᖅᑎᐊᖃᖅᓴᑦ ᓴᐳᔾᔪᐅᓯᒪᓕᕐᓂᖅᑎᑦ

Purpose of Network

- Conservation
- Research
- Interpretation

National Wildlife Areas (NWA)
Migratory Bird Sanctuaries (MBS)



ᐊᖑᓕᓂᖅᑎᑦ 12 ᒥᓕᒃᖑᓪ
ᐄᐃᐊᖅᑕᓂᖅ ᑕᒪᖏᖅ ᓄᑎᓪᓗᓕᑦ
ᐊᖑᓕᖑᓕᑦ
12 million hectares in total

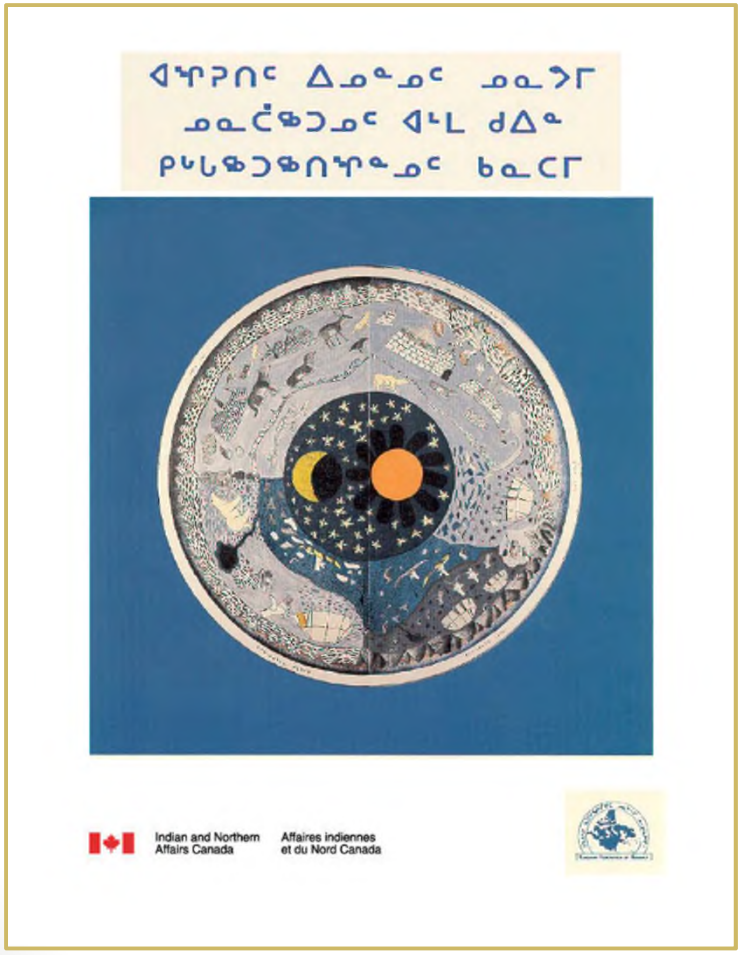
ᐊᓂᑎᓕᓵᕐᓯᐊᖏᑦ ᑲᓇᑕᒥ ᓯᓚᐅᔪᓐᓇ ᐊᓱᓴᖅᐸᔪᓕᐊᓂᖓᓂᑦ ᑲᓇᑕᒥ
Environment and Climate Change Canada

	ᑎᖅᒥᐊᖅᑲᓇᐃᑦ ᓴᓗᐅᔨᒪᕐᓇᖅᑐᑦ	ᑲᓇᑕᒥ ᐅᒪᔨᖅᑲᓇᐃᑦ ᓴᓗᐅᔨᒪᕐᓇᖅᑐᑦ
ᓴᓗᓂᐊᕐᑕᐅᓂᖅᓗᑦ ᑐᖏᓚᖅᖃᑐᑦ	ᑎᖅᒥᐊᑦ	ᑕᒪᖅᑭᑲ ᐅᒪᔨᐃᑦ
ᓴᓗᓂᐊᖅᑕᐅᔨᓂᖅᑭᓐᓄᑦ ᐊᑐᖏᓂᖅᑭᑦ	ᐅᓪᓗᖅᑲᖏᓂᖅᑭᑦ /ᐃᓕᓴᖏᓂᖅᑭᑦ/ ᓄᓕᐊᖏᓂᖅᑭᑦ	ᐊᖏᕿᔭᓕᒫᖅ
ᒪᓕᒐᖅᑎᔪᑦ	*ᑎᖅᒥᐊᖏᓪᓕᓚᓂᓂᕿᑲᖅ ᑲᑎᒪᖏᓐᓄᐊᕐᑕᐅᔨᒪᔨᓂᑦ ᒪᓕᒐᐃᑦ*	*ᑲᓇᑕᒥ ᐅᒪᔨᓕᓚᓂᓂᖏᓪᓗᑦ ᒪᓕᒐᐃᑦ*

	MBS	NWA
Protection Focus	Migratory birds	All wildlife
Protection Period	Nesting/breeding season	Year-round
Legal Basis	*Migratory Birds Convention Act*	*Canada Wildlife Act*

ᐃᓄᐃᑦ ᐊᖏᑐᕐᑕᐅᓯᒪᓂᖅᐸᓂᖅ ᐱᓕᕆᓂᕐᑕᐅᔨᓐᓇᖅᑐᓂᒃᑲᓂᕐᓗ ᐊᖏᕈᓐᓇ (2008; 2016)

Inuit Impact and Benefit Agreement (2008; 2016)





ᐃᓄᐃᑦ ᐊᖏᑐᖅᑕᐅᓯᒪᓂᖅᐸᓄᓄᑦ ᐱᓵᓕᕐᑕᐅᔨᓴᖅᑐᓂᒃᑐᓂᒃ ᐊᖏᑎᑦᑎᐊᓕ (2008; 2016)

Inuit Impact and Benefit Agreement (2008; 2016)

- ᐃᓱᒪᓕᐅᑭᑕᐅᓴᖅᑐᑦ ᐱᒻᓱᑎᖅᑲᖅᑐᑦ ᑎᖅᑭᐊᖅᑲᐃᓂᒃ ᐊᒪᓗᓗ ᐅᒪᔨᖅᑲᐃᓂᒃ ᓴᖅᑭᔨᒥᒃ ᐃᓄᐃᑦ ᖃᐅᔨᒪᔭᖅᑐᖅᑲᖅᖢᑦ ᐃᓄᐃᑦ ᖃᐅᔨᓴᖅᑲᖅᑲᓐᓂᖅᓯᒪᔪᖅ

- ᐃᓕᑕᒫᒃᐅᓱᒪᓴᑦ ᐊᐅᓪᓚᑎᐅᖅᑕᐅᒃᓗᐊᖅᑲᓂᖅᑭᑦ ᐃᓄᐃᑦ ᑎᖅᑭᐊᖅᑲᐃᓂᒃ ᐊᒪᓗᓗ ᐅᒪᔨᖅᑲᐃᐅᔨᓂᒃ ᐱᒻᒪᓗᐅᓂᖅᑭᑦ ᐊᖏᑎᑦᑎᐊᓕ ᐃᓄᐃᑦ ᑎᖅᑭᐊᖅᑲᐃᓂᒃᑐᓂᒃ: ᐊᐅᓪᓚᑎᐅᖅᑕᐅᓂᖅᓴᓪᒧᑦ ᑲᑎᕕᔪᕐᓇᑦ

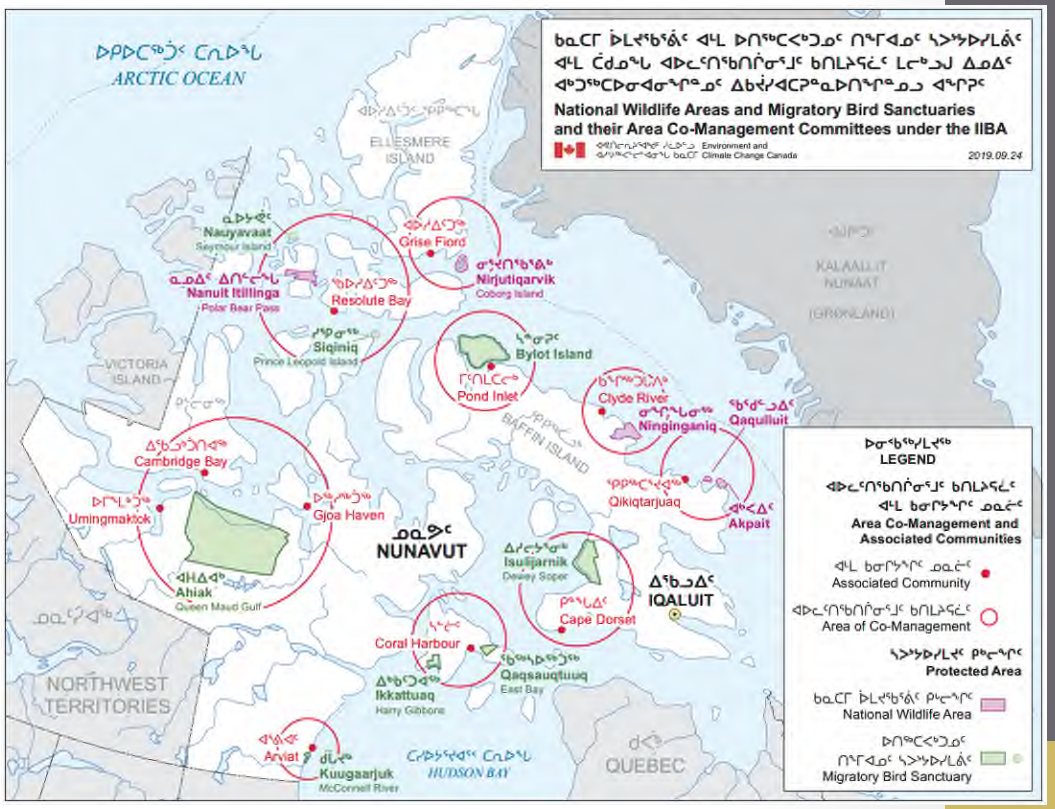
- Decisions for Migratory Bird Sanctuaries and National Wildlife Areas strongly influenced by **Inuit Qaujimajatuqangit**

- Guarantees co-management of Migratory Bird Sanctuary and National Wildlife Areas
  Important feature: **Area Co-Management Committees**

ᐊᐅᓪᓗᕆᐅᖅᑕᐅᓂᖏᓐ ᑲᑎᒪᔨᕋᓪᓕᐅᑦ
Area Co-Management Committees (ACMCs)

- 9-ᖃᓄᑦ ᐊᐅᓪᓗᕆᐅᖅᑕᐅᓂᖏᓐ ᑲᑎᒪᔨᕋᓱᒃᑐᖅᑎᑦ ᓄᓇᕗᒻᒥ, ᐊᐅᓪᓗᕆᐅᖅᑕᐅᓯᒪᔪᑦ 13-ᖃᓄᓂᒃ ᓴᓇᔨᓂᐊᖅᑕᐅᓕᒫᖅᓂᐊᓂᒃ ᓄᓇᓂᒃ
- ᑲᑎᒪᔨᖅᓯᖃᓪᓚᑎᒃ ᑕᒪᓕᒪᓂᒃ 5 ᐃᓄᖃᓂᒃ ᖁᓂᑭᖏᑐᓂ ᓄᓇᓕᓂᖃᖅᓯᒪᔪᓂᒃ ᐊᓪᒪᓗ ᐃᓕᖁᖃᓗᑎᒃ ᐊᑕᐅᓯᕆᑦ 1 ᑲᓇᑕᒥ ᐅᒪᔨᓕᕆᔨᒋᑦ ᐱᓕᕆᓚᖏᑐᓂ (ᐊᓯᑎᓕᕆᔨᒋᐊᓂᒃ ᓯᓚᐅᒪᓗ ᐊᓯᔨᕐᓴᒪᓕᐊᓂᖏᓐᓂᒃ)

- 9 ACMCs were created in Nunavut to co-manage the 13 protected areas
- Made up of 5 people from the associated community and 1 from Canadian Wildlife Service (Environment and Climate Change Canada)



- ᐃᖃᓗᐃᖅᓯᑦ ᐊᐅᓪᓚᕆᐅᖅᑕᐅᓂᖃᑦ ᑲᑎᒪᔨᖅᓯᒪᔪᑦ ᑲᑎᒪᔨᖏᓪᓗᐅᖅᑐᑦ 2012-ᒥ
- ᑕᕐᓕᒪᓂᒃ 5 ᑲᑎᒪᔨᖅᖅᑐᑦ ᓴᕐᓕᖅᑎᐅᑕᓂᒃ
  - ᓄᐊ ᑲᓕᓪᒃ (ᐃᒃᓯᐊᐅᑕᖅ)
  - ᐊᔪᓂ ᓂᖏᑎᐅᖏᓐᓄᑦ
  - ᓗᐃᓴ ᑲᓕᓪᒃ
  - ᐅᐃᓕ ᐊᑕᒪᓴ
  - ᐊᑕᐅᓯᖅ ᐃᓄᖅᖏᑎᑐᖅ
- ᐊᑕᐅᓯᖅᑎᒃ 1 ᑲᓇᑕᒥ ᐅᒪᔨᓕᕆᔨᒃᑯᑦ ᐱᓕᕆᓚᖓᓂ ᑲᑎᒪᔨᖅᕆᓂᕐᒧᑦ: ᖃᐅᔨ-ᐃᐊᐟ ᑐᐅᐊ (ᐃᒃᓯᐊᐅᑕᐅᐟ ᑐᖏᑎᓚᖓᓂᒃ)
- ᐃᑲᔪᖅᑕᐅᔪᖅ ᐅᒧᖏᒐ ᖃᓄ ᓂᖏᐅᖏᓚᓄ (ᑭᐊᓕᓪᒥ ᐃᓄᐃᑦ ᑲᑐᔨᖅᑎᑎᑦ)

- Irniurviit ACMC was formed in 2012
- 5 members from Coral Harbour
  - Noah Kadlak (Chair)
  - Annie Ningeongan
  - Louisa Kudluk
  - Willie Adams
  - Vacant
- 1 member from Canadian Wildlife Service: JF Dufour (Vice-Chair)
- Supported by Ron Ningeongan (KIA)



2012



2018

ᐃᖏᓂᐅᕐᕕᐊᑦ
ᐊᐅᓪᓗᓯᐅᖅᑕᐅᓂᖓᓪᓕᒃ
ᑲᑎᒪᔨᖏᓪᓗᒃ

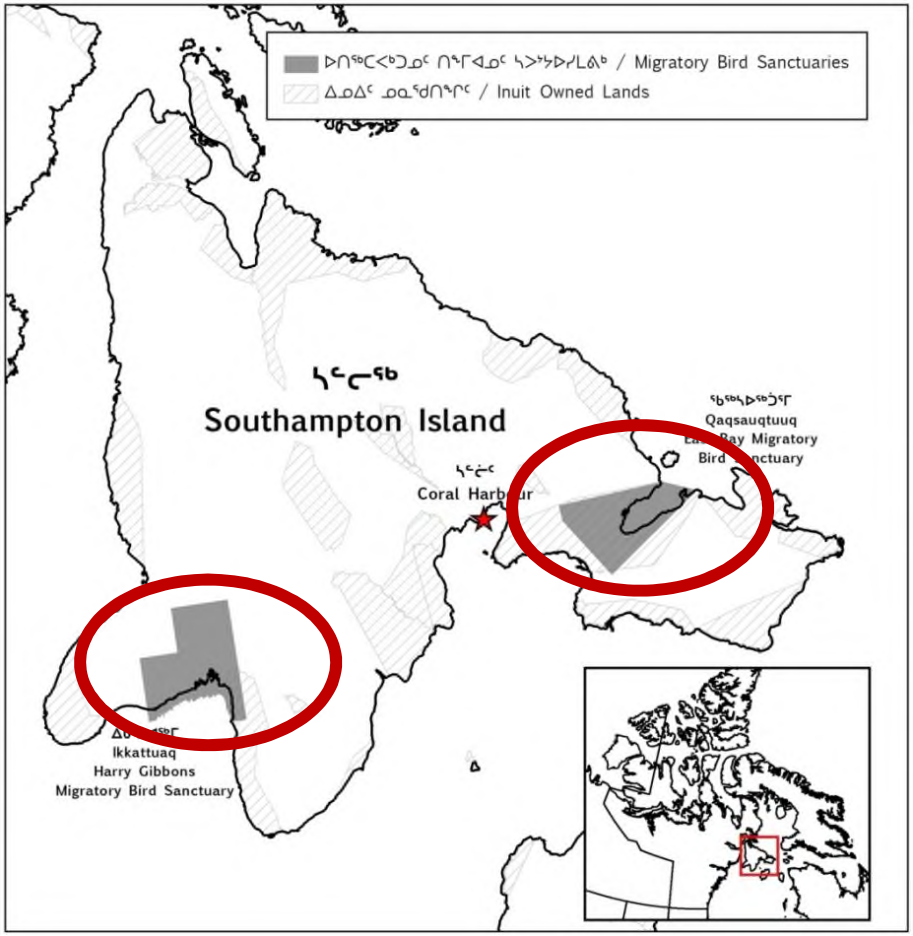
IRNIURVIIT AREA
CO-MANAGEMENT
COMMITTEE

ᒪᖏᕐᒧᑐᖅ ᑎᖕᒥᐊᖅᑲᓇᐃᖅ
ᓴᓂᓂᐊᖅᑕᐅᓯᒪᖕᓇᐅᔪᓕᑎᒃ:

- ᖃᖅᖁᓇᐅᖅᑐᖅᒥ
- ᐃᒃᑐᑕᐊᖅᒥ

Two Migratory Bird Sanctuaries:

- Qaqsauqtuuq
- Ikkattuaq



ᐊᐅᓪᓗᓂᐅᖅᑕᐅᓂᖏᑦ ᑲᑎᒪᔨᖏᓪᓕᓪᓂ
Area Co-Management Committees (ACMCs)

ᐊᐅᓪᓗᓂᐅᖅᑕᐅᔾᔨᓂ ᑲᑎᒪᔨᖏᓪᓕᓯᓪᓂ
ᐃᒪᓐᓇᐃᓕᐅᖅᑕᕐᓂᓕᕆᖅᑐᑦ:

- ᐅᖅᐅᓴᔨᕆᕕᖅᑎᐅᖅᑕᕐᓂᔭᓐᓄᑦ ᒥᓂᔾᑕᒧᑦ ᑕᒪᐃᓐᓇᓂᕆᕕᖅ ᐱᔾᔪᑎᖅᖅᑐᓂᑦ ᑎᓪᒥᐊᖅᕿᓐᓂᓂᑦ/ᐅᒪᔪᖅᕿᓐᓂᓂᑦ ᐊᐅᓪᓗᓂᑎᓂᕐᒥᑦ
- ᖃᐅᒥᖅᑕᐊᖅᑕᕐᓂᔭᓐᓄᑦ ᐱᔪᓐᓇᐅᑎᑦᓴᑕᕐᓂᔪᓐᓇᕐᓂᖏᑦ ᐅᑦᑐᖅᑕᐊᖅᑎᓂᑦ ᑐᑦᔪᖅᑐᐅᑎᓂᑦ
- **ᓴᓇᖅᑕᕐᓂᔭᓐᓄᑦ ᐊᐅᓪᓗᓂᑎᑦᔪᑎᑦᓴᓂᑦ ᐸᖅᓇᐅᑎᓂᑦ**



ACMC will:

- advise the Minister on all aspects of MBS/NWA management
- review permit applications
- **develop Management Plans**



ᓯᓇᐅᖏᒪᑕ ᐊᐅᓪᓕᑎᐱᔨᑎᖅᓴᓕᓂᑦ ᐸᖕᓇᐅᑎᑦ?

What is a management plan?

- ᐱᔨᓴᓇᐅᑕᐅᐳᖅᑐᑦ ᐊᐅᓪᓕᑎᐱᔭᖑᓇᐅᑕᐅᓂᖕᒧᑦ ᑲᑎᒪᔨᕆᓪᓕᑦ ᐅᖃᐅᔨᖑᕐᓇᖕᓂᖏᓐᓂᖅ ᑕᑯᑎᑕᑎᐱᓴᓇᖕᓂᒃ ᑕᐅᑐᒪᓗᓇᖕᓂᖕᒧᑐ ᖃᓄᐃᓕᖏᓐᓄᓚᐊᖃᖕᓂᖏᓐᓂᖅ ᓴᐳᓴᐊᖃᑕᐅᔨᒪᔨᑦ
- ᓇᓗᓇᐃᔭᐃᔨᐅᐸᓗᓗᑎᒃ ᒪᓕᒃᑕᐅᓂᐊᖃᖕᒥᓂᒃ ᐃᔨᒪᓕᐅᖃᑎᒌᖏᓐᓂᖃᖅ ᐱᔭᐸᑎᖃᖕᒥᓂᒃ ᓴᐳᓴᐊᖃᑕᐅᔨᒪᔨᓂᖅ ᓄᓇᓂᒃ
- ᐅᓂᒃᑲᖅᐸᒃᑐᒥᑦ ᐱᓕᒪᓗᐅᓂᖏᓐᓂᖅ ᐃᓕᓐᓄᔨᑕᖅᑎᑦ ᐊᐸᑎᖏᓐᓂᓕᓪᓗ ᖃᓄᐃᓕᖏᓐᓄᓂᖏᓐᓂᖅ
- ᐅᓂᒃᑲᖅᔨᒪᑕᑎᐊᖅᑐᑦ ᖃᓄᖅ ᐱᓕᓗᐊᐅᔨᓇᖕᓂᖏᓐᓂᖅ ᓄᓇᖏᑦ ᐊᓪᒪᓗ ᖃᓄᖅ ᐱᓕᓗᐊᐅᔨᓇᓐᖏᓐᓂᖏᓐᓂᖅ ᓄᓇᖏᑦ

- Allows the Area Co-Management Committees to share their vision of the protected area
- Guides decision making for the protected area
- Describes important cultural and environmental aspects
- States which activities are permitted and not permitted





ᐊᐅᓪᓗᐊᑎᒃᑲᐃᓕᑦ ᓱᖏᓐᓄᐅᑎᑦ: ᐱᓕᓀᐊᖅᓯᓂᓕᐊᖏᑕᐃᓇᖏᓐᓂᑦ
Management Plans: *Steps*

ᐱᓯᓂᓕᐊᓂᖅᓂᓐᓂ ᓯᓚᓐᓂᖅ 1

ᖃᐅᔨᒪᔨᕐᑎᑲᓇᓂᐊᖏᑕᖅᓂᓂᑦ ᑲᑎᖏᓯᐃᓂᖏᖅ

ᐱᓯᓂᓕᐊᓂᖅᓂᓐᓂ ᑐᑭᓂᖅ 2

ᑐᑭᓂᐅᖏᑕᐅᓗᑎᑦ ᑕᐅᑐᑐᓀᒃᐅᔨᓂ ᓯᓚᓂᓂᒃᓕᒍᑦ, ᑐᖏᓀᓀᒃᐅᔨᓂ, ᐃᓂᖏᑕᐅᓯᒪᓂᐊᖏᑐᑐᓂᓗ

ᐱᓯᓂᓕᐊᓂᖅᓂᓐᓂ ᐱᖓᓱᖓᑦ 3

ᑎᑎᕋᖏᑕᐅᓯᓂᓕᓗᑎᑦ ᐊᐅᓪᓚᑎᓂᓀᓂᐊᖏᑕᖅᓂᕐᓂᓄᑦ ᓴᖃᐅᑎᑦᑕᖅᓂᑦ

ᐱᓯᓂᓕᐊᓂᖅᓂᓐᓂᑦ ᓯᑕᒪᖓᑦ 4

ᓄᓇᓕᖅᓂ ᑲᑎᒪᓂᑦᑎᓂᖅᓂᑦ ᐱᓵᓯᑎᑭᓗᑦ ᑎᑎᕋᖏᑕᐅᔭᖏᖅᓯᒪᓯᑦ ᐊᐅᓪᓚᑦᑎᓯᑲᓇᖅᓂᑦ ᓴᖃᐅᑎᖏᓐᓂᓂᑦ

ᐱᓯᓂᓕᐊᓂᖅᓂᓐᓂ ᑕᖅᓚᒪᖓᑦ 5

ᓄᓇᓄᓐᒥ ᐅᒪᔨᓚᓗᔨᔨᐊᐳᑦ ᑲᑎᒪᔨᖏᓐᓄᓪᓕᑦ ᐊᓐᒪᓗ ᑲᓇᑕᐅᐸ ᒥᓂᑕᖓᓄᓪᓕᑦ ᐊᕿᑎᓚᓗᓂᔪᑦ ᐊᖏᕈᑕᐅᓗᑎᑦ

ᐊᑐᓚᖅᑎᑕᐅᓗᑎᑦ ᐊᐅᓪᓚᑦᑎᓯᑲᓇᖅᓂᑦ ᓴᖃᐅᑎᖏᓐᓂᑦ

Step 1

Collect Information

Step 2

Articulate Vision, Goals, and Objectives

Step 3

Draft the Management Plan

Step 4

Community Meetings
about the draft Management Plan

Step 5

Nunavut Wildlife Management Board and
federal Minister of the Environment Approvals

Implement the Management Plan

ᑕᒪᔨᓂᖅ ᐅᖃᐅᓯᖅ
Where we are

ᐃᓗᓕᓐᖏᑦ ᑎᑎᕐᖃᑕᐅᔭᓕᓕᐊᔾᑦ ᓂᓕ ᐊᐅᓪᓚᑦᑎᐸᕐᓴᖅᑦ ᕿᖏᐅᖅ% ᖃᖃᓴᐅᖃᑉᑐᕐᒧᑦ ᐊᓚᒪᓗ ᐃᑲᑦᑐᐊᕐᒧᑦ ᑎᖏᒥᐊᖃᕐᐸᖏᓐᓂᑦ

Content of the Draft Management Plans for the Qaqsauqtuuq and Ikkattuaq Migratory Bird Sanctuaries

ᐃᓗᓕᓐᖏᑦ ᐊᐅᓪᓚᑎᑦᑎᐸᒋᑎᖅᑲᐃᑦ ᓯᖏᐅᑎᒃ
Content of the Management Plans

- ᐅᓂᖅᑲᑦᑎᐊᖅᑐᑦ ᑎᖏᒥᐊᖅᖏᓐᓇᑦ ᖃᓄᐃᓕᓐᖑᓂᖏᓪᓂᖅ
- ᐊᓭᑎᖑᓂ ᓄᓇᒥᐅᑕᐃᓕᓴᐅ ᐅᒪᔪᐃᓕᓴᐅ ᐱᑕᖅᖏᓂᖏᓪᓂᖅ ᑕᒪᓂ
- ᐱᐅᔪᑐᖅᖅᑎᒍᑦ ᐊᓭᑎᒥᐅᑕᖏᓐᖏᑦ ᔪᓇᑕᖅᖏᓂᖏᓪᓕᓴᐅ
- ᑕᐅᑐᒪᓱᐅᔪᑦ, ᑐᖃᓱᓱᐅᔪᑦ ᐊᓚᒪᓗ ᐱᓕᓱᐊᓂᔪᒪᓂᐊᖅᑐᑦ
- ᐊᐅᓪᓚᑎᓂᕐᒧᑦ ᐃᓕᒪᖏᖅᔪᐅᑭᑎᖏᑦᑲᐃᑦ - ᔪᓇᑐᐃᓵᖏᑲᐃᑦ ᐃᓕᒪᖏᖅᔪᐅᑭᑕᐅᓂᖏᓪᑎᑦ ᐊᐅᓪᓚᑎᓂᕐᒧᑦ ᑎᖏᒥᐊᖅᖏᓐᓄᓂᓂ

- Description of the Migratory Bird Sanctuaries
- Ecological resources
- Cultural resources
- Vision, goals and objectives
- Management Considerations – things to consider in managing the Migratory Bird Sanctuaries





ᐱᓪᓕᐅᓴᖅ **Black Guillemot**



ᐃᓗᓕᓐᖏᑦ ᐊᐅᓪᓚᑎᐱᑎᖅᓴᐃᑦ ᐸᖕᓇᐅᑎᓂᑦ
Content of the Management Plans

- ᐊᐅᓪᓚᑎᓂᖕᒪᑦ ᖃᓄᐃᓕᓐᖓᓂᐊᖕᓂᖏᑦ - ᖃᓄᐃᓕᓐᐅᖕᓂᐊᖕᒪᖓᑕ ᑎᑭᐅᑎᕐᒪᓂᖕᒪᑦ ᑐᖓᒪᓗᐅᔪᓄᑦ ᐊᓱᒪᓗ ᐱᓕᕆᐊᖅᐊᓂᔪᒪᓂᐊᖅᑐᑐᓄᑦ
- ᐊᖏᕈᑕᐅᓯᒪᔪᑦ ᐱᓕᕆᐊᖅᔨᓇᖕᓂᖅ ᑎᑭᓯᒪᖕᓇᐅᔪᖏᓐᓄᑦ ᐱᔨᓇᐅᑎᖃᕆᐊᖅᑐᑦ ᐊᓱᒪᓗ ᑭᓇᐅᔭᖓᑦ ᐱᔨᓇᐅᑎᖃᕆᐊᖅᖢᓂᖅᑐᑦ
- ᓄᓇᐃᑦ ᖃᓄᐃᓕᓐᖓᔪᒥᒃ ᑎᒃᓯᐊᖅᑕᐅᓯᒪᓂᖏᑦ: ᐃᔨᓇᐅᔪᖅ ᑎᓪᒥᐊᖅᖃᕐᖢᐅᑎᑕᐅᔪᖅ
- ᐊᐅᓪᓚᑎᐱᑎᖅᓴᐃᑦ ᐸᖕᓇᐅᑎᓂᑦ ᐊᑐᓪᖅᑎᑦᑕᐅᓂᖏᑦ ᐊᓱᒪᓗ ᐱᓕᕆᐊᖅᑐᑐᓂᖏᑦ

- Management Approaches – what we will do to achieve the goals and objectives
- Authorized Activities and Access – what activities require a permit, who requires a permit
- Site designation: currently a Migratory Bird Sanctuary
- Management Plan implementation and collaboration







ᖃᓄᖅ ᐱᓂᓪᓕᐊᒋᐊᓕᓚᐅᖅᓯᒪᓐᒪᓐᓂᑦ
Historical Background





ᖃᓄᐃᓕᐅᖅ 1959-ᓴᑎᓪᓗᒍ ᓴᓇᓂᐊᖅᑕᐅᓇᓯᑎᒃ ᖃᓴᐃᐃᑦ, ᓂᕆᓪᓇᐃᓪᓗ

“ᖃᓄᐃᓕᐅᖅ” - ᖃᓄᐃᓕᐅᖅᑐᓪᓗᒍᒃ ᑕᓯᕋᐊᖅ ᑕᒪᓂ

ᑎᑎᕋᖅᑕᐅᓭᓪᓗᐊᓂᖅᑎᑦ ᓯᓚ ᐊᐅᓪᓚᑦᑎᓗᒃᓴᐃᑦ ᐸᕋᐅᓕᖅᑎᑦ

- Established in 1959 to protect Snow Geese and Brant from disturbance
- “Kouksauktow” – Bay of red-throated loons
- Draft management plan in 1986



ᖃᓄᐃᓕᐅᖅ Red-throated loon

ᖃᓄᖅ ᖃᐅᔨ
Snow goose

ᐃᒃᑲᑦᑐᐊᖅᑎ ᑎᓪᓗᐊᖃᕐᓇᒃ
Ikkattuaq

- ᐱᓪᓕᖅᑎᑕᐅᓚᐅᖅᓯᒪᔪᖅ 1959-ᓴᑎᓪᓗᒍ
  ᓴᐅᓂᐊᖅᑕᐅᓇᓯᓚᑎᒃ ᒃᓴᐃᐃᑦ, ᖃᐅᔨᑦ, ᓂᕆᓪᓇᐃᓪᓗ
- ᐄᐃᐅᓕ ᑭᐱᓪᓴ ᐅᓇᐃᓪᓄᒃ
- ᑎᑎᕋᖅᑕᐅᓭᓪᓗᐊᓂᖅᑎᑦ ᓯᓚ ᐊᐅᓚᑦᑎᓗᒃᓴᐃᑦ ᐸᕋᐅᓕᖅᑎᑦ

- Established in 1959 to protect “Blue” Goose, Snow Goose and Brant from disturbance
- Harry Gibbons Unainnuk (c. 1900-1954)
- Draft management plan in 1986

ᓄᓇᖅᑐᑦ ᑕᐅᓂᓂᒃ ᖃᓄᐃᓕᓐᖅᓯᓂᖅᑐᑦ
Landscape





ᐃᑲᑦᑐᐊᖅᑎ ᑎᖅᑎᐊᖃᖅᖁᓕᑲ
Ikkattuaq

- ᐊᖏᕐᓂᓕᑲ 1,433-ᓂᑲ ᓴᓂᒧᑦ ᑐᑭᒧᑉᓗ ᑭᐸᑦᓴᓐᖅᑐᑎᑲ ᑕᒪᐃᓐᓂ ᑭᓯᒥᑕᓕᖅᓂᑲ, ᐊᓚᒪᓗ 190 ᓴᓂᒧᑦ, ᑐᑭᒧᑉᓗ ᑕᒪᐃᓐᓂᑲ ᑭᓯᒥᑕᓂᑲ ᑕᓗᐅᖏᒥ ᐃᒪᐃᑦ
- ᐳᐊᓴᐅᐸ-Boas ᑯᖏᓚ ᓄᓇᐅᐸ ᐃᓗᑐᓂᖏᓐᓄᑦᑐᖅ ᐊᓚᒪᓗ ᐊᑭᐊᓄᓴᓭᑎᑲ ᑎᓂᖏᓂᐊᓗᓄᖅᑐᑦ ᓭᓴᒥ ᑕᐅᓂᓐᓂᐸ ᐃᑲᑦᑐᐊᐸ ᑕᓗᐅᖏᓐ
- ᓄᓇᖏᓚ ᖃᖃᓴᖃᖏᓕᑦᑐᖅ (ᑕᒫᓂ <60m ᑭᑕᒥᑲ ᐊᖏᕐᓂᖏᒥ) ᐃᒪᐃᓴᖅᖁᖃᑦᑎᐊᖏᕐᑐᐊᓗᓇᓗᓂᓗ

- 1,433 km^2, includes 190 km^2 of marine waters
- Boas River delta and the adjacent tidal flats in the Bay of God’s Mercy
- Land is flat (<60m) & poorly drained

ᖃᖅᖁᓴᐅᖅᑐᖅᑎ ᑎᖅᑎᐊᖃᖅᖁᓕᐅᓂᖏᓐᓄᑦ
Qaqsauqtuuq

- ᐊᖏᕐᓂᓕᑲ 1,124-ᓂᑲ ᓴᓂᒧᑦ ᑐᑭᒧᑉᓗ ᑭᐸᑦᓴᓐᖅᑐᑎᑲ ᑕᒪᐃᓐᓂ ᑭᓯᒥᑕᓕᖅᑎᑲ, ᐃᓕᖃᖅᓯᓂᓗ 286-ᓂᑲ ᑭᐸᑦᓴᓐᓂ ᑕᒪᐃᓐᓂᑲ ᑕᓗᐅᖏᒥ ᐃᒪᖁᓂᑲ
- ᖃᖅᖁᓴᐅᖅᑐᖅᑎ, ᑕᑭᓂᖃᖅᑎᑎᕐᒥᑲ 50-km ᑭᓯᒥᑕᓕᖅᑎᑲ ᑲᖏᕐᓄᖃᖅᖁᖃᖅᓄᖅ
- ᓄᓇᖏᓚ ᖃᖃᓴᖃᖏᓕᑦᑐᖅ (ᑕᒫᓂ <120m ᑭᑕᒥᑲ ᐊᖏᕐᓂᓕᑲ) ᐃᒪᐃᓴᖅᖁᖃᑦᑎᐊᖏᕐᓄᐊᓗᓇᓗᓂᓗ

- 1,124 km^2, includes 286 km^2 of marine waters
- East Bay, a 50-km-long inlet
- Land is flat (<120m) & poorly drained



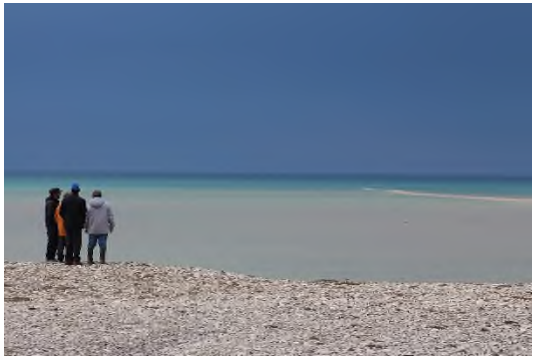
ᓄᓇᖅᑐᑦ ᑕᐅᔭᓂᒃᑯᓂᖅ
Landscape

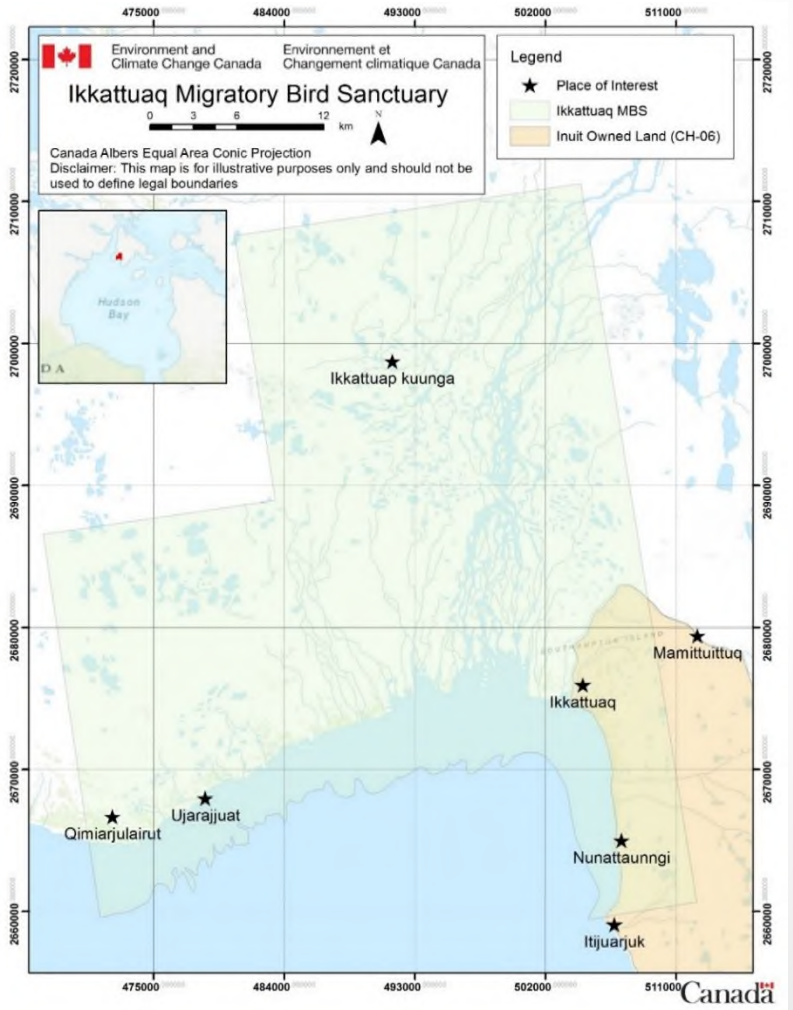




ᐃᖃᓪᓗᐊᖅᑎ ᑎᖅᑎᐊᖅᑐᖃᖅ
Ikkattuaq

- ᑕᒪᕆᒃᓴᒃ ᑕᒪᓐᓇ ᓄᓇ ᑲᓇᑕᐅᔨᑦ ᓴᓇᒪᓐᓂᒃᑯᐊᓂᖅ ᓄᓇᕐᔪᑎᑎᕆᔨᓐᓂ
- ᐊᑕᐅᓯᖅ ᑭᓪᓚᐸᓐᓂᕐᒥᖅ ᐃᓄᖅᓄᑦ ᓄᓇᕐᔪᑎᑎᕆᐅᓯᖅ
    - ᓄᓇᐅᔨᑦ ᖃᖅᓴᓂᑕᓂᕐᓄᑦ ᐱᓯᓇᐅᑎᖃᖅᑐᐊᓯᖅ
- Mostly federal crown land
- 1 parcel of Inuit Owned Land
    - Surface rights





ᓄᓇᖅᑐᑦ ᑕᐅᔭᓂ ᖃᓄᐃᓕᖅᑎᑦ

Landscape






ᖃᖅᓴᐅᔪᒃ ᑎᖅᑕᐊᖃᖅᓯᐅᓂᖅᓯᓂ

Qaqsauqtuuq

- ᑕᒪᖁᑲᓴᐃᑦ ᓄᓇᖅᑦ ᑕᒫᓂ ᐃᓄᖅᓄᑦ ᓄᓇᕐᒪᑎᖅᑲᐅᔪᑦ
  - ᓄᓇᐅᔨ ᖃᖅᓱᓂᑐᑐᓂᒃ ᐱᓵᓇᐅᑎᖃᕐᓯᐅᔪᖅ
- ᑕᕆᐅᖁᒥ ᐃᒪᐃᑦ ᐊᓚᓗ ᖁᑭᖅᑕᑯᓗᒃ - ᑲᓇᑕᐅᔨ ᒪᓪᒪᖅᓵᓄᑦ ᓄᓇᒥ
- Mostly Inuit Owned Land
  - Surface rights
- Marine waters and Qikiqtakuluk - federal



ᐊᐢᑎᖏᓂ ᓄᓇᒥᐅᑕᐃᓪᓗ ᐅᒪᔨᐃᓪᓗ ᐱᑕᖅᖃᑐᑦ ᑕᒪᓂ
Ecological Resources

ᐃᒃᑲᑐᐊᖅᒥ ᑎᓯᒥᐊᖅᖁᓕᒃ
Ikkattuaq

- ᓄᓕᐊᖏᐅᓴᓂᓯᓂᖓ ᑕᒪᓂ ᑲᓇᑕᓕᒫᒥ ᐱᓪᒪᓚᐅᓂᖅᑐᑦ ᐱᑕᖅᐃᓚᓇᑲᓚᖏᓚᓄᑦᑐᓚᓂᖅᑲᐃᐃᑦ (5% ᐳᕆᓚᑎᒋᑐᑦ) ᓂᖏᓕᓚᐃᓪᓗ (1% ᐳᕆᓚᑎᒋᑐᑦ)
- ᐱᓪᒪᓚᐊᓗᔭᖅ ᑎᑭᓯᒪᑲᐃᓇᖏᖅᑕᑦᑕᖏᓂᔪᑦ ᐊᓯᖏᓚᓄᓚᓂᐊᓂᖏᓚᓂ ᓯᓴᖅᐸᓯᐅᓂᖏᒋᓯᓯᕐᓂ ᑎᓯᒥᐊᑦ
- ᐅᖃᓕᑕᓂᒥᔪᑦ >50 ᐊᐠᔨᑦᖏᑦᑐᑎᑦ ᑎᓯᒥᐊᑲᓕᐃᑦ ᑕᒪᓂᓯᓯᕐᒥᔪᑦ
- ᖏᓂᐅᔨᑦ 10 ᐅᒪᔨᐃᑦ ᐊᒥᓯᖏᓪᓗᐊᓕᖏᓂᖏᑦ

- Breeding habitat for nationally significant populations of Snow Geese (5%) and Brant (1%)
- Important stopover site in fall for shorebirds
- >50 species of birds
- 10 species at risk



ᓂᖏᓚᓇᐃᑦ **Brant**



ᖃᓄᐃ **Snow Goose**

ᐊᐢᑎᖏᓂ ᓄᓇᒥᐅᑕᐃᓪᓗ ᐅᒪᔨᐃᓪᓗ ᐱᑕᖅᖃᖅᑐᑦ ᑕᒪᓂ
Ecological Resources

ᐃᒃᑲᑐᐊᖅᒥ ᑎᖏᒥᐊᖅᖃᕐᓂᖅ
Ikkattuaq

- 19-ᖏᔪᑦ ᐊᓴᒋᖏᑐᑐᑎᑦ ᐊᒪᒪᒃᑎᑦᑎᐸᒃᑐᑦ ᐱᐊᕆᖏᑦᓂᒃ ᓄᓇᒥᐅᑕᐃᑦ ᐅᒪᔨᐃᑦ ᑕᒪᓐᓇᑦ
- ᓇᓄᖅᓯᖅ ᐊᐅᓴᒃᑯᑦ ᐊᓚᒪᓗ ᑕᒪᓂ ᐃᒡᓗᖅᓴᐅᓯᖏᓪᓗᑎᒃ ᓇᓄᕐᓄᑦ
- ᓇᓪᓴᖅᑐᖅᖏᑦᑐᕈᐅᑕᓄᑦ ᑐᒃᑐᖅᕆᖅᓴᐅᐸᒃᑐᖅ, ᐃᓕᖏᑦᓗ ᓄᕐᕆᕆᐅᖅᑕᑦᑕᖅᓯᒪᔪᓗᑎᒃ
- ᓇᑦᓯᖅᑕᖅᖅᑐᖅ ᐊᓚᒪᓗ ᐊᕐᕆᒃᑕᖅᖅᑐᖅ

- 19 species of mammals
- Polar bear summer and denning habitat
- Barren-ground caribou summer range, portions used as calving grounds in the past
- Seals and Bowhead whale



ᓇᓄᖅ **Polar Bear**



ᑐᕐᑐ **Caribou**

ᐊᐢᑎᖏᓂ ᓄᓇᒥᐅᑕᐃᓪᓗ ᐅᒪᔨᐃᓪᓗ ᐱᑕᖅᑐᖅᑐᑦ ᑕᒪᓂ
Ecological Resources

ᖃᖅᓴᐅᖅᑐᑎᒥ ᑎᖏᒥᐊᖅᖁᕕᐅᓂᖏᓂ
Qaqsauqtuuq

- ᓄᓕᐊᖁᕕᐅᔪᖅᑐᖅ ᐱᓕᓚᐅᕕᔾᒥᒃ ᑲᓇᑕᒥ ᐊᒥᓱᓄᓕ ᑲᖏᖅᓄᓕ (2% ᐳᓴᓂᑎᖏᓂᑕᓄᓕ), ᒥᑎᖁᓄᓕ (5% ᐳᓴᓂᑎᓄᓕ) ᓂᖁᓕᖁᖁᓄᓪᓗ (1% ᐳᓴᓂᑎᑦᑕᓐᓄᓕ)
- ᑲᓇᑕᐅᐸ ᐅᑭᐅᖅᑕᖅᑐᑐᓂᓗᒃᑮᖏᓂ ᐊᖏᕐᓭᖏᖅᖁᖅ ᒥᑎᖅᑕᖃᖁᕕᐅᔪᓐᓂᖅ
- ᐅᖏᓪᓕᓂᒃᓕᕆᔨᓕᑦ >90 ᐊᐢᔨᑲᖏᑦᑐᑎᑲᑦ ᑎᖏᐊᓚᐱᐅᑦ ᑕᒪᓂᓕᒃᓴᖏᖅᓕᕆᔨᓕᑦ
- Breeding habitat for nationally significant populations of Snow Geese (2%), Common Eider (5%) and Brant (1%)
- Arctic Canada’s largest single colony of Common Eiders
- >90 species of birds



ᒥᑎᐹᖅ Common Eider



ᓴᐅᖁᖅ Red Phalarope

ᐊᐢᑎᖏᓂ ᓄᓇᒥᐅᑕᐃᓪᓗ ᐅᒪᔨᐃᓪᓗ ᐱᑕᖅᖃᖅᑐᑦ ᑕᒪᓂ
Ecological Resources

ᖃᖅᓴᐅᖅᑐᖅᒥ ᑎᖏᒥᐊᖅᖁᐅᓂᖏᓂ
Qaqsauqtuuq

- ᖁᓕᐅᔨᑦ 19 ᐅᒪᔨᐃᑦ ᐊᒥᓱᖏᓪᓗᐊᓕᖁᓂᖏᑦ
- ᓄᓇᖁᓇᑦ ᐃᒡᓗᖅᖁᐊᕐᕿᖅᑐᑦ (ᓱᑎᖅᖁᐊᕐᕿᖅᑐᑦ) ᐊᐅᔪᓚᐅᓪᓗ ᓂᖏᖅᓴᖅᓱᐅᖁᐊᕐᕿᖅᑐᖅ ᓄᓇᖁᓇᑦ
- ᓄᓯᑲᖅᑐᖅᖏᑦᑐᖁᐅᑕᓄᑦ ᑐᒃᑐᖅᖁᐊᕐᕿᖅᑐᖅ, ᓇᓇᖁᓇᖅᑕᐅᕐᕿᖅᑐᖁᖁᓪᓗ ᐊᐅᔪᐅᓂᖏᓂ
- ᖃᓄᓗᒃᐃᑦ ᐅᑎᕋᐊᖅᑕᖅᓱᒪᓱᑦ (ᐃᕆᓪᓕᖁᓂᒃ), ᐊᒥᔪᖅᑕᖅᓱᑎᒃᓗᓪᓗ, ᓂᖏᖅᓴᖅᓱᐅᖁᐊᕐᕿᖅᓱᓂᓗ ᑕᒪᒃᑯᓄᖓ
- ᐊᐃᐹᖅᑕᓕᒃ ᐊᐅᔪᒃᑯᑦ ᑕᒪᐢᓭ

- 19 species at risk
- Polar bear denning and summer foraging habitat
- Barren-ground caribou calving and summer range
- Beluga calving, molting and foraging habitat
- Walrus summer foraging habitat



ᐊᐃᐹᖅ Walrus



ᖃᓕᓴᖅ Beluga

ᐊᐢᕈᑎᖏᓂ ᓄᓇᒥᐅᑕᐃᓪᓗ ᐅᒪᔨᐃᓪᓗ ᐱᑕᖃᖅᑐᑦ ᑕᒫᓂ
Cultural Resources



ᐃᓄᐃᑦ ᓴᓪᓕᐅᕐᓂ ᖃᐅᖅᑕᒪᓗᐊᖏᖅᑕᑦᑕᕐᓂᑯᓕᖅᓴᓂ ᑕᐅᓴᓴᒪᓕᕆᐅᓕᖅᑐᓂ ᐊᕐᕿᒍᓂ

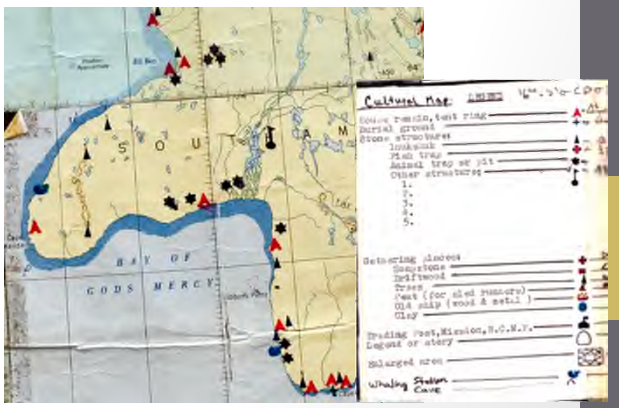
- ᐊᒥᓱᒪᒪᓕᕆᐅᕐᓂᒃ ᖃᐅᔨᒪᓴᐅᔨᕐᑎᑦ ᑕᐃᔾᓱᒪᓂᓂᑕᖃᕐᓂᐊᕐᓂᖅ, ᐃᓄᖃᕐᓂᐊᕐᓚᐅᕐᓂᖏᓐᓂᕐᓂᖅ, ᐃᓕᓴᕐᓯᑐᖃᕐᓂᖅᓴ ᓇᓗᓇᐃᑯᑕᐃᑦ ᐱᑕᖃᖅᑐᑦ ᐊᑐᓗ ᐱᓴᓯᑎᐃᓂᖃᕐᓂᐊᕐᓂᖅᓱᓂ ᑕᐅᕐᓂᓐᓇ ᓄᓇᖓ

- ᑕᐃᔾᓱᒪᓂᓂᑕᐃᑦ ᖃᖓᓂᓂᑕᐃᑦ ᒥᑭᓂᑕᐃᑦ ᑎᑭᑎᐊᖃᕐᓂᐊᕐᓚᐅᕐᖅᑐᑦ ᑕᐅᕐᓂᓄᓐ



Inuit have lived on Southampton Island for thousands of years

- Numerous known archaeological sites, cultural features & artifacts in the area
- Historic trap lines



ᐊᐢᓂᑎᓂᓄ ᓄᓇᒥᐅᑕᐃᓪᓗ ᐅᒪᔨᐃᓪᓗ ᐱᑕᖅᑲᖅᑐᑦ ᑕᒪᓄ Cultural Resources



- ᐊᒥᔨᐊᓗᐃᑦ ᔨᓕ ᐃᓄᖅᕿᐅᓂᒪᐅᖅᑐᖅᑐᒃᓗᐃᑦ ᔨᓕ ᑎᑎᕿᑕᐅᔨᒪᖏᑦᑐᑦ
- ᐊᑕᐅᔨᕿᒃ 1 ᑎᑎᕿᑕᐅᔨᒪᓕᖅᑐᖅ ᒪᓕᒐᖅᑎᒍᑦ ᓄᓇᖏ ᑕᐅᓂᓄ ᖃᐹᖅᑕᑯᓗᒃ
- ᒪᕆᐣ 2 ᑎᑎᕿᑕᐅᔨᒪᓕᖅᑐᖅ ᒪᓕᒐᖅᑎᒍᑦ ᓄᓇᕗᑦ ᖁᓂᒃᑯᖏᓐᓂᑦ ᐃᓕᔨᐊᕆᔨᒃᑯᑦ

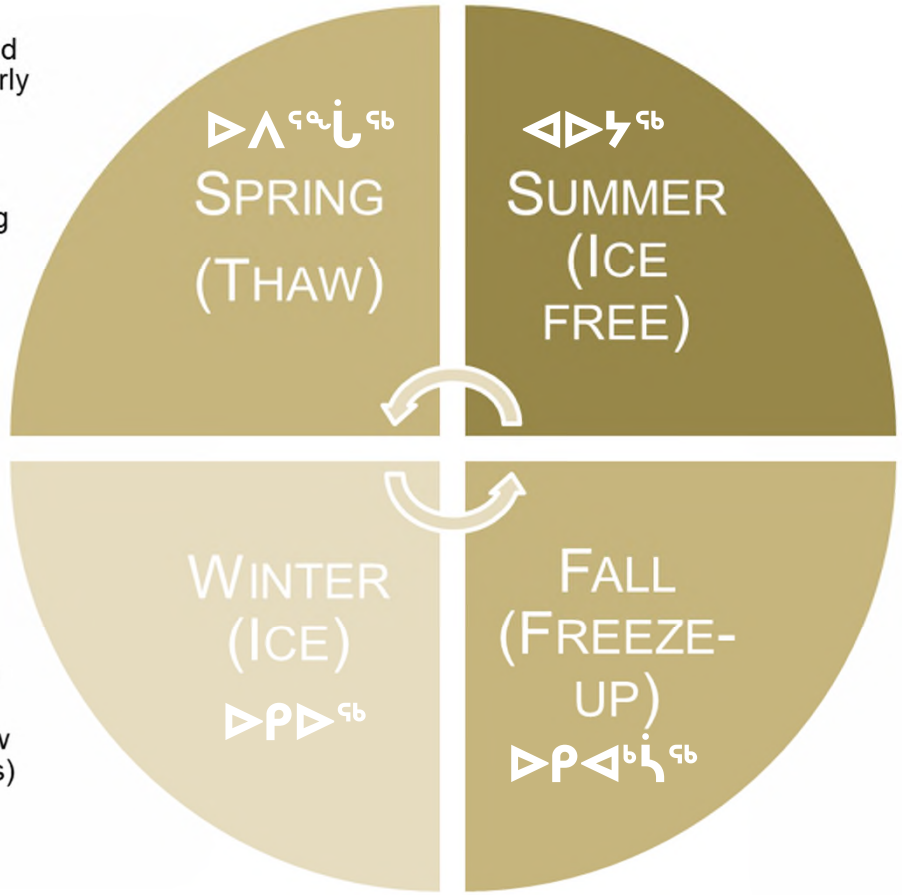
- Many archaeological sites remain unregistered
- 1 registered site on Qikiqtakuluk
- 2 registered sites near Itijuarjuk





ᑕᐃᔨᓯᒪᓂᑐᓄᖅᑎᒃ ᐃᓐᓇᒧᑦᓗ ᐃᓄᖅᓄᑦ ᓄᓇᖅᑎᑦ ᐊᑐᖅᑕᐅᖅᑕᕐᑐᖅᑐᑦ ᐃᓅᔨᐸᑎᖅᓴᓄᐅᓕᖅᓂᕐᒧᑦ

Past and current subsistence land uses



- Goose hunting and egg collection (early spring)
- Seal and walrus hunting
- Polar bear hunting
- Char fishing from lakes and rivers
- Fox trapping

- Camping
- Char fishing continued (using nets)
- Summer fishing camps were set-up at mouth of the rivers
- Seal, caribou and geese were traditionally hunted from canoes along the shoreline
- Sea mammal hunting from boats
- Collecting berries

- Fox trapping
- Caribou until the 1950s
- Fishing nets set under ice to catch char
- Hunting at the flow edge (seal, walrus)

- Securing meat for winter by hunting walrus, caribou, polar bear, and beluga whales
- Fishing with nets under new ice
- Meat caching
- Fox trapping

ᑕᐃᓴᓯᓂᑐᖅᓯᒪᖅ ᐃᓐᓇᒧᑦᓗ ᐃᓄᖅᓄᑦ ᓄᓇᖅᑎᑦ ᐊᑐᖅᑕᐅᖅᑕᕐᑐᖅᑐᑦ ᐃᓅᔨᐸᑎᖅᓴᓂᐅᕙᖅᓂᕆᒧᑦ

Past and current subsistence land uses

ᐅᓪᓗᒥᐅᓕᖅᑐᖅ, ᐊᑐᖅᑕᐅᕙᒃᑐᖅ ᓯᓚ ᐊᐅᓪᓚᐸᖅᓯᒪᓂᖅᓴᓂᐅᕙᖅᓂᕆᒧᑦ ᐊᖅᑐᓯᒪᔪᓴᖅᐱᐅᕙᖅᓂᕆᒧᑦᓗ ᐃᓚᓂᑯᓂᖅ ᖃᐅᑎᑯᓂᖅ

- ᐊᖅᓯᓇᓯᖅᑏᑦ ᖃᑐᐸᖅᑎᑎᒋᖅᓂᑦ ᐃᒡᓗᓕᕆᓚᖅᑐᑦ ᑕᐅᕙᓂ ᐃᖅᑦᑐᐊᒥᒃ ᐊᑐᖅᑕᐅᖅᑕᕐᑐᖅᑐᑦ ᐊᖅᓯᓇᓯᖅᑐᓄᓕᓂ, ᐱᓗᐊᖅᑐᒥᖅ ᓇᓂᐊᖅᓯᒪᔪᓄᓕᓂ



Today, used for camping & harvesting activities periodically

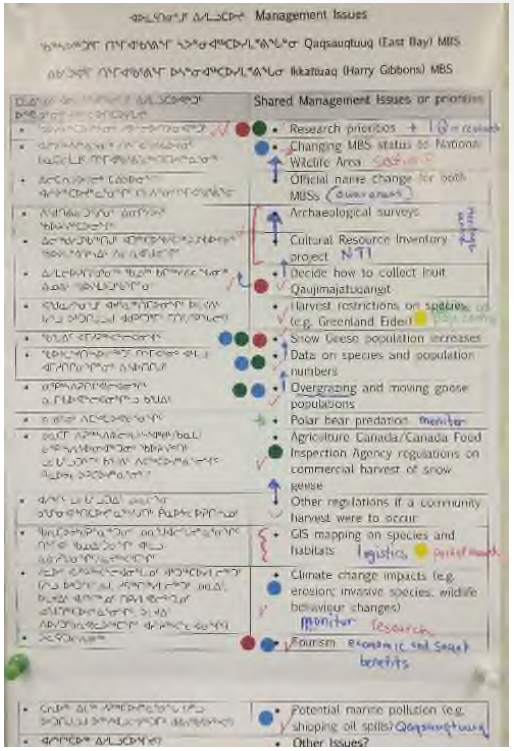
- HTO cabin located in Ikkattuaq used to support harvesting activities, in particular polar bear hunting

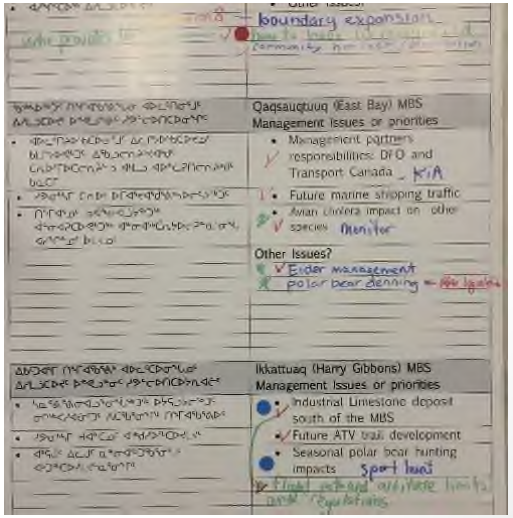


ᐊᐅᓪᓚᓂᖅ ᐃᓱᒪᖏᖅᓯᐅᑭᑎᖏᓚᐃᓪ
Management Considerations

ᐊᐅᓪᓚᓂᖅ ᐃᓱᒪᖏᖅᓯᐅᑭᑎᖏᓚᐃᓪ
ᐱᔨᔾᑎᖅᖅᓴᓪ ᑕᐃᒃᑯᓂᖓ
ᖃᐅᔨᒪᔨᐅᔨᓗᐊᖅᖅᑐᓂᒃ ᐃᓗᐊᓂ
ᐊᓚᓗ ᐊᕐᓗᓐᓯᓂᑐᓂᒃ,
ᓴᓴᓂᐊᖅᑕᐅᓱᒪᓂᓯᓂᓂ ᓄᓇᐃᓪ
ᐋᖏᐅᒪᓪᑎᐊᖅᑐᒥᒃ
ᐊᐅᓪᑕᐅᔨᓂᓕᖅᓯᐊᖏᒪᑕ

Management considerations are things we need to be aware of within, and surrounding, the protected area in order to effectively manage it





ᐊᐅᓪᓗᓂᔭᕐᓗᑎ ᐃᓕᓴᖅᓯᐅᑕᑎᓴᐃᑦ Management Considerations

ᐱᑕᖅᖃᑐᖅᓯᓪᓗᒍ ᐱᒻᒪᓚᐅᔨᓂᖅ ᐄᓐᓇᕆᐅᑎᑭᓕᓐᓂᒃ ᐅᓗᓚᐊᓇᑕᐅᔨᓂᖅ, ᑭᓯᐊᓂᓕᑕᐅᖅ:

1. ᑎᓪᓗᐊᖅᖃᕐᐅᓂᓪᓗᑎᑦ ᐃᓕᑕᑦᓴᐅᓂᓪᓚᑦ ᑎᒃᓯᐊᖅᑕᐅᓯᒪᓂᖅ
    - ᓴᐳᓐᓂᐊᖅᑕᐅᓯᒪᑦᑎᐊᒃᑲᓂᓚᐊᖅᖃᖅᑐᖅ
    - ᑎᓪᓗᐊᕐᓂᓐᓇᐅᔨᓐᓂᖅᑐᖅ
2. ᑲᔪᐃᑦ ᐊᒥᓯᓂᑦ ᐊᒻᒪᓗ ᓄᓇᒋᖅᑕᑦᓂᓂᓪᓚᑦ
    - ᐊᒥᓯᓗᐊᓕᖅᑐᑦ
    - ᐅᒪᔨᕐᓂᒃ ᐊᓯᖏᓐᓂᒃ ᐊᒃᑐᖅᓯᓀᓕᓕᐊᖏᒪᑕ ᐱᔭᕇᑕᐅᓗᑎᒃ ᓇᒻᒪᖏᑦᑐᒥᒃ

No significant or immediate threats, but:

1. MBS designation
    - need better protection
    - not just birds
2. Light geese population and habitat
    - too many
    - impact on other species



ᑐᑦᑐ Caribou





ᖃᓕᓗᒃ Beluga





ᑲᖏᒍ ᖃᐅᔨᖅ Snow goose

ᐊᐅᓪᓕᓂᐅᓐᓴᑦ ᐃᓱᒪᖏᖅᓯᐅᑕᑎᖏᓚᐃᓪᑦ
Management Considerations

3. ᓯᓚᐅᐟ ᐊᓯᔨᖅᐸᑦᓪᓕᐊᓂᖅ
   - ᐊᖏᑐᖅᑕᐅᓴᑦᓪᓕᐊᓴᑦ ᐅᐠᔨᕐᓇᖅᓯᖅᓯᒪᓕᑕ
   - ᐊᐅᓪᓕᓂᐅᓂᖅᖃᕐᑎᑦᑕᓄᑦ
4. ᓄᓇᓗᑦ ᐃᓄᐃᑦ ᐃᓪᓕᐅᕆᓪᓚᐊᖅᖅᑐᑦ ᐊᓖᒪᓗ ᖃᐅᔨᒪᕆᓪᓚᐊᖅᖅᓯᑎᖏ
   - ᖃᐅᔨᔨᖅᑕᐅᔪᓂᖅ
   - ᐃᓪᓕᑎᕐᐅᕆᓪᓚᐊᖅᖃᕐᓂᕐᓂᖏ ᐊᑐᖅᑕᐅᓗᑎᖏ ᐃᓄᐃᑦ ᖃᐅᔨᒪᔨᑐᖅᖃᕐᑐᓂ ᓄᓇᓕᕐᓂ ᐃᑲᔪᕐᓂᖅᓂᕐᓂᐊᖏᓪᓕᑕ

3. Climate Change
   - effects are noticed
   - out of our control
4. Community participation and awareness
   - research
   - inclusion of Inuit Qaujimajatuqangit
   - local benefits







ᐊᐅᓪᓗᓂᔭᕐᒪᑦ ᐃᓕᒪᖏᖅᓯᐅᑕᑎᖏᖅᓴᐃᓪᓗᑦ
Management Considerations







5. ᑭᓇᐅᔭᓄᑐᐃᓇᖅ ᐱᓕᕆᐊᖓᔪᓐᓇᐊᕐᓂᑦ
   - ᐅᒥᐊᖅᓯᐊᖅᑲᓐᓂᐊᓕᖅᓂᖅ
   - ᐊᒥᓱᑭᖅᐸᓐᓂᐊᓂᖓᓂᑦ ᑎᑭᐸᐸᓂᖅᑐᑦ
   - ᐊᑭᓚᑎᑦᑎᔪᓂᖅ ᐊᖓᔪᓇᓱᖓᐊᑭᐅᔨᔪᓂᓂᖅᓴᑦ
6. ᖃᐅᔨᒪᔭᐅᕆᓇᐊᓕᑦ ᐱᑕᖃᖓᓂᓂᖓᑦ
   - ᐱᐅᓱᑐᖃᖅᑎᒍᑦ ᐊᔪᑎᖓᓄᓂ ᓄᓇᒥᐅᑕᐃᓕᓐᓂ ᐅᒪᔨᐃᓕᓐᓂ ᐱᑕᖃᖅᓂᖓᑦ, ᐱᓂᐊᖅᑐᒥᐅᒃ ᐃᓄᖃᖅᓴᐅᔪᓇᒪᐅᖅᓂᖓᓂᓂᒃ ᖃᐅᒪᔪᑐᖃᐃᓕᑦ
   - ᑕᓚᐅᒥᐅᑕᓂᒃ ᐅᒪᔨᖓᑦ, ᐃᖃᓂᓕᕆᐃᓕᓐᓂ ᐊᖅᔨᑎᖓᑦᑐᑦ

5. Human Activities
   - shipping
   - increased access
   - sport hunting
6. Information missing
   - Cultural resources, especially archaeology
   - marine habitat, fish

ᐊᐅᓪᓗᓂᔭᕐᓗᑦ ᐃᓱᒪᖏᖅᓯᐅᑕᑎᖏᓚᐃᓪᓗᑦ (ᖃᖅᖏᖏᖅᑐᕐᕆᓂᖅ) Management Considerations (*Qaqsauqtuuq only*)



ᐅᓪᓚᐊᓇᑕᐅᓂᖅᐳᑦ ᒥᑎᕕᖅᖏᓚᐊᓄᑦ ᖃᐅᖅᑕᓯᔪᓐᓇᖅ

- ᓄᓂᔪᖏᕐᓂᕐᒥᒃ ᑎᖅᒥᐊᕐᓄᑦ ᐊᓂᓂᐊᖅᑕᓚᖏᐅᓂᒃᑐᑦ
- ᓇᓄᐃᑦ

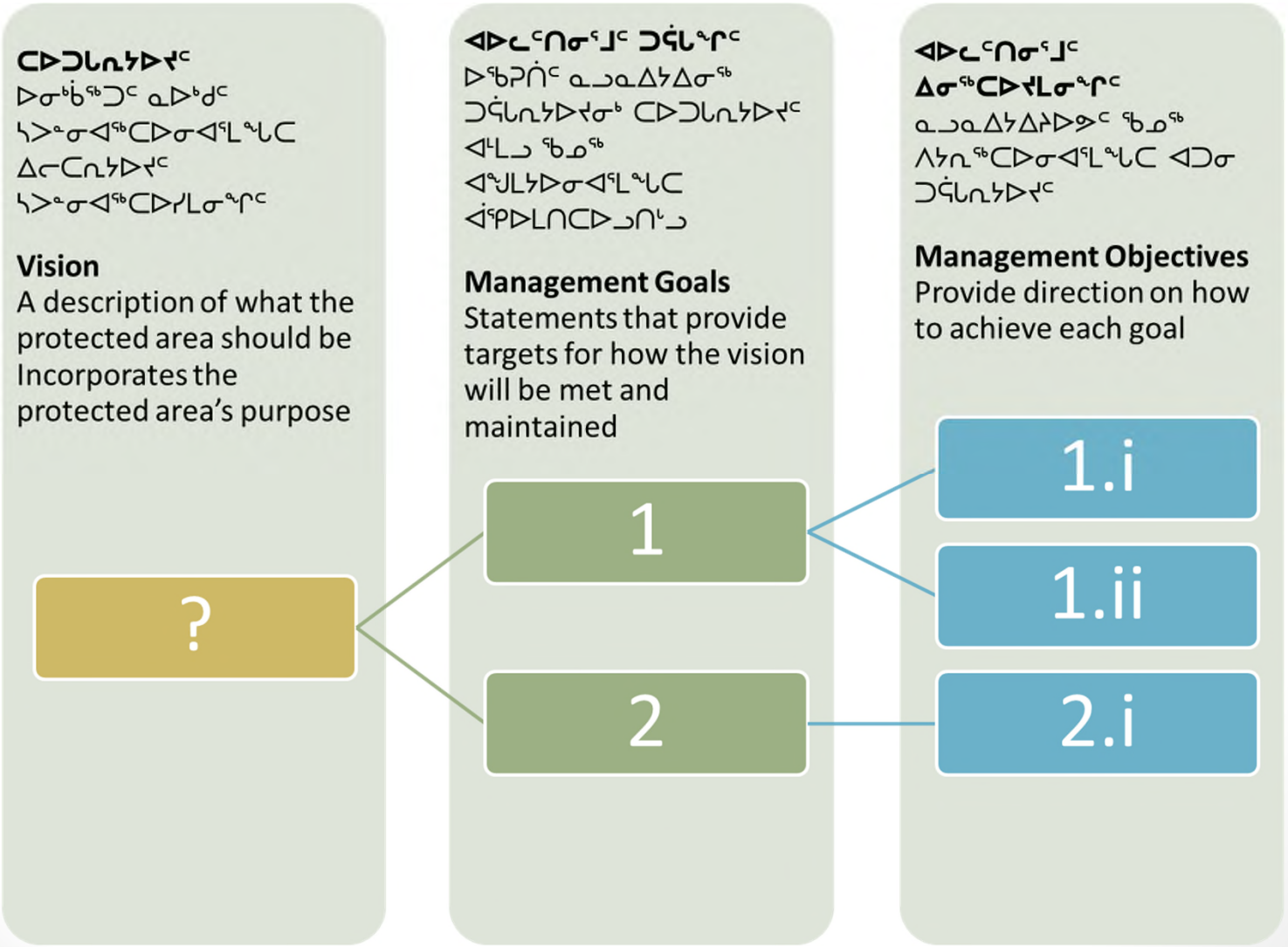
Threats to eider colony at Qikiqtakuluk

- Avian cholera
- Polar bear

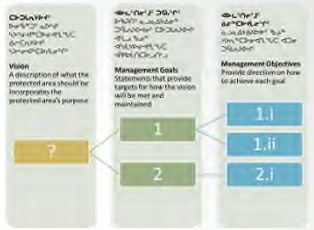


ᓇᓄᖅ **Polar Bear**

ᑕᐅᑐᒪᓗᓴᐅᔪᑦ, ᑐᕐᒪᓗᓴᐅᔪᑦ, ᐃᓂᖏᑕᐅᔪᒪᔪᓪᓚ
Vision, Goals, and Objectives



ᑕᐅᑐᓚᓴᐅᔨᖅ ᑎᓐᒥᐊᖅᑲᕆᓐᓄᑦ ᓴᓗᓂᐊᖅᑕᐅᓯᒪᕆᓐᓄᑦ
Vision for the MBSs



“ᑎᓐᒥᐊᖅᑲᓱᑦ ᓴᓗᓂᐊᖅᑕᐅᓯᒪᕆᓐᓄᑦ ᐊᐅᓚᑕᐅᓂᐊᖅᑐᑦ ᐅᓴᖅᑐᑦᑎᐊᕐᒪᓂᕐᒧᑦ ᐊძᓂᐅᓂᐊᖅᑐᖅ ᓴᓗᓂᐊᖅᑕᐅᓂᖏᓐᓄᑦ ᐅᓇᖏᑦ ᐊᓪᒪᓗ ᐃᒪᐃᑦ ᑕᒪᐃᓐᓄᑦ ᐱᑕᖅᑲᓗᑎᒃ ᐅᒪᔨᕐᓄᑦ, ᐃᓄᐃᑦ ᐱᔨᓐᓇᐅᑎᖅᑲᕐᓂᖏᓐᓄᑦ, ᐱᑕᖅᐃᓐᓇᕐᓂᖏᓐᓄᓗ ᑕᐃᒪᓐᓇ ᐃᓄᓂᑦ ᐃᓅᓂᕐᒥᓂᖅ, ᐃᓕᓴᕐᓂᖏᓐᓄᓗ ᑕᐃᒪᓐᓇ ᐊᑐᖅᑕᐅᓂᖅ ᐃᓄᐃᑦ ᖃᐅᔨᒪᔨᑐᖃᖅᑐᓂᖏᓐᓄᑦ ᐃᓕᓴᕐᓂᐊᕐᓗᒍ ᑕᒪᐃᓐᓇ ᐃᓄᐃᑦ ᖃᐅᔨᓴᖃᖅᑐᓂᖏᓐᓄᑦ ᐃᓕᓴᕐᓂᐊᖅᑕᐅᓯᒪᔪᓐᓇᖅᑐᑦ.”

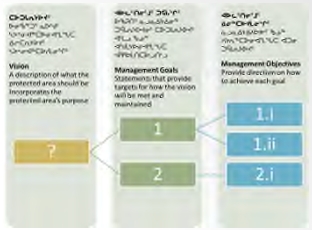
“The MBSs will be managed to ensure the long-term conservation and protection of the land and water for all wildlife, Inuit rights and their heritage while considering Inuit Qaujimajatuqangit in all decisions.”


© Jason Caswell

ᑐᓴᓐᓂᐊᖅ Arctic Fox

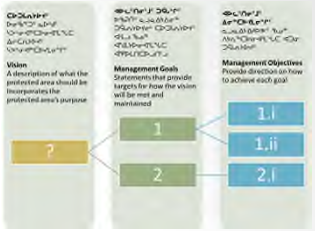


ᐊᐅᓪᓂᐹᓂᒃ ᑐᖏᓐᓂᒃ
Management Goals



*“ᑎᓕᒋᐊᖅᑲᓇᑦ ᓴᓇᓂᐊᖅᑕᐅᓂᒡᓕᐊᖅᓯᒪᔪᓂᑦ ᐊᐅᓚᑕᐅᓂᐊᖅᑐᑦ ᐅᖃᖅᑐᑎᐊᕈᒪᓂᖅᓯᑦ ᐊdᓂᐅᓂᐊᖅᑐᖅ ᓴᓇᓂᐊᖅᑕᐅᓂᖅᓂᓇᓂ ᓄᓇᖅᑦ ᐊᓚᒐ ᐃᒪᐃᑦ ᑕᒪᐃᓇᓂᑦ ᐱᑕᖅᑐᑎᓂᑦ ᐅᓪᓗᓂᑦ, ᐃᓄᐃᑦ ᐱᔨᓇᐅᑎᖅᑲᖅᖢᓂᓇᓂᑦ, ᐱᑕᖅᐃᓇᖅᓂᖅᖢᓂᓇᓂᑦ ᑕᐃᒪᖅᑎᑦ ᐃᓕᓴᕐᕕᒃ ᐃᓄᐃᑦ ᖃᐅᔨᓚᕐᖅᑕᐅᓂᖅᑐᑦ ᑕᒪᐃᓇᓂᑦ ᐊᑐᖅᑕᕐᕕᐊᖅ ᐃᓕᓴᕐᓂᐊᖅᑐᓂᑦ ᑕᒪᐃᓇᓂᑦ ᐃᓄᐃᑦ ᖃᐅᔨᓚᐅᖅᑐᓂᑦ ᑕᒪᐃᓇᓂᑦ ᐊᑐᖅᑕᕐᕕᐊᖅ ᐃᓕᓴᕐᓂᐊᖅᑐᓂᑦ ᑕᒪᐃᓇᓂᑦ ᐱᑕᖅᑐᑎᐊᕈᒪᓂᖅᓯᑦ ᐊᐅᓚᑕᐅᓂᐊᖅᑐᑦ ᐃᓄᐃᑦ ᖃᐅᔨᓚᐅᖅᑐᓂᑦ ᑕᒪᐃᓇᓂ

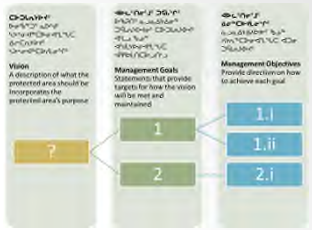
ᐊᐅᓪᓗᓂᔪᓐᓇᖅ ᐃᓂᖅᑕᐅᔪᒪᓂᖅᑎᑦ
Management Objectives



ᓴᓕᓂᖅᑕᐅᓂᖅᑎᑦ ᐃᓕᓴᕐᓂᐊᓂᖅ ᑲᓇᙵᓂᖅ ᑲᑎᒪᔨᓂᖅ ᐃᒪᐃᑦ ᐅᑭᐅᖅᑕᐅᔪᒪᓂᖅᑎᑦ ᑕᐃᔭᑯᓐᓚ ᑲᑎᒪᔨᓂᖅᑎᑦ ᐃᒪᐃᑦ ᐅᑭᐅᖅᑕᐅᔪᒪᓂᖅᑎᑦ ᑕᐃᔭᑯᓐᓚ ᑲᑎᒪᔨᓂᖅᑎᑦ ᐃᒪᐃᑦ ᐅᑭᐅᖅᑕᐅᔪᒪᓂᖅᑎᑦ ᑕᐃᔭᑯᓐᓚ ᑲᑎᒪᔨᓂᖅᑎᑦ ᐃᒪᐃᑦ ᐅᑭᐅᖅᑕᐅᔪᒪᓂᖅᑎᑦ ᑕᐃᔭᑯᓐᓚ

ᓴᓕᓂᖅᑕᐅᓂᖅᑎᑦ ᓄᓇᓕᖕᒥ ᐃᓕᓴᕐᓂᐊᓂᖅ ᑲᑎᒪᔨᓂᖅᑎᑦ ᐃᒪᐃᑦ ᐅᑭᐅᖅᑕᐅᔪᒪᓂᖅᑎᑦ ᑕᐃᔭᑯᓐᓚ

ᐊᐅᓪᓕᓂᐊᓪᓗᑦ ᐃᓂᖅᑕᐅᔪᓂᖏᑦ
Management Objectives



ᐅᓴᖅᑐᑦᑎᐊᓂᖅ ᓄᓇᓕᑦ ᖃᐅᔨᒪᔨᐅᑎᑦᑎᐊᖅᑕᕐᓂᖅᓗᑦ ᐸᕐᓇᐅᑎᓴᓂᖅ ᐊᑐᑎᖅᑕᕐᓂᐊᖅᑐᓂᖅ ᖃᐅᔨᒪᑎᑦᑎᐊᖅᑕᕐᓂᖅᓗᑦ ᐊᒻᒪᓗ ᖃᐅᔨᒪᔨᐅᑎᑦᑎᐊᖅᑕᕐᓂᖅᑎᑦ ᖃᐅᔨᓴᐅᓯᓕᐊᔪᓂᖅ, ᐅᖃᓕᒫᖅᑐᓂᖅᓴᓇᓱᓗ ᐃᔪᒪᓕᑕᐅᓂᖓᓂ ᐃᓄᖅᓄᑦ ᐊᒻᒪᓗ ᐃᓄᐃᑦ ᐃᔪᒪᓕᕆᖅᓂᖓᓂ, ᖃᐅᔨᓴᖅᑕᐅᓂᐊᖅᑐᓂᖅ ᔪᓚᑦᓂᐅᑎᑕᐅᓂᐊᖅᑐᓂᖅ ᐱᓕᕆᓂᖅᓂᓂ

ᐱᔨᒥᓴᐃᖅᑕᕐᓴᓗᑎᖅ ᓴᓪᓂᕐᒥᐅᑕᓂᖅ ᐃᖅᓚᐃᓴᖅᑕᐅᓯᕐᓂᖅᓂᓂᖅ ᐊᒻᒪᓗ ᐃᔪᒥᖅᓴᐃᓴᐅᖅᑕᐅᓯᕐᓂᖅᓂᓂᖅ ᐱᓴᐊᖅᑕᖅᑐᓂᖅ ᖃᐅᔨᓴᖅᑕᐅᓂᐊᖅᑐᓂᖅ ᐊᒻᒪᓗ ᓇᐅᑦᑎᖅᑕᐅᖅᑕᕐᓂᐊᖅᑐᓂᖅ

ᖃᐅᔨᒪᔨᐅᓂᖅᓴᐅᑦᓴᓗᑎᖅ ᓄᓇᕐᓂ ᐱᓕᕆᐃᐅᔨᓇᖅᑐᓯᕐᓂᖅᓂᓂᖅ ᑎᓐᒥᐊᖅᑲᖅᓴᐃᐅᔨᑦ ᓴᓐᓂᐊᖅᑕᐅᔪᒪᖅᓯᕐᓂᖅᓂᓂ

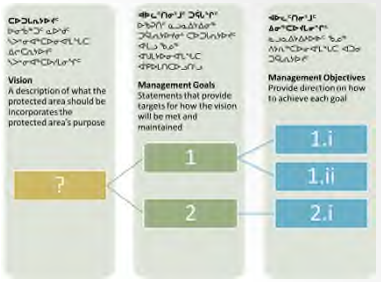
Ensure local awareness, participation and benefits

Develop a communication plan to facilitate information and knowledge sharing, discuss concerns and input into research priorities

Encourage Salliqmiut employment and mentorship in research and monitoring

Increase local awareness of permitted activities within the MBSs

ᐊᐅᓪᓕᓂᐊᓕᒃ ᐃᓂᖅᑕᐅᔪᒪᓂᖅᑎᑦ
Management Objectives



ᐊᖏᑐᕈᓂᕐᔪᖏᑎᑦᑎᑦ ᐃᓕᒪᐃᓐᓇᕐᓂᖅ ᑭᒪᔭᖏᑐᖅ ᐅᖃᐅᔾᔨᒌᖕᖏᑦ

ᐅᔾᔨᖅᑐᑦᑎᐊᕐᓇᕐᔪᓂᖅᑎᑦ ᖃᐅᔨᓴᖅᑎᑦᑎᓂᖅ ᐊᑐᖅᑕᐅᔨᒪᔨᖅᑎᑦᑎᓂᖅ, ᐅᑭᐅᖅᑕᐅᔪᒪᓂᖅᑎᑦᑎᓂᖅ, ᒪᑐᐊᖅᑎᑦᑎᓂᖅ

ᐊᖏᑐᕈᓂᕐᔪᖏᑎᑦᑎᓂᖅ ᐃᓕᒪᐃᓐᓇᕐᓂᖅ ᑭᒪᔭᖏᑐᖅ ᐅᖃᐅᔾᔨᒌᖕᖏᑦ ᐅᖃᐅᓯᒪᔭᕐᓂᖅ ᐃᓕᓴᕐᓂᖅ ᐊᑐᖅᑕᐅᔨᒪᔨᖅᑎᑦᑎᓂᖅ

ᐊᐅᓪᓕᓂᖅᓯᓐᓂ ᖃᓄᐃᓕᓴᕐᓂᓱᐊᕐᓯᓐᓂ
Management Approaches

ᐊᐅᓪᓕᓂᖅᓯᓐᓂᒃ ᖃᓄᐃᓕᓴᕐᓂᓱᐊᖅᑐᑦ ᐅᖃᐅᓯᖃᓕᓯᐅᕙᒃ
ᖃᓄᐃᓕᓴᐅᑭᑕᐅᓂᐊᓕᓴᖅᑐᓂᒃ ᐊᒃᓯᑭᑕᐅᔨᓐᓇᖅᑐᓂᒃ ᐊᐅᓪᓕᓂᕆᓯᓐᓂᕐᒧᑦ,
ᐊᖏᓚᕆᐅᓗᑎᒍᓗ ᐊᐅᓪᓕᓂᖅᓂᕐᒧᑦ ᐱᓕᕆᐊᖏᐊᓂᔪᓚᓯᔨᑦ

- ᐱᐅᓯᑐᖅᓴᒍᑦ ᐊᐸᑎᓐᓴᓂ ᓄᓇᒥᐅᑕᓐᓂᑦ ᐊᓚᒪᓗ ᐅᓚᔨᐃᑦ ᐱᑕᖅᑎᓂᓐᓂᑦ
- ᐅᓚᔨᐃᓪᓗ ᐅᓚᔨᑎᓂᓗ ᓇᔨᓴᕆᐅᕙᐸᓐᓂᓂᓐᓂᒃ ᐊᐅᓪᓕᓂᖅᓂᖅ
- ᓇᐅᑦᑎᖅᑐᐊᖅᑕᐅᖅᑕᑕᐃᓇᖅᓂᑦ ᐊᓚᒪᓗ ᖃᐅᔨᓴᖅᑕᐅᖅᑕᓴᖅᓂᑦ
- ᐃᓄᓕᒋᓂᒃ ᖃᐅᔨᓴᒪᑦᑎᐸᓪᓕᐊᓂᖅ ᐊᓚᒪᓗ ᖃᐅᔨᓴᓕᐅᔨᕐᓴᐅᓂᖅᑐᓂᒃ ᐊᐅᓪᓕᓂᐸᓐᓂᖅ

Management Approaches outline ways to address the Management Challenges, while meeting the Management Goals

- Cultural Resources Management
- Wildlife and wildlife habitat Management
- Monitoring and Research
- Public Awareness and Information Management

ᐊᐅᓪᓂᐊᓂᖅᓯᓂᖅ ᖃᓄᐃᓕᓐᓄᑦᓯᐊᖏᓂᖅ Management Approaches

ᐱᐅᓯᑐᖃᖅᑎᒍᑦ ᐊᕐᕌᑎᓄᑦ ᓄᓇᒥᐅᑕᓂᖅᑐᑦ ᐊᓚᒐᓗ ᐅᒪᔨᐃᑦ ᐱᑕᖃᖏᓂᖅᑐᑦ

ᐅᖃᓕᖅᑐᑦᑎᐊᖃᑕᖏᓂᖅ ᓴᐳᓂᓂᐊᖅᑕᐅᓂᖅᑐᓂᓂᒃ ᐃᓄᖅᖃᖏᐅᕐᓂᐅᖅᑐᖅᑐᑦᑐᖅᑐᐃᑦ ᖃᐅᔨᓴᐅᓂᖃᖏᓂᖅᑐᑦ, ᐃᓄᐃᑦᓗ ᐅᖃᐅᔾᔨᖃᖅᓯᑦ, ᐃᓄᐃᑦᓗ ᓄᓇᒥᓂᒃ ᐃᒪᖏᑎᖅᑐᓂᒃᓗ ᑕᐃᔪᓯᑐᖃᖅᓯᑦ, ᐃᓕᓴᐅᕐᓂᐊᓗᑎᒃ ᖃᐅᔨᒪᓴᐅᕐᓂᐊᔨᓄᑦ, ᑎᑎᕋᖅᑕᐅᕐᓂᐊᖃᖅᑕᐃᓐᓇᖏᓐᓂᓗᑎᒃ ᐊᓚᒐᓗ ᓄᓇᖓᐊᓕᐅᖃᖅᑕᖏᑕᕋᓗᑎᒃ

Cultural Resources Management

Ensure preservation of archeological sites, Inuit language, and Inuit place names and add to knowledge through inventory and mapping projects

ᐊᐅᓪᓕᓂᐅᖅᓯᒪᓂᖅ ᖃᓄᐃᓕᓴᖅᓯᐊᕐᓯᖅᓯᒪᓂᑦ Management Approaches

ᐅᒪᔨᐃᑦᓗ ᐅᒪᔨᕐᓄᑦᓗ ᓇᔨᕕᓴᐅᕙᖅᓯᖅᓯᒪᓂᖅ ᐊᐅᓪᓕᓂᐅᖅᓯᖅ

- ᐊᓯᔾᔨᖅᑕᐅᓗᓂᓂ ᐃᓕᑕᕕᓴᐅᓂᖅᓴᓄᑦ ᑎᒃᑯᐊᖅᑕᐅᓯᒪᓂᖅᓴ ᖃᓇᑕᒥ ᐅᒪᔨᖅᓴᕐᐃᐅᓂᕐᒧᑦ, ᐱᔭᔨᑕᐅᔨᓐᓇᕐᒪᑦ ᐊᓯᔾᔨᖅᑕᐅᔨᓐᓇᕐᓂᖅᓂᓂᒃ ᑭᓪᓕᖅᓴᕐᐃᐅᓂᖅᓯᒪᓂᑦ
- ᐊᒥᓱᓴᖅᓂᒃ ᖃᓄᐃᓕᓕᐅᑕᐅᓂᐊᖅᑐᓂᒃ ᐃᑲᔨᖅᓯᐃᓗᓐᓂᑎᒃ ᐊᐅᓪᓕᑎᒃᔨᐅᑎᑲᓄᑦ ᖃᖅᓴᐃᑦ ᐊᒥᓱᓂᖅᓯᖅᓂᒃ
  - ᐱᔨᒥᓴᐃᓂᖅ ᓄᓇᓕᖅᓂ ᖃᖅᓴᓯᓯᐅᖅᑕᑕᕕᔨᓐᓂᕐᒥᒃ, ᑐᓂᐅᖅᐃᖅᑕᑕᐅᑎᐊᓐᓂᖅ ᐊᐃᑦᑐᓐᓴᒃᓗᑎᒃ ᐃᓄᖅᑎᑎᓄᓗᓄᑎᒃ ᐊᖅᓯᓓᑕᕕᔨᓐᓇᖅᑐᑕᕕᓴᐅᓂᖅ ᐊᓗᒪᓗ ᑭᓇᐅᔭᓕᐅᑕᐅᔨᓐᓇᖅᑐᑕᕕᓴᐅᓂᖅ ᐊᑐᑭᓐᓇᖅᑐᑕᕕᓴᐅᓂᖅ ᐊᑐᔨᒪᓗ ᖃᐅᔨᓴᓂᒃ ᖃᐅᔨᓴᖅᑕᐅᓐᓇᓕᓕᐅᑕᐅᓂᖅ
- ᐊᒃᑐᖅᑕᐅᓂᕐᓗᒃᑎᑦᑎᑕᐃᓕᒪᕐᐊᕐᓂᖅ ᑕᓇᐅᒃᓯᒃ ᐅᒥᐊᕐᔪᐊᕐᓂᒃ ᖃᖅᓱᑕᓯᐅᑦᓯᓕᕐᓂᖅᓴᓄᑦ ᐅᒪᔨᐃᑦ ᐱᓕᕐᓂᑦ

Wildlife and wildlife habitat Management

- Change designation to National Wildlife Area, which may involve a boundary change
- Support several strategies to manage goose population
  - Promote local harvest, sharing, sport hunting, and commercial opportunities, ongoing research
- Mitigate marine and air traffic impacts on wildlife

ᐊᐅᓪᓕᓂᖅᓯᓐᓂᖅ ᖃᓄᐃᓕᓴᕐᓯᐊᕐᓯᓐᓂᒃ
Management Approaches

ᓇᐅᑦᑎᖅᑐᑕᐊᖅᑕᐅᖃᑦᑕᐃᓐᓇᕐᓯᓐᓂᒃ ᐊᓪᓚᓗ ᖃᐅᔨᓴᖅᑕᐅᖃᑦᑕᕐᓯᓐᓂᒃ

- ᐃᑲᔪᖅᓭᐃᓂᖅ ᑲᔪᓭᓐᓂᖅᓂᑉ ᖃᐅᔨᓴᖅᑕᐅᓕᕐᓂᐊᔪᑦ ᐊᓪᓚᓗ ᓇᐅᑦᑎᖅᑐᖅᑕᐅᓴᖅᑐᖃᑦᑕᕐᓯᓐᓂᒃ, ᑎᑎᕐᖅᑕᐅᓕᕐᓂᐊᓗᑎᑦᓗ ᐃᓗᖃᖏᕐᕕᐅᓕᐅᖅᑐᑦ ᖃᑭᒪძᕕᓂᖃᖏᕐᕕᐅᔪᑦ
- ᐃᑲᔪᖅᓭᖅᑕᐅᓗᑎᑉ ᓴᓂᓕᕆᐅᑕᓗᑦ ᖃᐅᔨᓴᖅᑕᐅᕐᔪᐊᕐᓇᔪᑦ ᓭᓄᓂᓕᐅᕐᔪᐊᕐᓂᓗᑎᑉ
- ᐱᐅᓱᕈᐊᖅᑕᐅᓗᑎᑉ ᖃᐅᔨᒪᓴᓱᑦ ᐊᓕᑎᒥᑉ ᐅᒪᔪᓚᕆᐅᓕᖅᑐᑦ ᐊᒪᓗ ᐱᐅᓱᑐᖃᖅᑎᒍᑦ ᐊᓕᑎᖏᓐᓂᒃ ᓄᓇᒥᐅᑕᕐᓂᑦ ᐊᒪᓗ ᐅᒪᔪᐃᑦ ᐱᑕᖃᕐᓯᓐᓂᒃ

Monitoring and Research

- Support ongoing research and monitoring, document archaeological sites
- Support Salliqmiut research priorities
- Improve knowledge of ecological and cultural resources in the MBSs

ᐊᐅᓪᓂᓂᖅᓯᓐᓄ ᖃᓄᐃᓕᖅᑐᓂᒃᑯᓂᖅ
Management Approaches

ᐃᓄᓕᒻᓂᖅ ᖃᐅᔨᒪᑎᑦᑎᐊᓪᓕᐊᓂᖅ ᐊᓪᒪᓗ ᖃᐅᔨᒪᕗᐅᔪᕐᓂᖅᓯᓐᓄᑦ ᐊᐅᓪᓂᐊᖅᓂᖅ

- ᓴᖅᑭᑎᑦᑎᓗᑎᑦ ᑐᓴᐅᒪᕗᐅᑎᑦᑎᖃᑦᑕᕐᓂᕐᒧᑦ ᕿᕐᓇᐅᑎᐸᓴᓂᖅ ᐊᓪᒪᓗ ᐱᐃᐸᓴᖃᖅᑎᑕᐅᐊᖅᓂᕐᓂᓄᑦ ᐃᓄᐃᑦ ᑐᓴᐅᒪᑎᑦᑎᖃᑕᑭᓇᕐᓂᕐᒥᐸᑦ ᖃᐅᔨᒪᕗᖅᑭᓪᓂᕐᓂᖅᓯᓐᓄᑦ, ᖃᐅᔨᒪᕗᖅᓂᕐᓂᓪᓗ ᓄᓇᒧᖏᐅᐊᐸᑐᓄᑦ, ᐅᖃᐅᔨᔪᐅᔪᓇᖃᖅᑎᑕᕐᓗᑎᓪᓗ ᐃᔪᒪᓗᑕᐅᔪᑦ ᐃᓄᖅᓄᑦ ᐊᓪᒪᓗ ᖃᐅᔨᓴᖃᑕᐅᓂᐊᖅᑐᑐᓂᖅᓯᓐᓄᑦ ᔪᐊᓕᓐᓂᐊᐅᑎᑕᐅᓂᐊᖅᑐᑐᓂᖅᓯᓐᓄᑦ
- ᐱᔪᒥᓴᐃᓂᖅ ᐃᑲᔪᖅᔪᐃᐊᖅᓂᕐᓗᓪᓗ ᐃᓄᖅᓂᑦ ᐊᓪᒪᓗ ᐃᓄᖅᓂᑦ ᐃᓕᓴᓂᐊᖅᑎᑕᐅᔪᓂᑦ ᐱᖃᑕᐅᔪᒪᓂᖅᓂᑦ ᓄᓇᓕᖅᓂ ᐊᔪᖅᑭᐃᓂᖅᓯᓐᓄᑦ ᐊᑐᖅᓂᖃᕐᓇᖅᑎᑕᐅᓇᖅᓂᖅᓂᑦ
- ᐃᑲᔪᖅᔪᐃᐊᓂᖅ ᑲᔪᔭᖅᓇᑭᖅᑐᓂᑦ ᐊᑐᖅᑕᐅᓂᖅᓇᑭᖅᑐᓂᑦ ᐅᓪᓗᒥ ᑎᖅᑕᐊᖅᑲᐃᖅᓂᖅ ᐊᐅᓪᓂᐊᖅᓂᖅᓯᓐᓄᑦ ᐃᓗᓐᓂᐊᓂᖅ

Public Awareness and Information Management

- Develop a communication plan and provide opportunities to share information and knowledge among users, discuss concerns and research priorities
- Encourage and support Inuit and Inuit student initiatives to build local capacity
- Support sustainable tourism operations within the MBSs

ᐊᐅᓪᓕᓂᐅᖅᓯᖅ ᖃᓄᐃᓕᖅᓱᓕᐊᕐᓯᖅ
Management Approaches

ᐃᓄᓕᒻᒥᐅᖅ ᖃᐅᔨᒪᑎᑦᑎᐊᕐᓕᐊᓂᖅ ᐊᖏᒪᓗ ᖃᐅᔨᒪᓴᐅᔪᖅᓴᐅᓂᖅᓯᖅᓄᑦ ᐊᐅᓪᓕᓂᑎᐊᕐᓂᖅ

- ᑎᑎᕆᖅᑕᐅᔪᒪᓗᑎᑦ ᓄᓇᒋᑦᑕᖅᑐᕆᐊᐅᓪᐊᕐᑐᑦ, ᖃᐅᐸᐊᖅᑕᐅᖃᖅᑎᑦᑕᕆᓗᑎᒃᓗ ᐊᖏᔪᓇᔪᓰᑦ ᑲᑐᔨᖃᑎᒋᖅᓯᖅᓄᑦ ᑎᑦᔨᕆᐊᑎᒋᓄᑦ ᑕᐃᔪᑯᐊ ᓄᑕᓂᓂᑦ ᑐᔪᔪᕐᐅᑎᑦ ᑎᖅᑎᐊᖃᖅᕆᒋᑦᑐᒪᓂᖅᓯᖅᓄᑦ, ᖃᐅᔨᕆᖅᑕᐅᖃᑕᕆᓕᑎᓐᓗ ᐃᓐᓇᓂᓪᓕᐅᔪᖏᖅ
- ᒪᓪᓕᐊᖃᑕᕆᓂᖅᑎᑦ ᐱᔨᒥᕆᐃᐃᓂᖅ - ᑐᕆᐅᒪᑎᑦᑎᖃᑕᕆᓗᑎᒃ ᖃᐅᔨᒪᓴᐅᓪᓕᐊᖅᑐᓂᒃ ᒪᓪᓚᓪᓀᔨᓂᒃ ᐊᒻᒪᓗ ᒪᓪᓚᓵᓗᑐᓴᐅᐊᖅᑐᓂᒃ, ᐊᐅᓪᓕᓂᑎᓂᕐᒧᓵᓗ ᑐᖏᓚᓀᓴᐅᔨᔨᓂᒃ ᐊᒻᒪᓗ ᐱᓪᓀᐊᖏᓂᔪᒪᔨᓂᒃ

Public Awareness and Information Management

- Maintain list of camps, assess new requests inside MBSs with HTO and inspect periodically
- Compliance promotion – share information about laws and regulations, management goals and objectives

ᐊᖏᑭᑕᐅᓯᒪᔪᑦ ᐱᓕᕆᐊᖓᔪᓂᓐᓄᑦ ᑎᑭᓯᒪᖓᐊᖅᓂᓐᓄᑦᑐᓕᓗ
Authorized Activities and Access



- ᐃᓄᐃᑦ **ᐱᔨᖅᓇᐅᑎᖏᕆᐊᖏᖅᑎᑕᐅᖅᖁᓕᑦ** ᑎᑭᓯᒪᔨᖅᓇᓐᓄᑦᓂᓄ ᑎᖅᑕᐊᖏᖅᓴᑦ ᓄᓇᖅᑐᓄᑦ, ᐱᐅᓯᑐᖏᑎᒃ ᐊᑐᓂᐊᖏᑎᓪᓗᑎᑦ, ᓯᑦᓗ ᐊᖓᔪᓇᖅᓂᖅᖁᖅᑐᓂᓄ, ᓴᓇᖅᖁᐊᖓᕆᓴᒃ ᐅᓴᕋᐃᓴᐃᓂᖅᖁᖅᑐᓂᓄ, ᓄᓇᒥᑕᖏᑐᓴᖅᑐᓂᓄ (ᒪᓕᒐᖅᑎᑦ ᒪᓕᒐᓗᑎᑦ ᓄᓇᕗᓴᒥ ᓄᓇᑕᑭᑎᓄᑦ ᐊᖅᑭᑐᑎᑦ ᐊᒡᒪᓗ ᐃᓄᐃᑦ ᐊᒃᑐᖏᑕᐅᓯᒪᓂᖅᑐᓄᑦ ᐃᑲᔪᓯᐊᕐᓂᖅᑐᓄᑦ ᐊᖅᑭᑐᑎᑦ)
- ᐃᓄᐃᑦ **ᐱᔨᖅᓇᐅᑎᖏᕆᐊᖏᖅᑎᑕᐅᖅᖁᓕᑦ** ᑎᑭᓯᒪᔨᖅᓇᓐᓄᑦ ᑎᖅᑕᐊᖏᖅᓴᑦ ᓄᓇᖅᑐᓄᑦ ᐊᖅᑭᑐᑎᖅᑕᐃᔨᓂᖅᑐᓄᑦ ᐅᕝᕙᓚᐅᔪᓂᑦ ᐃᖏᓪᓗᓯᐅᑦᑎᐊᓂᖅᑐᓄᑦ

- Inuit **do not** require a permit to enter the MBSs for traditional activities, including harvesting, removal of carving stone, setting up camps *(Nunavut Agreement* and IIBA)
- Inuit **do not** require a permit to enter the MBSs when working as a hunting or fishing guide



ᐊᖏᑭᑕᐅᓕᕆᓂ ᐱᓕᕆᐊᖏᔪᓐᓇᖅᓂᖅ ᑎᑭᓕᒫᐅᔪᓐᓇᖅᓂᖏᑦᓗ
Authorized Activities and Access

- ᑕᒪᖅᓂᒃ ᐃᓄᒡᒪᓗᐅᖏᑦᑐᑦ **ᐱᔪᓐᓇᐅᑎᖅᑲᖅᑎᑕᐅᔭᑦ** ᑎᑭᓕᔪᓐᓇᖅᓂᖅ ᑎᖏᒥᖅᑲᖅᕕᖓᓄᑦ (ᓄᓇᖏᑦᓂᓄᓐᓂᑦ ᐃᒪᖅᔪᑎᖏᑦᓂᓄᓐᓂᑦ) ᑕᐃᒃᑯᐊᓗ ᐱᔪᓐᓇᐅᑎᖅᑲᖅᑲᖅᑐᑦ ᐃᓄᒡᒪᓗᐅᖏᑦᑐᑦ ᐊᑭᓐᓇᒃᑐᓂᒃᑐᒥᒃ ᐊᖏᔪᓇᓕᐊᑭᓴᓇᒃᑐᑦ, ᖃᐅᔨᓴᖅᑎᓗᑦ, ᐳᓪᓕᑎᓪᓗ ᓂᐅᖅᑕᐊᑦ

- ᑕᒪᖅᑭᒃ ᑭᓇᐅᔭᓪᓕᐅᑎᖃᖅᓂᖅᓗᑦ ᐱᓪᓚᐊᖃᖅᓂᖅᓗᓴᓪᓕᓂᑦ ᐱᓪᓚᓂᖅᓗᑦ (ᐃᓄᐃᑦ ᐊᒻᒪᓗ ᐃᓄᒡᒪᓗᐅᖏᑦᑐᑦᖃᖅ ᓇᖏᑭᓂᖅ ᐱᓪᓚᐃᖅᑯᑎᖃᖅᑐᑦ **ᐱᔪᓐᓇᐅᑎᖅᑲᖅᑎᑕᐅᔭᑦ**. ᑕᐃᒪᓇᔨᖏᑦᑐᑐᓄᑦ ᐃᓄᐃᑦ ᐊᖏᔪᓇᓕᐊᑭᓴᑦ ᐊᒻᒪᓗ ᐃᖃᓪᐊᖅᑭᒪᓕᕆᑦ

- All non-Inuit **do** require a permit to enter the MBSs (land or water) including non-Inuit sport hunters, researchers and tourists

- All commercial or business activities (Inuit and non-Inuit owned businesses) **do** require a permit. Except for Inuit hunting and fishing guides



ᐊᓐᑭᑐᑕᐅᓯᒪᔪᑦ ᐱᓕᕆᐊᓐᔪᐊᓂᓐᓄᖅ ᑎᑭᓯᒪᓴᐃᐅᔪᓂᓐᓂᓯᑐᓕᓪ
Authorized Activities and Access

- ᑕᒪᖅᑭᒃ ᐱᓕᕆᕆᔨᐅᔪᑦ ᐃᓄᒃᒪᒪᕆᐅᓐᕿᑦᑕᔭᑦ ᐱᔪᓂᐊᐅᑎᖅᕆᓚᐅᖅᓴᓪᓕᖅ ᑎᓐᒥᐊᖅᓂᓐᒪᓂ (ᐃᐳᒥᒃ-ᐊᒃᑐᐱᕆᒧᑦ ᑕᖅᑭᓂ)
- ᖃᓄᐃᑦᑐᑐᐃᓐᓇᓂᒃ ᐱᓕᕆᔪᑦ ᓯᕐᖅᑎᕆᑕᐅᔪᓐᓇᖅᑐᓂᒃ ᑎᓐᒥᐊᖅᓂᐹᐃᑦ ᐊᓂᓗᓐᕿᓂᒃ ᐱᔪᓂᐊᐅᑎᖅᕆᓚᐅᖅᓴᓪᓕᖅ (ᐊᖅᕐᓗᒋᓕᒫᖅ)
- ᐃᓄᒃᒪᒪᕆᐅᓐᕿᑦᑕᔭᑦ ᐱᔪᓂᐊᐅᑎᖅᕆᓚᐅᖅᓴᓪᓕᖅ ᖁᔨᐅᓯᕐᓂᔪᓐᓇᓂᓗᑦ ᑎᓐᒥᐊᖅᓂᕐᐹᓐᓂ

- All activities by non-Inuit require a permit when migratory birds are present (APR-OCT)
- Any activities that may result in the destruction of migratory bird habitat requires a permit (YEAR-ROUND)
- Non-Inuit must have a permit to carry a firearm in the MBSs





ᐱᓯᓂᓇᐅᑎᖅᑭᑕᐅᓯᓂᓇᖅᓂᓕᒫᑦ
Permit Authorizations

- ᐃᓄᐃᑦ ᐱᓯᓂᓇᐅᑎᖅᑌᐊᖅᖃᑐᑦ ᑎᑭᓕᒪᓯᓂᓇᖅᓂᖅ ᑎᓪᓗᐊᖅᖃᕐᓂᓄᑦ ᐅᖅᑐᑭᓂᓇᖅᐳᑦ ᐱᓇᓕᔪᓐᓇᑎᒃ ᑲᓇᑕᒥ ᐅᒪᓯᓕᓚᓱᖅᑯᑦ ᐱᔨᑦᑎᕋᐃᓐᓇᕐᓂᖅ:

ec.nupermisscf-cwspermitnu.ec@canada.ca

ᐃᖅᓚᓐᓂ ᐃᖅᓇᐃᒪᖃᖅᓱᒃ: 867-975-4642



- ᐃᖃᓂᐅᖃᖅᓱᒃᑯᑦ ᐊᐅᓪᓚᑦᑎᐸᐅᖅᑕᐅᓂᖃᑦ ᑲᑎᒪᔨᕋᓪᓕᕐᓂᑦ ᖁᒥᖃᕈᐊᖅᑎᐅᐳᓕᑦ ᑕᒪᐃᓂᓂᑎᐊᖅ ᐅᖅᑐᑭᑎᓂᒃ ᐱᓯᓂᓇᐅᑎᑕᕋᓱᐃᑐᓂᒃ ᐊᒻᒪᓗ ᐊᑐᓕᖃᕐᑯᑐᓂᒃ ᑲᑎᒪᔨᕋᓪᓕᕐᓂᑦ ᐃᖅᓇᐃᒪᖃᖅᓱᖅᓱᓪᓗᓂᒃ ᑲᑎᒪᔨᕋᓪᓕᕐᓂᑦ ᐃᖅᓇᐃᒪᖃᖅᓱᖅᓱᑎᑦᓯᓚᖅᓂᒃ ᓇᓗᓇᐃᒪᖃᐃᓕᒃᑯᑦ

- Persons who require a permit to enter the MBSs can apply for a permit from the Canadian Wildlife Service:

ec.nupermisscf-cwspermitnu.ec@canada.ca

Iqaluit office: 867-975-4642

- The Irniurviit ACMC reviews all permit applications and provides recommendations to the Canadian Wildlife Service on whether the permit should be issued or not

ᐱᔨᓇᐅᑎᖅᑕᐅᔨᓇᓂᓐᓕᒃ
Permit Authorizations

- ᐱᔨᓇᐅᑎᓂᒃ ᑐᓂᔭᐅᔨᓇᖅᑐᑦ ᐃᒪᓇᐃᒃᑯᑎᒃ:
  - ᐱᓕᕆᐊᕆᔪᒪᔭᒃᓕᑦ ᓯᕐᖅᑎᕆᓗᑕᐅᓂᐊᖏᓕᑐᑐᒋᐊᕈᑎᒃ ᑎᖏᒥᐊᖅᓄᑦ, ᒪᓇᓂᖏᓇᓄᑦ, ᐅᓪᓗᖏᓇᓄᑦ, ᓇᔨᖅᐸᒃᑕᖏᓇᓄᓪᓗ ᐊᒻᒪᓗ/ᐅᕐᓂᓗᓇᓚᑦ
  - ᐱᓕᕆᐊᕆᓂᐊᖅᑕᖏᑦ ᒪᓕᑎᐊᕈᑎᒃ ᐱᑕᖅᕈᑕᐅᓂᖏᓄᓄᑦ ᑎᖏᒥᐊᖅᑲᐃᑦ ᐊᒻᒪᓗ ᐊᐅᓪᓚᑎᐅᑎᒃᓴᐃᑦ ᑕᐃᒃᑯᐊ ᕿᖏᓇᐅᑎᒃᓴᖏᑦ
- Permits may be issued if:
  - The activity is not harmful to migratory birds, eggs, nests, or habitats and/or
  - The activity is consistent with the purpose of the MBSs and their management plans



ᓱᓴᓕᐊᖅᓯᐊᖅ White-rumped Sandpiper





ᓴᐅᖅᑐᖅ Red Phalarope

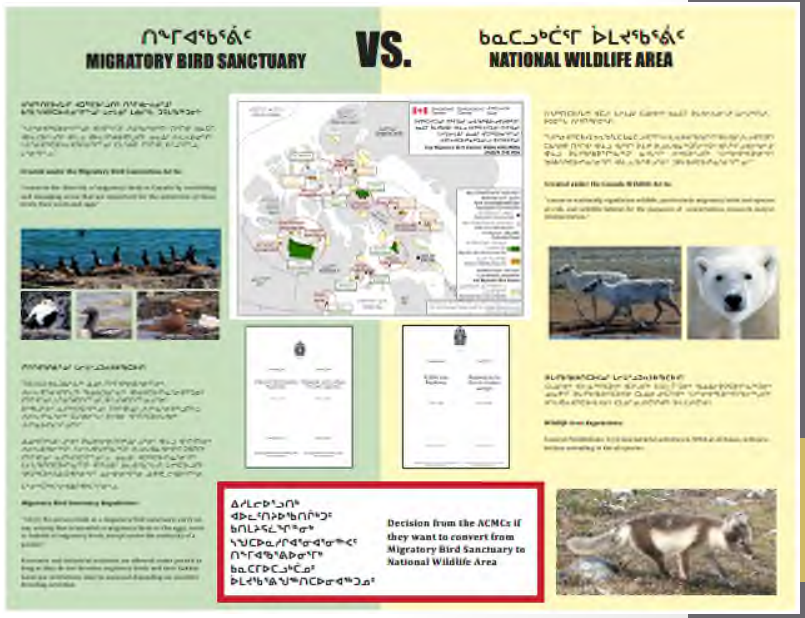
ᓄᓇᖅᑐᑦ ᑎᒃᓯᐊᖅᑕᐅᓯᒪᓂᖅᑐᑦ / Site Designation

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- Qaqsauqtuuq and Ikkattuaq are currently designated as a Migratory Bird Sanctuary; however the wildlife and cultural resources within them are better suited by protection as a National Wildlife Area
- Management plans discuss how the criteria for a National Wildlife Areas are met by these MBSs
- Talking about the site designation in the management plan begins the discussion for the future; no changes would be made without further consultation with community

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	MBS	NWA
Protection Focus	Migratory birds	All wildlife
Protection Period	Nesting/breeding season	Year-round
Legal Basis	*Migratory Birds Convention Act*	*Canada Wildlife Act*



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Management Plan Implementation

- ᐊᑐᓪᖅᑎᑕᐅᓐᓪᓚᐊᓂᖅᑐᑦ ᐊᑐᒐᒃᑲᐃᓕᓪ (ᐱᕆᒃᑲᖏᕆᐊᖅᖏᓂᔪᓂ ᑭᓇᐅᔭᐃᓪᓗᓂ)
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- Implemented as resources (time and money) allow
- Plan will be reviewed after 5 years, and then every 10 years after that

2025 / 2035

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Thank you for joining us!



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jean-francois.dufour2@canada.ca

ᐅᖅᓱᓚᐅᕐᒥ (867) 669-4766

Contact Information:

Irniurviit Area Co-Management Committee

c/o Vice-chairperson JF Dufour

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(867) 669-4766

Laura McKinnon

ᑐᓴᑭᒪᔨᔪᑦ ᐃᓕᓴᐸᓂᖅ!
We want to hear from you!



- ᐅᖏᐅᓯᖏᓐᓄᓴᓯ ᑐᓴᖏᑕᐅᖃᐅᔨᓴᓯᓗ ᐊᑐᑎᓕᒪᓐᓄᐊᓗᖓᒪᑕ ᐅᐸᕐᑎᓕᓂᒃ
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- Your comments and input are very valuable to us
- What do you think of the content of the management plans?
  - Are you comfortable with the content of the management plans?
  - What are you not comfortable with in the management plans?
- Do you have any knowledge about the MBSs that you want to share so it can be included in the management plans?

Irniurviit ACMC Management Plan Presentations:

Day 2: Wednesday, November 27, 2019 2:00PM Session

Start time: 2:05 – Welcome and introduction (Ron Ningeongan)

Start time: 2:06 End Time: 3:16 – Presentation

Questions and Answers:

1. Q: About the avian cholera, will the disease be going on permanently now?

   A: It was first detected in 2005 where there was a huge die-off in the colony. Since then, the disease has only gone down and less and less fatalities are being recorded. It's hard to tell how long it will go on, so it's important to continue monitoring it.

2. Q: Where is the disease coming from? The air or the land?

   A: Avian Cholera is a bacterial disease and it comes from contaminated food or water.

Day 2: Wednesday, November 27, 2019 7:00 PM Session

Start time: 7:33 – Welcome and introduction (Noah Kadlak)

Start time: 7:36 End Time: 8:35 – Presentation

Questions and Answers:

1. Q: Are the number of geese increasing in Qaqsauqtuuq or are they leaving the area?

   A: Survey results show an increase in the population over the last 20-30 years, and a change in distribution as well. They believe the population is stabilizing now, as fewer young are surviving or becoming adults.

2. Q: Are the Migratory Bird Sanctuaries protected in the winter? For example, could a mining company come in the winter and start mining in the area in the winter?

   A: The habitat is protected; you don't need a permit to enter the sanctuaries in the winter because there are no birds present. But the bird habitat is still protected, so you can't go in and destroy any bird habitat in the winter; you would require a permit for that.

3. Q: Regarding the harvesting program; you mentioned in the presentation that there was an amount of 12 million dollars being distributed for the program; Is this amount of money a one time distribution or is it being distributed annually?

   A: The money was related to the Inuit Impact Benefit Agreement signed by ECCC, NTI and Regional Inuit Associations. There's a funding schedule and most of the funds go to NTI and the RIAs.

4. Q: For the spring goose harvesting program, will there be an increase of funding?

   A: GN funded the program. The ACMC coordinated the planning and supported the HTO in getting the funding from GN. The HTO will have to re-apply to GN for funding each year. Should there be more funding allocated?

   Comment: Yes, the rate [$/goose or egg harvested] was too low. It didn't cover enough of the costs to go out and hunt. The program came together late in the spring and the conditions were not normal last spring.

5. Q: They will always have to ask for funding again?

   A: Yes, that's our understanding. Last year was a pilot year and we'd need to discuss with GN about options to renew the program.

6. Q: I am concerned about the numbers and closeness of the geese. I feel like they are becoming more dangerous [to eat??]. I am wondering what's being done or will be done?

   A: The ACMC supports a number of strategies to help with the goose issue, e.g. promote local harvest, sharing, sport hunting, commercial harvest and more monitoring. But our role only extends to the boundaries of the MBSs. The ACMC also actively participated and supported the IQ Snow Goose study, the local Goose Spring Harvest program and new community-based monitoring studies. The federal government opened the hunting season, increased bag and possession limits and changed other hunting strategies for non-Inuit/Indigenous Peoples down south.

   Comment: They told us to hunt them, but we know when they are fat enough to hunt. If we hunted just to kill (while they are skinny), that would not look good for Inuit. Inuit do not hunt to kill; we hunt for food and if we hunted the skinny ones, it would just be wasting food. We do not hunt the skinny geese; we go after the fat ones.

Day 3: Thursday, November 28, 2019 2:00 PM Session

No attendees.

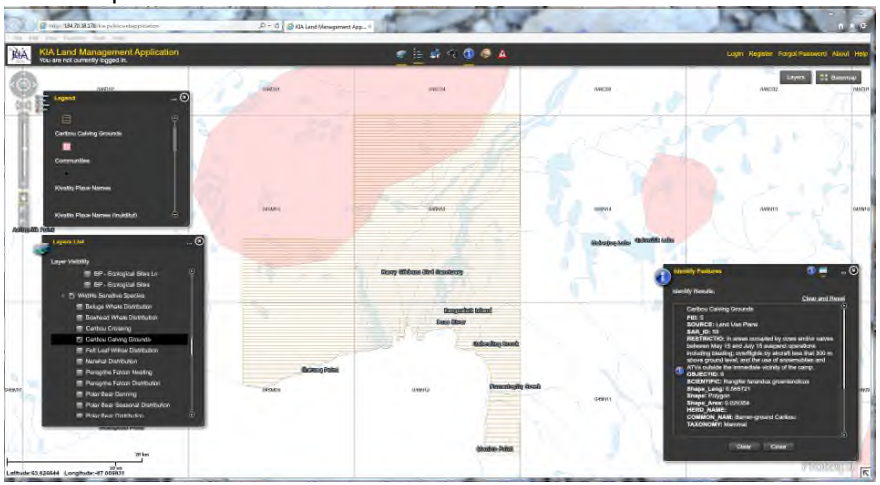
Day 3: Thursday, November 28, 2019 7:00 PM Session

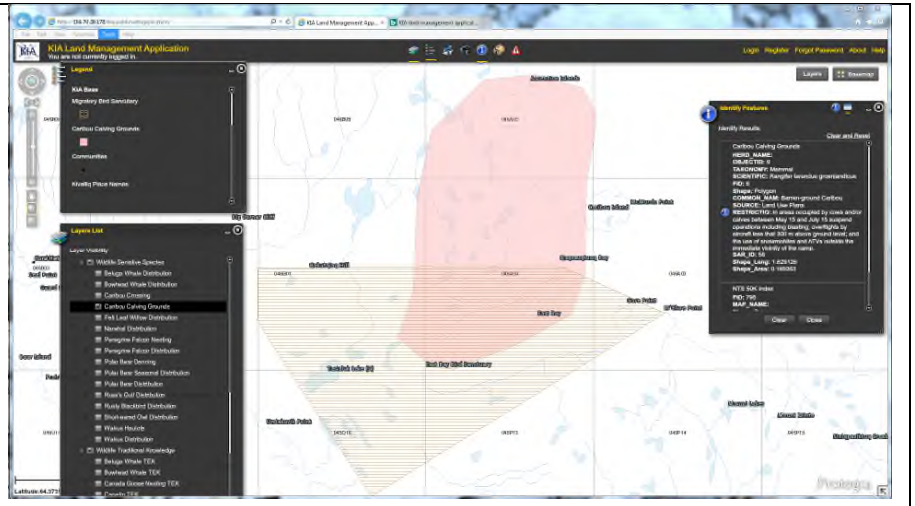
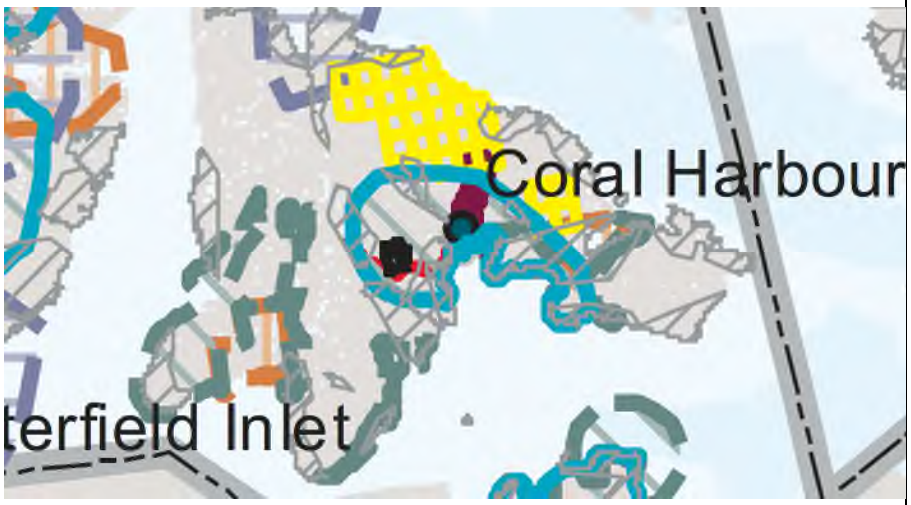
Start time: 7:30 – Welcome and introduction (Noah Kadlak)

Start time: 7:30 End Time: 8:30 – Presentation

Questions and Answers: None.

Management Plan Review and Consultations

Organization	Comment	ACMC Response
Kivalliq Inuit Association Via email 22-Aug-2019	It was reported that barren-ground caribou have used some portions of the MBS as calving grounds in the past, but no details were provided.	Both management plans refer to the Keewatin Regional Land Use Plan (NPC, 2000) for more details. The map on p.51 of the Keewatin Regional Land Use Plan shows caribou calving grounds on Southampton Island. The overlap was determined using the Kivalliq Inuit Association Mapping Tool – see clips below. Ikkattuaq MBS:  Qaqsauqtuuq MBS:

		 More recent information from Draft Nunavut Land Use Plan process suggests that only Qaqsauqtuuq MBS overlaps the main calving grounds on Southampton Island. See the blue line in clip below. 

		The ACMC will add more details to Sections 2.3.1 of the management plans (see in red below). Ikkattuaq: "At least historically, the northwestern portion of the Ikkattuaq MBS overlapped ~~portions of~~ the Southampton Island caribou calving grounds (NPC, 2000). Recent information suggests that important caribou calving grounds now surround the community of Coral Harbour further to the east (NPC, 2012)." Qaqsauqtuuq: "Qaqsauqtuuq MBS also overlies portions of the traditional Southampton Island caribou calving grounds to the northeast (NPC, 2000).~~;~~ Recent information suggests that important caribou calving grounds now surround the community of Coral Harbour and overlap the western portion of the MBS (NPC, 201~~6~~2)."
Kivalliq Inuit Association Via email 22-Aug-2019	Their first objective is to work towards converting the MBS to a National Wildlife Area (under the Canada Wildlife Act) – the major change is year-round protection for more than just migratory birds. This change is supported by the Irniuviit Area Co-Management Committee, and could involve boundary changes. I am sure Government of Canada It is aware that any changes in the actual designation made have an impact in Inuit and required open of the IIBA to address the changes and a full fusibility of that change. (See Article 9 NLCA). I will advised to removed this section because have legal repercussions to the IIBA	Under the IIBA, the Irniurviit ACMC advises the Minister on all aspects of MBS management, including the protection of wildlife and wildlife habitat. The ACMC determined during the management planning process that better protection for all wildlife and cultural resources in the protected areas is required and would be of benefit to Salliqmiut – see Section 8 for more details. The purpose of the management plans is to outline the vision and goals for the protected areas and year-round protection for all wildlife and important cultural resources is the primary goal identified. The Irniurviit ACMC has written letters to CWS, NTI and KivIA (06 July 2015) formally requesting that CWS pursue the option of a status change. Article 13 of the IIBA outlines a process for changes to MBSs and NWAs. This process includes (but is not limited to) notification and consultation with NTI, KivIA, Salliqmiut and the ACMC, and will involve the

		establishment of an assessment group to consider the status change. The IIBA already anticipated potential changes to protected areas in Article 13, and as such all signatories, including the Government of Canada, have agreed to an established process and hence are aware of the implications. For these reasons, the Irniurviit ACMC will keep this section in the management plans.
Kivalliq Inuit Association Via email 22-Aug-2019	Section 5.0, pg 24: There was recognition of inclusion of IQ in research and management decisions. KIA develop a methodology for water and fish to collect IQ and Scientific information at the same time please (see attach document)	Thank you for providing this information. The Irniurviit ACMC will refer to this methodology when implementing the management plans.
Kivalliq Inuit Association Via email 22-Aug-2019	Section 6.2.6, pg 29: Minimum air traffic flight avoidance (650 m altitude and 1.5 km horizontal) is consistent with other Nunavut management plans.	The Irniurviit ACMC's intent throughout the management plans is to be consistent with existing guidance and regulation. Thank you for confirming this.
Kivalliq Inuit Association Via email 22-Aug-2019	The 2016 to 2023 IIBA for NWAs and MBSs in the Nunavut Settlement Area (Section 12.3.1) states that $20,000 compensation should be paid to the local HTO if a polar bear is killed by a CWS employee or person authorized to enter a NWA/MBS. It does not appear to be linked to IOL. There is no mention of compensation in either of the two draft management plans.	The ACMC will add a reference to the IIBA in Section 9.1. See change in red below. Compensation to the Aiviit HTO for a bear kill within the MBS will follow Section 12.3 of the *IIBA*.
Nunavut Impact Review Board Via letter 20-Nov-2019	Sec. 6.3 Monitoring and Research It states that "CWS and the Irniurviit ACMC will screen project proposals to ensure compatibility with management goals and objectives". While the ACMC as a committee make a decision on a project proposal being permitted in the MBS, this statement is a bit misleading as it may lead the	The ACMC will replace "will screen" with "will examine" to avoid confusion with screenings under *NuPPAA*. The intent of Section 6.3 (Management Approaches) is outline strategies that the ACMC and CWS will implement to manage habitat, migratory birds within the protected area to attain the goals and objectives of the management plan. As such, Nunavut's regulatory system will be described in section 7.1.7 of the

	reader to conclude that the screening by the ACMC is the only process. To make this section clearer to the reader the NIRB suggests that an additional statement about the Nunavut Planning Commission (Commission) and the NIRB's role in screening for the ecosystemic and socio-economic impacts as associated with a monitoring or research proposals within the MBS. Additionally, while further in the paragraph it directs readers to Section 7 for information on permitting, in this section there is no mention that there are other regulatory agencies besides CWS that may issue licences/permits. For example; research may also require a scientific research licence from the Nunavut Research Institute (NRI) or potentially a wildlife research permit from the Government of Nunavut, Department of Environment (GN-DOE).	management plans and other examples of licences and permits will be added to section 7.2 – see other responses below.
Nunavut Impact Review Board Via letter 20-Nov-2019	7.1.1 Authorizations by Permit This section describes authorizations of "prohibited activities under the MBSR", however, the title would indicate that this section should describe activities where authorizations are required by permit for activities that are not prohibited (e.g., non-Inuit access to the MBS). Subsection 7.1.4 Non-Inuit Activities Authorized Only by Permit also does not include the access only example.	Section 7.1.1 outlines the conditions under which any permit is possible. The ACMC will add entry and access as as example in section 7.1.4. "All activities, including entry and access, may require a permit for non-Inuit when migratory birds are present (April through October)."
Nunavut Impact Review Board Via letter 20-Nov-2019	7.1.7 CWS Permit Application Process While this section presents a figure that describes the regulatory process that includes NPC and NIRB there is no verbal text to describe regulatory process under the Nunavut Planning and Project Assessment Act (NuPPAA); additional clarity is recommended in two areas for this section. First,	The ACMC will add a paragraph in section 7.1.7 to describe Nunavut's regulatory system. "For project proposals located in the Qaqsauqtuuq MBS, the CWS is a regulatory authority under the *Nunavut Planning and Project Assessment Act*, which defines Nunavut's integrated regulatory system. All project proposals in Nunavut must be first submitted to the Nunavut Planning

	additional text should be provided to ensure the reader has complete information on the regulatory processes applying to a MBS within the territorial boundaries of Nunavut. Second, in the figure which indicates that the ACMC will review the "project comments" received from the NIRB, for clarity, the language should be updated to reflect that the NIRB in its screening decision does not provide comments but rather recommended terms and conditions to the Minister of Environment to be incorporated into the permits or licences subsequently issued.	Commission (NPC). The NPC assesses project proposals for conformity with the Keewatin Land Use Plan. The NPC sends a positive conformity determination and any recommendations to the CWS. The NPC also sends the project proposal, with its determination and any recommendations, to the Nunavut Impact Review Board (NIRB) for screening, unless the project proposal is exempt from screening pursuant to Schedule 12-1 of the *NA*. The NIRB determines whether the project has the potential to result in significant ecosystemic or socio-economic impacts and, accordingly, whether it requires further review. The NIRB submits a screening decision report to the CWS. The CWS cannot issue a permit without a positive conformity determination from the NPC and a screening decision report from the NIRB confirming that a review of the project is not required. In addition, the Irniurviit ACMC reviews CWS permit applications and provides recommendations prior to CWS issuing a permit (*IIBA s.3.3*). Figure 8 illustrates the permitting process." The ACMC will also revise Figure 8 to address NIRB's comments.
Nunavut Impact Review Board Via letter 20-Nov-2019	7.2 Other Federal and Territorial Authorizations and Permits The section notes that there are other federal or territorial authorizations and permits that may be required to undertake activities in the MBS however there are no examples of what types of activities may require permits. It may be helpful to provide these common examples: research may require a Scientific Research Licence from the Nunavut Research Institute or a Wildlife Permit from the Government of Nunavut – Department of Environment.	The ACMC will add the examples provided to section 7.2. See revised text below. "Depending on the type of activity, other federal or territorial authorizations or permits may be required to undertake an activity in the Qaqsauqtuuq MBS. For example, research may require a Scientific Research Licence from the Nunavut Research Institute or a Wildlife Permit from the Government of Nunavut – Department of Environment. Contact your regional federal and territorial permitting offices for more information."

Fisheries and Ocens Canada Via email 5-Dec-2019	p. 2 – Should Settlement Region be “Nunavut Settlement Area” as opposed to “Kivalliq”.	The ACMC will revise the heading to “Region”
Fisheries and Ocens Canada Via email 5-Dec-2019	p. 4 – for the list of species assessed by COSEWIC, Bowhead Whale is mentioned on p. 19 as occurring in waters of East Bay during summer. The Eastern Canada-West Greenland Bowhead Whale population is COSEWIC assessed Special Concern. Also, very recently (earlier this week!), Ringed Seal was COSEWIC assessed Special Concern: https://www.theglobeandmail.com/canada/article-ringed-seals-a-bellwether-species-of-the-arctic-now-deemed-at-risk/ (this doesn’t appear to be updated yet on the Species at risk public registry).	The ACMC added both species to SAR lists and counts.
Fisheries and Ocens Canada Via email 5-Dec-2019	p. 7 – Table 2. Would you want to add the Hudson Bay Complex marine bioregion? https://www.dfo-mpo.gc.ca/oceans/maps-cartes/bioregions-eng.html	The ACMC added the Marine Bioregion to Table 2.
Fisheries and Ocens Canada Via email 5-Dec-2019	p. 8 – mentions the Area of Interest. “The Southampton Island AOI currently includes the marine waters of the Qaqsauqtuuq MBS”, but note that the wording that ECCC preferred for the webpage was Marine conservation values within the Area of Interest extend into two Environment and Climate Change Canada (ECCC) Migratory Bird Sanctuaries	The ACMC notes the comment. The proposed wording for the overlap is less clear. As the management plan serves a different purpose, there is no need for the wording to be identical to the AOI webpage. The ACMC included all the minor revisions to the text. The proposed additional sentences were not kept as the purpose of the paragraph is to describe land ownership and interests within the MBSs, and not describe the MPA establishment process.

	The Department of Fisheries and Oceans (DFO) selected the nearshore waters around Southampton Island and Chesterfield Inlet as an area of interest (AOI). This marks the beginning of a Marine Protected Area (MPA) establishment process. The Kivalliq Inuit Association has endorsed the AOI and will be working closely with DFO to complete the required AOI assessment and MPA establishment steps. Marine Conservation values within the Southampton Island AOI extend into ~~currently includes~~ the marine waters of the Qaqsauqtuuq MBS, however ~~DFO will determine~~ the final boundary of a potential MPA would be decided following further assessments and extensive consultation. The Southampton Island Area of Interest Co-development Committee, which advises on steps in the process to establish a Marine Protected Area, has representation from the Irniurviit ACMC. To learn more about the Southampton Island AOI, please visit the webpage at https://www.dfo-mpo.gc.ca/oceans/aoi-si/southampton-eng.html.	
Fisheries and Ocens Canada Via email 5-Dec-2019	p. 15 – Figure 5. Can the map display the nesting areas so that we can better see the overlap with the MBS.	The overlap is currently visible in Figure 5. The ACMC cannot revise the figure without further information to understand the issue. All figures follow a map template - changes to one figure will likely result in changes to all figures.
Fisheries and Ocens Canada Via email 5-Dec-2019	p. 33 For example, progressive earlier ice break-up in Hudson Bay has forced polar bears ashore much earlier (Lunn, et al., 2016) leading to documented increases in predation of eider nests ~~predation~~ in the MBS (Iverson, et al., 2014) and other breeding	The ACMC revised this sentence.

	birds on Southampton and Coats Islands (Smith, et al., 2010).	
Fisheries and Ocens Canada Via email 5-Dec-2019	p. 38 ~~Management~~ Managers of the MBS and Wildlife Areas of Importance to Inuit will ~~include~~: (1) Minimize disturbance to wildlife and wildlife habitat, and promote the maintenance of vital, healthy wildlife populations; (2) Make all reasonable efforts, consistent with the Minister's jurisdiction under the *MBCA* to respect the cultural significance of Wildlife Areas of Importance to Inuit, taking into account any Inuit Qaujimajatuqangit documented and presented to them ~~it~~ by Inuit, the Irniurviit ACMC and other knowledgeable parties; (3) Investigate public concerns regarding the protection or management of wildlife and document the response, or refer the matter to the wildlife management agency having jurisdiction; and, (4) As appropriate, consult Inuit organizations about issues pertaining to the effective management of wildlife and wildlife habitat within the MBS.	The section was revised for more consistency with *IIBA s.12.2.3*.
Fisheries and Ocens Canada Via email 5-Dec-2019	p. 45 – replace "conversation" with "conservation". "KIA" is used versus "KivIA".	The ACMC revised these words.
Fisheries and Ocens Canada Via email 5-Dec-2019	pp. 48-49 – 7.1.2-7.1.5. It was a little unclear what the rules are for non-Inuit. It's stated that Inuit have a "right of access without permit to guide sport hunters in or across the sanctuary", so I understand that sport hunting with an Inuk guide,	The ACMC revised sections 7.1.2-7.1.5 of the text to address these concerns.

	either by laws of general application or by assignment of rights, can occur within the MBS – but the non-Inuk sport hunter requires a permit. 7.1.2 Nunavut Inuit Activities Authorized Without a Permit Nunavut Inuit have a right of access to MBSs, without fee or permit, for the following activities: □ Harvesting and activities incidental (*NA s.5.7.18* and *IIBA s.5.2*), □ Removal of up to 50 cubic yards of carving stone within the MBS and any amount from IOL within the MBS (*NA s.19.9.4* and *IIBA s.5.4*), and □ Establishment of new outpost camps (so long as consistent with Section 6.4.5, *IIBA s.5.5*, as well as the *NA*). The *IIBA* (*s.5.3*) gives Inuit a further right of access without permit to guide sport hunters in or across the Sanctuary, and to carry a firearm for self-protection or the protection of clients. It also extends the right of access without permit for harvesting and covers activities that are reasonably incidental to harvesting. Non-Inuit cannot be assigned this right of access and exemption to carry a firearm, even if ~~hunting~~ harvesting rights are assigned to that person pursuant to *NA s.5.7.35*. These activities by non-Inuit require a permit. more information on permits. 7.1.3 Nunavut Inuit Activities Authorized Only By Permit Commercial ventures or businesses require a permit to conduct commercial activities within the	

	MBS even if the commercial venture or business is Nunavut Inuit-owned. The one exception to commercial activities is guiding sports hunters or sport fishermen. A Nunavut Inuit guide does not require a permit, but the non-Inuit hunters or fishermen he or she is guiding do require a permit. Refer to Section 7.1.5 for non-Inuit. Other types of guiding (eco-tourism, canoeing, etc.) by Nunavut Inuit may require a permit. Refer to Section 7.1.7 for more information on permits. 7.1.4 Non-Inuit Activities Authorized Without a Permit There are no activities authorized without a permit for non-Inuit when migratory birds are present (April through October). In addition, any activities at any time of year that may result in the destruction of migratory bird habitat may require a permit. All activities by non-Inuit require a permit even if ~~hunting~~ harvesting rights are assigned to that person under *s.5.7.35* of the *NA*. Refer to Section 7.1.7 for more information on permits. The last sentence states that all activities by non-Inuit require a permit. Why is it necessary to also state that all activities by non-Inuit when migratory birds are present require a permit (1st sentence) and all activities by non-Inuit at any time of year that may result in the destruction of migratory bird habitat require a permit (2nd sentence). The 2nd sentence actually says these activities may require a permit, which is in contradiction to the last sentence that says all activities require a permit. The 1st	

	sentence in 7.1.5 below also says non-Inuit may require a permit. 7.1.5 Non-Inuit Activities Authorized Only By Permit Non-Inuit may require a permit to undertake any activity in MBSs in Nunavut. Non-Inuit must have a permit to carry a firearm in a MBS. Non-Inuit also require a permit to shoot and have dead migratory birds in their possession. This includes non-Inuit hunters on guided hunts for any wildlife species (even when the guide is a Nunavut ~~Inuit~~ Inuk and he or she does not require a permit; *IIBA s.5.3.1*; Section 7.1.2). Refer to Section 7.1.7 for more information on permits.	
Fisheries and Ocens Canada Via email 5-Dec-2019	p.9 – change to Minister of Environment and Climate Change	Use of Minister of Environment is intended for consistency with language in the IIBA.
Fisheries and Ocens Canada Via email 5-Dec-2019	p.13 – DFO – change to Fisheries and Oceans Canada	The ACMC changed this.
Fisheries and Ocens Canada Via email 5-Dec-2019	p.15 - How does criteria #2 apply to this MBS? Earlier in the document is stated POTENTIAL exploration/development. Is subsistence hunting considered an area-specific threat?	No, subsistence is not considered a current threat. The MBS supports a large portion of a national population of more than one migratory bird species. Birds are concentrated in the MBS during spring and summer period and therefore may be vulnerable to present or future area-specific threats.
Fisheries and Ocens Canada	p.17 – add -Eastern Canada-West Greenland Bowhead whale COSEWIC special concern Western Hudson Bay Beluga	The ACMC added Bowhead whale to the list of SAR species. Specific populations are described in Table 4.

Via email 5-Dec-2019	Atlantic Walrus - Central-Low Arctic population	
Fisheries and Ocens Canada Via email 5-Dec-2019	p.21 – Change to "Fisheries and Oceans Canada" and revise to: "however the final boundary will be determined by DFO and their partners following further assessments and extensive consultations.	The ACMC revised the text.
Fisheries and Ocens Canada Via email 5-Dec-2019	p.31 – add Ringed seal, Narwhal, walrus The waters off Southampton Island have substantial kelp forests as well. Also a variety of shellfish/marine invertebrates (shrimp, mussels, urchin, sea cucumber, etc.)	The ACMC added Ringed Seal to the SAR lists. However, the ACMC was not provided with any references and unable to locate detailed information to describe how these species use the MBS. Similarly, without a specific reference or information on which areas relative to the MBS these other marine resources are found, the ACMC is unable to determine the importance of including this information.
Fisheries and Ocens Canada Via email 5-Dec-2019	p.43 - Not a threat, but an additional management consideration should be the potential establishment of a Marine Protected Area. This could influence some of the management concerns here (i.e. shipping and other human activities)	The potential establishment of the MPA is described in section 1.3 and also considered in section 6.4.8 (e.g. establishment of conservation areas in the Kivalliq region) as a mechanism by which the ACMC can further regional conservation of migratory birds and other wildlife through its participation in the process. However, until further assessments are conducted to inform the MPA boundary discussions and its associated regulations are published, it is difficult to describe how the MPA might impact the management of the MBS or influence other management concerns.

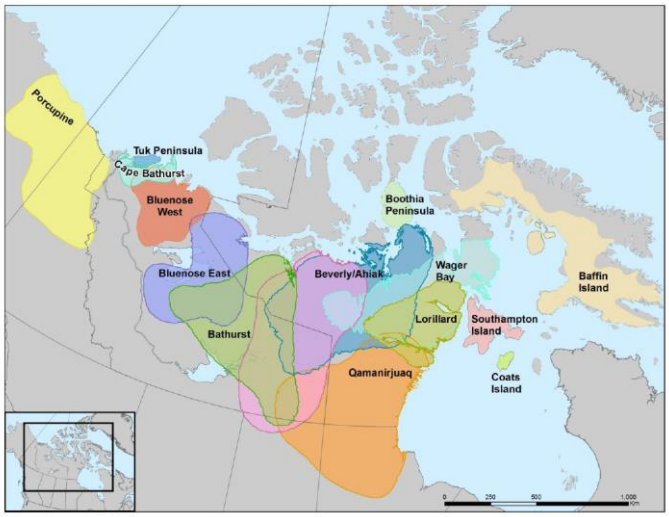
Submission to the Nunavut Wildlife Management Board

For

Information: X Decision:

Issue: Update on the consultations in Nunavut on the proposed listing of Barren-ground Caribou as Threatened under the federal *Species at Risk Act* (SARA)


Lisa Pirie-Dominix



Background:

Distribution

- The range of Barren-ground caribou in Canada extends from the Yukon to Baffin Island, and south into Saskatchewan and Manitoba.
- In Nunavut, the range includes the Bluenose-East, Bathurst, Beverly, Ahiak, Qamanirjuaq, Lorillard, Boothia Peninsula, Wager Bay, Southampton Island, Coats Island, and Baffin Island herds.

Assessment and Threats

- The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assessed Barren-ground Caribou as Threatened in November 2016. A threatened species is likely to become endangered unless threats are addressed.
- Most Barren-ground Caribou herds have shown large declines since 1990. Across Canada, Barren-ground Caribou have declined from around 2 million individuals in the early 1990s to about 800,000 in 2016. The decline is estimated at 56% over three generations (between 1989 and 2016). Abundance surveys that have occurred since the

COSEWIC assessment have shown further declines in some populations, including the Bluenose-East, Bathurst, and Beverly herds.

- Herds are more vulnerable and sensitive to threats when their populations are low.
- Inuit knowledge says that caribou cycle through population highs and lows. New threats, such as development and climate change, may make it more difficult for populations to cycle back to peak levels and there are no indications that populations are making rapid recoveries at this time.
- Potential threats include:
    - Climate and weather changes affecting forage availability, predation, parasites and diseases.
    - Industrial exploration and development.
    - Fragmentation of habitat in their winter range from forest fires and increasing human presence.
    - Increased human population and an increased demand for caribou meat.

Implications of the proposed listing

- If Barren-ground Caribou is listed on SARA, a national recovery strategy will be written. This will include a plan detailing how to keep the herds healthy and available for future generations.
- Important caribou habitat will be identified and CWS will work with partners in Nunavut to identify the best ways of protecting it from activities that would harm it. For example, important habitat such as calving grounds and migrations routes could be protected.
- Upon listing, general prohibitions would apply to non-Inuit; they would be prohibited from harvesting caribou in National Parks, National Wildlife Areas, and Migratory Bird Sanctuaries.
- Harvest decisions for Inuit-harvest will continue to follow the Nunavut Agreement decision-making process, thus, a SARA listing does not directly affect Inuit-harvest.
- The profile of caribou would be raised and communities would have more resources available to them to support caribou conservation (e.g. funding for monitoring and the development of herd-specific management plans).

Consultations on the proposed listing

- In December 2017, CWS presented a consultation plan to the NWMB, outlining our intentions for consultations in Nunavut. Although the initial plan was lacking details, we ultimately did conduct face-to-face meetings in each of the communities within the Barren-ground Caribou range.
- Consultation packages were sent by email and mail to 22 Nunavut communities within the range of the species in January 2018. The packages included a letter, a factsheet, a PowerPoint presentation, and a questionnaire in English and Inuktitut. Follow-up phone calls were made to Hunter & Trapper Organizations between January and April 2018.
- In-person consultations were conducted between February 2018 and February 2019 in all 22 communities within the Barren-ground Caribou range.

- Throughout the consultations, it became clear that many communities had similar concerns about the proposed listing (see Appendix A for a summary of the feedback received).
- To accommodate the concerns shared by several communities and to ensure their questions were addressed, we decided to conduct further consultations in Nunavut.
- CWS worked closely with the GN and NTI to develop a plan to consult with the regional wildlife boards at their fall 2019 annual general meetings (AGM). The overlap of the Kitikmeot Regional Wildlife Board (KRWB) AGM with the 2019 federal election meant our plans were put on hold and we were not able to meet with the KRWB.
- Since then, CWS has been working with GN biologists in each region to determine the best strategy for additional consultations.
- In October and November 2019, respectively, we presented at the Kivalliq Wildlife Board (KWB) and Qikiqtaaluk Wildlife Board (QWB) AGMs with new material aimed at addressing outstanding concerns and clarifying common misconceptions about the proposed listing. Following each presentation, we had open discussions during which board members and attendees asked questions, voiced opinions, and shared knowledge about caribou in their area. A summary of the feedback received at these meetings is included in Appendix A.
- Upon advice from the GN's Kivalliq biologist, and the fact that the Kivalliq represents a substantial portion of the Barren-ground Caribou range (7 of the total 11 herds in Nunavut), we decided that further in-person consultations in this region might be warranted. The GN gave us the opportunity to coordinate with their annual regional tour which would streamline and support our efforts and reduce the consultation burden to HTOs and communities. We presented this idea at the KWB AGM and received no objections from board members or attendees.
- As the Baffin herd is shared by 10 communities, the most efficient and effective way to address concerns for this region was to consult at the regional level at the QWB AGM. Following the presentation and subsequent discussion, we asked members if they required any follow-up consultations in their communities. We did not receive any such requests or indications of interest. As a result, we consider consultations with the Baffin region to be complete at this time.
- As we were not able to attend the KRWB AGM in the fall, we will be looking for other ways to engage with the Kitikmeot community HTOs.
- We have made multiple efforts to consult with the Regional Inuit Associations, starting in January 2018 when they were sent the initial consultation package. In December 2019, we received confirmation that the Qikiqtani Inuit Association (QIA) had received and reviewed the information. They noted that they had limited capacity to address the proposed listing and did not request any further engagement from us.
- Discussions have occurred with the Kivalliq Inuit Association (KIA) and an in-person meeting will take place in February 2020.
- We are still waiting to hear back from Kitikmeot Inuit Association (KitIA) on whether they require further engagement.

Upcoming consultations

- In February 2020, in conjunction with the GN regional biologist's community tour, we plan to travel to each of the seven Kivalliq communities to conduct further in-person consultations on the proposed listing. Representatives from the GN and NTI will be in attendance of each of these meetings.
- We will have an in-person meeting with the KIA in Rankin Inlet in February 2020.
- In April 2020, we will meet with the Beverly and Qamanirjuaq Caribou Management Board (a board made up of members from the Kivalliq, NWT, Saskatchewan and Manitoba, as well as NWMB) for further consultations.
- Spring 2020 (TBD) consultations in the Kitikmeot region, as required.

Next Steps:

- Complete further consultations in the Kivalliq (February 2020) and Kitikmeot (spring 2020, TBD), as required.
- Request decision from the NWMB on the proposed listing (TBD, possibly June 2020).

Prepared by:
Canadian Wildlife Service, Iqaluit January 2020

Appendix A

Summary of feedback received from consultations in Nunavut on the proposed listing of Barren-ground Caribou as Threatened under the federal *Species at Risk Act* (SARA)

February 2018 – January 2020

Qikiqtaaluk Wildlife Board AGM
November 17, 2019

- We presented an overview of what SARA is, discussed the health of the Baffin herd and threats to its recovery. We discussed the implications of SARA-listing, the anticipated timeline for a decision on the listing proposal and what the steps would be if caribou is listed. Following the presentation we had a discussion and asked what the Board suggested is needed to support the Baffin herd to ensure it is healthy for future generations; and whether the Board agrees, disagrees, or has concerns with the SARA listing proposal.
- We presented the slides in both English and Inuktitut. In addition, we provided each member with printed copies of the presentation in both English and Inuktitut, an Inuktitut version of the COSEWIC report, an English summary of the COSEWIC report, a glossary of terms in the COSEWIC report in both languages, and questionnaire sheets in both languages.
- One member noted that the caribou on Baffin Island cross back and forth from the mainland so when it looks like there is a dip in population numbers it's only because they have moved to the mainland.
- There was a question about what makes herds distinct and whether the assessment considered that individuals move around between herds.
- A question from the Kitikmeot Wildlife Board representative asking when we would come to consult with the Kitikmeot.
- A few members noted concern that the knowledge of Inuit elders is being lost as elders pass away and that that knowledge is the best resource for information on caribou cycles, habits and general biology.
- The QWB wildlife advisor noted that the Baffin caribou herd has historically been this low during each of their cycles and that it's not unusual. He noted that it is wrong to blame harvesters for declines.
- One member asked if we personally thought the caribou herds are declining.
- One member noted that there is Inuit knowledge on caribou population cycles and that they are related to the population cycles of lemmings.

- One member asked if there is a listing, if a management plan would address development. He also asked if things got better, at which point could caribou be removed from SARA?
- One member asked about how we would address the threat of climate change to the recovery of BGCA.
- One member noted that the Baffin herd is already managed by the GN and there is already a draft management plan.
- A few members noted that a new survey of Baffin Island is desperately needed. The surveys that were used to establish the current TAH were flawed and they want to see a new one completed with more Inuit involvement.
- One member asked if we follow western science or Inuit knowledge in our processes and noted that IQ indicates that caribou will recover.
- We did not receive any requests for further consultation on the proposed listing from any of the QWB representatives or audience members.

Kivalliq Wildlife Board AGM
October 23, 2019

- We presented an overview on the health of the Kivalliq herds, the main threats to caribou in that region, the implications of SARA-listing, and our proposed plan to revisit communities in the Kivalliq in early 2020.
- Representatives from the NWMB, BQCMB and GN were supportive of our approach to the topic and the material that we presented.
- One Board member asked how HTOs can receive more support if caribou is listed
- One asked how a 'plan' is implemented and if it's the GN management plan that gets adopted
- Another member asked how SARA provisions would be enforceable.
- No members objected to our plan to do further consultations in the region.

Cambridge Bay
HTO and public meetings, February 26, 2018

- ECCC presented a PowerPoint describing the federal species at risk process, why barren-ground caribou have been assessed as threatened, and what it would mean if barren-ground caribou are listed as threatened under the federal species at risk act.
- HTO members expressed strong concerns about the lack of Inuit participation and traditional knowledge in the assessment of Barren-ground caribou and the decision-making process. They also want to be involved in the drafting of the recovery strategy.

- They would appreciate a herd-by-herd assessment as they are in the opinion that their herd is doing fine.
- Increased predation: would like to see an incentive for hunters to harvest wolves.
- They are worried about their income (subsistence and income hunting).
- Kugluktuk [Bluenose-East and Bathurst herds]:
- HTO members expressed strong concerns about the lack of Inuit participation and traditional knowledge in the assessment of Barren-ground caribou and the decision-making process.
- They would appreciate a herd-by-herd assessment, and worry about the flexibility in prohibitions and how it will be applied to local management.
- They noticed an increase in wolf and wolverine populations.

Gjoa Haven
HTO meeting, March 1, 2018

- ECCC presented a PowerPoint describing the federal species at risk process, why barren-ground caribou have been assessed as threatened, and what it would mean if barren-ground caribou are listed as threatened under the federal species at risk act.
- HTO members expressed strong concerns about the lack of Inuit participation and traditional knowledge in the assessment of Barren-ground caribou and the decision-making process.
- They are worried about the Caribou declining, the species is critical for their way of life and food security. They are interested in collaborating to help the species recover.
- They mentioned various reasons why they see less Caribou than before :
    - Increased predation (wolves, wolverines and grizzlies)
    - They are seeing a lot more Muskox than before
    - Climate Change: Caribou are vulnerable to migration on thin ice.
- They would like to improve youth education regarding hunting practices.

Kugaaruk
HTO meeting, February 27, 2018

- ECCC presented a PowerPoint describing the federal species at risk process, why barren-ground caribou have been assessed as threatened, and what it would mean if barren-ground caribou are listed as threatened under the federal species at risk act.
- HTO members expressed strong concerns about the lack of Inuit participation and traditional knowledge in the assessment of Barren-ground caribou and the decision-making process.

- They would appreciate a herd-by-herd assessment, they never heard of any studies done in their region.
- They are worried about harvest restrictions and food security.
- They mentioned various reasons why they see less Caribou than before :
    - Increased predation (wolves)
    - They are seeing a lot more Muskox than before
    - Mining (chemicals, plane/helicopters flying low)
    - Climate Change : They noticed a lot of rain on snow event making the foraging harder for the species.
    - Natural cycle of caribou population
    - Diseases

Rankin Inlet
HTO meeting, March 5, 2018

- ECCC presented a PowerPoint describing the federal species at risk process, why barren-ground caribou have been assessed as threatened, and what it would mean if barren-ground caribou are listed as threatened under the federal species at risk act.
- HTO members expressed strong concerns about the lack of Inuit participation and traditional knowledge in the assessment of Barren-ground caribou and the decision-making process. They would like to see an Inuit representative on COSEWIC committee.
- They would appreciate a herd-by-herd assessment, they never heard of any studies done in their region.
- Increased predation: They are seeing more wolves and grizzlies than before.
- They want to be involved in drafting the recovery strategy. Management plans already in place in some regions should be recognized.
- Some agreed to the listing of the barren-ground caribou.

Whale Cove
HTO meeting, March 6, 2018

- ECCC presented a PowerPoint describing the federal species at risk process, why barren-ground caribou have been assessed as threatened, and what it would mean if barren-ground caribou are listed as threatened under the federal species at risk act.
- HTO members expressed some worries about their harvest rights.
- They mentioned various reasons why they see less Caribou than before :
    - Increased predation (eagles, wolverines)
    - They are seeing a lot more Muskox than before
    - Natural cycle of caribou population

- Diseases: They noticed swollen hooves (brucellosis)
- Mining

Arviat
HTO meeting, March 7, 2018

- ECCC presented a PowerPoint describing the federal species at risk process, why barren-ground caribou have been assessed as threatened, and what it would mean if barren-ground caribou are listed as threatened under the federal species at risk act.
- HTO members would like to see a herd-by-herd assessment as they think their herd is stable.
- They mentioned various reasons why they see less Caribou than before :
  - Sport hunting happening south of Aviat
  - Migration routes have changed
  - Increased predation (wolves, grizzlies, wolverines)
  - Moose habitat range has recently extended to their region
  - Hunting ways have changed (bullet type, transportation)

Baker Lake
HTO meeting, March 8, 2018

- ECCC presented a PowerPoint describing the federal species at risk process, why barren-ground caribou have been assessed as threatened, and what it would mean if barren-ground caribou are listed as threatened under the federal species at risk act.
- HTO members expressed strong concerns about the lack of Inuit participation and traditional knowledge in the assessment of Barren-ground caribou and the decision-making process. They would like to see an Inuit representative on COSEWIC committee.
- They are worried about their harvest rights and food security.
- They haven't seen the Qamanirjuaq herd for a long time, and mentioned potential causes of the caribou decline, i.e. changing migration routes, natural cycle of the caribou population, forest fires, and increased predation.
- They want to see the recovery strategy being elaborated cooperatively with all territories and provinces sharing the herds. Attention to the migration routes and its protection should be emphasized.

Chesterfield Inlet
HTO meeting, March 9, 2018

- ECCC presented a PowerPoint describing the federal species at risk process, why barren-ground caribou have been assessed as threatened, and what it would mean if barren-ground caribou are listed as threatened under the federal species at risk act.
- HTO members expressed strong concerns about the lack of Inuit participation and traditional knowledge in the assessment of Barren-ground caribou and the decision-making process.
- The caribou have other predators, like wolves, grizzlies and wolverines that are also responsible for their decrease.
- They are worried about their harvest rights.
- Some noticed the caribou have recently started to increase in the area.

Igloolik
Public meeting, September 25, 2018

- ECCC presented a PowerPoint describing the federal species at risk process, why barren-ground caribou have been assessed as threatened, and what it would mean if barren-ground caribou are listed as threatened under the federal species at risk act.
- Community and HTO members expressed strong concerns about the lack of Inuit participation and traditional knowledge in the assessment of Barren-ground caribou and the decision-making process.
- They are worried about their harvest rights and food security; they see this proposed listing as an additional hardship done to their community and traditional way of life.
- Most of them believed the caribou population is going through a natural cycle and will eventually come back on its own. Some people mentioned the population numbers were not trustworthy.
- They want more responsibility in regards to managing their own herd, instead of having outsiders getting involved. They also didn't appreciate all the herds being merged together for the listing assessment.

Hall Beach
Public and HTO meetings, September 26, 2018

- ECCC presented a PowerPoint describing the federal species at risk process, why barren-ground caribou have been assessed as threatened, and what it would mean if barren-ground caribou are listed as threatened under the federal species at risk act.

- Community and HTO members expressed strong concerns about the lack of Inuit participation and traditional knowledge in the assessment of Barren-ground caribou and the decision-making process.
- Most of them believed the caribou population is going through a natural cycle and will eventually come back on its own.
- The caribou have other predators, like wolves that are also responsible for their decrease.
- They are worried about their harvest rights and food security. Some of them thought animals should not be surveyed and didn't like outsiders coming to interfere with their wildlife management.

Naujaat
Public meeting, September 27, 2018

- ECCC presented a PowerPoint describing the federal species at risk process, why barren-ground caribou have been assessed as threatened, and what it would mean if barren-ground caribou are listed as threatened under the federal species at risk act.
- Community members wanted to see local management of the herd. They didn't like having their caribou lumped in with other herds across Canada as part of the assessment of Barren-ground caribou or in future recovery plans. Some of them mentioned the survey methodology was not trustworthy.
- Most of them believed the caribou population is going through a natural cycle and will eventually come back on its own.
- They are worried about their harvest rights being affected after the listing.

Arctic Bay
Public meeting, October 16, 2018

- ECCC presented a PowerPoint describing the federal species at risk process, why barren-ground caribou have been assessed as threatened, and what it would mean if barren-ground caribou are listed as threatened under the federal species at risk act.
- There were strong concerns about the lack of Inuit participation in the assessment of the caribou and decision-making regarding the wildlife management. They would like to see more traditional knowledge involved throughout the process.
- Community members mentioned the cause of decline is most likely due to wolf predation and natural cycle of the caribou population. They strongly believe the caribou will come back on their own.
- Community members were also worried about their harvest right and food security.

Pond Inlet
Public meeting, October 17, 2018

- ECCC presented a PowerPoint describing the federal species at risk process, why barren-ground caribou have been assessed as threatened, and what it would mean if barren-ground caribou are listed as threatened under the federal species at risk act.
- Community and HTO members expressed strong concerns about the lack of Inuit participation in the assessment of Barren-ground caribou and decision-making. They would like to see more local management and are concerned about their harvest rights.
- There were some doubts regarding the numbers of caribou and the survey methodology.
- Most of them believed the caribou population is going through a natural cycle and will eventually come back on its own.
- One person asked for a further investigation on the actual causes of decline of the Baffin herd

Clyde River
Public and HTO meetings, October 18, 2018

- ECCC presented a PowerPoint describing the federal species at risk process, why barren-ground caribou have been assessed as threatened, and what it would mean if barren-ground caribou are listed as threatened under the federal species at risk act.
- Community and HTO members expressed strong concerns about the lack of Inuit participation in the assessment of Barren-ground caribou and decision-making. They would like to see more local management and are concerned about their harvest rights.
- One member mentioned there was a generational conflict where the younger hunters want to try new wildlife management methods, but the elders disagree. The Inuit's profound respect for elders makes the younger generation hesitant to talk about it.
- Community members also mentioned potential causes of the caribou decline, i.e. the natural cycle of the caribou population, the predation by wolves, female-male ratio allowed for hunting, and the new technology (snowmobiles scare caribou away).

Iqaluit
HTO meeting, October 22, 2018

- ECCC presented a PowerPoint describing the federal species at risk process, why barren-ground caribou have been assessed as threatened, and what it would mean if barren-ground caribou are listed as threatened under the federal species at risk act.
- Community and HTO members expressed strong concerns about the lack of Inuit participation and traditional knowledge in the assessment of Barren-ground caribou and the decision-making process.

- They would also like to be involved in the scientific research. The survey methodology is not clear to them, and they believe a herd-by-herd assessment would be much more relevant.
- They believe the caribou populations are going through natural cycle and will eventually come back up on their own.
- Many were worried about their harvest rights and would like to see investigation on other threats like predation, industry and impact of research.

Qikiqtarjuaq
Public and HTO meetings, October 23-24, 2018

- ECCC presented a PowerPoint describing the federal species at risk process, why barren-ground caribou have been assessed as threatened, and what it would mean if barren-ground caribou are listed as threatened under the federal species at risk act.
- HTO board members expressed their concerns about the harvest restrictions and mentioned they want to collaborate to see the caribou population increase again.
- HTO and community members mentioned the helicopters from mining companies were an important threat to the caribou (scaring them away).
- The wolf population is also an important threat to consider.
- Some of them strongly believed the caribou will come back on their own. They migrate long distance and undergo natural cycles of population density.

Coral Harbour
Public and HTO meetings, January 22, 2019

- ECCC presented a PowerPoint describing the federal species at risk process, why barren-ground caribou have been assessed as threatened, and what it would mean if barren-ground caribou are listed as threatened under the federal species at risk act.
- Community members were concerned about the mining activity and identified industry as one of the main threats to caribou.
- Community members identified climate change as an on-going threat to caribou.
- Several community members believe caribou undergo natural cycles of population density. When populations are too abundant the numbers drop, but increase again when vegetation grows back.
- Community members expressed interest in knowing current local caribou numbers, particularly on Coats Island.
- The lag time between caribou surveys and results is too long. The community members would like to be informed of the health of the herds more quickly, so they can better manage their harvest.
- Community members expressed interest in knowing how caribou herds across Canada were doing, and how they were being managed.

Cape Dorset
Public and HTO meetings, January 23, 2019

- ECCC presented a PowerPoint describing the federal species at risk process, why barren-ground caribou have been assessed as threatened, and what it would mean if barren-ground caribou are listed as threatened under the federal species at risk act.
- Community members questioned the accuracy of the range of Barren-ground caribou herds shown on the maps
- Community members weren't sure that caribou populations will cycle up and down as they have in the past because of all the things that have changes
- Community members were concerned about the affect of the mines on caribou and want to find ways to protect the caribou from mining. Critical habitat is one way to protect habitat for caribou.
- Community members were concerned about predation from wolves, and suggested wolf control
- Community members were concerned about harassment of caribou by helicopters and airplanes
- Some community members though that caribou are not threatened, and have just moved to another area
- Community members were concerned that caribou are not surveyed often enough
- Community members spoke about the importance of using Inuit Qaujimajungit
- Community members were concerned about the possible impact that listing caribou might have on harvesting

Kimmirut
Public and HTO meetings, January 24, 2019

- ECCC presented a PowerPoint describing the federal species at risk process, why barren-ground caribou have been assessed as threatened, and what it would mean if barren-ground caribou are listed as threatened under the federal species at risk act.
- HTO members expressed strong concern regarding the listing of all Barren-ground caribou herds as one. They believe South Baffin and North Baffin populations should be considered separately.
- Several HTO and community members do not believe the South Baffin population is in decline.
- Several HTO and community members believe caribou undergo natural cycles of population density. When populations are too abundant the numbers drop, but increase again when vegetation grows back.
- Some community members do believe caribou populations on South Baffin Island are in decline, support the listing, and believe more survey efforts are required.

- Community members expressed concern related to methods used to survey caribou (e.g. helicopter use), and suggest using less intrusive methods.
- Community members identified parasites and wolves as threats, and expressed an interest in better understanding how parasites (e.g. ticks) have arrived and how they impact the caribou.
- HTO and community members expressed concern about their harvest rights and the lack of Inuit participation in the listing process.

Taloyoak
Public and HTO meetings, February 26, 2019

- ECCC presented a PowerPoint describing the federal species at risk process, why barren-ground caribou have been assessed as threatened, and what it would mean if barren-ground caribou are listed as threatened under the federal species at risk act.
- HTO members did not agree with the delineation of the herds. They advised that caribou from various herds (Peary and Ahiak) interbreed and mix with Boothia Peninsula caribou, and that the range of the Boothia Peninsula herd actually extends further south than Taloyoak. Interbreeding may have caused the original Boothia Peninsula caribou to move south, but all caribou in the area are considered as one herd.
- HTO and community members identified wolves and muskox as threats to the Boothia Peninsula herd, and expressed an interest in establishing an incentivised culling program for wolves.
- HTO members were interested in knowing more about the various threats and their impact on caribou herds.
- HTO and community members expressed concern about their harvest rights.
- HTO and community members found the information presented was very broad, and would like to see more concrete survey data showing caribou population estimates in their area before deciding to support the listing. They do not want to rush any decisions.
- Some community members do not believe their local herds are at risk or are declining, while others do believe they are a threatened species.
- Community members strongly support conservation and believe maintaining clean hunting grounds (free of carcasses) and minimizing waste is very important. They believe their people need to take more accountability and think a carcass cleaning program could be beneficial.
- HTO and community members believe growing populations are increasing the harvest pressure on caribou unlike before. For this reason, it is important to work collaboratively, and plan for the future to ensure caribou are conserved.

Kitikmeot Regional Wildlife Board
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SUBMISSION TO THE NUNAVUT WILDLIFE MANAGEMENT BOARD
REGULAR MEETING 001-2020
March 11, 2020

for

INFORMATION: **DECISION:** X

ISSUE: Kitikmeot Regional Wildlife Board request for 5 additional Grizzly Bear Sport Hunt Tags

BACKGROUND:

The last study on population survey by the Government of Nunavut was in 2007.

Inuit in Kugluktuk have observed an increase in the grizzly bear population. There are many observations of sows with twins and triplets and increasingly more each year.

Grizzly bears are always present in caribou calving grounds and close to the community.

In 2017, the Kugluktuk HTO had originally requested an additional 5 grizzly bear tags.

An increase in grizzly bear tags would bring more income into the community; it would assist in bringing the population back down and it would assist the caribou herds, as there would be less predation on the calving grounds.

Historically, the Kitikmeot Regional Wildlife Board had 10 grizzly bear tags and they were allocated as: Kugluktuk – 5; Omingmaktok – 2; Burnside – 3.

In June 2019, the Nunavut Wildlife Management Board approved 5 additional tags, for a total of 15 for the Kitikmeot Regional Wildlife Board. It is respected by the Kugluktuk Angoniatit Association that the Ekaluktutiak Hunters and Trappers Organization have put in the request for 5 additional tags. The Kugluktuk HTO does not want to take any tags away from other HTOs. These tags were allocated as follows: Kugluktuk – 5; Cambridge Bay – 5; Omingmaktok – 2; Burnside – 3.

RECOMMENDATION:

Kitikmeot Regional Wildlife Board
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During our conference call on October 18th, 2019, the Kitikmeot Regional Wildlife Board heard concerns from the Kugluktuk Angoniatit Association's observation on the increase in grizzly bears in the Kugluktuk area.

We have also heard from KAA on their request for an increase in grizzly bear sport hunt tags that did not go through. We would like to show our support and approval for their request for five (5) additional tags to be used for sport hunts.

Please do not hesitate to contact our office for questions to this request.

Yours Truly,

Bobby Klengenberg

KRWB Chair

Kitikmeot Regional Wildlife Board
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ᐃᑦ 11, 2020

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ᐊᑐᖃᒥᒃᓴᓂᓄᓂ:

ᐅᖅᑲᐃᑎᔨᑦ ᑲᑎᒪᑐᓄᑕ ᐅᓇᐃᓄᑦ 18th, 2019, ᖃᑎᖏᑕᐅᓂ ᐊᕐᕋᑐᖏᓱᒪᖏᓂᓄᓂ ᐅᒪᔨᓪᓚᖏᓱᐊᓪᓚᒍᖅᑎᓂᓄᓂ ᑲᑎᒪᔨᖅᑎᓂᓄᓂ ᑐᓴᕐᖏᕐᕋᕐᓂᐅᒪᔨᖅᑎᓂᓄᓂ ᖁᔭᓐᖏᑐᖏᑦ ᐅᓂᒪᓕᑎᒃᓴᐅᔪᓂᓄᓂ ᑲᑎᒪᔨᖅᑎᓂᓄᓂ ᐅᒪᔨᓪᓚᖏᓱᐊᓪᓚᒍᖅᑎᓂᓄᓂ ᖃᔨᖏᑕᐅᓱᒪᖏᓂᖅᑎᓂᓄᓂᑐᓂ ᐊᒥᓱᓕᕕᒃᓴᐅᔪᓂᓄᓂ ᖃᐅᔨᓴᓕᖅᑎᓂᓄᓂ ᐊᑲᓇᐃᑦ ᖁᔭᓐᖏᑐᖏᑦ ᐅᒪᔨᓪᓚᖏᓱᐊᓪᓚᒍᖅᑎᓂᓄᓂ ᑲᑎᒪᔨᖅᑎᓂᓄᓂ ᐊᑐᖏᑕᐅᓂᐊᖏᓂᖅᑎᓂᓄᓂ ᑕᓪᓕᓂᓄᓂ ᐃᓅᓚᖅᑕᐅᓂᐊᖏᓂᖅᑎᓂᓄᓂ ᐊᑐᖏᑕᐅᓂᐊᖏᓂᖅᑎᓂᓄᓂ ᑲᑎᒪᔨᖅᑎᓂᓄᓂ ᐅᒪᔨᓪᓚᖏᓱᐊᓪᓚᒍᖅᑎᓂᓄᓂ ᑲᑎᒪᔨᖅᑎᓂᓄᓂ ᐊᑐᖏᑕᐅᓂᐊᖏᓂᖅᑎᓂᓄᓂ ᑕᓪᓕ