NUNAVUT WILDLIFE MANAGEMENT BOARD
Agenda: Regular Meeting 002-2026
June 24-25, 2026
Kinngait, Nunavut

	No:	Item:	Tab:	Presenter:	Maximum Time
9:00 - 9:02 AM	1	Open Meeting		Chairperson	1 minute
9:02 - 9:04 AM	2	Approval of RM002-2026 Agenda		Chairperson	2 minutes
9:04 - 9:05 AM	3	Agenda: Review and approval of RM002-2026	1	Chairperson	2 minutes
	4	Request for modification of Baffin Island Caribou Total Allowable Harvest (For Decision)	2	Government of Nunavut	
		Break			
	5	Modification of Cumberland Sound Beluga Quotas / Basic Needs Levels to be Implemented in July 2026 (For Decision)	3	Pangnirtung Hunters and Trappers Organization	
	6	Pangnirtung Hunters and Trappers Organization Request for ten-tonne open-water turbot quota for Cumberland Sound — fall 2026 pilot (For Decision)	4	Pangnirtung Hunters and Trappers Organization	
	7	National Marine Conservation Area interim management plan and non-quota limitations on harvesting by non-Inuit within specific zones of Tallurutiup Imangaa (For Decision)	5	Parks Canada	
		Lunch			
	8	Carry-forward protocol and gear amendments for the Greenland Halibut fishery in the Cumberland Sound Turbot Management Area (For Decision)	6	Fisheries and Oceans Canada	

	9	Proposed Amendments to the Northwest Territories Fishery Regulations (For Decision)	7	Fisheries and Oceans Canada	
	10	Department of Fisheries and Oceans Canada – Fisheries Management Operational Updates (For Information)	8	Fisheries and Oceans Canada	
	11	Department of Fisheries and Oceans Canada – Community-Based Marine Mammal Hunt Sampling Program (For Information)	9	Fisheries and Oceans Canada	
	12	Meeting adjournment of RM002-2026		Chairperson	

SUBMISSION TO THE

NUNAVUT WILDLIFE MANAGEMENT BOARD

FOR

Information: **Decision: X**

Issue: Aerial Abundance Survey Results for Baffin Island caribou

Background

- Historical qualitative estimates suggested that more than 100,000 caribou inhabited Baffin Island in 1985, and in 1991 were considered stable, with 60,000–180,000 caribou in South Baffin, >10,000 caribou in Central Baffin, and 50,000–150,000 caribou in North Baffin.
- During the mid to late 1990s, hunters across Baffin Island reported declining caribou numbers and the need to travel farther from communities to locate caribou.
- In March 2014, the Government of Nunavut, Department of Environment, in collaboration with co-management partners conducted an island-wide aerial survey which confirmed significant declines in Baffin Island caribou.
- Following the release of Report on November 1, 2015, the Government of Nunavut, Department of Environment (GN ENV) implemented a Total Allowable Harvest (Table 1). and in August 2015 the Nunavut Wildlife Management Board (NWMB) established a whole-island Total Allowable Harvest (TAH) of 250 caribou with a male-only Non-Quota Limitation (NQL).

Table 1: Harvest Regulations Baffin Island caribou

Date	Harvest restrictions	Total Allowable Harvest (TAH)	Regulation
January 1, 2015	Moratorium		R-032-2014
August 27, 2015	Total Allowable Harvest (TAH) with a male-only Non-Quota Limitation (NQL)	250 Caribou	R-024-2015
September 19, 2019	Modification of the NQL to allow female harvest	250 caribou with 10% female harvest	R-025-2019

July 18, 2022	TAH and NQL Modification (Annual TAH Increase)	350 with 50 caribou annual increase with ~5% TAH female	R-022-2022

Current Status

- In collaboration with affected Hunters and Trappers Organizations (HTOs) the Department of Environment (ENV) completed a South Baffin Island caribou abundance survey in March 2024, and the North and Central Baffin Island caribou abundance survey in March 2025.
- These aerial surveys included 28 HTO selected participants from Iqaluit, Pangnirtung, Kinngait, Kimmirut, Qikiqtarjuaq, Clyde River, Pond Inlet, and Igloolik.
- The final report was distributed to co-management partners and stakeholders on December 23, 2025.
- The current total estimated caribou abundance on Baffin Island is 48,681 (95% CI: 43,973–53,893).

Consultations

- On February 6, 2026, the Department of Environment (Operations and Wildlife Research) met with HTO representatives from Arctic Bay, Clyde River, Pond Inlet, Sanirajak, Igloolik, Kinngait, Qikiqtarjuaq, Pangnirtung, and Kimmirut in Iqaluit. The Amaruq HTO did not attend. During the meeting, the aerial survey report was discussed at length. Representatives from the Qikiqtaaluk Wildlife Board (QWB) met with ENV and provided a resolution of a TAH of 6,000 caribou, representing approximately 12% of the 2024-2025 Baffin Survey estimate, with an annual increase of 125 caribou. The meeting participants supported these recommendations to be forwarded to the Nunavut Wildlife Management Board (NWMB).
- There was an additional community member led recommendation to include up to 40% female harvest. This is not included in the ENV recommendation to the NWMB, but we would support this initiative by our co-management partners, the Qikiqtaaluk Wildlife Board and Hunters and Trappers Organizations if they choose.

Recommendation

- Based on the current population estimate, all available scientific information, and Inuit qaujimajatuqangit, the Government of Nunavut (GN) recommends the Nunavut Wildlife Management Board modify the existing Baffin Island Total Allowable Harvest to a non sex-selective harvest of 6,000 caribou annually, representing approximately 12.3% of the population, with an annual increase of 125 caribou.

Aerial Abundance Estimates and Trends of the Barren-Ground Caribou (*Rangifer tarandus groenlandicus*) of Baffin Island Nunavut – March 2024 and 2025

Government of Nunavut
Department of Environment
Technical Report Series – No: 02-2025

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19th December 2025

ABSTRACT

In this report, we present an update to the 2014 abundance estimate and trend of Baffin Island Caribou. We conducted aerial surveys to estimate the abundance of barren-ground caribou on Baffin Island and ancillary islands over two years (2024, 2025), using double-observer pair and distance sampling methods. Both surveys were enhanced through the guidance of local knowledge and inclusion of Inuit Qaujimajatuqangit (IQ) from communities that hunt Baffin Island caribou.

In March 2024 and March 2025, we assessed South Baffin, and North and Central Baffin caribou abundance respectively. In March 2024, we observed 3,843 individuals on-transect across all South Baffin strata. In March 2025, we observed 3,656 caribou on-transect across North and Central Baffin strata. In total (across both years and all strata), we observed 7,635 caribou. We used double-observer pair and distance sampling analytical models to develop abundance estimates for all strata across both years and for the entire Baffin Island complex. We estimated 24,162 (95% CI = 21,595-27,034; CV =5.7%) adults, calves, and yearling caribou within South Baffin strata in March 2024 and 25,026 (95% CI = 21,182-29,568; CV =8.5%) adults, calves, and yearlings within North and Central Baffin strata in March 2025. Combined, the March 2024 and 2025 surveys produced an estimated total of 48,681 (95% CI = 43,973-53,893; CV =5.2%) adult, yearling, and calf caribou. Our findings confirm a statistically significant increase from the March 2014 whole-island survey, which estimated 4,645 adult, yearling, and calf caribou (95% CI=3,667-5,884, CV=12.1%).

We conducted trend analyses using matched strata between 2012, 2014, and 2024/2025. These analyses suggest increasing trends in all regions with annual increases of 15% to 36% except for Prince Charles Island, where abundance declined annually at a rate of 3% (CI=-8% to 2%)). We calculated estimates of gross change and annual change the results of which indicate that the Baffin Island caribou population increased by a factor of 10.5 between March 2014 and 2024/2025, corresponding to an average annual growth rate of 25% (CI=22-28%). The observed change between March 2014 and 2024 was highly significant (t-Test =17.1; p-value <0.001). The observed annual rate of increase of 25% parallels rates of increase observed on island populations with minimal predation, high productivity, and minimal harvest pressure. Our results highlight the success of research and management actions led by co-managers in safeguarding Baffin caribou.

Research monitoring using fall and spring composition studies tracked relative density and overall productivity of Baffin Island caribou following the March 2014 Island wide abundance estimate, and initiation of management actions in 2014/2015 aimed at recovering Baffin Island caribou. Measures such as the implementation of Total Allowable Harvests (TAH) and Non-quota Limitations (NQLs), introduced in response to critically low numbers and steered by IQ and demographic monitoring studies, have played a pivotal role in reversing the long-term decline in abundance. These findings demonstrate how collaborative, evidence-based management can restore resilience to a population once in jeopardy.

Key words: Caribou, Barren-Ground Caribou, Baffin Island, Melville Peninsula, North Baffin Island, South Baffin Island, Aerial Survey, Ground Survey, Late Winter, Visual Survey, Baffin Region, Double Observer Pair Method, Distribution, Movements, Seasonal Range Use, Distance Sampling, Spatial Affiliations, Population Structure, Nunavut, *Rangifer tarandus groenlandicus*, Population Survey, Caribou Late Winter Distribution.

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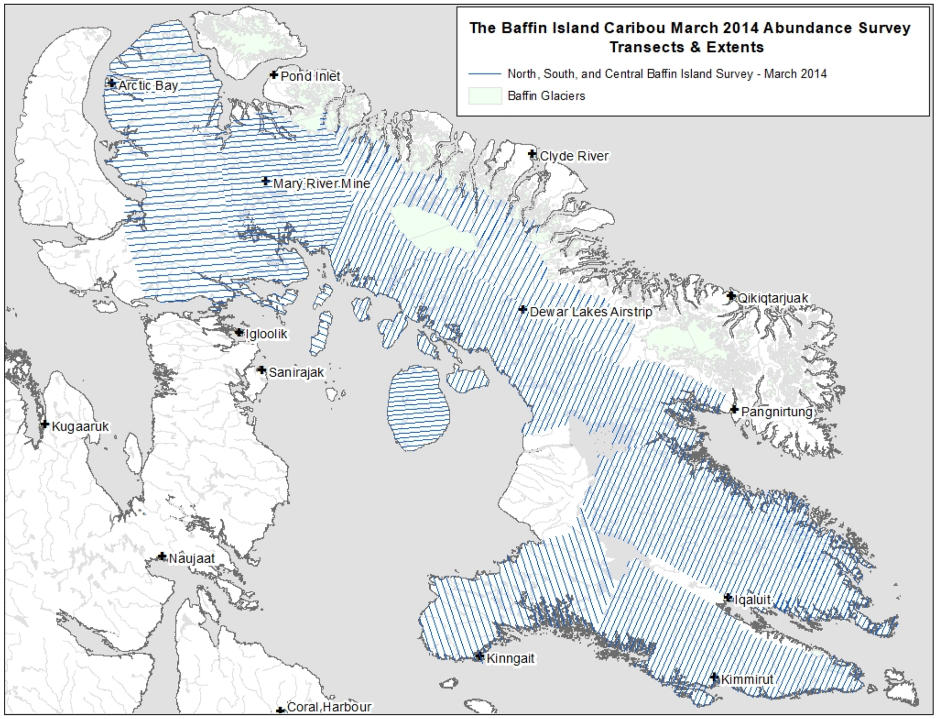
1.0 INTRODUCTION

The following report reassesses demographic estimates and trends in caribou abundance across Baffin Island by comparing strata flown in March 2014 (all of Baffin Island), March 2024 (South Baffin Island), and March 2025 (North and Central Baffin Island) (**Figure 1**). It provides estimates of herd size and region-specific densities, documenting changes since the 2014 island-wide survey and subsequent 2024 and 2025 abundance surveys. The report presents updated abundance estimates to support ongoing management discussions between the Government of Nunavut, Department of Environment (GN ENV), co-management partners, and stakeholders.

Caribou are circumpolar in their distribution and occur in the northern parts of Eurasia and North America. In Canada, caribou are represented by four subspecies: Peary (*R. t. pearyi*), Woodland (*R. t. caribou*), Grant's (*R. t. granti*), and Barren-ground (*R. t. groenlandicus*). Of the four subspecies, barren-ground caribou are the most abundant and can be further divided into two ecotypes: the taiga wintering migratory and the tundra wintering ecotypes (Nagy et al. 2011). Baffin Island barren-ground caribou are classified as a tundra wintering ecotype, generally occurring in smaller aggregations, exhibit limited migratory behaviour, and are confined to tundra environments. Baffin Island caribou movement behaviour is not fully understood; however, limited scientific knowledge and IQ suggest that known seasonal movements or migratory behaviour, differ amongst three generally accepted Baffin Island caribou groupings or sub-populations. Currently, the GN ENV, recognizes three (3) caribou sub-populations across Baffin Island (see **Figure 6**; 5.1 Baffin Island Populations/Subpopulations). These populations include the South, North, and Central Baffin Island sub-populations (Campbell et al. 2015).

Historical caribou abundance assessments on Baffin Island caribou have suggested that more than 100,000 caribou likely inhabited Baffin Island in 1985 (Williams and Heard 1986). This status was updated in 1991 at which time it was believed that the caribou sub-populations across Baffin Island were stable, with 60,000 -180,000 in South Baffin, greater than 10,000 in Central Baffin, and between 50,000-150,000 in North Baffin (Ferguson and Gauthier 1992). These earlier estimates, however, were not based on whole Island quantitative demographic studies, but rather estimations based on more geographically restricted scientific observations and IQ, including various smaller scale quantitative aerial observations, and limited movement data made up of; 1- extensive tagging programs and 2- limited telemetry studies from the early 1990s and early 2000’s (Ferguson 1988).

During the mid to late 1990s, local hunters across Baffin Island reported decreasing caribou numbers, with hunters having to travel further from their communities to locate caribou (Jenkins et al. 2012; Jenkins and Goorts 2013, Department of Environment 2013). These observations appeared to have continued up to the 2014 whole Island abundance survey estimate. During this period Baffin Island caribou harvesters continued to confirm general declines in caribou abundance Island wide (Jenkins and Goorts 2013, Department of Environment 2013). These concerning observations, quantitatively confirmed following the 2014 abundance survey, lead to the engagement of all stakeholders in the development of management and research actions with an eye to reversing the confirmed declining trend.



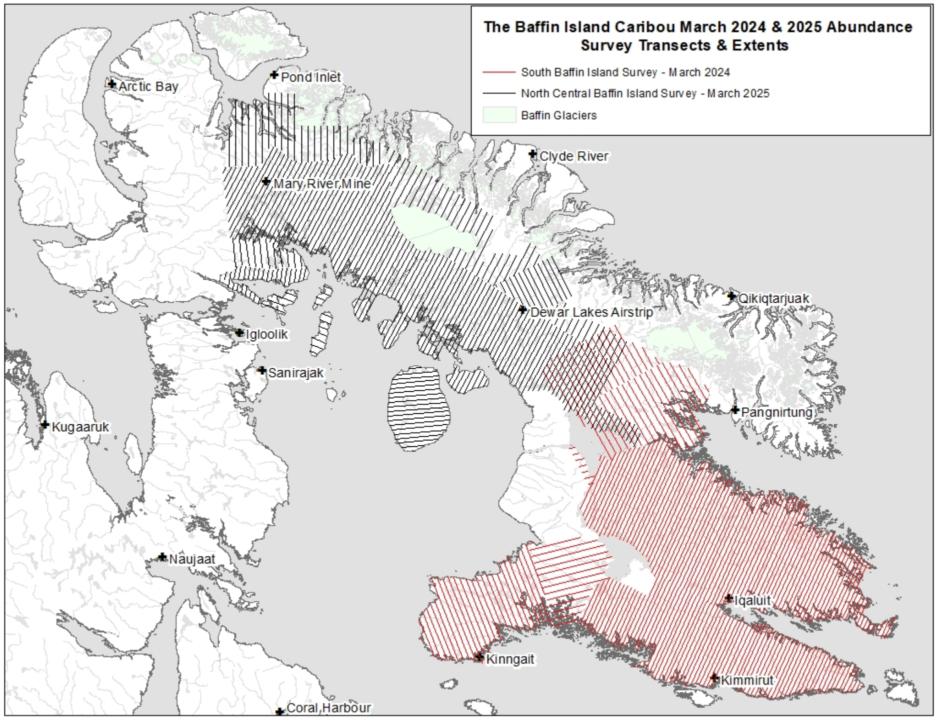


Figure 1. The north, central, and south March 2014 Baffin Island survey transects and extents (Left), and the March 2024 south Baffin and March 2025 north and central Baffin survey transects and extents (Right) side by side for comparison of survey extents. All survey extents and transects were developed through consultation with Hunters and Trappers Organizations (HTOs), Regional Wildlife Organization (RWO), and community meetings (Jenkins and Goorts 2013, Department of Environment 2013).

2.0 STUDY AREA

The Baffin Island complex, which includes all of Baffin Island and proximal islands (including Prince Charles Island), covers an estimated 543,746 square kilometres (excluding the areas of glaciers and ice fields). The Baffin Island complex exhibits variable relief, ranging from expansive lowlands near sea level (e.g., the great plain of the Koukdjuak east of Nettilling Lake, and Prince Charles Island), to the mountains of the North and South Baffin reaching elevations of 1,963 meters and 2,147 meters above sea level, respectively. The northeastern fifth of Baffin Island is within the Arctic Cordillera ecozone, while the remainder of the Baffin Island complex is wholly within the northern arctic ecozone (**Figure 2**). For detailed information on these ecozones and associated ecoregions (**Figure 3**), see (Campbell et al. 2015). Generalized indications of plant community productivity suggest that much of Baffin Island may not be suitable as caribou range suggesting more restrictive and predictable seasonal occupation of geographically specific areas by caribou (**Figure 4**) (Environment Canada 2001).

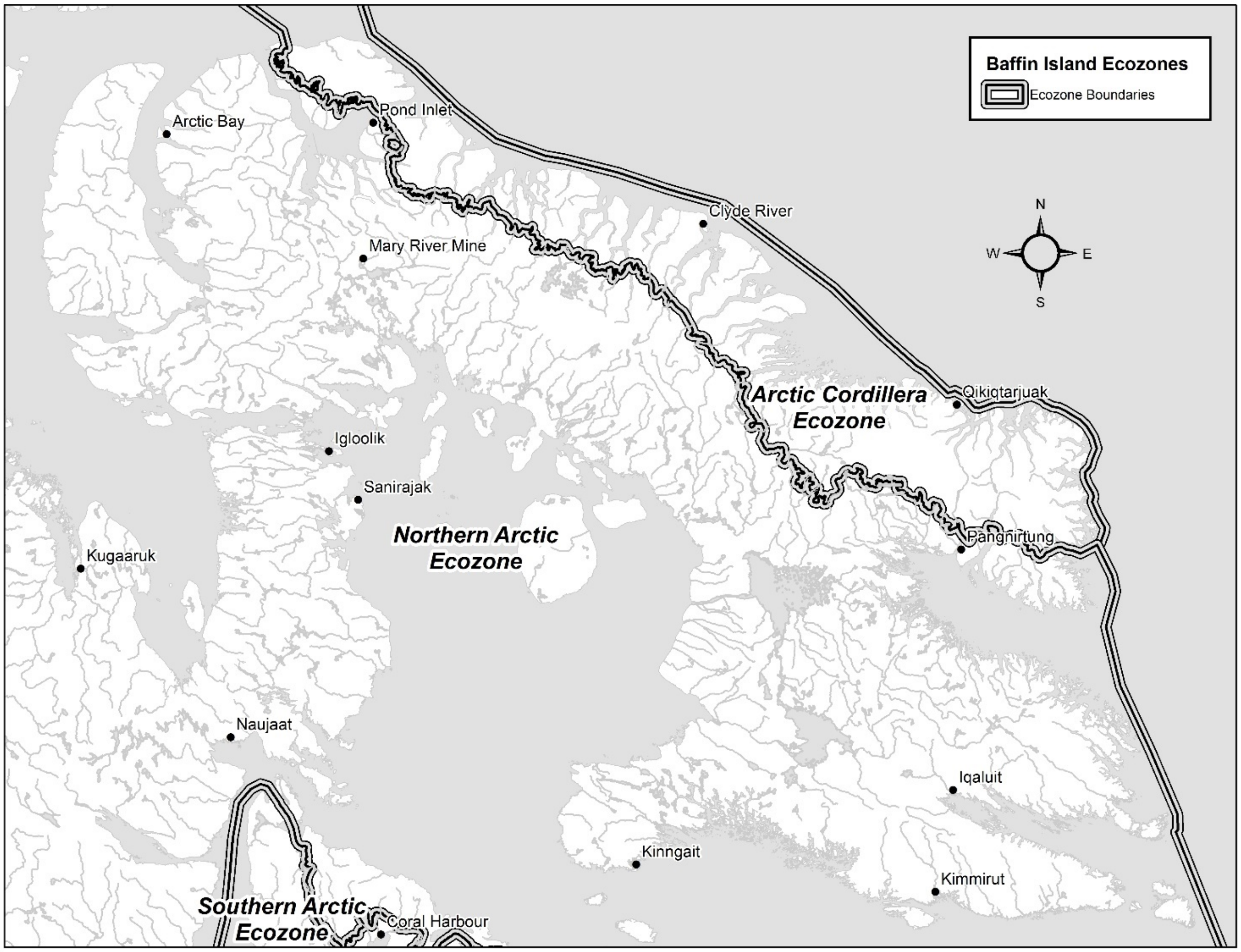


Figure 2. Ecozones of Baffin Island and proximal islands, and northern Melville Peninsula, Nunavut (after Environment Canada 2001).

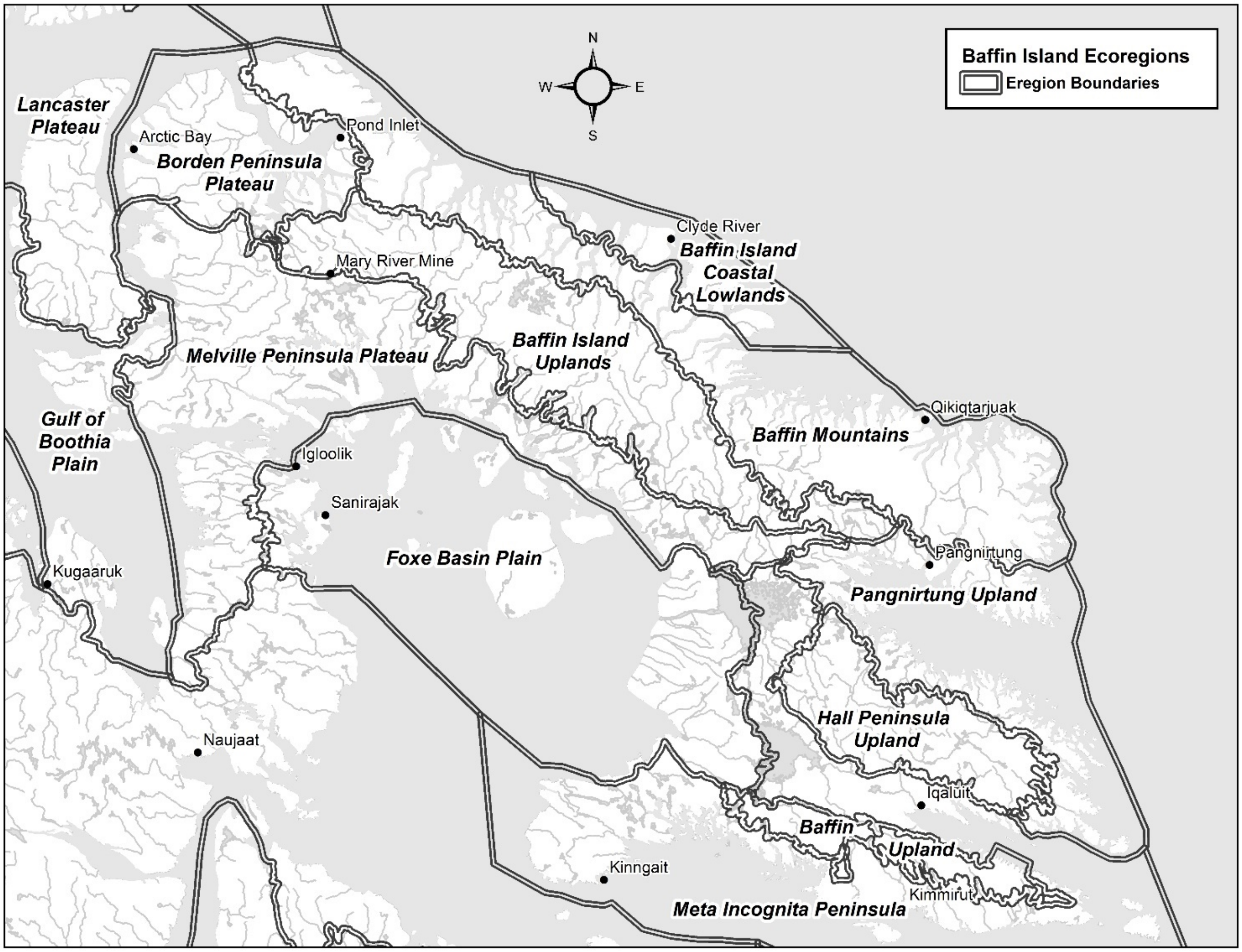


Figure 3. Ecoregions of Baffin and proximal islands, and northern Mellville Peninsula, Nunavut (after Environment Canada 2001).

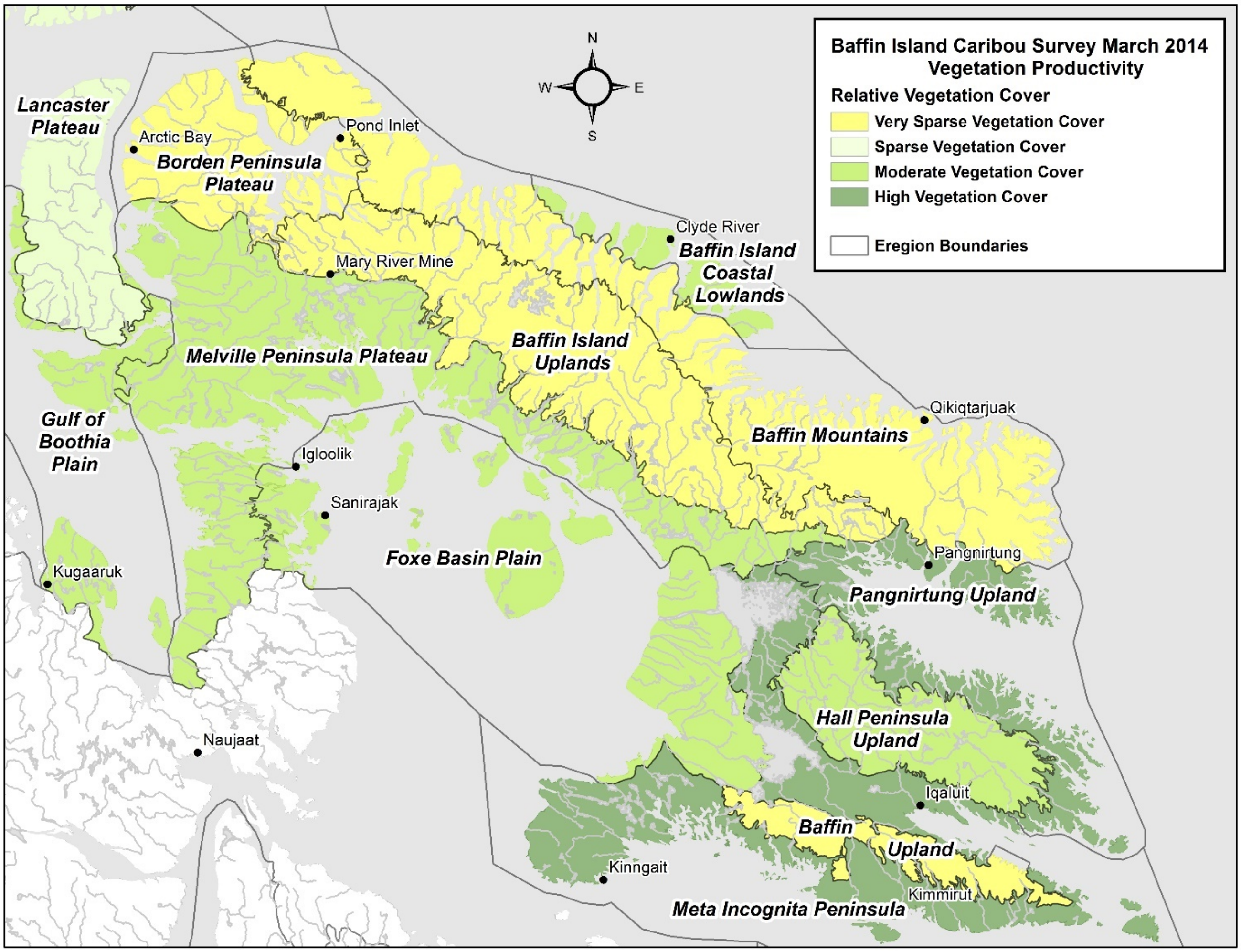


Figure 4. The relative productivity of plant communities within the ecoregions of the Baffin Island complex including northern Melville Peninsula. Productivity based on generalized plant species and cover assessments (after Environment Canada 2001).

3.0 METHODS

3.1 Abundance Survey Methods

The March 2024 abundance survey, which focused on South Baffin Island (*see 4.1 Sampling Summary and Data Segregation*), used two DeHavilland Twin Otter fixed wing aircraft and one Eurocopter B-2 helicopter and was based out of the communities of Iqaluit, Pangnirtung, and Kinngait. The March 2025 abundance survey, which focused on Central and North Baffin Island including Prince Charles Island (*see 4.1 Sampling Summary and Data Segregation*), also used two DeHavilland Twin Otter fixed wing aircraft and one Eurocopter B-2 helicopter and was based out of the communities of Iqaluit, Pangnirtung, Qikiqtarjuaq, Clyde River, and Igloolik, in addition to the Mary River Mine Site.

These abundance surveys used the same methods and similar strata (*see 4.1 Sampling Summary and Data Segregation*) used in the 2014 islandwide survey (Campbell et al. 2015; however, see discussion on helicopters, e.g., *4.2 Double Observer and Distance Analysis*). These methods are commonly and successfully used for barren-ground caribou surveys throughout Nunavut (Campbell et al. 2015, 2019, and 2022).

For the fixed wing portion of the surveys, we used a combined distance sampling and cooperative double observer pair mark-recapture approach. The double-observer pair configuration was used within all fixed wing aircraft to maximize sightability out of each of the left and right side of the aircraft, by adding one additional observer to each side (Campbell et al. 2012, 2015, and 2019). Additionally, the double observer pair configuration allowed each aircraft to maintain a minimum of two experienced wildlife observers on each of the left and right side of the aircraft throughout the survey, while providing training opportunities, when required, for community-based representatives within the remaining seats.

For the helicopter portion of these surveys, we used a modified approach whereby the pilot and data recorder served as observers that would remain in the same seats throughout the survey making this application of the double-observer component of the helicopter survey less robust than that of the fixed-wing. The helicopter survey, as detailed further later in this report, utilized a different observer platform and flight pattern, which involved flying to and way-pointing each observation rather than using wing strut bins to estimate distance as used on the fixed wing aircraft. As a result, it was useful to consider areas flown by helicopter as a distinct stratum to allow added modelling flexibility as well as evaluation of the effect of the different observer platform on survey estimates and associated precision.

Distance Sampling

The distance sampling component of the methods estimates the sightability of caribou groups in various distance bins. This is necessary to correct for declining detection probability with increasing distance from the survey plane. To accomplish this, we placed markers on the struts of the survey planes calculated using the formula from Norton-Griffiths (1978). These markers correspond with the following distance bins: 1) 0–200 meters, 2) 200–400 meters, 3) 400–600 meters, 4) 600–1,000 meters, and 5) 1,000–1,500 meters (Norton-Griffiths 1978).

Double Observer Pair

The dependent double observer pair component of the methods estimates the sightability of caribou groups between same side observers. This is necessary to reduce bias by accounting for animals missed by a single observer and provides more reliable abundance estimates. To accomplish this, we used two “primary” or “front” observers sitting in the left and right seats of the aircraft adjacent to the wing struts, and two “secondary” or “rear” observers sitting on the left and right side of the aircraft right behind the primary observers (**Figure 5**). The dependent double observer pair method adhered to five basic assumptions or steps.

1 - The primary observer called out all groups of caribou (number of caribou and wing-strut bin number) he/she saw within the 1- 0-200 meter, 2- 200-400 meter, 3- 400-600 meter, 4- 600-1000 meter, and 5- 1000–1500-meter wing-strut bins before they passed halfway between the primary and secondary observer (approximately at the wing strut). This included caribou groups that were between approximately 12 and 3 o’clock for right side observers and 9 and 12 o’clock for left side observers (**Figure 5**). The main requirement was that the primary observer be given time to call out all caribou seen before the secondary observer called them out.

2 - The secondary observer called out whether he/she saw the caribou that the primary observer saw, and observations of any additional caribou groups. The secondary observer also waited to call out caribou until the group observed passed halfway between observers (between 3 and 6 o’clock for right side observers and 6 and 9 o’clock for left side observers).

3 - The observers discussed any differences in group counts to ensure that they are calling out the same groups or different groups and to ensure accurate counts of larger groups.

4 - The data recorder categorized and recorded counts of caribou groups into “primary only”, “secondary only”, and “both”, entered as separate records.

5 - The same side observers switched places approximately halfway through each survey day (i.e. during refueling stops) to monitor observer position-based ability. The recorders noted the names of the primary and secondary observers and their side (left or right) and recorded group size and any assigned covariates.

In some cases, both same side observers missed a group of caribou, but the group was seen by the data recorder. It is expected that observer pairs may miss some caribou and naïve inclusion of data recorder observations could cause bias in estimates. However, in some cases a substantial number of caribou groups were missed by same side observer pairs indicating that they were weak observers. The concern in this case is that a substantial number of caribou would have 0 detection probabilities solely due to poor observer performance (in comparison to other observers). However, in this situation the dependent observer approach would not provide a valid estimate of the reduced detection probabilities. To address this concern graphical approaches were used to identify weak observer pairs, and in extreme cases, the weak observers were pooled as a single observer with the second observer being the data recorder. A covariate was used to model this modification of observer pairing. A sensitivity analysis was conducted to determine the effect of inclusion of data recorder observations.

Group size, topography, speed, snow cover, and cloud cover were also considered as covariates as with other surveys. Aircraft type was also considered. For the 2014 Baffin Island survey, 3 Cessna grand caravan fixed-wing aircraft and one Eurocopter B-2 helicopter were used, while during both the 2024 and 2025 Baffin Island surveys, 2 DeHavilland twin Otter fixed wing aircraft, and one Eurocopter B-2 helicopter were used.

Data Recorded

We used "*groups of caribou*", as opposed to individual caribou, as the sample unit for the survey. Recorders and observers were instructed to consider individuals to be those caribou that were observed independent of other individual caribou and/or groups of caribou. If sightings of individuals were influenced by other individuals, then the caribou were considered a group. In general, groups of caribou over an estimated 250 meters apart were considered independent groups. For each group of caribou recorded, additional covariates were recorded that can influence the sightability of caribou (**Table 1**). Due to heterogeneity variation in detection probabilities, it has been found that using just a mark-recapture approach overestimates sightability as distance from the survey plane increases, however, this approach was useful for estimation of sighting probability near the plane. This approach ensured a more robust estimate than using distance sampling methods alone which assume that the probability of detection of caribou groups at 0 distance from the plane is 1 (Borchers et al. 1998, Buckland et al. 2004, Laake et al. 2008a, Laake et al. 2008b, Buckland et al. 2010, Laake et al. 2012).

General Analytical Approach

Initially, we analyzed 2024 and 2025 data separately. For both years, we followed these general steps to conduct our analysis. First, we conducted exploratory analyses to assess detection performance in the double observer framework. This allowed us to identify weak or non-switching observer pairs that could bias the accuracy of estimates (*4.2.1 Double Observer and Distance Analysis (2024), Double Observer Summary; 4.2.2 Double Observer and Distance Analysis (2025), Double Observer Summary*). Second, we conducted exploratory analyses to assess detection patterns across the distance sampling framework and the impact of various covariates (*see* **Table 1**; *4.2.1 Double Observer and Distance Analysis (2024), Distance Sampling Summary; 4.2.2 Double Observer and Distance Analysis (2025), Distance Sampling Summary*). This was done to identify and account for any covariates that could influence the detection probabilities and thereby impact the accuracy of estimates. Covariates were also used to describe and model factors influencing the sightability of caribou (**Table 1**). These included observer pair given that the sample unit for dependent methods is pairs of observers as opposed to single observers. If observers were not paired, then they were pooled into a single multi-observer group.

After the exploratory analyses, we created double observer pair mark-recapture and distance sampling models for each year (*4.2.1 Double Observer and Distance Analysis (2024), Model Selection Fixed Wing, Helicopter Model Selection; 4.2.2 Double Observer and Distance Analysis (2025), Model Selection Fixed Wing, Helicopter Model*

Selection). We first built distance sampling models with the mark-recapture model parameters that held constant, and then vice versa for the double observer models. We then built a composite model using the most supported covariates from each of the component analyses. Estimates for strata were derived based on transect lengths and strata areas for the best fitting detection model. Estimates of variance were derived using estimators for a systematic sampling layout (Fewster 2011).

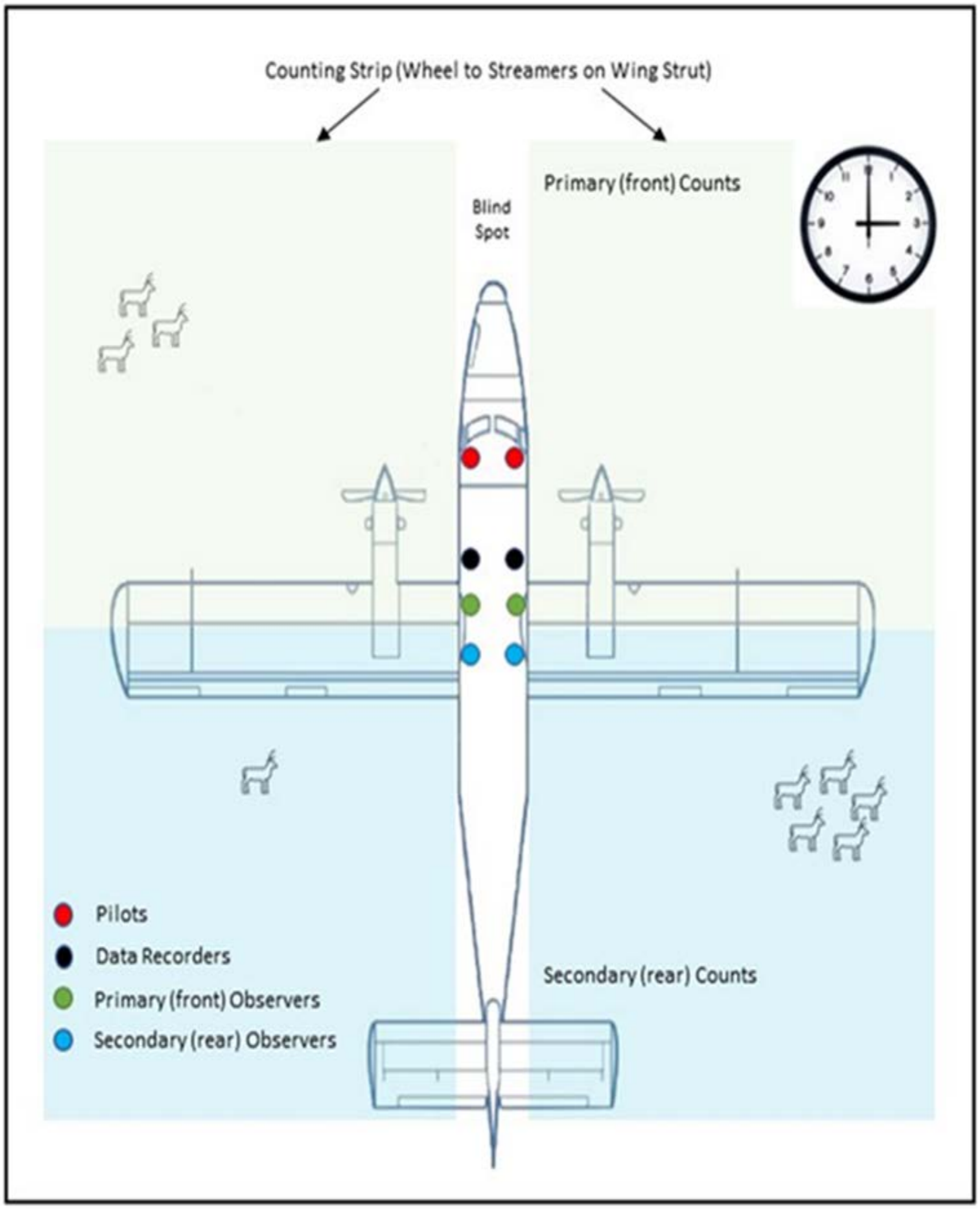
We evaluated the fit of these models using the Akaike Information Criterion corrected for small sample size (AIC_c). The model with the lowest AIC_c score was considered the most parsimonious (simplest), thus minimizing estimate bias and optimizing precision (Burnham and Anderson 1998). The difference in AIC_c values between the most supported model and other models (ΔAIC_c) was also used to evaluate the fit of models when their AIC_c scores were close. In general, any models with a ΔAIC_c score of less than 2 between them were considered to have equivalent statistical support. Overall model fit was also assessed using goodness of fit tests (Buckland et al. 1993, Buckland et al. 2004) as well as graphical comparison of detection functions with histograms of frequencies of observations from the surveys.

We then conducted sensitivity analyses for each year to assess how estimates were affected by analysis methods and model assumptions (*4.3 Analysis of 2024 & 2025 Models and Data*). We derived estimates using the Jolly strip-transect estimator (Jolly 1969, Krebs 1998) with the survey strip defined at 400 meters from the plane. This approach, which allows inclusion of all survey data (i.e. data recorder, etc) but assumes sightability, was equal to 1 in the 0–400-meter strip, provided a useful comparison with distance sampling estimates. In addition, distance sampling only, and double observer only (no distance sampling) within the 0–400-meter strip were considered.

Next, we derived estimates for both years (*4.4 Estimates*). In both years, abundance estimates were derived from the most supported MRDS model for both the fixed-wing strata and the helicopter strata (*4.4.1 March 2024 South Baffin Survey; 4.4.2 March 2025 Central and North Baffin Survey*). We then combined the 2024 and 2025 survey year estimates into a single islandwide estimate through re-analysis of the 2024 data set so that strata had zero (0) overlap with 2025 strata (*as detailed later in the report*). The full island 2024-2025 combined estimate was then compared with the 2014 full island estimate (Campbell et al. 2015).

Finally, we undertook analyses to compare trends in applicable sub-regions (*Foxe Peninsula, Meta-Incognita Peninsula, Hall Peninsula, Central Baffin, and Prince Charles Island were also compared; 4.5 Trend Analysis*). Estimates were initially compared to the 2012 and 2014 estimates using a t-test to determine if the two estimates were significantly different (Gasaway et al. 1986). Confidence limits on yearly change were estimated assuming log-normal distributions of abundance estimates using a Monte Carlo simulation approach (Manly 1997).

We conducted our analyses in *R* (R Development Core Team 2009) using the following R packages: *ggplot* (Wickham 2009), MRDS R package (Laake et al.), *AICmodavg* (Mazerolle 2016), *lubridate* (Grolemund and Wickham 2011), and *ddply* (Wickham 2011). For GIS analyses, we used the R package *sf* (simple features) (Pebesma 2018) in addition to the software QGIS (QGIS Foundation 2020). The *MRDS* R package (Laake et al. 2012) was used to build double observer pair mark-recapture and distance sampling models.



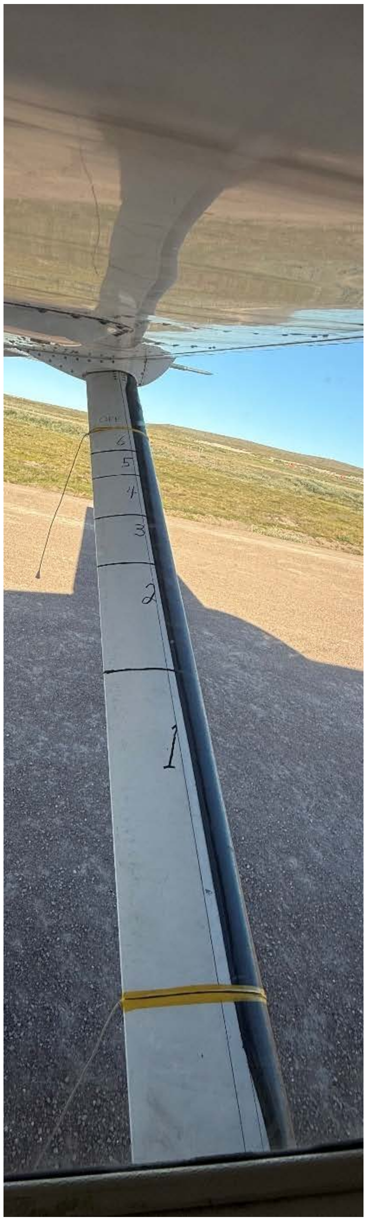


Figure 5 Observer position for double observer methods. The secondary (Rear) observer calls caribou not seen by the primary (Front) observer after the caribou has passed the main field of vision of the primary observer. Time on a clock is used to reference relative locations of caribou groups (e.g. “Caribou group at 1 o’clock”).

Table 1. The main co-variates (speed and topography were not used) used to model variation in sightability for dependent double observer pair analysis.

Covariate	Acronym	Description
Aircraft type	AirType	Helicopter vs fixed wing
Observer pair	obs	each unique observer pair
	Paired	Whether a pair switched places during survey
Data recorder observations	weakobs	Pairs who were assisted by the data recorder
Group size	size	size of caribou group observed
	Log(size)	Natural log of group size
Snow cover	snowf	snow cover (0,25,75,100)
	snow	continuous
Cloud cover	cloudf	cloud cover (0,25,75,100)
	cloud	continuous
Snow patchiness	SnowPatch	Continuous ordinal scale

3.2 Composition Studies

Since the 2014 survey, the GN ENV has conducted intermittent fall and/or spring aerial composition surveys from October and March 2015 to 2021 to monitor productivity and geographically specific relative densities of caribou across Baffin Island (Ringrose 2018, 2019, and 2021). The objectives of this monitoring program were to:

1) Estimate the overall composition of the subpopulations including the north Baffin grouping, south Baffin grouping, and central Baffin grouping (**Figure 6**); i.e., what proportion of the population are bulls, cows, yearlings, and calves.

2) Estimate the trajectory of abundance of the three main groupings of the Baffin Island caribou population, based on demographic composition as it relates most specifically to overwinter calf survival (March/April) and overall productivity (October; measured as calves per 100 cows) to develop an index of population trend.

3) Monitor the proportion of bulls in the population to ensure that predominantly bull harvests do not reduce their numbers to a level that could compromise breeding (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) Provide information geographically specific to relative abundance as it relates to ease of finding caribou and overall numbers of caribou observed, and to use this information for discussions of TAH and NQL appropriateness.

Surveys were conducted using a Eurocopter AS350 B2 helicopter, and a survey crew consisting of a biologist, wildlife technician, an observer, and a pilot. Study areas were selected based on previous aerial surveys and telemetry program observations as well as information gathered from hunters from each of the Baffin communities. Hunter information was collected during consultations conducted in 2012, 2013, 2014, and 2015 (DOE 2013, 2014, 2015a, 2015b *unpublished written records-In Prep*), across all Baffin Island (Ringrose 2018, Jenkins and Goorts 2013). Study areas were surveyed using two to three 5 km spaced transects bisecting identified high use areas by caribou, or until tracks were observed either on route to proposed high use areas, or while running transects through these same areas (Ringrose 2018). The method relied heavily on tracking groups and/or individual caribou until they were sighted, however, visual sighting methods were used when tracking was either difficult or not possible.

When tracks were encountered and the group located and classified, parallel transects through the study area would be tightened up to 1 to 2 km apart (depending on the density of tracks as it related to the ease to separate groups of tracks), with one transect run perpendicular to the track leading into the area and continued perpendicular to adjacent transects until tracks were no longer encountered (Ringrose 2018). This allowed classification crews to adaptively "high grade" search areas with caribou sign. The use of this adaptive search technique allowed for the most efficient use of the limited helicopter time and limited fuel caches, both the result of the geographical scale and resultant remote nature of the Baffin Island composition study areas. Additionally, this adaptive method allowed crews to take advantage of clustering behavior observed during previous survey and tracking studies, and described by Baffin Island caribou harvesters, whereby groups of Baffin Island caribou were more commonly observed in small geographic clusters generally associated with watersheds, during late winter and spring.

Once tracks were observed, they were followed until the group was located at which time caribou would be classified into 5 categories; 1) Cow (based on the presence of a visible vulva patch), 2) Calf (based on body size and characteristics), 3) Yearling (based on body size and characteristics), 4) Bull (based on absence of vulva patch, body characteristics and antler size) and when possible, 5) Young Bull (based on absence of vulva patch, body characteristics and antler size). Image stabilizing binoculars were used to reduce approach distances as much as possible to limit disturbance to animals. In cases where groups could not be located due to fuel and/or weather-related issues, and where time allowed, tracking was resumed the following day or after refueling.

When analyzing composition results, we used a logistic regression analysis (McCullough and Nelder 1989) to assess regional differences and overall trends in calf-cow ratios using surveys. An additive model was used (region+year) to assess differences in regions and explore if there was a regional increase in calf-cow ratios. Using logistic regression accounted for differences in sample sizes in surveys with the response being the count of calves divided by the count of cows in each survey. A quassi-binomial response model was used to account for likely overdispersion in the response data.

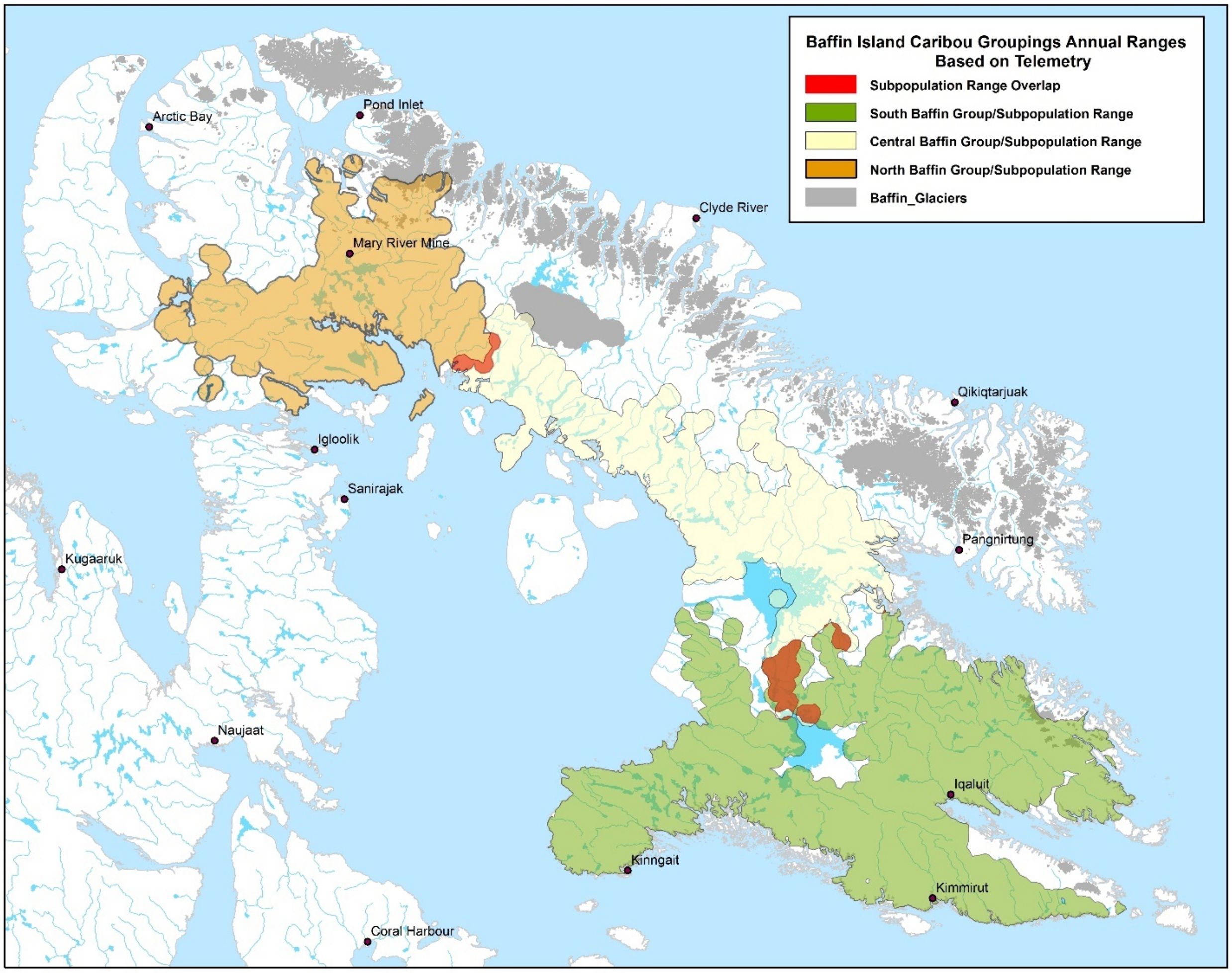


Figure 6. Caribou grouping annual range delineation based on telemetry studies from 1987 to 1994 (primarily South and Central Baffin), and 2008 to 2011 (North Baffin). Polygons created utilizing a kernel analysis of telemetry point data collected for 107 collars (North=35; Central = 17; South = 55) (Campbell et al. 2015).

4.0 RESULTS

4.1 Sampling Summary and Data Segregation

The Baffin Island March 2024 and 2025 abundance surveys included eight (8) south Baffin strata and six (6) north-central Baffin strata. The aircraft used within each strata varied according to topographic ruggedness with fixed-wing (FW) aircraft being delegated to less topographically rugged strata, and rotary-wing or helicopter (H) aircraft to more mountainous strata (**Figure 7**). The South Baffin strata included:

1- Foxe Peninsula low Density Fixed-Wing (**FP-LD-FW**)
2- Foxe Peninsula Medium Density Fixed-Wing (**FP-MD-FW**)
3- Hall Peninsula High Density Fixed-Wing (**HP-HD-FW**)
4- Hall Peninsula High Density Helicopter (**HP-HD-H**)
5- Meta Incognita Peninsula High Density Fixed-Wing (**MP-HD-FW**)
6- Niko Island Very Low Density Fixed-Wing (**NI-VLD-FW**)
7- Nettilling Lake Northeast Low Density Fixed-Wing (**NLNE-LD-FW**)
8- Nettling Lake North Low Density Fixed-Wing (**NLN-LD-FW**)

The North-Central Baffin strata included:

1- Gifford Fiord Medium Density Fixed-Wing (**GF-MD-FW**)
2- Neergaard Lake Low Density Fixed-Wing (**NL-LD-FW)**
3- North Central Baffin High Density Fixed-Wing (**NCB-HD-FW**)
4- North Central Baffin Medium Density Helicopter (**NCB-MD-H**)
5- Pond Inlet Low Density Helicopter (**PI-LD-H**)

6- Prince Charles Island-High Density Fixed-Wing (**PCI-HD-FW**)
7- Western Islands Low Density Fixed-Wing (**ISL-LD-FW**)

The helicopter survey, as detailed further later in this report, utilized a different observer platform (non-switching observers) and flight pattern, which involved flying to and way-pointing each observation rather than using wing strut bins to estimate distance as used on the fixed wing aircraft. As a result, it was useful to consider areas flown by helicopter as a distinct stratum to allow added modelling flexibility as well as evaluation of the effect of the different observer platform on survey estimates. **Table 2** summarizes strata and transect dimensions, groups, and caribou observed on each survey strata.

Like the 2014 Baffin Island caribou abundance survey, both the 2024 and 2025 surveys were flown over the same general dates in March, with the 2025 north-central Baffin survey extending further into March due to above-average weather cancellations (**Table 3**). Neither survey year violated the five-day maximum allowable weather delay based on an analysis of collar movements of north, central, and south Baffin caribou across the March 2024 and 2025 surveys (**Figure 8**). Additionally, collar movements over the period showed little directional movement and were consistent with non-migratory behavior expressed as less than five kilometers of directional movement per day (**Figure 9**).

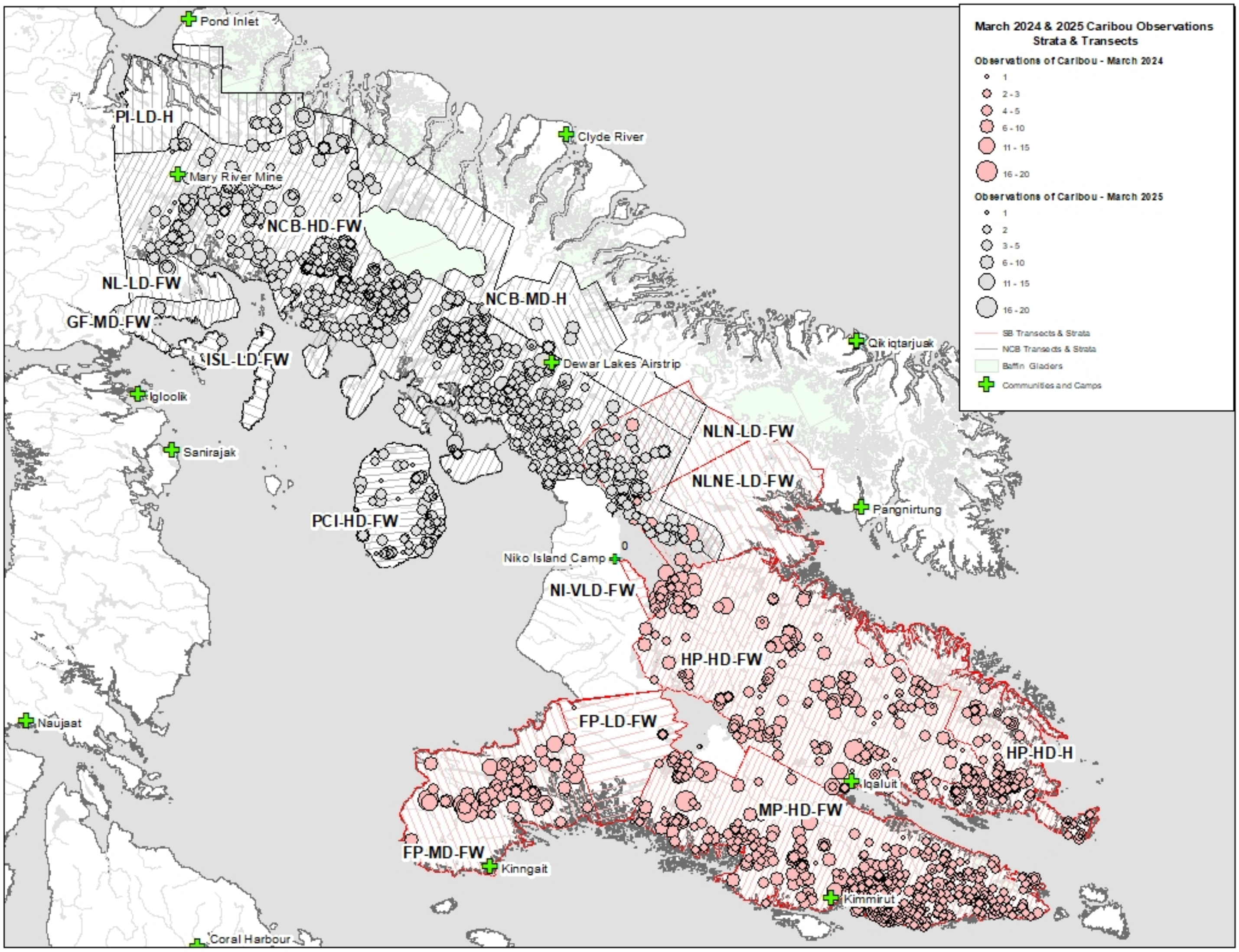


Figure 7 The 2024 South Baffin (Red) and 2025 North & Central Baffin Island (Grey) survey strata, transects, and caribou observations, used in this analysis. Helicopter stratum indicated with an "H" in their label, and fixed wing strata indicated with a "FW".

Table 2. Summary of strata dimensions and sampling. On-transect total caribou observations are listed for each stratum.

Strata	Transects	Strata Area (km²)	Total transects length (km)	Average transect width (km)	Baseline (km)	Coverage (1.5 km X 2 strip width (km2))	Caribou on transect
2024							
FP-LD-FW	14	11,333	1,117	79.79	142.03	0.30	**11**
FP-MD-FW	26	21,635	2,654	102.09	211.92	0.37	**650**
HP-HD-FW	57	50,317	8,206	143.96	349.52	0.49	**909**
HP-HD-H	51	19,677	3,221	63.16	311.55	0.49	**433**
MP-HD-FW	73	41,801	6,879	94.23	443.61	0.49	**1,815**
NI-VLD-FW	7	752	81	11.55	65.1	0.32	**0**
NLNE-LD-FW	20	18,573	1,909	95.47	194.54	0.31	**66**
NLN-LD-FW	17	12,444	1,244	73.15	170.12	0.30	**24**
2025							
NCB-HD-FW	108	82,875	12,155	112.55	736.37	0.44	**3,223**
GF-MD-FW	25	3,160	453	18.14	174.25	0.43	**7**
ISL-LD-FW	15	2,800	301	20.07	139.57	0.32	**3**
NCB-MD-H	53	22,164	2,225	41.98	528.01	0.30	**18**
NL-LD-FW	11	3,819	395	35.93	106.32	0.31	**238**
PCI-HD-FW	19	9,529	1,349	71.01	134.20	0.42	**71**
PI-LD-H	24	15,809	1,238	51.57	306.56	0.23	**96**

Table 3. A comparison between the March 2024 and 2025 Baffin Island abundance survey timing (x = Flight Day, ***PR*** = Pilot Rest Day; ***WC*** = Flight cancelled due to weather).

Survey Type	Date (2024)																			
	Mar-06	Mar-07	Mar-08	Mar-09	Mar-10	Mar-11	Mar-12	Mar-13	Mar-14	Mar-15	Mar-16	Mar-17	Mar-18	Mar-19	Mar-20	Mar-21	Mar-22	Mar-23	Mar-24	Mar-25
Fixed Wing	x	x	x	x	x	x	***PR***	x	x	x	x	x	x	x						
Rotary Wing				***WC***	x	x	x	x	x	***WC***	x	x								

Survey Type	Date (2025)																			
	Mar-06	Mar-07	Mar-08	Mar-09	Mar-10	Mar-11	Mar-12	Mar-13	Mar-14	Mar-15	Mar-16	Mar-17	Mar-18	Mar-19	Mar-20	Mar-21	Mar-22	Mar-23	Mar-24	Mar-25
Fixed Wing	x	x	x	***WC***	x	***WC***	x	***WC***	x	x	x	***WC***	***WC***	***WC***	x	x	x	x	x	x
Rotary Wing									***WC***	x	***WC***	***WC***	***WC***	***WC***	***WC***	x	x	x	x	x

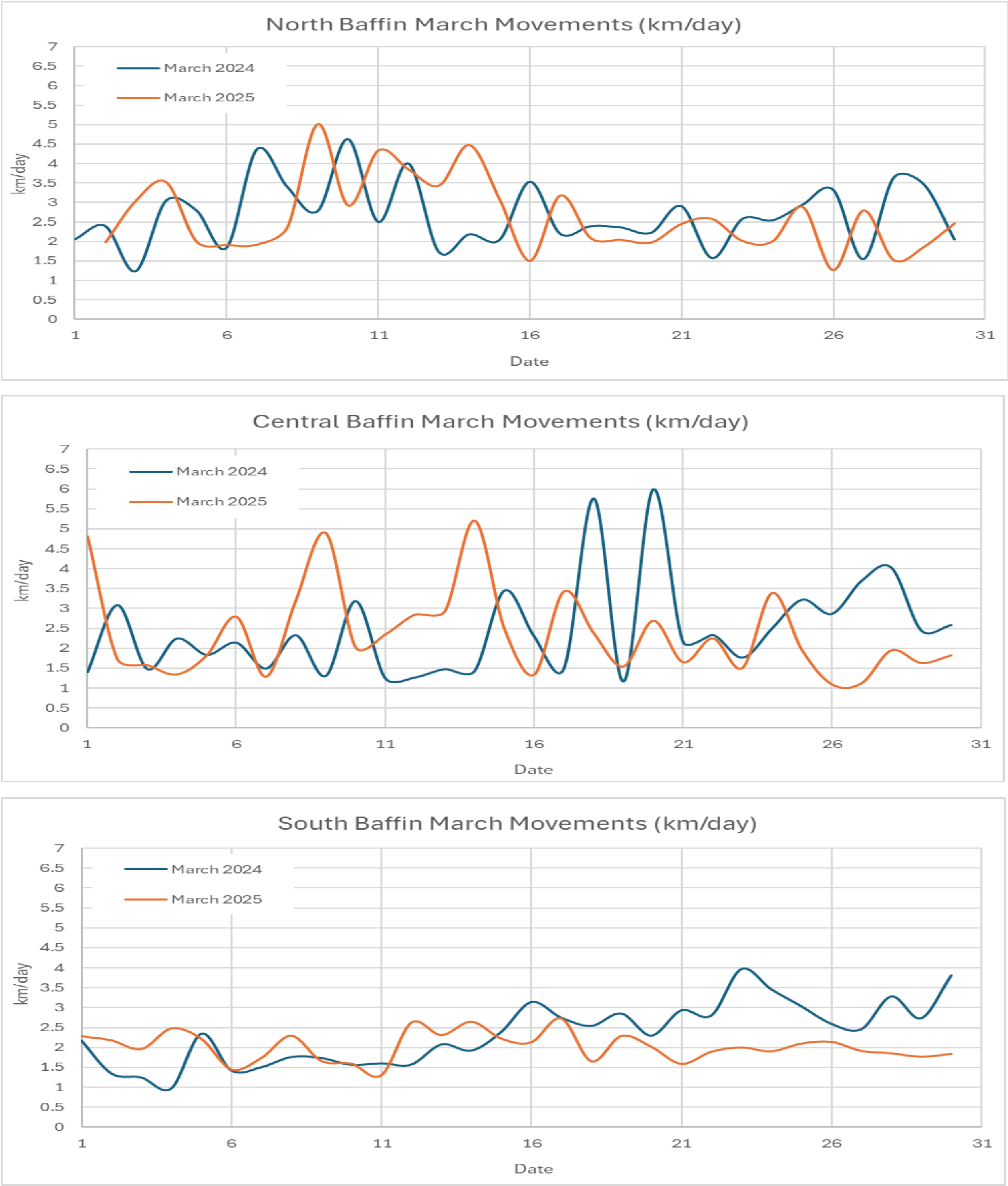


Figure 8. March daily movement rates of south Baffin collared caribou (2024), and north and central Baffin collared caribou (2025). Note that most collars tracked during the survey periods were under 5 km/day.

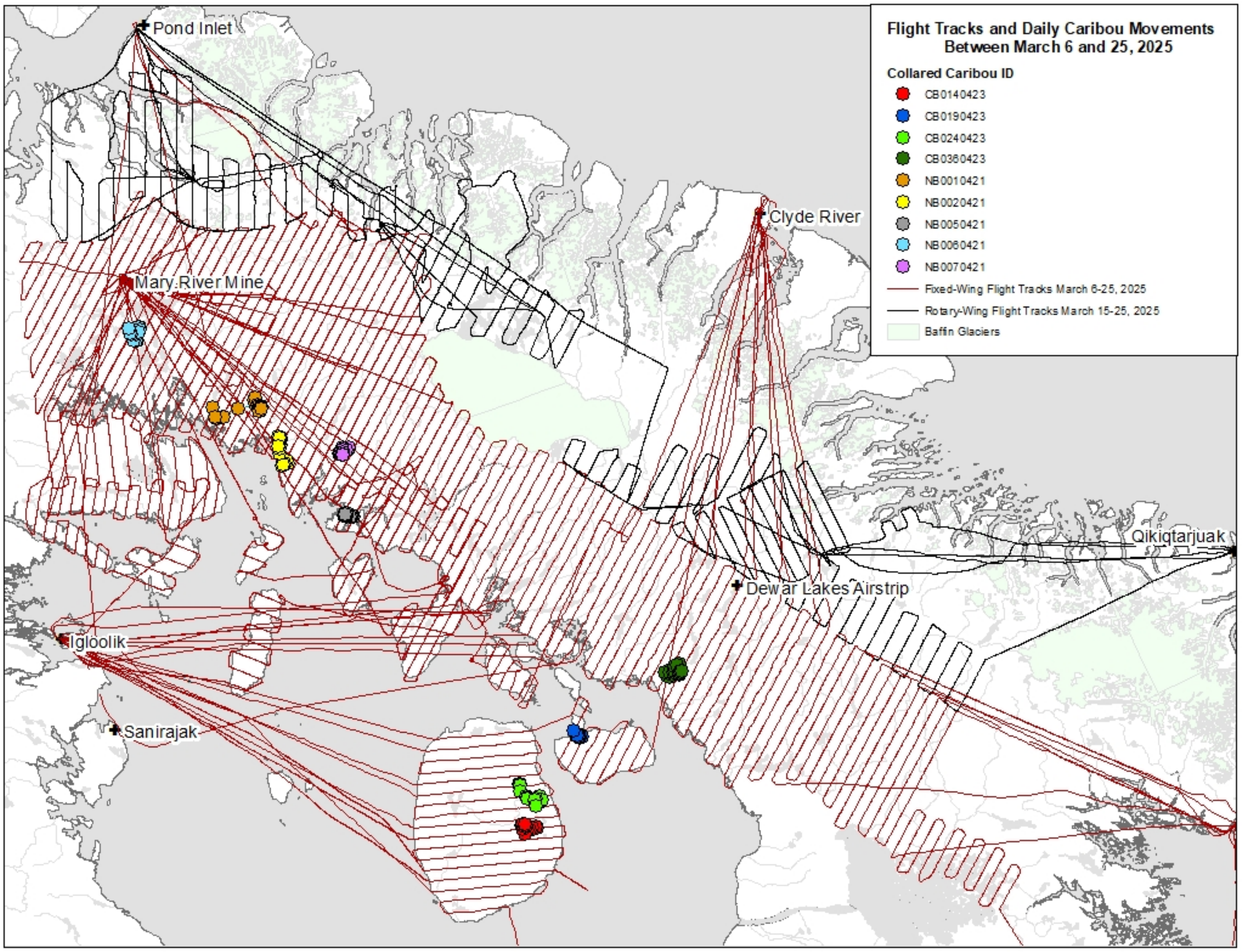


Figure 9. Survey flight tracks and collared caribou daily movements between March 6 and 25th, 2025. Note that movement rates of all collared caribou were very restricted during the survey period suggesting weather delays had little impact on cross-transect movements.

4.2 Double Observer and Distance Analysis

4.2.1 Double Observer and Distance Analysis (2024)

Double Observer Summary

Overall, there were 13 observer pairings of which 7 switched places (as required by the dependent observer method) (**Table 4**). Two of the pairings were in the helicopter where the pilot and data recorder were primary observers therefore not allowing switching. Pair number 11 was a data recorder who also served as a primary observer for some time periods again making it not possible to switch.

Of interest was the detection of weak observer pairs that missed a substantial portion of caribou as indicated by larger frequencies of observations only seen by data recorders. Data screening suggested that there were 2 pairs (5 and 6) that missed substantial frequencies of caribou as indicated by the relative difference of detection probabilities estimated with and without data recorder observations included. Often these pairs had higher double observer detection probabilities since often the pairs missed the same caribou (that were observed by the data recorder), therefore causing an unrealistically high detection probability estimate (given the number of caribou not observed compared to other pairs) (**Figure 10**). To offset this issue, the 2 observers were treated as a primary observer, and the recorder was treated as the secondary observer. This allowed inclusion of these observations for the weak observer pairs with a covariate to describe unique observer pair detection probabilities. Other data recorder observations from other pairs were not included in the analysis.

Another challenge to the analysis was low detection probabilities for the helicopter observer pairs (9 and 13). This was likely due to the pilots and data recorders being distracted by other factors and therefore not able to provide constant sighting effort. The challenge was that by not switching, the estimate of detection probabilities for the observer pair was based solely on the primary observers with the dependent method (which assumes equal primary and secondary observer probabilities). This likely caused a negative bias in detection probabilities and potentially a positive bias in estimates. Use of distance sampling only, which does not attempt to estimate detection based on double observer data, was used as a means to offset this issue.

An added challenge to the analysis was observer pair 11 which was a data recorder who also served as a primary observer. This observer pairing also had lower detection probabilities, which were hard to assess given that the primary observer never switched with the secondary observer. It is assumed in this case that this pair had lower detection probabilities than many of the other pairs (which were modelled using an observer pair covariate).

Table 4. Summary of double observer pair data. P1x is the single observer sighting probability and p2x is the double observer probability. Data is summarized for double observer only data and double observer with data recorder observations as indicated by _nodr and _dr suffixes respectively.

Pair	Switched?	Frequencies				Naïve detection probabilities			
		Front	Rear	Both	DataRec	P1x_nodr	P1x_dr	p2x	p2x_dr
2	yes	1	4	14	0	0.79	0.79	0.96	0.96
3	yes	17	20	92	13	0.84	0.77	0.98	0.95
4	yes	30	35	87	5	0.77	0.75	0.95	0.94
5	yes	27	4	99	37	0.97	**0.75**	1.00	0.94
6	yes	14	6	39	**45**	0.90	**0.51**	0.99	0.76
7	yes	4	6	15	2	0.76	0.70	0.94	0.91
8	no	1	1	6	0	0.88	0.88	0.98	0.98
9	no (heli)	18	32	18	0	0.53	**0.53**	0.78	0.78
10	no	5	6	21	0	0.81	0.81	0.96	0.96
11	no (data recorder & observer)	8	13	10	0	0.58	**0.58**	0.82	0.82
12	no	20	7	53	0	0.91	0.91	0.99	0.99
13	no (heli)	11	34	18	0	0.46	**0.46**	0.71	0.71

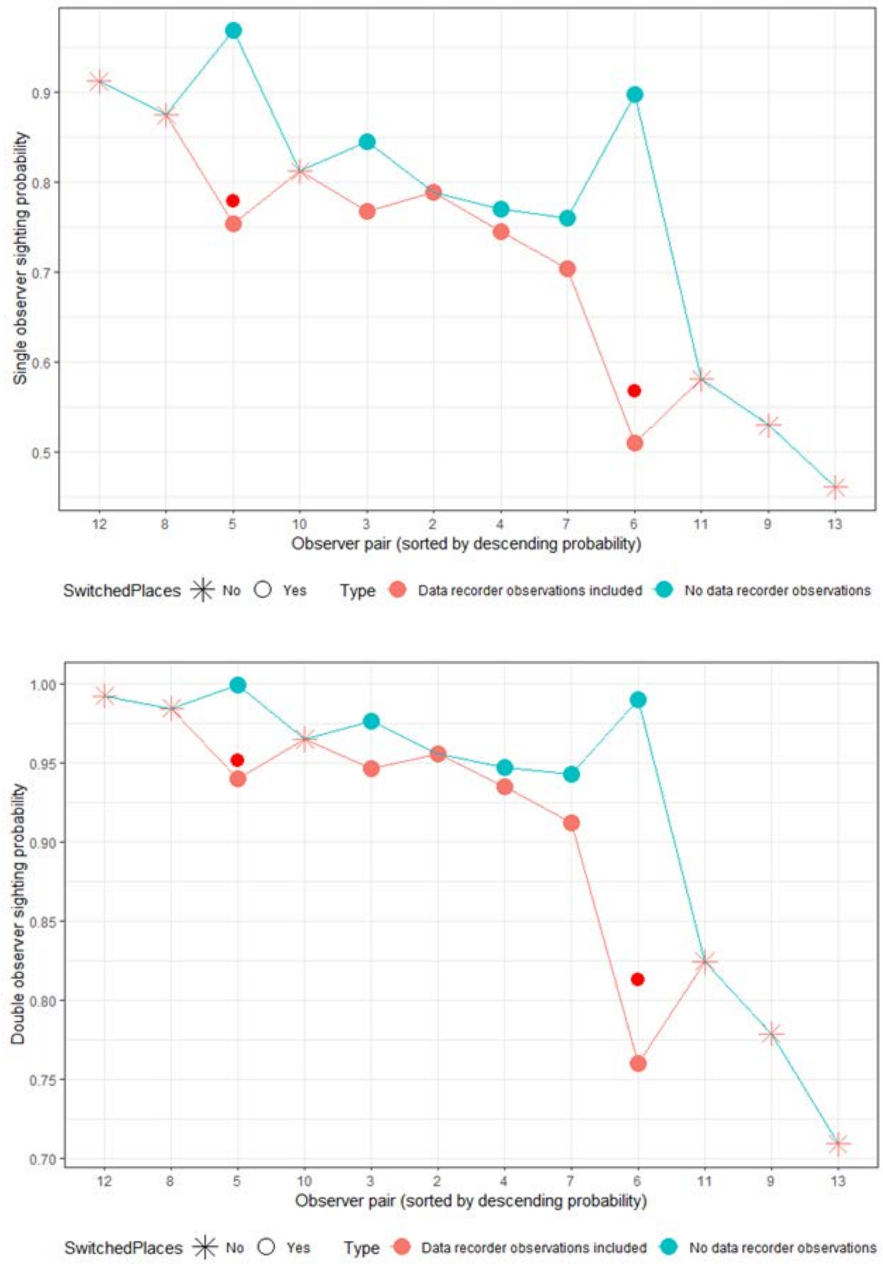


Figure 10. Graphical representation of double observer detection probabilities by observer pairs. The red dots indicate detection probabilities for applicable pairs where the 2 observers were primary, and the data recorder was considered the secondary observer.

Distance Sampling Summary

As would be expected, the detection histogram of observations was highest in the closest bin with a steady decline to the furthest bin. Detection histogram suggests that observers were attentive to the closest bin near the plane; an improvement from past surveys (**Figure 10**). The shape of detection histograms by aircraft type were different with a more pronounced shoulder for the helicopter which was likely due to clumping of caribou groups into small patches of suitable habitat but could also have been due to differences in the recording of caribou groups and associated coordinates (**Figure 11**). In addition, as noted earlier, most observations were only detected by a single observer for the helicopter in comparison to the twin otter fixed wing. This was likely due to the observer configuration. Due to the difference in both detection histogram shape and double observer data, it was decided to analyze the helicopter and fixed wing as separate data sets.

The effect of group size on detection histograms was less pronounced (**Figure 12**). Lower sample sizes made it more difficult to interpret helicopter observations. Cloud cover had a potential effect of broadening the detection histogram for fixed wing aircraft at higher cloud cover levels (**Figure 13**). A broadening of the detection shoulder with higher snow cover was also suggested, however the effect was minimal (**Figure 14**). The combined effect of snow and cloud is shown by the product of the two covariates. The detection histogram is flattened at higher levels of both cloud and snow cover (**Figure 15**).

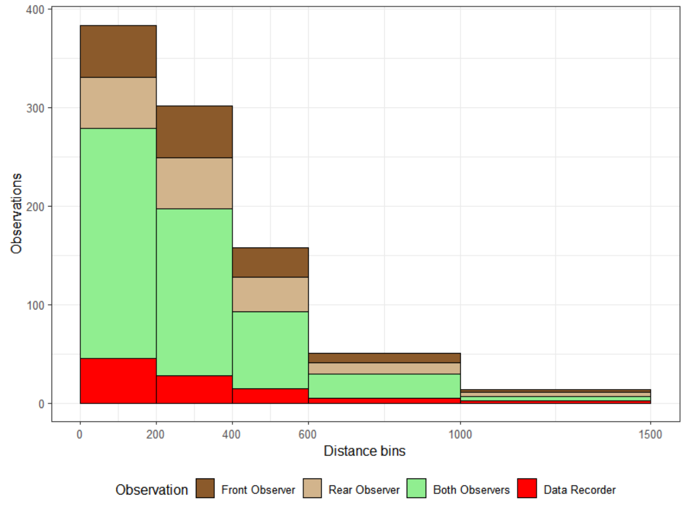


Figure 10. Histograms of detections as a function of distance from fixed wing aircraft. Observations are also color-coded by observation type. Observation frequencies are adjusted based on bin widths.

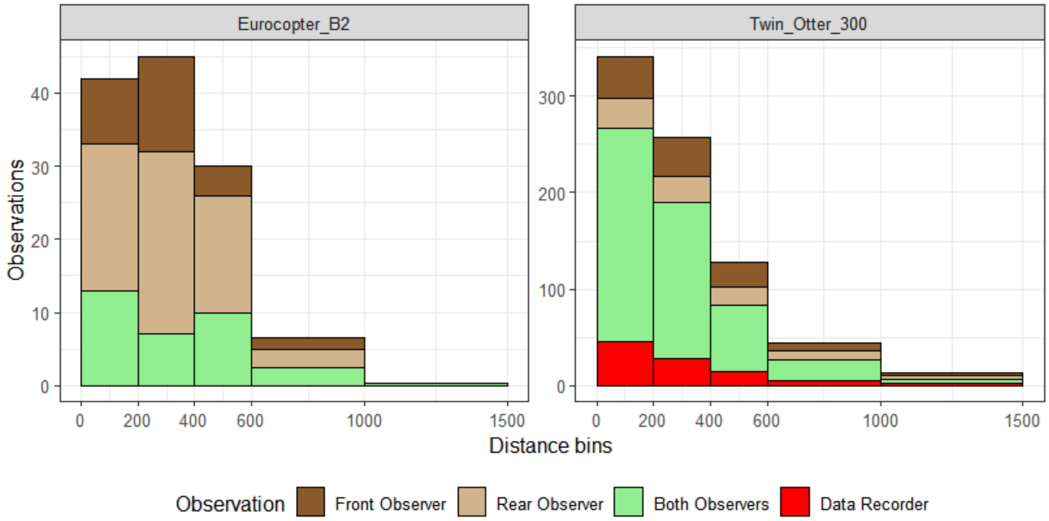


Figure 11. Histograms of detections as a function of distance from plane for aircraft type. Observations are also color-coded by observation type. Observation frequencies are adjusted based on bin widths. Note the different y-axis scales.

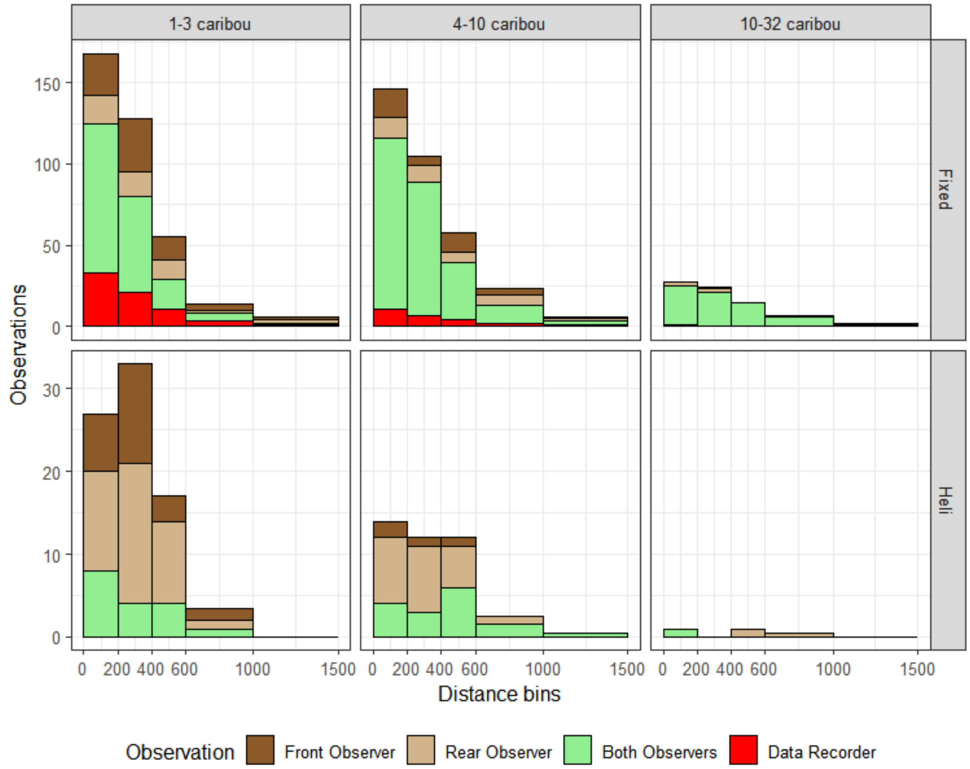


Figure 12. Histograms of detections as a function of group size and observation type. Observation frequencies are adjusted based on bin widths. Note the different y-axis scales.

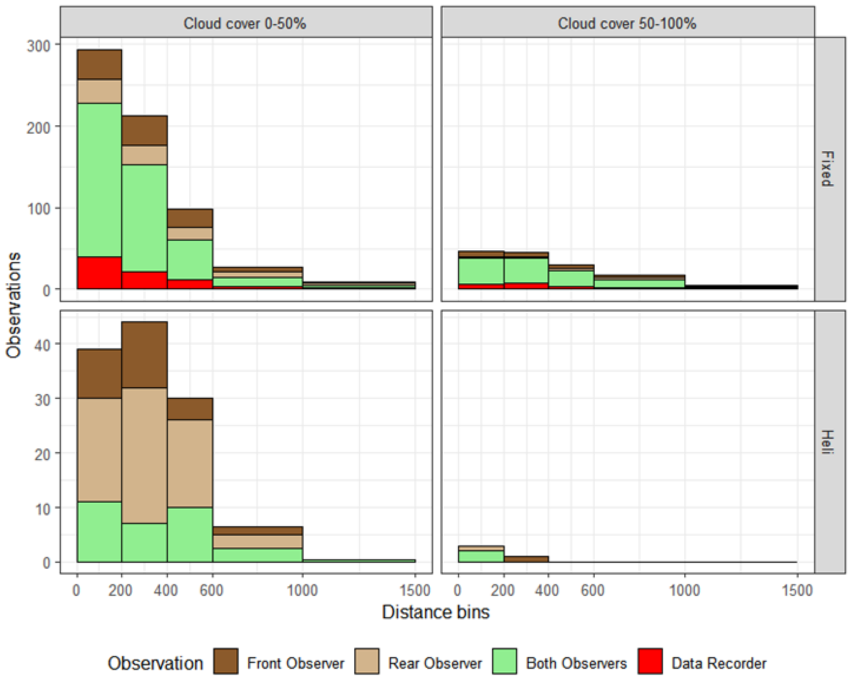


Figure 13. Detection histograms as a function of cloud cover. Observation frequencies are adjusted based on bin widths. Note the different y-axis scales.

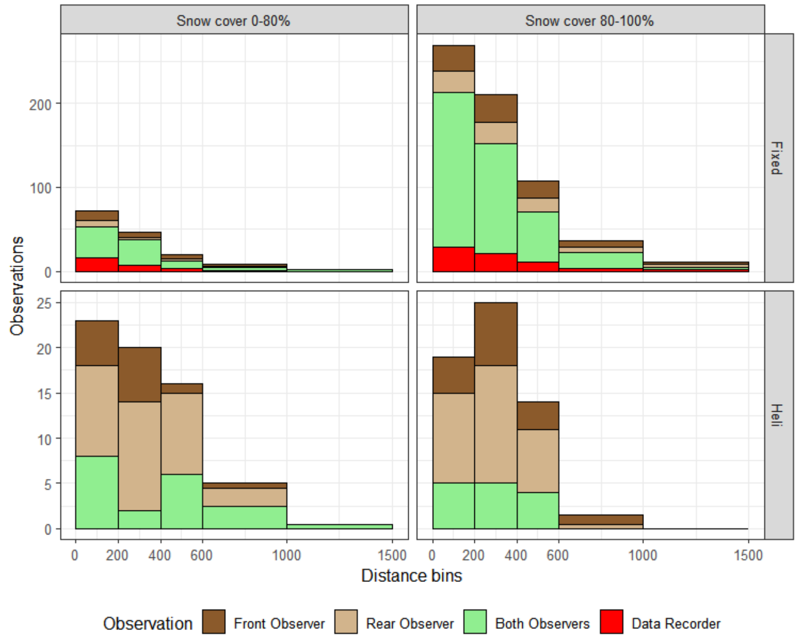


Figure 14. Detection histograms as a function of snow cover. Observation frequencies are adjusted based on bin widths. Note the different y-axis scales.

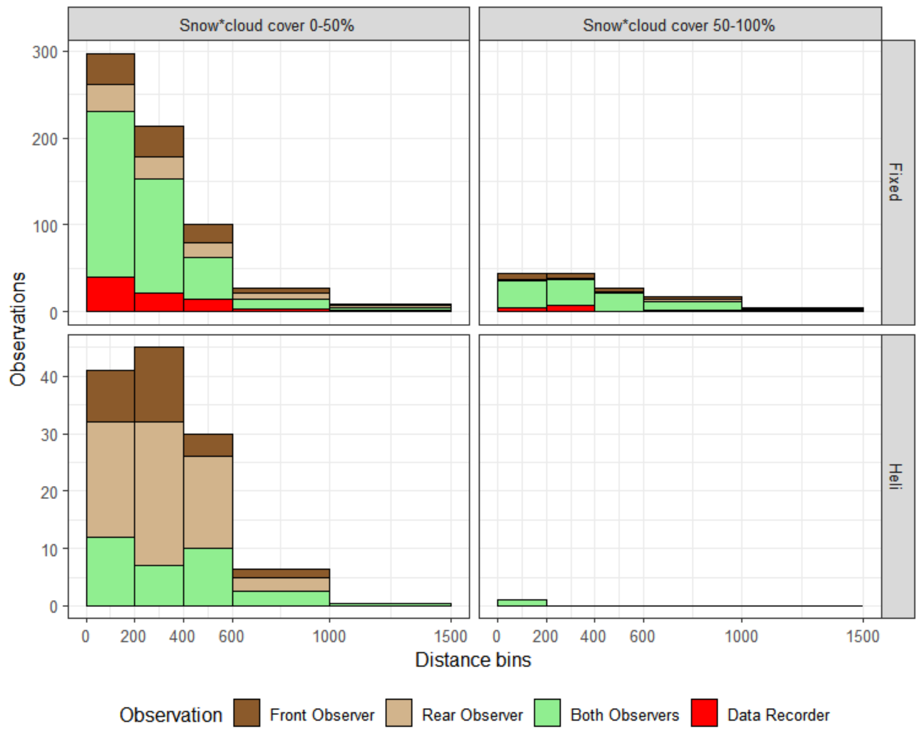


Figure 15. Detection histograms as a function of the product of cloud and snow cover. Observation frequencies are adjusted based on bin widths. Note the different y-axis scales.

Model Selection Fixed Wing

Initial model selection tested whether hazard rate or half normal detection functions were more supported by the data. For this study hazard rate was more supported even when group size was considered (**Tables 5 and 6**, model 12). Of the covariates considered, univariate snow and cloud were supported with an additive snow and cloud covariate model (model 1) showing the most support. Interestingly, group size was not supported as a covariate suggesting good sightability conditions within all fixed-wing survey strata. Observer-specific detection histograms were also considered; however, model convergence was marginal as shown by large standard errors on beta terms and therefore these models were not considered especially representative since adequate model fit was achieved with the set of covariates that were used. For the double observer model selection, observers (with a focus on weaker observers that displayed lower detection probabilities than other observers), distance, and the log of group size were supported. The support of distance suggested that detection from observers showed some level of independence at further survey bins resulting in decreasing double observer probabilities.

A plot of the pooled detection function for model 1 (**Table 5 and 6**) suggests that the detection of caribou on the line (distance=0) was close to 1 with a shoulder of constant detection to approximately 200m after which it declined to 0.0 at the furthest bin (**Figure 16**). The actual estimate of detection on the line was 0.94 (SE=0.04). The fit of the distance detection function was adequate with a chi-square of 4.87. However, degrees of freedom were 0 due to covariates used to estimate the detection function. The base hazard rate model with no covariates did significantly fit the data with a chi-square value of 0.79, (df=1, p=0.49).

Visual inspection of the fit of the data to the mark-recapture component of the model (**Figure 17**) suggests adequate fit, however, chi-square values suggested marginal fit (chi-square=16.5, df=5, p=0.005). The main lack of fit was an underestimate of observations seen only by the secondary observer. The likely cause of this would be heterogeneity of sighting probabilities caused by the periodic inability to switch observers. Sensitivity analyses were conducted, including consideration of estimates with no mark-recapture component (using distance sampling only, therefore assuming detection is 1 at the closest survey bin) to better understand implications of lack of fit.

Table 5. Univariate model selection for distance sampling covariates for the 2024 fixed wing data set. The distance sampling detection function (DF: hr-hazard rate, hn-Half normal) is shown along with the distance and double observer model. A constant intercept double observer model was used for all analysis. Sample size adjusted Akaike Information Criterion (AICc), the difference in AICc between the most supported model for each model (∆AICc), AICc weight (wi), number of model parameters (K) and deviance is given. Constant models are shaded for reference.

No	DF	Distance model	AIC_c	ΔAIC_c	w_i	K	LL
1	hr	snow + cloud	3109.30	0.00	0.56	5	-1549.6
2	hr	snow + cloud + snowloud	3110.45	1.15	0.31	6	-1549.2
3	hr	snowloud	3114.26	4.96	0.05	4	-1553.1
4	hr	cloud	3114.77	5.47	0.04	4	-1553.4
5	hr	logsize + snowloud	3116.05	6.75	0.02	5	-1553.0
6	hr	logsize + cloud	3116.53	7.23	0.02	5	-1553.2
7	hr	logsize + cloud + snowloud	3118.08	8.78	0.01	6	-1553.0
8	hr	cloud_factor	3120.72	11.42	0.00	6	-1554.3
9	hr	weakobs	3127.13	17.83	0.00	4	-1559.5
10	hr	snow	3140.26	30.96	0.00	4	-1566.1
11	hr	snow_factor	3143.77	34.46	0.00	5	-1566.8
12	hr	constant	3146.88	37.58	0.00	3	-1570.4
13	hr	logsize	3147.22	37.92	0.00	4	-1569.6
14	hr	DataRecObs	3148.11	38.81	0.00	4	-1570.0
15	hr	size	3148.31	39.01	0.00	4	-1570.1
17	hr	SnowPatch	3148.38	39.08	0.00	6	-1568.1
18	hn	constant	3176.39	67.09	0.00	2	-1586.2
19	hn	size	3177.18	67.88	0.00	3	-1585.6

Table 6. Model selection for double observer and combined distance sampling/double observer covariates for the 2024 fixed wing data set. The distance sampling detection function (DF: HR-hazard rate, HN-Half normal) is shown along with distance and double observer model. Sample size adjusted Akaike Information Criterion (AICc), the difference in AICc between the most supported model for each model (∆AICc), AICc weight (w_i), number of model parameters (K) and deviance is given. Constant mark-recapture models are shaded for reference.

No	DF	Distance model	MR/2x model	AIC_c	ΔAIC_c	w_i	K	LL
1	hr	snow + cloud	ob6 + ob11 + distance + logsize	3070.31	0.00	0.62	9	-1526.0
2	hr	snow + cloud	ob6 + ob11 + distance + size	3071.64	1.32	0.32	9	-1526.7
3	hr	snow + cloud	ob6 + distance + logsize	3075.95	5.63	0.04	8	-1529.9
4	hr	snow + cloud	ob6 + ob11 + distance	3077.24	6.92	0.02	8	-1530.5
5	hr	snow + cloud	ob6 + ob11	3082.67	12.35	0.00	7	-1534.3
6	hr	snow + cloud	ob5 + ob6 + ob11	3082.90	12.59	0.00	8	-1533.4
7	hr	snow + cloud	weakobs	3091.95	21.63	0.00	6	-1539.9
8	hr	snow + cloud	distance + logsize	3093.30	22.99	0.00	7	-1539.6
9	hr	snow + cloud	logsize	3098.77	28.46	0.00	6	-1543.3
10	hr	snow + cloud	size	3100.48	30.17	0.00	6	-1544.2
11	hr	snow + cloud	SnowPatchF	3101.27	30.96	0.00	8	-1542.5
12	hr	snow + cloud	distance	3104.54	34.23	0.00	6	-1546.2
13	hr	snow + cloud	snowloud	3107.51	37.20	0.00	6	-1547.7
14	hr	snow + cloud	cloud	3107.87	37.56	0.00	6	-1547.9
15	hr	snow + cloud	snow	3108.67	38.35	0.00	6	-1548.3
16	hr	snow + cloud	constant	3109.30	38.99	0.00	5	-1549.6

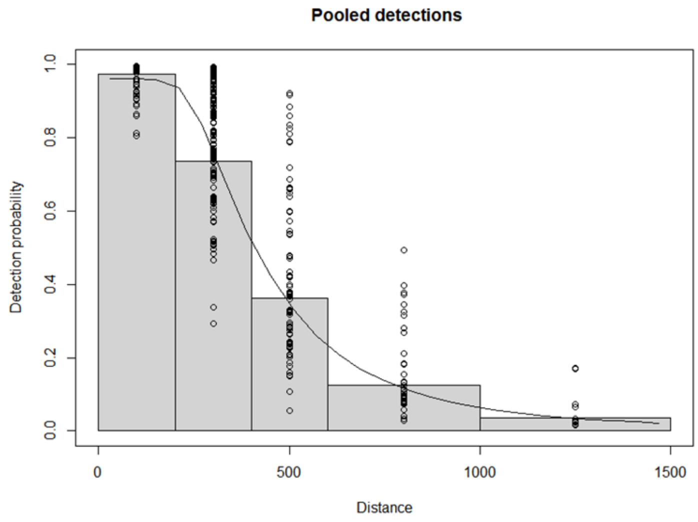


Figure 16. Fitted detection function for the most supported MRDS model for the fixed wing data set.

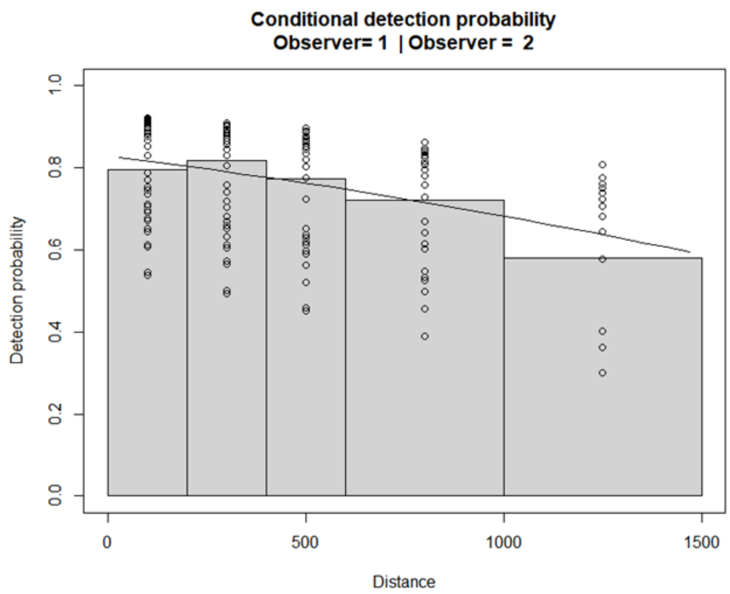


Figure 17. Fit of fixed wing mark-recapture double observer model for the fixed wing data set.

Model Selection Helicopter

Lower sample sizes of observations (131 observations) precluded consideration with more elaborate distance sampling models with the helicopter-only data set (**Table 7**). Models with more than 1 covariate did not converge and therefore univariate models were considered. Of detection functions, the hazard rate was most supported (model 6). A model with cloud cover as a covariate was most supported. A plot of the detection function shows a broader shoulder extending partially across the 200-400m survey sighting range. Model fit was adequate (chi-square=0.513, df=1, p=0.47) as indicated by chi-square tests (**Figure 18**).

Table 7. Model selection for distance sampling covariates for the 2024 helicopter data set. The distance sampling detection function (DF: hr-hazard rate, hn-Half normal) is shown along with the distance and double observer model. Sample size adjusted Akaike Information Criterion (AICc), the difference in AICc between the most supported model for each model (ΔAICc), AICc weight (wi), number of model parameters (K) and deviance is given. Constant models are shaded for reference.

No	DF	Model	AIC_c	ΔAIC_c	w_i	K	LL
1	hr	cloud	344.70	0.00	0.60	3	-169.3
2	hr	snowloud	345.72	1.02	0.36	3	-169.8
3	hr	size	352.75	8.05	0.01	3	-173.3
4	hr	snow	353.07	8.37	0.01	3	-173.4
5	hr	logsize	354.18	9.48	0.01	3	-174.0
6	hr	constant	354.43	9.73	0.00	2	-175.2
7	hn	size	355.82	11.12	0.00	2	-175.9
8	hr	SnowPatch	356.01	11.31	0.00	5	-172.8
9	hn	constant	356.34	11.64	0.00	1	-177.2

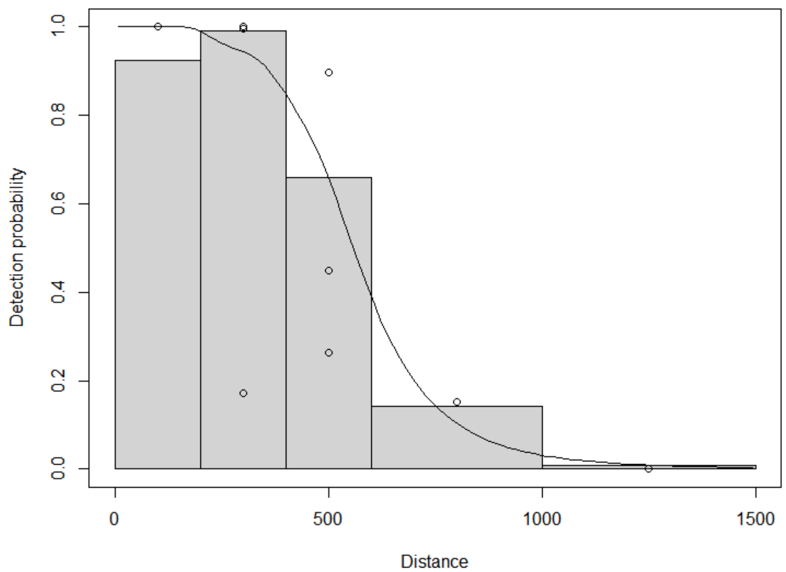


Figure 18. Fit of helicopter data set to distance sampling data.

4.2.2 Double Observer and Distance Analysis (2025)

Double Observer Summary

There were 45 combinations of observers during the 2025 survey (when accounting for primary/secondary ordering of observers). Summaries of the 2025 double observer data resulted in 12 pairs that switched with the remaining observer combinations not switching **(Table 8).** Of the 12 that switched, 2 pairings did not have sufficient sample sizes and were pooled into a single pair which resulted in 11 pairs. The remainder of the observers that did not switch were grouped into a single observer pair (12 in **Table 8**). The helicopter crew was considered as a single pairing (13 in **Table 8**), given that they were not able to switch and therefore did not have a pairing that could be modelled using double observer methods.

Plots of detection probabilities reveal weak pairings using either data recorder observation or observations without data recorder augmentation **(Figure 19).** More exactly, pairs 2 and 7 had lower detection probabilities (without data recorder observations added), and pairs 8 to 11 had lower detection when data recorder observations were added. To offset this issue, data recorder observations were used as the 2nd observer observations for pairs 8 to 11. A “weak observer pair” covariate was used to potentially account for weak probabilities for pairs 2 and 7.

Table 8. Summary of double observer pair data for 2025. P1x is the single observer sighting probability and p2x is the double observer probability. Data is summarized for double observer only data and double observer with data recorder observations as indicated by _nodr and _dr suffixes.

Pair	Switched?	Frequencies				Naïve detection probabilities			
		Front	Rear	Both	DataRec	P1x_nodr	P1x_dr	p2x	p2x_dr
1	yes	10	40	17	3	0.75	0.71	0.94	0.92
2	yes	1	10	12	1	0.48	0.46	***0.73***	***0.71***
3	yes	6	54	4	0	0.94	0.94	1.00	1.00
4	yes	1	33	2	1	0.94	0.92	1.00	0.99
6	yes	2	30	3	7	0.91	0.76	0.99	0.94
7	yes	6	13	27	0	0.41	0.41	***0.66***	***0.66***
8	yes	4	19	2	9	0.92	***0.68***	0.99	0.90
9	yes	3	16	4	8	0.83	***0.61***	0.97	0.85
10	yes	4	24	5	11	0.85	***0.64***	0.98	0.87
11	yes	3	30	3	19	0.92	***0.60***	0.99	0.84
12	no (pooled)	94	128	53	17	0.81	0.76	0.96	0.94
13	no (heli)	16	8	12	0	0.67	0.67	0.89	0.89

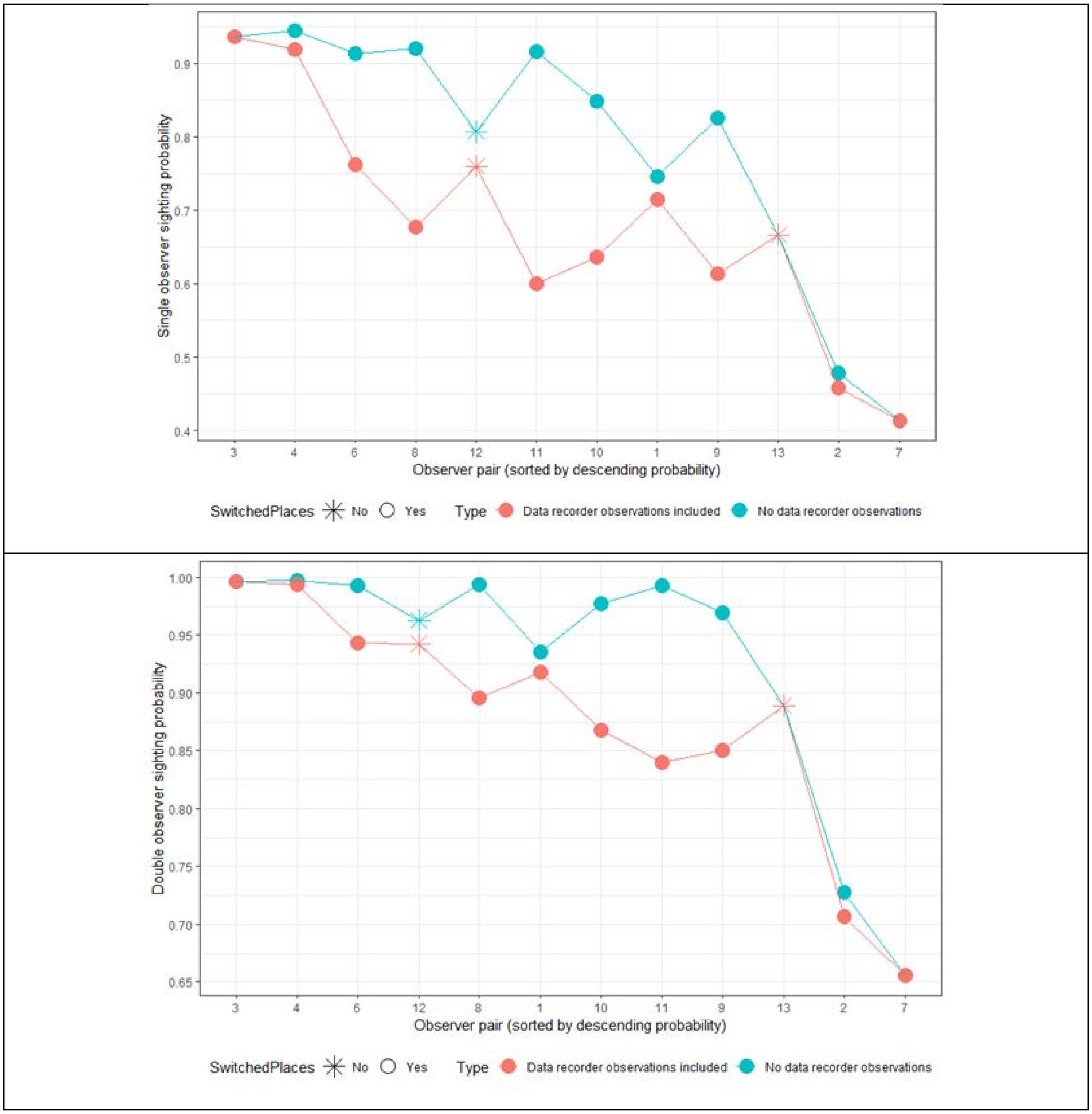


Figure 19. Graphical representation of double observer detection probabilities by observer pairs for 2025. The red dots indicate detection probabilities for applicable pairs where the 2 observers were primary, and the data recorder was considered the secondary observer.

Distance Sampling Summary

As for the 2024 analysis, the detection histogram of observations was highest in the closest bin, with a steady decline to the furthest bin, though sparse sample sizes precluded solid evaluation of a detection histogram for the Eurocopter B-2 helicopter (**Figure 20 and 21**). To confront this, we combined the 2024 and 2025 helicopter observation data for the analysis of the 2025 data set as detailed later in this report (Figure 29).

For the fixed-wing analysis, smaller group sizes appeared to have a more pronounced shoulder compared to larger group sizes for the fixed wing (**Figures 21 and 22**). Cloud cover had a potential effect of broadening the detection histogram for fixed wing aircraft at higher cloud cover levels (**Figure 23**). A broadening of the shoulder with higher snow cover was also suggested; however, the effect was minimal (**Figure 24**). The combined effect of snow and cloud is shown by the product of the two covariates. It can be seen that the detection histogram is flattened at higher levels of both cloud and snow cover (**Figure 25**).

In previous analyses of central Baffin strata, Prince Charles Island (sampled in 2014 and again in 2025) and characterized by its flat topography and almost continuous cover of snow, had higher sightability compared to other strata. Inspection of detection histograms for 2025 also suggests a broader shoulder with a higher proportion of observations in further survey bins (**Figure 26**).

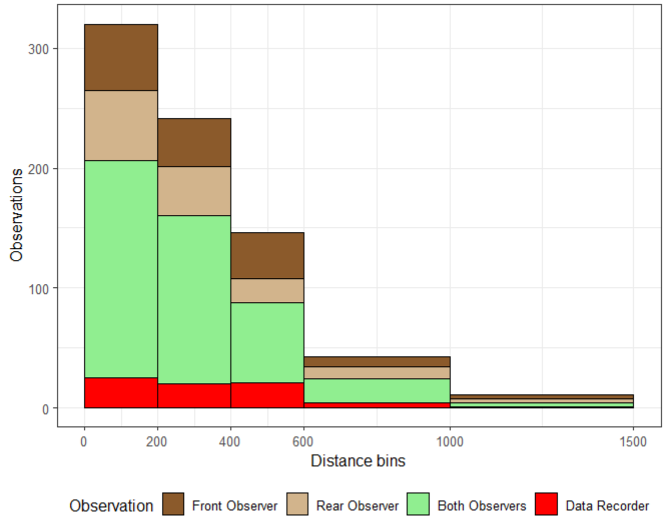


Figure 20. Histograms of detections as a function of distance from fixed wing for 2025. Observations are also color-coded by observation type. Observation frequencies are adjusted based on bin widths.

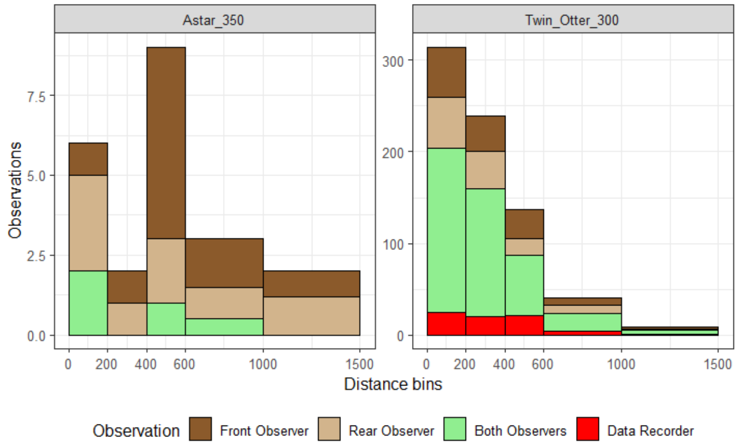


Figure 21. Histograms of detections as a function of distance from plane for 2025 aircraft type. Observations are also color-coded by observation type. Observation frequencies are adjusted based on bin widths. Note the different y-axis scales.

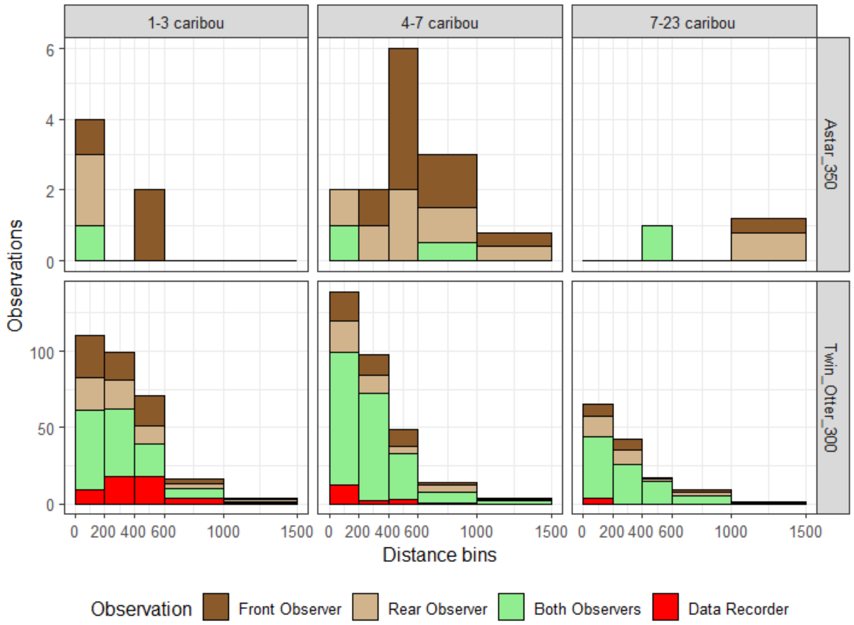


Figure 22. Histograms of detections as a function of group size and observation type for the 2025 survey. Observation frequencies are adjusted based on bin widths. Note the different y-axis scales.

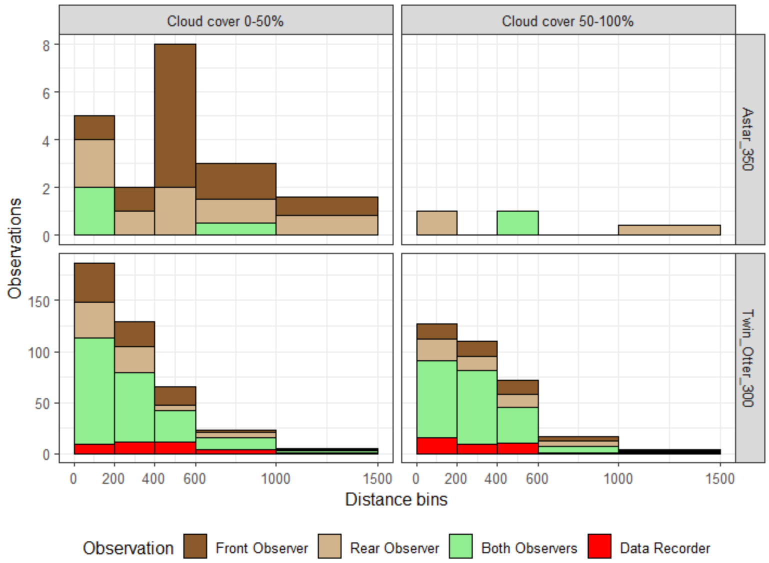


Figure 23. Detection histograms as a function of cloud cover for 2025. Observation frequencies are adjusted based on bin widths. Note the different y-axis scales.

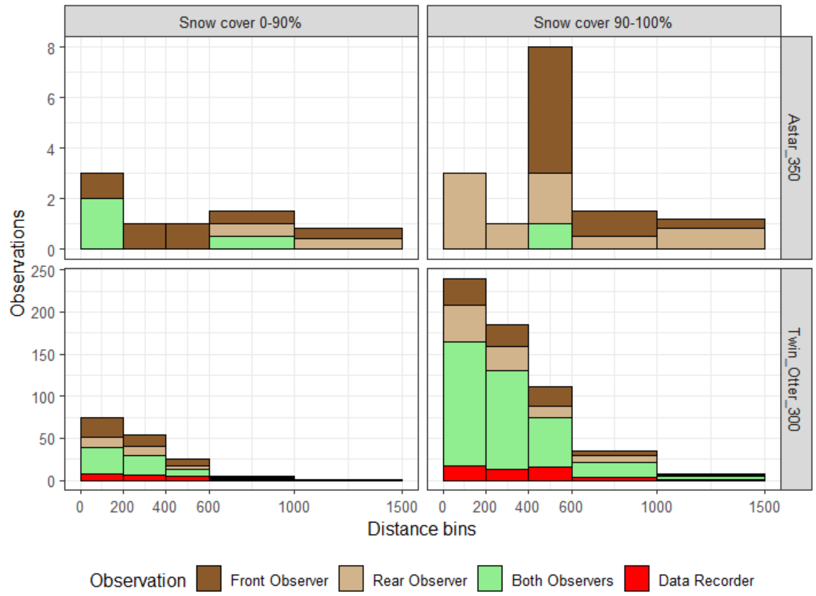


Figure 24. Detection histograms as a function of snow cover for 2025. Observation frequencies are adjusted based on bin widths. Note the different y-axis scales.

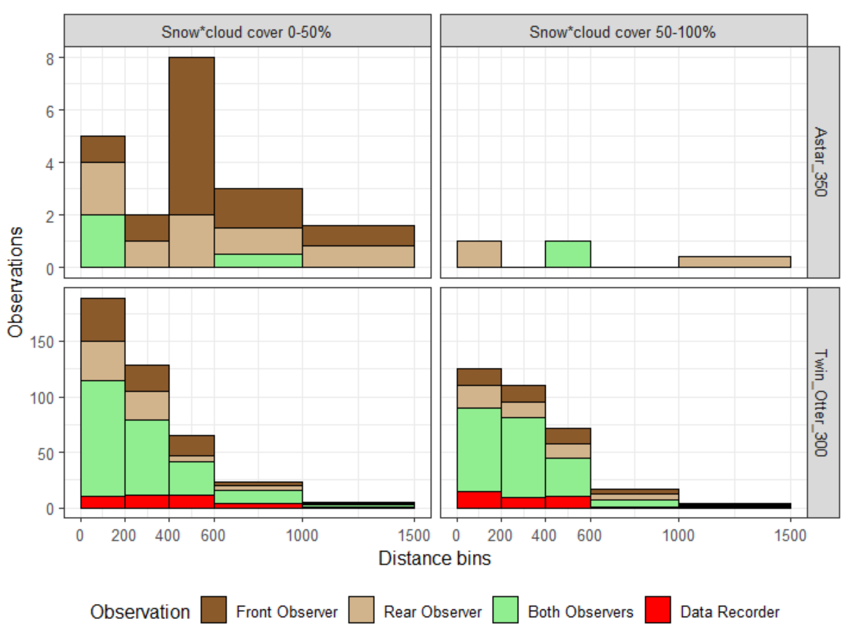


Figure 25. Detection histograms as a function of the product of cloud and snow cover for 2025. Observation frequencies are adjusted based on bin widths. Note the different y-axis scales.

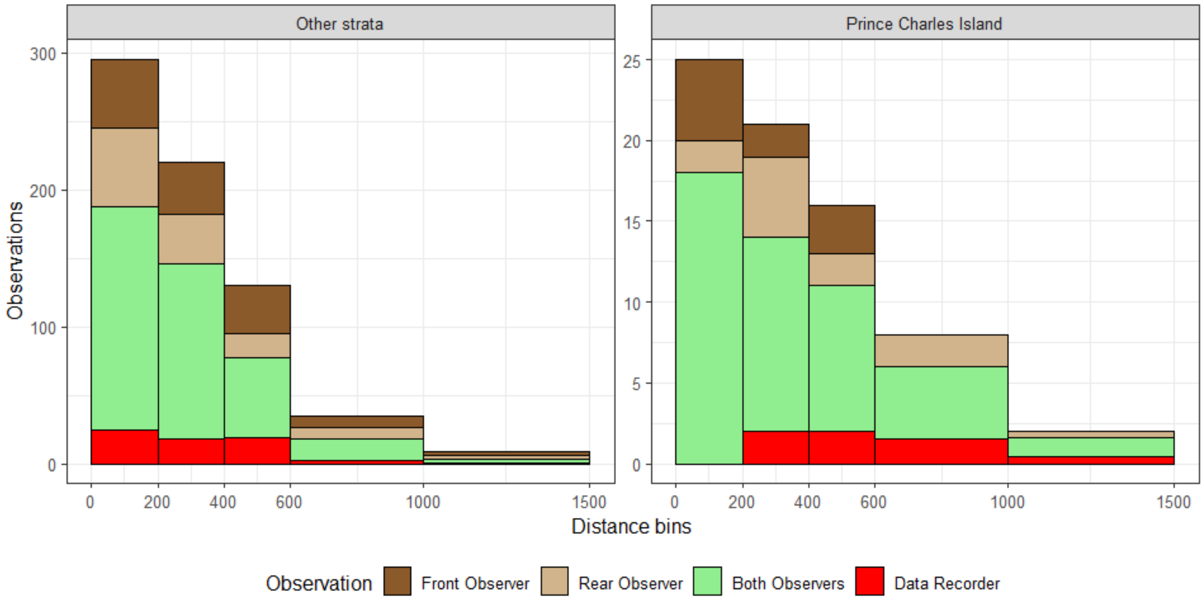


Figure 26. Detection histograms as a function of the product whether observations occurred on Prince Charles Island for 2025 survey. Observation frequencies are adjusted based on bin widths. Note the different y-axis scales.

Model Selection Fixed Wing

Model selection for the fixed wing aircraft initially focused on detection function choice, with a hazard rate model **(Table 9**: Models 6 and 15**)** being most supported in comparison to a half-normal detection function. The most supported model (Model 1) had group size, cloud cover, snow patchiness, and Prince Charles Island (PCI) as supported covariates. The most supported distance model was then used for mark-recapture model selection. Distance, the log of group size was more supported than a constant model **(Table 10).** A DRPair covariate, which was for lower detection probability observers, was not supported, suggesting that the amount of variation caused by these observers was minimal.

The fit of the MRDS model was good, as indicated by plots of the data relative to detection histograms **(Figure 27).** Chi-square tests for the distance portion had 0 degrees of freedom, precluding a p-value for the test; however, the overall chi-square was 3.6, suggesting a reasonable fit. Fit was also adequate to the mark-recapture portion of the MRDS model (chi-square=2.06, df=2, p=0.36) as suggested by plots of predictions compared to conditional double observer detection probabilities. Detection probabilities did decrease with distance; however, the amount was less than suggested by the distance plot **(Figure 28)** due to heterogeneity of double observer detection probabilities.

Table 9. Model selection for distance sampling covariates for the 2025 fixed wing data set. The distance sampling detection function (DF: hr-hazard rate, hn-Half normal) is shown along with the distance and double observer model. A constant intercept double observer model was used for all analysis. Sample size adjusted using Akaike Information Criterion (AICc), the difference in AICc between the most supported model for each model (ΔAICc), AICc weight (wi), number of model parameters (K) and deviance is given. Constant models are shaded for reference.

No	DF	Distance model	AIC_c	ΔAIC_c	w_i	K	LL
1	hr	size + PCI + cloud + snowpatch	2632.84	0.00	0.66	7	-1309.34
2	hr	size + PCI + snow + cloud +snowpatch	2634.43	1.60	0.30	8	-1309.12
3	hr	size + snow + cloud + snowpatch	2641.34	8.50	0.01	7	-1313.59
4	hr	size + cloud + snow	2641.75	8.91	0.01	6	-1314.82
5	hr	size + snow	2642.15	9.31	0.01	5	-1316.03
6	hr	size + PCI	2643.09	10.26	0.00	5	-1316.51
7	hr	size + snow + snowpatch	2643.15	10.32	0.00	6	-1315.52
8	hr	size + snow + cloud + snowloud	2643.26	10.43	0.00	7	-1314.56
9	hr	PCI	2645.23	12.39	0.00	4	-1318.59
10	hr	snow + cloud + snowpatch	2645.95	13.12	0.00	6	-1316.92
11	hr	snow + cloud	2646.24	13.41	0.00	5	-1318.08
12	hr	snow	2646.93	14.09	0.00	4	-1319.44
13	hr	Strata	2647.37	14.53	0.00	7	-1316.61
14	hr	snow + cloud + snowcloud	2647.45	14.61	0.00	6	-1317.67
15	hr	snowpatch	2647.82	14.98	0.00	4	-1319.88
16	hr	size	2650.43	17.59	0.00	4	-1321.19
17	hr	snow_factor	2652.38	19.55	0.00	4	-1322.17
18	hr	logsize	2653.48	20.64	0.00	4	-1322.71
19	hr	weakobs	2654.40	21.56	0.00	4	-1323.17
20	hr	constant	2654.81	21.98	0.00	3	-1324.39
21	hr	snowcloud	2655.02	22.19	0.00	4	-1323.49
22	hr	cloud	2655.34	22.50	0.00	4	-1323.64
23	hr	cloud_factor	2658.02	25.18	0.00	6	-1322.95
24	hn	size	2663.31	30.48	0.00	3	-1328.64
25	hn	logsize	2663.49	30.65	0.00	3	-1328.73
26	hn	constant	2664.11	31.28	0.00	2	-1330.05

Table 10. Model selection for double observer and combined distance sampling/double observer covariates for the 2025 fixed wing data set. For this analysis the most supported DS model (Table: size + cloud + Snowpatch+PCI) was used. Sample size adjusted Akaike Information Criterion (AICc), the difference in AICc between the most supported model for each model (ΔAICc), AICc weight (w_i), number of model parameters (K) and deviance is given. Constant mark-recapture models are shaded for reference.

No	MRmodel	AIC_c	ΔAIC_c	w_i	K	LL
1	logsize + distance	2627.82	0.00	0.32	9	-1304.8
2	PCI + logsize + distance	2628.27	0.45	0.26	10	-1304.0
3	logsize	2629.84	2.02	0.12	8	-1306.8
4	size	2630.14	2.31	0.10	8	-1307.0
5	distance	2630.33	2.50	0.09	8	-1307.1
6	constant	2632.84	5.01	0.03	7	-1309.3
7	Snow_Patchyness	2633.45	5.63	0.02	8	-1308.6
8	DRPair	2633.59	5.76	0.02	8	-1308.7
9	snowc	2634.48	6.66	0.01	8	-1309.1
10	PCI	2634.66	6.84	0.01	8	-1309.2
11	snowcloud	2634.67	6.84	0.01	8	-1309.2
12	cloudc	2634.71	6.88	0.01	8	-1309.3
13	SnowPatchF	2635.32	7.50	0.01	9	-1308.5
14	logsize + distance	2627.82	0.00	0.32	9	-1304.8

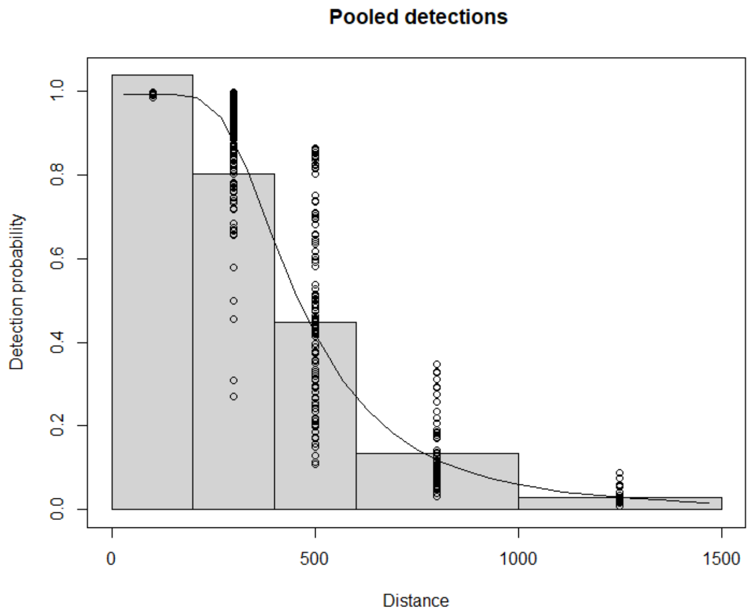


Figure 27. Fitted detection function for the most supported MRDS model for the 2025 fixed wing data set.

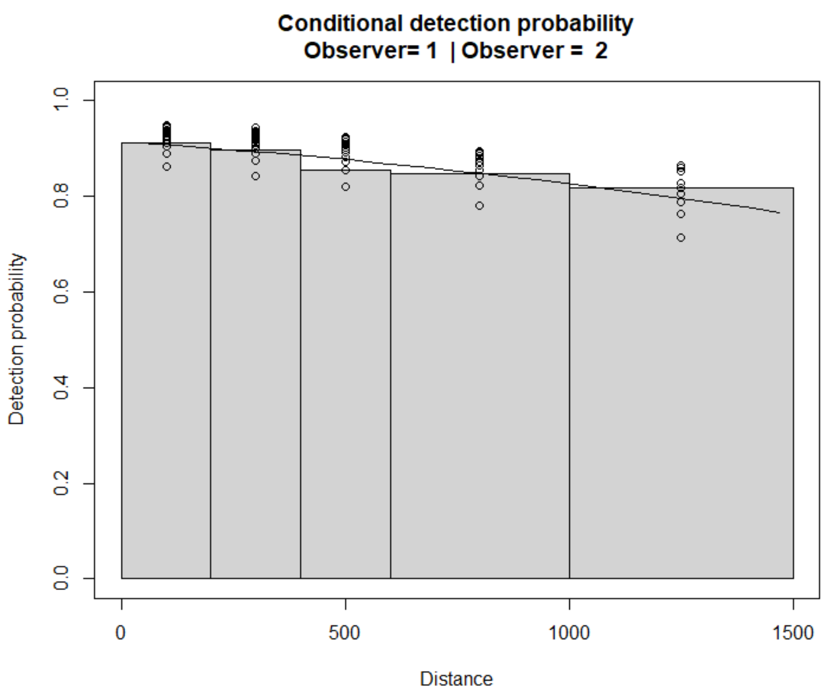


Figure 28. Fitted detection function for the most supported MRDS model for the 2025 fixed wing data set.

Helicopter Model Selection

The 2024 and 2025 helicopter data were combined for the 2025 analysis to offset low sample sizes in the 2025 data set. An additional year covariate was also added to the analysis to test potential differences in detection functions. A comparison of detection histograms **(Figure 29)** suggests proportionally more observations in the furthest survey bin in 2025; however, this may be due to low sample sizes in 2025. Model selection results suggested that the detection function scale varied by group size, year and cloud cover for helicopter observations, with the hazard rate detection function being most supported **(Table 11).** A plot of the overall detection function suggested a reasonable fit of the detection function to the data, with an overall chi-square value of 2.3 (0 degrees of freedom prevented a p-value from being developed) **(Figure 30).** The year-based covariate suggested that detection was higher for the helicopter used in 2025 compared to the same make and model of helicopter (Eurocopter B-2) used in 2024 **(Figure 31).** The effect of this covariate was a reduction in estimates for 2025 strata by approximately 20% (Model 3 vs Model 1: approximately 200 caribou). So, the net effect of using the year covariate is to make the 2025 estimate more conservative due to data deficiencies. Because of this, helicopter estimates were relatively imprecise (CV=20%) when compared with fixed wing estimates.

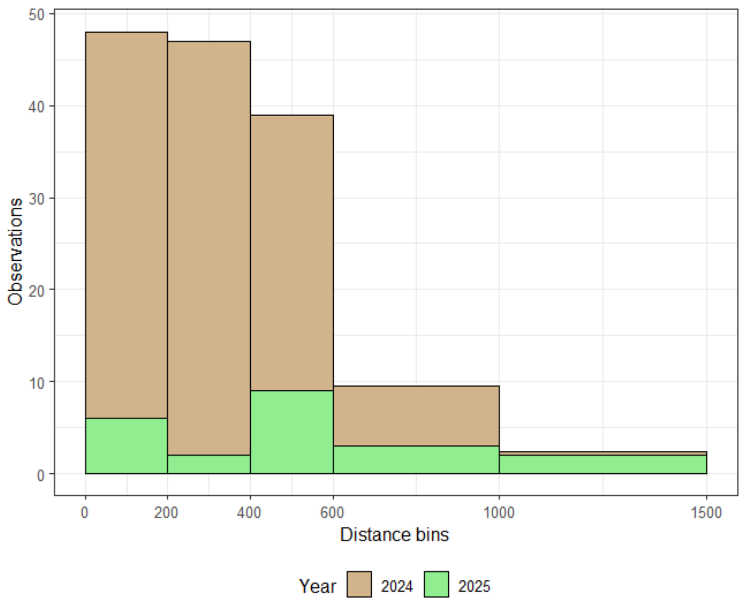


Figure 29. Detection histograms for 2024 and 2025 helicopter data sets.

Table 11. Model selection for distance sampling covariates for the 2024 and 2025 helicopter data sets. The distance sampling detection function (DF: hr-hazard rate, hn-Half normal) is shown along with distance and double observer model. Sample size adjusted Akaike Information Criterion (AICc), the difference in AICc between the most supported model for each model (∆AICc), AICc weight (wi), number of model parameters (K) and deviance is given. Constant models are shaded for reference.

No	DF	Model	AIC_c	ΔAIC_c	w_i	K	LL
1	hr	size + Year + cloud	434.98	0.00	0.59	5	-212.3
2	hr	size + Year + cloud + snowloud	436.69	1.71	0.25	6	-212.1
3	hr	size + cloud	439.23	4.25	0.07	4	-215.5
4	hr	size + Year	439.67	4.69	0.06	4	-215.7
5	hr	size + cloudc + snow	441.34	6.37	0.02	5	-215.5
6	hr	size	445.04	10.07	0.00	3	-219.4
7	hn	size	446.11	11.13	0.00	2	-221.0
8	hr	Year	448.19	13.22	0.00	3	-221.0
9	hn	Year	449.54	14.57	0.00	2	-222.7
10	hr	logsize	450.71	15.73	0.00	3	-222.3
11	hn	logsize	452.01	17.04	0.00	2	-224.0
12	hr	cloudc	458.16	23.18	0.00	3	-226.0
13	hr	snowloud	460.89	25.91	0.00	3	-227.4
14	hr	Constant	464.13	29.16	0.00	2	-230.0
15	hr	snow	466.10	31.13	0.00	3	-230.0
16	hn	Constant	466.50	31.52	0.00	1	-232.2
17	hr	SnowpatchF	469.71	34.73	0.00	5	-229.7

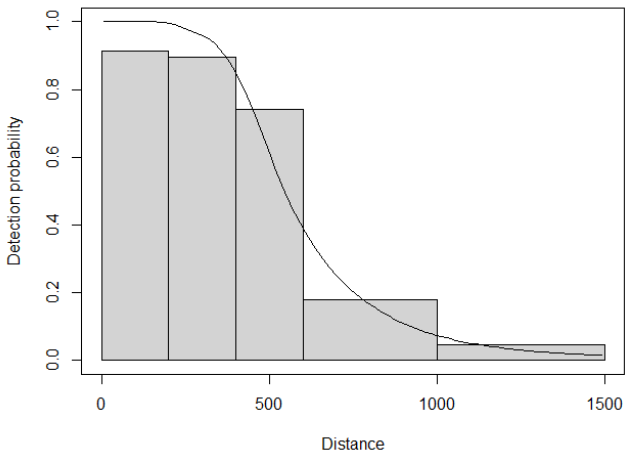


Figure 30. Fit of helicopter data set to distance sampling data for 2025.

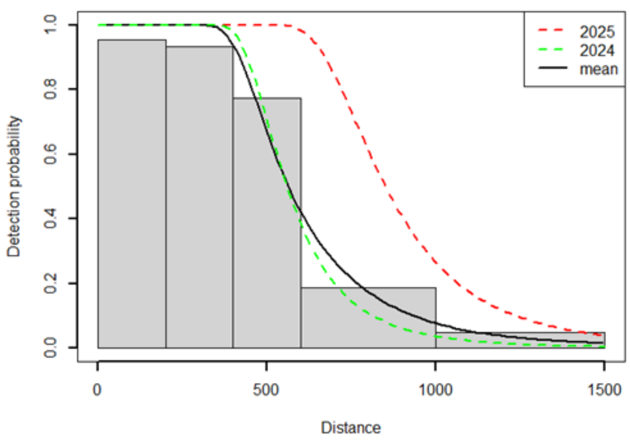


Figure 31. Comparison of detection functions for 2024 and 2025. The mean detection function and detection functions for 2024 and 2025 are shown.

4.3 Sensitivity Analysis of 2024 & 2025 Models & Data

4.3.1 Sensitivity Analysis (2024)

A sensitivity analysis was conducted for the 2024 fixed wing data set to assess sensitivity of estimates to model fit, inclusion of data recorder data, and distance sampling **(Table 6 and Figure 16).** The overall estimates from the most supported model were compared with various models and data formulations **(Table 12 and Figure 32).**

In the first analysis, we used a distance sampling only model that used estimates of the most supported distance models with no double observer model (assumed sightability=1 in the closest bin was considered). Estimates from this model were 584 caribou lower (2.4%) lower than the full MRDS model suggesting that sightability within the transect strip only reduced the estimate marginally compared to assuming it was 1. We note that this formulation also should be less sensitive to inclusion of data recorder data given that detection probabilities are not modelled; instead, it is assumed that relatively equal observer effort occurs during the survey so that the resulting detection functions apply across all observer pairs.

In the second analysis, we used a strip transect estimator that assumes sightability within the 0-400m strip. Estimates were 12% lower using this approach which was not surprising given that detection decayed after 200m based on calculated detection functions. Incorporation of double observer modelling did increase the estimate slightly (7% lower); however, it was still lower than the distance sampling only estimates.

In the third analysis, we used an estimate using the full MRDS model with all data recorder observations; with estimates being approximately 2,000 caribou (8.8%) lower than the MRDS model and 6.5% lower than the distance sampling model. This result suggests that inclusion of data recorder data for the extremely weak pairs likely offsets potential negative bias caused by larger numbers of caribou being missed by weak observer pairs.

In the fourth analysis, we used all data including data recorders, all of which was used with the most supported distance sampling model. This forth analysis was run with estimates being only 288 caribou lower (1%) than the MRDS model suggesting that just using data recorder data may be as efficient as double observer modelling.

Table 12. Sensitivity analysis of estimates of 2024 Baffin Island total estimates. The total number of caribou used in the estimate (n) is given along with each estimate (N). MRDS indicates a distance sampling/double observer model, DS indicates a distance sampling model, and DR indicates data recorder observations.

Model	n	N	SE	Conf. Limit		CV
Strip transect/Double observer	2609	22,438	1268.4	17,097	29,063	**0.057**
Strip transect	2644	21,289	1458.1	18,409	24,169	**0.068**
MRDS Fixed/DS heli-no DR observations	3614	22,056	1341.2	19,555	24,877	**0.061**
MRDS Fixed/DS helicopter	3843	24,162	1372.0	21,595	27,034	**0.057**
DS Fixed and Helicopter	3843	23,577	1362.4	21,031	26,432	**0.058**
DS Fixed and Helicopter-all DR observations	3908	23,874	1406.6	21,254	26,816	**0.059**

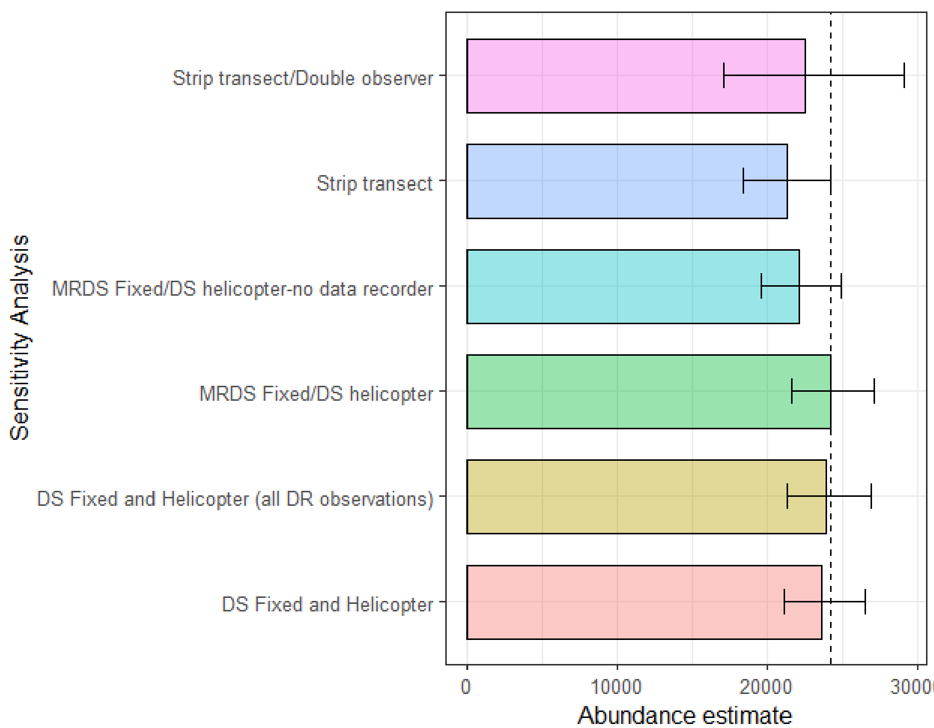


Figure 32. Graphical representation of 2024 sensitivity analysis. Dashed line indicates estimate used for analyses.

4.3.2 Sensitivity Analysis (2025)

A similar set of sensitivity analyses were conducted for the 2025 fixed wing Northern Baffin Island data set to assess the effect of inclusion of data recorder observations as well as use of distance sampling methods. Estimates were compared to the full MRDS estimate **(Table 10).** The helicopter portion of the data set, which was challenged by low sample sizes, was not used in sensitivity analyses.

As with the 2024 strip-transect/double observer results, 2025 estimates with or without data recorder observations were 10-16% lower than full data set estimates **(Table 13 and Figure 33)** demonstrating the utility of distance sampling to reduce estimate bias.

A second analysis considered the selective addition of data recorder observations used in the 2025 analysis (MRDS (selective DR obs in **Table 13**)) with no data recorder observations included (MRDS (no DR obs)). In this case estimates were 4% lower when data recorder observations were not included, suggesting that augmentation of weak observers with data recorder observations provides an effective way to offset issues with weak observers.

A final analysis compared estimates using just distance sampling with all data recorder observations (DS (all DR obs)) with the MRDS estimates with selective observations. In this case the <u>distance sampling only</u> estimates were slightly higher than the MRDS estimates, however, the difference was only 1.5%. As discussed later, this result suggests that just using distance sampling with combined data recorder and observer observations can be as effective as MRDS methods when survey conditions are favorable.

Table 13. Sensitivity analysis of estimates of 2025 Baffin Island total estimates. The total number of caribou used in the estimate (n) is given along with each estimate (N). MRDS indicates a distance sampling/double observer model, DS indicates a distance sampling model, and DR indicates data recorder observations.

Model	n	N	SE	Conf. Limit		CV
Strip transect (all DR obs)	2588	20,328	1589.9	17,177	23,480	0.078
Strip transect/Double observer	2532	21,774	1493.0	18,982	24,977	0.069
MRDS (selective DR obs)	3489	24,080	1812.2	20,739	27,958	0.075
MRDS (no DR obs)	3278	23,044	1841.3	19,668	27,001	0.080
DS (all DR obs)	3555	24,450	1942.0	20,898	28,606	0.079

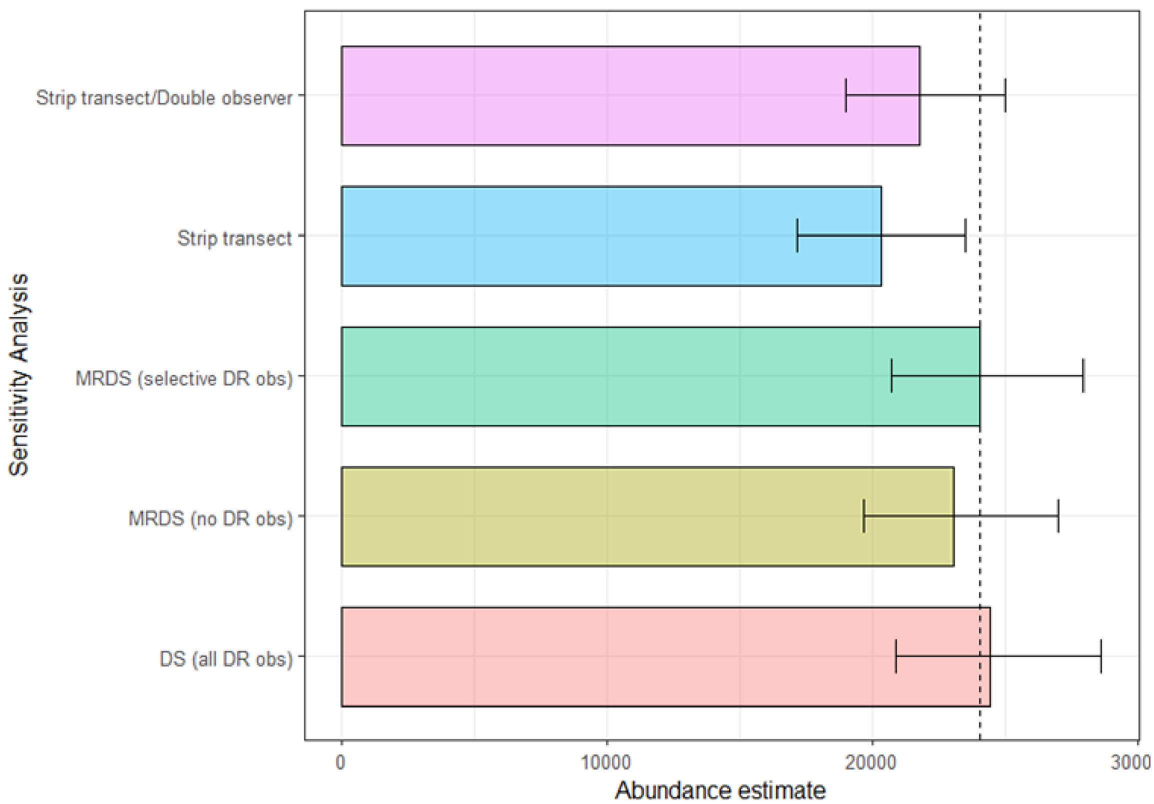


Figure 33. Graphical representation of 2025 sensitivity analysis. Dashed line indicates estimate used for analyses.

4.4 Estimates

Estimates derived from both March 2024, and 2025 surveys were analyzed separately before merging the two datasets together for a whole Baffin Island estimate. The results of these individual assessments are as follows below. However, to accurately assess the whole Island estimate, survey strata from both years would have to be merged in a way that would keep relative density assessments as mutually exclusive as possible. This process will be discussed later in this section.

4.4.1 March 2024 South Baffin Survey

March 2024 abundance estimates were derived from the most supported MRDS model for both the fixed-wing strata and the helicopter (Heli) strata (**Table 14**). Highest abundance and densities occurred on the MP-HD-FW (Meta-Incognita Peninsula High Density) where 11,694 adult, yearling, and calf caribou were estimated, followed by Hall Peninsula High Density strata (HP-HD-FW and HP-HD-H) where combined fixed wing and rotary wing methods estimated a total of 8,110 (Fixed 95% CI = 4,977-6,910; CV = 8.2%; Helicopter 95% CI = 1,572-3,207; CV = 18.0%) adults, yearlings, and calves, and finally FP-MD-FW (Fox Peninsula Medium Density), where 3,589 (95% CI = 2,558-5,035; CV = 16.1%) adults, yearlings, and calves were estimated. Overall estimates were relatively precise with the least precise estimates (highest CV's) occurring within the FP-LD-FW density stratum (with 11 on-transect caribou observations), the NLNE-LD-FW (Nettling Lake North East low density) stratum (with 66 on-transect caribou observations), and the NLN-LD-FW (Nettling Lake North low density) stratum (with 24 on-transect caribou observations) (**Table 14**). Combined these low-density strata had little influence on the overall abundance of south Baffin caribou, contributing a mean of 769 caribou to the south Baffin estimate. Higher density survey strata however were relatively precise yielding an estimate across all south Baffin survey strata of 24,162 (95% CI = 21,595-27,034; CV = 5.7%) adult, yearling, and calf caribou.

4.4.2 March 2025 Central and North Baffin Survey

Similar to March 2024, the March 2025 abundance estimates were derived from the most supported MRDS model for both the fixed-wing and the helicopter strata (**Table 14**). The NCB-HD-FW (North Central Baffin High Density Fixed-Wing) stratum recorded densities of 27.36 caribou per 100km^2 which were similar to densities to MP-HD-FW (Meta-Incognita Peninsula High Density Fixed-Wing) flown in 2024. These two strata contained the majority of caribou estimated across Baffin Island. In total 3,223 caribou were observed on transect within the NCB-HD-FW stratum which translated to an estimated total stratum abundance of 22,677 caribou (95%CI= 18,922-27,178; CV=9.2%). The estimate was precise with a CV of 8.5%. The next highest recorded densities of caribou occurred within the PCI-HD-FW (Prince Charles Island High Density Fixed-Wing) stratum where a relative density of 7.36 caribou/km^2 translated to an estimated 1,163 caribou adults, yearlings, and calves (95% CI=707-1,914; CV=24.2%), followed by the NL-LD-FW (Neergaard Lake Low Density Fixed-Wing) showing a relative density of 4.30 caribou/km2 and an estimated 164 adults, yearlings, and calves (95%CI=26 to 1,024;CV=98.5%). Both these strata produced imprecise estimates due to the relatively low sample population and as is evident by their high CVs. The remaining strata recorded 1.84 caribou/km2 within the NCB-MD-H (North Central Baffin Medium Density Helicopter), 1.61 caribou/km2 within the GF-MD-FW (Gifford Fiord Medium Density Fixed-Wing) and 0.85 caribou/km2 within the ISL-LD-FW (Western Islands Low Density Fixed-Wing)). In total these final strata accounted for 81 caribou seen on transect, yielding an estimate of 483 adults, calves, and yearlings between the three strata. Again, these estimates lacked precision, however, this lack of precision had little effect on the overall precision of the 2025 survey due to the relatively low numbers of caribou observed and estimated within these low and medium density transects when compared with the high density and high precision of the NCB-HD-FW strata and transects.

Table 14. Estimates for each stratum from the most supported MRDS model. The number of caribou counted on transect (n) is given for each stratum along with abundance estimates. Density is the abundance estimate divided by strata area X 100.

Strata	n	N	SE	Conf. Limit		CV	Density
2024							
FP-LD-FW	11	94	70.8	19	457	0.757	0.8
FP-MD-FW	650	3,589	578.8	2,558	5,035	0.161	16.6
MP-HD-FW	1,751	11,694	1041.7	9,787	13,972	0.089	28.0
NLNE-LD-FW	66	479	231.1	174	1,322	0.482	2.6
NLN-LD-FW	24	196	101.9	65	592	0.520	1.6
HP-HD-FW	909	5,864	479.8	4,977	6,910	0.082	11.7
HP-HD-H	432	2,246	403.9	1,572	3,207	0.180	11.4
Total	**3,843**	**24,162**	**1372.0**	**21,595**	**27,034**	**0.057**	
2025							
NCB-HD-FW	3,223	22,677	2081.0	18,922	27,178	0.092	27.4
GF-MD-FW	7	51	51.0	9	284	1.001	1.6
ISL-LD-FW	3	24	24.1	4	144	1.009	0.9
NL-LD-FW	18	164	162.0	26	1,024	0.985	4.3
PCI-HD-FW	238	1,163	281.5	707	1,914	0.242	7.4
NCB-HD-H	71	408	183.8	173	963	0.451	1.8
PI-LD-H	96	539	58.2	436	667	0.108	5.7
Total	**3,656**	**25,026**	**2115.8**	**21,182**	**29,568**	**0.085**	

4.4.3 Merging March 2024 and 2025 Overlapping Strata

We combined the March 2024, and 2025 caribou abundance estimates for a whole Baffin Island estimate. This analytical step was required for the development of a trend analysis utilizing the March/April 2012 South Baffin Island survey estimate, March 2014 Full Baffin Island survey estimate (Campbell et al. 2015), and the March 2024 and 2025 merged Baffin Island survey estimates (**Figure 34**). Further, and to analytically combine the 2024 Nettling Lake strata including the Nettling Lake East Low Density (NLNE-LD-FW) and the Nettling Lake Low Density (NLN-LD-FW), we analyzed their degree of overlap with the 2025 Central Baffin stratum (CB) (**Table 15**). To combine these overlapping strata estimates from the transects flown, a few modifications to the 2024 survey strata were required. We used all available past and recent telemetry and survey data to examine caribou movements and mixing within the localized area encompassing these three partially overlapping strata across the two survey years. We also used current 2024 and 2025 telemetry movement data to assess movement rates and spatial affiliations between the two survey years though this data was limited to only four (4) collars in March 2024 and four (4) collared caribou cows in March 2025.

An initial assessment of overlapping survey stratum showed the majority of the 2024 Nettling Lake North Low-density stratum (NLN-LD-FW) overlapping with the 2025 NCB-HD-FW stratum; however, no caribou were detected in the areas of the 2024 NLN-LD-FW stratum that did not overlap with the 2025 NCB-HD-FW stratum (**Figure 35**). Therefore, the NLN-LD-FW stratum was excluded from trend comparison (the estimate of caribou in the area that did not overlap 2025 was 0). We also examined the 2025 NCB-HD-FW stratum which also extended into the 2024 NLNE-LD-FW stratum. As with the NLN-LD-FW stratum, few caribou occurred in areas that did not overlap apart from a few groups to the southwest NLE-LD-FW stratum. To estimate these groups, the area of overlap between the 2025 NCB-HD-FW and 2024 NLNE-LD-FW strata was clipped to create a new 2024 NLE-LD-FW stratum that excluded the 2025 NCB-HD-FW stratum. Observations from 2024, that were in the 2025 NCB-HD-FW stratum, were then excluded to derive new estimates for the 2024 NLE-LD-FW stratum. This sampling configuration assumes that most caribou detected in 2025 were from the Central Baffin subpopulation and that an insignificant number of caribou moved from the South Baffin survey extents into the Central Baffin stratum survey extents (and vice-versa) in March 2024 and 2025. Past collar analysis (Campbell et al 2015) suggests that this subpopulation mainly occurs to the north of Nettling Lake with the South Baffin subpopulation or grouping predominantly occurring to the south of Nettling Lake during the time of year the survey was flown (**Figure 36**). Current collar data from 2024 and 2025, over the same days the surveys were conducted supports this hypothesis, showing minimal movement between central and south Baffin survey extents in March when the surveys occurred, and other months of the year as well (**Figure 37**). No collared caribou switched subpopulations during this period. Though this spatial assessment supports these stratification modifications, we must note that this comparison is limited by sample size and distribution of the collared caribou. Despite the small sample size, this assessment does suggest remarkable fidelity of caribou to regional areas within Baffin Island. Following the assessment of all available spatial caribou data and the final adjustment of overlapping strata and recorded caribou observations, the resulting 2024 and 2025 estimates were merged to derive a full island estimate of 48,681(CI=43,973-53,893) (**Table 15** and **Figure 38**).

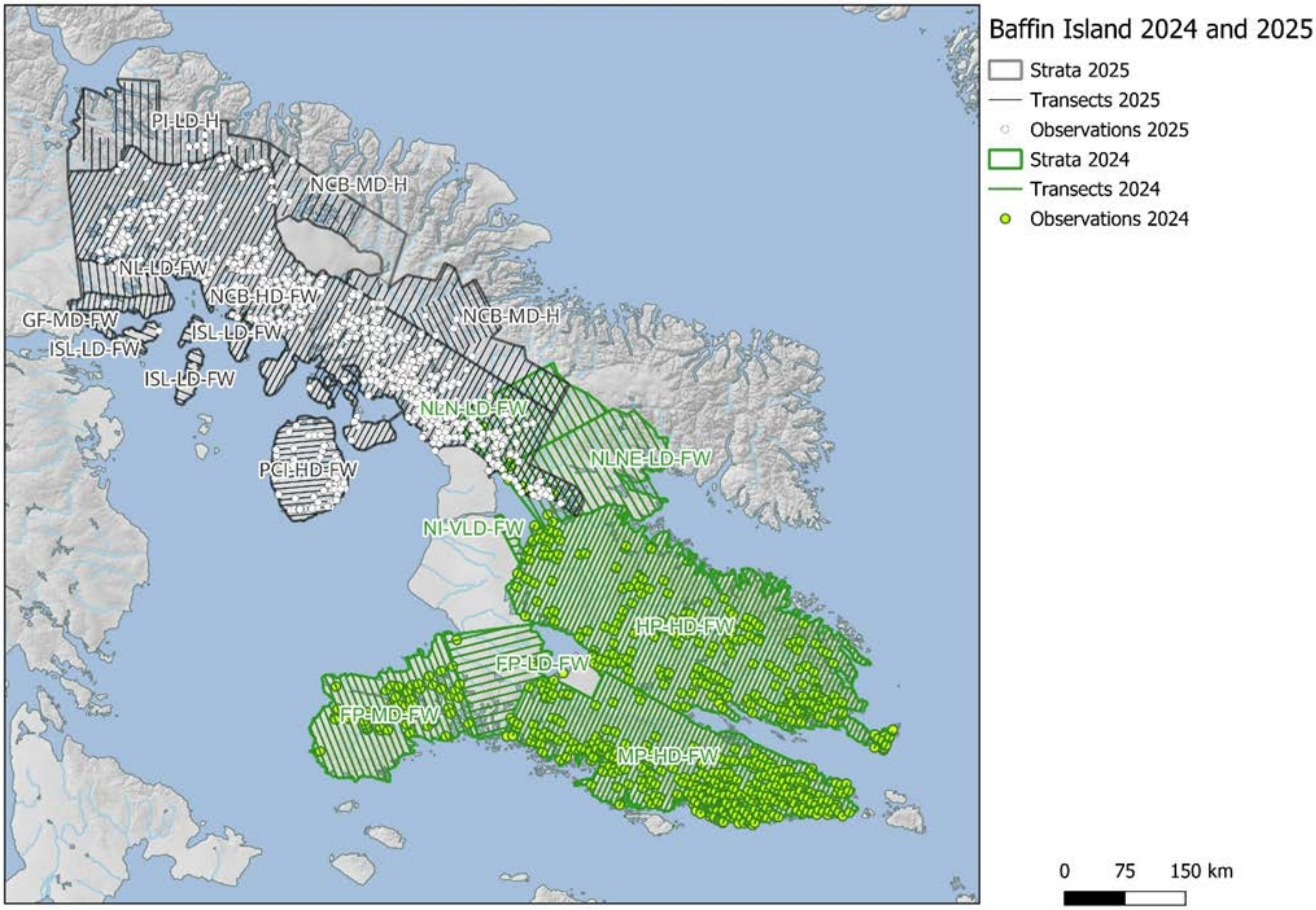


Figure 34. Areas sampled in 2024 (green) and 2025 (black with white observations).

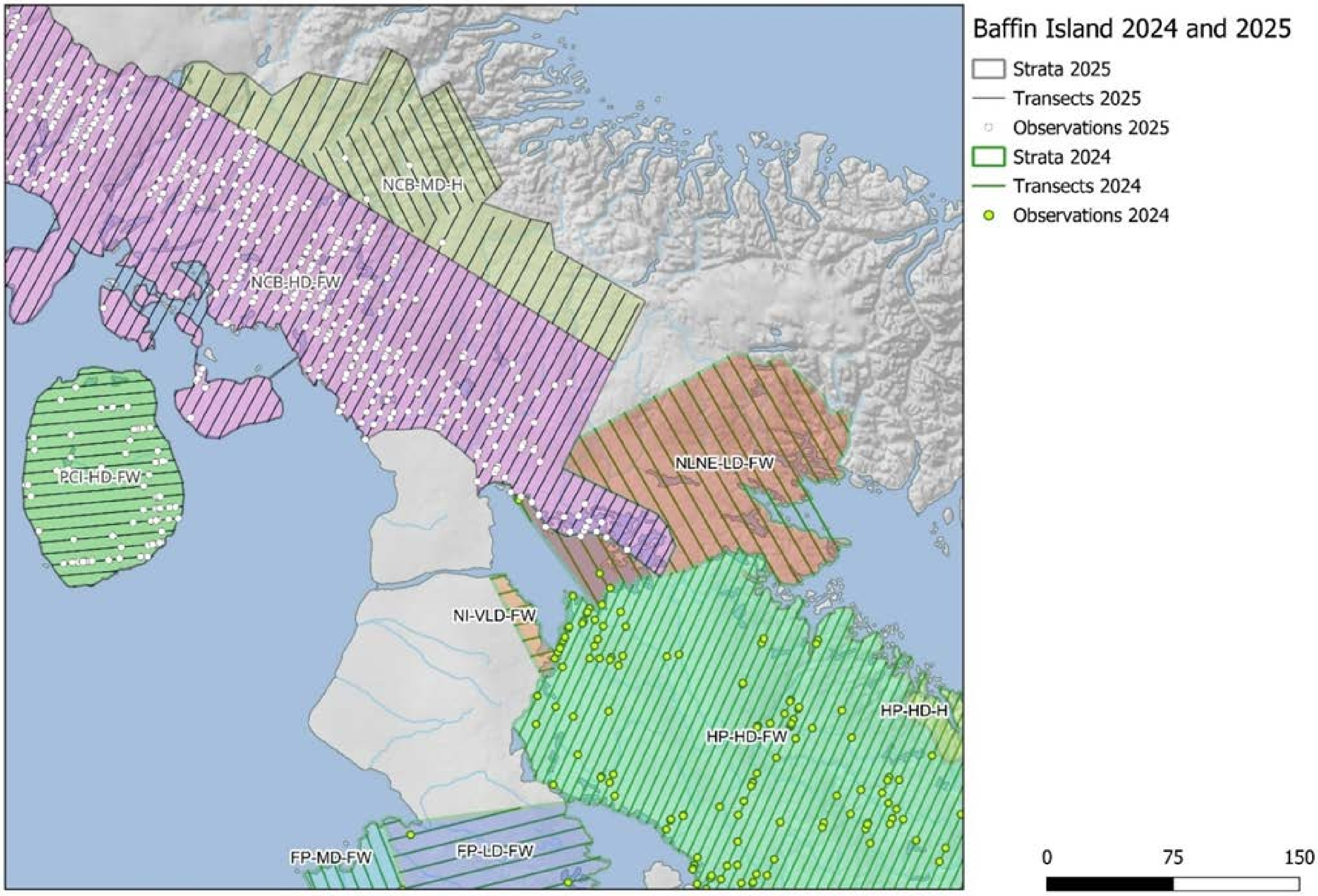


Figure 35. Close up of area of overlap of 2024 and 2025 sampling strata.

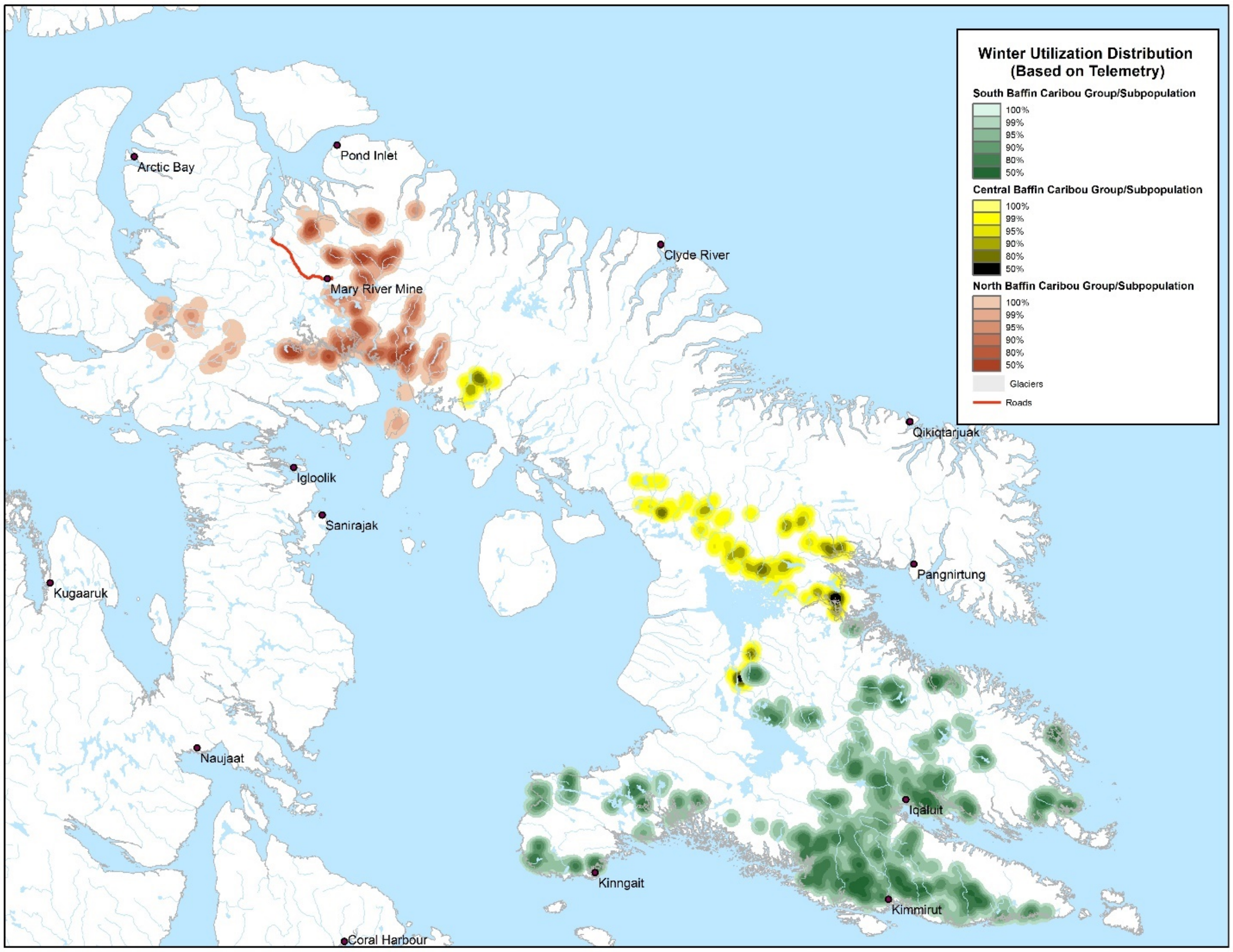


Figure 36. Winter range use based on utilization distributions utilizing a Kernel analysis with an 11 km search radius using historic (1987-1994) collar data. Darker colors indicate higher use. Figure from Campbell et al (2015).

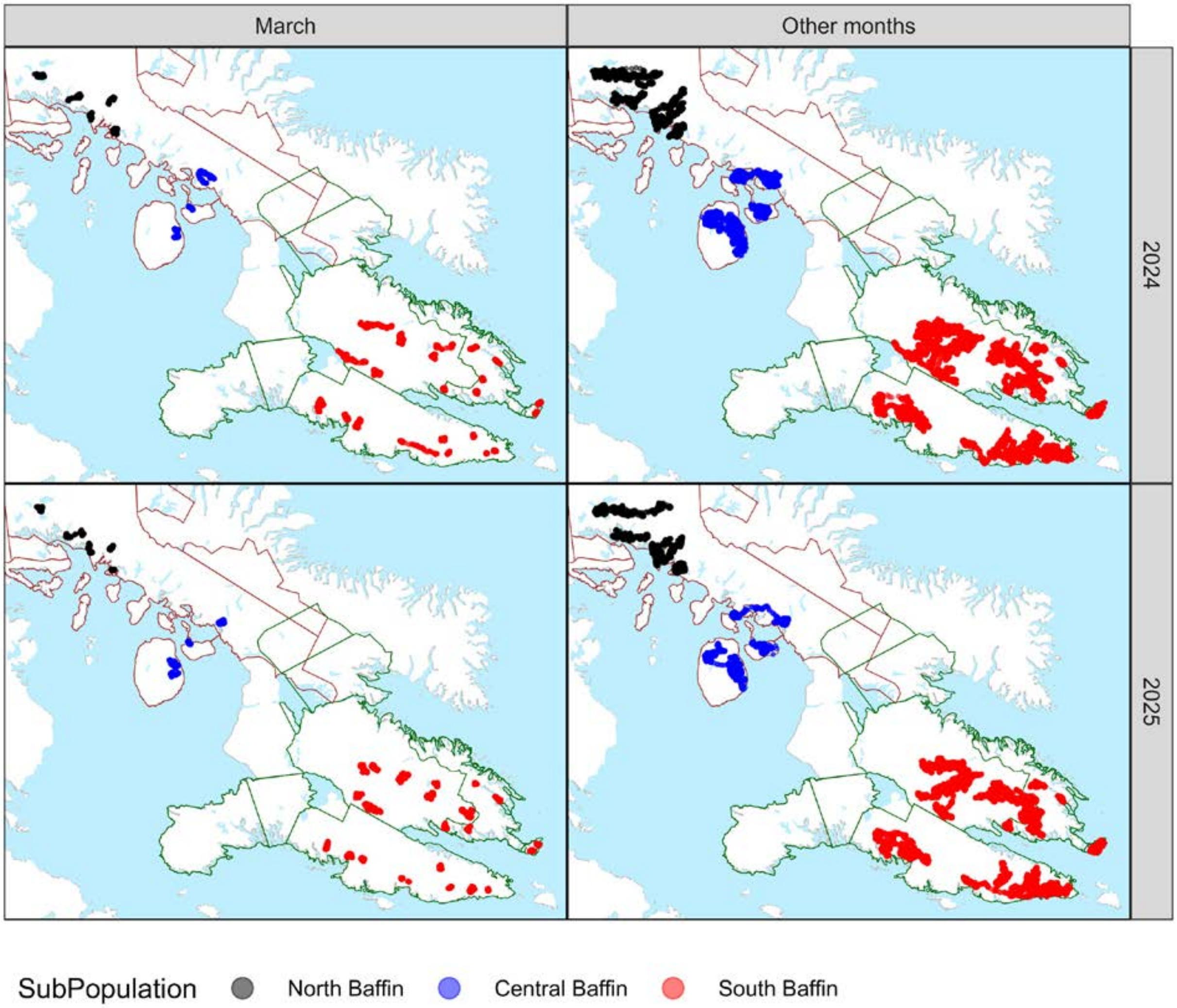


Figure 37. Locations of collared caribou (n=34 and 33 for 2024 and 2025) relative to survey strata (2024: green, 2025: brown) in March when surveys were conducted relative to other months of the year.

Table 15. Estimates from 2024 excluding area of overlap with 2025 strata (NLN-LD-FW strata eliminated and NLNE-LD-FW reduced) and the resulting combined estimates of 2024 and 2025 (FW=Fixed wing aircraft; H=Helicopter). The 2025 strata estimates are listed in Table 5.

Strata 2024		n	N	SE	Conf. Limit		CV	Density Caribou/km2
Foxe Penn. Fixed wing Low Density	**FP-LD-FW**	11	94	70.8	19	457	0.757	0.8
Foxe Penn. Med Density Fixed Wing	**FP-MD-FW**	650	3,589	578.8	2,558	5,035	0.161	16.6
Meta-Incognita Penn. High Density Fixed Wing	**MP-HD-FW**	1751	11,694	1041.7	9,787	13,972	0.089	28
Nettling Lake East Low Density Fixed Wing	**NLNE-LD-FW** (reduced)	**23**	**168**	**181.3**	**24**	**1,189**	**1.081**	**1.09**
Hall Penn High Density Fixed Wing	**HP-HD-FW**	909	5,864	479.8	4,977	6,910	0.082	11.7
Hall Penn Heli High Density Helicopter	**HP-HD-H** (DS only)	432	2,246	403.9	1,572	3,207	0.180	11.4
2024 Total		**3,776**	**23,655**	**1360.7**	**21,111**	**26,506**	**0.058**	

2025 Total	3,656	25,026	2115.8	21,182	29,568	0.085
TOTAL 2024 and 2025	**7,432**	**48,681**	**2515.5**	**43,973**	**53,893**	**0.052**

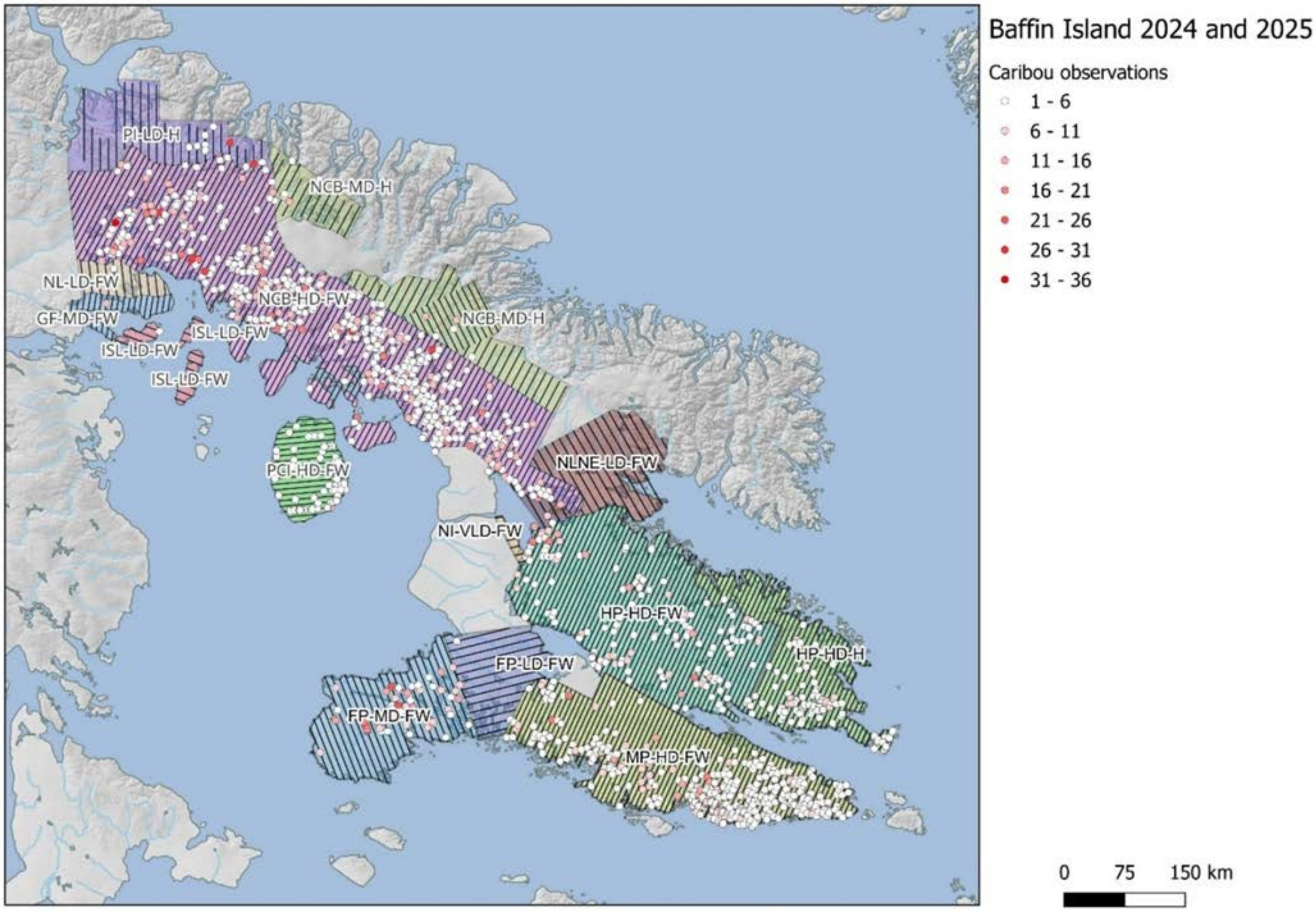


Figure 38. The combined 2024 and 2025 data sets with the 2024 NLNE-LD-FW stratum modified to avoid overlap with the 2025 NCB-HD-FW stratum.

4.5 Trend Analysis

4.5.1 Observed Abundance Trends

Comparisons between full Baffin Island abundance estimates as well as regional stratum estimates, were undertaken using data from the 2012, 2014, and merged 2024 and 2025 surveys (**Tables 15 and 16**). The 2014 full island estimate used to determine trend did not include Melville Peninsula or Borden Peninsula given that these 2 areas were not surveyed in 2024/2025. This reduced the estimate used for the analysis of trend from 4,872 (CI=3,661-6,484) to 4,645 (CI=3,667-5,885) (**Table 16**).

Regional trends from 2014 to 2024-5 were evaluated by pairing 2014 strata (**Figure 39 and Table 16)** with 2024-2025 strata based on overlap as summarized in Table 16.

Table 16. Estimates for 2014 Baffin Island survey (Campbell et al. 2015) strata that overlap the 2024 and 2025 surveys. Also listed are the corresponding 2024/2025 strata used in the trend analysis. Note that the Central Baffin region in 2014 was composed of the Central Baffin and Mary River strata (**Figure 39**).

Region/Strata Corresponding to 2014 Survey strata	n	N	SE	Confidence Limit		CV	Corresponding 2024/25 strata used for trend analysis
Central Baffin	197	1,091	278.4	662	1,798	0.255	NCB-HD-FW
Mary River	49	224	97.1	96	521	0.433	PI-LD-H
Foxe Peninsula	20	216	183.4	48	972	0.849	FP-MD-FW FP-LD-FW
Hall Peninsula	176	887	292.9	467	1,686	0.33	HP-HD-FW, HP-HD-H
Meta-Incognita Peninsula	91	539	207.5	256	1,138	0.385	MP-HD-FW
Prince Charles Island (PCI)	557	1,603	249.8	1,158	2,220	0.156	PCI-HD-FW
North Central Baffin	13	85	45	31	230	0.53	NCB-MD-H
Total	**1,103**	**4,645**	**560.2**	**3,667**	**5,884**	**0.121**	

Observations from the combined 2024 and 2025 data sets (**Figure 38**) indicated higher densities in most March 2024 and 2025 strata then were observed in March 2014 or March 2012. March 2014 observations and estimates illustrate relatively low numbers of caribou in comparison to March 2024 and 2025 strata observations and estimates (**Tables 15**, **16** and **Figure 39**).

Regionally, the greatest change was documented within the Central Baffin Region where the mean estimate increased from 1,315 caribou (adults and yearlings) in 2014, to 23,216 (p-value <0.0001) by 2025. The Meta-Incognita region recorded the next highest change from 539 to 11,694 (p-value < 0.0001), followed by the Hall Peninsula region where the estimated number of caribou increased from 887 to 7,878 (p-value < 0.0001), and finally the Foxe Peninsula region where the mean estimate increased from 216 adult, yearling, and calf caribou in 2014, to 3,682 by March 2024 (p-value < 0.0001) (**Table 17**). Significant increases in abundance were not detected within the Prince Charles Island region and North Central Baffin region, where p-values were recorded well above the 0.05 threshold. Mean estimates from these two regional strata did, however, suggest an increase in abundance within the North Central Baffin region, and a decrease in overall caribou abundance within the Prince Charles Island region (**Figure 40**).

Overall estimates across all Baffin Island strata between March 2014 and March 2024/25 saw a mean increase from 4,645 to 48,681 adult, yearling, and calf caribou respectively. This change was highly significant yielding a P-value of less than 0.0001 (P-values less than 0.05 are an indication of statistically significant change) (**Figure 41**).

The rates and magnitude of this change were estimated using the ratio of successive caribou survey estimates for the full Baffin Island survey area, as well as for individual strata making up the whole Baffin Island survey area (**Table 18**). For clarity, the year for the Baffin 2024/2025 merged surveys was set to 2024.5 to accommodate the splitting of the island wide survey effort into the 2024 (South Baffin) and 2025 (North and Central Baffin Island) surveys that covered the entire Island (except for a large portion of Borden Peninsula). Of most interest was a comparison of the 2012 and 2014 estimates with 2024/2025 estimates. The relatively high CV's reported for both the 2012 and 2014 surveys, coupled with extended (7 weeks) and partial coverage (parts of central Baffin and all of North Baffin Island not surveyed) of the 2012 survey, compared to the 2014 whole Baffin Island survey coverage across a 4 week period, precluded solid estimates of trend in most cases between these survey years.

The overall estimate for Baffin Island generated from the merged March 2024 (South Baffin), and 2025 (North and Central Baffin), indicate that caribou abundance increased approximately 11-fold since March 2014, which translates to a 25% rate of annual increase in abundance (CI=1.22-1.28). **Figure 42** shows yearly change estimates for the most relevant intervals. Increases occurred in all strata except for Prince Charles Island which decreased by 3% per year. Estimates of increase varied by each individual region, however, confidence intervals overlapped estimates for the entire region suggesting statistically similar trends.

Table 17. Estimates of abundance from previous and the present 2024/2025 surveys used for trend analysis based on comparisons listed in Table 16. The total number of caribou used in the estimate (n) is given along with each estimate and confidence limits as well as coefficient of variation (CV) and degrees of freedom. In addition, t-test for statistical significance between estimates are given.

Year	Caribou (n)	N	CV	Conf. Limit		df	T-test	dft	p-value
Baffin (all strata)									
2014	1,103	4,645	0.126	3,667	5,885	286.6			
2025	7,432	48,681	0.052	43,973	53,893	245.1	17.1	269.4	<0.0001
Central Baffin region									
2014	246	1,315	0.238	827	2,093	122.6			
2025	3,319	23,216	0.090	19,452	27,709	142.8	10.4	149.2	<0.0001
Foxe Peninsula region									
2012	6	69	0.995	12	389	19.6			
2014	20	216	0.849	48	972	30.4	0.8	38.3	0.4568
2024	661	3,682	0.158	2,577	5,492	23.0	5.7	27.6	<0.0001
Hall Peninsula region									
2012	41	480	0.337	250	925	65.5			
2014	176	887	0.330	467	1,686	96.0	1.2	143.9	0.2265
2024	1,342	7,878	0.075	6,793	9,137	86.7	10.6	127.9	<0.0001
Meta-Incognita Peninsula region									
2012	13	162	0.545	57	455	34.7			
2014	91	539	0.385	256	1,138	96.2	1.7	122.9	0.0966
2024	1,751	11,694	0.089	9,787	13,972	55.0	10.5	59.3	<0.0001
North Central Baffin region									
2014	13	85	0.533	31	232	55.2			
2025	71	408	0.451	173	963	154.0	1.7	171.5	0.0901
Prince Charles Island (PCI)									
2014	557	1,603	0.171	1,131	2,272	26.0			
2025	238	1,163	0.242	707	1,914	64.1	-1.1	75.7	0.2663

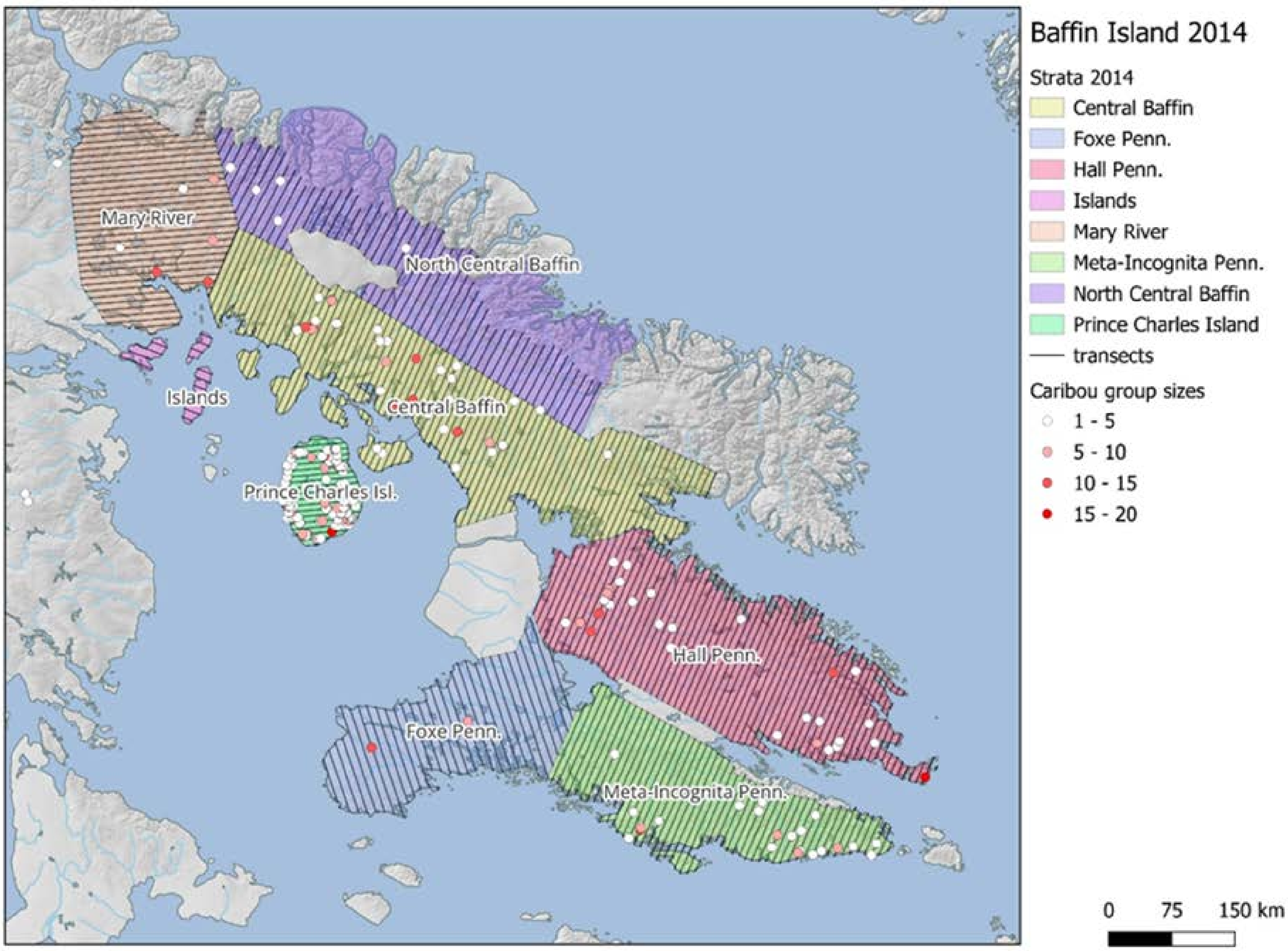


Figure 39 Observations from the 2014 Baffin Island survey (Campbell et al. 2015).

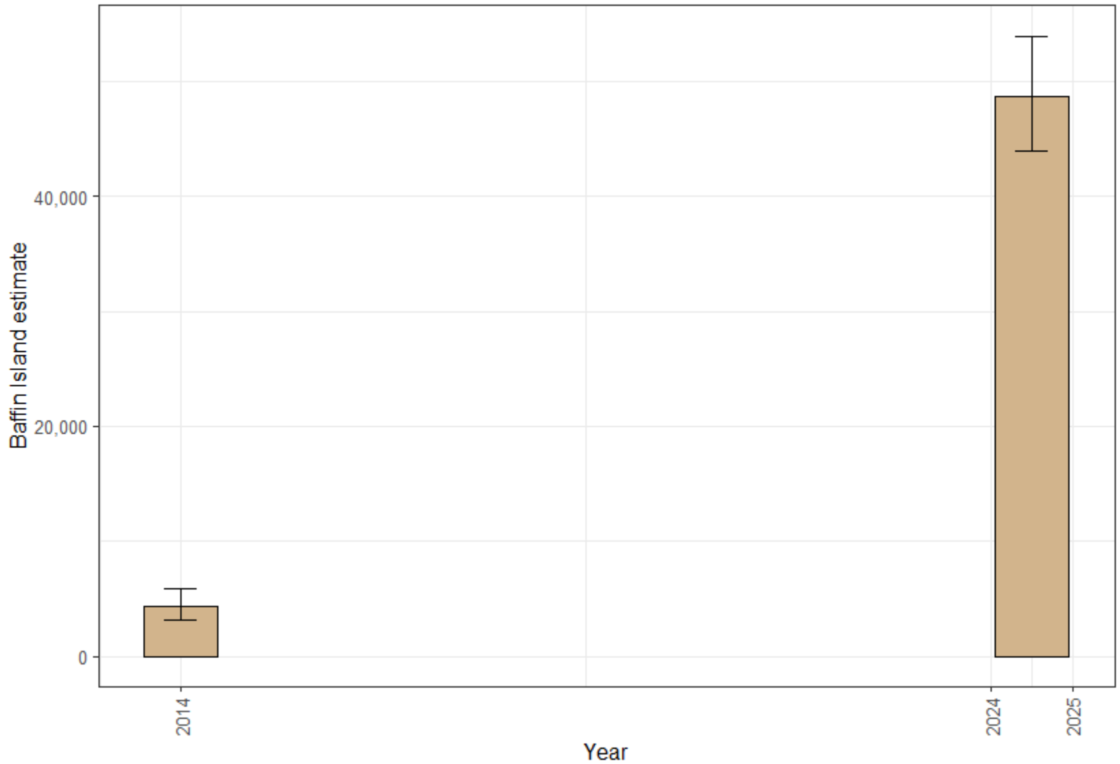


Figure 40 Estimates of abundance for the Baffin Island full island estimates in 2014 and 2024/25.

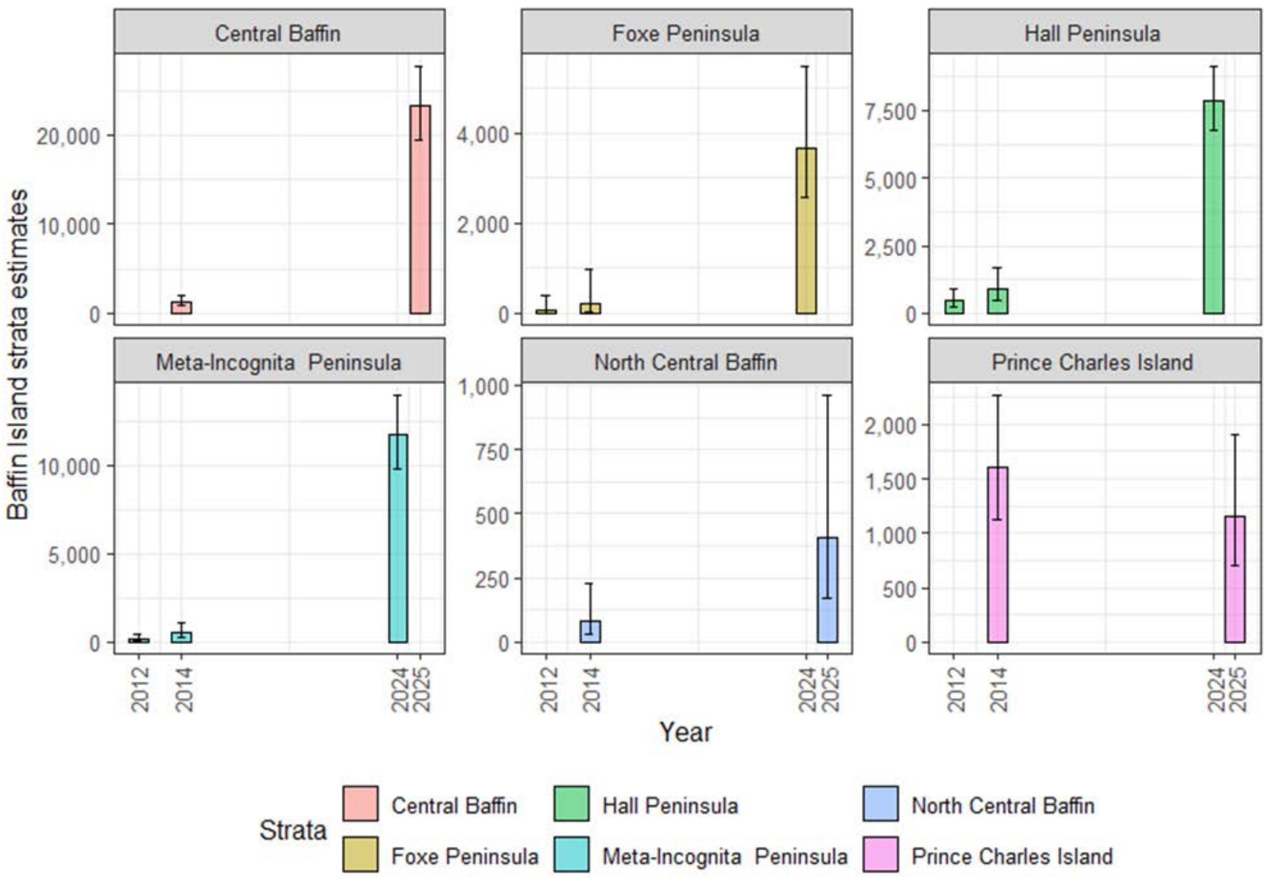


Figure 41. Estimates of abundance for 6 target regions in 2012, 2014, 2024, and 2025 as listed in **Table 16**. Note the different y-scales for each plot.

Table 18. Rates of change in abundance for regions as defined in **Table 16**. for 2012, 2014, 2024, and 2025. Abundance estimates are given for each year and estimates of gross change (N_{y2}/N_{y1}) and annual change (λ). N_{y1} is the abundance estimate for the first year of the comparison and N_{y2} is the estimate for the year of the second estimate.

Interval	N_{y1}	SE_{y1}	N_{y2}	SE_{y2}	GC	SE	Conf. Limit		λ	SE	Conf. Limit	
Baffin (all strata)												
2014-2024-2025	4,645	560.3	48,681	2515.5	10.48	1.40	8.16	13.62	1.25	0.02	1.22	1.28
Central Baffin region												
2014-2025	1,315	312.9	23,216	2081.8	17.65	4.77	11.06	4.49	1.30	0.03	1.24	1.36
Foxe Peninsula region												
2012-2014	69	68.5	216	183.4	3.14	9.73	0.38	4.10	1.77	1.28	0.62	5.44
2014-2024	216	183.4	3,682	583.1	17.05	25.6	5.05	14.73	1.33	0.10	1.18	1.58
Hall Peninsula region												
2012-2014	480	161.9	887	292.9	1.85	1.00	0.75	0.87	1.36	0.33	0.87	2.14
2014-2024	887	292.9	7,878	588.0	8.88	3.35	4.88	3.01	1.24	0.04	1.17	1.33
Meta Incognita Peninsula region												
2012-2014	162	88.1	539	207.5	3.34	3.03	1.03	2.23	1.83	0.64	1.01	3.50
2014-2024	539	207.5	11,694	1041.7	21.70	9.88	10.95	8.57	1.36	0.05	1.27	1.48
North Central Baffin region												
2014-2025	85	45.3	408	183.8	4.80	4.54	1.36	3.35	1.15	0.07	1.03	1.30
Prince Charles Island region												
2014-2025	1,603	274.1	1,163	281.5	0.73	0.22	0.40	0.22	0.97	0.03	0.92	1.02

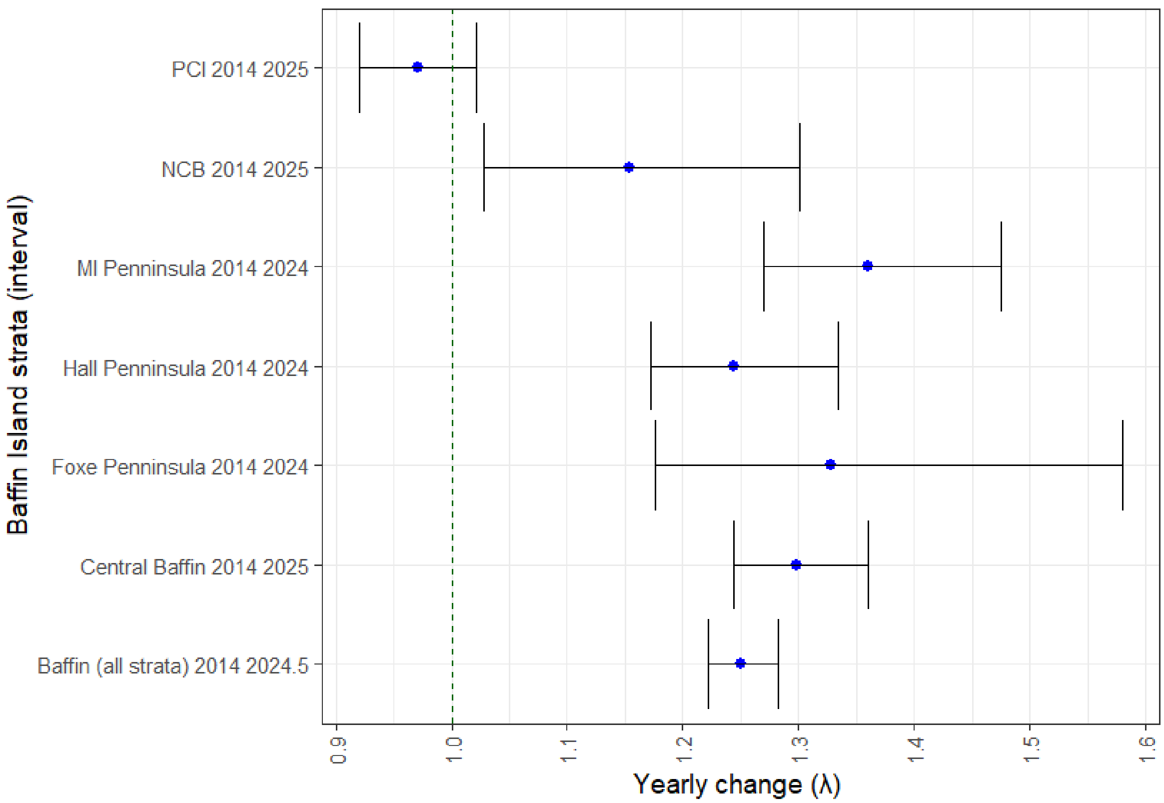


Figure 42. Comparison of yearly change (N_{t+1}/N_t) for Baffin (all strata) compared to region/strata specific change. A vertical line and λ =1 indicate population stability.

4.6 Spring Composition

Composition intensity, timing, and geographic location, varied between years and was highly dependant on funding, available qualified staff, and weather (Ringrose 2018, 2019, 2021). Emphasis was put onto spring composition studies as the best indicator of trend based on its ability to assess overwinter calf survival, the period with the highest expected calf mortality. This period is considered a more dependable indicator of herd productivity and trend. Generally, calves that survived into the spring were considered recruited into the population.

In the fall of 2015, classification crews flew a total of 96.4 hours (28.6 hours in North Baffin, 38.5 hours in Central Baffin, and 29.3 hours in South Baffin) classifying 208, 96, and 159 caribou respectively (**Table 19 and Table 20**) (Ringrose, 2018). In the spring of 2016, crews flew a combined total of 86.3 hours in both Central and South Baffin classifying 125 and 451 caribou, respectively, while in the fall of 2016 crews flew a total of 67.4 hours (19.6 hours in North Baffin and 47.8 hours in South Baffin) classifying 202 caribou in north Baffin, and 445 in south Baffin. Spring 2017 flight hours totaled 104.6 (26.2 hours in North Baffin, 41.6 hours in Central Baffin and 36.8 hours in South Baffin), classifying 254, 8, and 597 caribou respectively, while 2017 flights totaled 14.6 hours in North Baffin alone, observing 316 caribou. In the spring of 2018, crews flew a total of 102.5 hours (18.9 hours in North Baffin, 29.1 hours in Central Baffin, and 54.5 hours in South Baffin) classifying 100, 98, and 933 caribou, respectively. Unfortunately, there were not sufficient resources or cached fuel to conduct fall composition studies in 2018. By 2019 classifications were adjusted to spring only to focus available resources on what was believed to be the most useful index of demographic growth (Ringrose 2019). In spring 2019, classification crews flew 61 hours in south Baffin only observing 1,584 caribou. The most recent composition flights occurred in March/April 2021 within the north and south Baffin study areas (Ringrose 2021), at which time a total of 38.4 hours were flown in south Baffin, and

31.6 hours were flown within the north Baffin study area. South Baffin caribou observations totalled 1,734 the highest recorded to date while north Baffin observations totaled 192, largely due to poor weather and the inability to reach all targeted north Baffin pre-determined classification extents.

It is noteworthy that when compared to the 2014 caribou survey estimates for the north, central, and south Baffin Island regions, 2016, 2017, and 2018 spring classification counts assessed large proportions of the overall estimates. In 2016 11.5% of the survey estimate was assessed for central Baffin, and 16.5% for south. In spring 2017, 80.6% of the 2014 survey estimate was classified for north Baffin, and 21.8% for south Baffin suggesting good representation of the overall caribou population. Of the North, Central and South Baffin classification areas, the south Baffin had the most consistent sampling of caribou on their spring range. South Baffin classification counts increased from 451 in 2016, to 597 in 2017, to 933 in 2018, to 1,584 in 2019 and finally to 1,734 by 2021, suggesting substantial growth within these sampling areas.

High calf to cow ratios were observed for both north and south Baffin. Calf to cow ratios within the south Baffin steadily increased from 22 in 2016, 37 in 2017, to 39 in 2018, to a high of 57 in 2019, and most recently to 47 in 2021 (**Table 20**). Similarly north Baffin calf to cow ratios climbed from 39 in 2017, to 58 in 2018 ending with a high of 63 by 2021. Apart from spring 2016, all calf to cow ratios were for both north and south Baffin Island caribou were well above the known published thresholds for an increasing population (Heard et al. 1990, Boulanger et al. 2011). These findings suggest substantial growth since the establishment of harvest restrictions.

A logistic regression analysis (McCullough and Nelder 1989) was conducted to assess regional differences and overall trends in calf-cow ratios using surveys **(Table 21).** Additionally, an additive model was used (region+year) to assess differences in regions and explore if there was a regional increase in calf-cow ratios. The use of logistic regression accounted for differences in sample sizes in surveys with the response being the count of calves divided by the count of cows in each survey. A quassi-binomial response model was then used to account for likely overdispersion in the response data. Results suggested a weak positive trend (as indicated by the year term) as well as differences in mean calf-cow ratios in different regional areas.

Inspection of estimates relative to predictions suggests a relatively similar positive trend in all areas except Prince Charles Island, which also did not exhibit an increase in abundance between 2014 and 2025 (**Figure 43).** The most apparent trend occurred on South Baffin, which had the most survey data.

Table 19. Survey Flight hours by survey region 2015-2021.

YEAR	SEASON	FLIGHT HOURS		
		North Baffin	Central Baffin	South Baffin
2015	Fall	28.6	38.5	29.3
2016	Spring	***NC***	86.3	86.3
	Fall	19.6	***NC***	47.8
2017	Spring	26.2	41.6	36.8
	Fall	14.6	***NC***	***NC***
2018	Spring	18.9	29.1	54.5
2019	Spring	***NC***	***NC***	61.0
2021	Spring	31.6	***NC***	38.4

Table 20. Spring and fall composition results Oct 2015 to April 2021 (***NS***=Not sampled; ***NR***=Not recorded).

YEAR	LOCATION	SEASON	Cows	Bulls	Yearlings	Calves	Calves/100 cows (%)	Total Caribou Observed
2015	North Baffin Island	SPRING	NS	NS	NS	NS	NS	NS
		FALL	77	76	NR	55	71	208
	Central Baffin Island	SPRING	NS	NS	NS	NS	NS	NS
		FALL	39	29	NR	28	72	96
	Prince Charles Island	SPRING	NS	NS	NS	NS	NS	NS
		FALL	189	126	NR	133	70	448
	South Baffin Island	SPRING	NS	NS	NS	NS	NS	NS
		FALL	64	46	NR	49	77	159
2016	North Baffin Island	SPRING	NS	NS	NS	NS	NS	NS
		FALL	94	54	NR	54	57	202
	Central Baffin Island	SPRING	67	25	10	23	34	125
		FALL	NS	NS	NS	NS	NS	NS
	Prince Charles Island	SPRING	328	204	76	82	25	690
		FALL	NS	NS	NS	NS	NS	NS
	South Baffin Island	SPRING	222	151	29	49	22	451
		FALL	196	126	42	81	41	445
2017	North Baffin Island	SPRING	120	64	23	47	39	254
		FALL	139	74	17	86	62	316
	Central Baffin Island	SPRING	1	6	0	1	100	8
		FALL	NS	NS	NS	NS	NS	NS
	Prince Charles Island	SPRING	351	133	57	114	32	655
		FALL	NS	NS	NS	NS	NS	NS
	South Baffin Island	SPRING	249	181	75	92	37	597
		FALL	NS	NS	NS	NS	NS	NS
2018	North Baffin Island	SPRING	36	36	5	21	58	100
		FALL	NS	NS	NS	NS	NS	NS
	Central Baffin Island	SPRING	33	40	7	18	55	98
		FALL	NS	NS	NS	NS	NS	NS
	Prince Charles Island	SPRING	161	73	37	31	19	302
		FALL	NS	NS	NS	NS	NS	NS
	South Baffin Island	SPRING	401	277	100	155	39	933
		FALL	NS	NS	NS	NS	NS	NS
2019	North Baffin Island	SPRING	NS	NS	NS	NS	NS	NS
		FALL	NS	NS	NS	NS	NS	NS
	Central Baffin Island	SPRING	NS	NS	NS	NS	NS	NS
		FALL	NS	NS	NS	NS	NS	NS
	Prince Charles Island	SPRING	NS	NS	NS	NS	NS	NS
		FALL	NS	NS	NS	NS	NS	NS
	South Baffin Island	SPRING	664	465	108	347	52	1,584
		FALL	NS	NS	NS	NS	NS	NS
2021	North Baffin Island	SPRING	87	44	6	55	63	192
		FALL	NS	NS	NS	NS	NS	NS
	Central Baffin Island	SPRING	NS	NS	NS	NS	NS	NS
		FALL	NS	NS	NS	NS	NS	NS
	Prince Charles Island	SPRING	NS	NS	NS	NS	NS	NS
		FALL	NS	NS	NS	NS	NS	NS
	South Baffin Island	SPRING	805	392	158	379	47	1,734
		FALL	NS	NS	NS	NS	NS	NS

Table 21. Logistic regression analysis parameters for analysis of regional trends in calf cow ratios. The parameters are on the logit scale with t-tests of parameter significance.

Term	Estimate	Std. Error	t value	Pr(>|t|)
(Intercept)	-401.796	291.885	-1.377	0.202
North Baffin Island	-0.739	0.648	-1.140	0.284
Prince Charles Island	-1.639	0.655	-2.504	0.034
South Baffin Island	-1.279	0.583	-2.194	0.056
Year	0.199	0.145	1.378	0.201

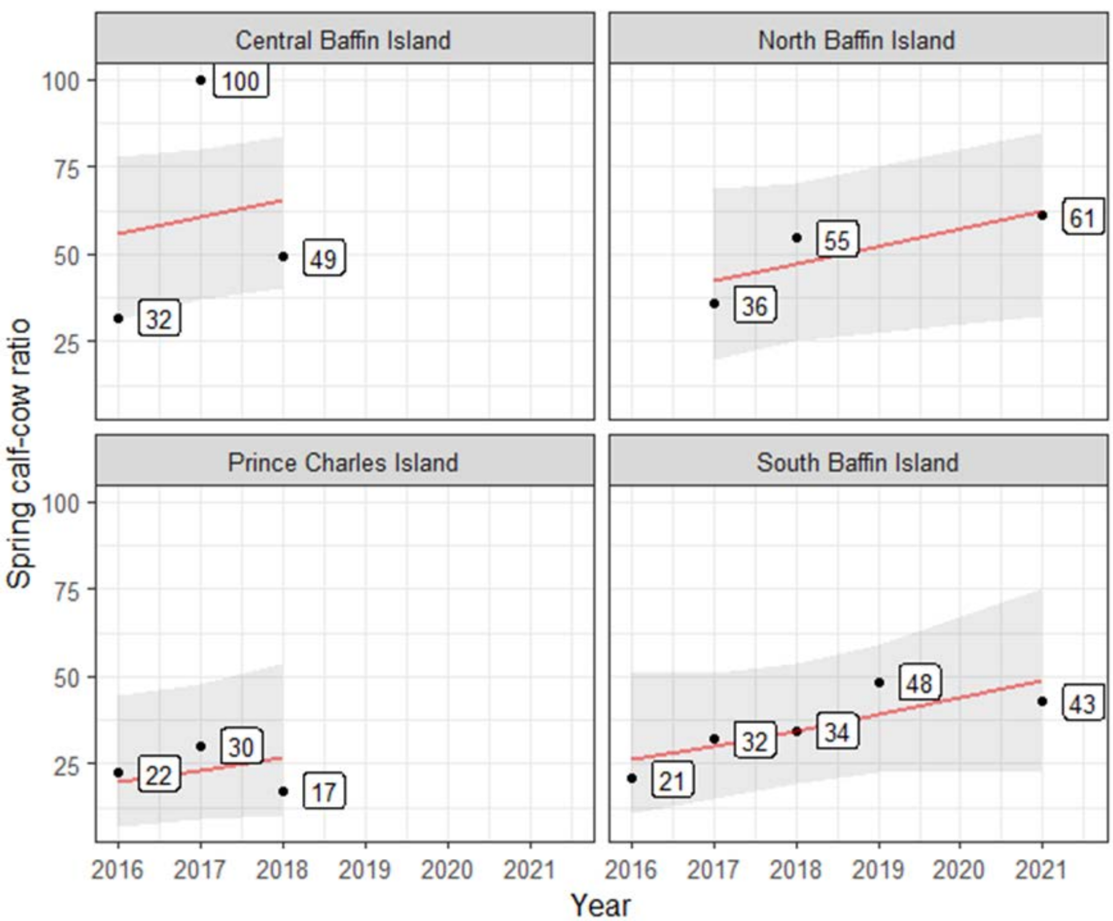


Figure 43 Spring calf/100 cow ratios expressed as a percentage for each of North Baffin, South Baffin, Central Baffin and Prince Charles Island groupings of caribou. Also shown are logistic regression predictions of trend in calf cow ratios with confidence limits given as shaded areas.

5.0 DISCUSSION

5.1 Baffin Island Populations/Subpopulations

No conclusive quantitative assessment of caribou population and/or subpopulation structure has been reported for Baffin Island. Ferguson was the first to report three populations across Baffin Island; the North Baffin population, the South Baffin population and the Northeast Baffin population (Ferguson, 1993; Ferguson and Gauthier, 1992; Ferguson et al., 1998). The delineation of these populations was based largely on Inuit knowledge with the first published boundaries released in 1992 (Ferguson and Gauthier, 1992; Ferguson, 1993) (**Figure 44**). Ferguson also described differing ecotypes and/or migratory types within the defined south Baffin population, suggesting that three subpopulations make up the south Baffin caribou population (Ferguson, 1993; Ferguson et al., 1998).

The most recent attempt to delineate distinct behavioral groupings of barren-ground caribou across Baffin Island was reported in Campbell et al. (2015). Campbell et al. (2015) examined the location data from 71 collared Baffin caribou cows collected between 1987 and 1994, as well as the location data of 31 collared north Baffin caribou cows collected between 2008 and 2011 (Campbell et al. 2015; Jenkins and Goorts, 2011, Ferguson 1988). The location database was not temporally consistent, covering a period of high abundance (1987-1994) and low abundance (2008-2011) creating temporal gaps and associated challenges in its interpretation. Additionally, the amount of data was small and as a result limited in statistical certainty and as such was limited in its reliability. Though the data was limited, and its collection period variable, the

Kernal analysis between the two time periods agreed strongly with model results displaying very little mixing between groupings. In the case of the north Baffin grouping, this lack of mixing was present within both high and low abundance phases. North Baffin collared caribou cows displayed no tendency to switch with 100% of all collars captured within the defined north Baffin annual range, both between the 1987 to 1994 deployment and 2008 to 2011 deployment, remaining within that annual range (**Figure 6**). Unfortunately, no other annual or seasonal delineations for Baffin Island caribou have been reported. Therefore, the kernel analysis of the existing data provides important information to help better understand potential caribou subpopulation structure on Baffin Island. Though the data is limited, these preliminary analyses have provided insights into long-term Baffin Island caribou behavioral groupings that remain consistent with the March 2024 south Baffin abundance survey caribou distributions, and observations further adding support to the 2015 findings.

These surveys were successful in documenting a large increase in caribou in the survey area in all survey strata. Overall estimates were relatively precise compared to previous surveys which was partially due to the large increase in sample sizes (Campbell et al. 2015). The observed rate of increase of 25% per year (CI=22-28%) is similar to observed rates of increase on introduced island populations of caribou with minimal hunting and predation pressure (Heard 1990). These increases were largely driven by increases in the Central Baffin, Meta-Incognita, Hall, and Foxe Peninsula's stratums. We also note that there is no direct evidence of collar movement which would have caused an overestimation between the 2024 and 2025 strata due to double counting.

Modelling of the survey data was challenged by certain situations where detection rates were low, and observers were unable to switch. The helicopter data was especially problematic in that at face value it was suggested that detection probabilities were low. The removal model does not perform well when detection rates are low and as a result estimates using the removal model were extremely imprecise and not reliable. To offset this issue the helicopter strata was modelled separately using distance sampling only. This may result in a slightly conservative estimate for the helicopter strata, however, there is no straightforward way to model this data set in its current form. In future surveys an independent observer method should be considered for situations where there is no way for observers to switch places.

Inclusion of data recorder data for 2 weak observer pairs provided one approach to offset issues with observers that miss a substantial portion of caribou. With double observer methods it is difficult to model observer probabilities if both observers are weak since in the end, they both miss many caribou and therefore their estimate of sightability using the ratio of detections/non-detections will likely be biased high, leading to negatively biased abundance estimates (Laake and Collier 2024). Always having a strong observer on each side of the plane and having observers switch is essential to manage this issue. Inclusion of data recorder observations is essentially ad-hoc and less likely to provide as reliable an estimate when compared to using strong pairs of experienced observers.

Sensitivity analyses revealed that using distance sampling with all data recorder observations (without modelling double observer probabilities) provided estimates that were within 1-2% of the double observer/distance sampling approach. In this case, the data recorder observations help meet the assumption of sightability on the line being perfect while avoiding the complexities and assumptions of the double observer models. This approach may be viable if there are relatively strong observers and data recorders who actively search for caribou missed by the observers. We suggest this approach be used in unison with the double observer method in future surveys as a possible solution to offsetting these possible biases.

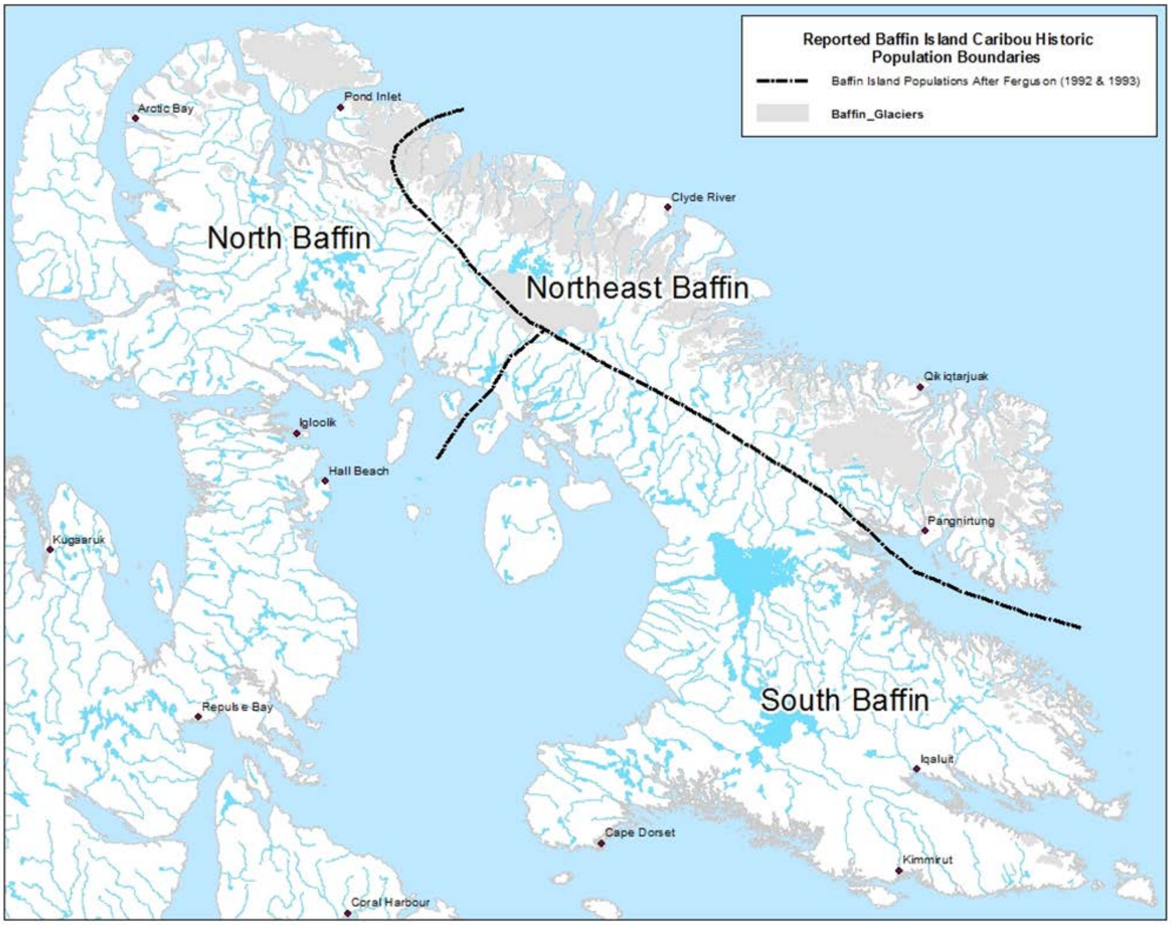


Figure 44. Caribou population divisions on Baffin Island after Ferguson (1993) and Ferguson and Gauthier (1992). Divisions based largely on IQ and not substantiated with genetic analysis and/or long-term spatial affiliations based on telemetry (Campbell et al. 2015).

5.2 Drivers of Observed Trend

The recovery of the Baffin Island caribou population within the 10-to-11-year span between the March 2014 and March 2024 and 2025 surveys was remarkable and obvious across most Baffin Island survey strata. The estimated annual rate of change of 1.25 (CI=1.22-1.28) translates (**Table 18**) to an annual rate of increase approaching some of the highest rates of increase recorded for caribou.

5.2.1 Comparison with other studies and underly demography

Annual rates of increase of 25% (CI=22-28%) observed on Baffin Island, parallels rates of increase for introduced caribou populations with minimal hunting and predation pressure. Heard (1990) estimated the intrinsic rate of increase (r_m) (which is the slope of a linear regression of the log of population size and year) for 8 introduced island populations. The annual rate of change (λ), as estimated in this study, can be calculated as the exponent of the year slope term (r_m) from the regression analysis of a heard (**Table 22**). Based on Heard's (1990) work, the mean annual rate of change of caribou (with no predations or hunting) was 1.29% (sd.=0.03, min=1.23%, max=1.34%, n=8) which is similar to the 1.25% observed on Baffin Island. The increase in populations for many of the islands considered in Heard (1990) were in the range of 10 years further suggesting that large increases can span across many years if habitat and other factors are supporting.

Table 22. Rates of increase of island populations of Caribou from Heard (1990). Annual rate of increase is equal to annual rate of change-1.

Population	years of increase	surveys	Intrinsic rate of increase (r_m)	Annual rate of change $\lambda = e^{r_m}$
Barff	10	4	0.29	1.34
Brunette Isl.	5	6	0.27	1.31
Belcher Isl.	4	2	0.28	1.32
St George Isl.	6	7	0.26	1.30
Adak Isl.	8	2	0.25	1.28
St Mathew Isl.	13	2	0.25	1.28
Southhampton Isl.	20	3	0.23	1.26
St Paul Island	7	8	0.21	1.23
Mean			**0.26**	**1.29**

The Southampton Island analysis of Heard (1990) applies to the period of 1967 when 48 caribou were introduced in 1967 when Heard (1990) estimated the population at 5,400 caribou by 1987, suggesting an estimated rate of increase of 26%. Campbell et al (2020), and Campbell and Boulanger (2024), analyzed the period from 1987 to 1997 where the population continued to increase at 18% per year until 1997 when it reached 29,425 after which time it declined sharply to 7,287 caribou by 2011. The rate of increase for Southampton Island likely decreased as it neared carrying capacity as well as due to increasing harvest pressure. During the period harvest pressure was exacerbated by the sale of caribou meat through the internet to Baffin Island communities that were having difficulties finding caribou on Baffin Island due to the caribou declines ongoing across the island.

The main assumption for the results of the Heard (1990) findings that we believe directly applied to Baffin Island caribou, was that post 2014, predation and hunting mortality was low on Baffin Island, while productivity was high. We speculate that caribou populations on Baffin Island were reduced to very low levels prior to the 2012 and 2014 survey allowing range conditions to improve which in turn lead to an increase in the abundance and quality of forage, ultimately translating into higher levels of productivity.

Heard (1990) also developed and used a population model to estimate maximum rate of increase of caribou populations. The results of this modelling exercise suggest that the rates of growth for barren-ground caribou could reach as high as 36% per year if female caribou pregnancy rates approached 100% starting at the yearling age class, and adult female survival approached 100% until age 20 when they would reach 100% mortality. This scenario is not biologically possible over long time periods but does put a ceiling on rates of increase in the unlikely event that the majority of female caribou are able to reach these milestones. We would also advise that strata-specific estimates of increase **(Figure 42)** were potentially influenced by movement between strata that occurred over the 10-year period in-between surveys and therefore the best estimate of trend is for the entire island is one that pools all surveys strata.

5.2.2 Using a Matrix Model to Determine Rate of Change

A stage-based matrix model based on caribou demographic analyses (Boulanger et al 2011, Boulanger et al 2024, Campbell et al 2025, Caswell 1989, Thomas et al. 2009) was used to further explore the levels of adult survival, calf survival, and pregnancy rate needed to achieve observed levels of increase on Baffin Island, and specific to caribou females (males not included). For this model adult female survival was varied from 0.8 to 0.96, calf survival from 0.35 to 0.98 with adult female pregnancy set at 0.95. Yearling survival was assumed to be equal to adult female survival. In addition, it was assumed 70% of yearlings (22 month old caribou during the fall rut) bred each year which is often the case with increasing populations (Parker 1981, Thomas and Kiliaan 1998). For example, Parker (1981) found that 43% of yearlings bred for the George River Herd during a population increase, while Heard (1990) assumed all yearlings bred. Finally, a sex-ratio of 0.57 favoring females was considered. Also, Thomas and Killiam found that younger females (ages 1.5-4 years old) produced more females (61-64 females/50 males). The assumption in this case was that the age structure of a recovering population would be dominated by younger females. The resulting rate of change (λ) values were then estimated as the dominant eigenvalue of the matrix model which constitutes the stable annual rate of population change for any combination of demographic parameters (Caswell 1989). The resulting estimates of annual rate of change indicate that calf-survival would need to be at least 0.75 and adult female survival approximately 0.91 or above to create levels of increase of 25% each year **(Figure 45).**

It is also possible to estimate calf-cow ratios based on adult female, calf and yearling survival from the matrix model (Boulanger et al 2011, White and Lubow, 2002). In this case the spring calf cow ratio is approximated as:

$$CC = \frac{F_a S_c^{t/365}}{S_f^{t/365} + 0.5 S_y^{t/365}}$$

where F_a is pregnancy rate, S_c is calf survival, S_f is adult female survival, S_y is yearling survival and t is the time interval from birth of calves on the calving ground to the March composition survey (assumed to be 270 days). The corresponding calf-cow ratios for the parameter range in **Figure 43** suggest that calf-cow ratios of at least 0.5 resulted when population increase was 1.2 (20% increase) or above. The calf-cow ratio varied with underlying levels of adult female and calf survival **(Figure 46).**

The main inference from this modelling exercise, similar to those developed by Heard (1990), is that very high levels of survival and productivity are required to produce rates of increase observed on Baffin Island. This finding highlights the importance of continued monitoring of productivity, harvest, and survival as an index of the rate of increase of caribou populations. Building on this discussion, we propose that the observed increase documented for Baffin Island caribou between March 2014 and March 2024/2025, can be attributed to several interacting mechanisms at work between these respective survey years. However, we suggest the main mechanisms of recovery were the result of co-management endorsed harvest restrictions, minimal predation pressure, high productivity, mild winters, limited anthropogenic activities in sensitive caribou seasonal range, and accessible abundant forage. A likely contributing factor was the large-scale decline in caribou numbers first evident around 2010. This reduction would have been consistent with the subsequent recovery of likely overgrazed seasonal range ultimately leading to the development of favorable range conditions, particularly in terms of forage abundance and quality.

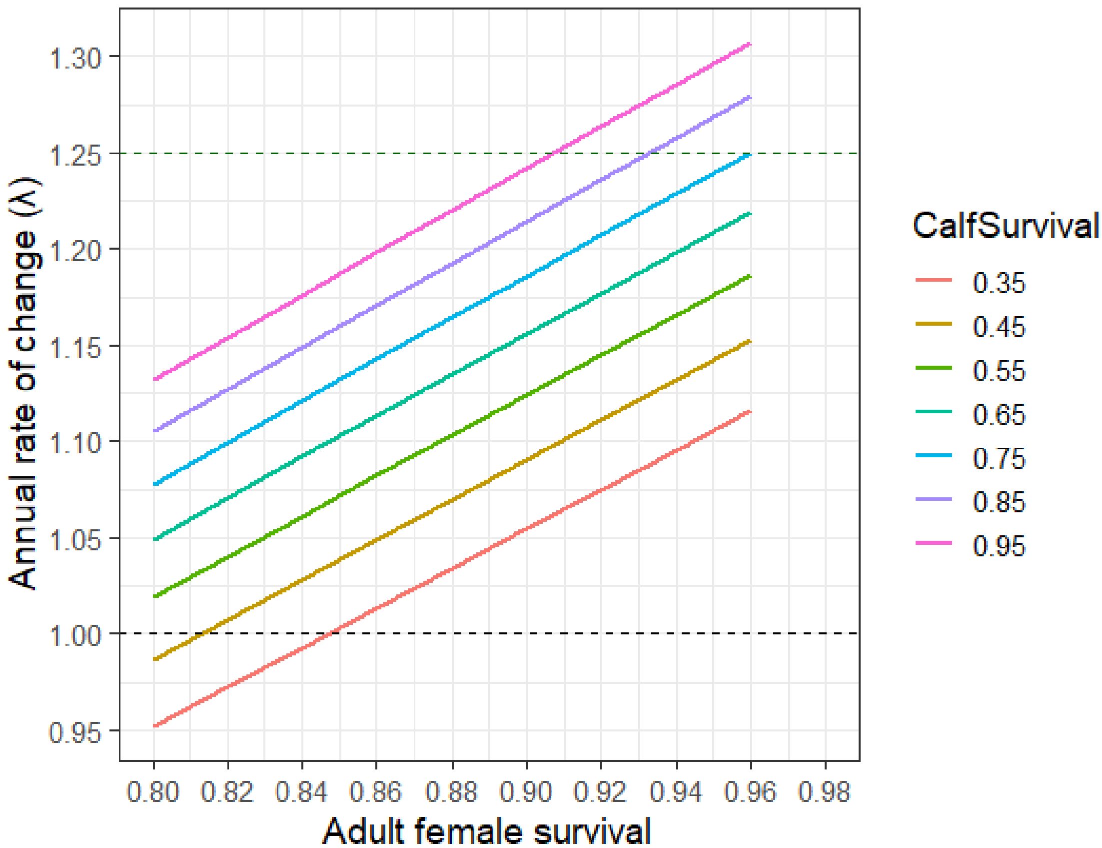


Figure 45. Results of stage-based model estimates of annual rate of change (λ) under varying levels of adult and calf survival. The dotted lines indicate levels of stability (λ=1) and the observed rate of increase on Baffin Island (λ=1.25).

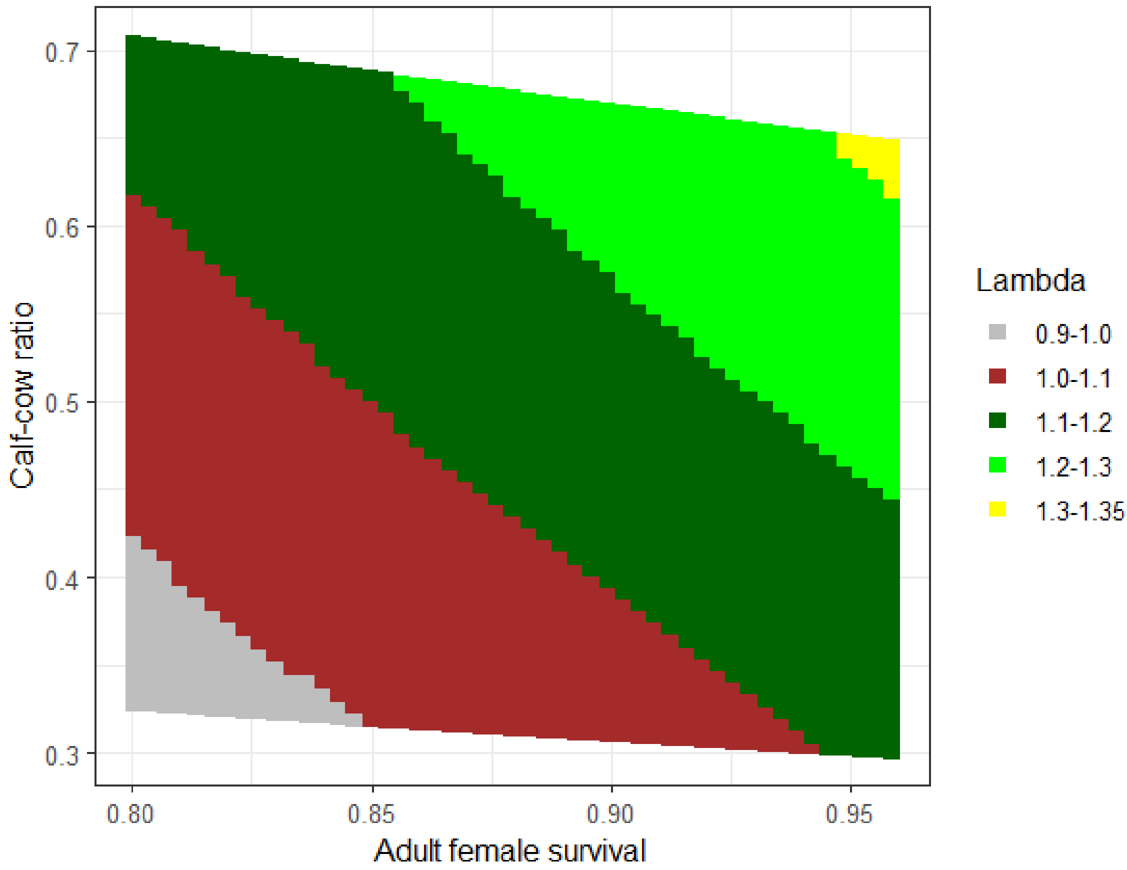


Figure 46. Calf-cow ratios from spring surveys resulting from ranges of adult female and calf survival simulated in Figure 50.

5.2.3 Baffin Island Caribou Herd Productivity

Understanding how to use the cow to calf ratio as an index for population trend is difficult without a Baffin Island specific baseline developed using paired quantitative composition and abundance survey results through time. Until a baseline is developed for Baffin Island caribou, we suggest the use of pre-existing baselines developed for mainland barren-ground caribou. At present, the only, and most similar baseline for barren-ground caribou has been developed by the Government of the Northwest Territories (GNWT). These developed calf to cow ratios suggests that a stable to increasing barren-ground caribou population would display 70-90 calves/100 cows at calving, 50-70 calves/100 cows during the fall rutting period, and 30-50 calves/100 cows during spring (Adamczewski et al. 2009; Tobey 2001; Gunn et al 2005). For Baffin Island, given the very low densities of wolves observed during aerial surveys and equally infrequent observations of wolves reported by Baffin Island hunters, we suggest that spring cow to calf ratio threshold values developed by the GNWT are likely much higher than what would apply to Baffin Island caribou. We advance this conclusion primarily because wolf predation levels on Baffin Island have been and likely, at least in the short term, continue to be far lower than those suggested for the Bathurst and Bluenose caribou herds of Nunavut and the NWT, which were used to develop these thresholds. Additionally, there are no grizzly bears on Baffin Island and only rare sightings of wolverine on the northwestern extents of Baffin Island just across from Melville Peninsula. Both these mammals are known predators of mainland barren-ground caribou.

Given the low relative densities of carnivores reported across Baffin Island over the past 20 years, we suggest that human harvest, up until 2015, was the main cause of predation related mortality for Baffin Island caribou. As such, it was likely the main mechanism suppressing caribou population growth (caribou harvest will be discussed in the following sections).

Productivity, measured in this report as spring calf to cow ratios, and based on how these ratios relate to overwinter calf survival, was well into the increasing range (above

30%) for most years across all of Baffin Island (**Figure 45**). Spring calf to cow ratios for north Baffin reached highs of 58% and 63% for spring 2018 and 2021 respectively, while highs of 57% and 47% were recorded for the south Baffin in spring 2019, and 2021 respectively. Central Baffin Spring calf/cow ratios, though data deficient, also showed signs of high productivity, reporting 55% in spring 2021 (the 100% listed value for spring 2017 was based on the observation of a single cow/calf pair). Additionally, considering a bull only harvest non quota limitation (NQL) put in effect from 2015 through 2018, bull ratios were recorded to have been within a normal range. Bull ratios exceeded Tobey's (2001) findings which concluded that the ratio of 40 bulls:100 cows represents a valid benchmark for the number of bulls required in a population to ensure all cows are bred successfully (Tobey 2001).

Productivity can be influenced by pregnancy rates as well as age of first breeding, and sex ratios at birth. Related to this is the underlying age structure of the population. Populations that have good nutrition may make it possible for proportions of yearling caribou (18 months at fall rut) to breed therefore increasing productivity. For example, Parker (1981) found that 43% of yearlings bred for the George River Herd during an increase. Thomas and Killiam (1998) and Thomas et al (1989) found that younger females (ages 1.5-4 years old) produced more females (61-64%) at birth. If productivity is high, it would be likely that age-structure may shift toward younger females therefore increasing overall productivity. The increasing trend in calf-cow ratios **(Table 21 and Figure 43)** does suggest that productivity was high and increasing which would support higher pregnancy rates, higher calf survival, and potentially female-skewed sex ratios at birth.

5.2.4 Harvest Management Pre-2015

Since the mid to late 1990s, local hunters across Baffin Island have reported decreasing caribou numbers, and as of 2013, many hunters reported that they had to travel further from their communities to locate caribou (Jenkins et al. 2012; Jenkins and Goorts 2013, Department of Environment 2013). These observations were also supported by scientific studies of the time. GN ENV flew a caribou abundance survey across southern Baffin Island in March/April/May 2012 (Jenkins et al. 2012). Poor weather extended the survey period well into the spring migratory period, and melting conditions encountered toward the end of the survey period created difficulties with caribou sightability; However, Jenkins did report an estimated 1,484 yearling, adult, and calf caribou across southern Baffin including Prince Charles Island. These results supported hunter reports of a substantial reduction in South and central Baffin Island caribou abundance. At the time Jenkins et al. (2012) suggested that the observed and reported declines may be due to a combination of factors including but not limited to climate change, resource exploration and development, and extensive and widespread harvest (Vors and Boyce 2009, Jenkins 2011, Fiesta-Bianchet 2011). At the same time there was concern that these hypothesized mechanisms of decline were limiting the chance of recovery for some, if not all, Baffin Island caribou populations/groupings.

The only published documentation of pre-2015 caribou harvest across Baffin Island is the 2004 Nunavut Wildlife Management Board (NWMB) Nunavut Wildlife Harvest Study (NWHS) (Priest and Usher 2004). The study utilized community-based door to door surveys during which community assigned field workers interviewed 67% of registered hunters within each community, each month. Registered hunters were randomly selected from each community based on a list generated using statistics Canada data, Inuit Beneficiary enrollment lists, and General Hunting licence (GHL) holders. It was the fieldworker’s role to assess the hunter’s harvesting intensity which categorised hunters into three classes: 1-Intensive, 2-Active, and 3-Occasional. Using the data collected through this process, wildlife harvest estimates were generated monthly for each of the June1996 through May 2001 harvesting years. As not all communities provided data for the June 1996 to May 1997 harvesting year, we assessed harvest based on the June 1997 through May 2001 harvesting years for all Baffin Island communities. Based on harvest study findings, 19,113 caribou were harvested from south Baffin communities, 9,616 caribou from North Baffin communities, and 3,099 from central Baffin communities between June 1997 and May

2001 (**Table 23**; *data from 1996 excluded due to incompleteness*). This suggests an annual harvest across all of Baffin Island of approximately 7,957 caribou of unknown age and sex between June 1997 and May 2001. Given a well accepted low risk estimate of sustainable harvest of 5% (Bathurst Caribou Advisory Committee 2021; *Bathurst caribou management plan*), a sustainable harvest based on the NWHS harvest estimates would require a population of approximately 39,785 caribou to be sustainable.

The earliest Island wide quantitative estimate of Baffin Island caribou abundance was developed in March 2014, at which time Campbell et al. (2015) estimated 4,645 adult, yearling, and calf caribou (95% CI=3,667-5,884, CV=12.1%). Within the south Baffin region, a partial survey of the Island in March/April/May of 2012 found similar low densities of caribou to those observed in 2014 (Jenkins et al., 2012; Campbell et al., 2015), while within the north Baffin region, reconnaissance data from a telemetry program run between 2008 and 2011 suggested similar low densities of caribou to those observed in 2012 and 2014 (Jenkins and Goorts, 2011). We suggest that based on this information, it is likely that the subsistence harvest had been above sustainable levels for several years prior to 2008, suggesting that low numbers of caribou could have persisted since the late 1990s to early 2000's as supported by consultation reports (Jenkins and Goorts 2013; Jenkins et. al. 2012).

If these assessments reflect the Baffin Island demography of the period, we expect that caribou seasonal range would have had a chance to recover over the approximate 20-year period between the first reports of declining caribou on or about 1995, and the initiation of harvest restrictions in 2015. We suggest that the Baffin Island caribou population would have started to increase in abundance far sooner, were it not for a subsistence harvest which was suspected to have been above sustainable harvest levels over that same period. This condition of a suspected harvest related suppression of caribou population growth, could have allowed caribou seasonal range and forage to have made a more complete recovery from previous population highs, a condition that could express itself in the form of high rates of productivity and growth within the remaining low densities of caribou across the Island. Additionally, hunter reports and survey findings all suggest low densities of wolves across the Island further benefiting calf survival and downstream productivity and growth.

5.2.5 Harvest Management Post-2015

Following the March 2014 whole Baffin Island abundance estimate, significant caribou declines across Baffin Island were confirmed quantitatively. Immediately following the release of the 2014 Baffin Island caribou survey report and results on November 1st, 2015, the Government of Nunavut Department of Environment (GN ENV) initiated a moratorium on caribou harvesting across Baffin Island through a ministerial management initiative. This prompted the fast tracking of the Nunavut Wildlife Management Boards (NWMB) assessment process including the establishment of harvest management actions through their GN ENV, Regional Wildlife Organization (RWO), and Hunters and Trappers Organization (HTO) inclusive co-management process. By August 2015, the NWMB, through multiple meetings and discussions with the GN ENV, Qikiqtaaluk Wildlife Board (QWB), Nunavut Tunngavik Incorporated (NTI), and the community HTOs of Arctic Bay, Pond Inlet, Igloolik, Sanirajak, Clyde River, Qikiqtarjuaq, Pangnirtung, Iqaluit, Kinngait, and Kimmirut, agreed to a whole Island Total Allowable Harvest (TAH) of 250 caribou, and the establishment of a Non-Quota Limitation (NQL) of a male only harvest (**Table 23**).

The TAH and associated NQL restricting female harvest remained in effect from August 27th, 2015, to September 18th, 2019, at which time they were re-assessed based on both scientific and IQ evidence of increased caribou abundance in some areas across Baffin Island. This new information primarily included evidence of high indices of productivity derived from semi-annual GN ENV fall and spring composition studies coupled with harvester reports and IQ, suggesting recovery of the Baffin Island caribou population in some areas.

The NWMB re-assessment first reviewed in June 2019, acknowledged the positive signs of recovery submitted by the GN ENV and the QWB, and by September 19th, 2019, rendered a decision to allow for the modification of the NQL to include up to 25 females within the 250 caribou TAH. As early signs of recovery continued to be reported by all Baffin Island stakeholders, NWMB and their co-management partners re-convened on June 16, 2022, to re-examine all Baffin Island Caribou TAH's and NQL's. Based on submissions by the GN ENV and QWB, the NWMB, on July 5th, 2022, rendered a decision to increase the TAH of Baffin Island caribou from 250 to 350 caribou for the 2022/2023 harvest season. This decision also allowed for an annual increase of the TAH by 50 caribou in the 2023/2024 harvest season, and each year following for the next 8 years or until additional information on the herd suggested otherwise. Additionally, the NWMB allowed for a modification to the NQL allowing for an increase of the female proportion of the TAH from 25 to 75 for the 2022/23 harvest season, with further allowance for an annual increase to the proportion of female caribou within the assigned TAH to 20% in the 2023/2024 harvest season and each year after that for the next 8 years or until new information on the herd suggests otherwise. As of November 1st, 2025, the current TAH stands at 500 caribou 100 of which could be female (**Table 24 and 25**).

The dramatic lowering of the caribou harvest across Baffin Island by the NWMB and approved by the GN Minister of Environment, we believe, set the stage for the dramatic recovery of the Baffin Island barren-ground caribou population. Total harvest dropped from an annual high of 7,957 caribou including females in the late 1990's and early 2000's, to 0 caribou by August 2015, then to a 250 per year male-only harvest for 7 years, for a total of 1,750 legally harvested caribou since 2015. This level of harvest shows a 97% reduction over the subsistence harvest estimated just 13 years prior. Of equal importance was the extremely low female harvest over the same period. During this same 7-year period only 25 females were legally harvested.

Though TAH's increased as did female proportions of the harvest beginning in 2022, it remained well below pre-TAH harvest estimates as did the female proportions of the annual harvest. In all, substantial reductions in the estimated harvest of caribou and the proportion of females harvested lasted just over 10 years, extending from October 2015 to present. We suggest that this dramatic reduction in overall harvest as well as the reduction in the female proportion of that harvest, was the main mechanism of the observed recovery documented within the 2024 and 2025 Baffin Island survey estimates. High productivity was key to the strong recovery as well and was likely the result of an extended period of harvest induced low caribou abundance, and the resultant recovery of preferred herbaceous vegetation used as forage by caribou throughout their annual cycle and across all seasonal range.

Table 23. Pre-2014 estimates of Baffin Island caribou harvest for all communities. Data summarized from the NWMB Nunavut Wildlife Harvest Study (2004).

Harvest Year (July 1-June 30)	TAH	Female Proportion of TAH	Estimated Harvest	Reported Harvest
1997/1998	Unlimited	?	8,669	Unreported
1998/1999	Unlimited	?	8,479	Unreported
1999/2000	Unlimited	?	6,578	Unreported
2000/2001	Unlimited	?	6,739	Unreported
Baffin Totals	**Unlimited**	**?**	**30,465**	**Unreported**

Table 24. Post-2014 Caribou harvest data for all Baffin Island by harvest year. Not all illegal harvest could be accurately quantified. Actual harvest may have exceeded indicated harvest rates due to illegal harvest.

Harvest Year	TAH	Actual Harvest (male & female)	Female Proportion of TAH	Difference (+/-)
2015-2016	250	183	0	67
2016-2017	250	229	0	21
2017-2018	250	233	0	17
2018-2019	250	236	0	14
2019-2020	250	247	25	3
2020-2021	250	247	25	3
2021-2022	250	245	25	5
2022-2023	350	352	75	-2
2023-2024	400	421	80	-21
2024-2025	450	422	90	0
Totals	**2,950**	**2,815**	**320**	**107**

Table 25. Post-2014 caribou harvest data by community and harvest year (not all illegal harvest could be accurately quantified. Actual harvest may have exceeded indicated harvest rates).

COMMUNITY	2015-2016		2016-2017		2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		2022-2023		2023-2024		2024-2025	
	TAH	HVST	TAH	HVST	TAH	HVST	TAH	HVST	TAH	HVST	TAH	HVST	TAH	HVST	TAH	HVST	TAH	HVST	TAH	HVST
ARCTIC BAY	30	9	25	12	20	17	20	20	19	19	19	19	19	13	26	23	30	30	34	34
CLYDE RIVER	30	25	30	30	32	30	32	30	31	29	31	29	31	31	37	26	41	41	43	43
IGLOOLIK	10	0	10	7	12	11	12	10	10	13	10	13	10	12	25	41	31	23	40	34
IQALUIT	30	30	35	41	41	40	41	41	43	43	43	43	43	45	64	64	74	119	53	67
KIMMIRUT	30	30	31	31	33	33	33	33	35	35	35	35	35	35	42	42	45	45	50	48
KINNGAIT	30	13	25	18	20	19	20	19	20	21	20	21	20	21	38	37	43	38	52	52
PANGNIRTUNG	30	22	31	31	33	33	33	35	35	35	35	35	35	36	47	47	53	53	58	58
POND INLET	30	30	32	33	34	33	34	24	34	36	34	36	34	41	46	49	52	58	46	46
QIKIQTARJUAQ	30	24	31	26	25	17	25	24	23	16	23	16	19	9	17	15	20	10	30	24
SANIRAJAK	0	0	0	0	0	0	0	0	0	0	0	0	4	2	8	8	11	4	16	16
BAFFIN TAH	**250**	**183**	**250**	**229**	**250**	**233**	**250**	**236**	**250**	**247**	**250**	**247**	**250**	**245**	**350**	**352**	**400**	**421**	**450***	**450***

* = The full legal TAH allocation for Baffin Island was not distributed by the QWB during this harvesting season.

6.0 CONCLUSIONS

The Baffin Island 2024/2025 abundance survey documents a successful implementation of the Nunavut co-management caribou harvest management system. The data presented in this report suggests the north, central, and south Baffin caribou groups or herds, may have had a prolonged declining phase due to the proportionally high rates of harvest that continued following the onset of a declining phase. Based on anecdotal observations and numerous community consultations undertaken across Baffin Island over this period, this likely began in the early 2000's. Additionally, low densities of predators (particularly the wolf), and the absence of mainland predators (e.g. wolverine and grizzly bear), suggest that predation had little effect on the demographic trends of Baffin Island caribou over this same period. Similarly, prolonged periods of adverse weather or evidence of sustained reproductive disease were not apparent from the early 2000's to present and as a result could not directly account for the prolonged period of low caribou abundance in our opinion.

Following the 2015 activation of harvest management restrictions, ongoing monitoring studies showed a gradual movement of caribou back into previously well-known caribou habitat, with the concurrent effect of documented increases in relative densities documented using IQ and productivity-based classification studies. Beginning in 2015, the Baffin Island caribou harvest was dramatically reduced from an estimated 7,616 caribou annually to 250 caribou annually with an accompanying bull only NQL, clearly paving the way to the dramatic increases seen in the most recent population assessment.

We hypothesize that the prolonged low numbers of caribou across the Island allowed for previously overgrazed range to strongly recover, offering nutritious and abundant forage to Baffin Island caribou now provided substantial relief from extensive harvesting activity. Additionally, density dependant disease would have been substantially reduced as relative densities of caribou across the Island continued to decline and remained low well into the post-2015 recovery period.

We suggest the results presented in this report highlight a success story brought about by the working together of Baffin Island community HTO's, the QWB, and the Government of Nunavut, all under the umbrella of the NWMB and their primary role as the main instrument of wildlife management. We suggest that next steps should acknowledge and utilize the success of the Baffin Island caribou management structure as we move forward. Based on the March 2014 Baffin Island survey estimate (including Prince Charles Island) of 4,652, the NWMB, in discussions with the GN ENV, Baffin HTOs, and the QWB, assessed a TAH and NQL of a 250 caribou male only harvest as being consistent with the recovery of the Baffin Island caribou population. This assigned TAH represented a 5% harvest rate based on the 2014 estimate, proving successful in fostering the strong observed recovery over the 7 years it was in effect. The NQL applied would have also contributed to the strong recovery of the herds. During the first 4 years female harvest was restricted and for the next 3 years only increased to 25 out of the TAH of 250, thus strongly protecting the reproductive potential of the population through the protection of breeding females. Though management decisions made to address the Baffin Island caribou declines were reflective of multifaceted approaches and recommendations expressed by Nunavut stakeholders and management authorities, there is published literature supporting this management approach from studies conducted on mainland barren-ground caribou herds (Boulanger and Adamczewski 2016).

One of the major challenges of monitoring the Baffin Island populations is the high expense of population surveys to provide trends in the abundance of caribou. Because these surveys are expensive and logistically demanding, they are often carried out infrequently, which can result in data gaps. This hampers our ability to detect changes in population dynamics in a timely manner. One means of addressing this is the use of Integrated Population models (IPM) (Schaub and Kery 2022), which have been successfully applied to the Beverly (Campbell et al 2025), Bathurst, and Bluenose-East (Boulanger et al 2024) herds.

IPMs can combine estimates of abundance, productivity (calf-cow ratios), collar survival (through the establishment of telemetry programs), and harvest monitoring, to estimate demographic trends. IPMs use an underlying population model (similar to that described in **Figure 45**) to reconcile trends suggested from each data source. It can therefore be used to predict trends based on levels of productivity and harvest. While collar-based survival is not necessarily a requirement of IPMs, this information can add additional confidence in model results and reliability. In the absence of collared-based survival data, an IPM can still be used to help determine what level of survival is required to maintain the observed trend in survey results given observed levels of productivity (calf-cow ratios) and harvest. This approach would certainly become viable if calf-cow ratio surveys were conducted in a systematic way both temporally and spatially across Baffin Island. Ideally, collar data could be tracked consistently to assess survival rates, aid in locating and studying overwinter calf survival in a way representative of Island subpopulations or groupings, identify caribou groupings and movements to improve on methods and precision of demographic monitoring studies such as abundance surveys, and delineate seasonal range and migratory corridors and behaviour and any long-term changes to the same.

7.0 RECOMMENDATIONS

Disclaimer:

The recommendations section represents the opinions and recommendations of the Government of Nunavut, Department of Environment, Wildlife Research Division Staff, and do not necessarily reflect the opinions of the Government of Nunavut as a whole or all the authors contributing to this report.

Based on the findings of this report, we recommend a continuation of the harvest management regime set out by the NWMB. We suggest a harvest rate of 5% continue to be applied, which would suggest an island wide TAH of 2,334 caribou (based on the 2024/25 abundance estimate), with the maintenance of the NQL allowing 467 (20%) of the TAH to be females. We also recommend a NQL restricting the harvest of cow/calf pairs. We further recommend that this TAH and associated NQL, remain in place under the same harvesting regime most recently updated by the NWMB in 2022 (allowing for the TAH to increase by 50 caribou annually, of which 20% can be females without calves in tow), for a period of 5 to 7 years, or until new information suggests a re-assessment of these management actions. We further recommend that spring composition studies continue every 2 years to monitor herd productivity and indices of general abundance and trends. Finally, we recommend that a telemetry program be maintained within each of the north, central, and south Baffin caribou ranges to:

1- develop a better understanding of Baffin caribou critical seasonal range.

2- assess, predict, and mitigate (to the extent possible), any conflicts, disturbance effects, or herd-level impacts caused by industrial development and associated infrastructure on or impacting caribou seasonal range.

3- provide more detailed critical caribou range maps to better inform the Nunavut Land Use Planning process.

4- better understand north, central, and south Baffin caribou migratory corridors to help ensure these areas are not compromised by linear infrastructure of other land use related impacts.

5- further monitor caribou mortality for associated assessments of herd health and vulnerability primarily through the estimation of adult female survival rates through the tracking of collar data.

6- help locate caribou for more precise and cost-effective monitoring work including but not limited to systematic spring composition surveys to monitor herd productivity by region, regional abundance and reconnaissance surveys, and ecological land classification studies of caribou seasonal range.

At the end of this 5–7-year period, we further recommend that a re-assessment (either through abundance or reconnaissance aerial surveys) of the Baffin Island caribou population be considered, to provide more quantitative information with which to re-assess the existing TAH and associated NQLs. If implemented, these recommendations will help detect and address any negative impacts to Baffin Island caribou demographics arising from anthropogenic causes. We believe these measures will help safeguard Inuit subsistence harvesting rights, as guaranteed within the Nunavut Agreement.

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Aerial Abundance Estimates and Trends of the Barren-Ground Caribou (*Rangifer tarandus groenlandicus*) of Baffin Island Nunavut – March 2024 and 2025

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19th December 2025

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ᑕᕝᕙᓂ ᐅᓂᒃᑳᒥ, ᐅᖃᐅᓯᖃᖅᐳᑦ ᓄᑖᙳᕆᐊᖅᓯᒪᔪᓂᒃ 2014-ᒥ ᐅᓄᕐᓂᖏᑦ ᓇᓚᐅᑦᑖᖅᑕᐅᓯᒪᔪᑦ ᖃᓄᐃᓕᕙᓪᓕᐊᓂᖏᓐᓂᓪᓗ ᕿᑭᖅᑖᓗᑉ ᑐᒃᑐᖏᑦ. ᖃᖓᑕᓲᒃᑯᑦ ᖃᐅᔨᓴᓚᐅᖅᐳᑦ ᐅᓄᕐᓂᖏᓐᓂ ᓇᓚᐅᑦᑖᖅᓱᑕ ᓇᐸᖅᑐᖃᙱᑦᑐᒥ ᑐᒃᑐᖏᑦ ᕿᑭᖅᑖᓗᖕᒥ ᖃᓂᒋᔭᖏᓐᓂᓪᓗ ᕿᑭᖅᑕᐃᑦ ᐊᕐᕋᒎᓄᑦ ᒪᕐᕉᖕᓄᑦ (2024, 2025), ᒪᕐᕉᖕᓂᒃ ᖃᐅᔨᓴᖅᑎᖃᖅᓱᑎᒃ ᐊᑕᐅᑦᑎᒃᑯᑦ ᐅᖓᓯᑦᑎᖕᓂᖓᓂᓪᓗ ᖃᐅᔨᓴᕈᑎᓕᖕᒥᒃ. ᑕᒪᕐᒥᒃ ᖃᐅᔨᓴᕈᑎᑦ ᐱᐅᓯᒋᐊᖅᑕᐅᓚᐅᖅᐳᑦ ᐊᔪᙳᖅᓲᔾᔨᔨᖃᖅᓱᑎᒃ ᓄᓇᓕᖕᓂ ᖃᐅᔨᒪᔪᒥᒃ ᐃᓚᓕᐅᔾᔨᓪᓗᑎᓪᓗ ᐃᓄᐃᑦ ᖃᐅᔨᒪᔭᑐᖃᖏᓐᓂᒃ ᖁᓕᓂᑦ ᕿᑭᖅᑖᓗᖕᒥ ᓄᓇᓕᖕᓂᙱᖅᑐᓂᑦ.

ᒫᔾᔨ 2024−ᒥ ᐊᒻᒪ ᒫᔾᔨ 2025−ᒥ, ᖃᐅᔨᓴᓚᐅᖅᐳᑦ ᕿᑭᖅᑖᓗᐸ ᓂᒋᐊᓂ, ᐊᒻᒪ ᐅᐊᖕᓇᖓᓂ ᐊᒻᒪ ᕿᑎᖅᐸᓯᐊᓂ ᕿᑭᖅᑖᓗᐸ ᑐᒃᑐᖏᑕ ᐅᓄᕐᓂᖏᓐᓂᒃ ᐊᑐᓂ. ᒫᔾᔨ 2024−ᒥ 3,843−ᓂᒃ ᑕᑯᓚᐅᖅᐳᑦ ᐃᒻᒥᑰᖅᑐᓂᒃ ᐃᑳᖅᑎᓪᓗᒋᑦ ᕿᑭᖅᑖᓗᐸ ᓂᒋᐊᓂ. ᒫᔾᔨ 2025−ᒥ 3,656−ᓂᒃ ᑕᑯᓚᐅᖅᐳᑦ ᐃᑳᖅᑎᓪᓗᒋᑦ ᕿᑭᖅᑖᓗᐸ ᐅᐊᖕᓇᖓᓂ ᕿᑎᖅᐸᓯᐊᓂᓗ. ᑲᑎᕝᕙᒋᑦ (ᑕᒪᐃᓐᓂ ᐊᕐᕋᒍᓂ ᖃᖓᑕᕿᕕᒋᔭᓕᒫᖏᓐᓂᓪᓗ), ᑕᑯᓚᐅᖅᐳᑦ 7,635−ᓂᒃ ᑐᒃᑐᓂᒃ. ᒪᕐᕉᖕᓂᒃ−ᖃᐅᔨᓴᖅᑎᖃᓚᐅᖅᐳᑦ ᐊᑕᐅᑦᑎᒃᑯᑦ ᐅᖓᓯᖕᓂᖓᓂᓪᓗ ᖃᐅᔨᓴᕈᑎᓕᖕᒥᒃ ᓴᖅᑭᑎᔪᒪᓪᓗᑕ ᐅᓄᕐᓂᖏᓐᓂᒃ ᓇᓚᐅᑦᑖᖅᑕᐅᔪᒥᒃ ᖃᖓᑕᕿᕕᐅᔪᓕᒫᓂᑦ ᑕᒪᐃᓐᓂ ᐊᕐᕋᒎᖕᓂ ᐊᒻᒪ ᕿᑭᖅᑖᓗᓕᒫᒧᑦ. ᓇᓚᐅᑦᑖᓚᐅᖅᐳᑦ 24,162 (95% CI = 21,595-27,034; CV =5.7%) ᐃᓐᓇᐃᑦ, ᓄᕋᐃᑦ, ᐊᒻᒪ ᑎᕿᑐᕋᐃᑦ ᑐᒃᑐᐃᑦ ᕿᑭᖅᑖᓗᐸ ᓂᒋᐊᓂ ᒫᔾᔨ 2024−ᒥ ᐊᒻᒪ 25,026 (95% CI = 21,182-29,568; CV =8.5%) ᐃᓐᓇᐃᑦ, ᓄᕋᐃᑦ, ᐊᒻᒪ ᑎᕿᑐᕋᐃᑦ ᕿᑭᖅᑖᓗᐸ ᐅᐊᖕᓇᖓᓂ ᕿᑎᖅᐸᓯᐊᓂᓗ ᒫᔾᔨ 2025−ᒥ. ᑲᑎᕝᕙᒋᑦ, ᒫᔾᔨ 2024−ᒥ ᐊᒻᒪ 2025−ᒥ ᖃᐅᔨᓴᖅᑕᐅᓚᐅᖅᑐᑦ ᓴᖅᑭᑦᑎᓚᐅᖅᐳᑦ ᓇᓚᐅᑦᑖᖅᑕᐅᓯᒪᔪᓂᒃ ᑲᑎᕝᕙᒋᑦ 48,681−ᓂᒃ (95% CI = 43,973-53,893; CV =5.2%) ᐃᓐᓇᐃᑦ, ᑎᕿᑐᕋᐃᑦ, ᐊᒻᒪ ᓄᕋᐃᑦ. ᖃᐅᔨᔮᑦ ᓇᓗᓇᐃᖅᓯᕚᑦ ᑭᒡᓕᓯᓂᐊᖅᑕᐅᓯᒪᔪᓂᒃ ᐅᔾᔨᕐᓇᖅᑐᒥᒃ ᐅᓄᖅᓯᕚᓕᖅᓯᒪᓂᖏᓐᓂᒃ ᒫᔾᔨ 2014-ᒥ ᕿᑭᖅᑕᓕᒫᒥ

ᖃᐅᔨᓴᖅᑕᐅᓚᐅᖅᑐᒥᑦ, ᓇᓚᐅᑦᑖᖅᑕᐅᔪᑦ 4,645 ᐃᓐᓇᐃᑦ, ᑎᕿᑐᕋᐃᑦ, ᐊᒻᒪ ᓄᕋᐃᑦ (95% CI=3,667-5,884, CV=12.1%).

ᖃᓄᐃᓕᕚᓕᐊᓂᖓᓂ ᖃᐅᔨᓴᓚᐅᖅᐳᒍᑦ ᐊᑐᖅᖢᑕ ᐊᔾᔨᒌᓂᒃ ᖃᖓᑕᕝᕕᐅᔪᓂᑦ 2012, 2014, ᐊᒻᒪᓗ 2024/2025 ᐊᑯᓐᓂᖏᓐᓂ. ᑖᒃᑯᐊ ᖃᐅᔨᓴᕈᑎᑦ ᓇᓗᓇᐃᖅᓯᕗᑦ ᐅᓄᖅᓯᕚᓕᐊᓂᖏᓐᓂᒃ ᑕᒪᐃᓐᓂᒃ ᖃᖓᑕᕝᕕᐅᓯᒪᔪᓂᑦ ᑭᓯᐊᓂ ᐳᒃᑭᑦᑐᔮᖅ ᕿᑭᖅᑕᕈᓗ, ᐅᓄᕈᓐᓃᖅᐸᓖᓕᓚᐅᖅᐳᑦ 75%−ᒥ 2014 ᐊᒻᒪ 2025 ᐊᑯᓐᓂᖓᓂ (ᐊᕐᕌᒍᓕᒫᒧᑦ ᐅᓄᕈᓐᓃᖅᐸᓖᓕᖅᑐᑦ 3%−ᒥ (CI=-8% ᑎᑭᐅᓪᓗᒍ 2%)). ᖃᐅᔨᓴᓚᐅᖅᐳᒍᑦ ᓇᓚᐅᑦᑖᖅᑕᐅᓯᒪᔪᑦ ᐲᖅᓯᕝᕙᐅᓚᐅᖅᑎᓐᓇᒋᑦ ᐊᓯᔾᔨᖅᑐᓂᒃ ᐊᒻᒪ ᐊᕐᕌᒍᓕᒫᒧᑦ ᐊᓯᔾᔨᖅᐸᓖᓕᐊᔪᓂᒃ, ᖃᐅᔨᔭᐅᔪᑦ ᓇᓗᓇᐃᖅᓯᓪᓗᑎᒃ ᕿᑭᖅᑖᓗᖕᒥ ᑐᒃᑐᐃᑦ ᐅᓄᕐᓂᖏᑦ ᐅᓄᖅᓯᕖᓪᓕᓚᐅᖅᐳᑦ 11.2−ᒥᒃ ᒫᔾᔨ 2014 ᐊᒻᒪ 2024/2025 ᐊᑯᓐᓂᖓᓂ, ᒪᓕᒃᖢᑎᒃ ᐊᕐᕌᒍᓕᒫᒧᑦ ᐅᓄᖅᓯᕚᓕᐊᔪᓂᑦ 25%−ᒥᒃ (CI=22-28%). ᑕᑯᔭᐅᔪᑦ ᐊᓯᔾᔨᖅᑐᑦ ᒫᔾᔨ 2014 ᐊᒻᒪ 2024 ᐊᑯᓐᓂᖓᓂ ᐅᔾᔨᕐᓇᖅᑐᒻᒪᕆᐅᓚᐅᖅᐳᖅ (t-ᖃᐅᔨᓴᕈᑎ =17.1; p-ᖃᔅᓯᐅᓂᖓ <0.001). ᖃᐅᔨᓴᕈᑎᕗᑦ ᓇᓗᓇᐃᖅᓯᕗᑦ ᑲᔪᓯᑦᑎᐊᕐᓂᖏᓐᓂᒃ ᖃᐅᔨᓴᖅᑕᐅᔪᑦ ᐊᒻᒪ ᐊᐅᓚᑦᑎᔾᔪᑎᑦ ᐊᐅᓚᑦᑎᔨᐅᖃᑕᐅᔪᓄᑦ ᓴᐳᔾᔨᓯᒪᓇᓱᒃᖢᑎᒃ ᐊᐅᓚᑕᐅᔪᑦ ᕿᑭᖅᑖᓗᖕᒥ ᑐᒃᑐᖏᓐᓂᒃ.

ᖃᐅᔨᓴᖅᐸᓖᓕᐊᔪᑦ ᐊᑐᓚᐅᖅᑐᑦ ᐅᑭᐊᒃᓵᒃᑯᑦ ᐅᐱᕐᖔᒃᑯᓗ ᖃᓄᐃᓕᖓᓂᖓᓂ ᖃᐅᔨᓴᖅᑐᑦ ᖃᐅᔨᓚᐅᖅᐳᑦ ᐅᓄᕐᓂᖏᓐᓂᒃ ᑕᒪᐃᓐᓂᓪᓗ ᐊᒥᖏᓐᓂᖏᓐᓂᒃ ᕿᑭᖅᑖᓗᖕᒥ ᑐᒃᑐᐃᑦ ᒪᓕᒃᖢᒋᑦ ᒫᔾᔨ 2014−ᒥ ᐅᓄᕐᓂᖏᑦ ᓇᓚᐅᑦᑖᖅᑕᐅᓚᐅᖅᑐᑦ, ᐱᒋᐊᖅᑎᑕᐅᔪᒥᓪᓗ ᐊᐅᓚᑦᑎᓂᕐᒧᑦ ᐱᓕᕆᐊᖑᔪᓂᑦ 2014/2015−ᒥ ᑐᕋᖓᖃᖅᖢᑎᒃ ᐅᑎᖅᐸᓖᓕᐊᕐᑯᓗᒋᑦ ᕿᑭᖅᑖᓗᖕᒥ ᑐᒃᑐᐃᑦ. ᒪᓕᒃᑕᐅᔭᕆᐊᓕᑦ ᓃᕐᓗ ᑲᑎᕐᓗᒋᑦ ᐊᖑᓇᓱᒃᑕᐅᔪᓐᓇᖅᑐᑦ (TAH) ᐊᑐᓕᖅᑎᑕᐅᔪᑦ ᐊᒻᒪ ᑰᑕᖄᙱᑦᑐᑦ ᑭᓪᓕᖅᖃᖅᑎᑕᐅᔪᑦ (NQLs), ᓴᖅᑭᑕᐅᓚᐅᖅᑐᑦ ᑭᐅᔾᔪᑕᐅᓪᓗᑎᒃ ᐅᓄᙱᓗᐊᕐᓂᖏᓐᓄᑦ ᐊᐅᓚᑕᐅᓪᓗᑎᓪᓗ ᐃᓄᐃᑦ ᖃᐅᔨᒪᔭᑐᖃᖏᓐᓄᑦ ᐊᒻᒪ ᖃᓄᐃᐸᓖᓕᐊᓂᖏᓐᓂᑦ ᖃᐅᔨᓴᖅᐸᓖᓕᐊᔾᔪᑎᑦ, ᑐᙵᕕᐅᓪᓚᕆᒃᐳᖅ ᐃᓪᓗᖖᒑᖕᒐᓃᕈᑕᐅᓪᓗᓂ ᐊᑯᓂᐅᔪᖅ ᐅᓄᕈᓐᓃᖅᐸᓖᓕᐊᔪᓂᑦ. ᑖᒃᑯᐊ ᖃᐅᔨᔭᐅᔪᑦ ᑕᑯᒃᓴᐅᑎᑦᑎᕗᑦ ᑲᑐᔾᔨᖃᑎᒌᖕᓂᖅ, ᓇᓗᓇᐃᕈᑎᒃᓴᑦ−ᒪᓕᒃᖢᒋᑦ ᐊᐅᓚᑦᑎᓂᖅ ᖃᓄᖅ ᐊᓯᔾᔨᕈᓐᓇᖅᑎᑦᑎᖕᒪᖔᑦ ᐅᓄᕐᓂᖏᓐᓂᒃ ᐅᓗᕆᐊᓇᖅᑐᒦᓕᓚᐅᖅᑐᓂᑦ.

ᐅᖃᐅᓯᐅᓪᓗᐊᑕᖅᑐᖅ: ᑐᒃᑐᐃᑦ, ᓇᐹᖅᑐᖃᙱᑦᑐᒥ ᑐᒃᑐᐃᑦ, ᕿᑭᖅᑖᓗᒃ, ᐃᓗᐃᓪᓕᖅ, ᕿᑭᖅᑖᓘᑉ ᐅᐊᖕᓇᖕᒐᓂ, ᕿᑭᖅᑖᓘᑉ ᓂᕐᐊᓂ, ᖃᖕᒪᑕᓲᒃᑯᑦ ᖃᐅᔨᓴᕐᓂᖅ, ᓄᓇᒃᑯᑦ ᖃᐅᔨᓴᕐᓂᖅ, ᐅᑭᐅᑉ ᓄᙳᐊᓂ, ᑕᑯᒃᓴᐅᔪᒃᑯᑦ ᖃᐅᔨᓴᕐᓂᖅ, ᕿᑭᖅᑖᓗᖕᒥ, ᒪᕐᕉᖕᓂᒃ-ᖃᐅᔨᓴᖅᑎᖃᖅᓱᑎᒃ ᐊᑕᐅᑦᑎᒃᑯᑦ ᖃᐅᔨᓴᕈᑎᑦ, ᓇᓃᓐᓂᖕᒋᑦ, ᓇᒨᕐᒪᐅᕙᓪᓕᐊᓂᖕᒋᑦ, ᐊᕐᕌᒍ ᐃᓚᖕᒐᓂ ᐊᔾᔨᒌᙱᑦᑐᑦ ᐊᑐᖅᑕᐅᓰᑦ, ᐅᖕᒐᓯᖕᓂᖕᒐᓂ ᖃᐅᔨᓴᓚᒃᓴᑦ, ᓇᓃᓐᓂᖕᒋᑦ, ᖃᔅᓯᐅᓂᖕᒋᑦ, ᓄᓇᕗᒻᒥ, *Rangifer tarandus groenlandicus*, ᐅᓄᕐᓂᖕᒋᓐᓂᑦ ᖃᐅᔨᓴᕐᓂᖅ, ᑐᒃᑐᐃᑦ ᐅᑭᐅᒃᑯᑦ ᓇᓂᑐᐃᓐᓈᕐᓂᖕᒋᑦ.

ABSTRACT

In this report, we present an update to the 2014 abundance estimate and trend of Baffin Island Caribou. We conducted aerial surveys to estimate the abundance of barren-ground caribou on Baffin Island and ancillary islands over two years (2024, 2025), using double-observer pair and distance sampling methods. Both surveys were enhanced through the guidance of local knowledge and inclusion of Inuit Qaujimajatuqangit (IQ) from communities that hunt Baffin Island caribou.

In March 2024 and March 2025, we assessed South Baffin, and North and Central Baffin caribou abundance respectively. In March 2024, we observed 3,843 individuals on-transect across all South Baffin strata. In March 2025, we observed 3,656 caribou on-transect across North and Central Baffin strata. In total (across both years and all strata), we observed 7,635 caribou. We used double-observer pair and distance sampling analytical models to develop abundance estimates for all strata across both years and for the entire Baffin Island complex. We estimated 24,162 (95% CI = 21,595-27,034; CV =5.7%) adults, calves, and yearling caribou within South Baffin strata in March 2024 and 25,026 (95% CI = 21,182-29,568; CV =8.5%) adults, calves, and yearlings within North and Central Baffin strata in March 2025. Combined, the March 2024 and 2025 surveys produced an estimated total of 48,681 (95% CI = 43,973-53,893; CV =5.2%) adult, yearling, and calf caribou. Our findings confirm a statistically significant increase from the March 2014 whole-island survey, which estimated 4,645 adult, yearling, and calf caribou (95% CI=3,667-5,884, CV=12.1%).

We conducted trend analyses using matched strata between 2012, 2014, and 2024/2025. These analyses suggest increasing trends in all regions with annual increases of 15% to 36% except for Prince Charles Island, where abundance declined

annually at a rate of 3% (CI=-8% to 2%)). We calculated estimates of gross change and annual change the results of which indicate that the Baffin Island caribou population increased by a factor of 10.5 between March 2014 and 2024/2025, corresponding to an average annual growth rate of 25% (CI=22-28%). The observed change between March 2014 and 2024 was highly significant (t-Test =17.1; p-value <0.001). The observed annual rate of increase of 25% parallels rates of increase observed on island populations with minimal predation, high productivity, and minimal harvest pressure. Our results highlight the success of research and management actions led by co-managers in safeguarding Baffin caribou.

Research monitoring using fall and spring composition studies tracked relative density and overall productivity of Baffin Island caribou following the March 2014 Island wide abundance estimate, and initiation of management actions in 2014/2015 aimed at recovering Baffin Island caribou. Measures such as the implementation of Total Allowable Harvests (TAH) and Non-quota Limitations (NQLs), introduced in response to critically low numbers and steered by IQ and demographic monitoring studies, have played a pivotal role in reversing the long-term decline in abundance. These findings demonstrate how collaborative, evidence-based management can restore resilience to a population once in jeopardy.

Key words: Caribou, Barren-Ground Caribou, Baffin Island, Melville Peninsula, North Baffin Island, South Baffin Island, Aerial Survey, Ground Survey, Late Winter, Visual Survey, Baffin Region, Double Observer Pair Method, Distribution, Movements, Seasonal Range Use, Distance Sampling, Spatial Affiliations, Population Structure, Nunavut, *Rangifer tarandus groenlandicus*, Population Survey, Caribou Late Winter Distribution.

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1.0 INTRODUCTION

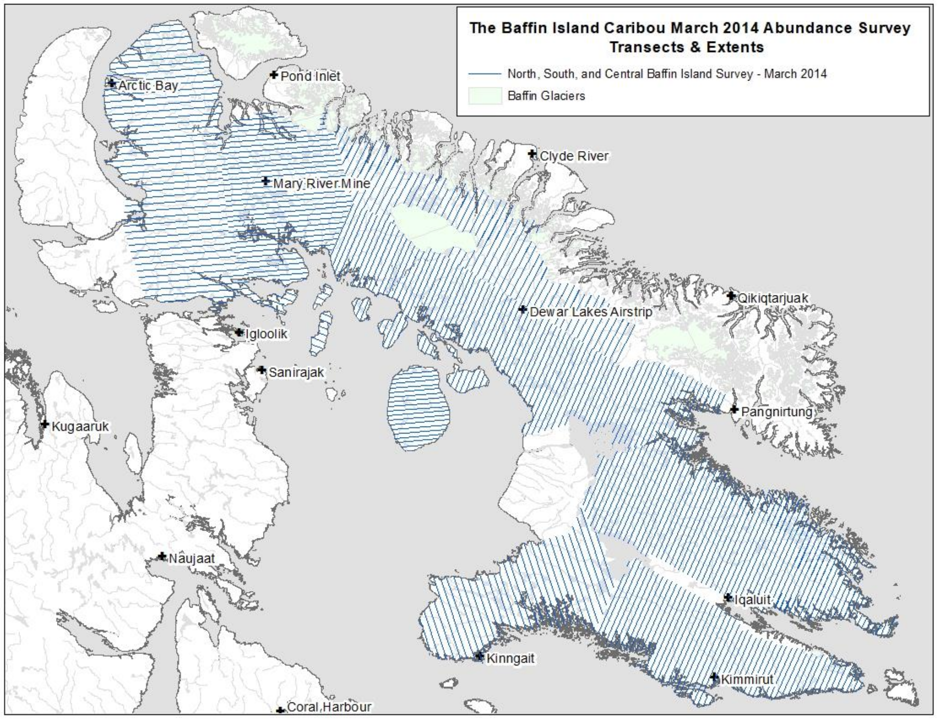
The following report reassesses demographic estimates and trends in caribou abundance across Baffin Island by comparing strata flown in March 2014 (all of Baffin Island), March 2024 (South Baffin Island), and March 2025 (North and Central Baffin Island) (**Figure 1**). It provides estimates of herd size and region-specific densities, documenting changes since the 2014 island-wide survey and subsequent 2024 and 2025 abundance surveys. The report presents updated abundance estimates to support ongoing management discussions between the Government of Nunavut, Department of Environment (GN ENV), co-management partners, and stakeholders.

Caribou are circumpolar in their distribution and occur in the northern parts of Eurasia and North America. In Canada, caribou are represented by four subspecies: Peary (*R. t. pearyi*), Woodland (*R. t. caribou*), Grant's (*R. t. granti*), and Barren-ground (*R. t. groenlandicus*). Of the four subspecies, barren-ground caribou are the most abundant and can be further divided into two ecotypes: the taiga wintering migratory and the tundra wintering ecotypes (Nagy et al. 2011). Baffin Island barren-ground caribou are classified as a tundra wintering ecotype, generally occurring in smaller aggregations, exhibit limited migratory behaviour, and are confined to tundra environments. Baffin Island caribou movement behaviour is not fully understood; however, limited scientific knowledge and IQ suggest that known seasonal movements or migratory behaviour, differ amongst three generally accepted Baffin Island caribou groupings or sub-populations. Currently, the GN ENV, recognizes three (3) caribou sub-populations across Baffin Island (see **Figure 6**; 5.1 Baffin Island Populations/Subpopulations). These populations include the South, North, and Central Baffin Island sub-populations (Campbell et al. 2015).

Historical caribou abundance assessments on Baffin Island caribou have suggested that more than 100,000 caribou likely inhabited Baffin Island in 1985 (Williams and

Heard 1986). This status was updated in 1991 at which time it was believed that the caribou sub-populations across Baffin Island were stable, with 60,000 -180,000 in South Baffin, greater than 10,000 in Central Baffin, and between 50,000-150,000 in North Baffin (Ferguson and Gauthier 1992). These earlier estimates, however, were not based on whole Island quantitative demographic studies, but rather estimations based on more geographically restricted scientific observations and IQ, including various smaller scale quantitative aerial observations, and limited movement data made up of; 1- extensive tagging programs and 2- limited telemetry studies from the early 1990s and early 2000's (Ferguson 1988).

During the mid to late 1990s, local hunters across Baffin Island reported decreasing caribou numbers, with hunters having to travel further from their communities to locate caribou (Jenkins et al. 2012; Jenkins and Goorts 2013, Department of Environment 2013). These observations appeared to have continued up to the 2014 whole Island abundance survey estimate. During this period Baffin Island caribou harvesters continued to confirm general declines in caribou abundance Island wide (Jenkins and Goorts 2013, Department of Environment 2013). These concerning observations, quantitatively confirmed following the 2014 abundance survey, lead to the engagement of all stakeholders in the development of management and research actions with an eye to reversing the confirmed declining trend.



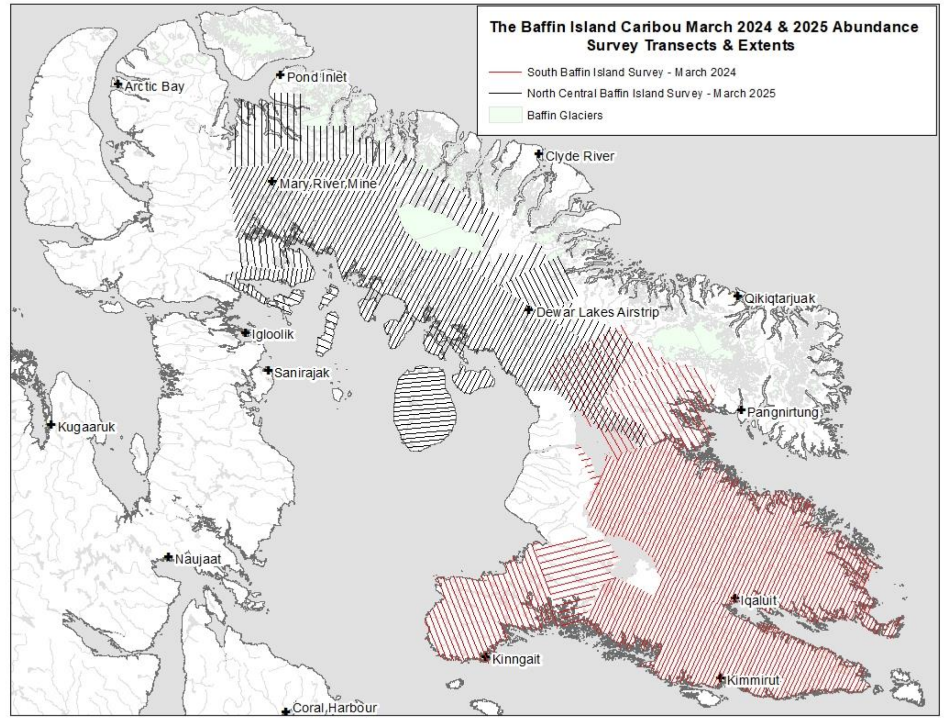


Figure 1. The north, central, and south March 2014 Baffin Island survey transects and extents (Left), and the March 2024 south Baffin and March 2025 north and central Baffin survey transects and extents (Right) side by side for comparison of survey extents. All survey extents and transects were developed through consultation with Hunters and Trappers Organizations (HTOs), Regional Wildlife Organization (RWO), and community meetings (Jenkins and Goorts 2013, Department of Environment 2013).

2.0 STUDY AREA

The Baffin Island complex, which includes all of Baffin Island and proximal islands (including Prince Charles Island), covers an estimated 543,746 square kilometres (excluding the areas of glaciers and ice fields). The Baffin Island complex exhibits variable relief, ranging from expansive lowlands near sea level (e.g., the great plain of the Koukdjuak east of Nettilling Lake, and Prince Charles Island), to the mountains of the North and South Baffin reaching elevations of 1,963 meters and 2,147 meters above sea level, respectively. The northeastern fifth of Baffin Island is within the Arctic Cordillera ecozone, while the remainder of the Baffin Island complex is wholly within the northern arctic ecozone (**Figure 2**). For detailed information on these ecozones and associated ecoregions (**Figure 3**), see (Campbell et al. 2015). Generalized indications of plant community productivity suggest that much of Baffin Island may not be suitable as caribou range suggesting more restrictive and predictable seasonal occupation of geographically specific areas by caribou (**Figure 4**) (Environment Canada 2001).

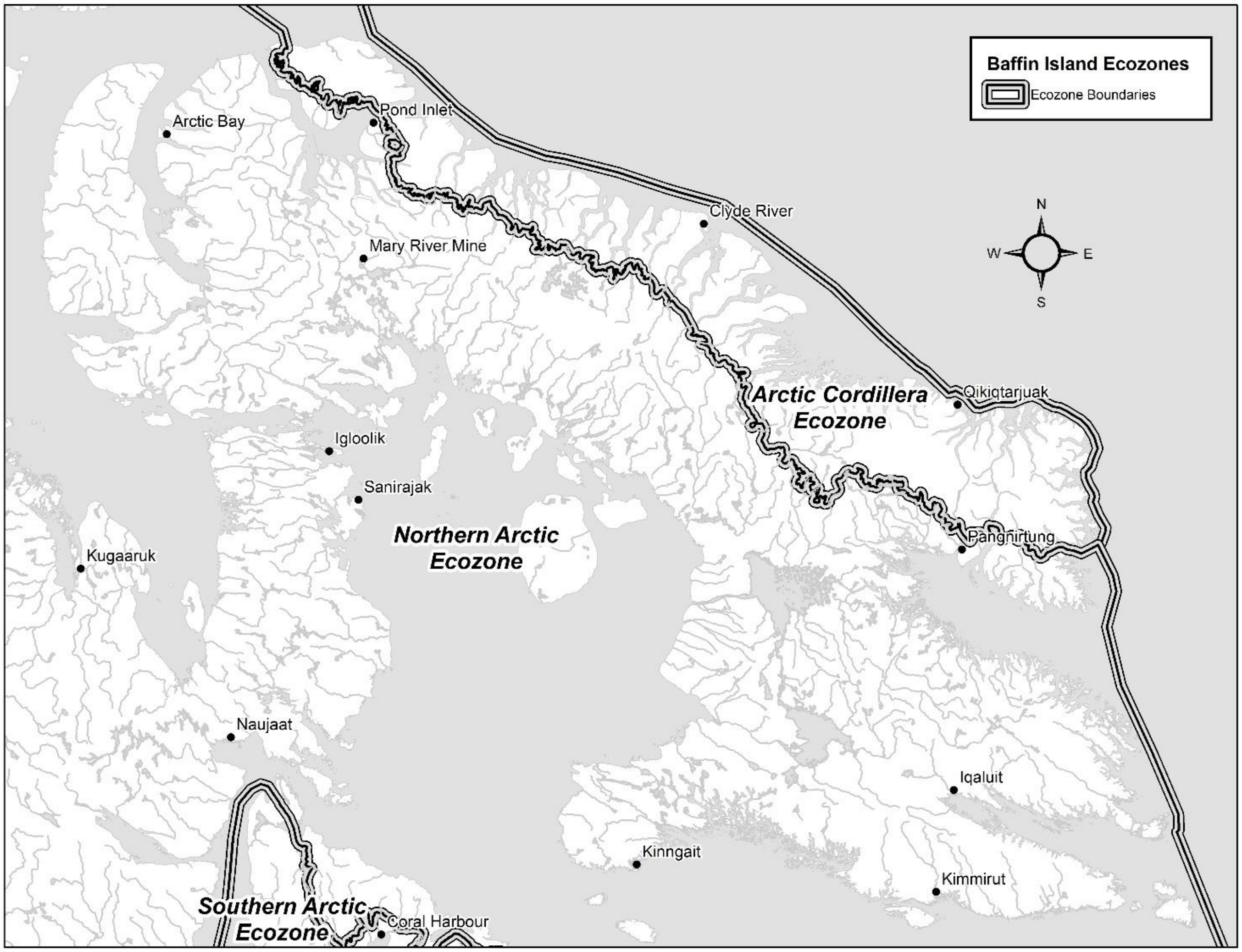


Figure 2. Ecozones of Baffin Island and proximal islands, and northern Melville Peninsula, Nunavut (after Environment Canada 2001).

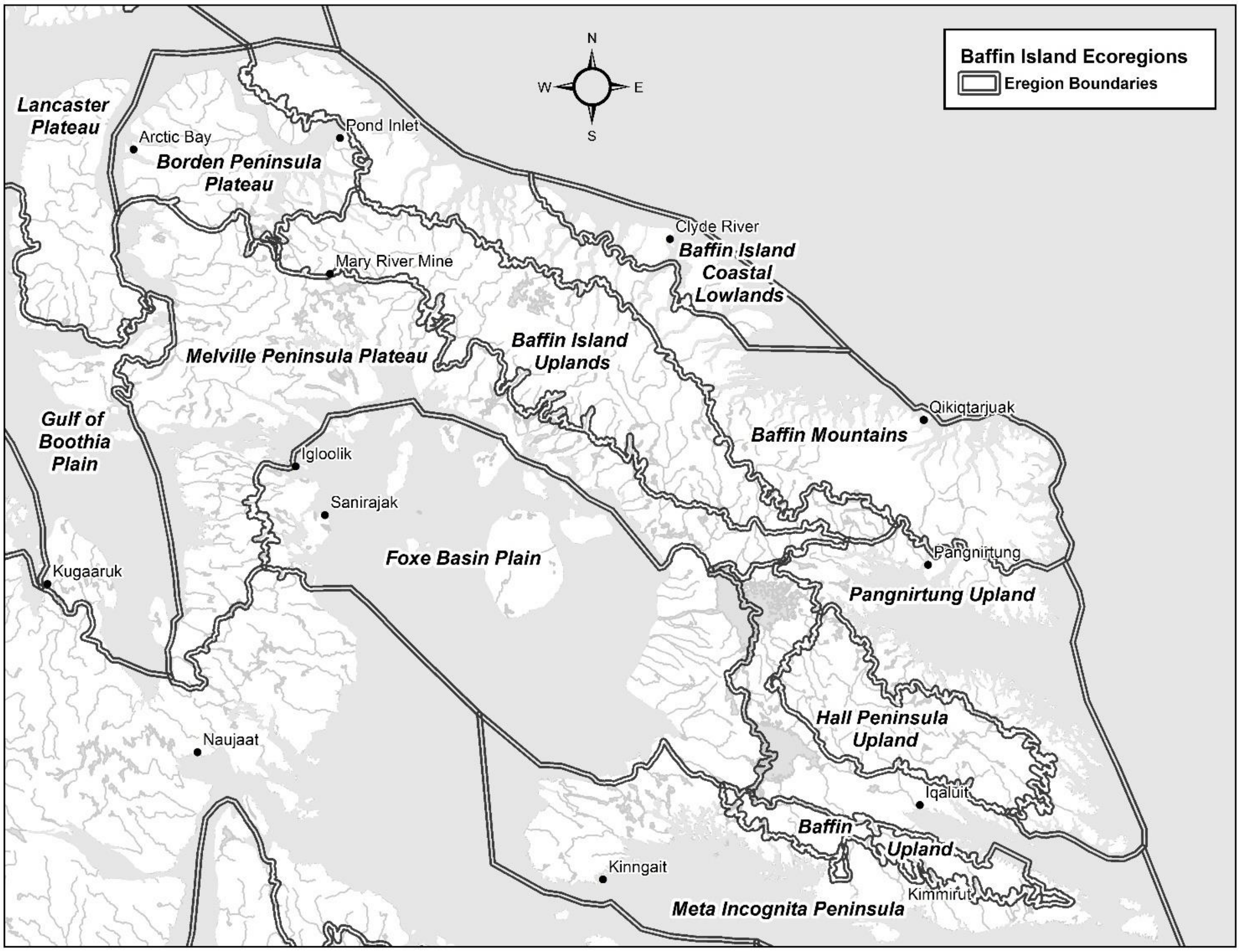


Figure 3. Ecoregions of Baffin and proximal islands, and northern Mellville Peninsula, Nunavut (after Environment Canada 2001).

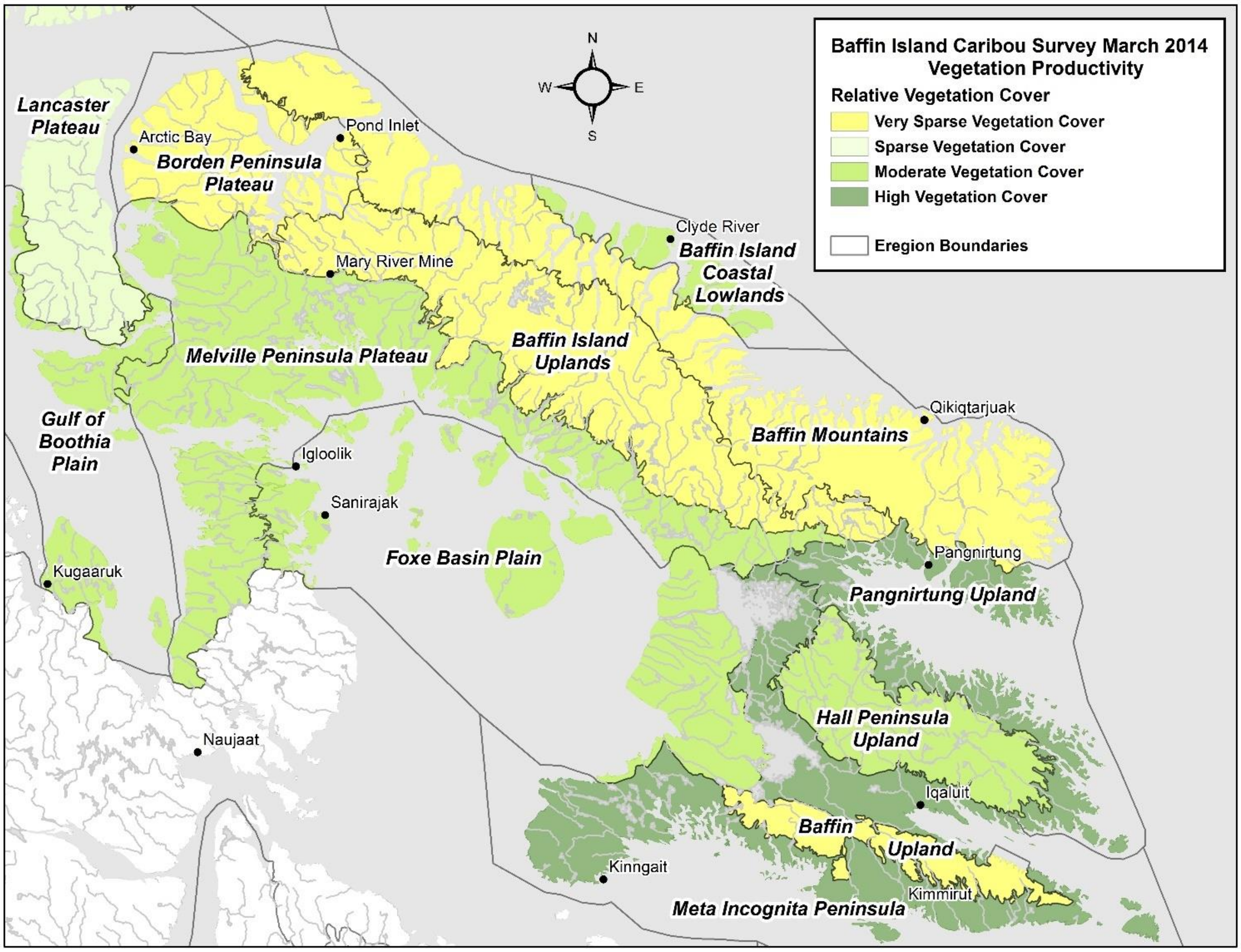


Figure 4. The relative productivity of plant communities within the ecoregions of the Baffin Island complex including northern Melville Peninsula. Productivity based on generalized plant species and cover assessments (after Environment Canada 2001).

3.0 METHODS

3.1 Abundance Survey Methods

The March 2024 abundance survey, which focused on South Baffin Island (*see 4.1 Sampling Summary and Data Segregation*), used two DeHavilland Twin Otter fixed wing aircraft and one Eurocopter B-2 helicopter and was based out of the communities of Iqaluit, Pangnirtung, and Kinngait. The March 2025 abundance survey, which focused on Central and North Baffin Island including Prince Charles Island (*see 4.1 Sampling Summary and Data Segregation*), also used two DeHavilland Twin Otter fixed wing aircraft and one Eurocopter B-2 helicopter and was based out of the communities of Iqaluit, Pangnirtung, Qikiqtarjuaq, Clyde River, and Igloolik, in addition to the Mary River Mine Site.

These abundance surveys used the same methods and similar strata (*see 4.1 Sampling Summary and Data Segregation*) used in the 2014 islandwide survey (Campbell et al. 2015; however, see discussion on helicopters, e.g., *4.2 Double Observer and Distance Analysis*). These methods are commonly and successfully used for barren-ground caribou surveys throughout Nunavut (Campbell et al. 2015, 2019, and 2022).

For the fixed wing portion of the surveys, we used a combined distance sampling and cooperative double observer pair mark-recapture approach. The double-observer pair configuration was used within all fixed wing aircraft to maximize sightability out of each of the left and right side of the aircraft, by adding one additional observer to each side (Campbell et al. 2012, 2015, and 2019). Additionally, the double observer pair configuration allowed each aircraft to maintain a minimum of two experienced wildlife observers on each of the left and right side of the aircraft throughout the survey, while providing training opportunities, when required, for community-based representatives within the remaining seats.

For the helicopter portion of these surveys, we used a modified approach whereby the pilot and data recorder served as observers that would remain in the same seats throughout the survey making this application of the double-observer component of the helicopter survey less robust than that of the fixed-wing. The helicopter survey, as detailed further later in this report, utilized a different observer platform and flight pattern, which involved flying to and way-pointing each observation rather than using wing strut bins to estimate distance as used on the fixed wing aircraft. As a result, it was useful to consider areas flown by helicopter as a distinct stratum to allow added modelling flexibility as well as evaluation of the effect of the different observer platform on survey estimates and associated precision.

Distance Sampling

The distance sampling component of the methods estimates the sightability of caribou groups in various distance bins. This is necessary to correct for declining detection probability with increasing distance from the survey plane. To accomplish this, we placed markers on the struts of the survey planes calculated using the formula from Norton-Griffiths (1978). These markers correspond with the following distance bins: 1) 0–200 meters, 2) 200–400 meters, 3) 400–600 meters, 4) 600–1,000 meters, and 5) 1,000–1,500 meters (Norton-Griffiths 1978).

Double Observer Pair

The dependent double observer pair component of the methods estimates the sightability of caribou groups between same side observers. This is necessary to reduce bias by accounting for animals missed by a single observer and provides more reliable abundance estimates. To accomplish this, we used two “primary” or “front” observers sitting in the left and right seats of the aircraft adjacent to the wing struts, and two “secondary” or “rear” observers sitting on the left and right side of the aircraft right behind the primary observers (**Figure 5**). The dependent double observer pair method adhered to five basic assumptions or steps.

1 - The primary observer called out all groups of caribou (number of caribou and wing-strut bin number) he/she saw within the 1- 0-200 meter, 2- 200-400 meter, 3- 400-600 meter, 4- 600-1000 meter, and 5- 1000–1500-meter wing-strut bins before they passed halfway between the primary and secondary observer (approximately at the wing strut). This included caribou groups that were between approximately 12 and 3 o’clock for right side observers and 9 and 12 o’clock for left side observers (**Figure 5**). The main requirement was that the primary observer be given time to call out all caribou seen before the secondary observer called them out.

2 - The secondary observer called out whether he/she saw the caribou that the primary observer saw, and observations of any additional caribou groups. The secondary observer also waited to call out caribou until the group observed passed halfway between observers (between 3 and 6 o’clock for right side observers and 6 and 9 o’clock for left side observers).

3 - The observers discussed any differences in group counts to ensure that they are calling out the same groups or different groups and to ensure accurate counts of larger groups.

4 - The data recorder categorized and recorded counts of caribou groups into “primary only”, “secondary only”, and “both”, entered as separate records.

5 - The same side observers switched places approximately halfway through each survey day (i.e. during refueling stops) to monitor observer position-based ability. The recorders noted the names of the primary and secondary observers and their side (left or right) and recorded group size and any assigned covariates.

In some cases, both same side observers missed a group of caribou, but the group was seen by the data recorder. It is expected that observer pairs may miss some caribou and naïve inclusion of data recorder observations could cause bias in estimates. However, in some cases a substantial number of caribou groups were missed by same side observer pairs indicating that they were weak observers. The concern in this case is that a substantial number of caribou would have 0 detection probabilities solely due to poor observer performance (in comparison to other observers). However, in this situation the dependent observer approach would not provide a valid estimate of the reduced detection probabilities. To address this concern graphical approaches were used to identify weak observer pairs, and in extreme cases, the weak observers were pooled as a single observer with the second observer being the data recorder. A covariate was used to model this modification of observer pairing. A sensitivity analysis was conducted to determine the effect of inclusion of data recorder observations.

Group size, topography, speed, snow cover, and cloud cover were also considered as covariates as with other surveys. Aircraft type was also considered. For the 2014 Baffin Island survey, 3 Cessna grand caravan fixed-wing aircraft and one Eurocopter B-2 helicopter were used, while during both the 2024 and 2025 Baffin Island surveys, 2 DeHavilland twin Otter fixed wing aircraft, and one Eurocopter B-2 helicopter were used.

Data Recorded

We used "*groups of caribou*", as opposed to individual caribou, as the sample unit for the survey. Recorders and observers were instructed to consider individuals to be those caribou that were observed independent of other individual caribou and/or groups of caribou. If sightings of individuals were influenced by other individuals, then the caribou were considered a group. In general, groups of caribou over an estimated 250 meters apart were considered independent groups. For each group of caribou recorded, additional covariates were recorded that can influence the sightability of caribou (**Table 1**). Due to heterogeneity variation in detection probabilities, it has been found that using just a mark-recapture approach overestimates sightability as distance from the survey plane increases, however, this approach was useful for estimation of sighting probability near the plane. This approach ensured a more robust estimate than using distance sampling methods alone which assume that the probability of detection of caribou groups at 0 distance from the plane is 1 (Borchers et al. 1998, Buckland et al. 2004, Laake et al. 2008a, Laake et al. 2008b, Buckland et al. 2010, Laake et al. 2012).

General Analytical Approach

Initially, we analyzed 2024 and 2025 data separately. For both years, we followed these general steps to conduct our analysis. First, we conducted exploratory analyses to assess detection performance in the double observer framework. This allowed us to identify weak or non-switching observer pairs that could bias the accuracy of estimates (*4.2.1 Double Observer and Distance Analysis (2024), Double Observer Summary; 4.2.2 Double Observer and Distance Analysis (2025), Double Observer Summary*). Second, we conducted exploratory analyses to assess detection patterns across the distance sampling framework and the impact of various covariates (*see* **Table 1**; *4.2.1 Double Observer and Distance Analysis (2024), Distance Sampling Summary; 4.2.2 Double Observer and Distance Analysis (2025), Distance Sampling Summary*). This was done to identify and account for any covariates that could influence the detection probabilities and thereby impact the accuracy of estimates. Covariates were also used to describe and model factors influencing the sightability of caribou (**Table 1**). These included observer pair given that the sample unit for dependent methods is pairs of observers as opposed to single observers. If observers were not paired, then they were pooled into a single multi-observer group.

After the exploratory analyses, we created double observer pair mark-recapture and distance sampling models for each year (*4.2.1 Double Observer and Distance Analysis (2024), Model Selection Fixed Wing, Helicopter Model Selection; 4.2.2 Double Observer and Distance Analysis (2025), Model Selection Fixed Wing, Helicopter Model*

Selection). We first built distance sampling models with the mark-recapture model parameters that held constant, and then vice versa for the double observer models. We then built a composite model using the most supported covariates from each of the component analyses. Estimates for strata were derived based on transect lengths and strata areas for the best fitting detection model. Estimates of variance were derived using estimators for a systematic sampling layout (Fewster 2011).

We evaluated the fit of these models using the Akaike Information Criterion corrected for small sample size (AIC_c). The model with the lowest AIC_c score was considered the most parsimonious (simplest), thus minimizing estimate bias and optimizing precision (Burnham and Anderson 1998). The difference in AIC_c values between the most supported model and other models (ΔAIC_c) was also used to evaluate the fit of models when their AIC_c scores were close. In general, any models with a ΔAIC_c score of less than 2 between them were considered to have equivalent statistical support. Overall model fit was also assessed using goodness of fit tests (Buckland et al. 1993, Buckland et al. 2004) as well as graphical comparison of detection functions with histograms of frequencies of observations from the surveys.

We then conducted sensitivity analyses for each year to assess how estimates were affected by analysis methods and model assumptions (*4.3 Analysis of 2024 & 2025 Models and Data*). We derived estimates using the Jolly strip-transect estimator (Jolly 1969, Krebs 1998) with the survey strip defined at 400 meters from the plane. This approach, which allows inclusion of all survey data (i.e. data recorder, etc) but assumes sightability, was equal to 1 in the 0–400-meter strip, provided a useful comparison with distance sampling estimates. In addition, distance sampling only, and double observer only (no distance sampling) within the 0–400-meter strip were considered.

Next, we derived estimates for both years (*4.4 Estimates*). In both years, abundance estimates were derived from the most supported MRDS model for both the fixed-wing strata and the helicopter strata (*4.4.1 March 2024 South Baffin Survey; 4.4.2 March 2025 Central and North Baffin Survey*). We then combined the 2024 and 2025 survey year estimates into a single islandwide estimate through re-analysis of the 2024 data set so that strata had zero (0) overlap with 2025 strata (*as detailed later in the report*).

The full island 2024-2025 combined estimate was then compared with the 2014 full island estimate (Campbell et al. 2015).

Finally, we undertook analyses to compare trends in applicable sub-regions (*Foxe Peninsula, Meta-Incognita Peninsula, Hall Peninsula, Central Baffin, and Prince Charles Island were also compared; 4.5 Trend Analysis*). Estimates were initially compared to the 2012 and 2014 estimates using a t-test to determine if the two estimates were significantly different (Gasaway et al. 1986). Confidence limits on yearly change were estimated assuming log-normal distributions of abundance estimates using a Monte Carlo simulation approach (Manly 1997).

We conducted our analyses in *R* (R Development Core Team 2009) using the following R packages: *ggplot* (Wickham 2009), MRDS R package (Laake et al.), *AICmodavg* (Mazerolle 2016), *lubridate* (Grolemund and Wickham 2011), and *ddply* (Wickham 2011). For GIS analyses, we used the R package *sf* (simple features) (Pebesma 2018) in addition to the software QGIS (QGIS Foundation 2020). The *MRDS* R package (Laake et al. 2012) was used to build double observer pair mark-recapture and distance sampling models.

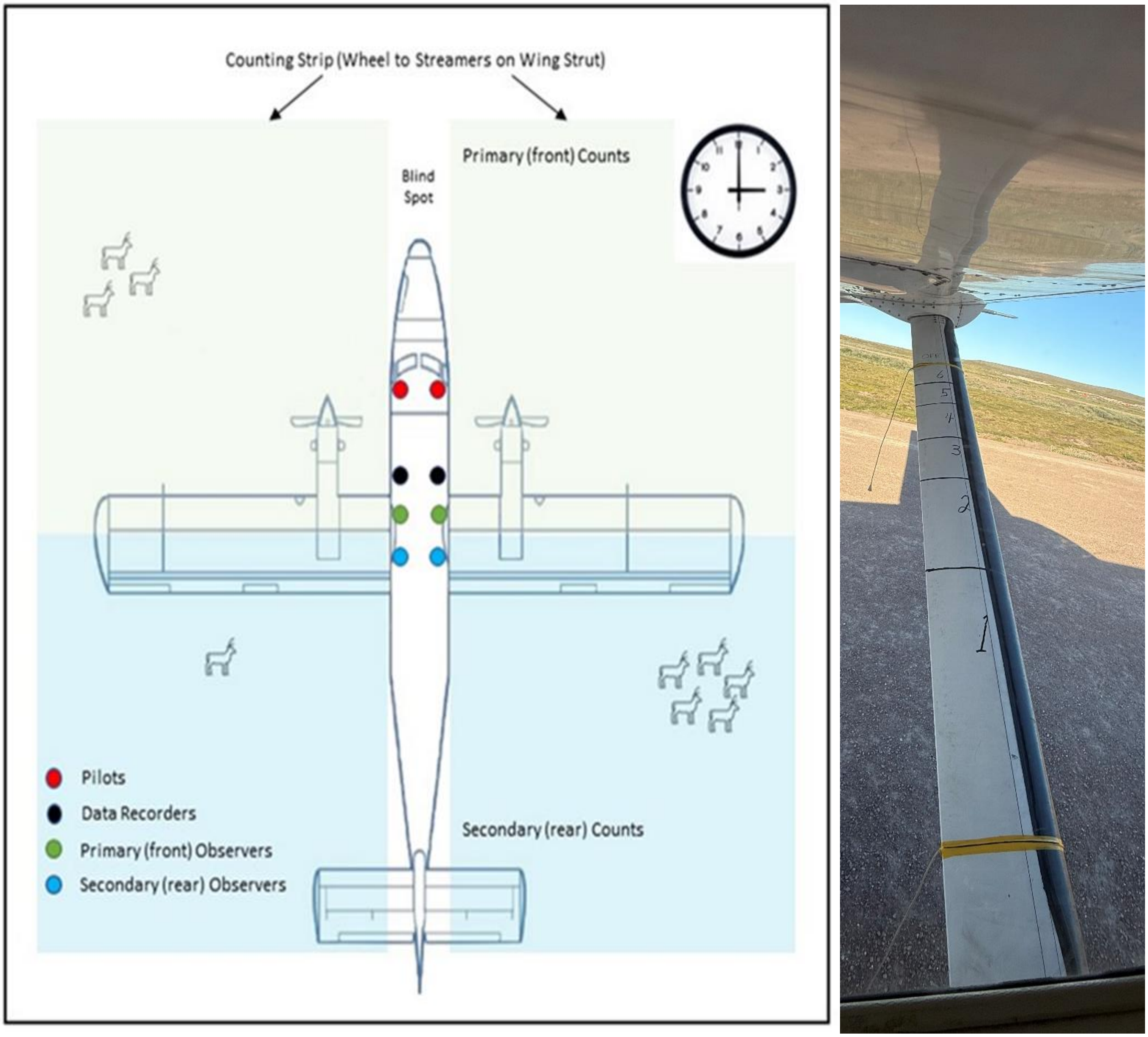


Figure 5 Observer position for double observer methods. The secondary (Rear) observer calls caribou not seen by the primary (Front) observer after the caribou has passed the main field of vision of the primary observer. Time on a clock is used to reference relative locations of caribou groups (e.g. “Caribou group at 1 o’clock”).

Table 1. The main co-variates (speed and topography were not used) used to model variation in sightability for dependent double observer pair analysis.

Covariate	Acronym	Description
Aircraft type	AirType	Helicopter vs fixed wing
Observer pair	obs	each unique observer pair
	Paired	Whether a pair switched places during survey
Data recorder observations	weakobs	Pairs who were assisted by the data recorder
Group size	size	size of caribou group observed
	Log(size)	Natural log of group size
Snow cover	snowf	snow cover (0,25,75,100)
	snow	continuous
Cloud cover	cloudf	cloud cover (0,25,75,100)
	cloud	continuous
Snow patchiness	SnowPatch	Continuous ordinal scale

3.2 Composition Studies

Since the 2014 survey, the GN ENV has conducted intermittent fall and/or spring aerial composition surveys from October and March 2015 to 2021 to monitor productivity and geographically specific relative densities of caribou across Baffin Island (Ringrose 2018, 2019, and 2021). The objectives of this monitoring program were to:

1) Estimate the overall composition of the subpopulations including the north Baffin grouping, south Baffin grouping, and central Baffin grouping (**Figure 6**); i.e., what proportion of the population are bulls, cows, yearlings, and calves.

2) Estimate the trajectory of abundance of the three main groupings of the Baffin Island caribou population, based on demographic composition as it relates most specifically to overwinter calf survival (March/April) and overall productivity (October; measured as calves per 100 cows) to develop an index of population trend.

3) Monitor the proportion of bulls in the population to ensure that predominantly bull harvests do not reduce their numbers to a level that could compromise breeding (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) Provide information geographically specific to relative abundance as it relates to ease of finding caribou and overall numbers of caribou observed, and to use this information for discussions of TAH and NQL appropriateness.

Surveys were conducted using a Eurocopter AS350 B2 helicopter, and a survey crew consisting of a biologist, wildlife technician, an observer, and a pilot. Study areas were selected based on previous aerial surveys and telemetry program observations as well as information gathered from hunters from each of the Baffin communities. Hunter information was collected during consultations conducted in 2012, 2013, 2014, and 2015 (DOE 2013, 2014, 2015a, 2015b *unpublished written records-In Prep*), across all Baffin Island (Ringrose 2018, Jenkins and Goorts 2013). Study areas were surveyed using two to three 5 km spaced transects bisecting identified high use areas by caribou, or until tracks were observed either on route to proposed high use areas, or while running transects through these same areas (Ringrose 2018). The method relied heavily on tracking groups and/or individual caribou until they were sighted, however, visual sighting methods were used when tracking was either difficult or not possible.

When tracks were encountered and the group located and classified, parallel transects through the study area would be tightened up to 1 to 2 km apart (depending on the density of tracks as it related to the ease to separate groups of tracks), with one transect run perpendicular to the track leading into the area and continued perpendicular to adjacent transects until tracks were no longer encountered (Ringrose 2018). This allowed classification crews to adaptively “high grade” search areas with caribou sign. The use of this adaptive search technique allowed for the most efficient use of the limited helicopter time and limited fuel caches, both the result of the geographical scale and resultant remote nature of the Baffin Island composition study areas. Additionally, this adaptive method allowed crews to take advantage of clustering behavior observed during previous survey and tracking studies, and described by Baffin Island caribou harvesters, whereby groups of Baffin Island caribou were more commonly observed in small geographic clusters generally associated with watersheds, during late winter and spring.

Once tracks were observed, they were followed until the group was located at which time caribou would be classified into 5 categories; 1) Cow (based on the presence of a visible vulva patch), 2) Calf (based on body size and characteristics), 3) Yearling (based on body size and characteristics), 4) Bull (based on absence of vulva patch, body characteristics and antler size) and when possible, 5) Young Bull (based on absence of vulva patch, body characteristics and antler size). Image stabilizing binoculars were used to reduce approach distances as much as possible to limit disturbance to animals. In cases where groups could not be located due to fuel and/or weather-related issues, and where time allowed, tracking was resumed the following day or after refueling.

When analyzing composition results, we used a logistic regression analysis (McCullough and Nelder 1989) to assess regional differences and overall trends in calf-cow ratios using surveys. An additive model was used (region+year) to assess differences in regions and explore if there was a regional increase in calf-cow ratios. Using logistic regression accounted for differences in sample sizes in surveys with the response being the count of calves divided by the count of cows in each survey. A quassi-binomial response model was used to account for likely overdispersion in the response data.

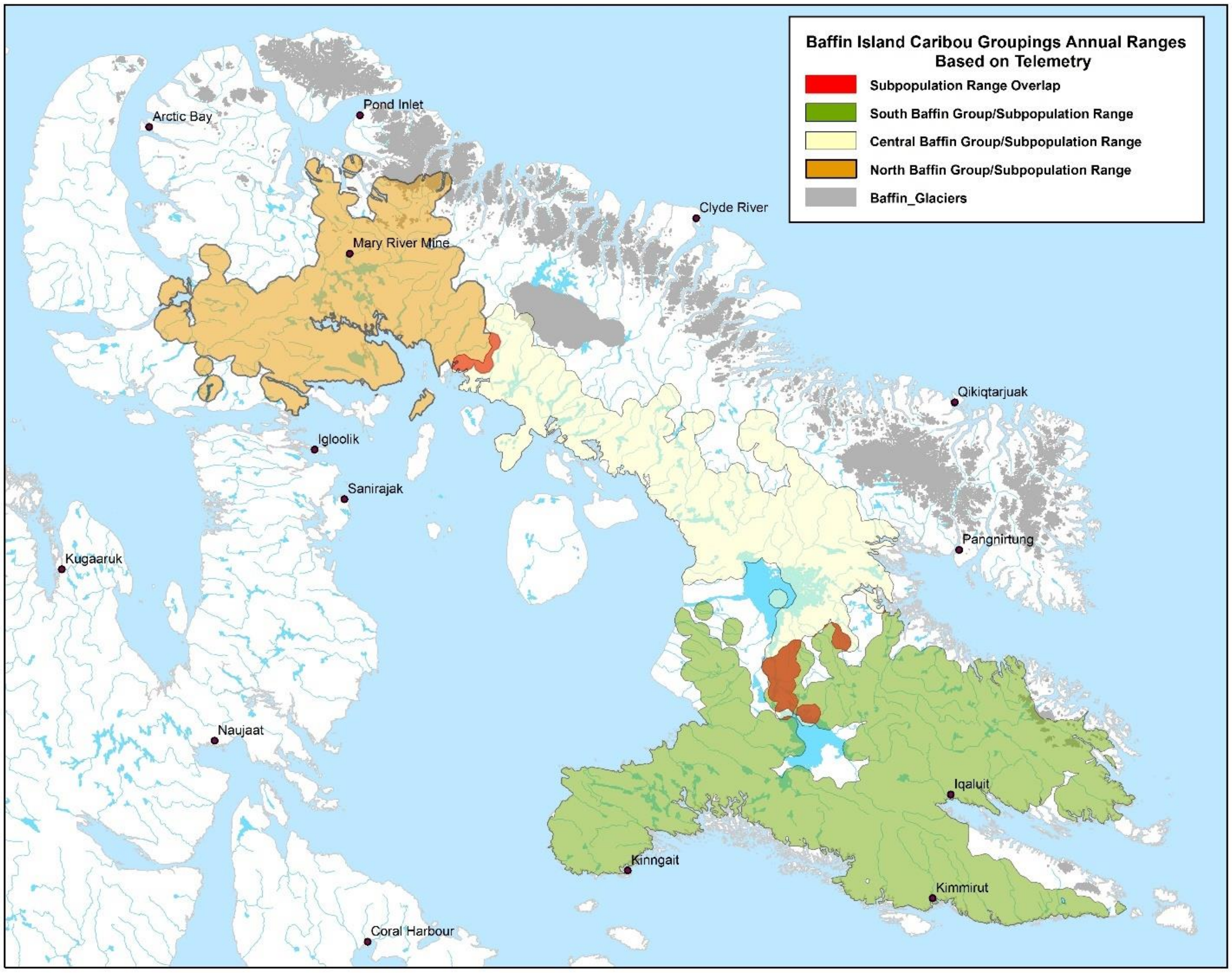


Figure 6. Caribou grouping annual range delineation based on telemetry studies from 1987 to 1994 (primarily South and Central Baffin), and 2008 to 2011 (North Baffin). Polygons created utilizing a kernel analysis of telemetry point data collected for 107 collars (North=35; Central = 17; South = 55) (Campbell et al. 2015).

4.0 RESULTS

4.1 Sampling Summary and Data Segregation

The Baffin Island March 2024 and 2025 abundance surveys included eight (8) south Baffin strata and six (6) north-central Baffin strata. The aircraft used within each strata varied according to topographic ruggedness with fixed-wing (FW) aircraft being delegated to less topographically rugged strata, and rotary-wing or helicopter (H) aircraft to more mountainous strata (**Figure 7**). The South Baffin strata included:

1- Foxe Peninsula low Density Fixed-Wing (**FP-LD-FW**)
2- Foxe Peninsula Medium Density Fixed-Wing (**FP-MD-FW**)
3- Hall Peninsula High Density Fixed-Wing (**HP-HD-FW**)
4- Hall Peninsula High Density Helicopter (**HP-HD-H**)
5- Meta Incognita Peninsula High Density Fixed-Wing (**MP-HD-FW**)
6- Niko Island Very Low Density Fixed-Wing (**NI-VLD-FW**)
7- Nettilling Lake Northeast Low Density Fixed-Wing (**NLNE-LD-FW**)
8- Nettling Lake North Low Density Fixed-Wing (**NLN-LD-FW**)

The North-Central Baffin strata included:

1- Gifford Fiord Medium Density Fixed-Wing (**GF-MD-FW**)
2- Neergaard Lake Low Density Fixed-Wing (**NL-LD-FW)**
3- North Central Baffin High Density Fixed-Wing (**NCB-HD-FW**)
4- North Central Baffin Medium Density Helicopter (**NCB-MD-H**)
5- Pond Inlet Low Density Helicopter (**PI-LD-H**)
6- Prince Charles Island-High Density Fixed-Wing (**PCI-HD-FW**)

7- Western Islands Low Density Fixed-Wing (**ISL-LD-FW**)

The helicopter survey, as detailed further later in this report, utilized a different observer platform (non-switching observers) and flight pattern, which involved flying to and way-pointing each observation rather than using wing strut bins to estimate distance as used on the fixed wing aircraft. As a result, it was useful to consider areas flown by helicopter as a distinct stratum to allow added modelling flexibility as well as evaluation of the effect of the different observer platform on survey estimates. **Table 2** summarizes strata and transect dimensions, groups, and caribou observed on each survey strata.

Like the 2014 Baffin Island caribou abundance survey, both the 2024 and 2025 surveys were flown over the same general dates in March, with the 2025 north-central Baffin survey extending further into March due to above-average weather cancellations (**Table 3**). Neither survey year violated the five-day maximum allowable weather delay based on an analysis of collar movements of north, central, and south Baffin caribou across the March 2024 and 2025 surveys (**Figure 8**). Additionally, collar movements over the period showed little directional movement and were consistent with non-migratory behavior expressed as less than five kilometers of directional movement per day (**Figure 9**).

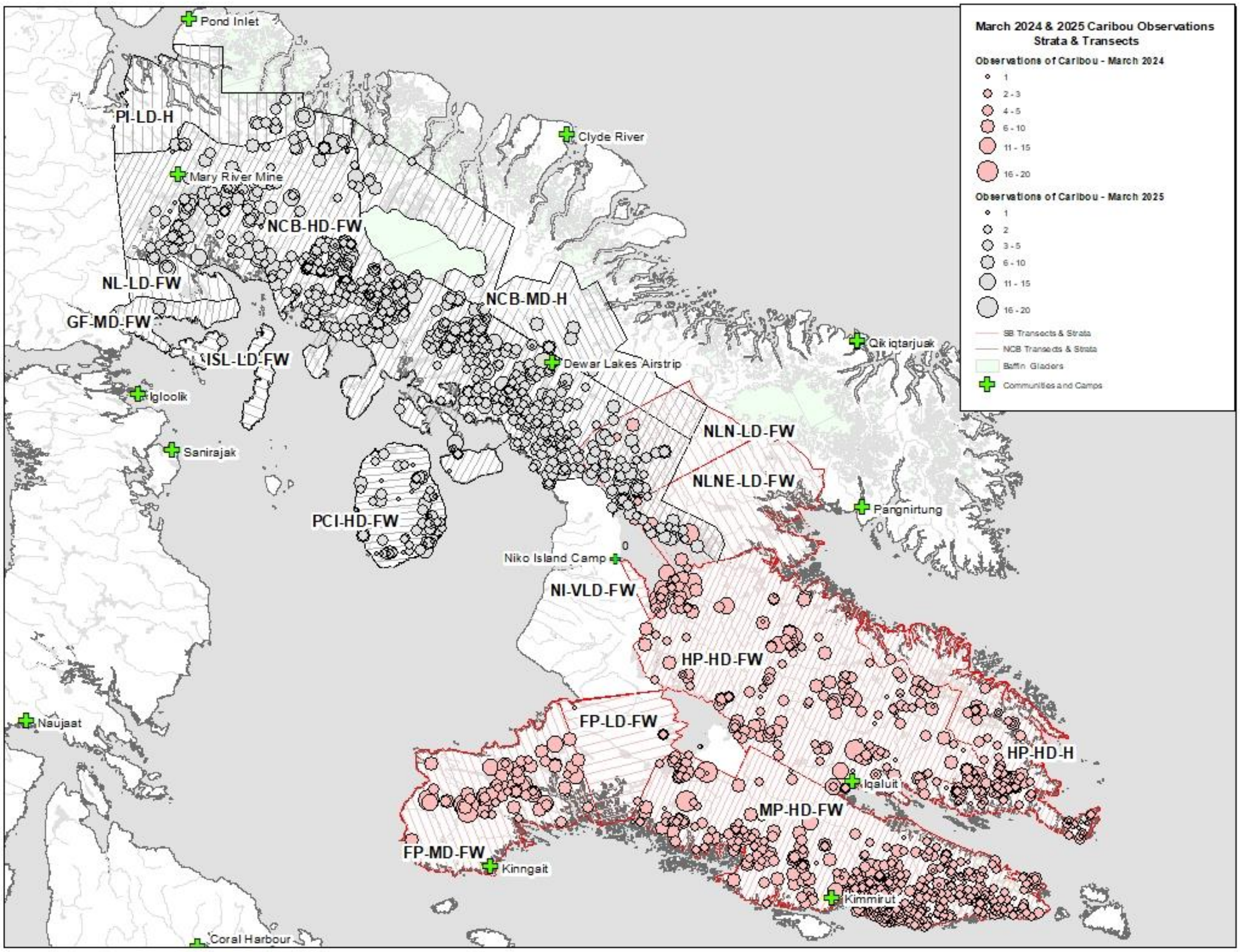


Figure 7 The 2024 South Baffin (Red) and 2025 North & Central Baffin Island (Grey) survey strata, transects, and caribou observations, used in this analysis. Helicopter stratum indicated with an "H" in their label, and fixed wing strata indicated with a "FW".

Table 2. Summary of strata dimensions and sampling. On-transect total caribou observations are listed for each stratum.

Strata	Transects	Strata Area (km^2)	Total transects length (km)	Average transect width (km)	Baseline (km)	Coverage (1.5 km X 2 strip width (km2))	Caribou on transect
2024							
FP-LD-FW	14	11,333	1,117	79.79	142.03	0.30	**11**
FP-MD-FW	26	21,635	2,654	102.09	211.92	0.37	**650**
HP-HD-FW	57	50,317	8,206	143.96	349.52	0.49	**909**
HP-HD-H	51	19,677	3,221	63.16	311.55	0.49	**433**
MP-HD-FW	73	41,801	6,879	94.23	443.61	0.49	**1,815**
NI-VLD-FW	7	752	81	11.55	65.1	0.32	**0**
NLNE-LD-FW	20	18,573	1,909	95.47	194.54	0.31	**66**
NLN-LD-FW	17	12,444	1,244	73.15	170.12	0.30	**24**
2025							
NCB-HD-FW	108	82,875	12,155	112.55	736.37	0.44	**3,223**
GF-MD-FW	25	3,160	453	18.14	174.25	0.43	**7**
ISL-LD-FW	15	2,800	301	20.07	139.57	0.32	**3**
NCB-MD-H	53	22,164	2,225	41.98	528.01	0.30	**18**
NL-LD-FW	11	3,819	395	35.93	106.32	0.31	**238**
PCI-HD-FW	19	9,529	1,349	71.01	134.20	0.42	**71**
PI-LD-H	24	15,809	1,238	51.57	306.56	0.23	**96**

Table 3. A comparison between the March 2024 and 2025 Baffin Island abundance survey timing (x = Flight Day, ***PR*** = Pilot Rest Day; ***WC*** = Flight cancelled due to weather).

Survey Type	Date (2024)																			
	Mar-06	Mar-07	Mar-08	Mar-09	Mar-10	Mar-11	Mar-12	Mar-13	Mar-14	Mar-15	Mar-16	Mar-17	Mar-18	Mar-19	Mar-20	Mar-21	Mar-22	Mar-23	Mar-24	Mar-25
Fixed Wing	x	x	x	x	x	x	***PR***	x	x	x	x	x	x	x						
Rotary Wing				***WC***	x	x	x	x	x	***WC***	x	x								

Survey Type	Date (2025)																			
	Mar-06	Mar-07	Mar-08	Mar-09	Mar-10	Mar-11	Mar-12	Mar-13	Mar-14	Mar-15	Mar-16	Mar-17	Mar-18	Mar-19	Mar-20	Mar-21	Mar-22	Mar-23	Mar-24	Mar-25
Fixed Wing	x	x	x	***WC***	x	***WC***	x	***WC***	x	x	x	***WC***	***WC***	***WC***	x	x	x	x	x	x
Rotary Wing									***WC***	x	***WC***	***WC***	***WC***	***WC***	***WC***	x	x	x	x	x

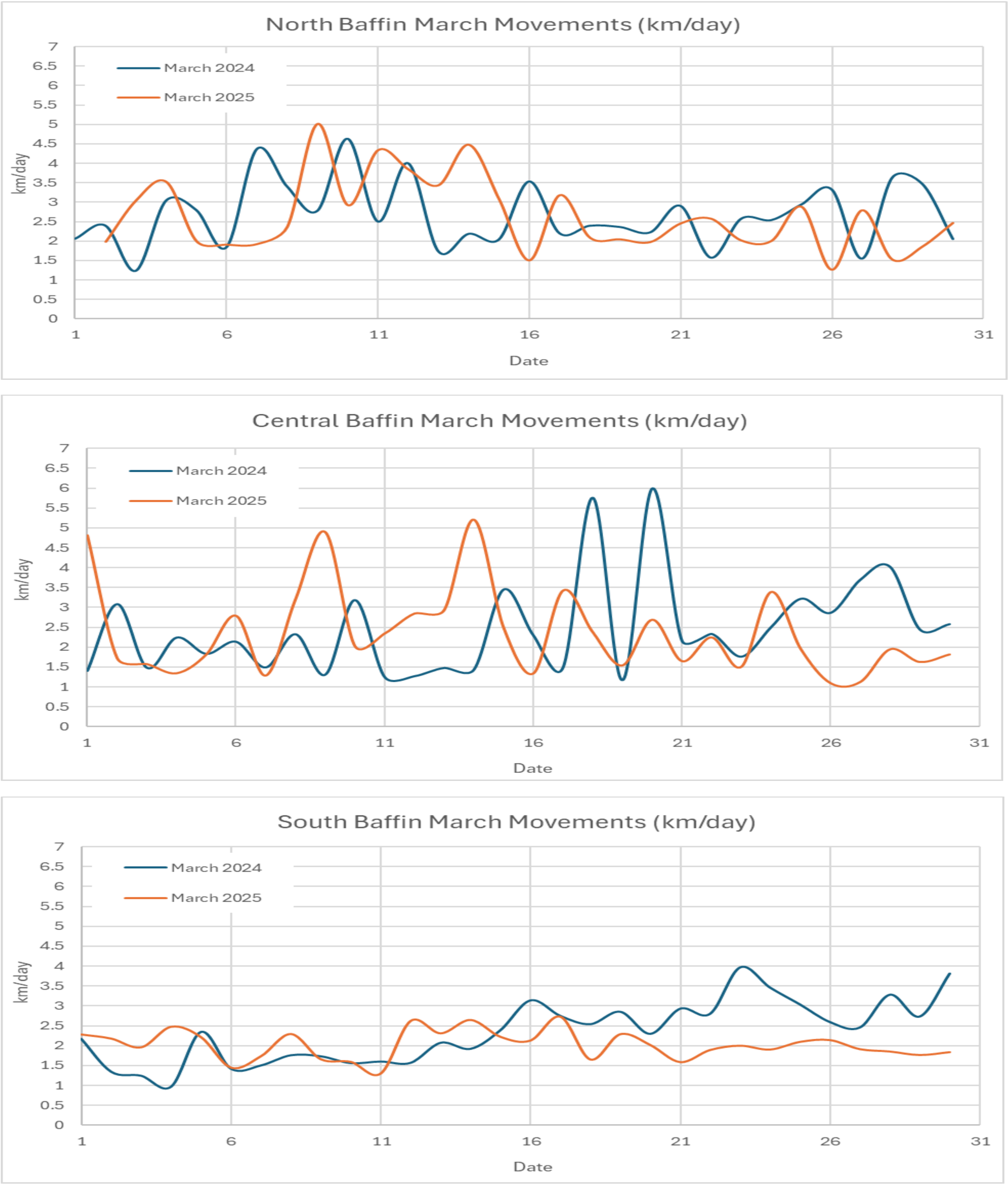


Figure 8. March daily movement rates of south Baffin collared caribou (2024), and north and central Baffin collared caribou (2025). Note that most collars tracked during the survey periods were under 5 km/day.

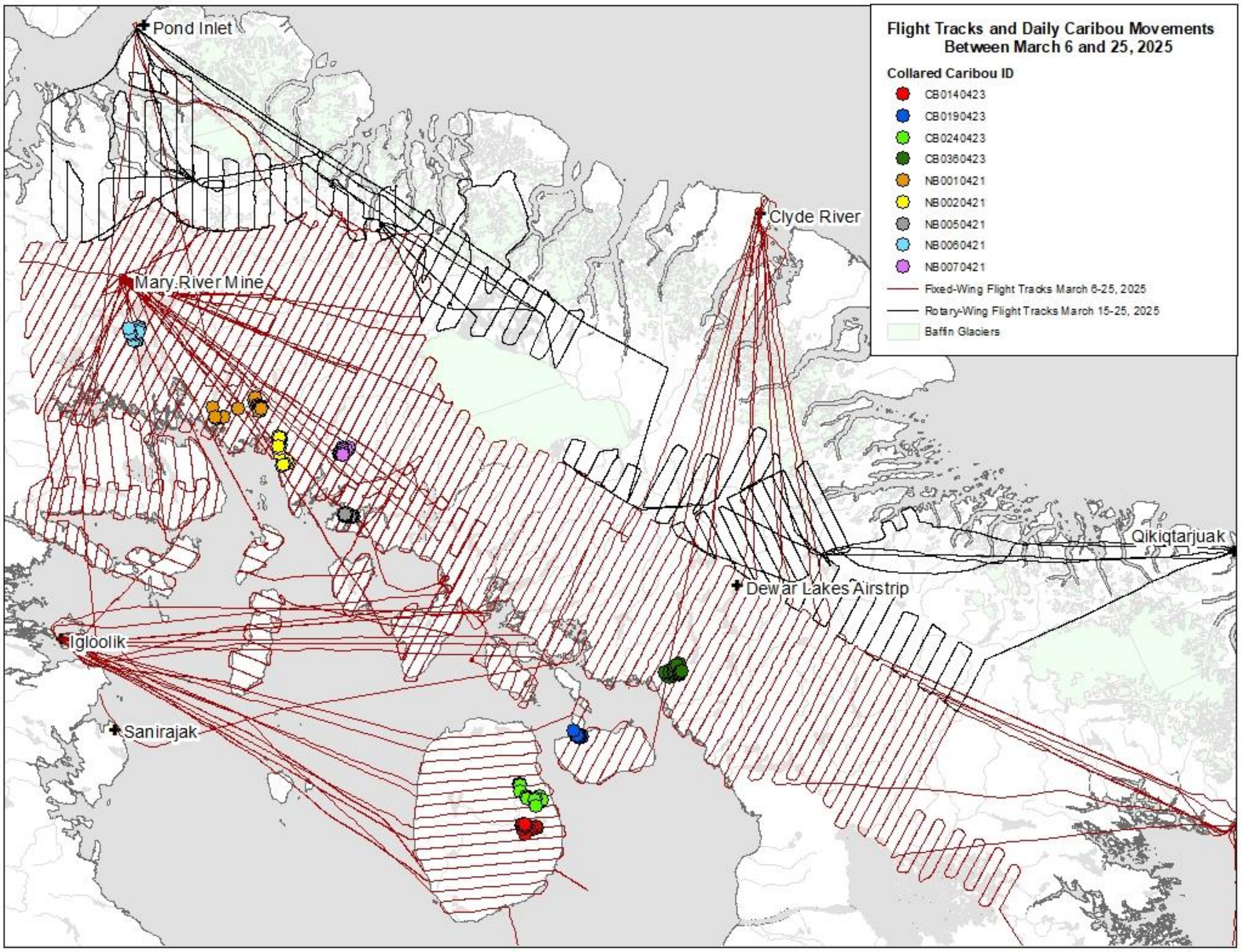


Figure 9. Survey flight tracks and collared caribou daily movements between March 6 and 25th, 2025. Note that movement rates of all collared caribou were very restricted during the survey period suggesting weather delays had little impact on cross-transect movements.

4.2 Double Observer and Distance Analysis

4.2.1 Double Observer and Distance Analysis (2024)

Double Observer Summary

Overall, there were 13 observer pairings of which 7 switched places (as required by the dependent observer method) (**Table 4**). Two of the pairings were in the helicopter where the pilot and data recorder were primary observers therefore not allowing switching. Pair number 11 was a data recorder who also served as a primary observer for some time periods again making it not possible to switch.

Of interest was the detection of weak observer pairs that missed a substantial portion of caribou as indicated by larger frequencies of observations only seen by data recorders. Data screening suggested that there were 2 pairs (5 and 6) that missed substantial frequencies of caribou as indicated by the relative difference of detection probabilities estimated with and without data recorder observations included. Often these pairs had higher double observer detection probabilities since often the pairs missed the same caribou (that were observed by the data recorder), therefore causing an unrealistically high detection probability estimate (given the number of caribou not observed compared to other pairs) (**Figure 10**). To offset this issue, the 2 observers were treated as a primary observer, and the recorder was treated as the secondary observer. This allowed inclusion of these observations for the weak observer pairs with a covariate to describe unique observer pair detection probabilities. Other data recorder observations from other pairs were not included in the analysis.

Another challenge to the analysis was low detection probabilities for the helicopter observer pairs (9 and 13). This was likely due to the pilots and data recorders being distracted by other factors and therefore not able to provide constant sighting effort. The challenge was that by not switching, the estimate of detection probabilities for the observer pair was based solely on the primary observers with the dependent method (which assumes equal primary and secondary observer probabilities). This likely caused a negative bias in detection probabilities and potentially a positive bias in estimates. Use of distance sampling only, which does not attempt to estimate detection based on double observer data, was used as a means to offset this issue.

An added challenge to the analysis was observer pair 11 which was a data recorder who also served as a primary observer. This observer pairing also had lower detection probabilities, which were hard to assess given that the primary observer never switched with the secondary observer. It is assumed in this case that this pair had lower detection probabilities than many of the other pairs (which were modelled using an observer pair covariate).

Table 4. Summary of double observer pair data. P1x is the single observer sighting probability and p2x is the double observer probability. Data is summarized for double observer only data and double observer with data recorder observations as indicated by _nodr and _dr suffixes respectively.

Pair	Switched?	Frequencies				Naïve detection probabilities			
		Front	Rear	Both	DataRec	P1x_nodr	P1x_dr	p2x	p2x_dr
2	yes	1	4	14	0	0.79	0.79	0.96	0.96
3	yes	17	20	92	13	0.84	0.77	0.98	0.95
4	yes	30	35	87	5	0.77	0.75	0.95	0.94
5	yes	27	4	99	37	0.97	**0.75**	1.00	0.94
6	yes	14	6	39	**45**	0.90	**0.51**	0.99	0.76
7	yes	4	6	15	2	0.76	0.70	0.94	0.91
8	no	1	1	6	0	0.88	0.88	0.98	0.98
9	no (heli)	18	32	18	0	0.53	**0.53**	0.78	0.78
10	no	5	6	21	0	0.81	0.81	0.96	0.96
11	no (data recorder & observer)	8	13	10	0	0.58	**0.58**	0.82	0.82
12	no	20	7	53	0	0.91	0.91	0.99	0.99
13	no (heli)	11	34	18	0	0.46	**0.46**	0.71	0.71

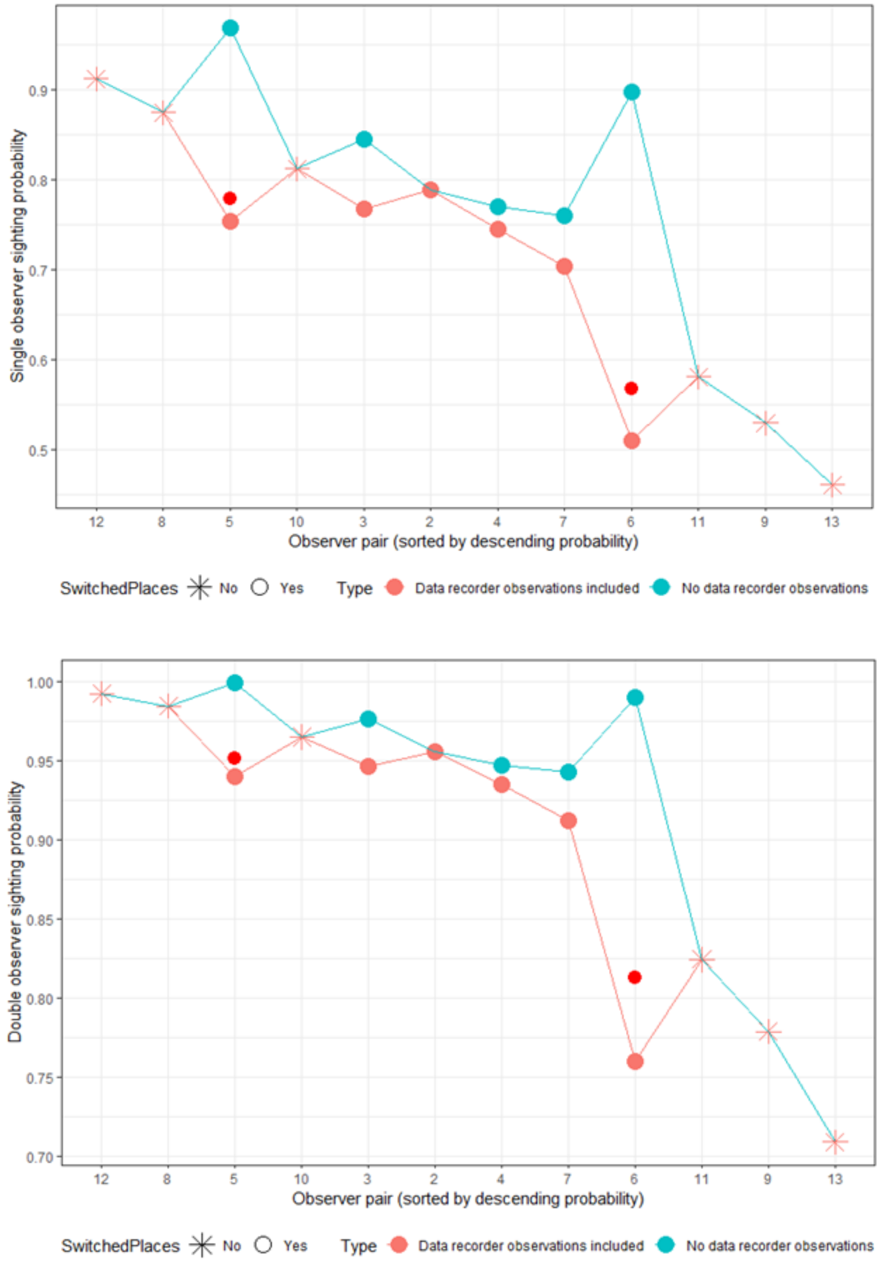


Figure 10. Graphical representation of double observer detection probabilities by observer pairs. The red dots indicate detection probabilities for applicable pairs where the 2 observers were primary, and the data recorder was considered the secondary observer.

Distance Sampling Summary

As would be expected, the detection histogram of observations was highest in the closest bin with a steady decline to the furthest bin. Detection histogram suggests that observers were attentive to the closest bin near the plane; an improvement from past surveys (**Figure 10**). The shape of detection histograms by aircraft type were different with a more pronounced shoulder for the helicopter which was likely due to clumping of caribou groups into small patches of suitable habitat but could also have been due to differences in the recording of caribou groups and associated coordinates (**Figure 11**). In addition, as noted earlier, most observations were only detected by a single observer for the helicopter in comparison to the twin otter fixed wing. This was likely due to the observer configuration. Due to the difference in both detection histogram shape and double observer data, it was decided to analyze the helicopter and fixed wing as separate data sets.

The effect of group size on detection histograms was less pronounced (**Figure 12**). Lower sample sizes made it more difficult to interpret helicopter observations. Cloud cover had a potential effect of broadening the detection histogram for fixed wing aircraft at higher cloud cover levels (**Figure 13**). A broadening of the detection shoulder with higher snow cover was also suggested, however the effect was minimal (**Figure 14**). The combined effect of snow and cloud is shown by the product of the two covariates. The detection histogram is flattened at higher levels of both cloud and snow cover (**Figure 15**).

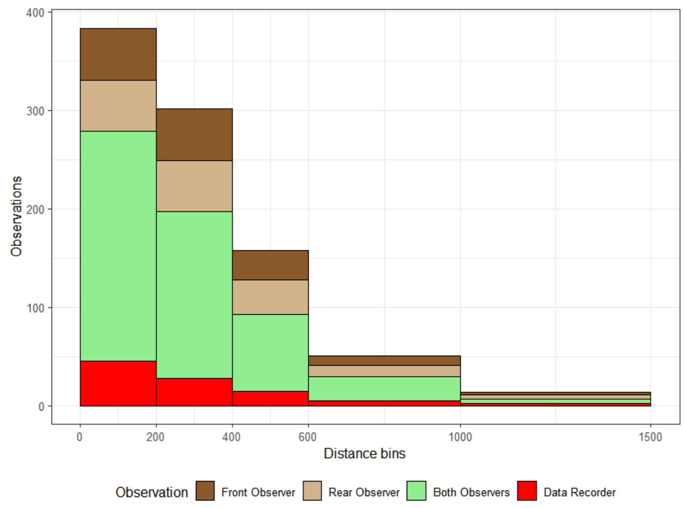


Figure 10. Histograms of detections as a function of distance from fixed wing aircraft. Observations are also color-coded by observation type. Observation frequencies are adjusted based on bin widths.

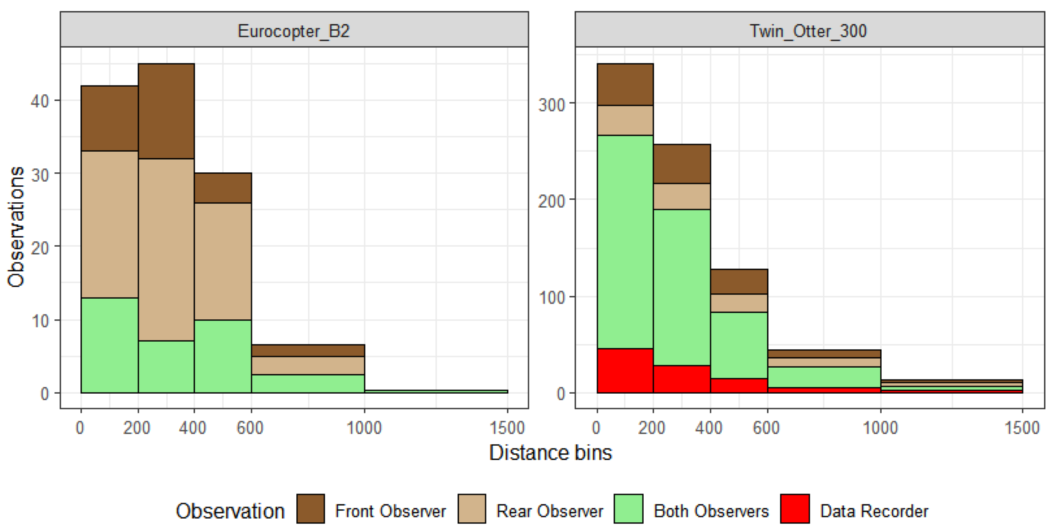


Figure 11. Histograms of detections as a function of distance from plane for aircraft type. Observations are also color-coded by observation type. Observation frequencies are adjusted based on bin widths. Note the different y-axis scales.

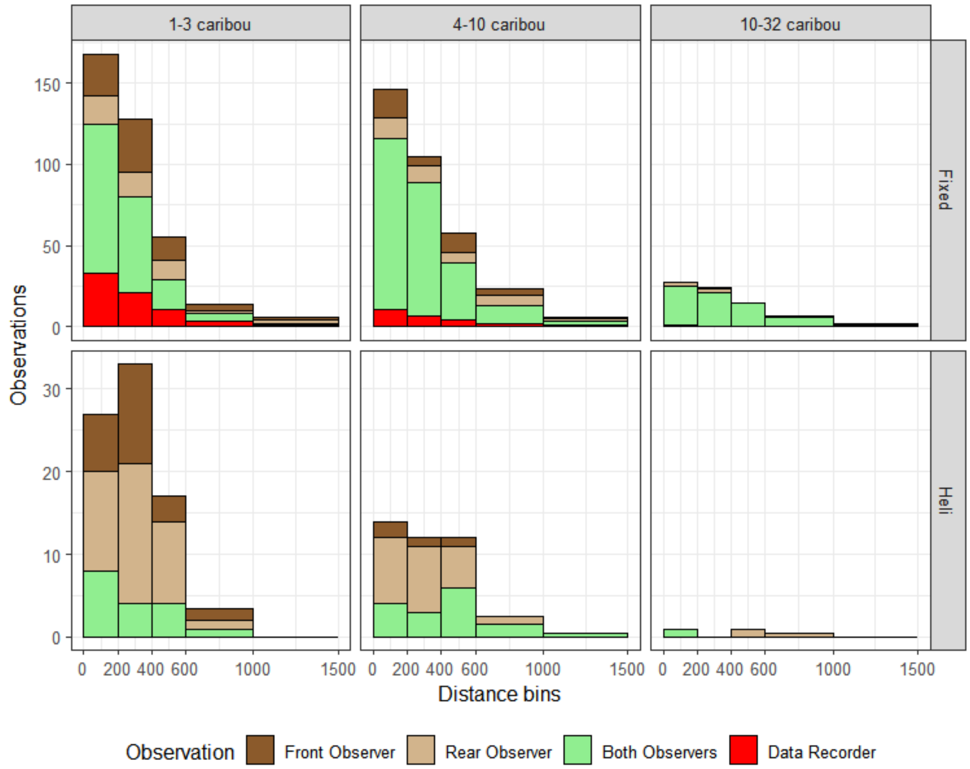


Figure 12. Histograms of detections as a function of group size and observation type. Observation frequencies are adjusted based on bin widths. Note the different y-axis scales.

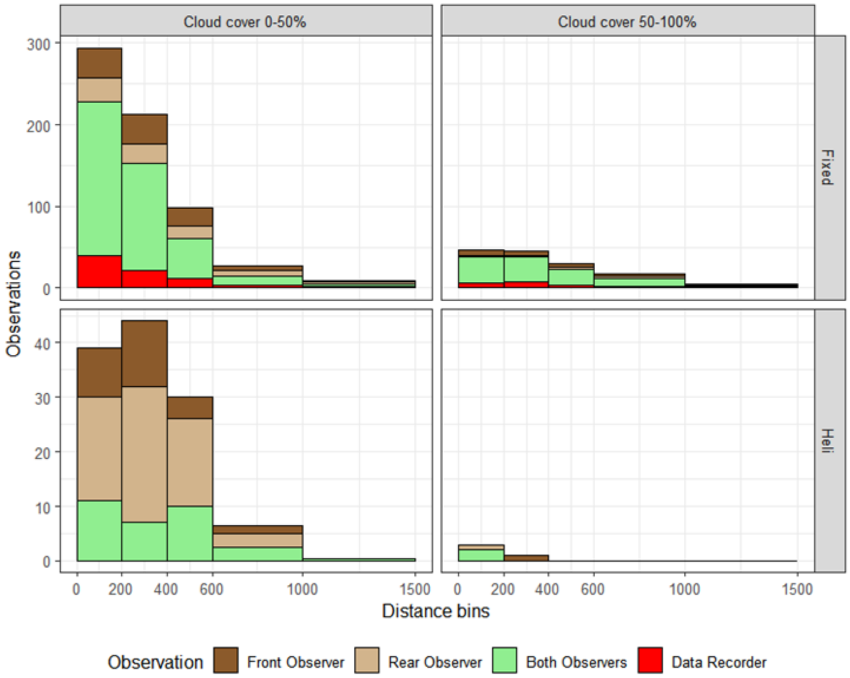


Figure 13. Detection histograms as a function of cloud cover. Observation frequencies are adjusted based on bin widths. Note the different y-axis scales.

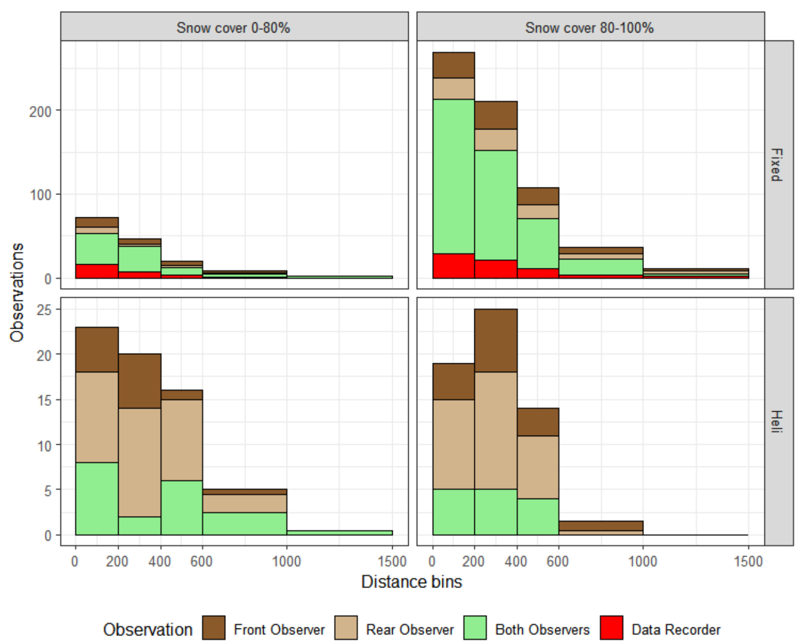


Figure 14. Detection histograms as a function of snow cover. Observation frequencies are adjusted based on bin widths. Note the different y-axis scales.

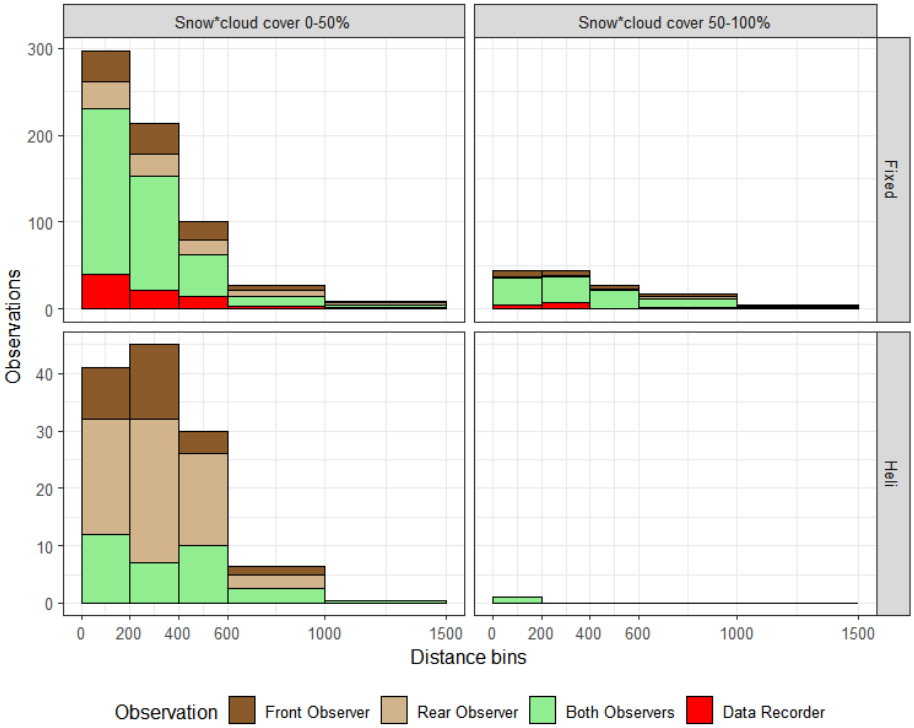


Figure 15. Detection histograms as a function of the product of cloud and snow cover. Observation frequencies are adjusted based on bin widths. Note the different y-axis scales.

Model Selection Fixed Wing

Initial model selection tested whether hazard rate or half normal detection functions were more supported by the data. For this study hazard rate was more supported even when group size was considered (**Tables 5 and 6**, model 12). Of the covariates considered, univariate snow and cloud were supported with an additive snow and cloud covariate model (model 1) showing the most support. Interestingly, group size was not supported as a covariate suggesting good sightability conditions within all fixed-wing survey strata. Observer-specific detection histograms were also considered; however, model convergence was marginal as shown by large standard errors on beta terms and therefore these models were not considered especially representative since adequate model fit was achieved with the set of covariates that were used. For the double observer model selection, observers (with a focus on weaker observers that displayed lower detection probabilities than other observers), distance, and the log of group size were supported. The support of distance suggested that detection from observers showed some level of independence at further survey bins resulting in decreasing double observer probabilities.

A plot of the pooled detection function for model 1 (**Table 5 and 6**) suggests that the detection of caribou on the line (distance=0) was close to 1 with a shoulder of constant detection to approximately 200m after which it declined to 0.0 at the furthest bin (**Figure 16**). The actual estimate of detection on the line was 0.94 (SE=0.04). The fit of the distance detection function was adequate with a chi-square of 4.87. However, degrees of freedom were 0 due to covariates used to estimate the detection function. The base hazard rate model with no covariates did significantly fit the data with a chi-square value of 0.79, (df=1, p=0.49).

Visual inspection of the fit of the data to the mark-recapture component of the model (**Figure 17**) suggests adequate fit, however, chi-square values suggested marginal fit (chi-square=16.5, df=5, p=0.005). The main lack of fit was an underestimate of observations seen only by the secondary observer. The likely cause of this would be heterogeneity of sighting probabilities caused by the periodic inability to switch observers. Sensitivity analyses were conducted, including consideration of estimates with no mark-recapture component (using distance sampling only, therefore assuming detection is 1 at the closest survey bin) to better understand implications of lack of fit.

Table 5. Univariate model selection for distance sampling covariates for the 2024 fixed wing data set. The distance sampling detection function (DF: hr-hazard rate, hn-Half normal) is shown along with the distance and double observer model. A constant intercept double observer model was used for all analysis. Sample size adjusted Akaike Information Criterion (AICc), the difference in AICc between the most supported model for each model (∆AICc), AICc weight (wi), number of model parameters (K) and deviance is given. Constant models are shaded for reference.

No	DF	Distance model	AIC_c	ΔAIC_c	w_i	K	LL
1	hr	snow + cloud	3109.30	0.00	0.56	5	-1549.6
2	hr	snow + cloud + snowloud	3110.45	1.15	0.31	6	-1549.2
3	hr	snowloud	3114.26	4.96	0.05	4	-1553.1
4	hr	cloud	3114.77	5.47	0.04	4	-1553.4
5	hr	logsize + snowloud	3116.05	6.75	0.02	5	-1553.0
6	hr	logsize + cloud	3116.53	7.23	0.02	5	-1553.2
7	hr	logsize + cloud + snowloud	3118.08	8.78	0.01	6	-1553.0
8	hr	cloud_factor	3120.72	11.42	0.00	6	-1554.3
9	hr	weakobs	3127.13	17.83	0.00	4	-1559.5
10	hr	snow	3140.26	30.96	0.00	4	-1566.1
11	hr	snow_factor	3143.77	34.46	0.00	5	-1566.8
12	hr	constant	3146.88	37.58	0.00	3	-1570.4
13	hr	logsize	3147.22	37.92	0.00	4	-1569.6
14	hr	DataRecObs	3148.11	38.81	0.00	4	-1570.0
15	hr	size	3148.31	39.01	0.00	4	-1570.1
17	hr	SnowPatch	3148.38	39.08	0.00	6	-1568.1
18	hn	constant	3176.39	67.09	0.00	2	-1586.2
19	hn	size	3177.18	67.88	0.00	3	-1585.6

Table 6. Model selection for double observer and combined distance sampling/double observer covariates for the 2024 fixed wing data set. The distance sampling detection function (DF: HR-hazard rate, HN-Half normal) is shown along with distance and double observer model. Sample size adjusted Akaike Information Criterion (AICc), the difference in AICc between the most supported model for each model (∆AICc), AICc weight (w_i), number of model parameters (K) and deviance is given. Constant mark-recapture models are shaded for reference.

No	DF	Distance model	MR/2x model	AIC_c	ΔAIC_c	w_i	K	LL
1	hr	snow + cloud	ob6 + ob11 + distance + logsize	3070.31	0.00	0.62	9	-1526.0
2	hr	snow + cloud	ob6 + ob11 + distance + size	3071.64	1.32	0.32	9	-1526.7
3	hr	snow + cloud	ob6 + distance + logsize	3075.95	5.63	0.04	8	-1529.9
4	hr	snow + cloud	ob6 + ob11 + distance	3077.24	6.92	0.02	8	-1530.5
5	hr	snow + cloud	ob6 + ob11	3082.67	12.35	0.00	7	-1534.3
6	hr	snow + cloud	ob5 + ob6 + ob11	3082.90	12.59	0.00	8	-1533.4
7	hr	snow + cloud	weakobs	3091.95	21.63	0.00	6	-1539.9
8	hr	snow + cloud	distance + logsize	3093.30	22.99	0.00	7	-1539.6
9	hr	snow + cloud	logsize	3098.77	28.46	0.00	6	-1543.3
10	hr	snow + cloud	size	3100.48	30.17	0.00	6	-1544.2
11	hr	snow + cloud	SnowPatchF	3101.27	30.96	0.00	8	-1542.5
12	hr	snow + cloud	distance	3104.54	34.23	0.00	6	-1546.2
13	hr	snow + cloud	snowloud	3107.51	37.20	0.00	6	-1547.7
14	hr	snow + cloud	cloud	3107.87	37.56	0.00	6	-1547.9
15	hr	snow + cloud	snow	3108.67	38.35	0.00	6	-1548.3
16	hr	snow + cloud	constant	3109.30	38.99	0.00	5	-1549.6

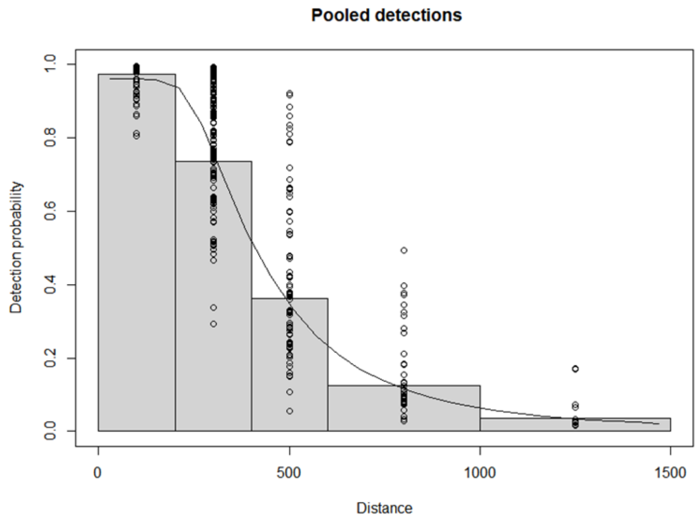


Figure 16. Fitted detection function for the most supported MRDS model for the fixed wing data set.

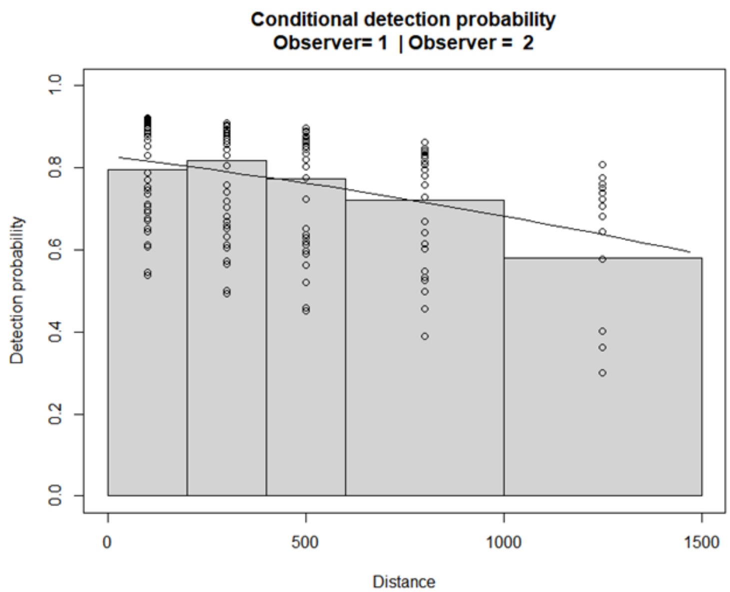


Figure 17. Fit of fixed wing mark-recapture double observer model for the fixed wing data set.

Model Selection Helicopter

Lower sample sizes of observations (131 observations) precluded consideration with more elaborate distance sampling models with the helicopter-only data set (**Table 7**). Models with more than 1 covariate did not converge and therefore univariate models were considered. Of detection functions, the hazard rate was most supported (model 6). A model with cloud cover as a covariate was most supported. A plot of the detection function shows a broader shoulder extending partially across the 200-400m survey sighting range. Model fit was adequate (chi-square=0.513, df=1, p=0.47) as indicated by chi-square tests (**Figure 18**).

Table 7. Model selection for distance sampling covariates for the 2024 helicopter data set. The distance sampling detection function (DF: hr-hazard rate, hn-Half normal) is shown along with the distance and double observer model. Sample size adjusted Akaike Information Criterion (AICc), the difference in AICc between the most supported model for each model (ΔAICc), AICc weight (wi), number of model parameters (K) and deviance is given. Constant models are shaded for reference.

No	DF	Model	AIC_c	ΔAIC_c	w_i	K	LL
1	hr	cloud	344.70	0.00	0.60	3	-169.3
2	hr	snowloud	345.72	1.02	0.36	3	-169.8
3	hr	size	352.75	8.05	0.01	3	-173.3
4	hr	snow	353.07	8.37	0.01	3	-173.4
5	hr	logsize	354.18	9.48	0.01	3	-174.0
6	hr	constant	354.43	9.73	0.00	2	-175.2
7	hn	size	355.82	11.12	0.00	2	-175.9
8	hr	SnowPatch	356.01	11.31	0.00	5	-172.8
9	hn	constant	356.34	11.64	0.00	1	-177.2

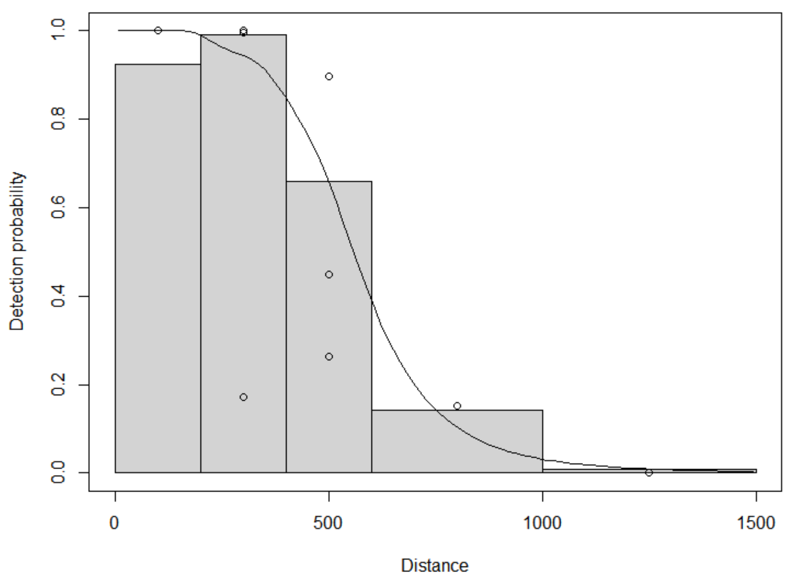


Figure 18. Fit of helicopter data set to distance sampling data.

4.2.2 Double Observer and Distance Analysis (2025)

Double Observer Summary

There were 45 combinations of observers during the 2025 survey (when accounting for primary/secondary ordering of observers). Summaries of the 2025 double observer data resulted in 12 pairs that switched with the remaining observer combinations not switching **(Table 8).** Of the 12 that switched, 2 pairings did not have sufficient sample sizes and were pooled into a single pair which resulted in 11 pairs. The remainder of the observers that did not switch were grouped into a single observer pair (12 in **Table 8**). The helicopter crew was considered as a single pairing (13 in **Table 8**), given that they were not able to switch and therefore did not have a pairing that could be modelled using double observer methods.

Plots of detection probabilities reveal weak pairings using either data recorder observation or observations without data recorder augmentation **(Figure 19).** More exactly, pairs 2 and 7 had lower detection probabilities (without data recorder observations added), and pairs 8 to 11 had lower detection when data recorder observations were added. To offset this issue, data recorder observations were used as the 2nd observer observations for pairs 8 to 11. A "weak observer pair" covariate was used to potentially account for weak probabilities for pairs 2 and 7.

Table 8. Summary of double observer pair data for 2025. P1x is the single observer sighting probability and p2x is the double observer probability. Data is summarized for double observer only data and double observer with data recorder observations as indicated by _nodr and _dr suffixes.

Pair	Switched?	Frequencies				Naïve detection probabilities			
		Front	Rear	Both	DataRec	P1x_nodr	P1x_dr	p2x	p2x_dr
1	yes	10	40	17	3	0.75	0.71	0.94	0.92
2	yes	1	10	12	1	0.48	0.46	***0.73***	***0.71***
3	yes	6	54	4	0	0.94	0.94	1.00	1.00
4	yes	1	33	2	1	0.94	0.92	1.00	0.99
6	yes	2	30	3	7	0.91	0.76	0.99	0.94
7	yes	6	13	27	0	0.41	0.41	***0.66***	***0.66***
8	yes	4	19	2	9	0.92	***0.68***	0.99	0.90
9	yes	3	16	4	8	0.83	***0.61***	0.97	0.85
10	yes	4	24	5	11	0.85	***0.64***	0.98	0.87
11	yes	3	30	3	19	0.92	***0.60***	0.99	0.84
12	no (pooled)	94	128	53	17	0.81	0.76	0.96	0.94
13	no (heli)	16	8	12	0	0.67	0.67	0.89	0.89

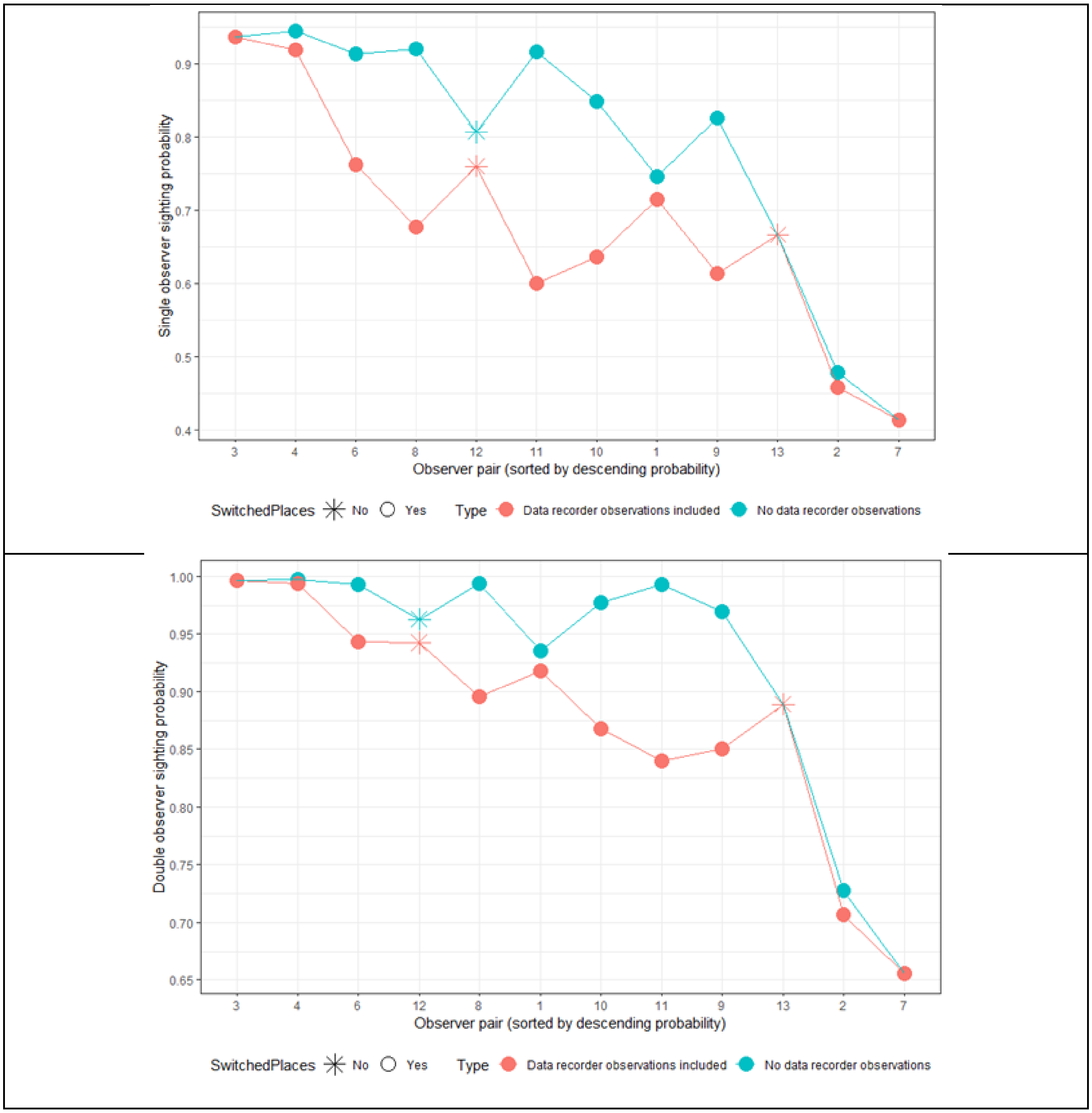


Figure 19. Graphical representation of double observer detection probabilities by observer pairs for 2025. The red dots indicate detection probabilities for applicable pairs where the 2 observers were primary, and the data recorder was considered the secondary observer.

Distance Sampling Summary

As for the 2024 analysis, the detection histogram of observations was highest in the closest bin, with a steady decline to the furthest bin, though sparse sample sizes precluded solid evaluation of a detection histogram for the Eurocopter B-2 helicopter (**Figure 20 and 21**). To confront this, we combined the 2024 and 2025 helicopter observation data for the analysis of the 2025 data set as detailed later in this report (Figure 29).

For the fixed-wing analysis, smaller group sizes appeared to have a more pronounced shoulder compared to larger group sizes for the fixed wing (**Figures 21 and 22**). Cloud cover had a potential effect of broadening the detection histogram for fixed wing aircraft at higher cloud cover levels (**Figure 23**). A broadening of the shoulder with higher snow cover was also suggested; however, the effect was minimal (**Figure 24**). The combined effect of snow and cloud is shown by the product of the two covariates. It can be seen that the detection histogram is flattened at higher levels of both cloud and snow cover (**Figure 25**).

In previous analyses of central Baffin strata, Prince Charles Island (sampled in 2014 and again in 2025) and characterized by its flat topography and almost continuous cover of snow, had higher sightability compared to other strata. Inspection of detection histograms for 2025 also suggests a broader shoulder with a higher proportion of observations in further survey bins (**Figure 26**).

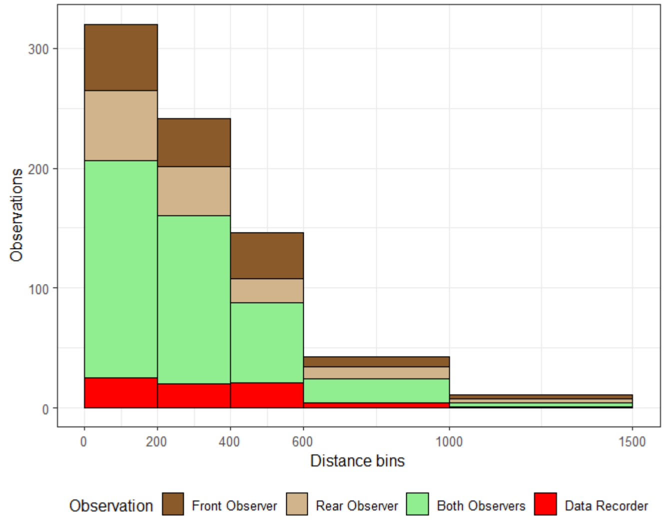


Figure 20. Histograms of detections as a function of distance from fixed wing for 2025. Observations are also color-coded by observation type. Observation frequencies are adjusted based on bin widths.

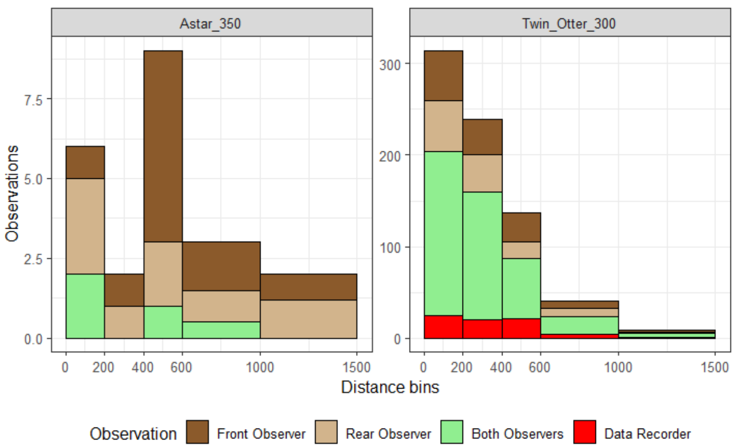


Figure 21. Histograms of detections as a function of distance from plane for 2025 aircraft type. Observations are also color-coded by observation type. Observation frequencies are adjusted based on bin widths. Note the different y-axis scales.

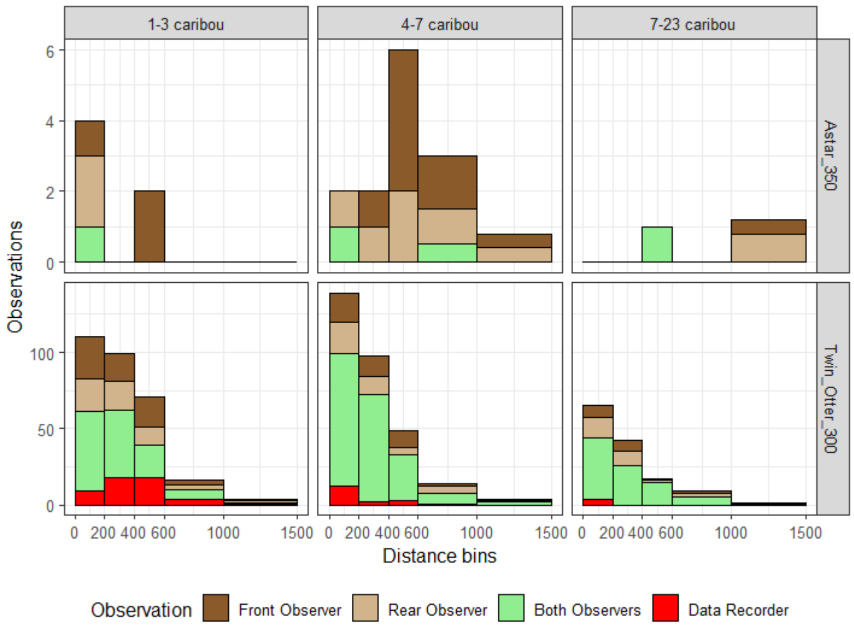


Figure 22. Histograms of detections as a function of group size and observation type for the 2025 survey. Observation frequencies are adjusted based on bin widths. Note the different y-axis scales.

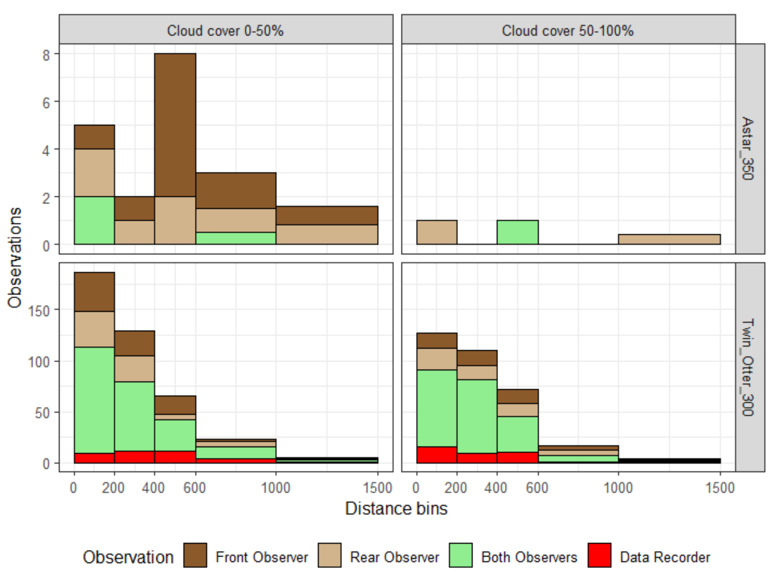


Figure 23. Detection histograms as a function of cloud cover for 2025. Observation frequencies are adjusted based on bin widths. Note the different y-axis scales.

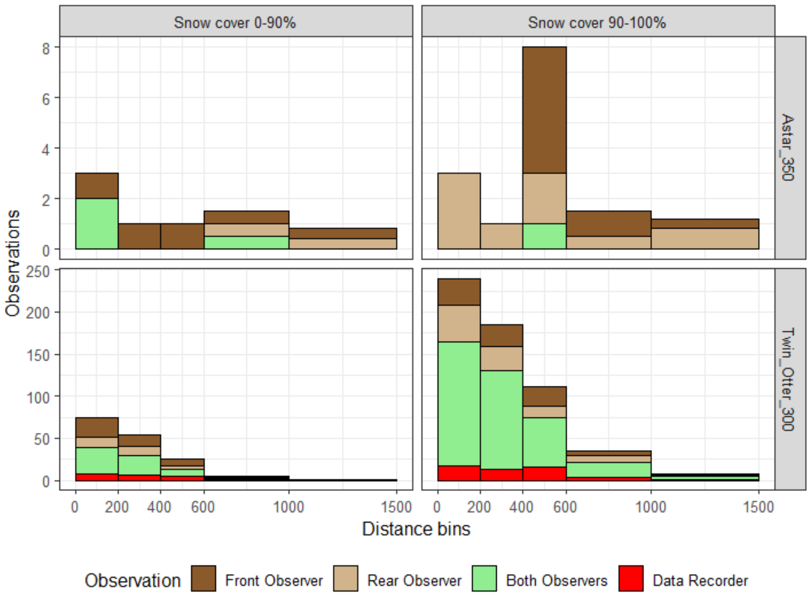


Figure 24. Detection histograms as a function of snow cover for 2025. Observation frequencies are adjusted based on bin widths. Note the different y-axis scales.

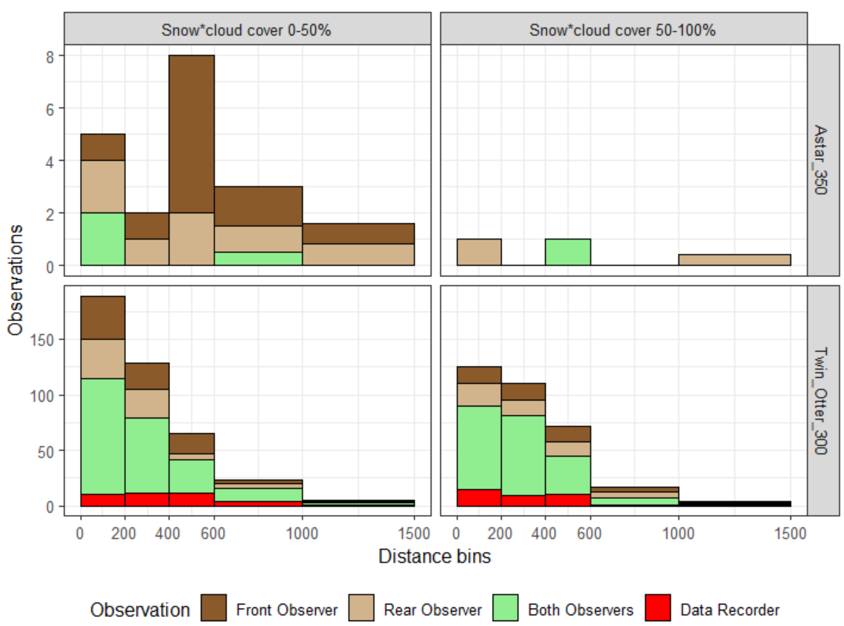


Figure 25. Detection histograms as a function of the product of cloud and snow cover for 2025. Observation frequencies are adjusted based on bin widths. Note the different y-axis scales.

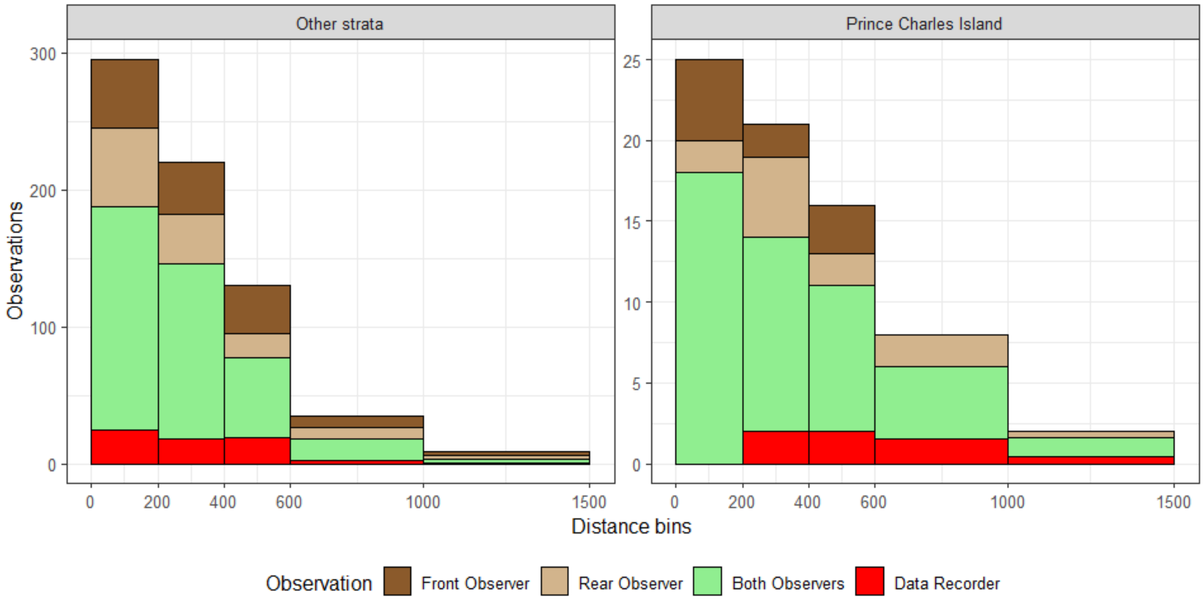


Figure 26. Detection histograms as a function of the product whether observations occurred on Prince Charles Island for 2025 survey. Observation frequencies are adjusted based on bin widths. Note the different y-axis scales.

Model Selection Fixed Wing

Model selection for the fixed wing aircraft initially focused on detection function choice, with a hazard rate model **(Table 9**: Models 6 and 15**)** being most supported in comparison to a half-normal detection function. The most supported model (Model 1) had group size, cloud cover, snow patchiness, and Prince Charles Island (PCI) as supported covariates. The most supported distance model was then used for mark-recapture model selection. Distance, the log of group size was more supported than a constant model **(Table 10).** A DRPair covariate, which was for lower detection probability observers, was not supported, suggesting that the amount of variation caused by these observers was minimal.

The fit of the MRDS model was good, as indicated by plots of the data relative to detection histograms **(Figure 27).** Chi-square tests for the distance portion had 0 degrees of freedom, precluding a p-value for the test; however, the overall chi-square was 3.6, suggesting a reasonable fit. Fit was also adequate to the mark-recapture portion of the MRDS model (chi-square=2.06, df=2, p=0.36) as suggested by plots of predictions compared to conditional double observer detection probabilities. Detection probabilities did decrease with distance; however, the amount was less than suggested by the distance plot **(Figure 28)** due to heterogeneity of double observer detection probabilities.

Table 9. Model selection for distance sampling covariates for the 2025 fixed wing data set. The distance sampling detection function (DF: hr-hazard rate, hn-Half normal) is shown along with the distance and double observer model. A constant intercept double observer model was used for all analysis. Sample size adjusted using Akaike Information Criterion (AICc), the difference in AICc between the most supported model for each model (∆AICc), AICc weight (wi), number of model parameters (K) and deviance is given. Constant models are shaded for reference.

No	DF	Distance model	AIC_c	ΔAIC_c	w_i	K	LL
1	hr	size + PCI + cloud + snowpatch	2632.84	0.00	0.66	7	-1309.34
2	hr	size + PCI + snow + cloud +snowpatch	2634.43	1.60	0.30	8	-1309.12
3	hr	size + snow + cloud + snowpatch	2641.34	8.50	0.01	7	-1313.59
4	hr	size + cloud + snow	2641.75	8.91	0.01	6	-1314.82
5	hr	size + snow	2642.15	9.31	0.01	5	-1316.03
6	hr	size + PCI	2643.09	10.26	0.00	5	-1316.51
7	hr	size + snow + snowpatch	2643.15	10.32	0.00	6	-1315.52
8	hr	size + snow + cloud + snowloud	2643.26	10.43	0.00	7	-1314.56
9	hr	PCI	2645.23	12.39	0.00	4	-1318.59
10	hr	snow + cloud + snowpatch	2645.95	13.12	0.00	6	-1316.92
11	hr	snow + cloud	2646.24	13.41	0.00	5	-1318.08
12	hr	snow	2646.93	14.09	0.00	4	-1319.44
13	hr	Strata	2647.37	14.53	0.00	7	-1316.61
14	hr	snow + cloud + snowcloud	2647.45	14.61	0.00	6	-1317.67
15	hr	snowpatch	2647.82	14.98	0.00	4	-1319.88
16	hr	size	2650.43	17.59	0.00	4	-1321.19
17	hr	snow_factor	2652.38	19.55	0.00	4	-1322.17
18	hr	logsize	2653.48	20.64	0.00	4	-1322.71
19	hr	weakobs	2654.40	21.56	0.00	4	-1323.17
20	hr	constant	2654.81	21.98	0.00	3	-1324.39
21	hr	snowcloud	2655.02	22.19	0.00	4	-1323.49
22	hr	cloud	2655.34	22.50	0.00	4	-1323.64
23	hr	cloud_factor	2658.02	25.18	0.00	6	-1322.95
24	hn	size	2663.31	30.48	0.00	3	-1328.64
25	hn	logsize	2663.49	30.65	0.00	3	-1328.73
26	hn	constant	2664.11	31.28	0.00	2	-1330.05

Table 10. Model selection for double observer and combined distance sampling/double observer covariates for the 2025 fixed wing data set. For this analysis the most supported DS model (Table: size + cloud + Snowpatch+PCI) was used. Sample size adjusted Akaike Information Criterion (AICc), the difference in AICc between the most supported model for each model (∆AICc), AICc weight (w_i), number of model parameters (K) and deviance is given. Constant mark-recapture models are shaded for reference.

No	MRmodel	AIC_c	ΔAIC_c	w_i	K	LL
1	logsize + distance	2627.82	0.00	0.32	9	-1304.8
2	PCI + logsize + distance	2628.27	0.45	0.26	10	-1304.0
3	logsize	2629.84	2.02	0.12	8	-1306.8
4	size	2630.14	2.31	0.10	8	-1307.0
5	distance	2630.33	2.50	0.09	8	-1307.1
6	constant	2632.84	5.01	0.03	7	-1309.3
7	Snow_Patchyness	2633.45	5.63	0.02	8	-1308.6
8	DRPair	2633.59	5.76	0.02	8	-1308.7
9	snowc	2634.48	6.66	0.01	8	-1309.1
10	PCI	2634.66	6.84	0.01	8	-1309.2
11	snowcloud	2634.67	6.84	0.01	8	-1309.2
12	cloudc	2634.71	6.88	0.01	8	-1309.3
13	SnowPatchF	2635.32	7.50	0.01	9	-1308.5
14	logsize + distance	2627.82	0.00	0.32	9	-1304.8

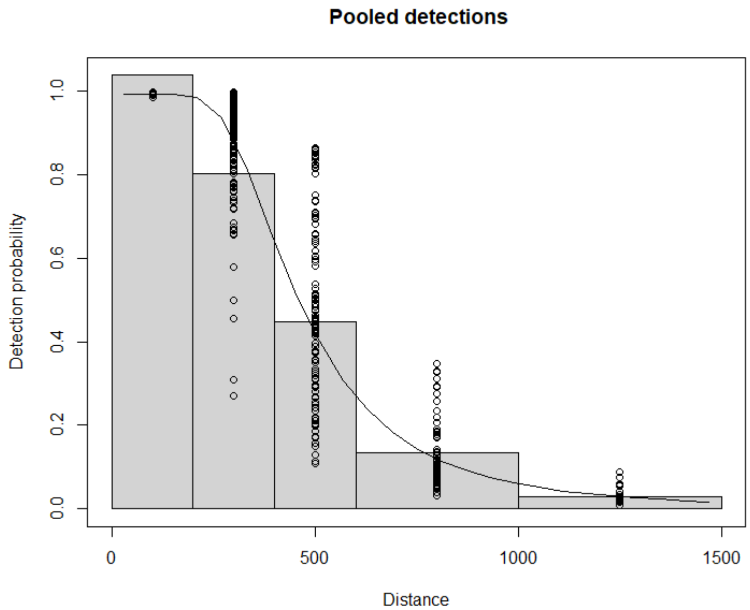


Figure 27. Fitted detection function for the most supported MRDS model for the 2025 fixed wing data set.

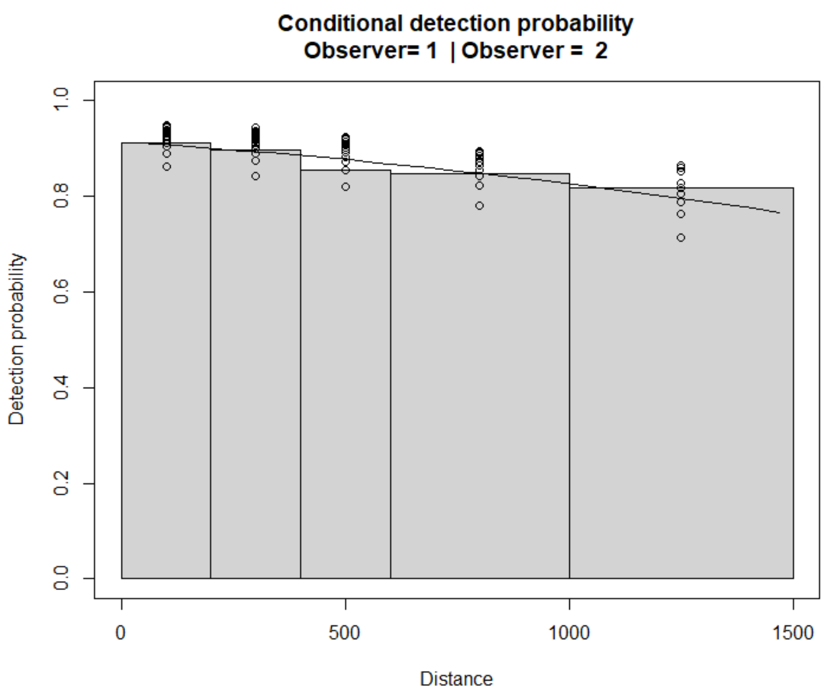


Figure 28. Fitted detection function for the most supported MRDS model for the 2025 fixed wing data set.

Helicopter Model Selection

The 2024 and 2025 helicopter data were combined for the 2025 analysis to offset low sample sizes in the 2025 data set. An additional year covariate was also added to the analysis to test potential differences in detection functions. A comparison of detection histograms **(Figure 29)** suggests proportionally more observations in the furthest survey bin in 2025; however, this may be due to low sample sizes in 2025. Model selection results suggested that the detection function scale varied by group size, year and cloud cover for helicopter observations, with the hazard rate detection function being most supported **(Table 11).** A plot of the overall detection function suggested a reasonable fit of the detection function to the data, with an overall chi-square value of 2.3 (0 degrees of freedom prevented a p-value from being developed) **(Figure 30).** The year-based covariate suggested that detection was higher for the helicopter used in 2025 compared to the same make and model of helicopter (Eurocopter B-2) used in 2024 **(Figure 31).** The effect of this covariate was a reduction in estimates for 2025 strata by approximately 20% (Model 3 vs Model 1: approximately 200 caribou). So, the net effect of using the year covariate is to make the 2025 estimate more conservative due to data deficiencies. Because of this, helicopter estimates were relatively imprecise (CV=20%) when compared with fixed wing estimates.

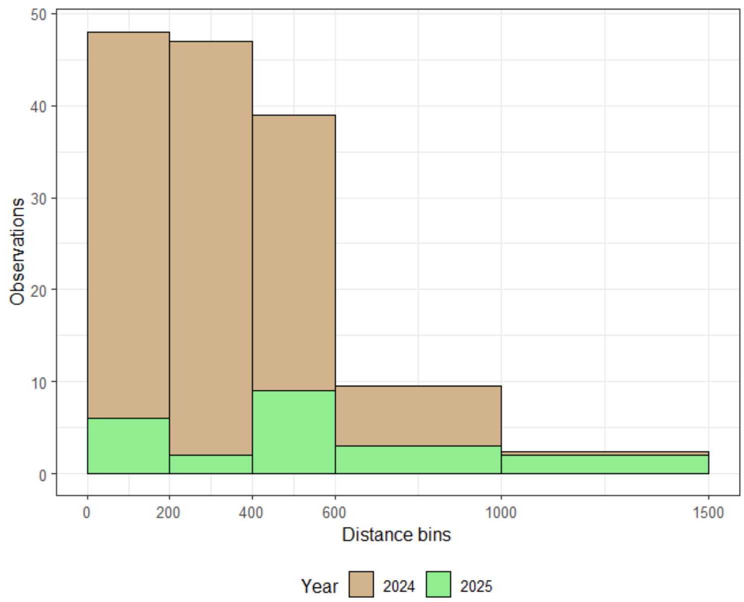


Figure 29. Detection histograms for 2024 and 2025 helicopter data sets.

Table 11. Model selection for distance sampling covariates for the 2024 and 2025 helicopter data sets. The distance sampling detection function (DF: hr-hazard rate, hn-Half normal) is shown along with distance and double observer model. Sample size adjusted Akaike Information Criterion (AICc), the difference in AICc between the most supported model for each model (ΔAICc), AICc weight (wi), number of model parameters (K) and deviance is given. Constant models are shaded for reference.

No	DF	Model	AIC_c	ΔAIC_c	w_i	K	LL
1	hr	size + Year + cloud	434.98	0.00	0.59	5	-212.3
2	hr	size + Year + cloud + snowloud	436.69	1.71	0.25	6	-212.1
3	hr	size + cloud	439.23	4.25	0.07	4	-215.5
4	hr	size + Year	439.67	4.69	0.06	4	-215.7
5	hr	size + cloudc + snow	441.34	6.37	0.02	5	-215.5
6	hr	size	445.04	10.07	0.00	3	-219.4
7	hn	size	446.11	11.13	0.00	2	-221.0
8	hr	Year	448.19	13.22	0.00	3	-221.0
9	hn	Year	449.54	14.57	0.00	2	-222.7
10	hr	logsize	450.71	15.73	0.00	3	-222.3
11	hn	logsize	452.01	17.04	0.00	2	-224.0
12	hr	cloudc	458.16	23.18	0.00	3	-226.0
13	hr	snowloud	460.89	25.91	0.00	3	-227.4
14	hr	Constant	464.13	29.16	0.00	2	-230.0
15	hr	snow	466.10	31.13	0.00	3	-230.0
16	hn	Constant	466.50	31.52	0.00	1	-232.2
17	hr	SnowpatchF	469.71	34.73	0.00	5	-229.7

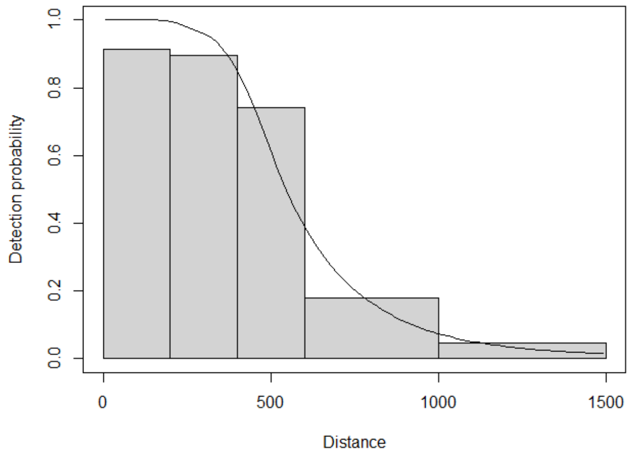


Figure 30. Fit of helicopter data set to distance sampling data for 2025.

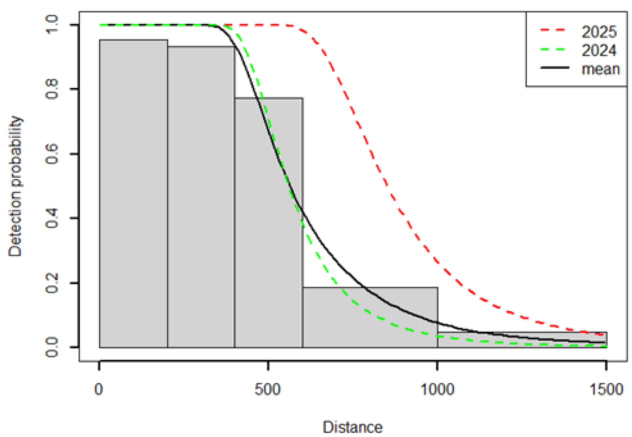


Figure 31. Comparison of detection functions for 2024 and 2025. The mean detection function and detection functions for 2024 and 2025 are shown.

4.3 Sensitivity Analysis of 2024 & 2025 Models & Data

4.3.1 Sensitivity Analysis (2024)

A sensitivity analysis was conducted for the 2024 fixed wing data set to assess sensitivity of estimates to model fit, inclusion of data recorder data, and distance sampling **(Table 6 and Figure 16).** The overall estimates from the most supported model were compared with various models and data formulations **(Table 12 and Figure 32).**

In the first analysis, we used a distance sampling only model that used estimates of the most supported distance models with no double observer model (assumed sightability=1 in the closest bin was considered). Estimates from this model were 584 caribou lower (2.4%) lower than the full MRDS model suggesting that sightability within the transect strip only reduced the estimate marginally compared to assuming it was 1. We note that this formulation also should be less sensitive to inclusion of data recorder data given that detection probabilities are not modelled; instead, it is assumed that relatively equal observer effort occurs during the survey so that the resulting detection functions apply across all observer pairs.

In the second analysis, we used a strip transect estimator that assumes sightability within the 0-400m strip. Estimates were 12% lower using this approach which was not surprising given that detection decayed after 200m based on calculated detection functions. Incorporation of double observer modelling did increase the estimate slightly (7% lower); however, it was still lower than the distance sampling only estimates.

In the third analysis, we used an estimate using the full MRDS model with all data recorder observations; with estimates being approximately 2,000 caribou (8.8%) lower than the MRDS model and 6.5% lower than the distance sampling model. This result suggests that inclusion of data recorder data for the extremely weak pairs likely offsets potential negative bias caused by larger numbers of caribou being missed by weak observer pairs.

In the fourth analysis, we used all data including data recorders, all of which was used with the most supported distance sampling model. This forth analysis was run with estimates being only 288 caribou lower (1%) than the MRDS model suggesting that just using data recorder data may be as efficient as double observer modelling.

Table 12. Sensitivity analysis of estimates of 2024 Baffin Island total estimates. The total number of caribou used in the estimate (n) is given along with each estimate (N). MRDS indicates a distance sampling/double observer model, DS indicates a distance sampling model, and DR indicates data recorder observations.

Model	n	N	SE	Conf. Limit		CV
Strip transect/Double observer	2609	22,438	1268.4	17,097	29,063	**0.057**
Strip transect	2644	21,289	1458.1	18,409	24,169	**0.068**
MRDS Fixed/DS heli-no DR observations	3614	22,056	1341.2	19,555	24,877	**0.061**
MRDS Fixed/DS helicopter	3843	24,162	1372.0	21,595	27,034	**0.057**
DS Fixed and Helicopter	3843	23,577	1362.4	21,031	26,432	**0.058**
DS Fixed and Helicopter-all DR observations	3908	23,874	1406.6	21,254	26,816	**0.059**

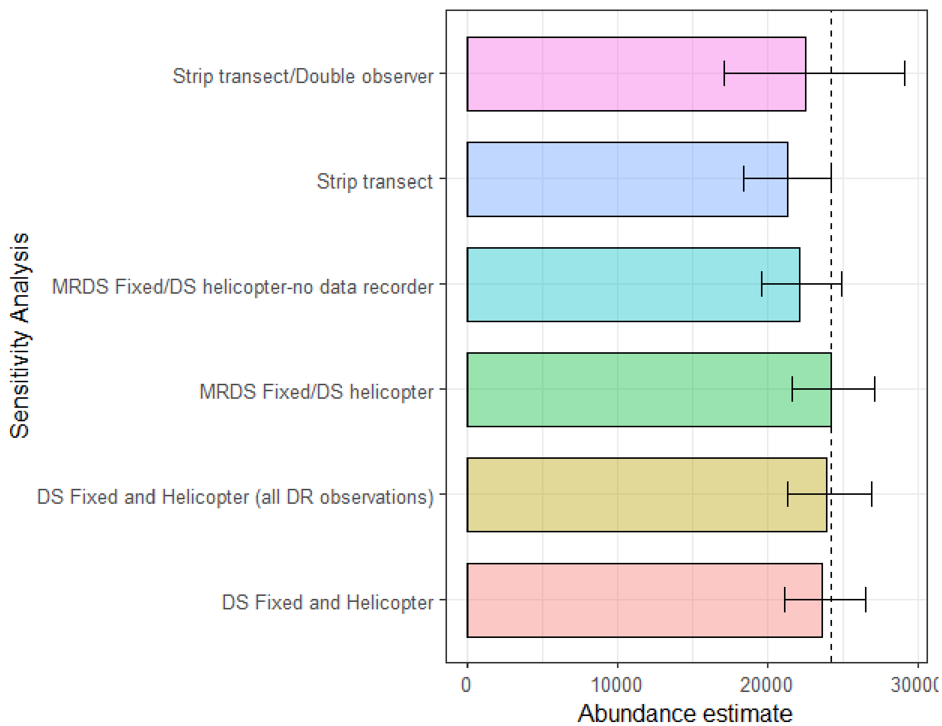


Figure 32. Graphical representation of 2024 sensitivity analysis. Dashed line indicates estimate used for analyses.

4.3.2 Sensitivity Analysis (2025)

A similar set of sensitivity analyses were conducted for the 2025 fixed wing Northern Baffin Island data set to assess the effect of inclusion of data recorder observations as well as use of distance sampling methods. Estimates were compared to the full MRDS estimate **(Table 10).** The helicopter portion of the data set, which was challenged by low sample sizes, was not used in sensitivity analyses.

As with the 2024 strip-transect/double observer results, 2025 estimates with or without data recorder observations were 10-16% lower than full data set estimates **(Table 13 and Figure 33)** demonstrating the utility of distance sampling to reduce estimate bias.

A second analysis considered the selective addition of data recorder observations used in the 2025 analysis (MRDS (selective DR obs in **Table 13**)) with no data recorder observations included (MRDS (no DR obs)). In this case estimates were 4% lower when data recorder observations were not included, suggesting that augmentation of weak observers with data recorder observations provides an effective way to offset issues with weak observers.

A final analysis compared estimates using just distance sampling with all data recorder observations (DS (all DR obs)) with the MRDS estimates with selective observations. In this case the <u>distance</u> <u>sampling</u> <u>only</u> estimates were slightly higher than the MRDS estimates, however, the difference was only 1.5%. As discussed later, this result suggests that just using distance sampling with combined data recorder and observer observations can be as effective as MRDS methods when survey conditions are favorable.

Table 13. Sensitivity analysis of estimates of 2025 Baffin Island total estimates. The total number of caribou used in the estimate (n) is given along with each estimate (N). MRDS indicates a distance sampling/double observer model, DS indicates a distance sampling model, and DR indicates data recorder observations.

Model	n	N	SE	Conf. Limit		CV
Strip transect (all DR obs)	2588	20,328	1589.9	17,177	23,480	0.078
Strip transect/Double observer	2532	21,774	1493.0	18,982	24,977	0.069
MRDS (selective DR obs)	3489	24,080	1812.2	20,739	27,958	0.075
MRDS (no DR obs)	3278	23,044	1841.3	19,668	27,001	0.080
DS (all DR obs)	3555	24,450	1942.0	20,898	28,606	0.079

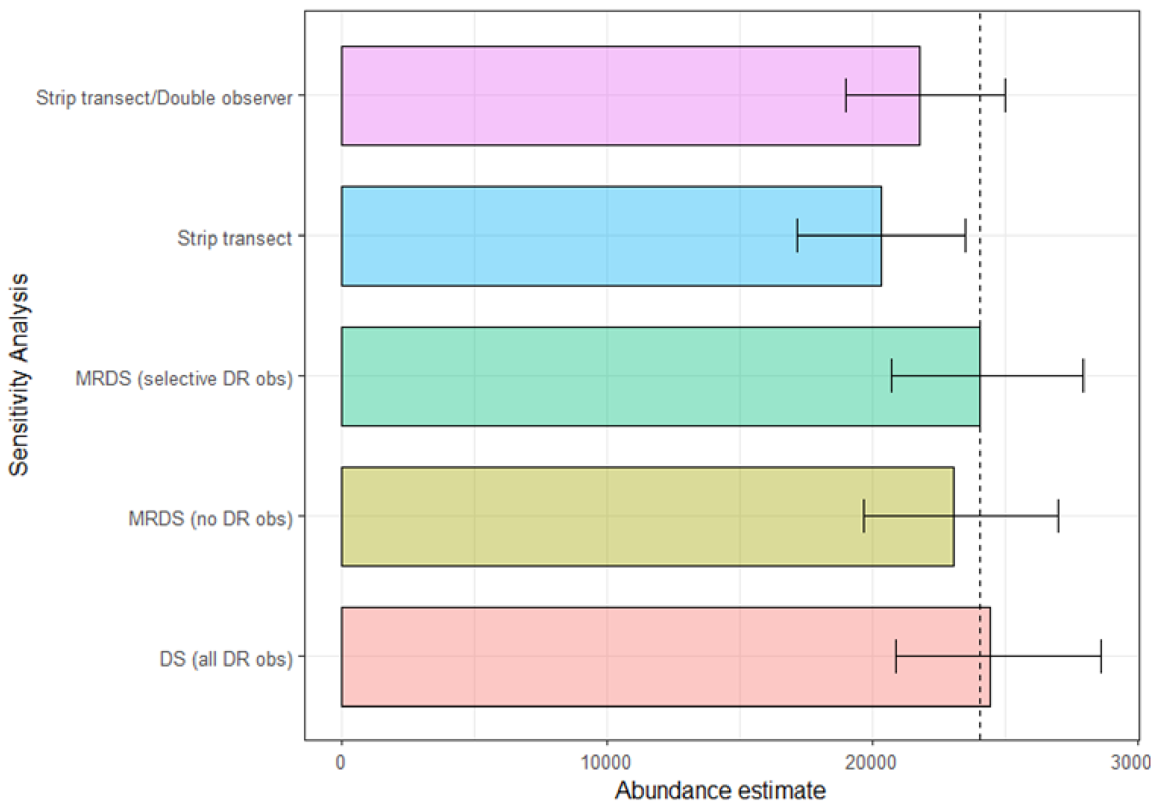


Figure 33. Graphical representation of 2025 sensitivity analysis. Dashed line indicates estimate used for analyses.

4.4 Estimates

Estimates derived from both March 2024, and 2025 surveys were analyzed separately before merging the two datasets together for a whole Baffin Island estimate. The results of these individual assessments are as follows below. However, to accurately assess the whole Island estimate, survey strata from both years would have to be merged in a way that would keep relative density assessments as mutually exclusive as possible. This process will be discussed later in this section.

4.4.1 March 2024 South Baffin Survey

March 2024 abundance estimates were derived from the most supported MRDS model for both the fixed-wing strata and the helicopter (Heli) strata (**Table 14**). Highest abundance and densities occurred on the MP-HD-FW (Meta-Incognita Peninsula High Density) where 11,694 adult, yearling, and calf caribou were estimated, followed by Hall Peninsula High Density strata (HP-HD-FW and HP-HD-H) where combined fixed wing and rotary wing methods estimated a total of 8,110 (Fixed 95% CI = 4,977-6,910; CV = 8.2%; Helicopter 95% CI = 1,572-3,207; CV = 18.0%) adults, yearlings, and calves, and finally FP-MD-FW (Fox Peninsula Medium Density), where 3,589 (95% CI = 2,558-5,035; CV = 16.1%) adults, yearlings, and calves were estimated. Overall estimates were relatively precise with the least precise estimates (highest CV's) occurring within the FP-LD-FW density stratum (with 11 on-transect caribou observations), the NLNE-LD-FW (Nettling Lake North East low density) stratum (with 66 on-transect caribou observations), and the NLN-LD-FW (Nettling Lake North low density) stratum (with 24 on-transect caribou observations) (**Table 14**). Combined these low-density strata had little influence on the overall abundance of south Baffin caribou, contributing a mean of 769 caribou to the south Baffin estimate. Higher density survey strata however were relatively precise yielding an estimate across all south Baffin survey strata of 24,162 (95% CI = 21,595-27,034; CV = 5.7%) adult, yearling, and calf caribou.

4.4.2 March 2025 Central and North Baffin Survey

Similar to March 2024, the March 2025 abundance estimates were derived from the most supported MRDS model for both the fixed-wing and the helicopter strata (**Table 14**). The NCB-HD-FW (North Central Baffin High Density Fixed-Wing) stratum recorded densities of 27.36 caribou per 100km^2 which were similar to densities to MP-HD-FW (Meta-Incognita Peninsula High Density Fixed-Wing) flown in 2024. These two strata contained the majority of caribou estimated across Baffin Island. In total 3,223 caribou were observed on transect within the NCB-HD-FW stratum which translated to an estimated total stratum abundance of 22,677 caribou (95%CI= 18,922-27,178; CV=9.2%). The estimate was precise with a CV of 8.5%. The next highest recorded densities of caribou occurred within the PCI-HD-FW (Prince Charles Island High Density Fixed-Wing) stratum where a relative density of 7.36 caribou/km^2 translated to an estimated 1,163 caribou adults, yearlings, and calves (95% CI=707-1,914; CV=24.2%), followed by the NL-LD-FW (Neergaard Lake Low Density Fixed-Wing) showing a relative density of 4.30 caribou/km2 and an estimated 164 adults, yearlings, and calves (95%CI=26 to 1,024;CV=98.5%). Both these strata produced imprecise estimates due to the relatively low sample population and as is evident by their high CVs. The remaining strata recorded 1.84 caribou/km2 within the NCB-MD-H (North Central Baffin Medium Density Helicopter), 1.61 caribou/km2 within the GF-MD-FW (Gifford Fiord Medium Density Fixed-Wing) and 0.85 caribou/km2 within the ISL-LD-FW (Western Islands Low Density Fixed-Wing)). In total these final strata accounted for 81 caribou seen on transect, yielding an estimate of 483 adults, calves, and yearlings between the three strata. Again, these estimates lacked precision, however, this lack of precision had little effect on the overall precision of the 2025 survey due to the relatively low numbers of caribou observed and estimated within these low and medium density transects when compared with the high density and high precision of the NCB-HD-FW strata and transects.

Table 14. Estimates for each stratum from the most supported MRDS model. The number of caribou counted on transect (n) is given for each stratum along with abundance estimates. Density is the abundance estimate divided by strata area X 100.

Strata	n	N	SE	Conf. Limit		CV	Density
2024							
FP-LD-FW	11	94	70.8	19	457	0.757	0.8
FP-MD-FW	650	3,589	578.8	2,558	5,035	0.161	16.6
MP-HD-FW	1,751	11,694	1041.7	9,787	13,972	0.089	28.0
NLNE-LD-FW	66	479	231.1	174	1,322	0.482	2.6
NLN-LD-FW	24	196	101.9	65	592	0.520	1.6
HP-HD-FW	909	5,864	479.8	4,977	6,910	0.082	11.7
HP-HD-H	432	2,246	403.9	1,572	3,207	0.180	11.4
Total	**3,843**	**24,162**	**1372.0**	**21,595**	**27,034**	**0.057**	
2025							
NCB-HD-FW	3,223	22,677	2081.0	18,922	27,178	0.092	27.4
GF-MD-FW	7	51	51.0	9	284	1.001	1.6
ISL-LD-FW	3	24	24.1	4	144	1.009	0.9
NL-LD-FW	18	164	162.0	26	1,024	0.985	4.3
PCI-HD-FW	238	1,163	281.5	707	1,914	0.242	7.4
NCB-HD-H	71	408	183.8	173	963	0.451	1.8
PI-LD-H	96	539	58.2	436	667	0.108	5.7
Total	**3,656**	**25,026**	**2115.8**	**21,182**	**29,568**	**0.085**	

4.4.3 Merging March 2024 and 2025 Overlapping Strata

We combined the March 2024, and 2025 caribou abundance estimates for a whole Baffin Island estimate. This analytical step was required for the development of a trend analysis utilizing the March/April 2012 South Baffin Island survey estimate, March 2014 Full Baffin Island survey estimate (Campbell et al. 2015), and the March 2024 and 2025 merged Baffin Island survey estimates (**Figure 34**). Further, and to analytically combine the 2024 Nettling Lake strata including the Nettling Lake East Low Density (NLNE-LD-FW) and the Nettling Lake Low Density (NLN-LD-FW), we analyzed their degree of overlap with the 2025 Central Baffin stratum (CB) (**Table 15**). To combine these overlapping strata estimates from the transects flown, a few modifications to the 2024 survey strata were required. We used all available past and recent telemetry and survey data to examine caribou movements and mixing within the localized area encompassing these three partially overlapping strata across the two survey years. We also used current 2024 and 2025 telemetry movement data to assess movement rates and spatial affiliations between the two survey years though this data was limited to only four (4) collars in March 2024 and four (4) collared caribou cows in March 2025.

An initial assessment of overlapping survey stratum showed the majority of the 2024 Nettling Lake North Low-density stratum (NLN-LD-FW) overlapping with the 2025 NCB-HD-FW stratum; however, no caribou were detected in the areas of the 2024 NLN-LD-FW stratum that did not overlap with the 2025 NCB-HD-FW stratum (**Figure 35**). Therefore, the NLN-LD-FW stratum was excluded from trend comparison (the estimate of caribou in the area that did not overlap 2025 was 0). We also examined the 2025 NCB-HD-FW stratum which also extended into the 2024 NLNE-LD-FW stratum. As with the NLN-LD-FW stratum, few caribou occurred in areas that did not overlap apart from a few groups to the southwest NLE-LD-FW stratum. To estimate these groups, the area of overlap between the 2025 NCB-HD-FW and 2024 NLNE-LD-FW strata was clipped to create a new 2024 NLE-LD-FW stratum that excluded the 2025 NCB-HD-FW stratum. Observations from 2024, that were in the 2025 NCB-HD-FW stratum, were then excluded to derive new estimates for the 2024 NLE-LD-FW stratum. This sampling configuration assumes that most caribou detected in 2025 were from the Central Baffin subpopulation and that an insignificant number of caribou moved from the South Baffin survey extents into the Central Baffin stratum survey extents (and vice-versa) in March 2024 and 2025. Past collar analysis (Campbell et al 2015) suggests that this subpopulation mainly occurs to the north of Nettling Lake with the South Baffin subpopulation or grouping predominantly occurring to the south of Nettling Lake during the time of year the survey was flown (**Figure 36**). Current collar data from 2024 and 2025, over the same days the surveys were conducted supports this hypothesis, showing minimal movement between central and south Baffin survey extents in March when the surveys occurred, and other months of the year as well (**Figure 37**). No collared caribou switched subpopulations during this period. Though this spatial assessment supports these stratification modifications, we must note that this comparison is limited by sample size and distribution of the collared caribou. Despite the small sample size, this assessment does suggest remarkable fidelity of caribou to regional areas within Baffin Island. Following the assessment of all available spatial caribou data and the final adjustment of overlapping strata and recorded caribou observations, the resulting 2024 and 2025 estimates were merged to derive a full island estimate of 48,681(CI=43,973-53,893) (**Table 15** and **Figure 38**).

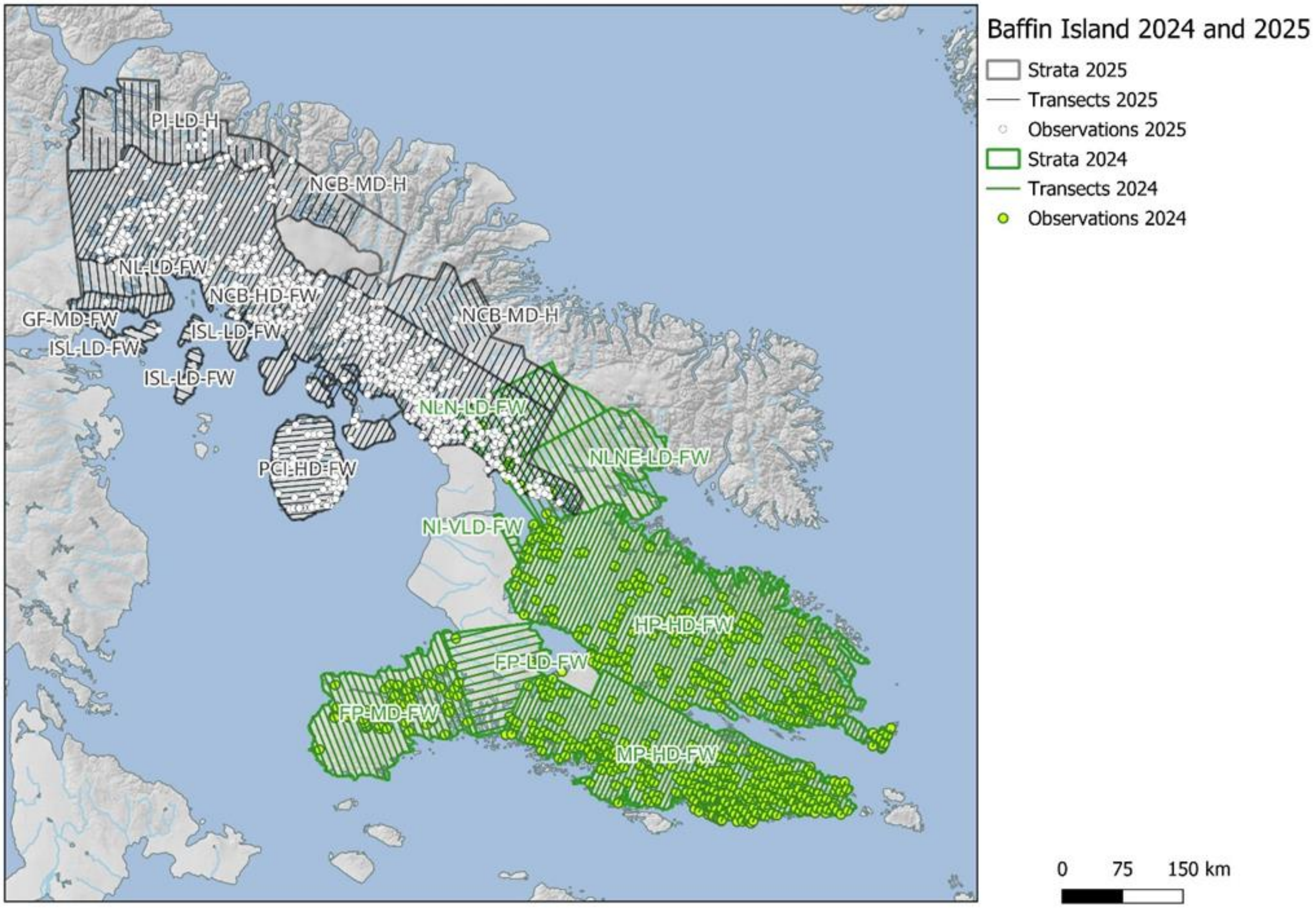


Figure 34. Areas sampled in 2024 (green) and 2025 (black with white observations).

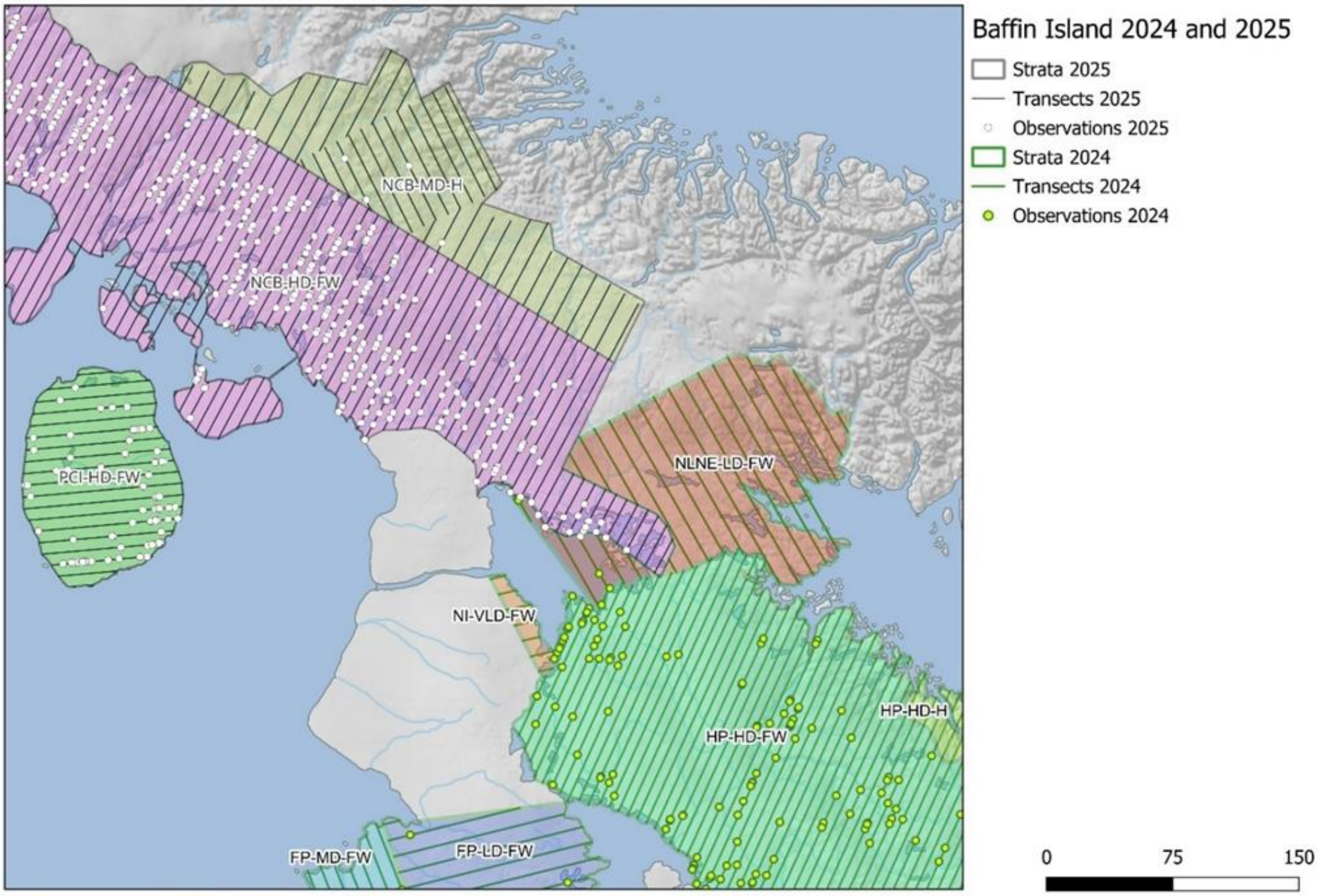


Figure 35. Close up of area of overlap of 2024 and 2025 sampling strata.

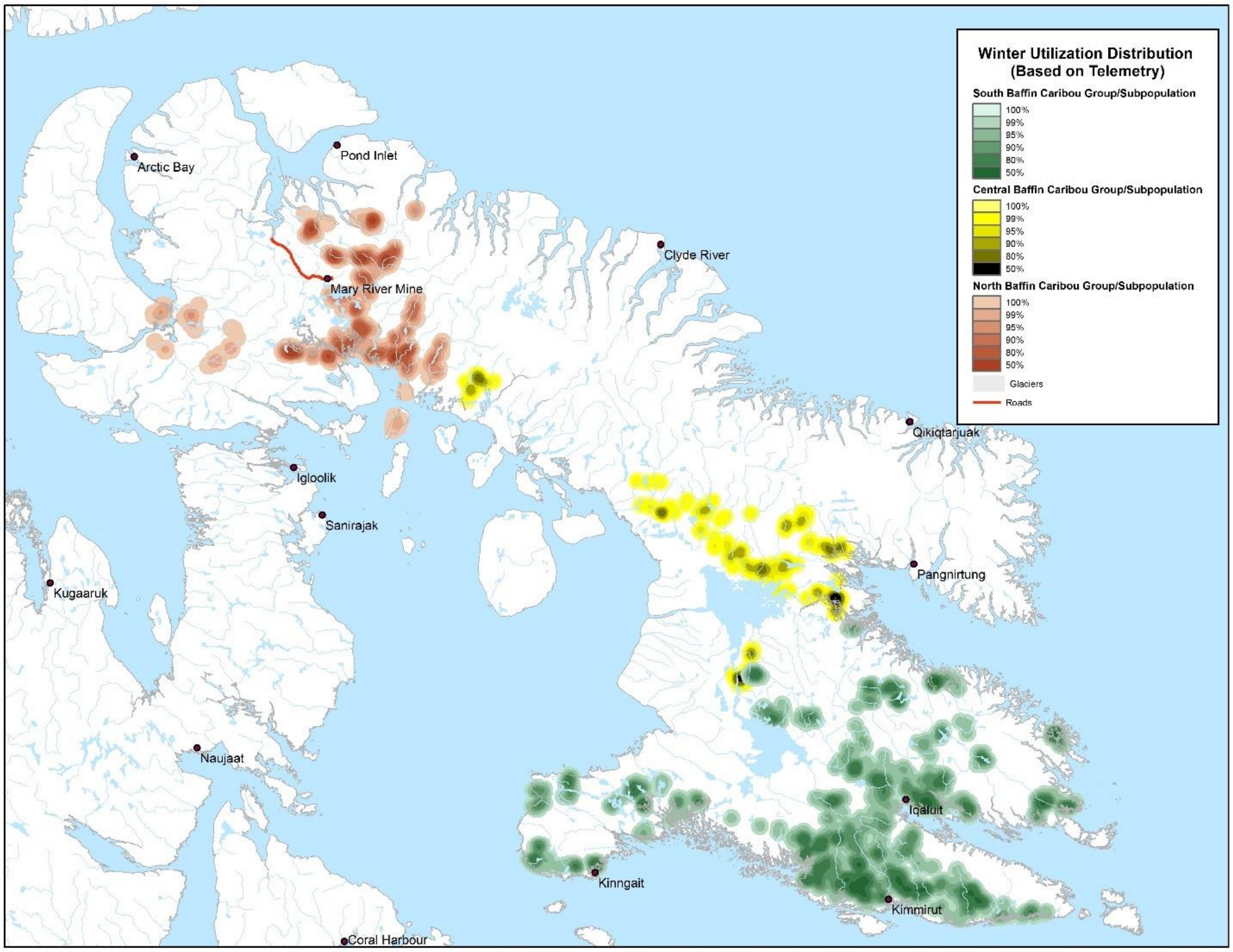


Figure 36. Winter range use based on utilization distributions utilizing a Kernel analysis with an 11 km search radius using historic (1987-1994) collar data. Darker colors indicate higher use. Figure from Campbell et al (2015).

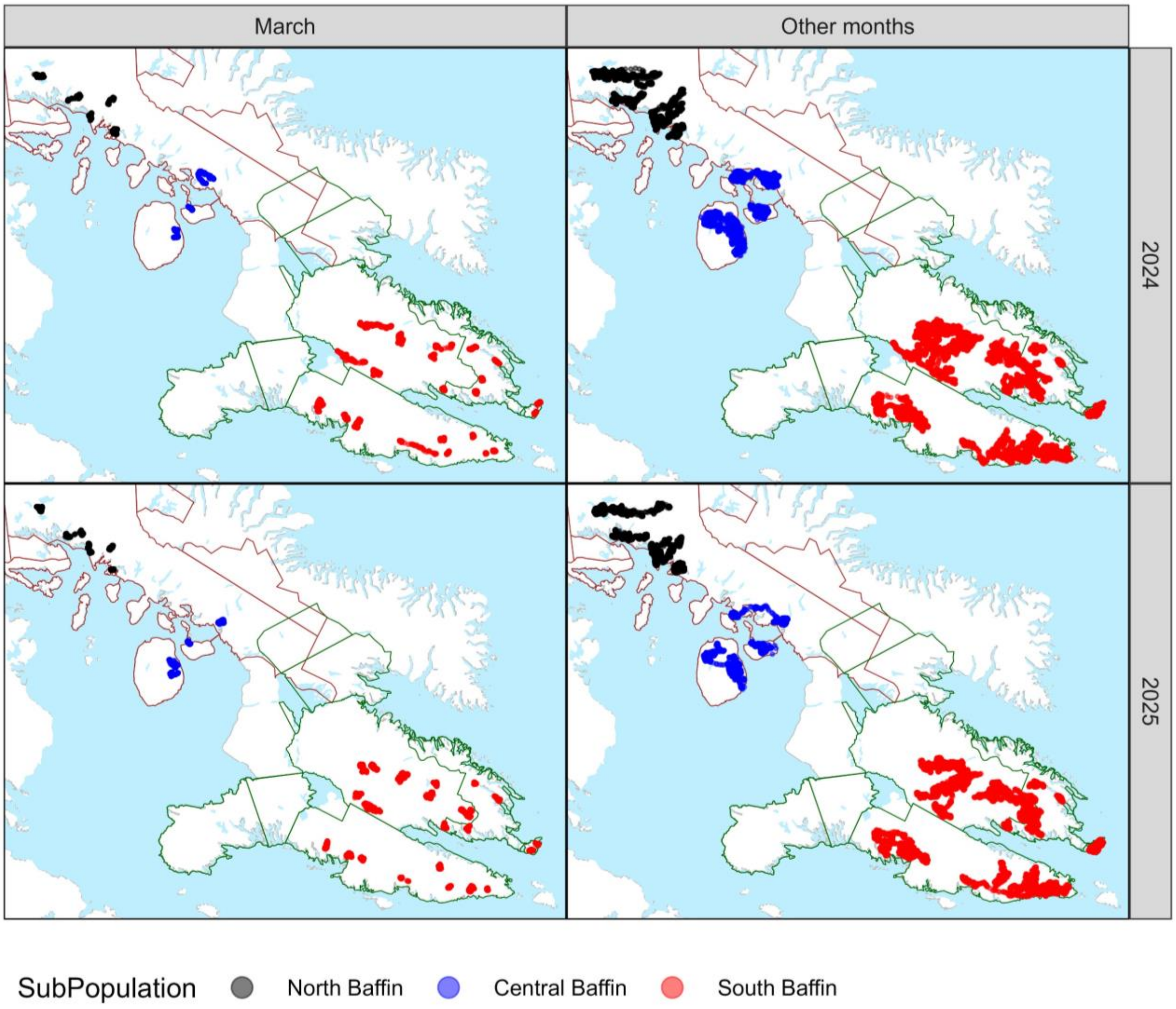


Figure 37. Locations of collared caribou (n=34 and 33 for 2024 and 2025) relative to survey strata (2024: green, 2025: brown) in March when surveys were conducted relative to other months of the year.

Table 15. Estimates from 2024 excluding area of overlap with 2025 strata (NLN-LD-FW strata eliminated and NLNE-LD-FW reduced) and the resulting combined estimates of 2024 and 2025 (FW=Fixed wing aircraft; H=Helicopter). The 2025 strata estimates are listed in Table 5.

Strata 2024		n	N	SE	Conf. Limit		CV	Density Caribou/km2
Foxe Penn. Fixed wing Low Density	FP-LD-FW	11	94	70.8	19	457	0.757	0.8
Foxe Penn. Med Density Fixed Wing	FP-MD-FW	650	3,589	578.8	2,558	5,035	0.161	16.6
Meta-Incognita Penn. High Density Fixed Wing	MP-HD-FW	1751	11,694	1041.7	9,787	13,972	0.089	28
Nettling Lake East Low Density Fixed Wing	NLNE-LD-FW (reduced)	**23**	**168**	**181.3**	**24**	**1,189**	**1.081**	**1.09**
Hall Penn High Density Fixed Wing	HP-HD-FW	909	5,864	479.8	4,977	6,910	0.082	11.7
Hall Penn Heli High Density Helicopter	HP-HD-H (DS only)	432	2,246	403.9	1,572	3,207	0.180	11.4
2024 Total		**3,776**	**23,655**	**1360.7**	**21,111**	**26,506**	**0.058**	

2025 Total	3,656	25,026	2115.8	21,182	29,568	0.085
TOTAL 2024 and 2025	**7,432**	**48,681**	**2515.5**	**43,973**	**53,893**	**0.052**

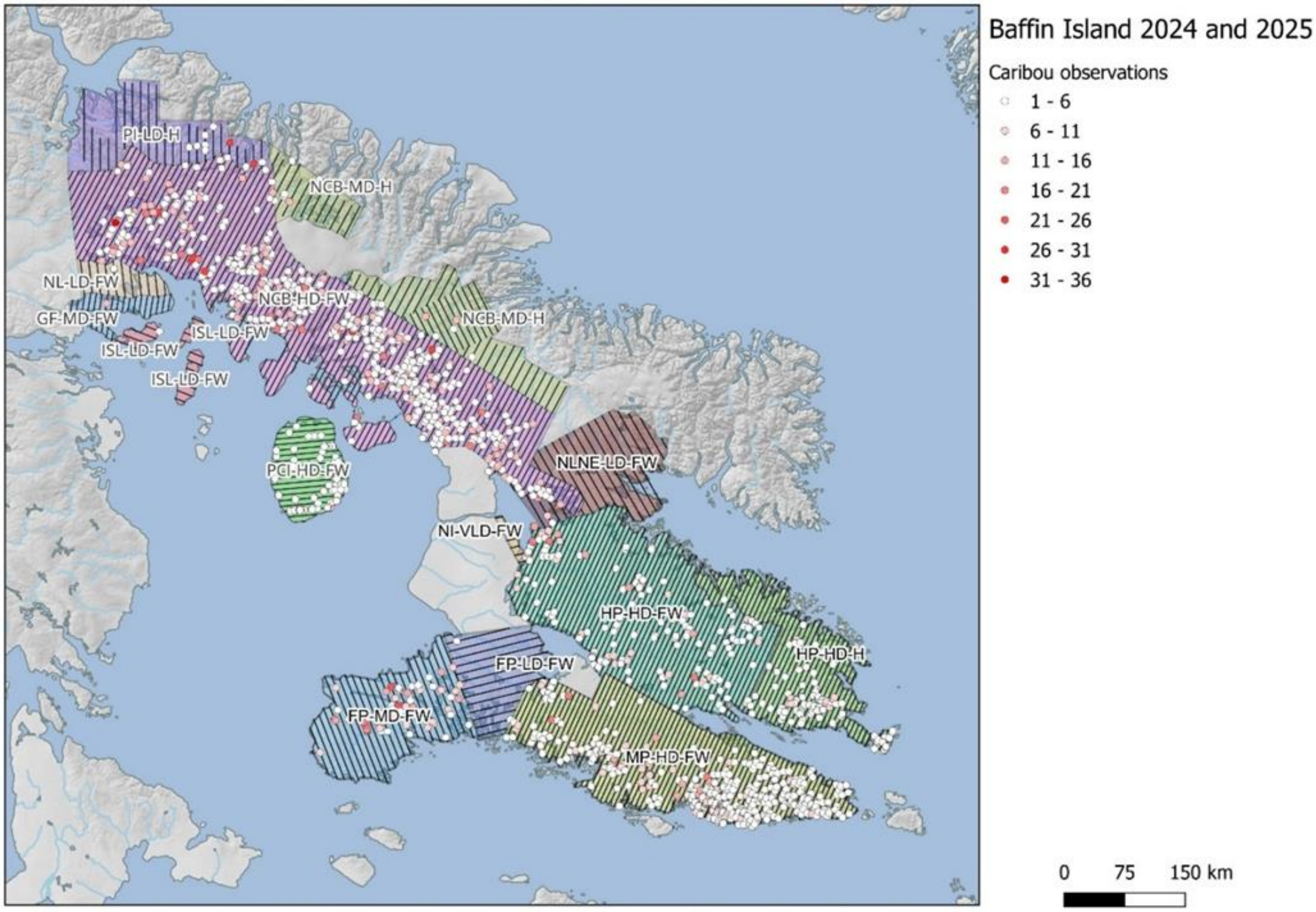


Figure 38. The combined 2024 and 2025 data sets with the 2024 NLNE-LD-FW stratum modified to avoid overlap with the 2025 NCB-HD-FW stratum.

4.5 Trend Analysis

4.5.1 Observed Abundance Trends

Comparisons between full Baffin Island abundance estimates as well as regional stratum estimates, were undertaken using data from the 2012, 2014, and merged 2024 and 2025 surveys (**Tables 15 and 16**). The 2014 full island estimate used to determine trend did not include Melville Peninsula or Borden Peninsula given that these 2 areas were not surveyed in 2024/2025. This reduced the estimate used for the analysis of trend from 4,872 (CI=3,661-6,484) to 4,645 (CI=3,667-5,885) (**Table 16**).

Regional trends from 2014 to 2024-5 were evaluated by pairing 2014 strata (**Figure 39 and Table 16)** with 2024-2025 strata based on overlap as summarized in Table 16.

Table 16. Estimates for 2014 Baffin Island survey (Campbell et al. 2015) strata that overlap the 2024 and 2025 surveys. Also listed are the corresponding 2024/2025 strata used in the trend analysis. Note that the Central Baffin region in 2014 was composed of the Central Baffin and Mary River strata (**Figure 39**).

Region/Strata Corresponding to 2014 Survey strata	n	N	SE	Confidence Limit		CV	Corresponding 2024/25 strata used for trend analysis
Central Baffin	197	1,091	278.4	662	1,798	0.255	NCB-HD-FW
Mary River	49	224	97.1	96	521	0.433	PI-LD-H
Foxe Peninsula	20	216	183.4	48	972	0.849	FP-MD-FW FP-LD-FW
Hall Peninsula	176	887	292.9	467	1,686	0.33	HP-HD-FW, HP-HD-H
Meta-Incognita Peninsula	91	539	207.5	256	1,138	0.385	MP-HD-FW
Prince Charles Island (PCI)	557	1,603	249.8	1,158	2,220	0.156	PCI-HD-FW
North Central Baffin	13	85	45	31	230	0.53	NCB-MD-H
Total	**1,103**	**4,645**	**560.2**	**3,667**	**5,884**	**0.121**	

Observations from the combined 2024 and 2025 data sets (**Figure 38**) indicated higher densities in most March 2024 and 2025 strata then were observed in March 2014 or March 2012. March 2014 observations and estimates illustrate relatively low numbers of caribou in comparison to March 2024 and 2025 strata observations and estimates (**Tables 15**, **16** and **Figure 39**).

Regionally, the greatest change was documented within the Central Baffin Region where the mean estimate increased from 1,315 caribou (adults and yearlings) in 2014, to 23,216 (p-value <0.0001) by 2025. The Meta-Incognita region recorded the next highest change from 539 to 11,694 (p-value < 0.0001), followed by the Hall Peninsula region where the estimated number of caribou increased from 887 to 7,878 (p-value < 0.0001), and finally the Foxe Peninsula region where the mean estimate increased from 216 adult, yearling, and calf caribou in 2014, to 3,682 by March 2024 (p-value < 0.0001) (**Table 17**). Significant increases in abundance were not detected within the Prince Charles Island region and North Central Baffin region, where p-values were recorded well above the 0.05 threshold. Mean estimates from these two regional strata did, however, suggest an increase in abundance within the North Central Baffin region, and a decrease in overall caribou abundance within the Prince Charles Island region (**Figure 40**).

Overall estimates across all Baffin Island strata between March 2014 and March 2024/25 saw a mean increase from 4,645 to 48,681 adult, yearling, and calf caribou respectively. This change was highly significant yielding a P-value of less than 0.0001 (P-values less than 0.05 are an indication of statistically significant change) (**Figure 41**).

The rates and magnitude of this change were estimated using the ratio of successive caribou survey estimates for the full Baffin Island survey area, as well as for individual strata making up the whole Baffin Island survey area (**Table 18**). For clarity, the year for the Baffin 2024/2025 merged surveys was set to 2024.5 to accommodate the splitting of the island wide survey effort into the 2024 (South Baffin) and 2025 (North and Central Baffin Island) surveys that covered the entire Island (except for a large portion of Borden Peninsula). Of most interest was a comparison of the 2012 and 2014 estimates with 2024/2025 estimates. The relatively high CV's reported for both the

2012 and 2014 surveys, coupled with extended (7 weeks) and partial coverage (parts of central Baffin and all of North Baffin Island not surveyed) of the 2012 survey, compared to the 2014 whole Baffin Island survey coverage across a 4 week period, precluded solid estimates of trend in most cases between these survey years.

The overall estimate for Baffin Island generated from the merged March 2024 (South Baffin), and 2025 (North and Central Baffin), indicate that caribou abundance increased approximately 11-fold since March 2014, which translates to a 25% rate of annual increase in abundance (CI=1.22-1.28). **Figure 42** shows yearly change estimates for the most relevant intervals. Increases occurred in all strata except for Prince Charles Island which decreased by 3% per year. Estimates of increase varied by each individual region, however, confidence intervals overlapped estimates for the entire region suggesting statistically similar trends.

Table 17. Estimates of abundance from previous and the present 2024/2025 surveys used for trend analysis based on comparisons listed in Table 16. The total number of caribou used in the estimate (n) is given along with each estimate and confidence limits as well as coefficient of variation (CV) and degrees of freedom. In addition, t-test for statistical significance between estimates are given.

Year	Caribou (n)	N	CV	Conf. Limit		df	T-test	dft	p-value
				Baffin (all strata)					
2014	1,103	4,645	0.126	3,667	5,885	286.6			
2025	7,432	48,681	0.052	43,973	53,893	245.1	17.1	269.4	<0.0001
				Central Baffin region					
2014	246	1,315	0.238	827	2,093	122.6			
2025	3,319	23,216	0.090	19,452	27,709	142.8	10.4	149.2	<0.0001
				Foxe Peninsula region					
2012	6	69	0.995	12	389	19.6			
2014	20	216	0.849	48	972	30.4	0.8	38.3	0.4568
2024	661	3,682	0.158	2,577	5,492	23.0	5.7	27.6	<0.0001
				Hall Peninsula region					
2012	41	480	0.337	250	925	65.5			
2014	176	887	0.330	467	1,686	96.0	1.2	143.9	0.2265
2024	1,342	7,878	0.075	6,793	9,137	86.7	10.6	127.9	<0.0001
				Meta-Incognita Peninsula region					
2012	13	162	0.545	57	455	34.7			
2014	91	539	0.385	256	1,138	96.2	1.7	122.9	0.0966
2024	1,751	11,694	0.089	9,787	13,972	55.0	10.5	59.3	<0.0001
				North Central Baffin region					
2014	13	85	0.533	31	232	55.2			
2025	71	408	0.451	173	963	154.0	1.7	171.5	0.0901
				Prince Charles Island (PCI)					
2014	557	1,603	0.171	1,131	2,272	26.0			
2025	238	1,163	0.242	707	1,914	64.1	-1.1	75.7	0.2663

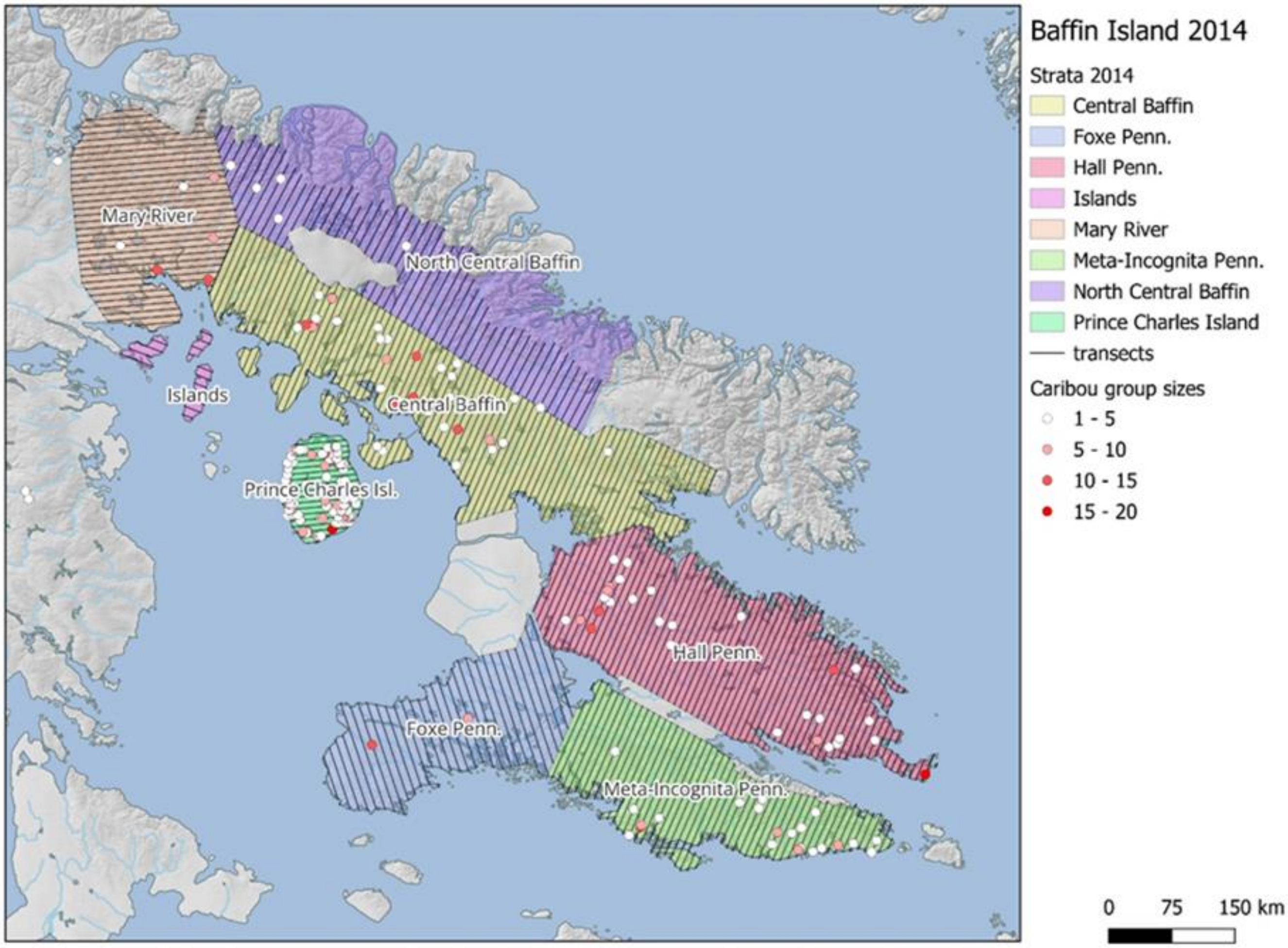


Figure 39 Observations from the 2014 Baffin Island survey (Campbell et al. 2015).

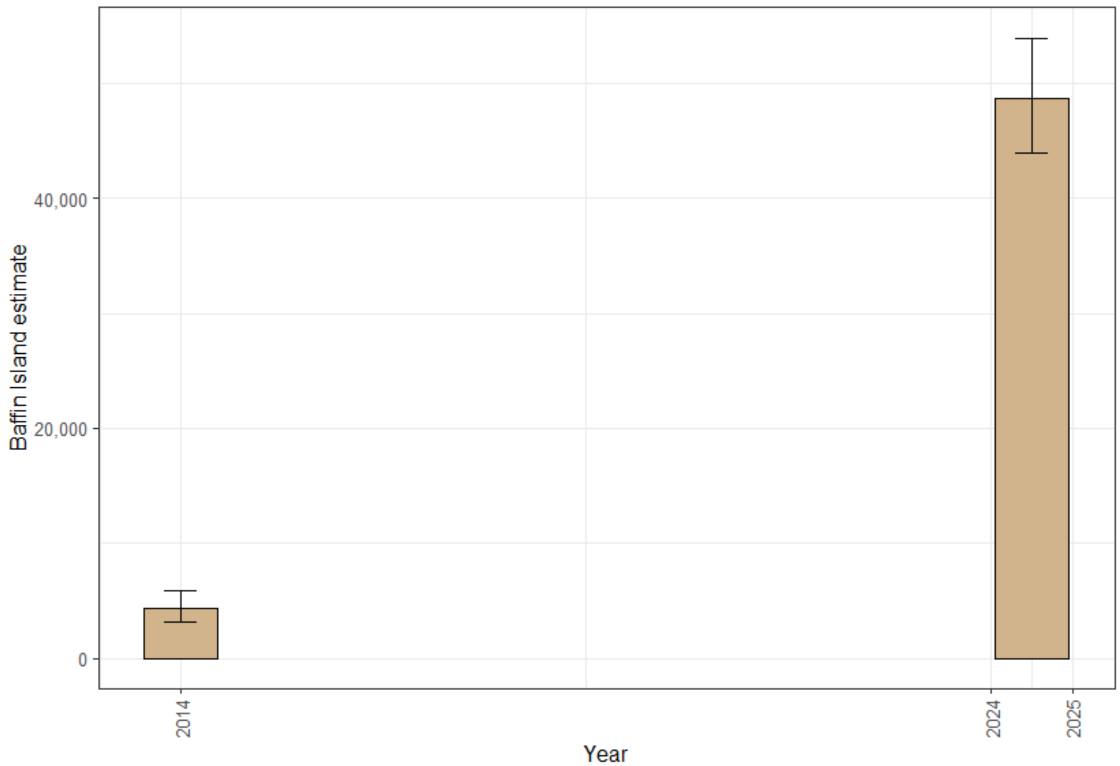


Figure 40 Estimates of abundance for the Baffin Island full island estimates in 2014 and 2024/25.

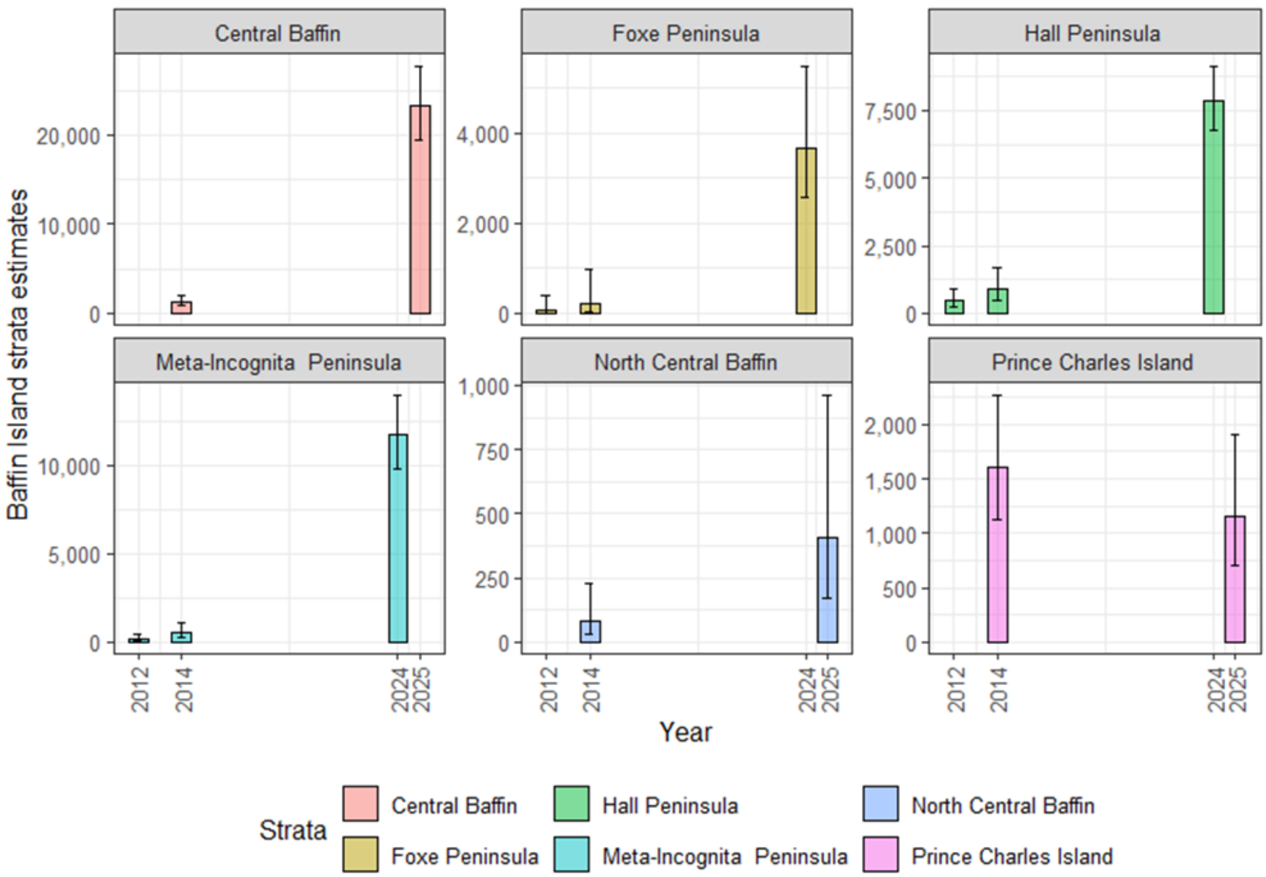


Figure 41. Estimates of abundance for 6 target regions in 2012, 2014, 2024, and 2025 as listed in **Table 16**. Note the different y-scales for each plot.

Table 18. Rates of change in abundance for regions as defined in **Table 16**. for 2012, 2014, 2024, and 2025. Abundance estimates are given for each year and estimates of gross change (N_{y2}/N_{y1}) and annual change (λ). N_{y1} is the abundance estimate for the first year of the comparison and N_{y2} is the estimate for the year of the second estimate.

Interval	N_{y1}	SE_{y1}	N_{y2}	SE_{y2}	GC	SE	Conf. Limit		λ	SE	Conf. Limit	
Baffin (all strata)												
2014-2024-2025	4,645	560.3	48,681	2515.5	10.48	1.40	8.16	13.62	1.25	0.02	1.22	1.28
Central Baffin region												
2014-2025	1,315	312.9	23,216	2081.8	17.65	4.77	11.06	4.49	1.30	0.03	1.24	1.36
Foxe Peninsula region												
2012-2014	69	68.5	216	183.4	3.14	9.73	0.38	4.10	1.77	1.28	0.62	5.44
2014-2024	216	183.4	3,682	583.1	17.05	25.6	5.05	14.73	1.33	0.10	1.18	1.58
Hall Peninsula region												
2012-2014	480	161.9	887	292.9	1.85	1.00	0.75	0.87	1.36	0.33	0.87	2.14
2014-2024	887	292.9	7,878	588.0	8.88	3.35	4.88	3.01	1.24	0.04	1.17	1.33
Meta Incognita Peninsula region												
2012-2014	162	88.1	539	207.5	3.34	3.03	1.03	2.23	1.83	0.64	1.01	3.50
2014-2024	539	207.5	11,694	1041.7	21.70	9.88	10.95	8.57	1.36	0.05	1.27	1.48
North Central Baffin region												
2014-2025	85	45.3	408	183.8	4.80	4.54	1.36	3.35	1.15	0.07	1.03	1.30
Prince Charles Island region												
2014-2025	1,603	274.1	1,163	281.5	0.73	0.22	0.40	0.22	0.97	0.03	0.92	1.02

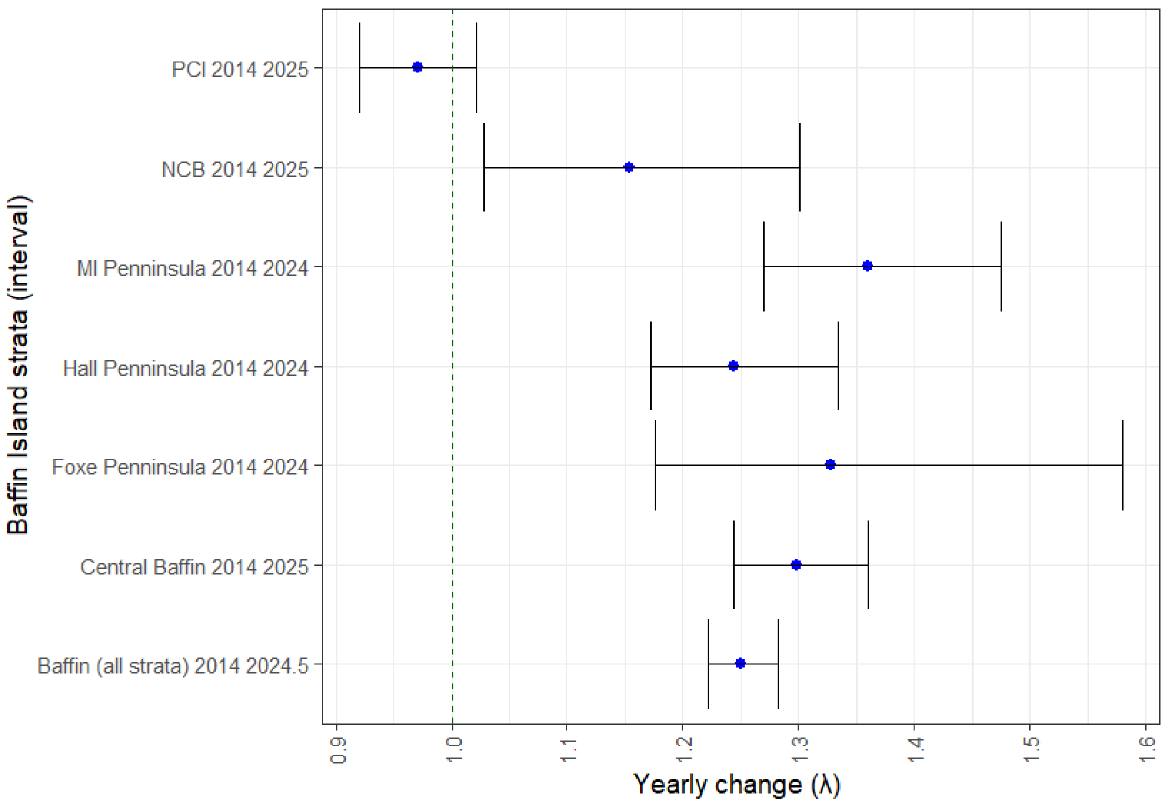


Figure 42. Comparison of yearly change (N_{t+1}/N_t) for Baffin (all strata) compared to region/strata specific change. A vertical line and λ =1 indicate population stability.

4.6 Spring Composition

Composition intensity, timing, and geographic location, varied between years and was highly dependant on funding, available qualified staff, and weather (Ringrose 2018, 2019, 2021). Emphasis was put onto spring composition studies as the best indicator of trend based on its ability to assess overwinter calf survival, the period with the highest expected calf mortality. This period is considered a more dependable indicator of herd productivity and trend. Generally, calves that survived into the spring were considered recruited into the population.

In the fall of 2015, classification crews flew a total of 96.4 hours (28.6 hours in North Baffin, 38.5 hours in Central Baffin, and 29.3 hours in South Baffin) classifying 208, 96, and 159 caribou respectively (**Table 19 and Table 20**) (Ringrose, 2018). In the spring of 2016, crews flew a combined total of 86.3 hours in both Central and South Baffin classifying 125 and 451 caribou, respectively, while in the fall of 2016 crews flew a total of 67.4 hours (19.6 hours in North Baffin and 47.8 hours in South Baffin) classifying 202 caribou in north Baffin, and 445 in south Baffin. Spring 2017 flight hours totaled 104.6 (26.2 hours in North Baffin, 41.6 hours in Central Baffin and 36.8 hours in South Baffin), classifying 254, 8, and 597 caribou respectively, while 2017 flights totaled 14.6 hours in North Baffin alone, observing 316 caribou. In the spring of 2018, crews flew a total of 102.5 hours (18.9 hours in North Baffin, 29.1 hours in Central Baffin, and 54.5 hours in South Baffin) classifying 100, 98, and 933 caribou, respectively. Unfortunately, there were not sufficient resources or cached fuel to conduct fall composition studies in 2018. By 2019 classifications were adjusted to spring only to focus available resources on what was believed to be the most useful index of demographic growth (Ringrose 2019). In spring 2019, classification crews flew 61 hours in south Baffin only observing 1,584 caribou. The most recent composition flights occurred in March/April 2021 within the north and south Baffin study areas (Ringrose 2021), at which time a total of 38.4 hours were flown in south Baffin, and 31.6 hours were flown within the north Baffin study area. South Baffin caribou observations totalled 1,734 the highest recorded to date while north Baffin observations totaled 192, largely due to poor weather and the inability to reach all targeted north Baffin pre-determined classification extents.

It is noteworthy that when compared to the 2014 caribou survey estimates for the north, central, and south Baffin Island regions, 2016, 2017, and 2018 spring classification counts assessed large proportions of the overall estimates. In 2016 11.5% of the survey estimate was assessed for central Baffin, and 16.5% for south. In spring 2017, 80.6% of the 2014 survey estimate was classified for north Baffin, and 21.8% for south Baffin suggesting good representation of the overall caribou population. Of the North, Central and South Baffin classification areas, the south Baffin had the most consistent sampling of caribou on their spring range. South Baffin classification counts increased from 451 in 2016, to 597 in 2017, to 933 in 2018, to 1,584 in 2019 and finally to 1,734 by 2021, suggesting substantial growth within these sampling areas.

High calf to cow ratios were observed for both north and south Baffin. Calf to cow ratios within the south Baffin steadily increased from 22 in 2016, 37 in 2017, to 39 in 2018, to a high of 57 in 2019, and most recently to 47 in 2021 (**Table 20**). Similarly north Baffin calf to cow ratios climbed from 39 in 2017, to 58 in 2018 ending with a high of 63 by 2021. Apart from spring 2016, all calf to cow ratios were for both north and south Baffin Island caribou were well above the known published thresholds for an increasing population (Heard et al. 1990, Boulanger et al. 2011). These findings suggest substantial growth since the establishment of harvest restrictions.

A logistic regression analysis (McCullough and Nelder 1989) was conducted to assess regional differences and overall trends in calf-cow ratios using surveys **(Table 21).** Additionally, an additive model was used (region+year) to assess differences in regions and explore if there was a regional increase in calf-cow ratios. The use of logistic regression accounted for differences in sample sizes in surveys with the response being the count of calves divided by the count of cows in each survey. A quassi-binomial response model was then used to account for likely overdispersion in the response data. Results suggested a weak positive trend (as indicated by the year term) as well as differences in mean calf-cow ratios in different regional areas.

Inspection of estimates relative to predictions suggests a relatively similar positive trend in all areas except Prince Charles Island, which also did not exhibit an increase in abundance between 2014 and 2025 (**Figure 43).** The most apparent trend occurred on South Baffin, which had the most survey data.

Table 19. Survey Flight hours by survey region 2015-2021.

YEAR	SEASON	FLIGHT HOURS		
		North Baffin	Central Baffin	South Baffin
2015	Fall	28.6	38.5	29.3
2016	Spring	***NC***	86.3	86.3
	Fall	19.6	***NC***	47.8
2017	Spring	26.2	41.6	36.8
	Fall	14.6	***NC***	***NC***
2018	Spring	18.9	29.1	54.5
2019	Spring	***NC***	***NC***	61.0
2021	Spring	31.6	***NC***	38.4

Table 20. Spring and fall composition results Oct 2015 to April 2021 (***NS***=Not sampled; ***NR***=Not recorded).

YEAR	LOCATION	SEASON	Cows	Bulls	Yearlings	Calves	Calves/100 cows (%)	Total Caribou Observed
2015	North Baffin Island	SPRING	NS	NS	NS	NS	NS	NS
		FALL	77	76	NR	55	71	208
	Central Baffin Island	SPRING	NS	NS	NS	NS	NS	NS
		FALL	39	29	NR	28	72	96
	Prince Charles Island	SPRING	NS	NS	NS	NS	NS	NS
		FALL	189	126	NR	133	70	448
	South Baffin Island	SPRING	NS	NS	NS	NS	NS	NS
		FALL	64	46	NR	49	77	159
2016	North Baffin Island	SPRING	NS	NS	NS	NS	NS	NS
		FALL	94	54	NR	54	57	202
	Central Baffin Island	SPRING	67	25	10	23	34	125
		FALL	NS	NS	NS	NS	NS	NS
	Prince Charles Island	SPRING	328	204	76	82	25	690
		FALL	NS	NS	NS	NS	NS	NS
	South Baffin Island	SPRING	222	151	29	49	22	451
		FALL	196	126	42	81	41	445
2017	North Baffin Island	SPRING	120	64	23	47	39	254
		FALL	139	74	17	86	62	316
	Central Baffin Island	SPRING	1	6	0	1	100	8
		FALL	NS	NS	NS	NS	NS	NS
	Prince Charles Island	SPRING	351	133	57	114	32	655
		FALL	NS	NS	NS	NS	NS	NS
	South Baffin Island	SPRING	249	181	75	92	37	597
		FALL	NS	NS	NS	NS	NS	NS
2018	North Baffin Island	SPRING	36	36	5	21	58	100
		FALL	NS	NS	NS	NS	NS	NS
	Central Baffin Island	SPRING	33	40	7	18	55	98
		FALL	NS	NS	NS	NS	NS	NS
	Prince Charles Island	SPRING	161	73	37	31	19	302
		FALL	NS	NS	NS	NS	NS	NS
	South Baffin Island	SPRING	401	277	100	155	39	933
		FALL	NS	NS	NS	NS	NS	NS
2019	North Baffin Island	SPRING	NS	NS	NS	NS	NS	NS
		FALL	NS	NS	NS	NS	NS	NS
	Central Baffin Island	SPRING	NS	NS	NS	NS	NS	NS
		FALL	NS	NS	NS	NS	NS	NS
	Prince Charles Island	SPRING	NS	NS	NS	NS	NS	NS
		FALL	NS	NS	NS	NS	NS	NS
	South Baffin Island	SPRING	664	465	108	347	52	1,584
		FALL	NS	NS	NS	NS	NS	NS
2021	North Baffin Island	SPRING	87	44	6	55	63	192
		FALL	NS	NS	NS	NS	NS	NS
	Central Baffin Island	SPRING	NS	NS	NS	NS	NS	NS
		FALL	NS	NS	NS	NS	NS	NS
	Prince Charles Island	SPRING	NS	NS	NS	NS	NS	NS
		FALL	NS	NS	NS	NS	NS	NS
	South Baffin Island	SPRING	805	392	158	379	47	1,734
		FALL	NS	NS	NS	NS	NS	NS

Table 21. Logistic regression analysis parameters for analysis of regional trends in calf cow ratios. The parameters are on the logit scale with t-tests of parameter significance.

Term	Estimate	Std. Error	t value	Pr(>|t|)
(Intercept)	-401.796	291.885	-1.377	0.202
North Baffin Island	-0.739	0.648	-1.140	0.284
Prince Charles Island	-1.639	0.655	-2.504	0.034
South Baffin Island	-1.279	0.583	-2.194	0.056
Year	0.199	0.145	1.378	0.201

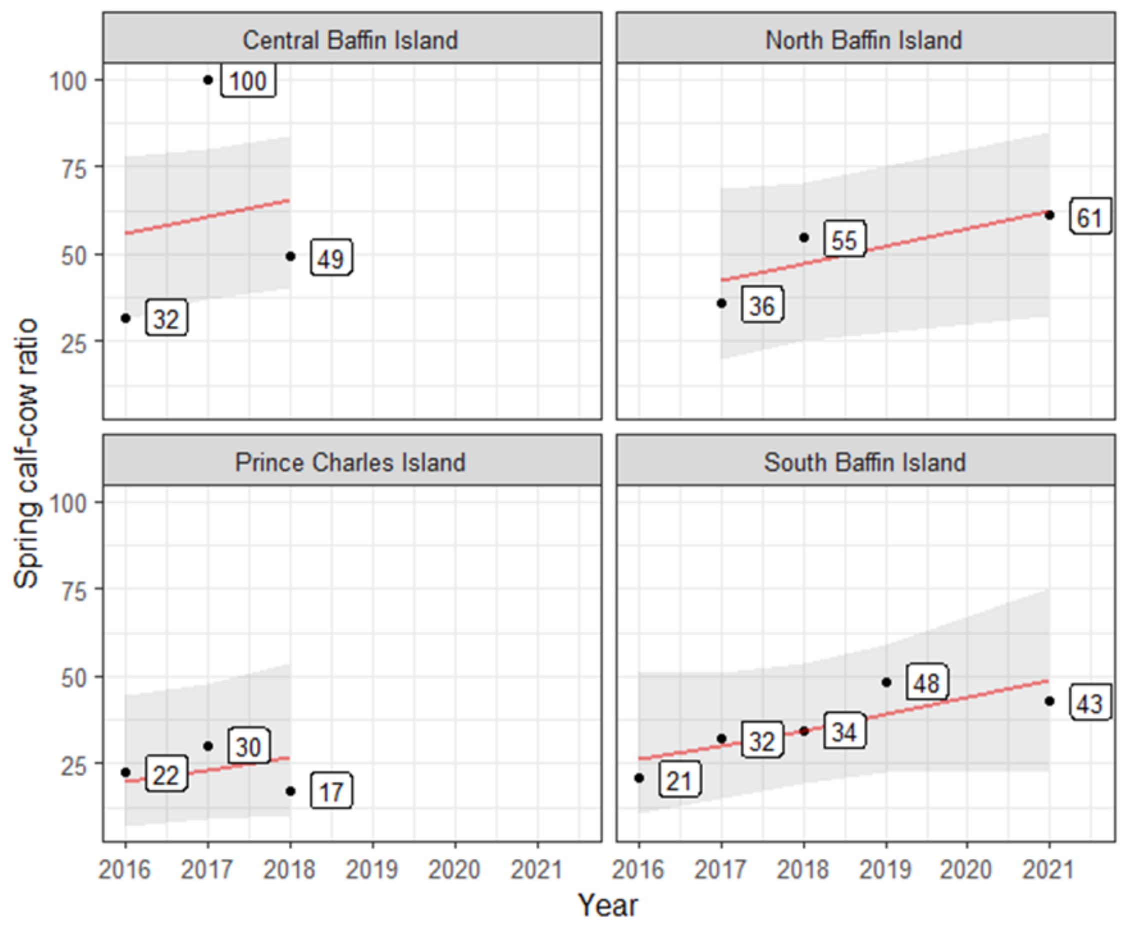


Figure 43 Spring calf/100 cow ratios expressed as a percentage for each of North Baffin, South Baffin, Central Baffin and Prince Charles Island groupings of caribou. Also shown are logistic regression predictions of trend in calf cow ratios with confidence limits given as shaded areas.

5.0 DISCUSSION

5.1 Baffin Island Populations/Subpopulations

No conclusive quantitative assessment of caribou population and/or subpopulation structure has been reported for Baffin Island. Ferguson was the first to report three populations across Baffin Island; the North Baffin population, the South Baffin population and the Northeast Baffin population (Ferguson, 1993; Ferguson and Gauthier, 1992; Ferguson et al., 1998). The delineation of these populations was based largely on Inuit knowledge with the first published boundaries released in 1992 (Ferguson and Gauthier, 1992; Ferguson, 1993) (**Figure 44**). Ferguson also described differing ecotypes and/or migratory types within the defined south Baffin population, suggesting that three subpopulations make up the south Baffin caribou population (Ferguson, 1993; Ferguson et al., 1998).

The most recent attempt to delineate distinct behavioral groupings of barren-ground caribou across Baffin Island was reported in Campbell et al. (2015). Campbell et al. (2015) examined the location data from 71 collared Baffin caribou cows collected between 1987 and 1994, as well as the location data of 31 collared north Baffin caribou cows collected between 2008 and 2011 (Campbell et al. 2015; Jenkins and Goorts, 2011, Ferguson 1988). The location database was not temporally consistent, covering a period of high abundance (1987-1994) and low abundance (2008-2011) creating temporal gaps and associated challenges in its interpretation. Additionally, the amount of data was small and as a result limited in statistical certainty and as such was limited in its reliability. Though the data was limited, and its collection period variable, the Kernal analysis between the two time periods agreed strongly with model results displaying very little mixing between groupings. In the case of the north Baffin grouping, this lack of mixing was present within both high and low abundance phases. North Baffin collared caribou cows displayed no tendency to switch with 100% of all collars captured within the defined north Baffin annual range, both between the 1987 to 1994 deployment and 2008 to 2011 deployment, remaining within that annual range (**Figure 6**). Unfortunately, no other annual or seasonal delineations for Baffin Island caribou have been reported. Therefore, the kernel analysis of the existing data provides important information to help better understand potential caribou subpopulation structure on Baffin Island. Though the data is limited, these preliminary analyses have provided insights into long-term Baffin Island caribou behavioral groupings that remain consistent with the March 2024 south Baffin abundance survey caribou distributions, and observations further adding support to the 2015 findings.

These surveys were successful in documenting a large increase in caribou in the survey area in all survey strata. Overall estimates were relatively precise compared to previous surveys which was partially due to the large increase in sample sizes (Campbell et al. 2015). The observed rate of increase of 25% per year (CI=22-28%) is similar to observed rates of increase on introduced island populations of caribou with minimal hunting and predation pressure (Heard 1990). These increases were largely driven by increases in the Central Baffin, Meta-Incognita, Hall, and Foxe Peninsula's stratums. We also note that there is no direct evidence of collar movement which would have caused an overestimation between the 2024 and 2025 strata due to double counting.

Modelling of the survey data was challenged by certain situations where detection rates were low, and observers were unable to switch. The helicopter data was especially problematic in that at face value it was suggested that detection probabilities were low. The removal model does not perform well when detection rates are low and as a result estimates using the removal model were extremely imprecise and not reliable. To offset this issue the helicopter strata was modelled separately using distance sampling only. This may result in a slightly conservative estimate for the helicopter strata, however, there is no straightforward way to model this data set in its current form. In future surveys an independent observer method should be considered for situations where there is no way for observers to switch places.

Inclusion of data recorder data for 2 weak observer pairs provided one approach to offset issues with observers that miss a substantial portion of caribou. With double observer methods it is difficult to model observer probabilities if both observers are weak since in the end, they both miss many caribou and therefore their estimate of sightability using the ratio of detections/non-detections will likely be biased high, leading to negatively biased abundance estimates (Laake and Collier 2024). Always having a strong observer on each side of the plane and having observers switch is essential to manage this issue. Inclusion of data recorder observations is essentially ad-hoc and less likely to provide as reliable an estimate when compared to using strong pairs of experienced observers.

Sensitivity analyses revealed that using distance sampling with all data recorder observations (without modelling double observer probabilities) provided estimates that were within 1-2% of the double observer/distance sampling approach. In this case, the data recorder observations help meet the assumption of sightability on the line being perfect while avoiding the complexities and assumptions of the double observer models. This approach may be viable if there are relatively strong observers and data recorders who actively search for caribou missed by the observers. We suggest this approach be used in unison with the double observer method in future surveys as a possible solution to offsetting these possible biases.

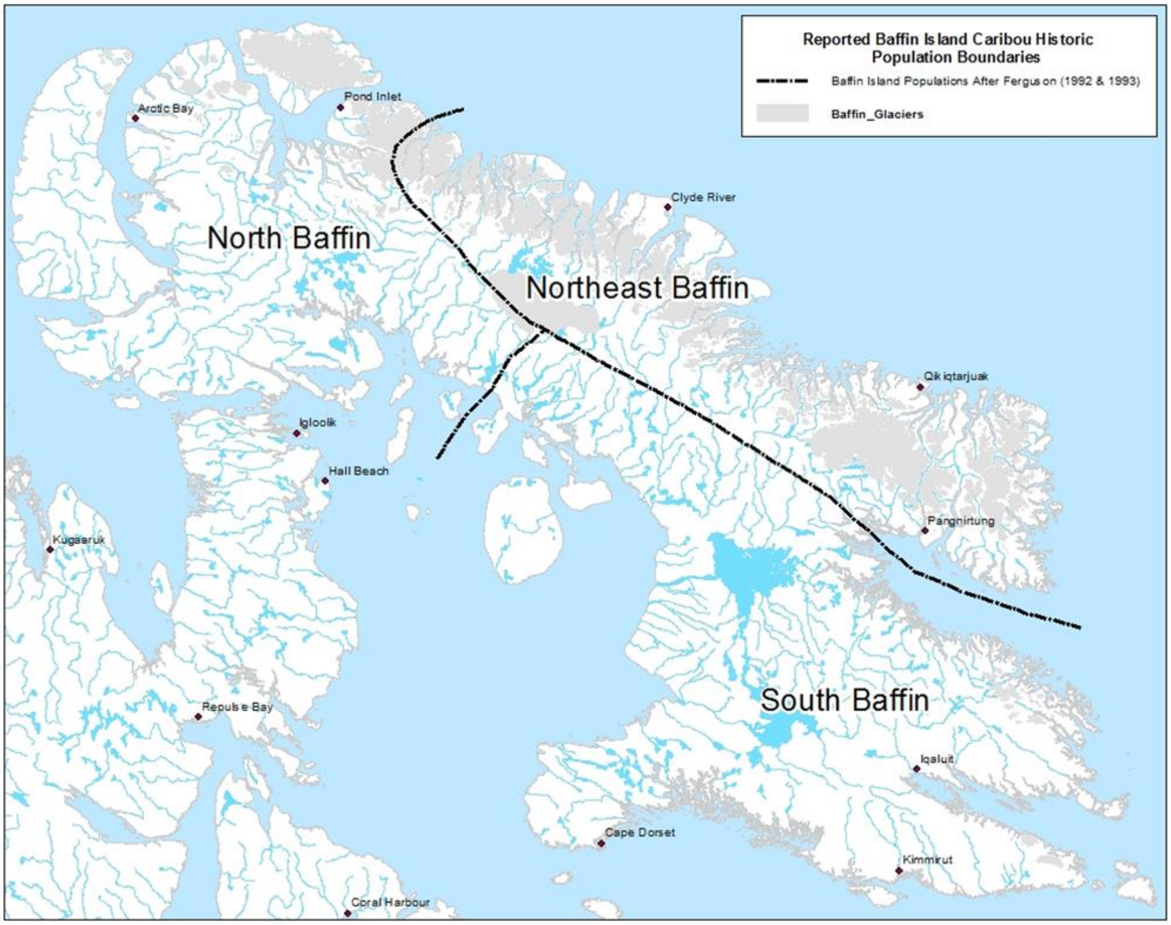


Figure 44. Caribou population divisions on Baffin Island after Ferguson (1993) and Ferguson and Gauthier (1992). Divisions based largely on IQ and not substantiated with genetic analysis and/or long-term spatial affiliations based on telemetry (Campbell et al. 2015).

5.2 Drivers of Observed Trend

The recovery of the Baffin Island caribou population within the 10-to-11-year span between the March 2014 and March 2024 and 2025 surveys was remarkable and obvious across most Baffin Island survey strata. The estimated annual rate of change of 1.25 (CI=1.22-1.28) translates (**Table 18**) to an annual rate of increase approaching some of the highest rates of increase recorded for caribou.

5.2.1 Comparison with other studies and underly demography

Annual rates of increase of 25% (CI=22-28%) observed on Baffin Island, parallels rates of increase for introduced caribou populations with minimal hunting and predation pressure. Heard (1990) estimated the intrinsic rate of increase (r_m) (which is the slope of a linear regression of the log of population size and year) for 8 introduced island populations. The annual rate of change (λ), as estimated in this study, can be calculated as the exponent of the year slope term (r_m) from the regression analysis of a heard (**Table 22**). Based on Heard's (1990) work, the mean annual rate of change of caribou (with no predations or hunting) was 1.29% (sd.=0.03, min=1.23%, max=1.34%, n=8) which is similar to the 1.25% observed on Baffin Island. The increase in populations for many of the islands considered in Heard (1990) were in the range of 10 years further suggesting that large increases can span across many years if habitat and other factors are supporting.

Table 22. Rates of increase of island populations of Caribou from Heard (1990). Annual rate of increase is equal to annual rate of change-1.

Population	years of increase	surveys	Intrinsic rate of increase (r_m)	Annual rate of change $\lambda = e^{r_m}$
Barff	10	4	0.29	1.34
Brunette Isl.	5	6	0.27	1.31
Belcher Isl.	4	2	0.28	1.32
St George Isl.	6	7	0.26	1.30
Adak Isl.	8	2	0.25	1.28
St Mathew Isl.	13	2	0.25	1.28
Southhampton Isl.	20	3	0.23	1.26
St Paul Island	7	8	0.21	1.23
Mean			**0.26**	**1.29**

The Southampton Island analysis of Heard (1990) applies to the period of 1967 when 48 caribou were introduced in 1967 when Heard (1990) estimated the population at 5,400 caribou by 1987, suggesting an estimated rate of increase of 26%. Campbell et al (2020), and Campbell and Boulanger (2024), analyzed the period from 1987 to 1997 where the population continued to increase at 18% per year until 1997 when it reached 29,425 after which time it declined sharply to 7,287 caribou by 2011. The rate of increase for Southampton Island likely decreased as it neared carrying capacity as well as due to increasing harvest pressure. During the period harvest pressure was exacerbated by the sale of caribou meat through the internet to Baffin Island communities that were having difficulties finding caribou on Baffin Island due to the caribou declines ongoing across the island.

The main assumption for the results of the Heard (1990) findings that we believe directly applied to Baffin Island caribou, was that post 2014, predation and hunting mortality was low on Baffin Island, while productivity was high. We speculate that caribou populations on Baffin Island were reduced to very low levels prior to the 2012 and 2014 survey allowing range conditions to improve which in turn lead to an increase in the abundance and quality of forage, ultimately translating into higher levels of productivity.

Heard (1990) also developed and used a population model to estimate maximum rate of increase of caribou populations. The results of this modelling exercise suggest that the rates of growth for barren-ground caribou could reach as high as 36% per year if female caribou pregnancy rates approached 100% starting at the yearling age class, and adult female survival approached 100% until age 20 when they would reach 100% mortality. This scenario is not biologically possible over long time periods but does put a ceiling on rates of increase in the unlikely event that the majority of female caribou are able to reach these milestones. We would also advise that strata-specific estimates of increase **(Figure 42)** were potentially influenced by movement between strata that occurred over the 10-year period in-between surveys and therefore the best estimate of trend is for the entire island is one that pools all surveys strata.

5.2.2 Using a Matrix Model to Determine Rate of Change

A stage-based matrix model based on caribou demographic analyses (Boulanger et al 2011, Boulanger et al 2024, Campbell et al 2025, Caswell 1989, Thomas et al. 2009) was used to further explore the levels of adult survival, calf survival, and pregnancy rate needed to achieve observed levels of increase on Baffin Island, and specific to caribou females (males not included). For this model adult female survival was varied from 0.8 to 0.96, calf survival from 0.35 to 0.98 with adult female pregnancy set at 0.95. Yearling survival was assumed to be equal to adult female survival. In addition, it was assumed 70% of yearlings (22 month old caribou during the fall rut) bred each year which is often the case with increasing populations (Parker 1981, Thomas and Kiliaan 1998). For example, Parker (1981) found that 43% of yearlings bred for the George River Herd during a population increase, while Heard (1990) assumed all yearlings bred. Finally, a sex-ratio of 0.57 favoring females was considered. Also, Thomas and Killiam found that younger females (ages 1.5-4 years old) produced more females (61-64 females/50 males). The assumption in this case was that the age structure of a recovering population would be dominated by younger females. The resulting rate of change (λ) values were then estimated as the dominant eigenvalue of the matrix model which constitutes the stable annual rate of population change for any combination of demographic parameters (Caswell 1989). The resulting estimates of annual rate of change indicate that calf-survival would need to be at least 0.75 and adult female survival approximately 0.91 or above to create levels of increase of 25% each year **(Figure 45).**

It is also possible to estimate calf-cow ratios based on adult female, calf and yearling survival from the matrix model (Boulanger et al 2011, White and Lubow, 2002). In this case the spring calf cow ratio is approximated as:

$$CC = \frac{F_a S_c^{t/365}}{S_f^{t/365} + 0.5 S_y^{t/365}}$$

where F_a is pregnancy rate, S_c is calf survival, S_f is adult female survival, S_y is yearling survival and t is the time interval from birth of calves on the calving ground to the March composition survey (assumed to be 270 days). The corresponding calf-cow ratios for the parameter range in **Figure 43** suggest that calf-cow ratios of at least 0.5 resulted when population increase was 1.2 (20% increase) or above. The calf-cow ratio varied with underlying levels of adult female and calf survival **(Figure 46).**

The main inference from this modelling exercise, similar to those developed by Heard (1990), is that very high levels of survival and productivity are required to produce rates of increase observed on Baffin Island. This finding highlights the importance of continued monitoring of productivity, harvest, and survival as an index of the rate of increase of caribou populations. Building on this discussion, we propose that the observed increase documented for Baffin Island caribou between March 2014 and March 2024/2025, can be attributed to several interacting mechanisms at work between these respective survey years. However, we suggest the main mechanisms of recovery were the result of co-management endorsed harvest restrictions, minimal predation pressure, high productivity, mild winters, limited anthropogenic activities in sensitive caribou seasonal range, and accessible abundant forage. A likely contributing factor was the large-scale decline in caribou numbers first evident around 2010. This reduction would have been consistent with the subsequent recovery of likely overgrazed seasonal range ultimately leading to the development of favorable range conditions, particularly in terms of forage abundance and quality.

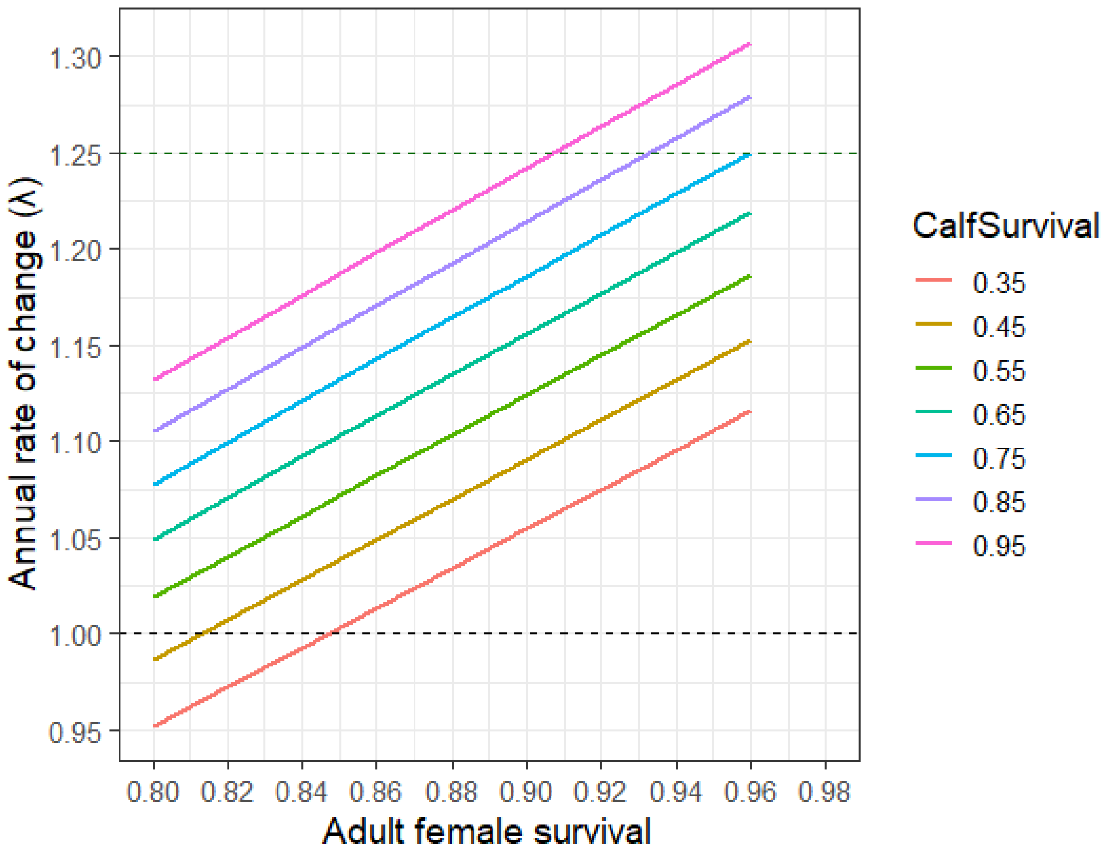


Figure 45. Results of stage-based model estimates of annual rate of change (λ) under varying levels of adult and calf survival. The dotted lines indicate levels of stability (λ=1) and the observed rate of increase on Baffin Island (λ=1.25).

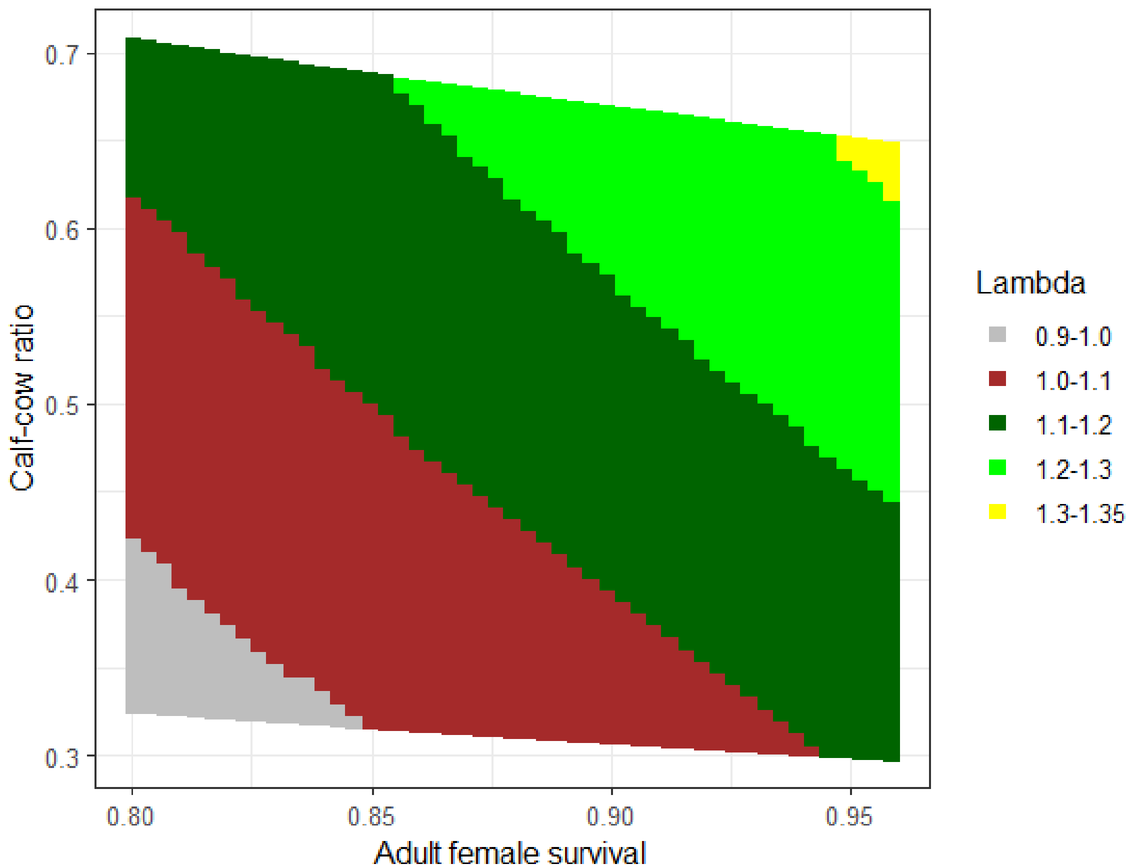


Figure 46. Calf-cow ratios from spring surveys resulting from ranges of adult female and calf survival simulated in Figure 50.

5.2.3 Baffin Island Caribou Herd Productivity

Understanding how to use the cow to calf ratio as an index for population trend is difficult without a Baffin Island specific baseline developed using paired quantitative composition and abundance survey results through time. Until a baseline is developed for Baffin Island caribou, we suggest the use of pre-existing baselines developed for mainland barren-ground caribou. At present, the only, and most similar baseline for barren-ground caribou has been developed by the Government of the Northwest Territories (GNWT). These developed calf to cow ratios suggests that a stable to increasing barren-ground caribou population would display 70-90 calves/100 cows at calving, 50-70 calves/100 cows during the fall rutting period, and 30-50 calves/100 cows during spring (Adamczewski et al. 2009; Tobey 2001; Gunn et al 2005). For Baffin Island, given the very low densities of wolves observed during aerial surveys and equally infrequent observations of wolves reported by Baffin Island hunters, we suggest that spring cow to calf ratio threshold values developed by the GNWT are likely much higher than what would apply to Baffin Island caribou. We advance this conclusion primarily because wolf predation levels on Baffin Island have been and likely, at least in the short term, continue to be far lower than those suggested for the Bathurst and Bluenose caribou herds of Nunavut and the NWT, which were used to develop these thresholds. Additionally, there are no grizzly bears on Baffin Island and only rare sightings of wolverine on the northwestern extents of Baffin Island just across from Melville Peninsula. Both these mammals are known predators of mainland barren-ground caribou.

Given the low relative densities of carnivores reported across Baffin Island over the past 20 years, we suggest that human harvest, up until 2015, was the main cause of predation related mortality for Baffin Island caribou. As such, it was likely the main mechanism suppressing caribou population growth (caribou harvest will be discussed in the following sections).

Productivity, measured in this report as spring calf to cow ratios, and based on how these ratios relate to overwinter calf survival, was well into the increasing range (above 30%) for most years across all of Baffin Island (**Figure 45**). Spring calf to cow ratios for north Baffin reached highs of 58% and 63% for spring 2018 and 2021 respectively, while highs of 57% and 47% were recorded for the south Baffin in spring 2019, and 2021 respectively. Central Baffin Spring calf/cow ratios, though data deficient, also showed signs of high productivity, reporting 55% in spring 2021 (the 100% listed value for spring 2017 was based on the observation of a single cow/calf pair). Additionally, considering a bull only harvest non quota limitation (NQL) put in effect from 2015 through 2018, bull ratios were recorded to have been within a normal range. Bull ratios exceeded Tobey's (2001) findings which concluded that the ratio of 40 bulls:100 cows represents a valid benchmark for the number of bulls required in a population to ensure all cows are bred successfully (Tobey 2001).

Productivity can be influenced by pregnancy rates as well as age of first breeding, and sex ratios at birth. Related to this is the underlying age structure of the population. Populations that have good nutrition may make it possible for proportions of yearling caribou (18 months at fall rut) to breed therefore increasing productivity. For example, Parker (1981) found that 43% of yearlings bred for the George River Herd during an increase. Thomas and Killiam (1998) and Thomas et al (1989) found that younger females (ages 1.5-4 years old) produced more females (61-64%) at birth. If productivity is high, it would be likely that age-structure may shift toward younger females therefore increasing overall productivity. The increasing trend in calf-cow ratios **(Table 21 and Figure 43)** does suggest that productivity was high and increasing which would support higher pregnancy rates, higher calf survival, and potentially female-skewed sex ratios at birth.

5.2.4 Harvest Management Pre-2015

Since the mid to late 1990s, local hunters across Baffin Island have reported decreasing caribou numbers, and as of 2013, many hunters reported that they had to travel further from their communities to locate caribou (Jenkins et al. 2012; Jenkins and Goorts 2013, Department of Environment 2013). These observations were also supported by scientific studies of the time. GN ENV flew a caribou abundance survey across southern Baffin Island in March/April/May 2012 (Jenkins et al. 2012). Poor weather extended the survey period well into the spring migratory period, and melting conditions encountered toward the end of the survey period created difficulties with caribou sightability; However, Jenkins did report an estimated 1,484 yearling, adult, and calf caribou across southern Baffin including Prince Charles Island. These results supported hunter reports of a substantial reduction in South and central Baffin Island caribou abundance. At the time Jenkins et al. (2012) suggested that the observed and reported declines may be due to a combination of factors including but not limited to climate change, resource exploration and development, and extensive and widespread harvest (Vors and Boyce 2009, Jenkins 2011, Fiesta-Bianchet 2011). At the same time there was concern that these hypothesized mechanisms of decline were limiting the chance of recovery for some, if not all, Baffin Island caribou populations/groupings.

The only published documentation of pre-2015 caribou harvest across Baffin Island is the 2004 Nunavut Wildlife Management Board (NWMB) Nunavut Wildlife Harvest Study (NWHS) (Priest and Usher 2004). The study utilized community-based door to door surveys during which community assigned field workers interviewed 67% of registered hunters within each community, each month. Registered hunters were randomly selected from each community based on a list generated using statistics Canada data, Inuit Beneficiary enrollment lists, and General Hunting licence (GHL) holders. It was the fieldworker's role to assess the hunter's harvesting intensity which categorised hunters into three classes: 1-Intensive, 2-Active, and 3-Occasional. Using the data collected through this process, wildlife harvest estimates were generated monthly for each of the June1996 through May 2001 harvesting years. As not all communities provided data for the June 1996 to May 1997 harvesting year, we assessed harvest based on the June 1997 through May 2001 harvesting years for all Baffin Island communities. Based on harvest study findings, 19,113 caribou were harvested from south Baffin communities, 9,616 caribou from North Baffin communities, and 3,099 from central Baffin communities between June 1997 and May 2001 (**Table 23**; *data from 1996 excluded due to incompleteness*). This suggests an annual harvest across all of Baffin Island of approximately 7,957 caribou of unknown age and sex between June 1997 and May 2001. Given a well accepted low risk estimate of sustainable harvest of 5% (Bathurst Caribou Advisory Committee 2021; *Bathurst caribou management plan*), a sustainable harvest based on the NWHS harvest estimates would require a population of approximately 39,785 caribou to be sustainable.

The earliest Island wide quantitative estimate of Baffin Island caribou abundance was developed in March 2014, at which time Campbell et al. (2015) estimated 4,645 adult, yearling, and calf caribou (95% CI=3,667-5,884, CV=12.1%). Within the south Baffin region, a partial survey of the Island in March/April/May of 2012 found similar low densities of caribou to those observed in 2014 (Jenkins et al., 2012; Campbell et al., 2015), while within the north Baffin region, reconnaissance data from a telemetry program run between 2008 and 2011 suggested similar low densities of caribou to those observed in 2012 and 2014 (Jenkins and Goorts, 2011). We suggest that based on this information, it is likely that the subsistence harvest had been above sustainable levels for several years prior to 2008, suggesting that low numbers of caribou could have persisted since the late 1990s to early 2000's as supported by consultation reports (Jenkins and Goorts 2013; Jenkins et. al. 2012).

If these assessments reflect the Baffin Island demography of the period, we expect that caribou seasonal range would have had a chance to recover over the approximate 20-year period between the first reports of declining caribou on or about 1995, and the initiation of harvest restrictions in 2015. We suggest that the Baffin Island caribou population would have started to increase in abundance far sooner, were it not for a subsistence harvest which was suspected to have been above sustainable harvest levels over that same period. This condition of a suspected harvest related suppression of caribou population growth, could have allowed caribou seasonal range and forage to have made a more complete recovery from previous population highs, a condition that could express itself in the form of high rates of productivity and growth within the remaining low densities of caribou across the Island. Additionally, hunter reports and survey findings all suggest low densities of wolves across the Island further benefiting calf survival and downstream productivity and growth.

5.2.5 Harvest Management Post-2015

Following the March 2014 whole Baffin Island abundance estimate, significant caribou declines across Baffin Island were confirmed quantitatively. Immediately following the release of the 2014 Baffin Island caribou survey report and results on November 1st, 2015, the Government of Nunavut Department of Environment (GN ENV) initiated a moratorium on caribou harvesting across Baffin Island through a ministerial management initiative. This prompted the fast tracking of the Nunavut Wildlife Management Boards (NWMB) assessment process including the establishment of harvest management actions through their GN ENV, Regional Wildlife Organization (RWO), and Hunters and Trappers Organization (HTO) inclusive co-management process. By August 2015, the NWMB, through multiple meetings and discussions with the GN ENV, Qikiqtaaluk Wildlife Board (QWB), Nunavut Tunngavik Incorporated (NTI), and the community HTOs of Arctic Bay, Pond Inlet, Igloolik, Sanirajak, Clyde River, Qikiqtarjuaq, Pangnirtung, Iqaluit, Kinngait, and Kimmirut, agreed to a whole Island Total Allowable Harvest (TAH) of 250 caribou, and the establishment of a Non-Quota Limitation (NQL) of a male only harvest (**Table 23**).

The TAH and associated NQL restricting female harvest remained in effect from August 27th, 2015, to September 18th, 2019, at which time they were re-assessed based on both scientific and IQ evidence of increased caribou abundance in some areas across Baffin Island. This new information primarily included evidence of high indices of productivity derived from semi-annual GN ENV fall and spring composition studies coupled with harvester reports and IQ, suggesting recovery of the Baffin Island caribou population in some areas.

The NWMB re-assessment first reviewed in June 2019, acknowledged the positive signs of recovery submitted by the GN ENV and the QWB, and by September 19th, 2019, rendered a decision to allow for the modification of the NQL to include up to 25 females within the 250 caribou TAH. As early signs of recovery continued to be reported by all Baffin Island stakeholders, NWMB and their co-management partners re-convened on June 16, 2022, to re-examine all Baffin Island Caribou TAH's and NQL's. Based on submissions by the GN ENV and QWB, the NWMB, on July 5th, 2022, rendered a decision to increase the TAH of Baffin Island caribou from 250 to 350 caribou for the 2022/2023 harvest season. This decision also allowed for an annual increase of the TAH by 50 caribou in the 2023/2024 harvest season, and each year following for the next 8 years or until additional information on the herd suggested otherwise. Additionally, the NWMB allowed for a modification to the NQL allowing for an increase of the female proportion of the TAH from 25 to 75 for the 2022/23 harvest season, with further allowance for an annual increase to the proportion of female caribou within the assigned TAH to 20% in the 2023/2024 harvest season and each year after that for the next 8 years or until new information on the herd suggests otherwise. As of November 1st, 2025, the current TAH stands at 500 caribou 100 of which could be female (**Table 24 and 25**).

The dramatic lowering of the caribou harvest across Baffin Island by the NWMB and approved by the GN Minister of Environment, we believe, set the stage for the dramatic recovery of the Baffin Island barren-ground caribou population. Total harvest dropped from an annual high of 7,957 caribou including females in the late 1990's and early 2000's, to 0 caribou by August 2015, then to a 250 per year male-only harvest for 7 years, for a total of 1,750 legally harvested caribou since 2015. This level of harvest shows a 97% reduction over the subsistence harvest estimated just 13 years prior. Of equal importance was the extremely low female harvest over the same period. During this same 7-year period only 25 females were legally harvested.

Though TAH's increased as did female proportions of the harvest beginning in 2022, it remained well below pre-TAH harvest estimates as did the female proportions of the annual harvest. In all, substantial reductions in the estimated harvest of caribou and the proportion of females harvested lasted just over 10 years, extending from October

2015 to present. We suggest that this dramatic reduction in overall harvest as well as the reduction in the female proportion of that harvest, was the main mechanism of the observed recovery documented within the 2024 and 2025 Baffin Island survey estimates. High productivity was key to the strong recovery as well and was likely the result of an extended period of harvest induced low caribou abundance, and the resultant recovery of preferred herbaceous vegetation used as forage by caribou throughout their annual cycle and across all seasonal range.

Table 23. Pre-2014 estimates of Baffin Island caribou harvest for all communities. Data summarized from the NWMB Nunavut Wildlife Harvest Study (2004).

Harvest Year (July 1-June 30)	TAH	Female Proportion of TAH	Estimated Harvest	Reported Harvest
1997/1998	Unlimited	?	8,669	Unreported
1998/1999	Unlimited	?	8,479	Unreported
1999/2000	Unlimited	?	6,578	Unreported
2000/2001	Unlimited	?	6,739	Unreported
Baffin Totals	**Unlimited**	**?**	**30,465**	**Unreported**

Table 24. Post-2014 Caribou harvest data for all Baffin Island by harvest year. Not all illegal harvest could be accurately quantified. Actual harvest may have exceeded indicated harvest rates due to illegal harvest.

Harvest Year	TAH	Actual Harvest (male & female)	Female Proportion of TAH	Difference (+/-)
2015-2016	250	183	0	67
2016-2017	250	229	0	21
2017-2018	250	233	0	17
2018-2019	250	236	0	14
2019-2020	250	247	25	3
2020-2021	250	247	25	3
2021-2022	250	245	25	5
2022-2023	350	352	75	-2
2023-2024	400	421	80	-21
2024-2025	450	422	90	0
Totals	**2,950**	**2,815**	**320**	**107**

Table 25. Post-2014 caribou harvest data by community and harvest year (not all illegal harvest could be accurately quantified. Actual harvest may have exceeded indicated harvest rates).

COMMUNITY	2015-2016		2016-2017		2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		2022-2023		2023-2024		2024-2025	
	TAH	HVST	TAH	HVST	TAH	HVST	TAH	HVST	TAH	HVST	TAH	HVST	TAH	HVST	TAH	HVST	TAH	HVST	TAH	HVST
ARCTIC BAY	30	9	25	12	20	17	20	20	19	19	19	19	19	13	26	23	30	30	34	34
CLYDE RIVER	30	25	30	30	32	30	32	30	31	29	31	29	31	31	37	26	41	41	43	43
IGLOOLIK	10	0	10	7	12	11	12	10	10	13	10	13	10	12	25	41	31	23	40	34
IQALUIT	30	30	35	41	41	40	41	41	43	43	43	43	43	45	64	64	74	119	53	67
KIMMIRUT	30	30	31	31	33	33	33	33	35	35	35	35	35	35	42	42	45	45	50	48
KINNGAIT	30	13	25	18	20	19	20	19	20	21	20	21	20	21	38	37	43	38	52	52
PANGNIRTUNG	30	22	31	31	33	33	33	35	35	35	35	35	35	36	47	47	53	53	58	58
POND INLET	30	30	32	33	34	33	34	24	34	36	34	36	34	41	46	49	52	58	46	46
QIKIQTARJUAQ	30	24	31	26	25	17	25	24	23	16	23	16	19	9	17	15	20	10	30	24
SANIRAJAK	0	0	0	0	0	0	0	0	0	0	0	0	4	2	8	8	11	4	16	16
BAFFIN TAH	**250**	**183**	**250**	**229**	**250**	**233**	**250**	**236**	**250**	**247**	**250**	**247**	**250**	**245**	**350**	**352**	**400**	**421**	**450***	**450***

* = The full legal TAH allocation for Baffin Island was not distributed by the QWB during this harvesting season.

6.0 CONCLUSIONS

The Baffin Island 2024/2025 abundance survey documents a successful implementation of the Nunavut co-management caribou harvest management system. The data presented in this report suggests the north, central, and south Baffin caribou groups or herds, may have had a prolonged declining phase due to the proportionally high rates of harvest that continued following the onset of a declining phase. Based on anecdotal observations and numerous community consultations undertaken across Baffin Island over this period, this likely began in the early 2000’s. Additionally, low densities of predators (particularly the wolf), and the absence of mainland predators (e.g. wolverine and grizzly bear), suggest that predation had little effect on the demographic trends of Baffin Island caribou over this same period. Similarly, prolonged periods of adverse weather or evidence of sustained reproductive disease were not apparent from the early 2000’s to present and as a result could not directly account for the prolonged period of low caribou abundance in our opinion.

Following the 2015 activation of harvest management restrictions, ongoing monitoring studies showed a gradual movement of caribou back into previously well-known caribou habitat, with the concurrent effect of documented increases in relative densities documented using IQ and productivity-based classification studies. Beginning in 2015, the Baffin Island caribou harvest was dramatically reduced from an estimated 7,616 caribou annually to 250 caribou annually with an accompanying bull only NQL, clearly paving the way to the dramatic increases seen in the most recent population assessment.

We hypothesize that the prolonged low numbers of caribou across the Island allowed for previously overgrazed range to strongly recover, offering nutritious and abundant forage to Baffin Island caribou now provided substantial relief from extensive harvesting activity. Additionally, density dependant disease would have been substantially reduced as relative densities of caribou across the Island continued to decline and remained low well into the post-2015 recovery period.

We suggest the results presented in this report highlight a success story brought about by the working together of Baffin Island community HTO's, the QWB, and the Government of Nunavut, all under the umbrella of the NWMB and their primary role as the main instrument of wildlife management. We suggest that next steps should acknowledge and utilize the success of the Baffin Island caribou management structure as we move forward. Based on the March 2014 Baffin Island survey estimate (including Prince Charles Island) of 4,652, the NWMB, in discussions with the GN ENV, Baffin HTOs, and the QWB, assessed a TAH and NQL of a 250 caribou male only harvest as being consistent with the recovery of the Baffin Island caribou population. This assigned TAH represented a 5% harvest rate based on the 2014 estimate, proving successful in fostering the strong observed recovery over the 7 years it was in effect. The NQL applied would have also contributed to the strong recovery of the herds. During the first 4 years female harvest was restricted and for the next 3 years only increased to 25 out of the TAH of 250, thus strongly protecting the reproductive potential of the population through the protection of breeding females. Though management decisions made to address the Baffin Island caribou declines were reflective of multifaceted approaches and recommendations expressed by Nunavut stakeholders and management authorities, there is published literature supporting this management approach from studies conducted on mainland barren-ground caribou herds (Boulanger and Adamczewski 2016).

One of the major challenges of monitoring the Baffin Island populations is the high expense of population surveys to provide trends in the abundance of caribou. Because these surveys are expensive and logistically demanding, they are often carried out infrequently, which can result in data gaps. This hampers our ability to detect changes in population dynamics in a timely manner. One means of addressing this is the use of Integrated Population models (IPM) (Schaub and Kery 2022), which have been successfully applied to the Beverly (Campbell et al 2025), Bathurst, and Bluenose-East (Boulanger et al 2024) herds.

IPMs can combine estimates of abundance, productivity (calf-cow ratios), collar survival (through the establishment of telemetry programs), and harvest monitoring, to estimate demographic trends. IPMs use an underlying population model (similar to that described in **Figure 45**) to reconcile trends suggested from each data source. It can therefore be used to predict trends based on levels of productivity and harvest. While collar-based survival is not necessarily a requirement of IPMs, this information can add additional confidence in model results and reliability. In the absence of collared-based survival data, an IPM can still be used to help determine what level of survival is required to maintain the observed trend in survey results given observed levels of productivity (calf-cow ratios) and harvest. This approach would certainly become viable if calf-cow ratio surveys were conducted in a systematic way both temporally and spatially across Baffin Island. Ideally, collar data could be tracked consistently to assess survival rates, aid in locating and studying overwinter calf survival in a way representative of Island subpopulations or groupings, identify caribou groupings and movements to improve on methods and precision of demographic monitoring studies such as abundance surveys, and delineate seasonal range and migratory corridors and behaviour and any long-term changes to the same.

7.0 RECOMMENDATIONS

Disclaimer:

The recommendations section represents the opinions and recommendations of the Government of Nunavut, Department of Environment, Wildlife Research Division Staff, and do not necessarily reflect the opinions of the Government of Nunavut as a whole or all the authors contributing to this report.

Based on the findings of this report, we recommend a continuation of the harvest management regime set out by the NWMB. We suggest a harvest rate of 5% continue to be applied, which would suggest an island wide TAH of 2,334 caribou (based on the 2024/25 abundance estimate), with the maintenance of the NQL allowing 467 (20%) of the TAH to be females. We also recommend a NQL restricting the harvest of cow/calf pairs. We further recommend that this TAH and associated NQL, remain in place under the same harvesting regime most recently updated by the NWMB in 2022 (allowing for the TAH to increase by 50 caribou annually, of which 20% can be females without calves in tow), for a period of 5 to 7 years, or until new information suggests a re-assessment of these management actions. We further recommend that spring composition studies continue every 2 years to monitor herd productivity and indices of general abundance and trends. Finally, we recommend that a telemetry program be maintained within each of the north, central, and south Baffin caribou ranges to:

1- develop a better understanding of Baffin caribou critical seasonal range.

2- assess, predict, and mitigate (to the extent possible), any conflicts, disturbance effects, or herd-level impacts caused by industrial development and associated infrastructure on or impacting caribou seasonal range.

3- provide more detailed critical caribou range maps to better inform the Nunavut Land Use Planning process.

4- better understand north, central, and south Baffin caribou migratory corridors to help ensure these areas are not compromised by linear infrastructure of other land use related impacts.

5- further monitor caribou mortality for associated assessments of herd health and vulnerability primarily through the estimation of adult female survival rates through the tracking of collar data.

6- help locate caribou for more precise and cost-effective monitoring work including but not limited to systematic spring composition surveys to monitor herd productivity by region, regional abundance and reconnaissance surveys, and ecological land classification studies of caribou seasonal range.

At the end of this 5–7-year period, we further recommend that a re-assessment (either through abundance or reconnaissance aerial surveys) of the Baffin Island caribou population be considered, to provide more quantitative information with which to re-assess the existing TAH and associated NQLs. If implemented, these recommendations will help detect and address any negative impacts to Baffin Island caribou demographics arising from anthropogenic causes. We believe these measures will help safeguard Inuit subsistence harvesting rights, as guaranteed within the Nunavut Agreement.

8.0 ACKNOWLEDGEMENTS

The success of any large-scale wildlife survey is completely dependent on the quality of the team assembled to complete the task. Our teams, assembled for both March 2024 and 2025 south and north-central Baffin Island caribou abundance surveys, were of the highest quality. In total, 15 Inuit from communities across south Baffin Island and 20 Inuit from north and central Baffin Island communities took part in this two-year caribou abundance survey field program. These 35 observers represented HTOs and other Inuit organizations from the communities of Iqaluit, Kimmirut, Pangnirtung, Qikiqtarjuaq, Kinngait, Clyde River, Igloolik, and Pond Inlet. In all, Inuit harvesters and community members from the Baffin Region made up 63% of the survey team. Our most sincere thanks go out to our keen-eyed observers including Ahmie Nauyakvik, Ahme Peters, Adamie Aligu, Alex Ootoowak, Andrew Attagutalukutuk, Charlie Inuarak, David Irngaut, Davidee Qaumariaq, Dewayne Nutarariaq, Gino Jaypoody, Jaypooti Aliqatuqtuq, Johnny Qaqqasiq, Judas Akpalialuk, Matthew Kilabuk, Matthias Kaunak, Maurice Palituq, Michael Alexander, Mosesie Ikkidluak, Natalino Piugattuk, Nathan Padluq, Robert Dialla, Ronnie Komagapik, Seemee Qamaniq, Simata Akavak, Stevie Karpik, Syzula Ikkidluak, Taqialuk Nuna, Temela Pitsiulak, and Tim Evic. We would also like to thank Samantha Smuk with Environment and Climate Change Canada for her observation skills and commitment to the entire survey program. Kyle Ritchie with the Nunavut Wildlife Management Board kindly helped us out with field observations during days when we were short crew members. We thank Tom Williamson with QIA for his help with filling in when short of crew members. We sincerely thank Government of Nunavut observers and recorders and logistic coordinators Christopher Mutch, Terry Milton, and Robert Karetak for their skilled assistance. Our thanks also go out to GN Director of Wildlife Research Drikus Gissing for his unwavering support and for making this survey possible, and directors of Operations Jason Aliqatuqtuq and Jeff MacDonald, for their support throughout the survey effort. In addition, our thanks go out to all the organizations that acknowledged the value of this survey effort through their generous financial and in-kind contributions including, Environment and Climate Change Canada, the Government of Nunavut, the Nunavut Wildlife Management Board, and Nunavut Tunngavik Inc. We thank Baffinland Iron mines for their generous provision of meals and accommodation to our north Baffin survey crew members, and for the provision of fuel and staff support throughout the north Baffin survey effort. We would also like to thank the De Beers group for their kind donation of fuel and their willingness to allow their remote camps to be emergency shelters for our crews should the weather turn unflyable.

Simple thanks cannot adequately express our immense appreciation to all those involved in this survey from the observers to the charter companies and hotel staff that safely carried and accommodated our team. We would like to extend a special thanks to Kenn Borek Air and their highly skilled pilots Braydon Smith, Bryce Kuhn, Chris Begemann, Doug Sperlich, George Barrett, Griffin Kelly, Henery Veasey, Isaac Sheard, Ken Janzen, Nick Muller, and Sarah Cote who in many ways carried this project through to its successful completion. We would also like to extend our thanks to Kenn Boreks Alex Este, who kept our survey planes flying and generously filled in as an observer during community ferrying trips, and to Joel Consaul who coordinated and smoothed out the often-challenging flight schedules that can so easily complicate these aerial wildlife survey efforts. We would also like to thank our rotary wing pilots with Panorama Helicopters Stephan Caron, and Nelson Bolduc who carried our crews safely through the more mountainous areas of the survey. And finally, we would like to thank the many hotels that put up with our unpredictable schedules while always being there to ensure we had a safe and clean home to come back to at the end of the day.

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Building Nunavut Together
Nunavuliuqatigiingniq
Bâtir le Nunavut ensemble

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Department of Environment
Avatiliqiyikkut
Ministère de l'Environnement

ᕿᑭᖅᑖᓗᖕᒥ ᖃᐅᔨᓴᕐᓂᖅ
Baffin Island Survey

Krista Shofstall– Regional Biologist
Mitch Campbell- Regional Biologist
Jonathan Pitseolak– Wildlife/Lab Technician

ᑯᓇᔅᑕ ᓵᕝᔅᑕᓪ – ᐊᕕᒃᑐᖅᓯᒪᔪᓂ ᐆᒪᔪᓂᒃ ᖃᐅᔨᓴᖅᑎ
ᒥᑦᓯ ᑳᒻᐹᓪ – ᐊᕕᒃᑐᖅᓯᒪᔪᓂ ᐆᒪᔪᓕᕆᔨ
ᔮᓇᑕᓐ ᐱᑦᑎᐅᓛᖅ– ᐆᒪᔪᓕᕆᓂᖅ/ᖃᐅᔨᓴᕐᕕᖕᒥ ᐱᓕᕆᔨ

ᕿᑭᖅᑖᓗᒃ ᖃᐅᔨᓴᕐᓂᕐᒧᑦ ᐱᓕᕆᐊᖑᓯᒪᔪᑦ
Baffin Island Survey Background

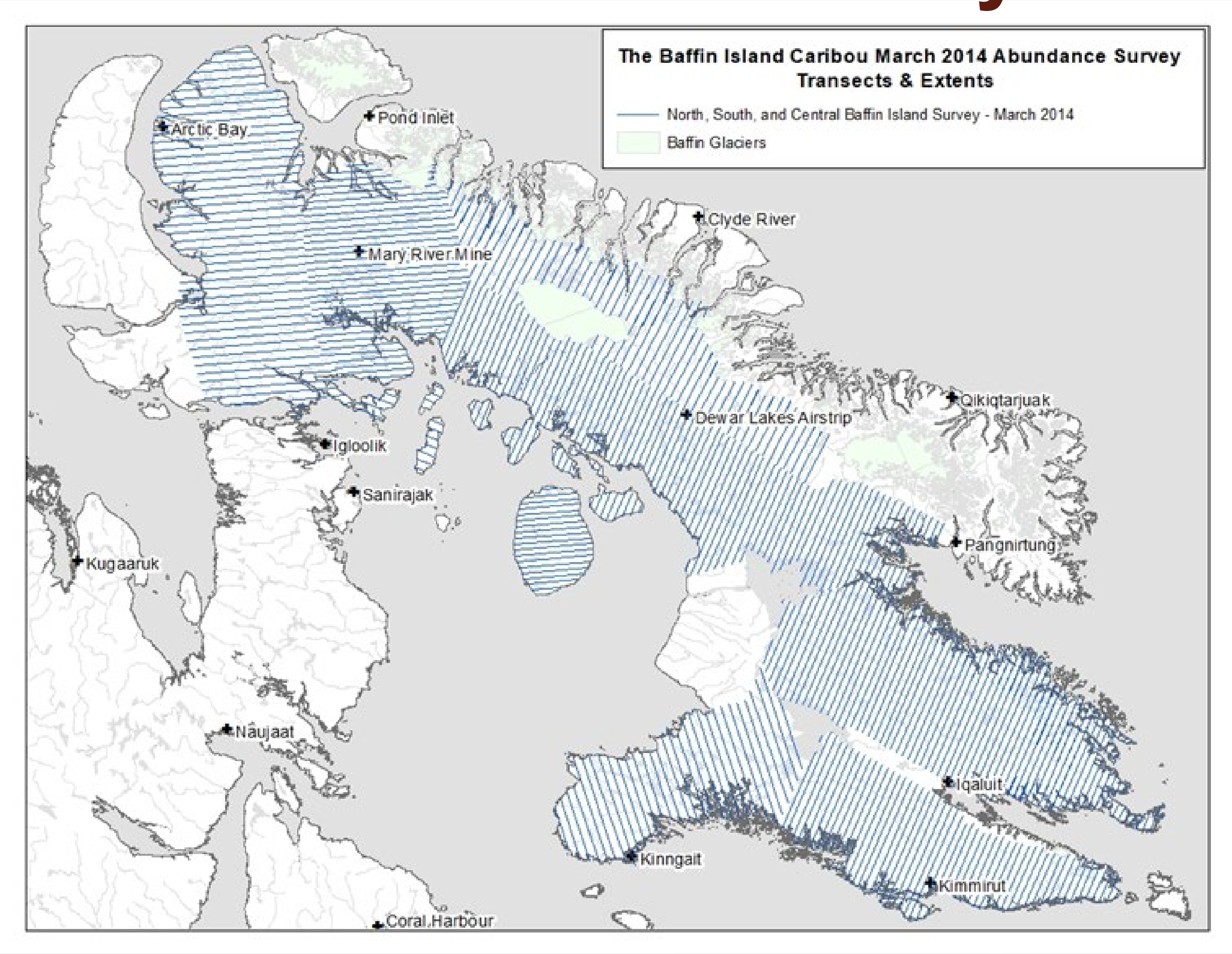
Completed

- Community Consultations (January/February 2024/2025)
- Baffin Island Caribou Survey (March 2024/2025)
- Baffin Island Caribou Survey Report (December 2025)
- Community Consultations (February 2025)

ᐱᔭᕇᖅᓯᒪᔪᖅ / ᐱᖓᓪᓕᐊᔪᖅ

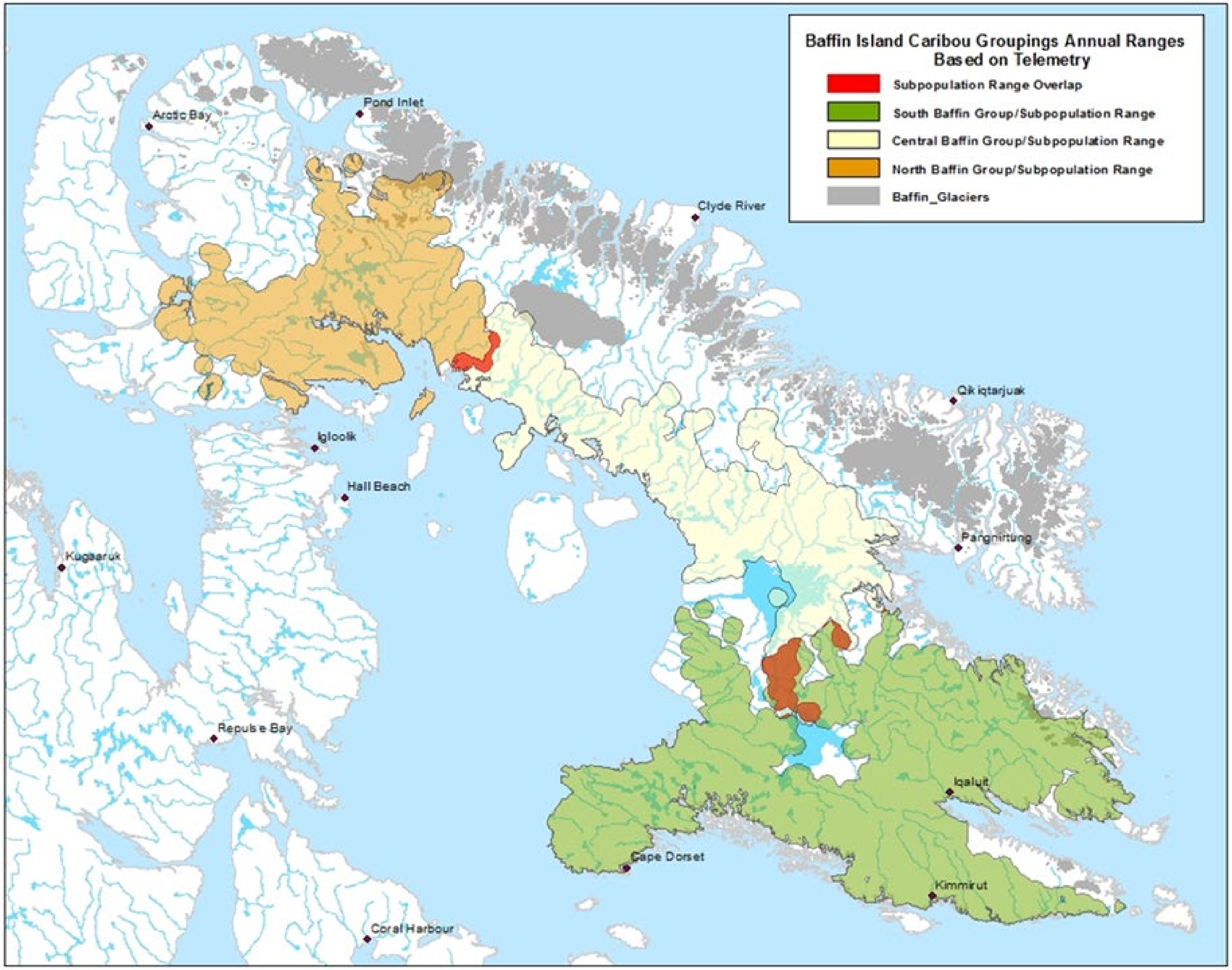
- ᓄᓇᓕᖕᓂᑦ ᑐᓴᕋᓱᖕᓂᖅ (ᔭᓄᐊᕆ 2024/2025)
- ᕿᑭᖅᑖᓗᒃ ᑐᒃᑐᖕᒋᑦ ᖃᐅᔨᓴᖅᑕᐅᓂᖕᒋᑦ (ᒫᔾᔨ 2024/2025)
- ᕿᑭᖅᑖᓗᖕᒥ ᑐᒃᑐᓂᒃ ᖃᐅᔨᓴᖅᓯᓂᕐᒧᑦ ᐅᓂᒃᑳᐅᓯᖅ (ᑎᓯᐱᕆ 2025)
- ᓄᓇᓕᖕᓂᑦ ᑐᓴᕋᓱᖕᓂᖅ (ᐊᕆ 2025)

2014 ᕿᑭᖅᑖᓗᒻᒥᑦ ᖃᐅᔨᓴᖅᑕᐅᔪᑦ
2014 Baffin Island Survey Area

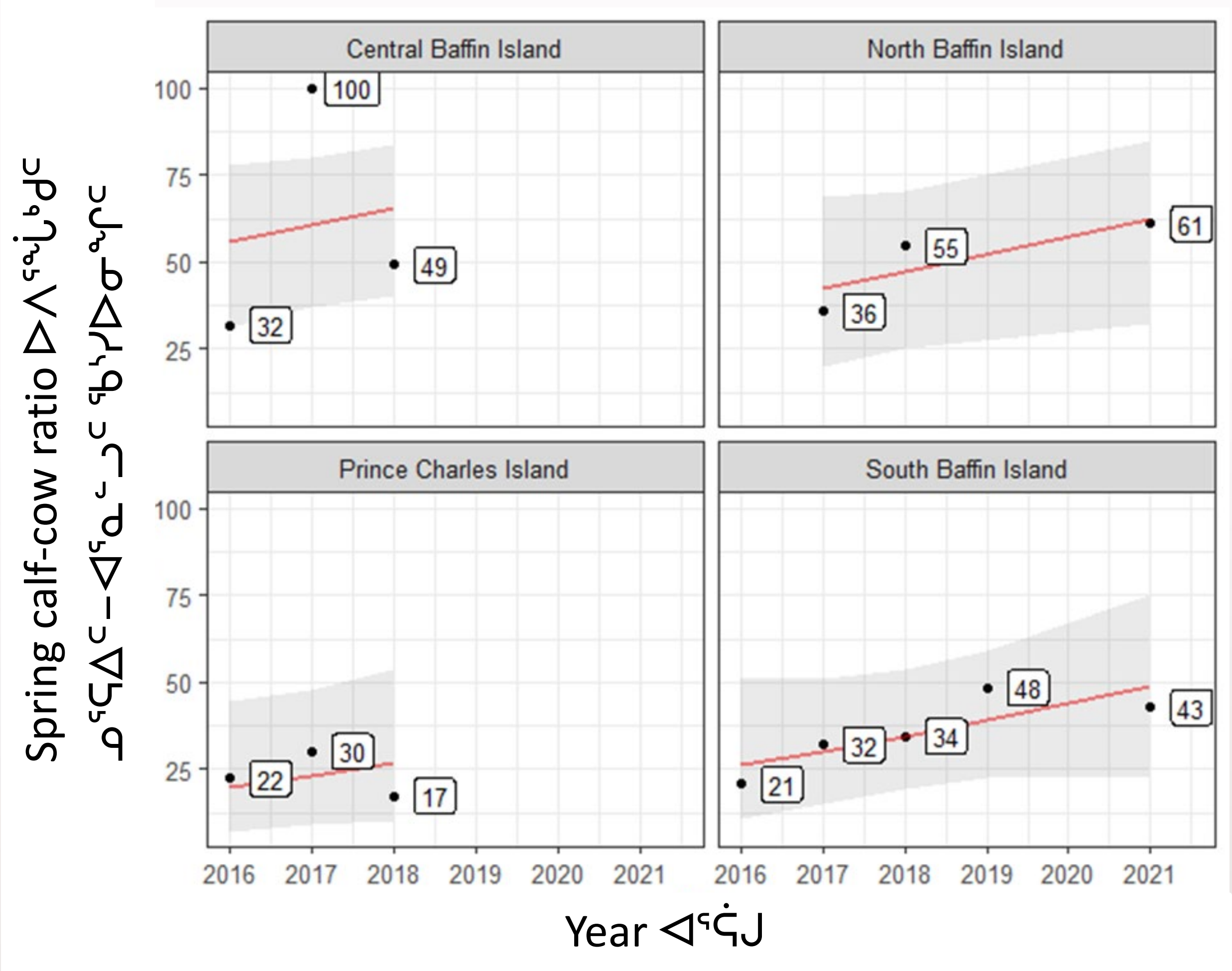


HARVEST YEAR (JULY 1- JUNE 30)	TAH	FEMALE PROPORTION OF TAH	ESTIMATED HARVEST	ACTUAL HARVEST
1997/1998	UNLIMITED	?	8,669	
1998/1999	UNLIMITED	?	8,479	
1999/2000	UNLIMITED	?	6,578	
2000/2001	UNLIMITED	?	6,739	
BAFFIN	UNLIMITED	?	30,465	

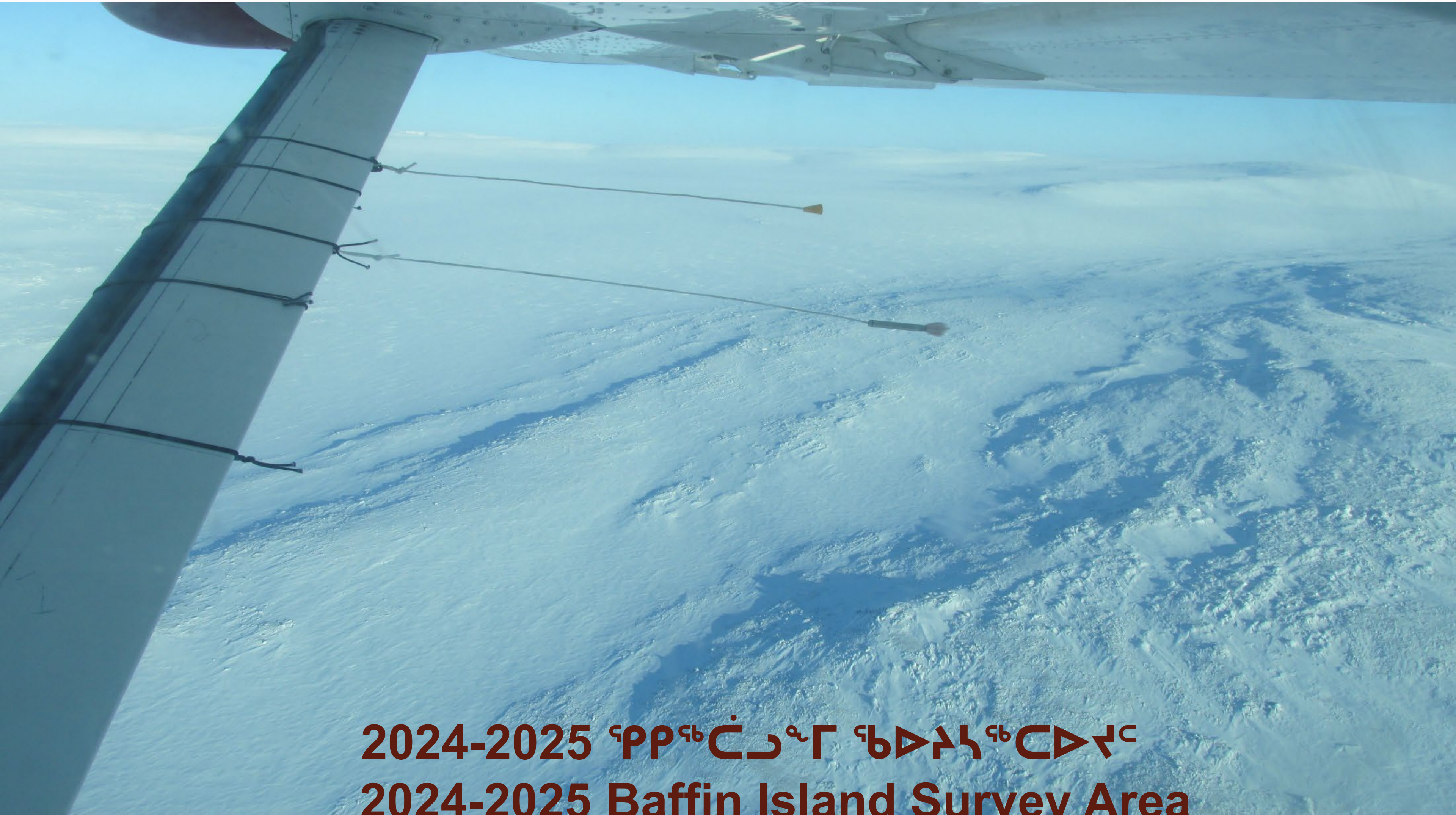
Harvest Year	TAH	Actual Harvest (male & female)	Female Proportion of TAH	Difference (+/-)
2015-2016	250	183	0	67
2016-2017	250	229	0	21
2017-2018	250	233	0	17
2018-2019	250	236	0	14
2019-2020	250	247	25	3
2020-2021	250	247	25	3
2021-2022	250	245	25	5
2022-2023	350	352	75	-2
2023-2024	400	421	80	-21
2024-2025	450	422	90	0
Totals	**2,950**	**2,815**	**320**	**107**



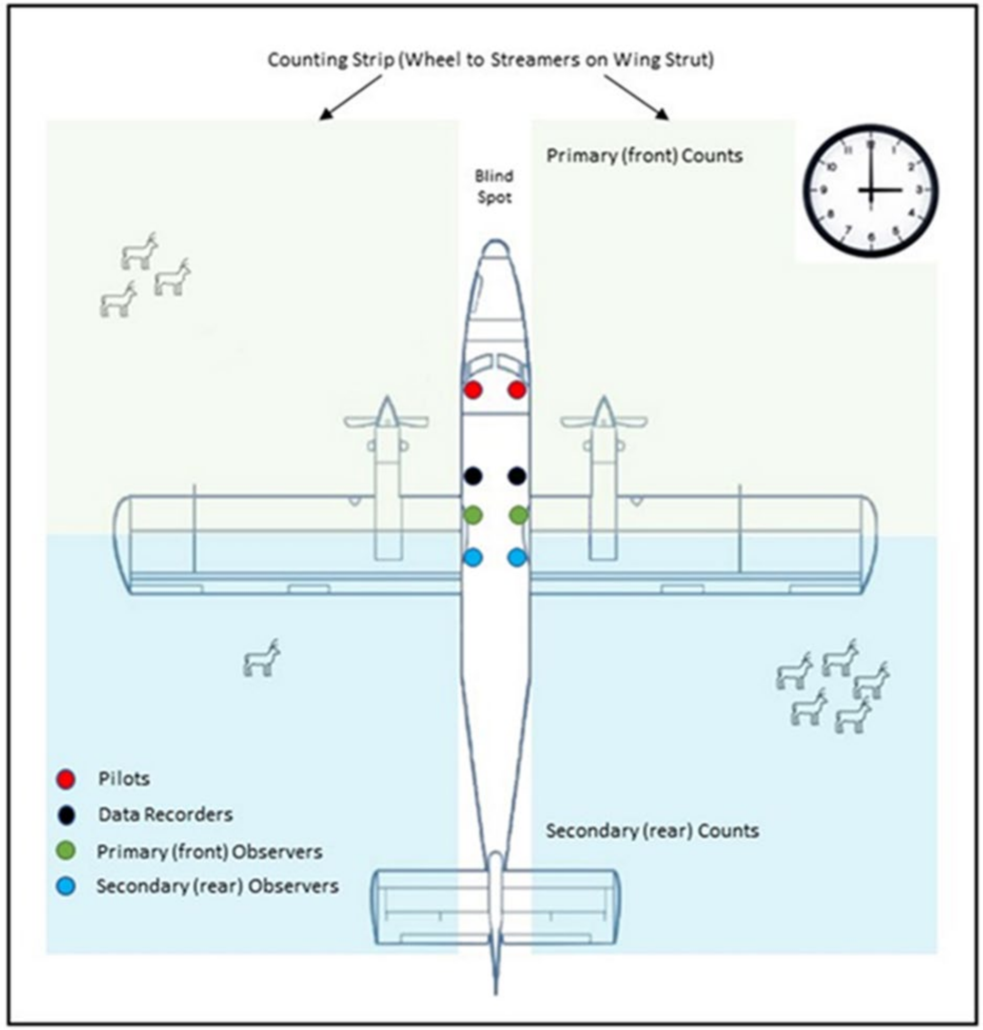
Baffin Island Caribou Groupings Annual Ranges
Based on Telemetry
Subpopulation Range Overlap
South Baffin Group/Subpopulation Range
Central Baffin Group/Subpopulation Range
North Baffin Group/Subpopulation Range
Baffin_Glaciers
Pond Inlet
Arctic Bay
Clyde River
Qikiqtarjuak
Igloolik
Hall Beach
Pangnirtung
Kugaaruk
Repulse Bay
Iqaluit
Cape Dorset
Kimmirut
Coral Harbour



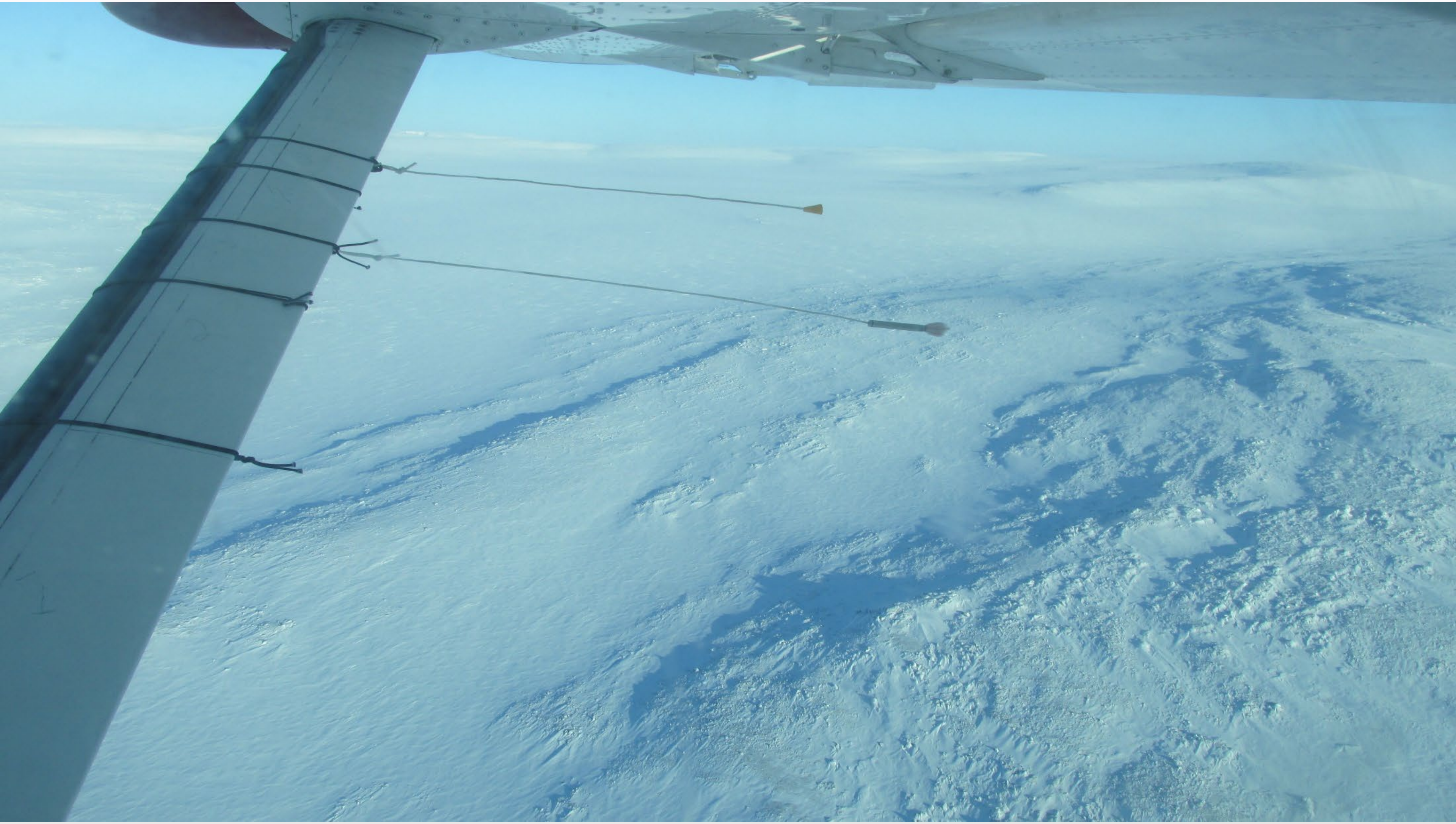
Central Baffin Island
North Baffin Island
Prince Charles Island
South Baffin Island
100
75
50
25
100
32
49
55
36
61
30
22
17
48
43
34
32
21
2016
2017
2018
2019
2020
2021
Spring calf-cow ratio ᐅᐱᕐᖔᒃᑯᑦ
ᓄᕐᕈᐃᑦ–ᐊᕐᓇᓕᓐᓄᑦ ᖃᔅᓯᐅᓂᖏᑦ
Year ᐊᕐᕌᒍ



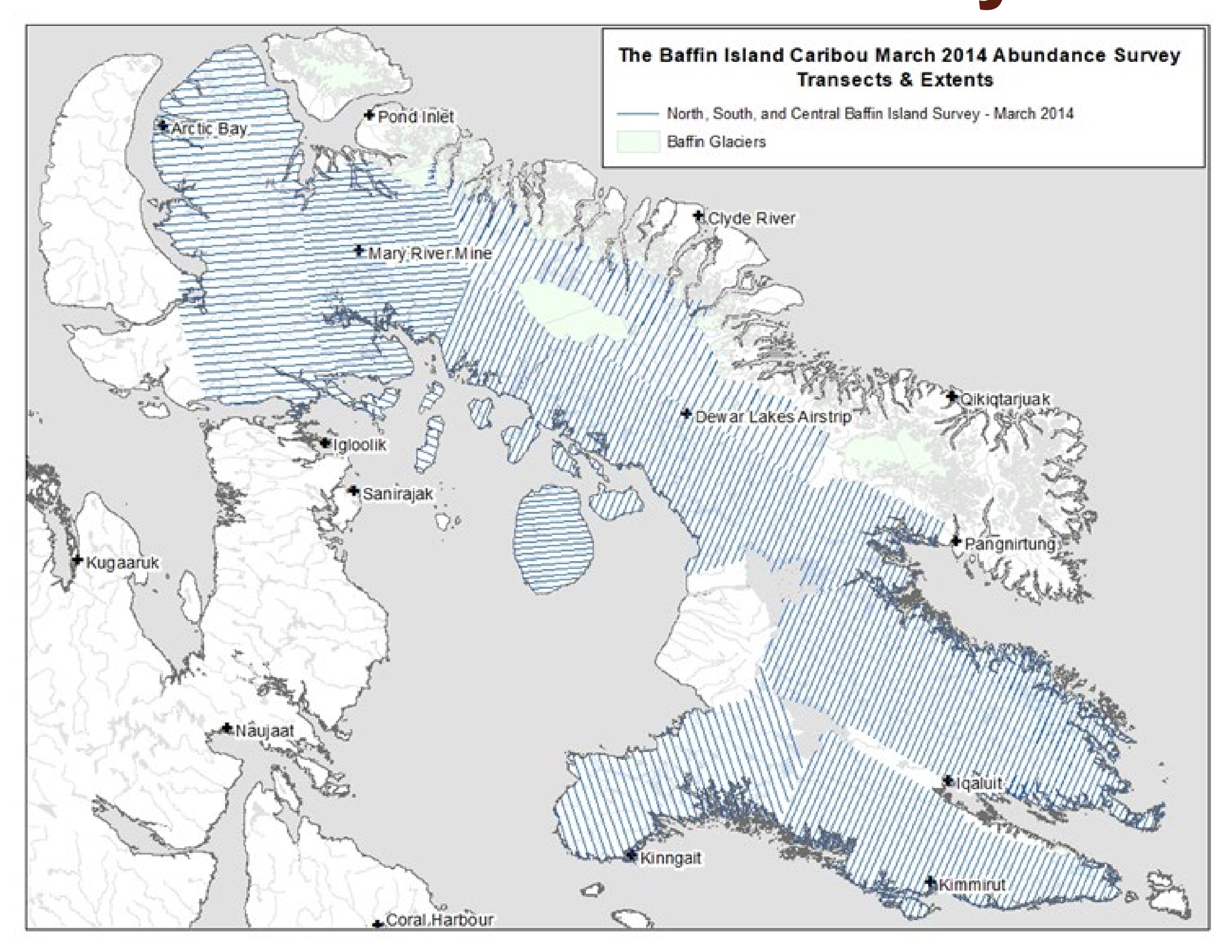
2024-2025 ᕿᑭᖅᑖᓗᖕᒥ ᖃᐅᔨᓴᖅᑕᐅᔪᑦ
2024-2025 Baffin Island Survey Area



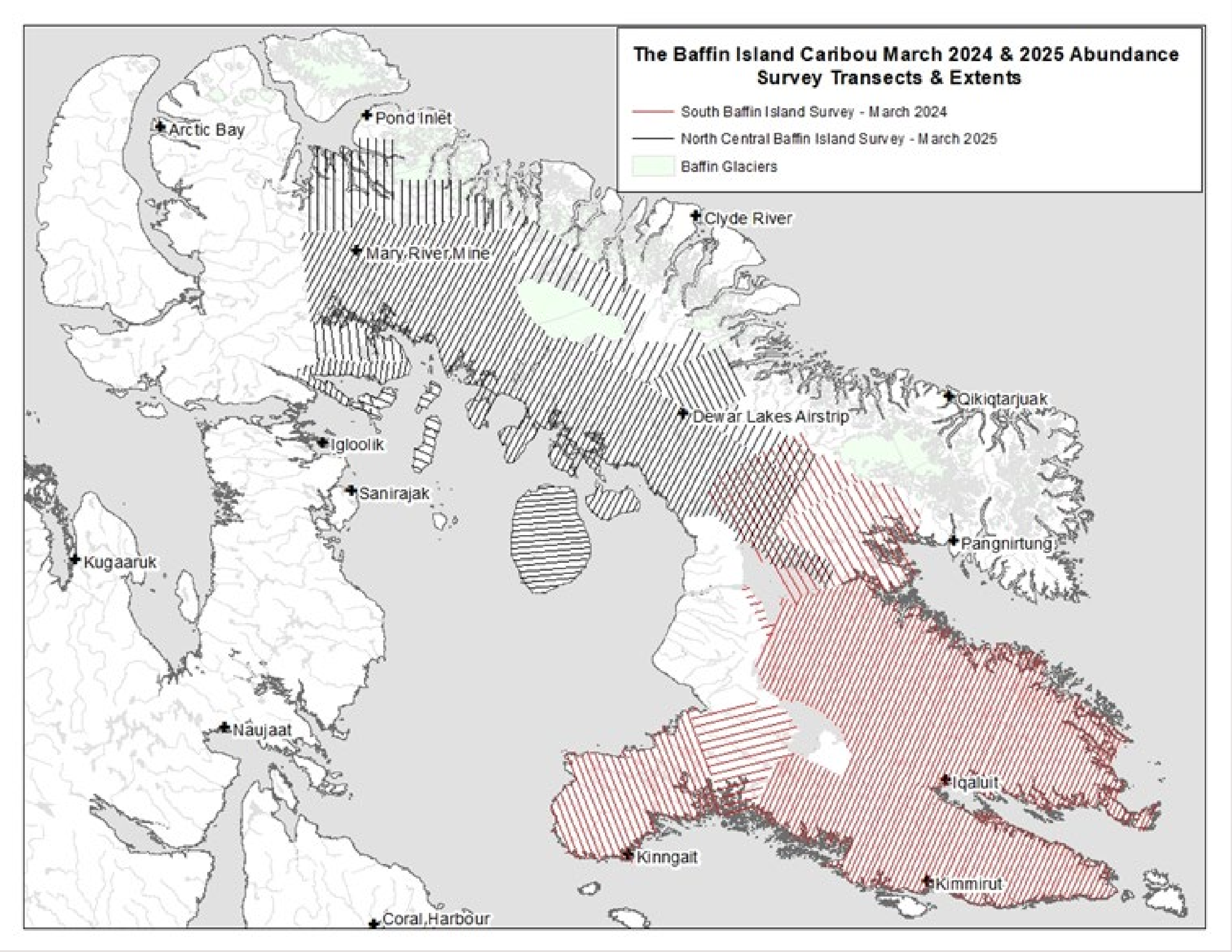
Counting Strip (Wheel to Streamers on Wing Strut)
Blind Spot
Primary (front) Counts
Secondary (rear) Counts
Pilots
Data Recorders
Primary (front) Observers
Secondary (rear) Observers



2014 ᕿᑭᖅᑖᓗᖓᑦ ᖃᐅᔨᓴᖅᑕᐅᓯᑦ
2014 Baffin Island Survey Area



2024-2025 ᕿᑭᖅᑖᓗᖕᒥ ᖃᐅᔨᓴᖅᑕᐅᔪᑦ
2024-2025 Baffin Island Survey Area



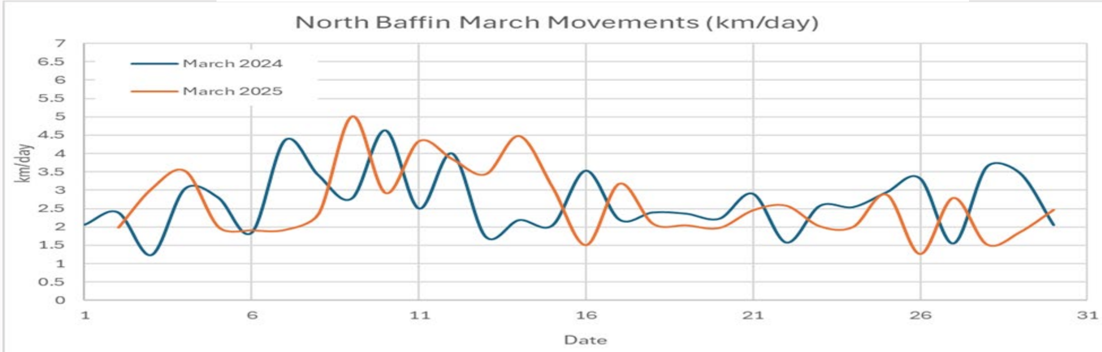
ᐅᓪᓗᖓ (2024) **Date (2024)**

ᖃᐅᔨᓴᖅᑕᐅᔪᖅ ᖃᓄᐃᓪᓘᓂᖓ Survey Type	Mar-06	Mar-07	Mar-08	Mar-09	Mar-10	Mar-11	Mar-12	Mar-13	Mar-14	Mar-15	Mar-16	Mar-17	Mar-18	Mar-19	Mar-20	Mar-21	Mar-22	Mar-23	Mar-24
ᖃᖓᑕᓲᖅ Fixed Wing	X	X	X	X	X	X	*PR*	X	X	X	X	X	X	X					
ᖁᓚᒥᒎᖅ Rotary Wing				*WC*	X	X	X	X	X	*WC*	X	X							

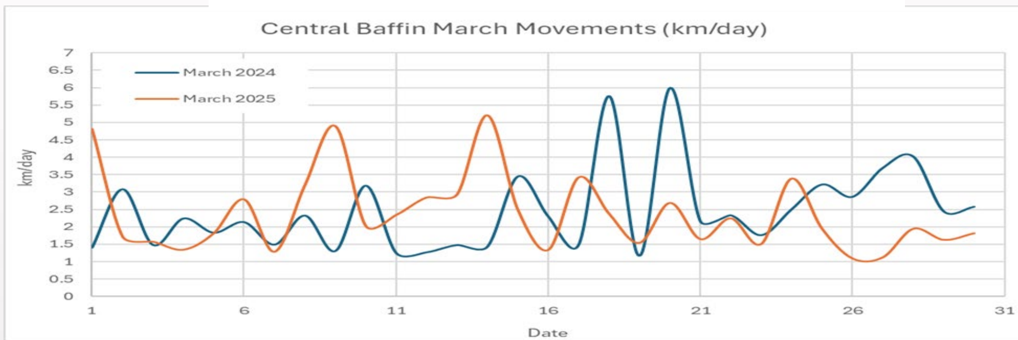
ᐅᓪᓗᖓ (2025) **Date (2025)**

ᖃᐅᔨᓴᖅᑕᐅᔪᖅ ᖃᓄᐃᓪᓘᓂᖓ **Survey Type**	Mar-06	Mar-07	Mar-08	Mar-09	Mar-10	Mar-11	Mar-12	Mar-13	Mar-14	Mar-15	Mar-16	Mar-17	Mar-18	Mar-19	Mar-20	Mar-21	Mar-22	Mar-23	Mar-24
ᖃᖓᑕᓲᖅ Fixed Wing	X	X	X	*WC*	X	*WC*	X	*WC*	X	X	X	*WC*	*WC*	*WC*	X	X	X	X	X
ᖁᓚᒥᒎᖅ Rotary Wing									*WC*	X	*WC*	*WC*	*WC*	*WC*	*WC*	X	X	X	X

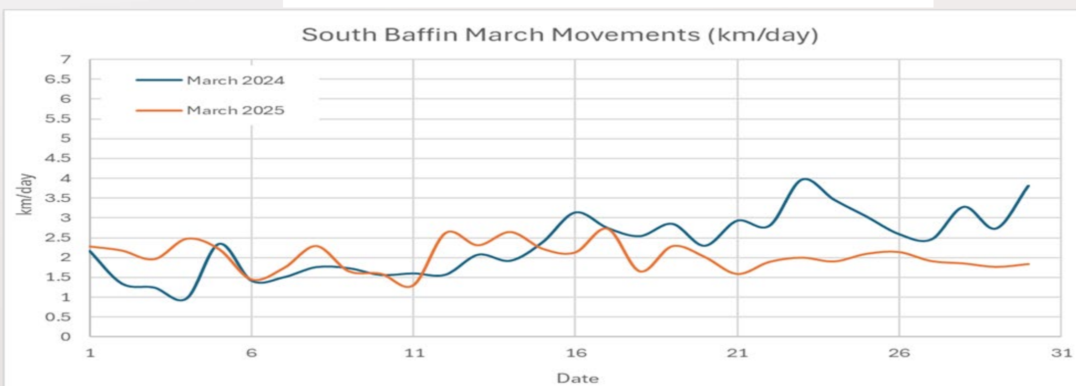
ᕿᑭᖅᑖᓘᑉ ᐅᐊᖕᓇᖕᒐᓂ ᒫᔾᔨᒥ ᓇᒧᙵᐅᕙᓪᓕᐊᓂᖕᒋᑦ (ᑭᓛᒥᑕ/ᐅᓪᓗᖅ)

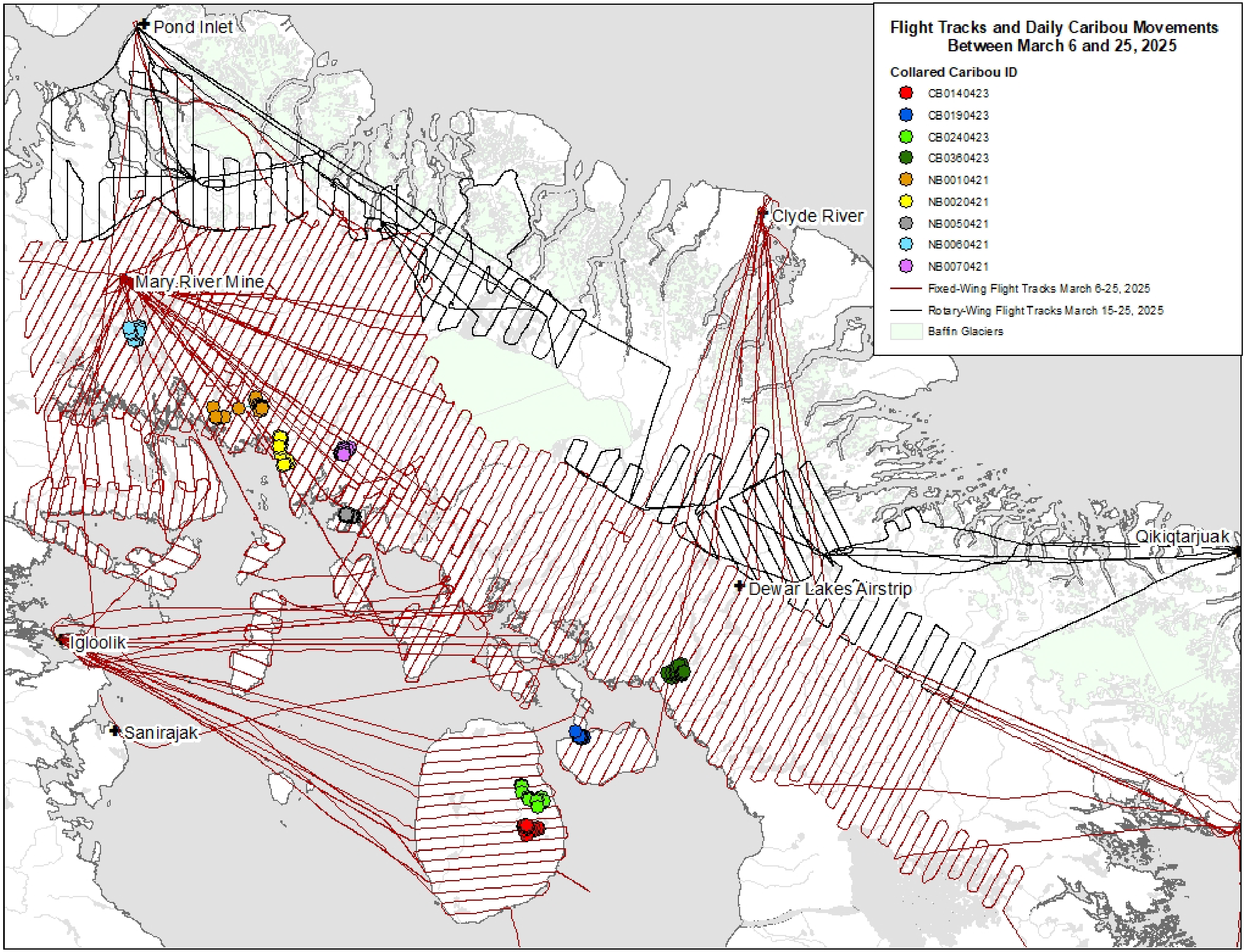


ᕿᑭᖅᑖᓘᑉ ᕿᑎᖅᐸᓯᐊᓂ ᓇᒧᙵᐅᕙᓪᓕᐊᓂᖕᒋᑦ (ᑭᓛᒥᑕ/ᐅᓪᓗᖅ)



ᕿᑭᖅᑖᓘᑉ ᓂᒋᐊᓂ ᓇᒧᙵᐅᕙᓪᓕᐊᓂᖕᒋᑦ ᑭᓛᒥᑕ/ᐅᓪᓗᖅ)

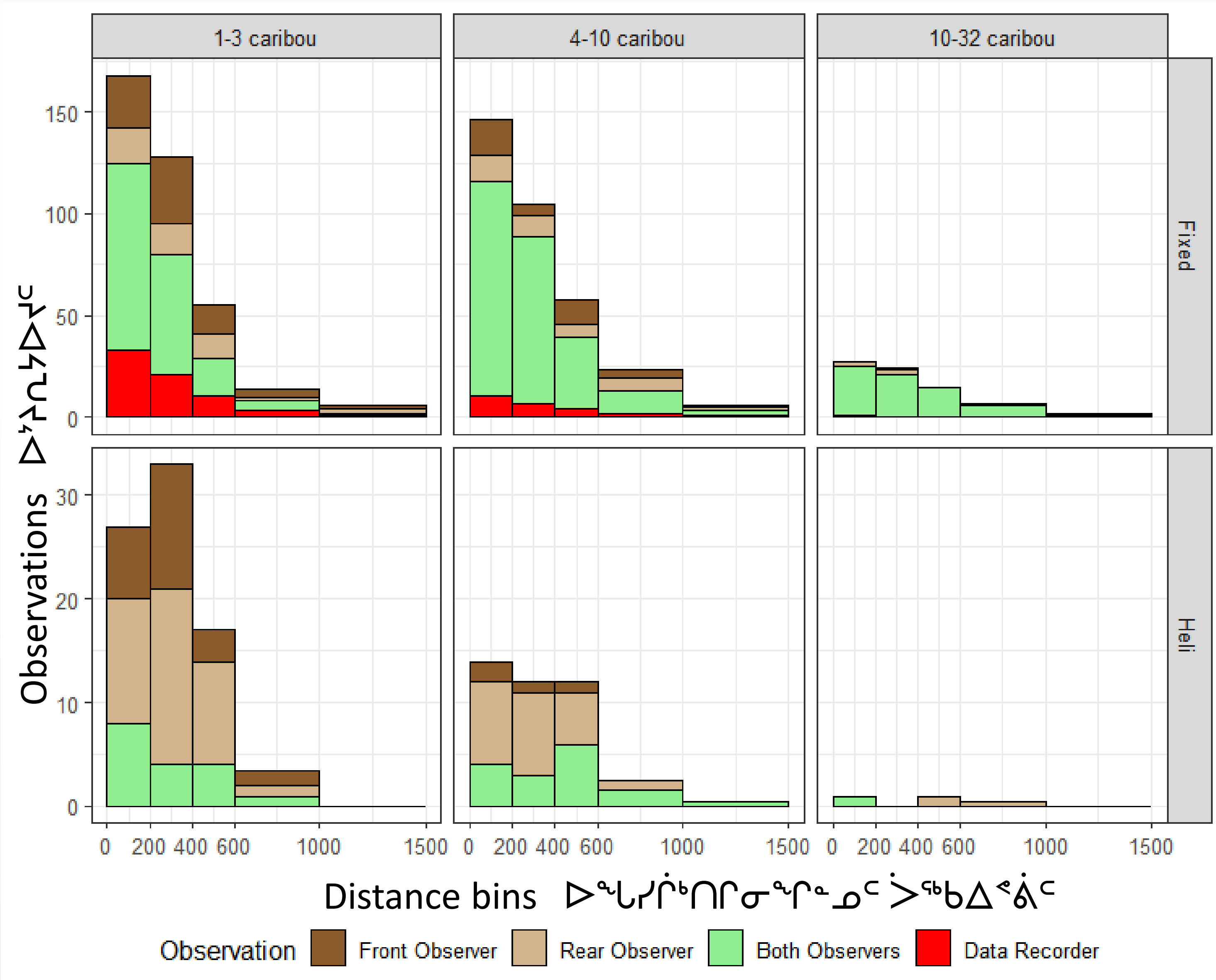




Flight Tracks and Daily Caribou Movements
Between March 6 and 25, 2025
Collared Caribou ID
CB0140423
CB0190423
CB0240423
CB0360423
NB0010421
NB0020421
NB0050421
NB0060421
NB0070421
Fixed-Wing Flight Tracks March 6-25, 2025
Rotary-Wing Flight Tracks March 15-25, 2025
Baffin Glaciers
Pond Inlet
Clyde River
Mary River Mine
Qikiqtarjuak
Dewar Lakes Airstrip
Igloolik
Sanirajak

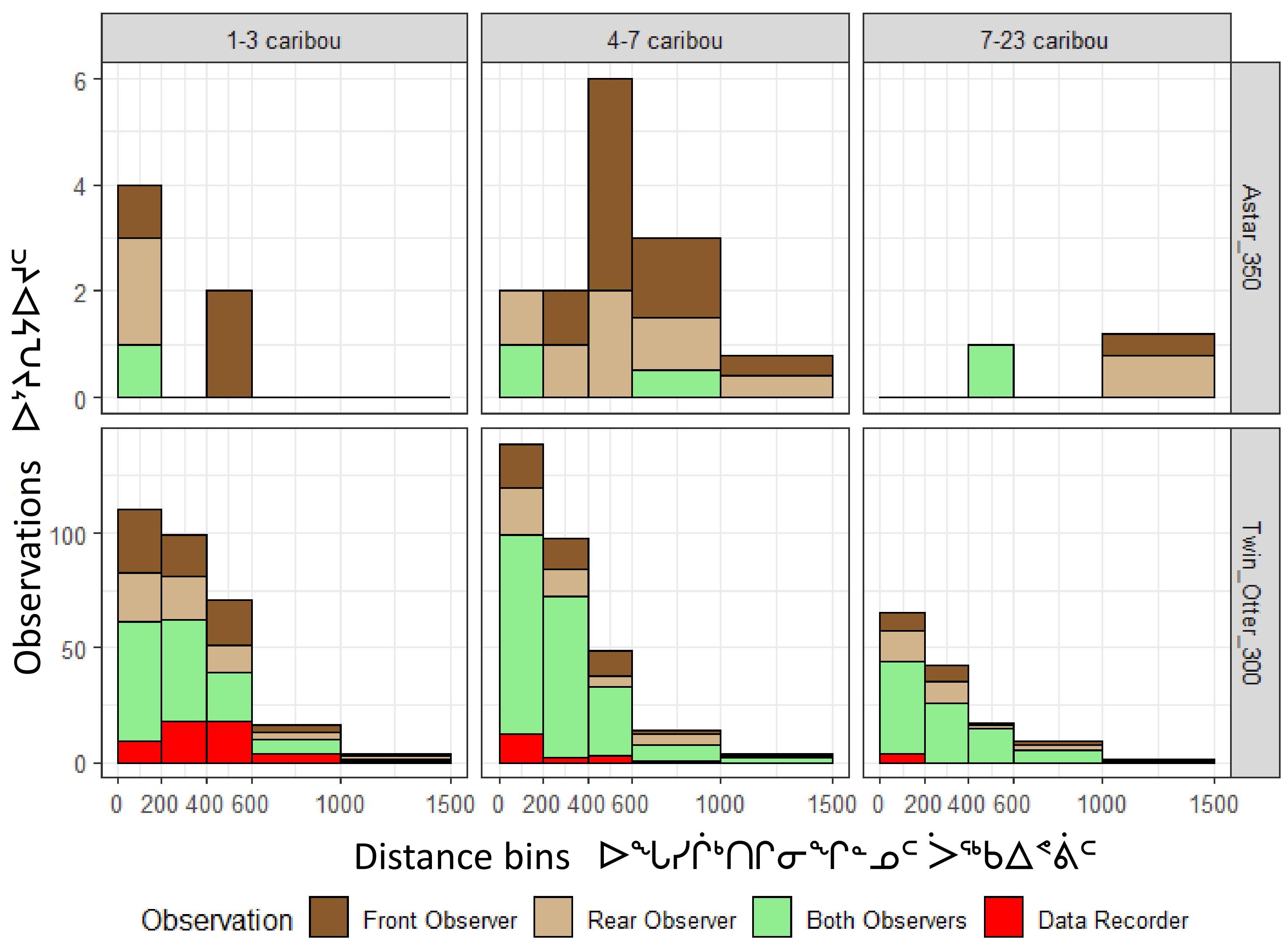
Nunavut

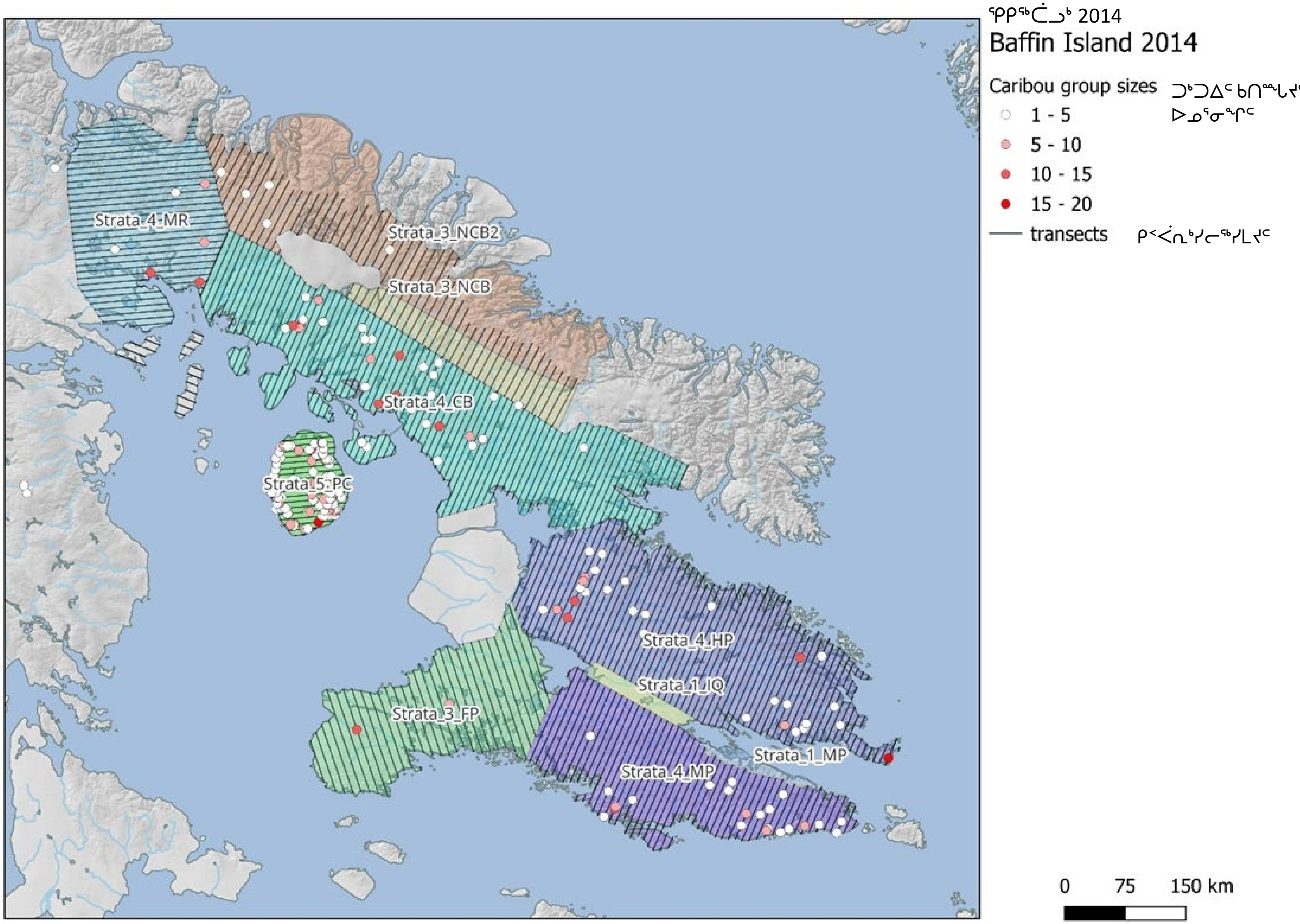
2024

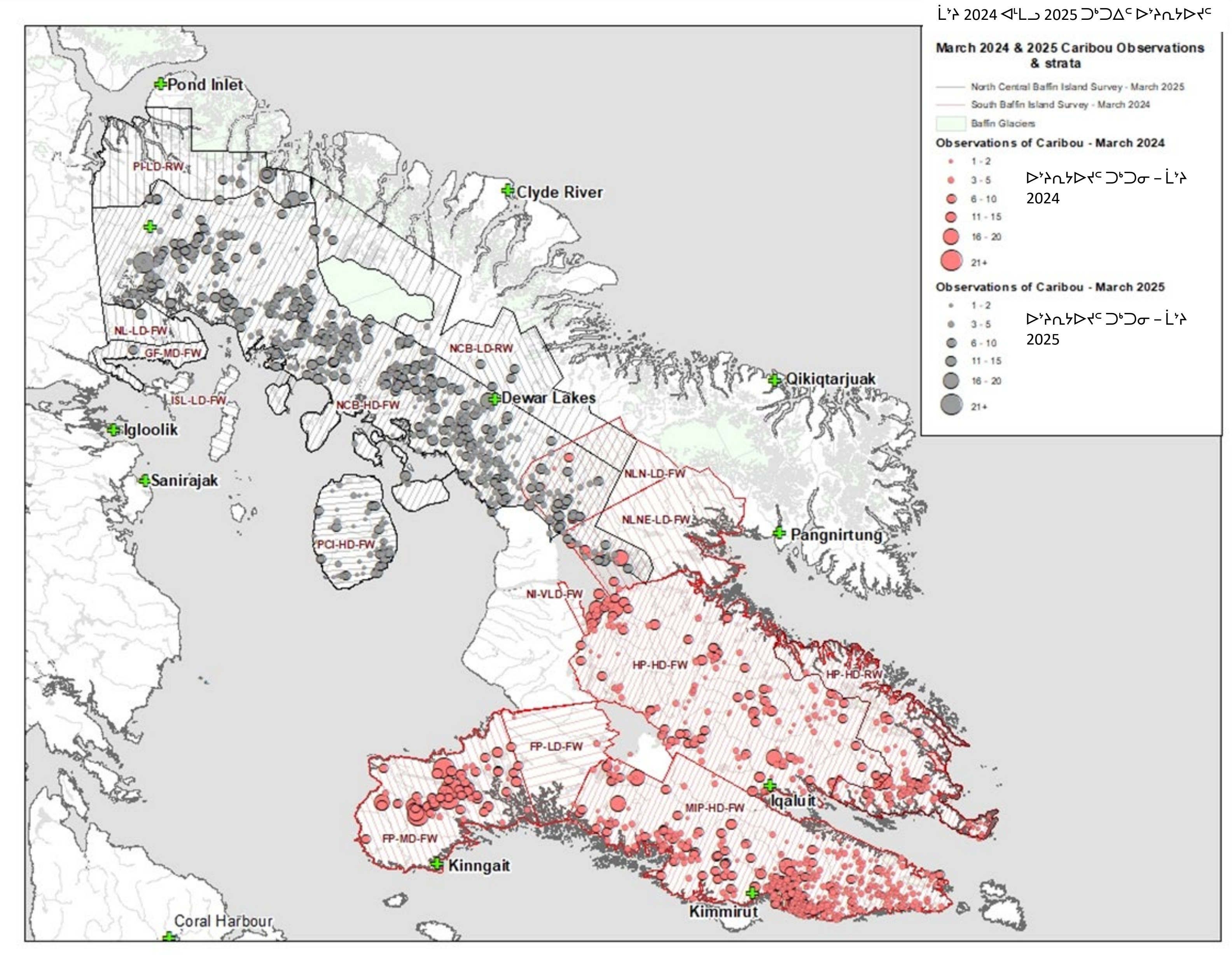


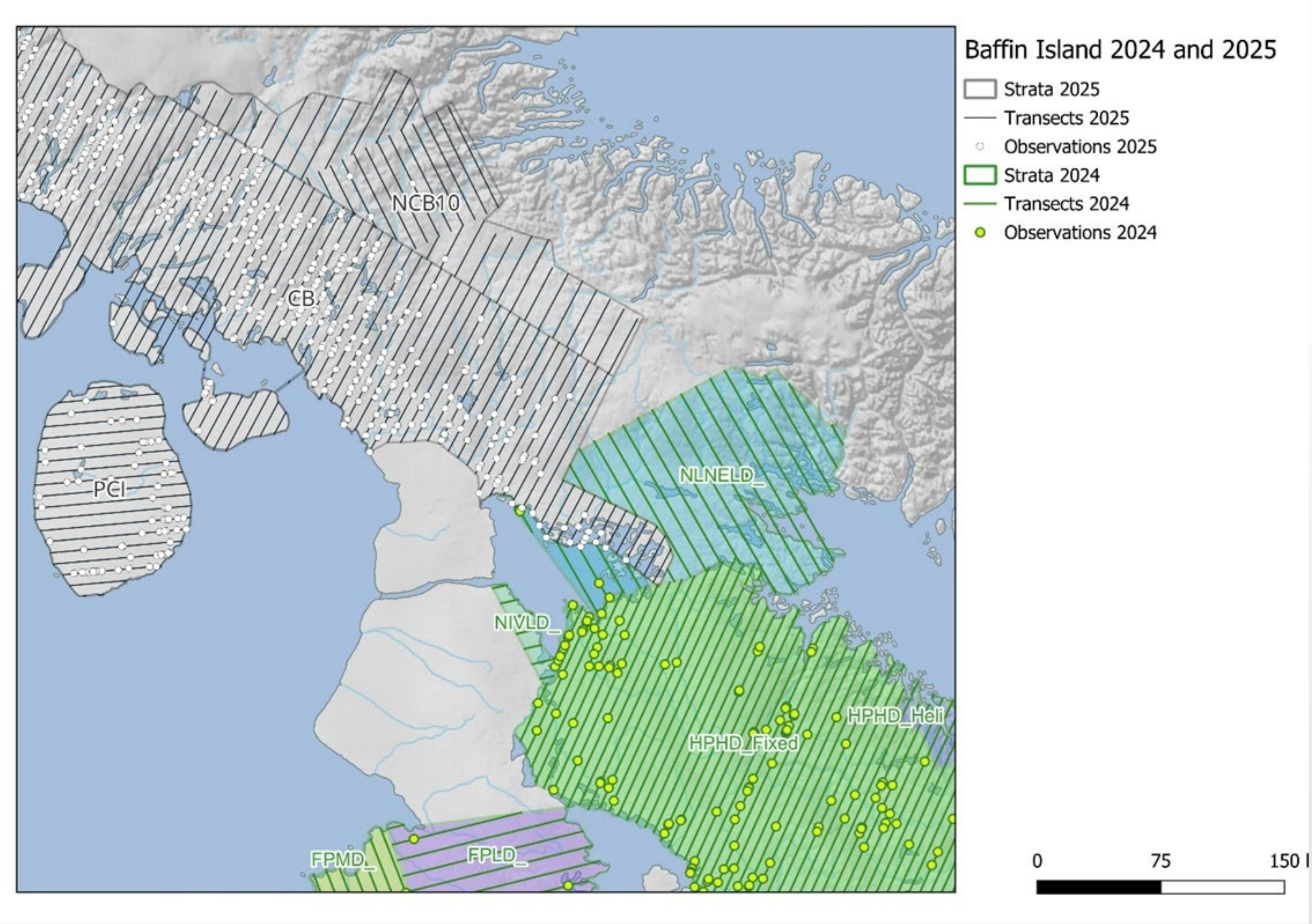
1-3 caribou
4-10 caribou
10-32 caribou
Fixed
Heli
0
50
100
150
0
10
20
30
0 200 400 600 1000 1500
Observations ᐅᔾᔨᕆᔭᐅᓯᑦ
Distance bins ᐅᖕᒐᓯᒌᒃᑎᒋᓂᖕᒋᓐᓄᑦ ᐲᖅᑲᐃᖅᑳᑦ
Observation
Front Observer
Rear Observer
Both Observers
Data Recorder

2025


1-3 caribou
4-7 caribou
7-23 caribou
Astar_350
Twin_Otter_300
Observations
0
2
4
6
50
100
0 200 400 600 1000 1500
Distance bins ᐅᖕᒐᓯᒌᒃᑎᒋᓂᖕᒋᖕᓄᑦ ᐹᖅᑲᐃᕝᕖᑦ
Observation
Front Observer
Rear Observer
Both Observers
Data Recorder


ᕿᑭᖅᑖᓗᒃ 2014
Baffin Island 2014
Caribou group sizes
ᑐᒃᑐᐃᑦ ᑲᑎᙵᔪᑦ
ᐅᓄᕐᓂᖏᑦ
1 - 5
5 - 10
10 - 15
15 - 20
transects
ᑭᐸᓈᓇᒃᓯᓕᖅᓯᒪᔪᑦ
Strata_4_MR
Strata_3_NCB2
Strata_3_NCB
Strata_4_CB
Strata_5_PC
Strata_4_HP
Strata_1_IQ
Strata_3_FP
Strata_1_MP
Strata_4_MP
0
75
150 km

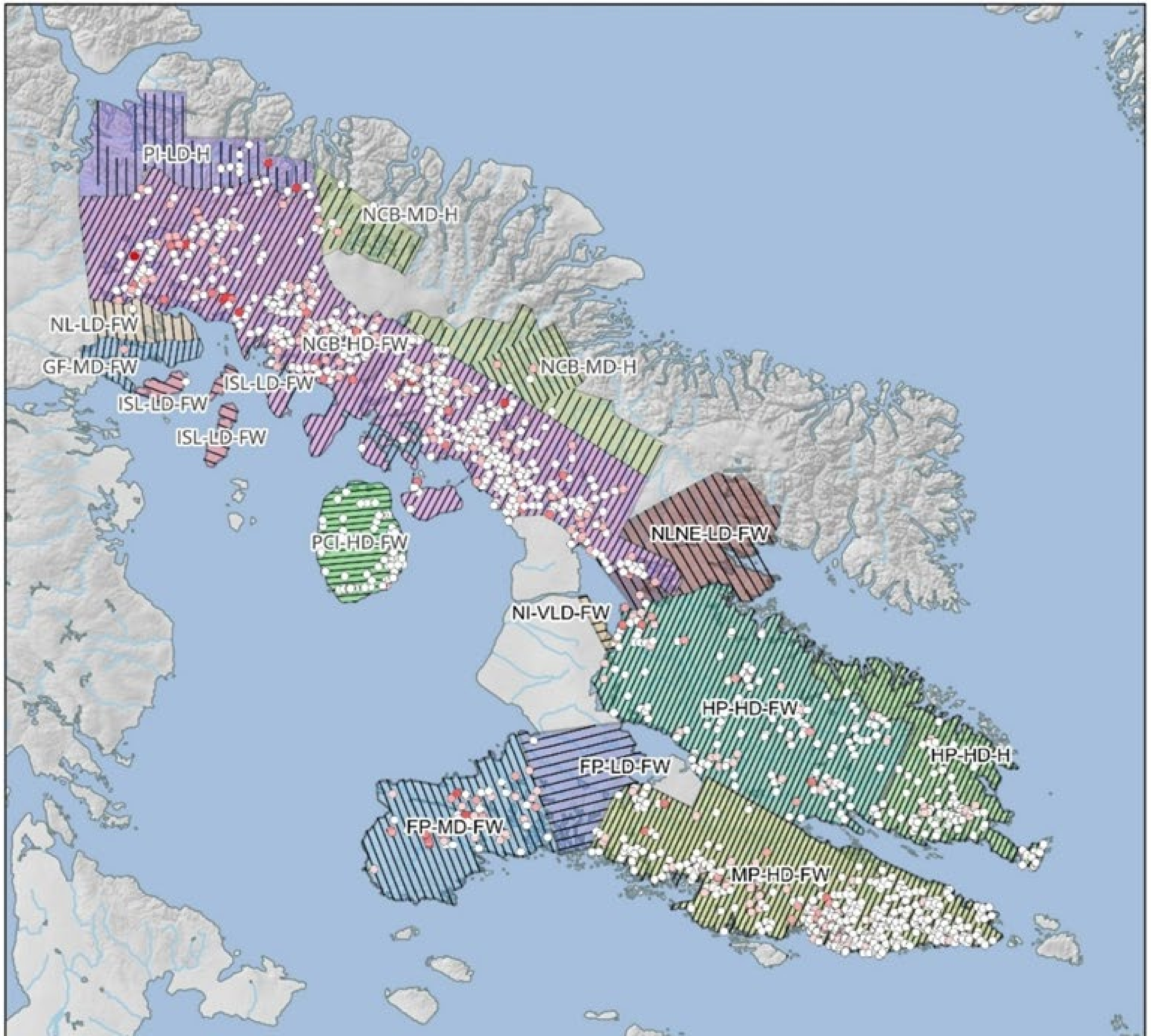

ᒫᔾᔨ 2024 ᐊᒻᒪᓗ 2025 ᑐᒃᑐᐃᑦ ᐅᔾᔨᕆᔭᐅᔪᑦ
March 2024 & 2025 Caribou Observations & strata
North Central Baffin Island Survey - March 2025
South Baffin Island Survey - March 2024
Baffin Glaciers
Observations of Caribou - March 2024
1 - 2
3 - 5
6 - 10
11 - 15
16 - 20
21+
ᐅᔾᔨᕆᔭᐅᔪᑦ ᑐᒃᑐᓂ – ᒫᔾᔨ 2024
Observations of Caribou - March 2025
1 - 2
3 - 5
6 - 10
11 - 15
16 - 20
21+
ᐅᔾᔨᕆᔭᐅᔪᑦ ᑐᒃᑐᓂ – ᒫᔾᔨ 2025
Pond Inlet
Clyde River
Qikiqtarjuak
Dewar Lakes
Igloolik
Sanirajak
Pangnirtung
Iqaluit
Kinngait
Kimmirut
Coral Harbour
PI-LD-RW
NL-LD-FW
GF-MD-FW
ISL-LD-FW
NCB-HD-FW
NCB-LD-RW
PCI-HD-FW
NLN-LD-FW
NLNE-LD-FW
NI-VLD-FW
HP-HD-FW
HP-HD-RW
FP-LD-FW
FP-MD-FW
MIP-HD-FW



Baffin Island 2024 and 2025
Strata 2025
Transects 2025
Observations 2025
Strata 2024
Transects 2024
Observations 2024
NCB10
CB
PCI
NLNELD_
NIVLD_
HPHD_Heli
HPHD_Fixed
FPMD_
FPLD_
0
75
150

ᕿᑭᖅᑖᓗᒃ 2024 ᐊᒻᒪᓗ 2025

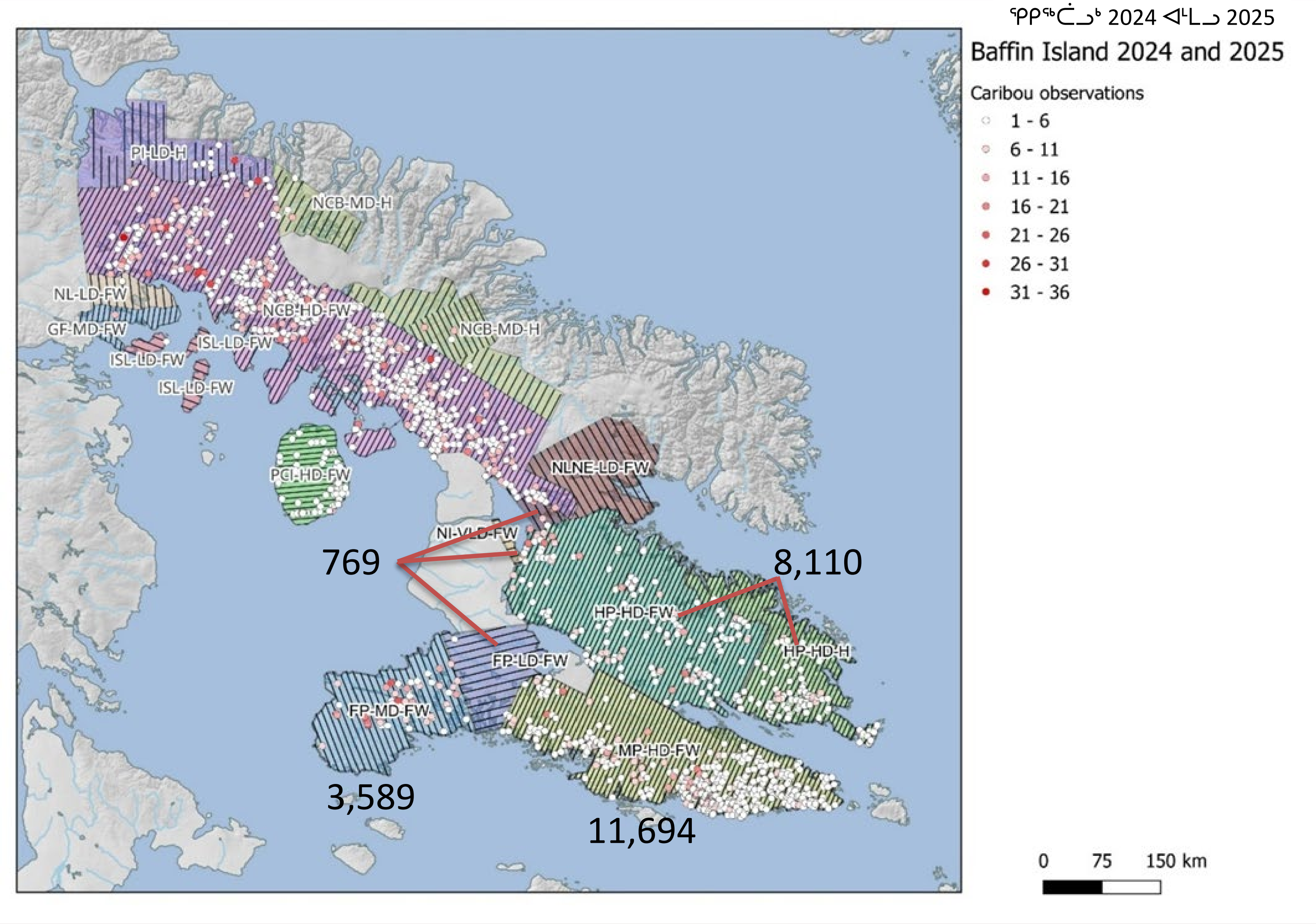
Baffin Island 2024 and 2025

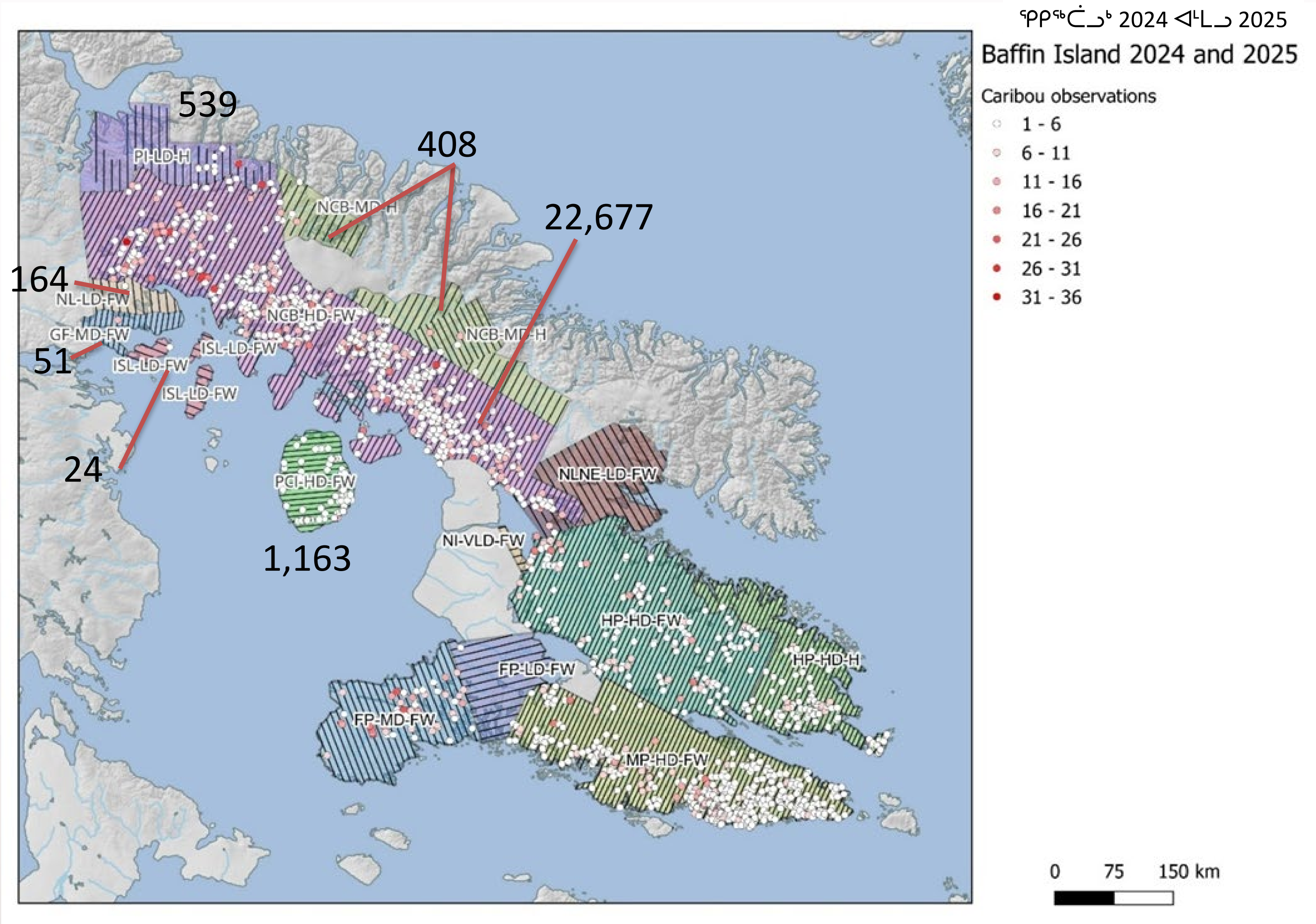


Caribou observations

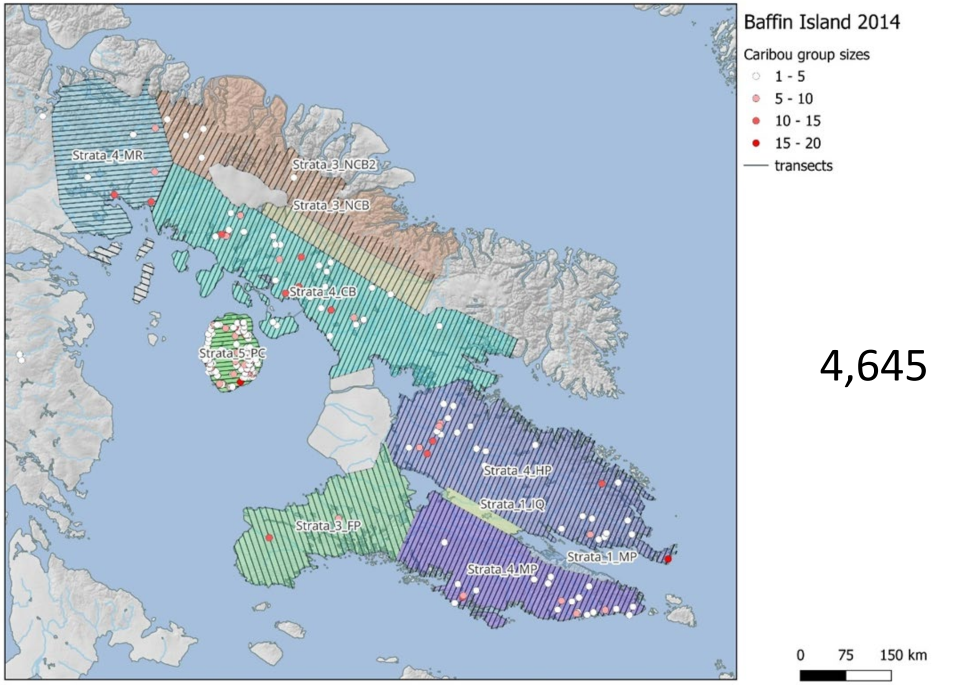
- 1 - 6
- 6 - 11
- 11 - 16
- 16 - 21
- 21 - 26
- 26 - 31
- 31 - 36

0 75 150 km


ᕿᑭᖅᑖᓗᒃ 2024 ᐊᒻᒪᓗ 2025
Baffin Island 2024 and 2025
Caribou observations
1 - 6
6 - 11
11 - 16
16 - 21
21 - 26
26 - 31
31 - 36
PI-LD-H
NCB-MD-H
NL-LD-FW
GF-MD-FW
NCB-HD-FW
ISL-LD-FW
ISL-LD-FW
ISL-LD-FW
NCB-MD-H
PCI-HD-FW
NLNE-LD-FW
NI-VLD-FW
769
8,110
HP-HD-FW
HP-HD-H
FP-LD-FW
FP-MD-FW
MP-HD-FW
3,589
11,694
0 75 150 km

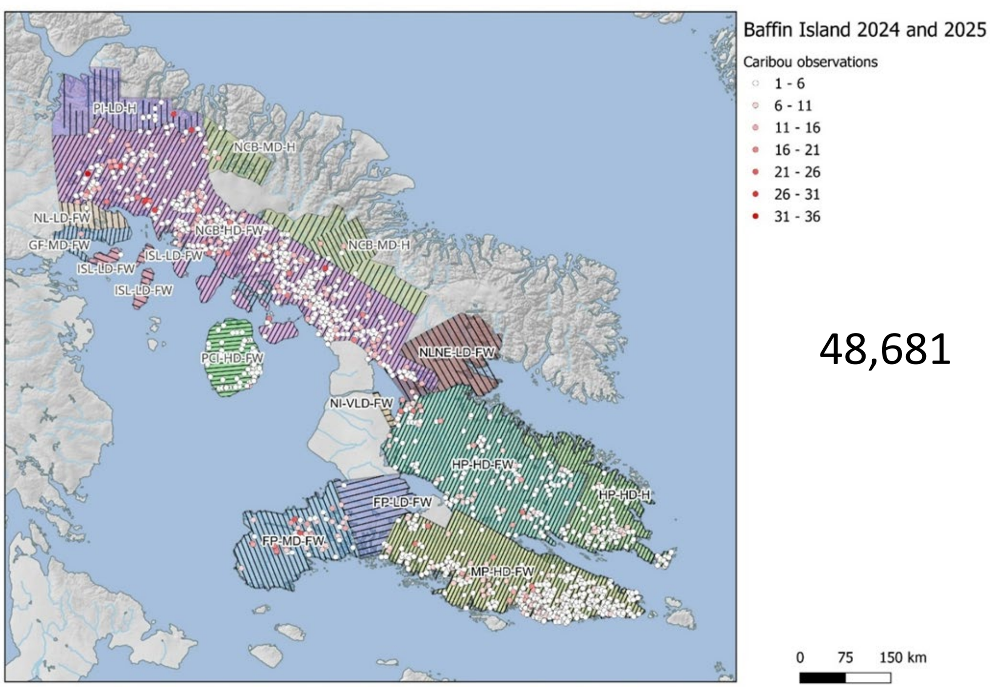

ᕿᑭᖅᑖᓗᒃ 2024 ᐊᒻᒪᓗ 2025
Baffin Island 2024 and 2025
Caribou observations
1 - 6
6 - 11
11 - 16
16 - 21
21 - 26
26 - 31
31 - 36
539
408
22,677
164
51
24
1,163
PI-LD-H
NCB-MD-H
NL-LD-FW
GF-MD-FW
NCB-HD-FW
ISL-LD-FW
ISL-LD-FW
ISL-LD-FW
NCB-MD-H
PCI-HD-FW
NLNE-LD-FW
NI-VLD-FW
HP-HD-FW
HP-HD-H
FP-LD-FW
FP-MD-FW
MP-HD-FW
0 75 150 km

ᕿᑭᖅᑖᓗᒃ 2014

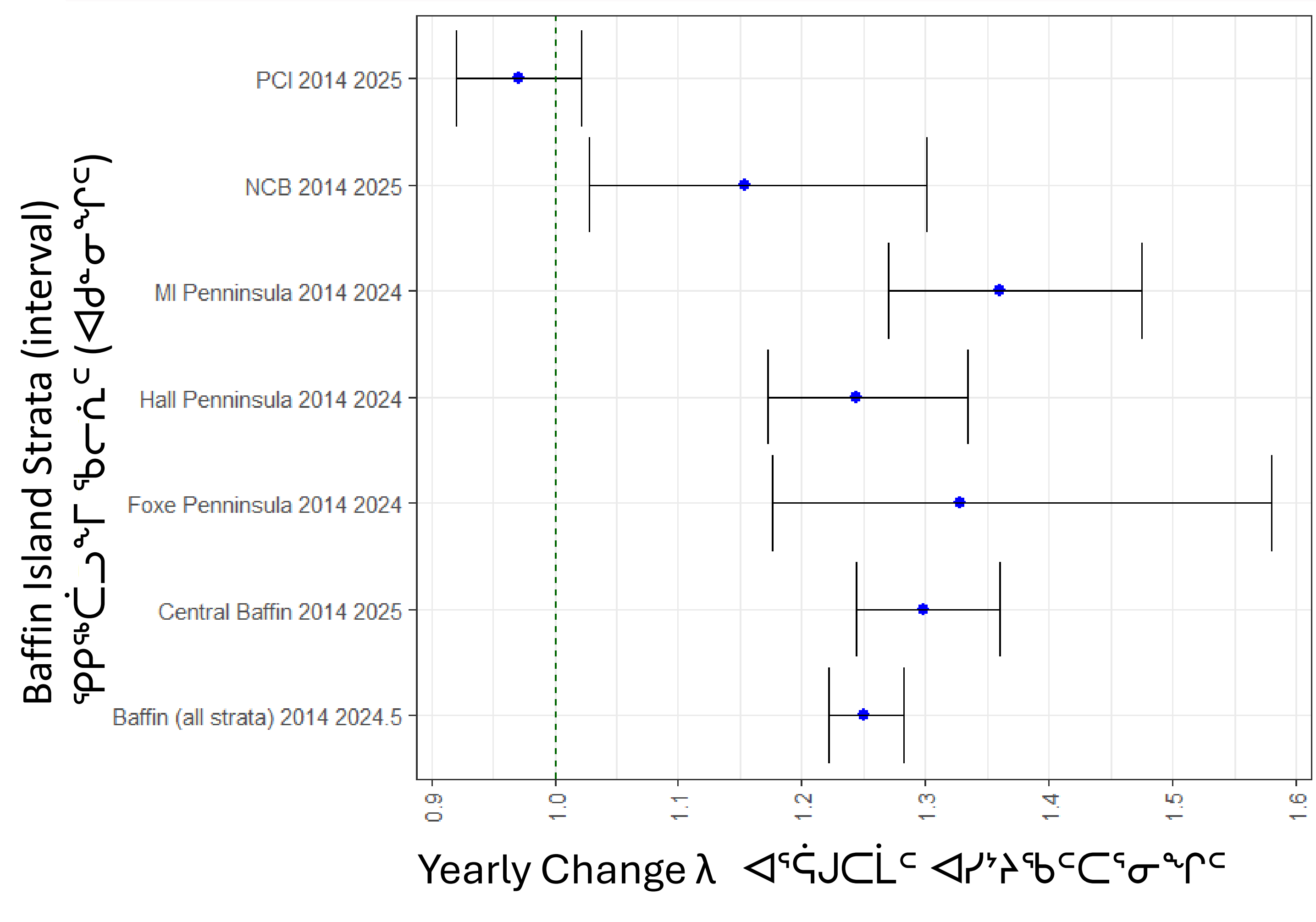


4,645

ᕿᑭᖅᑖᓗᒃ 2024 ᐊᒻᒪ 2025



48,681



Baffin Island Strata (interval)
ᕿᑭᖅᑖᓗᖕᒥ ᖃᓂᓘᑦ (ᐊᑯᓐᓂᖏᑦ)
PCI 2014 2025
NCB 2014 2025
MI Penninsula 2014 2024
Hall Penninsula 2014 2024
Foxe Penninsula 2014 2024
Central Baffin 2014 2025
Baffin (all strata) 2014 2024.5
0.9
1.0
1.1
1.2
1.3
1.4
1.5
1.6
Yearly Change λ ᐊᕐᕌᒍᑕᒫᑦ ᐊᓯᔾᔨᖅᑲᑦᑕᕐᓂᖏᑦ

Recommendations ᐊᑐᓕᖁᔭᐅᔪᑦ

- Based on the current population estimate, all available scientific information, and Inuit qaujimajatuqangit, the Government of Nunavut (GN) recommends the Nunavut Wildlife Management Board modify the existing Baffin Island Total Allowable Harvest to a non sex-selective harvest of 6,000 caribou annually, representing approximately 12.3% of the population, with an annual increase of 125 caribou.

- ᑐᙵᒐᕕᑎᓪᓗᑎᑦ ᒫᓐᓇ ᖃᑦᓯᐅᓇᓱᒋᔭᐅᓂᖏᑦ, ᑕᒪᕐᒥᑦᓯᐊᖅ ᐊᑐᐃᓐᓇᐅᔪᑦ ᖃᐅᔨᓴᖅᓯᓂᕐᒧᑦ ᑐᓴᖅᑕᐅᔪᑦᓴᐃᑦ, ᐃᓄᐃᓪᓗ ᖃᐅᔨᒪᔭᑐᖃᖏᑦ, ᓄᓇᕗᒻᒥ ᒐᕙᒪᒃᑯᑦ (GN) ᐃᒪᓐᓇᐅᖅᑯᔨᓇᔭᖅᐳᖅ, ᓄᓇᕗᒻᒥ ᐆᒪᔪᓕᕆᔨᕐᔪᐊᒃᑯᑦ ᑲᑎᒪᔨᖏᓐᓂᒃ ᐊᓯᔾᔨᖅᓯᕐᑯᔨᓪᓗᑎᒃ ᐱᑕᖃᖅᐸᓖᖅᑐᒥᒃ ᕿᑭᖅᑖᓗᒻᒥ ᑲᑎᓪᓗᒋᑦ ᖃᓯᕌᕈᓐᓇᖅᑎᑕᐅᓂᕐᒧᑦ ᓂᕈᐊᕈᔭᖃᙱᑦᓱᑎᒃ ᐊᖑᑕᐅᔪᓐᓇᖅᑐᓂᒃ 6,000−ᓂ ᑐᒃᑐᓂᒃ ᐊᕐᖀᒍᑕᓖᑦ, ᑭᒡᒐᖅᑐᐃᓪᓗᑎᒃ 12.3%−ᐸᓗᓐᓂᒃ ᖃᑦᓯᐅᓂᕆᔭᖏᓐᓂᒃ, ᐊᕐᖀᒍᑕᓖᑦ ᐅᓄᖅᓯᑎᐊᖅᐸᓪᓗᑎᒃ 125−ᓂ ᑐᒃᑐᓂᒃ.

Consultation on the 2024-2025 Aerial Abundance Estimates of Barren Ground Caribou of Baffin Island and Management Recommendations

February 2026

Format of Consultation

The consultation was held in person at the Aqsarniit Ballroom in Iqaluit on February 6, 2026. The meeting ran from approximately 9:00 a.m. to 5:00 p.m., with a break for lunch from 11:30 a.m. to 1:00 p.m. It opened with a prayer, followed by welcoming remarks from Minister Brian Koonoo. Neil Kigutaq (Director of Operations) chaired the meeting. Krista Shofstall (Baffin Regional Biologist) presented the report and results. The presentation was informal and the HTA members were invited to ask question or comment throughout. Recommendations were presented and discussed.

Attendees

	Given Name	Surname	Position
Meeting Chair	Neil	Kigutaq	Director Wildlife Operations
Survey Lead	Mitch	Campbell	Kivalliq Regional Biologist
Presenter	Krista	Shofstall	Baffin Regional Biologist
Recorder	Jonathan	Pitseolak	Wildlife Technician
Government of Nunavut	Drikus	Gissing	Director of Wildlife Research
Government of Nunavut	Brian	Koonoo	MLA of Tununiq, Minister of Environment and Minister of Cultural and Heritage
Government of Nunavut	Tracy	Wood	Ministerial Political Advisor
Government of Nunavut	Naomie	Pudluk	Assistant Deputy Minister, Environment
Qikiqtaaluk Wildlife Board	Kolola	Pitsiulak	Executive Director
Qikiqtaaluk Wildlife Board	David	Qamaniq	
Qikiqtaaluk Wildlife Board	Mike	Ferguson	Director of Wildlife & Environment
Government of Nunavut	Jeff	McDonald	Wildlife Manager South Baffin Operations
Government of Nunavut	Simon	Gagne	Conservation Officer
Nunavut Inuit Wildlife Secretariat	Jason	Mikki	Executive Director
Iqaluit	David	Alexander	Local Harvester

Arctic Bay	Suujuq		Elder
Arctic Bay	Sakiasie	Qaunaq	HTO Representative
Arctic Bay	Mathew	Akikuluk	HTO Representative
Arctic Bay	Don	Taqtu	HTO Representative
Clyde River	Roger	Etuangat	HTO Representative
Clyde River	Steven	Aippellee	HTO Representative
Clyde River	Jaysie	Tigullaraq	HTO Representative
Igloolik	Lloyd	Idlout	HTO Representative
Igloolik	Natalino	Piugattuk	HTO Representative
Igloolik	Seemee	Qamaniq	HTO Representative
Kimmirut	Mathewsie	Mingeriak	HTO Representative
Kimmirut	Jawlie	Akavak	HTO Representative
Kinngait	Eejeesiak	Eejeetsiak	HTO Representative
Kinngait	Adamie	Aliqu	HTO Representative
Kinngait	Taqialuk	Nuna	HTO Representative
Pangnirtung	Manasie	Maniapik	HTO Representative
Pangnirtung	Jaco	Ishulutaq	HTO Representative
Pangnirtung	Limee	Nakashuk	HTO Representative
Pond Inlet	Jonah	Koonark	HTO Representative
Qikiqtarjuaq	Jaloo	Kooneeliusie	HTO Representative
Qikiqtarjuaq	Jordan	Audlakiak	HTO Representative
Qikiqtarjuaq	Geela	Qiyuqtaq	HTO Representative

Regrets:

Charlie Inuarak (Pond Inlet), David Pitseolak (Pond Inlet) and Jawlie Mingeriak (Kimmirut) were unable to attend.

Summary of the Discussion:

Department of Environment (ENV) consultation aimed to keep Hunters and Trappers Organizations (HTOs) and the Qikiqtaaluk Wildlife Board (QWB) actively involved in discussions regarding Baffin Island caribou monitoring, recent abundance estimates, and proposed management recommendations. The meeting began with procedural matters, including agreement to record the meeting audio. After a round of introductions Krista Shofstall presented the background and results of the 2024–2025 Baffin Island caribou surveys. She reviewed the history of concerns about declining caribou numbers in the early 2000s, the 2012 survey, and the 2014 island-wide survey that estimated approximately 4,600 caribou. This led to an 8-month moratorium and then the establishment of a Total Allowable Harvest (TAH), initially set at 250 male-only caribou (approximately 5% of the

2014 estimated population), with later adjustments to include females and gradual annual increases.

Results from the 2024–2025 Baffin Island population surveys were presented, including updated abundance estimates of approximately 48,681 caribou, indicating a strong recovery since the 2014 survey. The Government of Nunavut (GN)'s starting point for discussion, based on the Baffin Island survey and previously collected data through composition surveys as well as a literature review, was a 5% TAH, with 20% female allocation and annual increase 100 Caribou. These recommendations were reviewed alongside alternative options raised during discussion and were being considered in preparation for submission to the Nunavut Wildlife Management Board (NWMB).

The meetings provided an opportunity for HTO representatives, Elders, QWB representatives, and attendees to ask questions, express concerns, and formally identify recommendations related to harvest levels, female harvest allocation, annual increases, monitoring frequency, collaring programs, industrial impacts, tag distribution, and the integration of Inuit Qaujimajatuqangit (IQ) into management decisions.

Discussion from HTO representatives, Elders, and QWB representatives focused heavily on increasing the harvest rate beyond the GN's initial recommendation of 5% of the updated estimate (2,434 Caribou). Participants identified that:

- Caribou numbers are visibly increasing across Baffin.
- Past harvest levels (1980s–1990s) were much higher.
- Current quotas are too restrictive and create frustration, unreported harvest, and food insecurity.
- Increasing harvest could prevent natural die-offs when populations grow too large.
- Community populations have increased and need more access to country food.

Several HTO representatives proposed raising the Total Allowable Harvest (TAH) to 10% or 15%, with some proposing 20%. Though after the number of caribou were added to the percentages a majority of HTO representatives agreed on 15% (7,302 Caribou) as a starting point. There was also discussion of increasing the female harvest allocation from 20% to 40% of the total harvest.

Concerns raised during the discussion included:

- Sustainability and uncertainty in population estimates. Consideration must be given to the sustainability of the Total Allowable Harvest (TAH) in relation to uncertainty in population estimates. Because aerial survey estimates include a margin of error, the true population size may be higher or lower than the reported estimate. Understanding this uncertainty is important when determining a sustainable harvest level to ensure that management decisions remain precautionary and support the long-term conservation of the herd.

- The risk of increasing harvest levels too quickly on harvest sustainability.
- Limited conservation officer capacity to manage very high TAH levels.
- The need for continued monitoring and community reporting.
- Impacts from mining and industrial development, with some calling for a pause until caribou populations grow further.
- Opposition to carry-over of unused tags (though many HTO representatives supported a one-year trial).

An Elder emphasized Inuit Qaujimajatuqangit (IQ), stating that caribou populations naturally fluctuate and migrate, and expressing concern about overreliance on government science. A couple of HTO representatives advocated reducing or eliminating tags entirely, while the majority of HTO representatives supported keeping a TAH system in place but adjusting the TAH over time and having restrictions on the timing of female harvest (e.g., avoiding harvest of cows with calves in late summer).

After further discussion and compromise, a draft motion was developed by QWB and the GN proposing:

- 6,000 total tags annually (just over 12% of the estimated population).
- 40% female allocation.
- An annual increase of 125 animals.
- Annual meetings between GN, QWB, and HTOs to review status.
- Continued monitoring and consultation.
- No recommendation for carry-over of unused tags (though further discussion may occur).

Many HTO representatives still preferred a 15% harvest (7,302 Caribou) and/or a higher harvest with an annual increase (up to 250). However, all HTO representatives agreed to try the draft motion as a starting point, with the understanding that it can be revisited in future years.

Furthermore, the Government of Nunavut (GN) and representatives from the consultation recommend the following actions to ensure sustainable management and long-term monitoring of Baffin Island caribou:

- Annual Consultation Meetings: Hold yearly meetings with HTOs and the Qikiqtaaluk Wildlife Board to discuss, document, and update caribou population status, management actions, and emerging concerns.
- Spring Composition Studies: Conduct population composition surveys every two years to monitor herd productivity, abundance, and population trends.
- Telemetry Program: Maintain a coordinated telemetry program across North, Central, and South Baffin ranges to:
    1. Identify and understand critical seasonal ranges.
    2. Assess and mitigate potential impacts from industrial development.
    3. Improve caribou range mapping to support land-use planning.
    4. Monitor migratory corridors and prevent disruption from infrastructure.
    5. Track mortality rates and adult female survival to evaluate herd health.
    6. Locate caribou efficiently to support cost-effective surveys and ecological research.
- Future Re-assessment: After 5–7 years, conduct abundance or reconnaissance aerial surveys to re-evaluate the TAH and NQL based on updated population data.

Ongoing monitoring is essential for the effective management and long-term conservation of Baffin Island caribou. Regular surveys, telemetry programs, and continued engagement with co-management partners provide critical information on population trends, herd productivity, seasonal ranges, and potential threats. This information supports informed decision-making and helps ensure that management actions and recommendations to the Nunavut Wildlife Management Board are based on the best available knowledge.

ᐆᒪᔪᓐᓂᐊᑎᑯᑦ ᑲᑐᔾᔨᖃᑎᒌᖕᒋᑦ ᐸᓐᓂᖅᑑᒥ

Pangnirtung Hunters & Trappers Organization

SUBMISSION TO THE

NUNAVUT WILDLIFE MANAGEMENT BOARD (NWMB)

Regular Meeting No. RM 002-2026

FOR

Information: ☐ Decision: ☒

Issue: *Modification of Cumberland Sound Beluga Quotas / Basic Needs Levels to be Implemented in July 2026*

Background:

The Pangnirtung Hunters and Trappers Association (PHTA) recommends that the Nunavut Wildlife Management Board (NWMB) and Minister of Fisheries and Oceans (DFO) approve and implement changes to the applicable Marine Mammal Regulations by July 2026 to manage the harvesting of beluga whales in Cumberland Sound as enabled by the following and other sections of the Nunavut Agreement, in that:

5.1.1 defines "basic needs level" as the level of harvesting by Inuit identified in Sections 5.6.19 to 5.6.25

5.1.2(e) explicitly recognizes "Inuit systems of wildlife management", while other potential management systems (e.g., scientific systems} are not mentioned in Article 5.

5.3.3 states that the NWMB or a Minister shall limit Inuit harvesting only to the extent necessary (a) to effect a valid conservation purpose...

5.7.3 gives powers and functions to HTOs (e.g., the Pangnirtung HTA) to manage their community basic needs level and general aspects of harvesting of wildlife by its community members, including the allocation of community basic needs levels and non-quota limitations among its members.

5.7.8. enables each HTO to develop and adopt by-laws guiding its operations.

Other sections of the Nunavut Agreement and the United Nations Declaration on the Rights of Indigenous Peoples may also affect the roles of the Inuit and the Pangnirtung HTA to manage beluga harvesting by its members but will not be repeated here to save space.

In June 2000, the NWMB decided that the community beluga quota for Pangnirtung should increase from 35 to 41. That final decision was accepted by the DFO Minister.

We note that the correspondence between the NWMB and DFO did not mention the recognition of two populations of beluga within Cumberland Sound, even though the Inuit of Pangnirtung have reported that the different two populations have been recognized by the Inuit of Pangnirtung for many years.

During October 2010 to June 2011, the NWMB reviewed proposals by DFO to list beluga in Cumberland Sound as "threatened" under the Species at Risk Act. The DFO Minister ultimately rejected decisions of the NWMB and listed the beluga as "threatened".

During the listing process, an especially contentious issue centered at the intersection of readily available IQ vs. unavailable scientific information. Based on generations of IQ and more recent Inuit testimony, the Pangnirtung HTA emphasized that two separate beluga populations have occurred within Cumberland Sound for many human generations. That IQ-based position was accepted by the NWMB in 2011 but was rejected by the DFO Minister, contrary to subsection 5.12(e) of the Nunavut Agreement. In 2011, the NWMB found that the IQ supporting the existence of two separate beluga populations in Cumberland Sound was "reliable and persuasive".

In December 2012, the NWMB decided that the basic needs levels of beluga and some other marine mammals would equal the total allowable harvest as established and modified by the NWMB from time to time.

After repeated requests from the Pangnirtung HTA, DFO conducted genetic analyses of samples taken from beluga whales in 2022. In December 2022 DFO presented the genetic results to the Cumberland Sound Beluga Working Group. Of 24 samples evaluated, the majority were from the CSB population (74%), or Clearwater beluga. The remainder (26%) were most similar to whales from the Western Hudson Bay (WHB) population, or "small" beluga. It is unknown whether these proportions from each population were representative of the total harvest in Cumberland Sound, the relative abundance of the two populations in the Sound, or only the coincidental proportions from the small number of samples analyzed.

The above genetic classification of the beluga is generally consistent with IQ. Note that the two populations within Cumberland Sound are referred to differently in the PHTA's current harvesting by-laws for consistency with local references. The "Clearwater" beluga in the PHTA's by-laws are larger animals and concentrate in the area of Clearwater Fiord during early summer, and appear to be comparable to CSB whales from the DFO genetic analyses. On the other hand, the "small" beluga in the PHTA's current by-laws occur mainly on the south side of Cumberland Sound mainly east of Irvine Inlet and appear to be very similar to WHB whales based on ancestral and current IQ, and as suggested by DFO's recent genetic analyses.

In June 2023, DFO confirmed that there is no quota or total allowable harvest for WHB beluga. Nevertheless, DFO has applied the current annual quota of 41 and previous lower quotas to all beluga harvested in Cumberland Sound, despite the consistent objections of the Inuit of Pangnirtung and their HTA for more than 25 years since beluga quotas were first imposed by DFO.

DFO's application of a quota to WHB beluga only within Cumberland Sound appears to be in contradiction of section 5.3.3 of the Nunavut Agreement. The quota of 41 in Cumberland Sound should apply **only** to Clearwater beluga in accordance with the Pangnirtung HTA's current beluga harvesting by-laws.

Inuit harvesters in Pangnirtung can readily determine which population that a harvested beluga may come from based on physical size and other characteristics, and this classification will be recorded in future.

In an email message sent to the Cumberland Sound Beluga Working Group in March 2024 by DFO staff, both the NWMB and DFO reportedly support management of beluga in Pangnirtung based on Inuit-based community management systems. These systems are described by the HTA's beluga harvesting by-laws, and as Recommended below. Once implemented, these measures would be in accordance with sub-section 5.1.2(e) and section 5.3.3 of the Nunavut Agreement.

Consultations:

In 2026, DFO provided documentation about quota changes that occurred in 2000. Neither DFO nor the NWMB provided the Pangnirtung HTA with records of public consultations leading to the current quota level, or to the previous quota levels of 35 or other prior quotas.

According to records of the Cumberland Sound Beluga Working Group in March 2024, both NWMB and DFO support management of beluga in Pangnirtung by Inuit-based community management systems, as long as management details are shared with NWMB and DFO.

In May 2026, M. Ferguson of the Qikiqtaaluk Wildlife Bord (on behalf of the Pangnirtung HTA) met with C. Friesen of DFO to discuss potential concerns that DFO may have regarding implementation of the current version of the HTA's beluga by-laws. Four concerns or requests were identified: 1) potential inadvertent harvesting of Clearwater beluga after an initial harvest of 41 while Inuit may continue harvesting small (WHB) beluga, 2) potential geographic separation of harvesting of Clearwater and small beluga, 3) potential timing separation of harvesting of Clearwater and small beluga, and 4) more collections of samples from small beluga to continue to examine their genetic differences from Clearwater beluga. Follow-up responses from the Pangnirtung HTA Board were: 1) Although unlikely, any inadvertent harvesting of Clearwater beluga above or below 41 will be compensated by a commensurate adjustment in the quota in the following year, 2) and 3) geographic zones and timing schedules of the two types of belugas are difficult to prescribe because these aspects of their ecology and movements may vary between years, although the two types are not seen in the same places at the same time, and 4) the harvesters and the PHTA will continue to support DFO to collect samples from harvested beluga in Cumberland Sound, although higher payments and more DFO staff assistance should be negotiated.

Recommendations:

The Pangnirtung HTA requests approval from the NWMB of the following:

- Modify the description of the **current quota or Basic Needs Level of 41** for "the Pangnirtung community quota for beluga" (as per item i) in NWMB letter of 17 July 2000 to DFO Minister) **to apply only to Clearwater beluga** in Cumberland Sound.

- Modify the current quota or Basic Needs Level for Clearwater beluga to **enable annual adjustments**, if applicable, for any inadvertent harvesting of Clearwater beluga above or below 41 by a commensurate adjustment in the quota in the following year;

- Modify the description of the **current quota or Basic Needs Level of 41** for "the Pangnirtung community quota for beluga" (as per item i) in NWMB letter of 17 July 2000 to DFO Minister) **to clearly exclude any limitation of harvesting of small beluga, as per the PHTA's beluga harvesting by-laws**.

- Explicitly recognize the ability of Pangnirtung harvesters to distinguish and identify both the larger Clearwater beluga and the smaller beluga as per the Pangnirtung HTA's beluga harvesting by-laws.

- Recognize the Pangnirtung HTA's willingness to continue to provide harvest data and samples from harvested beluga, subject to terms and conditions to be negotiated between the PHTA and DFO.

Prepared by: Michael Ferguson *(on assignment to the Pangnirtung HTA for this file as approved by the Executive Committee of the Qikiqtaaluk Wildlife Board)*

Date: May 15, 2026

Cumberland Sound Beluga Harvesting and Conservation By-laws

Pangnirtung Hunters and Trappers Association (HTA)

Approved during the Annual General Meeting of the HTA. December 14, 2024,

Updated based on an HTA Board decision on May 11, 2026 (see 2.1.2)

1. Introduction

ˋ1.1. The Nunavut Agreement and Recognition of Inuit Systems of Wildlife Management

These Beluga Harvesting and Conservation By-laws are guided by Article 5 for Wildlife of the Nunavut Agreement, especially sections 5.1.2 – Principles, 5.1.5 – The Principles of Conservation, 5.3.3 – Restricting or limiting Inuit harvesting only to the extent necessary, and 5.7.3 – The powers and functions of HTOs.

The Pangnirtung HTA recognizes that the Nunavut Agreement is part of the Constitution of Canada, and therefore provisions of the Agreement supersede provisions of federal legislation, acts and regulations, which may differ in part from the Agreement. The powers and functions of the Pangnirtung HTA are derived directly from the Nunavut Agreement, not from the Nunavut Wildlife Management Board or from the federal Fisheries Act.

Important elements of the Nunavut Agreement considered for these By-laws include but are not limited to the following:

5.1.2 This Article recognizes and reflects the following principles:

(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;

5.1.5 The principles of conservation are:

(c) the maintenance of vital, healthy, wildlife populations capable of sustaining harvesting needs[1] as defined in this Article; and

5.3.3 Decisions of the NWMB or a Minister made in relation to Part 6 [Harvesting] shall restrict or limit Inuit harvesting only to the extent necessary:

(a) to effect a valid conservation purpose; ...

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[1] Article 5 addresses harvesting needs only in terms of the Basic Needs of Inuit, which the NWMB may review and adjust based on section 5.6.26 of the Agreement.

or

(c) to provide for public health or public safety.

Sub-section 5,1,2(e) of the Nunavut Agreement "recognizes Inuit systems of wildlife management" in Nunavut, while other general systems of wildlife management (e.g., scientific systems) are not explicitly recognized in Article 5 of the Nunavut Agreement. Therefore, the Pangnirtung HTA asserts that Inuit systems of beluga management have primacy over such other systems.

1.2 Types or Sub-populations of Cumberland Sound Beluga

The Inuit of Pangnirtung and the Pangnirtung HTA have long recognized that the beluga in Cumberland Sound are made up of two different types or sub-populations, as described below:

(a)` The beluga that calve in Clearwater Fiord (see Fig.1 below) are readily recognized by experienced Inuit of Pangnirtung based on their larger body size as adults, fatness and skin colour, even when these beluga are outside Clearwater Fiord while migrating to and from the fiord. Upon arrival in Clearwater Fiord in late June or early July in big groups, their outer layer of skin is yellow and in its early stage of shedding. These beluga are fat, and most float when killed.;[2] In these by-laws these beluga are referred to as "Clearwater beluga". and

(b) Smaller beluga in Cumberland Sound are readily recognized by experienced Inuit of Pangnirtung based on their smaller body size as adults, by having less fat, spending more time in faster currents, and having different migratory movements, and distribution as follows (in these by-laws these beluga are referred to as "smaller beluga"):

  (i) Smaller beluga are usually first seen near the floe edge in Cumberland Sound during April – June, are whiter in colour and do not show any sign of shedding as Clearwater beluga do; are seen in smaller groups; and are generally easier to harvest than Clearwater beluga;[3] and

  (ii) Smaller beluga are also seen in July and later months before freeze-up on the west side of Cumberland Sound, when their skin (Maayak) is thicker with a stronger taste[4]

[2] Kilabuk, P. 1998. A Study of Inuit Knowledge of the Southeast Baffin Beluga. Nunavut Wildlife Management Board. Section: Distinguishing the Different Populations, Population 1 Page 53.
[3] Kilabuk, P. 1998. A Study of Inuit Knowledge of the Southeast Baffin Beluga. Nunavut Wildlife Management Board. Section: Distinguishing the Different Populations, Population 2 Page 53.
[4] Kilabuk, P. 1998. A Study of Inuit Knowledge of the Southeast Baffin Beluga. Nunavut Wildlife Management Board. Section: Distinguishing the Different Populations, Population 3 Page 53.

1.3 Establishment, Removal or Modification of Beluga Harvesting and Conservation By-laws, Guidelines and Rules

(a) Beluga harvesting and conservation by-laws, guidelines, rules and related policies of the Pangnirtung HTA may be established, removed or modified upon approval of a motion at an Annual General Meeting with the support of a majority of the HTA members in attendance;

(b) Such motions approved at an Annual General Meeting will be announced twice on the local radio, and printed notices will be posted in public places within the community for at least one week.

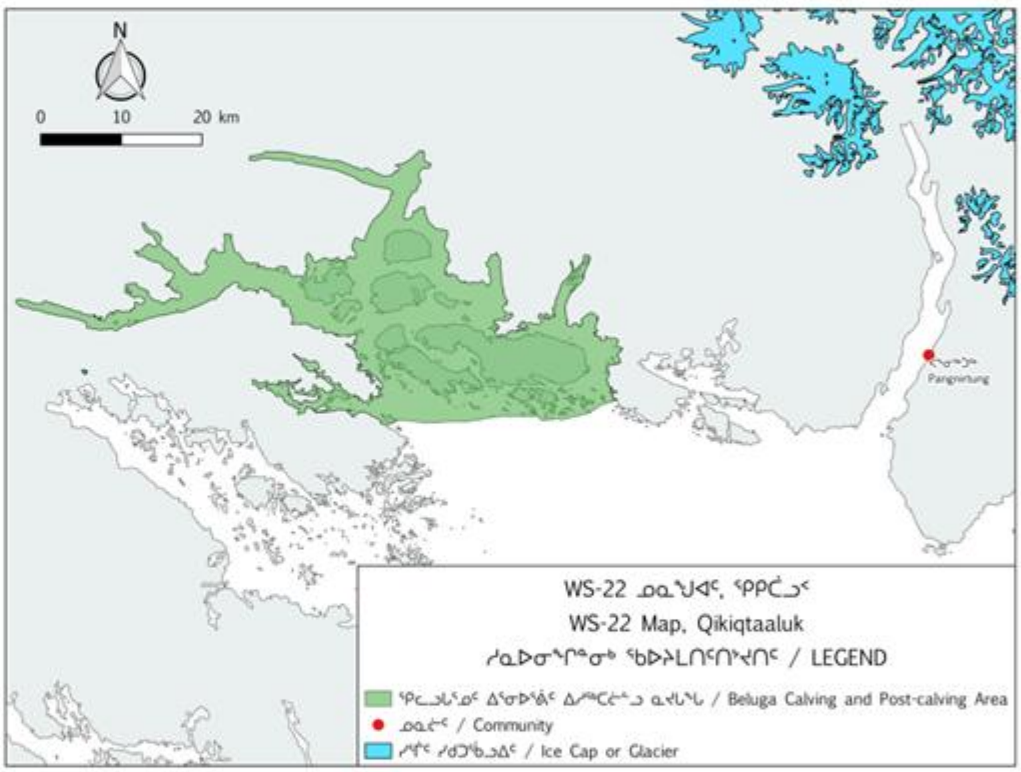

Figure 1. Clearwater Beluga Conservation Area.

2. <u>General Conservation of Cumberland Sound Beluga</u>

2.1 Conservation of Clearwater Beluga in Cumberland Sound

2.1.1 <u>Harvest Prohibition within Clearwater Beluga Conversation Area</u>

The Pangnirtung HTA does not allow harvesting of Clearwater beluga while they are in the Clearwater Beluga Conversation Area (Fig. 1).

2.1.2 Harvest Limitations and Potential Annual Adjustments for Clearwater Beluga

(a) Subject to 2.1.2(c), the total annual allocation for harvesting of Clearwater beluga is 41, while Clearwater beluga may be outside of the Clearwater Beluga Conversation Area. The harvest year begins on April 1 and ends on March 31 of the following calendar year.

(b) Each HTA member will be limited to a maximum of one Clearwater beluga annually provided that the total quota for Clearwater beluga has not been reached.

(c)` The annual allocation for harvesting of Clearwater beluga may be adjusted, if applicable, for any inadvertent total harvest of Clearwater beluga above or below 41 by a commensurate adjustment in the total harvest allocation in the following year;

2.1.3 Proposed Prohibition of Non-Traditional Land Use Activities in Clearwater Beluga Conservation Area

(a) The Pangnirtung HTA supports prohibition of all of the following non-tradition land and marine activities in and near the Clearwater Beluga Conservation Area (Fig. 1):

- Mineral Exploration and Production
- Oil and Gas Exploration and Production
- Seismic Testing
- Sonar
- Disposal at sea
- Obnoxious Land Use
- Quarries
- Hydro-electrical and related infrastructure
- Linear Infrastructure
- Tourism
- Exploitive Scientific Research
- All ship traffic, smaller vessels and watercraft.

(b) For clarity, activities of local tourism outfitters and guides who are also members of the Pangnirtung HTA are not subject to the tourism prohibitions listed in 2.1.3(a).

(c) A Indigenous Protected and Conserved Area on the waters and adjacent lands of the Clearwater Beluga Conservation Area was proposed.

2.2 Conservation of Smaller Beluga in Cumberland Sound

2.2.1 Recognition of Smaller Beluga in Cumberland Sound

The Inuit of Pangnirtung and the Pangnirtung HTA readily recognize smaller beluga based on their distinctive physical and other characteristics compared to Clearwater beluga (see section 1.2).

Fisheries and Oceans Canada (DFO) has recently summarized data on genetic differences between these two types of beluga. Classification of Clearwater beluga and smaller beluga in Cumberland Sound are recognized herein based on Inuit Qaujimajatuqangit, and is not dependent on scientific differences. The similarities of smaller beluga in Cumberland Sound with Western Hudson Bay beluga has been recognized by Pangnirtungmiut and the Pangnirtung HTA for decades or longer.

DFO has imposed quotas on all Cumberland Sound beluga without distinguishing between the two sub-populations, despite Inuit Qaujimajatuqangit about the distinctiveness of the two types. Western Hudson Bay beluga are not subject to any harvesting quotas in other parts of their range.

The Pangnirtung HTA no longer recognizes any quota on smaller beluga in Cumberland Sound. Inuit system of wildlife management is recognized in the Nunavut Agreement and therefore takes primacy in these by-laws.

2.2.2 Elimination of Harvest Limitations on Smaller Beluga in Cumberland Sound

Harvesting of smaller beluga in Cumberland Sound will not be limited by quota.

2.2.3 Reporting the Type of Each Beluga Harvested in Cumberland Sound

As per section 3.5 below, each harvester must record and report the type of beluga that he or she may have harvested.

3. Beluga Harvesting Rules, Guidelines and Policies

3.1 Overall Management of the Beluga Harvest

(a) The Pangnirtung HTA has the authority and responsibility to manage the harvesting of beluga by its members under section 5.7.3 of the Nunavut Agreement.

(b) All members of the Pangnirtung HTA must follow these rules, guidelines and by-laws while engaged in any attempt to harvest any beluga.

(c) The Pangnirtung HTA has the authority to enforce these By-laws among its members under the Nunavut Agreement.

(d) The Board of the Pangnirtung HTA may temporarily stop HTA members from actively harvesting beluga for the following reasons:

- (i) public safety or related concerns,
- (ii) respect for any wildlife in the harvesting area, and/or
- (iii) avoid or limit the potential waste of any beluga.

(e) The Board of the Pangnirtung HTA may reprimand or temporarily remove a member's beluga harvesting right if that member has broken any of the HTA's beluga harvesting by-laws, decisions, guidelines, rules or policies, after investigating the matter and passing a motion by the Board:A reprimand or removal of beluga harvesting rights may include the following:

- (i) Having an Elder speak to the member,
- (ii) Determining other consequences for the HTA member if the member has been found to have broken any HTA by-law, guideline, rule or policy; and/or
- (iii) Permit the member to keep the beluga that he or she may have already caught.

(f) At the discretion and by motion of the Board of the Pangnirtung HTA, additional allocation or non-quota restrictions, limitations, or conditions may be established, removed or modified for the harvesting of beluga by any or all HTA members, specifying whether specific limitations, restrictions or conditions apply to Clearwater beluga or small beluga or both.

3.2 Equipment and Firearm Guidelines

3.2.1 HTA members engaged in beluga harvesting must provide and have available and use all tools, equipment and firearms needed for successful harvesting, including but not limited to the following:

- (a) A **harpoon** and a buoy (avataq)
- (b) A 243 or stronger rifle
- (c) Dragging equipment (to recover any sunken beluga)
- (d) Enough flotation/life vests for all passengers on the boat
- (e) Retrieval hook with adequate line
- (f) Sampling kit (if applicable)

3.3 Harvesting Guidelines

(a) Any outfitter with tourists on board his or her boat is not allowed to go into active beluga harvesting areas. This is to avoid potential activity conflicts and ensure public safety.

(b) All HTA members engaged in beluga harvesting must assess and predict likely weather and sea conditions, including but not only: the travelling distances by boat and the load in the boat in order to avoid leaving their catch behind due to environmental conditions.

(c) Younger harvesters should be accompanied by an experienced harvester to ensure proper harvesting and butchering methods are used.

(d) Harvesters will not harvest a calf or an adult female with a calf.

(e) Harvesters must not injure a beluga and leave it behind. The harvester must make every reasonable effort to land any injured beluga.

(f) Harvesters must not sink a beluga on purpose.

(g) The first person to hit or strike the beluga is known to have caught the beluga.

(h) Anyone that did not harm a beluga with a rifle will be known as not having caught the beluga.

(i) HTA members must kill any and all beluga that they have injured and continue to only go after any injured beluga before going after another one.

(j) HTA members are not to leave behind any meat from harvested beluga that may be deemed edible. Generally, all meat of a beluga is considered edible. An Elder may be consulted if necessary.

(k) Any beluga meat should not be left on the ice or on the shore, and harvesters should give away any meat that is not suitable for humans to dog owners.

(l) Any beluga trapped because of ice conditions and later caught by an HTA member will not be taken from the quota. Nevertheless, all harvesting information about the harvest of the entrapped beluga will be recorded by the HTA member and reported to the HTA. (See section 3.4 below.)

3.4 Recording and Submission of Harvest Information and Samples

(a) Each member of the HTA must write down on a note pad, paper or electronic device all pertinent information about his or her harvest whenever he or she catches a beluga.

(b) Each member of the HTA must provide the information about each beluga that he or she harvested to the HTA on the next day after he or she returns to the community.

(c) Each member of the HTA that harvests a beluga must provide the following information[5] to the HTA Manager/Harvest Monitor. If the information is submitted to the Conservation Officer employed by the Government of Nunavut's Department of Environment, or a DFO Fisheries Officer, a copy should also be provided to the HTA:

(i) Name and Home Address of Harvester
(ii) Date of Harvest
(ii) Location of Harvest: Name and GPS Coordinates
(iv) Type of Beluga: Clearwater, Smaller; Other (specify)
(v) Sex: Male, Female, Unknown, Other (specify)
(vi) Age Class: Adult with a calf, Adult without a calf, Juvenile, Calf, Other.
(vii) Tissue(s) submitted (specify)
(vii) Quota Tag Number (if applicable)

4. Natural Deaths of Beluga in Cumberland Sound

4.1 Abandoned Calves and Natural Death of Older Beluga in Cumberland Sound

A naturally abandoned calf or any other beluga found dead or near death will be recorded as a natural death and not counted against the annual quota.

4.2 Ice-related Entrapment or Other Hazards Endangering Beluga in Cumberland Sound

Any beluga that may be found entrapped by ice or otherwise likely to die due to a natural or human-made hazard, provided that the situation or injury was not a result caused during harvesting, netting or trapping, may be killed as a humane action where the Conservation Officer (CO) or a Qaujimanilik recognized by the HTA will certify that the beluga was or were near death or likely to die due to the circumstances. After certification by the CO or the Qaujimanilik, the humane kill(s) (or euthanization) will not be counted against the annual quota.

[5] Harvesters could use the SIKU smartphone app for recording information in either Inuktitut, English or French in the field. The SIKU app needs to be set up initially while connected to the internet. The SIKU app is available on the Google Play store or the Apple iOS Play store or at siku.org. The SIKU app is owned by the Arctic Eider Society.

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Pangnirtung Hunters & Trappers Organization

May 14, 2026

Nunavut Wildlife Management Board
310-1106 Ikaluktuutiak Dr.
Iqaluit, Nunavut X0A 3H0
receptionist@nwmb.com

Dear Chairman Shewchuk and Board Members:

I write to request the support and approval of the NWMB for an exploratory allocation of 10t of turbot in the Cumberland Sound Turbot Management Area (CSTMA).

This exploratory allocation would be used to test fish in open water in the fall of 2026 in open water using small inshore boats. We believe that the future success of the turbot fishery in the CSTMA, our inshore fishery and our fish plant operations of Pangnirtung Fisheries Limited (PFL) will have to be based on the combination of fishing through the ice and fishing in open water.

As we have previously illustrated to and discussed with members of the NWMB, NTI, GN and DFO, changing weather patterns, milder temperatures and shorter winters are making it harder to fully prosecute the CSTMA turbot fishery because ice forms later, is not as thick as it used to be, gets broken up more often due to higher winds and more open water outside our fishing areas, and breaks up earlier in the spring. It is in the interest of our HTO members and our community to find ways to more effectively manage this fishery using local *Inuit Qaujimajatuqangit* as well as scientific analysis of the changing weather and ice conditions.

In 2026, we had a very successful turbot fishery through the ice and landed the entire 500t quota plus the allowable 75t carry over form the uncaught quota in 2025. It was our intent to stop the fishery and leave 10t for the pilot project in open water later in the fall, but the fishery was so successful that by the time a full assessment of the landings coming in were tabulated, the full quota and carry over appears to have been landed.

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Pangnirtung Hunters & Trappers Organization

Our fishery is based primary on 3-5 kg turbot that are in the age group of 15-20 years which are much larger fish than what is generally being caught in the offshore fishery or on the Greenland side of the Davis Strait. We believe that this demonstrates a very healthy stock in the CSTMA which can provide significant higher economic benefits to our community than we have seen over the past 20 years.

It is in the context of the successful fishery in 2026 that we must analyze the past fishery performance and weather conditions to prepare for future years. As outlined in the attached briefing note document, the fishery over the past 18 years has averaged only 325t per year. The briefing note also illustrates the rationale for pursuing a pilot project with the 10t allocation in the fall of 2026 to assess conditions and make plans accordingly for the fall of 2027 should the winter ice fishery be less than fully successful. The full catch history by year for the past 18 years as well as the El Nino, La Nina conditions observed are included in the attached Excel file.

Adapting to the changing conditions will allow Inuit organizations such as our HTO to manage our local fisheries resources, using local *Inuit Qaujimajatuqangit,* and testing new fishing strategies along with using established fisheries management tools to best manage the fish resources in our area for the benefit of the community.

Our request to be allowed to fish up to an extra 10t above what was caught in the winter ice fishery in 2026. The intent would be to pursue the open water test fishing in October based on the belief that sharks leave Cumberland Sound when the Beluga leave before October. If catch rates are similar to winter fishing, a 250 hook set would yield about 600kg of catch and a minimum of 8 sets would be required to give any sufficiency to the sample size to determine things like catch rates, catches in different areas, bait used and shark bycatch if any. If sharks are still present in October, more test fishing will need to be done in November albeit with less sets because the data from the October testing of the elements may still be valid unless turbot have moved as well. If there are still sharks in November, then further test fishing may be needed in December. So, if test results are all positive in October, the test may be conclusive with a 5t test fishery, however as much as 10t may be needed for further sampling if the October results are less conclusive. Due to the small scale of this test fishery, it will have no commercial value but may generate enough revenue to allow PFL to cover the costs of the fish harvesters.

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Pangnirtung Hunters & Trappers Organization

If there are data or samples that could be collected for DFO Science from this test fishery, the HTO is supportive of that and the details of the data or sampling requested can be worked out in collaboration with DFO Science.

Should you require any clarification of further information for the assessment of our request, please contact me. I hope you are able to support this pilot project.

Sincerely,

Mark Kilabuk

Mark Kilabuk
Manager
Pangnirtung HTO

Attachments: Briefing Note for the NWMB
CSTMA Turbot Catch History

cc. Jade Owen, NTI, Department of Marine
Zoya Martin, GN, Director, Fisheries and Sealing Division
Christi Friesen, DFO Arctic Region
Jon Johansson, Pangnirtung Fisheries Limited

Cumberland Sound Turbot Quota Request

Briefing Note for the NWMB with Climate Analysis and Strategic Considerations for an Open Water Pilot Project Test Fishery

Prepared for: Nunavut Wildlife Management Board

Subject: Request for 10t open-water turbot quota for Cumberland Sound — fall 2026 pilot

Submitted on behalf of: Pangnirtung Hunters and Trappers Organization

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1. The core argument — last four seasons under consistent management, effort and market conditions with varying outcomes due to weather patterns:

The last four consecutive fishing seasons (2023–2026) have had consistent management, effort, fleet, and operational approach during the January–April fishing window. This four-year period removes confounding variables that affect longer-term comparisons (changes in management, effort, market conditions, or regulatory framework) and isolates the environmental signal and variable ice conditions as the most likely factor resulting in significantly variable outcomes from the fishery.

Fishing Year (Jan–Apr)	Winter	ENSO Conditions	Catch (t)	% of TAC	Outcome
2023	2022–23	Weak La Niña	550.17	110%	Full Jan–Apr season; exceeded TAC via carryover
2024	2023–24	**Strong El Niño**	**290.00**	58%	**Stopped by ice — short season**
2025	2024–25	Cool-neutral (post-El Niño)	**219.00**	44%	**Stopped by ice — short season**
2026	2025–26	Weak La Niña	**574.50**	115%	**Full Jan–Apr season; record catch**

Four-year average: 408.4 t / 81.7% of TAC

Key observations

- Effort, fleet, and management held constant across all four years.
- Catches ranged from 219 t to 574.5 t — a swing of **355 tonnes (64%)**.
- Both strong years occurred under La Niña / cool conditions with reliable ice across the full Jan–Apr window.
- Both weak years occurred during or immediately after the Strong 2023–24 El Niño, when ice conditions prevented a full operating season — both early-season ice formation in

November–December and late-season ice deterioration in March–April affect the harvest.

- The variation is attributable to ice formation, not to capacity, market, or operational factors.

2. The mechanism — why El Niño disrupts Cumberland Sound ice

In the eastern Canadian Arctic, El Niño and La Niña pull the winter weather system in opposite directions with very different consequences for sea ice. **During El Niño**, the Pacific jet stream strengthens and reorganizes, routing more low-pressure storms up the US. East Coast and into Atlantic Canada, Davis Strait, and Baffin Island, while warm, moist air is pushed further north than usual. For Cumberland Sound this means a delayed and disrupted freeze-up in November and December, more frequent winter storms, and — most importantly — heavier early-season snowfall on top of thin new ice. Because snow is roughly seven times more thermally insulating than sea ice, a thick early snowpack effectively stops the ice from thickening, leaving fishers without a safe, stable platform for the January–April turbot season. **The same pattern also shortens the season at the other end:** warm air intrusions and earlier spring melt under El Niño conditions can cause unsafe ice to develop weeks earlier in March and April than in normal years, cutting the operating window from both sides. **During La Niña**, the opposite occurs: the storm track shifts south and weakens, the warm tongue along the Labrador coast and Davis Strait fails to set up, and cold Arctic air settles more reliably over Baffin Island. Ice forms earlier in the autumn, thickens steadily through December and January, and persists safely through March and April — producing the full four-month operating window the fishery depends on.

In short: El Niño brings warm air, storms, and insulating snow that prevent the ice from thickening and accelerate spring breakup; La Niña brings clear, cold, stable conditions that let the ice grow into a working platform and hold it through April.

The senior meteorologist with the Canadian Ice Service has confirmed this pattern publicly for our exact geography, noting that under strong El Niño conditions the warm setup along the Labrador coast and Davis Strait fails to develop normally, disrupting expected ice patterns off Baffin Island.

3. Forecast for the 2026–27 winter — a strong El Niño is now likely

Multiple international climate authorities, as of April–May 2026, are aligned on a strong El Niño developing through summer–fall 2026 and intensifying into the 2026–27 winter:

- **NOAA Climate Prediction Center (April 9, 2026 update):** ENSO Alert System status is *"Final La Niña Advisory / El Niño Watch."* ENSO-neutral conditions are favoured through April–June 2026 (80% chance), but in May–July 2026 **El Niño is likely to emerge (61% chance) and persist through at least the end of 2026.**
- **NOAA / OpenSnow analysis:** Latest forecast indicates an **80% chance of El Niño conditions developing this summer**, with high confidence in the transition, "eventually strengthening into a 'strong' El Niño phase" — defined as Niño 3.4 sea-surface temperature anomalies of +1.5°C or greater.

- **NOAA strength probability (April 2026):** Approximately **50% chance** the developing El Niño reaches "strong" intensity (≥ +1.5°C), and a **25% chance** it reaches "very strong" / "Super El Niño" intensity (≥ +2.0°C) — the highest such probability in years.
- **World Meteorological Organization (May 2026):** Climate models are now strongly aligned, with high confidence in El Niño onset and further intensification. WMO's Chief of Climate Prediction stated: *"Models indicate that this may be a strong event."*
- **ECMWF (Europe), BOM (Australia), and NOAA CFSv2 forecast plumes** all agree on a strong event for 2026–27, with successive monthly forecasts showing **increasing intensity** — the current 2026 trajectory is outpacing the development curves of the 1997–98 and 2015–16 Super El Niño events at the same point in the calendar.

Operational implication for Cumberland Sound: Following the timing pattern observed in 2009→2010, 2015→2016, and 2023→2024, an El Niño developing in summer–fall 2026 and peaking in winter 2026–27 would disrupt ice formation in November–January 2026–27 and impair the January–April 2027 fishing season at both ends — through delayed freeze-up and heavy early snow loading on the front end, and through accelerated spring breakup on the back end. Based on the three precedents in the dataset, a moderate-or-stronger El Niño produces an average catch of **229.9 t (46% of TAC)** — roughly half of normal harvest. If the 2026–27 event reaches the "strong" or "super" intensity that current forecasts suggest, the impact could be at least as severe as 2024.

This is not a prediction that the 2027 ice fishery will fail. It is a documented, multi-source forecast that **the risk of failure is substantially elevated**, and the request for a 10t open-water pilot quota is calibrated to that risk.

4. Local ice-thickness verification — SmartICE

The SmartICE program has been actively monitoring ice and snow thickness in Cumberland Sound from Pangnirtung since early 2020, with named local Community Operators (Patrick Kilabuk and Mosesie Akulujuk) deploying SmartBUOY thermistor sensors and SmartQAMUTIK trail-towed sensors. The system measures both snow depth and ice thickness simultaneously along community travel routes, with data published weekly via SIKU.org. Five winters of Cumberland Sound–specific data are available, including the Strong El Niño winter of 2023–24 and the cool-neutral winter of 2025–26.

If the NWMB would like to review it, the SmartICE record for Cumberland Sound trails, by week, for winters 2020–2026, could be requested from:

- **Tyler Spurrell**, Technical Operations Manager — tspurrell@smartice.org

This data — Inuit-operated, locally measured, season-by-season — would most likely directly demonstrate the snow-on-ice mechanism described in Section 2 using community-based monitoring rather than outside science.

5. The full 18-year fishing and catch record (for reference and supporting context)

The eighteen-year average (2009–2026, 2022 included as 0t — COVID closure) catch is 325.2t/ year or 65.0% of TAC.

This conservative long-term average (with 2022 included as zero rather than excluded) avoids any appearance of cherry-picking and supports the claim that the fishery routinely operates well below TAC due to environmental constraints as illustrate by the table below which shows the fishery performs poorly in neutral or moderate/stronger El Nino years.

Catch by ENSO phase (18-year record):

ENSO Phase	Years	Avg Catch (t)	% of TAC
Moderate-or-stronger El Niño	3	**229.9**	**46.0%**
Neutral	3	301.7	60.3%
La Niña (any strength)	9	341.0	68.2%
Weak El Niño	3	396.8	79.4%

The Moderate+ El Niño group (2010, 2016, 2024) is the clear outlier — a 154-tonne / 22-percentage-point gap below La Niña years.

6. The request

The Pangnirtung HTO is requesting a **10-tonne open-water turbot quota** for Cumberland Sound, to be fished in **fall 2026** as a pilot season ahead of the forecast 2026–27 El Niño winter.

Key features of the request

- 10t represents **2% of the 500t TAC** — a small fraction of total stock allocation.
- 10t is **well within historical precedent** — open-water catches of 32.55t (2010), 27.70t (2009), and 19.45t (2021) have all been recorded in past years.
- The request is for **pilot-scale operational readiness** — testing gear, methods, and bycatch profile before the community needs to rely on open-water fishing as a backup. See Section 7 for detail.
- The 2025 fishery left **281 tonnes of TAC uncaught** due to ice limitations — this fish remains in the water, and a 10t open-water harvest is a small fraction of what the ice fishery couldn't reach in 2025.

7. Why fall 2026 specifically — the 10t is a pilot, not an emergency response.

The 10-tonne open-water quota is requested for fall 2026 as a controlled pilot season, not as an emergency response to a winter that has already failed. This timing is deliberate and important.

Open-water turbot fishing from small boats in Cumberland Sound has not been operationally tested at scale by the current fleet and management. Several practical questions need to be answered before the community has to rely on this method as a backup:

- **Greenland shark bycatch risk.** Greenland sharks are present in Cumberland Sound and are a known bycatch concern in open-water turbot longlining elsewhere in the eastern Arctic. The fall 2026 pilot would let the HTO quantify the actual bycatch rate under local conditions, develop mitigation practices, and determine whether the fishery requires gear modifications, time-of-day restrictions, or specific area avoidance — *before* committing to it as a primary harvest method in a bad ice year.

- **Operational readiness.** Gear configuration, set times, depths, soak durations, weather windows, and small-boat logistics in Cumberland Sound's specific conditions all need to be worked out through real fishing, not theory.
- **Catch-per-unit-effort baseline.** Establishing a baseline for what a small boat can realistically harvest in a day, a week, and a season provides the data the HTO need to size any future open-water quota appropriately including the purchase of vessels and gear.

The strategic logic: if NOAA's forecast of a strong-to-very-strong El Niño in winter 2026–27 plays out as expected, the January–April 2027 ice fishery will likely be impaired, as it was in 2010, 2016, and 2024. **If the community waits until that point to start figuring out how to fish open water, an entire year of the remaining harvest is lost** — first to the ice failure itself, and then to the learning curve of trying open-water fishing under pressure with no prior experience and no bycatch data. The lost catch is when significant amounts of quota are left in the water is a large economic loss to the community through lost revenue to fish harvesters and plant workers but also to the fish plant operations that has to manage shipping costs on a smaller output as a direct example. By piloting in fall 2026 under no pressure, the community arrives at the 2027 ice season with a tested method, known bycatch profile, and an operational fleet ready to deploy if needed if the winter ice fishery is limited in success.

8. Caveats to be aware of:

- ENSO is a Pacific-equatorial signal; the link to Cumberland Sound ice is teleconnected (via jet-stream and Arctic Oscillation effects), not direct. The foregoing assessment shows and data supports a clear correlation observed in the local catch record, but not causation.
- The strongest statistical signal is at the **threshold** — Moderate-or-stronger El Niño events. Weak El Niño years do not show the same impact in the catch record. The trends may not illustrate the same indication across all ENSO states.
- Three Moderate+ El Niño data points (2010, 2016, 2024) is a clear pattern but not a large sample. The pattern is a risk indication if 2027 is a moderate+ El Niño year but not a deterministic prediction.

Sources

- Cumberland Sound Turbot Management Area annual catch data (HTA records, 2009–2026).
- NOAA Climate Prediction Center, Oceanic Niño Index (ONI v5), DJF values, via Golden Gate Weather Services.
- NOAA CPC ENSO Diagnostic Discussion, April 9, 2026 (next update May 14, 2026).
- World Meteorological Organization, El Niño / La Niña Update, May 2026.

- Canadian Ice Service public commentary (April 2026).
- SmartICE Monitoring & Information Inc., smartice.org.
- Peer-reviewed literature on snow thermal conductivity and sea-ice growth (MOSAiC expedition findings; Sturm and Massom, 2017).

Cumberland Sound Turbot Management Area — Annual Catch & ENSO Record

TAC: 500 t/year • 15% (75 t) carryover permitted from prior-year unused quota • Fishing season: January–April

Fishing Year (Jan–Apr)	Winter	Total Catch (t)	TAC (t)	% of TAC	DJF ONI	ENSO State
2009	2008–09	183.95	500	36.8%	-0.85	Weak La Niña
2010	2009–10	**65.43**	500	13.1%	+1.50	Moderate El Niño
2011	2010–11	53.96	500	10.8%	-1.31	Strong La Niña
2012	2011–12	287.00	500	57.4%	-0.72	Moderate La Niña
2013	2012–13	315.66	500	63.1%	-0.29	Neutral
2014	2013–14	370.55	500	74.1%	-0.28	Neutral
2015	2014–15	295.03	500	59.0%	+0.69	Weak El Niño
2016	2015–16	**334.26**	500	66.9%	+2.63	Very Strong El Niño
2017	2016–17	459.02	500	91.8%	-0.19	Weak La Niña
2018	2017–18	503.73	500	100.7%	-0.77	Weak La Niña
2019	2018–19	390.60	500	78.1%	+0.89	Weak El Niño
2020	2019–20	504.63	500	100.9%	+0.64	Weak El Niño
2021	2020–21	456.25	500	91.3%	-0.91	Moderate La Niña
2022	2021–22	0.00	500	0.0%	-0.82	Moderate La Niña (closed — COVID-19[1])
2023	2022–23	550.17	500	110.0%	-0.54	Weak La Niña
2024	2023–24	**290.00**	500	58.0%	+1.92	Strong El Niño
2025	2024–25	219.00	500	43.8%	-0.45	Neutral (cool)
2026	2025–26	**574.50**	500	114.9%	-0.55	Weak La Niña / cool[2]

Summary Statistics (2022 included as 0 — COVID closure[1])	
18-yr Avg Annual Catch (t)	325.2
Avg TAC Utilization	65.0%

Maximum Annual Catch (t) — record	574.50
Minimum Annual Catch (t)	0.00
Years Reaching ≥90% of TAC	6
Years Below 50% of TAC	5

Average Catch by ENSO Phase (2022 included as 0)

ENSO Phase	Years	Count	Avg Catch (t)	Avg % of TAC
Moderate-or-stronger El Niño	2010, 2016, 2024	3	271.5	54.3%
Weak El Niño	2015, 2019, 2020	3	396.8	79.4%
Neutral	2013, 2014, 2025	3	301.7	60.3%
La Niña (any strength)	2009, 2011, 2012, 2017, 2018, 2021, 2022, 2023, 2026	9	341.0	68.2%

[1] The Cumberland Sound turbot fishery did not operate in 2022 due to a COVID-19-related closure. The catch is recorded as 0 t and included in averages — this conservative treatment lowers the long-term average and avoids overstating the fishery's typical performance.

[2] 2025–26 winter ONI: NOAA reports SON +0.5°C, OND −0.55°C, indicating an ENSO-neutral / cool-neutral state transitioning toward weak La Niña conditions during the freeze-up and fishing window. Confirmed weak La Niña / cool-neutral.

Carryover note: Catches exceeding 500 t (2018, 2020, 2023, 2026) reflect the 15% (75 t) carryover provision: when prior-year catch falls short of TAC, up to 75 t of unused quota carries forward. Each over-100% year follows a year that left substantial quota uncaught — and 2026 follows 2025's 219 t catch (281 t left uncaught), authorizing the maximum 75 t

ENSO data source: NOAA Climate Prediction Center, Oceanic Niño Index (ONI v5), DJF (Dec–Jan–Feb) values, via Golden Gate Weather Services compilation.

Color key: Strong/Very Strong El Niño = dark orange • Weak/Mod El Niño = peach • Neutral = grey • Weak/Mod La Niña = light blue • Strong La Niña = darker blue • Closed year = yellow • New record = green.

SUBMISSION TO THE

NUNAVUT WILDLIFE MANAGEMENT BOARD

FOR

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

Issue: To seek Nunavut Wildlife Management Board (NWMB) approval of the Tallurutiup Imanga National Marine Conservation Area interim management plan and non-quota limitations on harvesting by non-Inuit within specific zones of Tallurutiup Imanga NMCA.

Background:

(a) How the issues relate to the NWMB mandate;

The Aulattiqatigiit Board, the Inuit-Canada co-management board for Tallurutiup Imanga National Marine Conservation Area (NMCA), is seeking NWMB approval of the aspects in the interim management plan (IMP) that concern wildlife management (5.2.34 (c)) and non-quota limitation on harvesting by non-Inuit (5.6.48) (see Annex I). This IMP, once approved, will be in place for five years, when it will be replaced by a full management plan.

(b) Why the issue is being presented;

The IMP is being submitted to the NWMB for approval in accordance with:

- *Nunavut Agreement*, Article 5.2.34 (c): *"In addition to its primary functions outlined in Section 5.2.33, the NWMB shall in its discretion perform the following functions related to management and protection of wildlife and wildlife habitat: (c) approve plans for management and protection of particular wildlife habitats including areas within Conservation Areas, Territorial Parks and National Parks"*;
- *Nunavut Agreement*, Article 5.6.48: *"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, non-quota limitations on harvesting in the Nunavut Settlement Area";* and;
- Tallurutiup Imanga IIBA, Section 7.3.8: *"Once the Aulattiqatigiit Board has reached a consensus decision in accordance with section 5.8 of this Agreement, the proposed* [interim] *Management Plan will be provided to the Nunavut Wildlife Management Board for its approval of the parts of the proposed Management Plan related to the management and protection of particular wildlife habitat, in accordance with Article 5 of the Nunavut Agreement."*

No wildlife management measures that affect Inuit rights-based activities provided for in the *Nunavut Agreement* are being proposed in the IMP. Management measures related to wildlife (e.g. zones prohibiting or restricting hunting and/or fishing by non-beneficiaries) were developed to increase the protection of wildlife and its habitat.

(c) The key facts and circumstances relating to the issue; and

Tallurutiup Imanga NMCA is a marine conservation area located in the northern Qikiqtani region and includes some terrestrial areas (three significant bird cliffs and all islands under 400 ha). It is an ecological driver for much of the eastern Arctic and provides important habitat for nearly all Arctic marine species.

It is jointly managed by the Qikiqtani Inuit Association and the Government of Canada (Parks Canada, Fisheries and Oceans Canada, and Transport Canada). An Inuit Impact and Benefit Agreement was signed for Tallurutiup Imanga NMCA in 2019, but the establishment of the site under the *Canada National Marine Conservation Areas Act* remains outstanding. One of the remaining steps needed to complete the establishment of Tallurutiup Imanga NMCA is to develop an IMP.

The IMP will guide the management of Tallurutiup Imanga NMCA while a comprehensive 10-year Management Plan is developed within five years of the establishment of the NMCA. The development has been led by a Planning Committee, which consists of two representatives from the Qikiqtani Inuit Association, one representative from Parks Canada, and one representative from the Government of Nunavut. The IMP has been informed by extensive consultation with the associated communities, as well as input from stakeholders and the public, from 2018 to 2025. The communities associated with Tallurutiup Imanga NMCA are Ausuittuq (Grise Fiord), Qausuittuq (Resolute), Ikpiarjuk (Arctic Bay), Mittimatalik (Pond Inlet), and Kangiqtugaapik (Clyde River).

The IMP contains a vision, management objectives and targets, and a zoning plan that address the protection and conservation of Tallurutiup Imanga ecosystems and cultural heritage while supporting sustainable use and respecting Inuit rights. The vision describes the desired future state of Tallurutiup Imanga NMCA in 15-20 years. The management objectives are broad outcomes to accomplish over the life of the IMP, with associated targets that are more specific and will measure progress towards achieving the objectives. They focus on the development and assessment of tools and processes to protect the natural and cultural heritage of Tallurutiup Imanga; protect Inuit rights and promote community well-being, support collaborative research and monitoring, and reinforce public safety. The zoning plan sets the management intent for different areas of Tallurutiup Imanga NMCA. Zoning describes what activities can take place in an area, when they can take place, and under what conditions. In particular, the zoning plan creates spatial and temporal restrictions to protect sea ice, areas of importance to the communities and key species such as Narwhal, Beluga, Walrus and sea birds. **Inuit rights-based harvesting and traditional use are not impacted by IMP restrictions**. However, some zones prohibit and/or restrict recreational fishing, commercial fishing, and hunting, trapping and gathering by non-Inuit either year-round or on a seasonal basis. The zoning is divided into an ice-season zoning plan and an open-water season zoning plan, to better reflect the realities of each season.

(d) The estimated time required to orally present the issue (excluding questions/discussion).

Representatives from the Qikiqtani Inuit Association and Parks Canada will deliver a 45 to 60minute PowerPoint presentation (enclosed) that provides details about the management planning process, an overview of the interim management plan (i.e., vision, objectives, and zoning), and the results of consultation.

Consultation:

The following is a summary of consultations that were undertaken between 2018 and 2025 to develop the interim management plan for Tallurutiup Imanga NMCA. The consultation report (enclosed) provides a comprehensive description of the Tallurutiup Imanga planning committee's consultations with Inuit, partners, stakeholders, and the Canadian public through meetings, workshops, open houses, and community events that played an integral role in the development of the interim management plan and what we heard during the consultation process, including validating what we heard with communities.

- **2018 - 2019 community consultations:** Consultations were held in Ausuittuq, Qausuittuq, Ikpiarjuk, Mittimatalik, and Kangiqtugaapik to gather information about what should be in the IMP. The Planning Committee met with hamlet councils, Hunters & Trappers Organizations and other local organizations and held public information sessions. 158 individuals attended those consultations. The Planning Committee used what was heard at these meetings to draft the IMP.

- **2018 - 2019 stakeholder engagement:** Stakeholders in the cruise, shipping, mining, and tourism industries, as well as NGOs, researchers and the Qikiqtaaluk Wildlife Board, were engaged through presentations, meetings, and workshops. Sixty-eight stakeholder groups attended 16 engagement opportunities. Letters and emails were also received from stakeholders. Inputs received during this stakeholder engagement informed the draft IMP.

- **March 2024 community consultations:** The Planning Committee travelled to the five communities associated with Tallurutiup Imanga NMCA to present the draft IMP and ensure that community concerns and priorities had been adequately addressed. Meetings were held with hamlet councils, Hunters & Trappers Organizations, Community Land and Resource Committees, and the Nauttiqsuqtiit (or Inuit stewards) over 2 days in each community. Open houses were also held in each community. A total of 103 individuals attended these meetings. During these consultations, the Planning Committee received additional information on values that need to be protected (e.g. rights, culture, wildlife) and about the threats to these values in Tallurutiup Imanga NMCA (e.g., concerns about pleasure craft and cruise ship behavior and impacts, concerns about capacity to respond to public safety or environmental incidents). The Planning Committee used this information to further refine the objectives and targets and the zoning sections of the draft IMP. The Planning Committee also received comments that improved the vision statement.

- **November 2024 - January 2025 community consultations:** Representatives of the Planning Committee travelled to the five communities associated with Tallurutiup Imanga NMCA to validate the updates made to the content of the draft IMP as a result of the March 2024 community consultations. Meetings were held with Hamlet Councils, Hunters &

Trappers Organizations, and the Nauttiqsuqtiit. Fifty-one individuals attended the meetings. Community members had questions and comments but were overall satisfied with the draft IMP, which allowed the Planning Committee to move to public and stakeholder consultations.

- **2025 public engagement:** Engagement was held online from June 23 to July 21. The draft IMP was posted in Inuktitut, English, and French on parks.canada.ca. It was shared on Facebook (@ParksCanadaNunavut, @ParksCanada, @QikiqtaniInuit @GovofNunavut), X (@ParksCanNunavut), and on the website Consulting with Canadians. The draft IMP webpage was visited 258 times in English and 25 times in Inuktitut. The public was offered to provide comments by email. Only one comment was received. No modifications to the draft IMP were made following the public engagement.

- **2025 stakeholder engagement:** From May 22 to August 1, 86 stakeholder groups were engaged, including the Qikiqtaaluk Wildlife Board. They each received a copy of the draft IMP. Meetings were held with representatives of the mining, shipping, cruise ship, tourism, and fisheries industries. Follow-up meetings were then held with the Association of Arctic Expedition Cruise Operators and Baffinland Iron Mines Corp. Non-government organizations and academia were provided with an opportunity to submit feedback in writing. A total of 125 comments were received from all stakeholders. Following this stakeholder engagement, the Planning Committee recommended making a few changes to the IMP.

- **2025 community check-in:** Before officially integrating the changes based on stakeholder engagement into the draft IMP, the Planning Committee checked in with each of the five communities associated with Tallurutiup Imanga NMCA. The hamlet councils and Hunters & Trappers Organizations of each community were sent a letter that provided an overview of the proposed changes. They were also offered an opportunity to meet and discuss the changes with the Planning Committee, ask questions, and clarify any of the edits. Communities did not raise concerns regarding the proposed changes. Therefore, these changes were made to the draft IMP.

Who We Engaged:

The consultation report (enclosed) provides a comprehensive description of the Tallurutiup Imanga planning committee's consultations with Inuit, partners, stakeholders, and the Canadian public through meetings, workshops, open houses, and community events that played an integral role in the development of the interim management plan and what we heard during the consultation process, including validating what we heard with communities.

On April 24, the Aulattiqatigiit Board passed a resolution to approve the final draft of the IMP. As part of this process, QIA received the approval from the Imaq, an advisory committee to QIA whose members are the QIA community directors from the five TINMCA communities.

<u>Recommendation</u>

The Planning Committee recommends approval of the interim management plan from the NWMB.

Prepared By:
Tallurutiup Imanga NMCA IMP Planning Committee
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Date: April 28, 2026

Addenda
Annex I: Fishing Restriction Tables

Annex I: Fishing Restriction Tables

Zone 1 – Ice and Open Water Season

Not allowed = Limitation on Harvesting for Non-Inuit*

Access and extractive uses are prohibited throughout all Zone 1 areas for Non-Inuit

	Wreck of Breadalbane NHS of Canada	Walrus haul-out sites	Seabird colonies	Ikpikittuarjuk/ Moffet Inlet	Tremblay Sound
Recreational fishing	Not allowed	Not allowed	Not allowed	Not allowed	Not allowed
Commercial fisheries	Not allowed	Not allowed	Not allowed	Not allowed	Not allowed
Hunting, trapping, gathering (non-rights based)	Not allowed	Not allowed	Not allowed	Not allowed	Not allowed
Bottom trawling	Not allowed	Not allowed	Not allowed	Not allowed	Not allowed

**No restriction on sport hunting as per the Tallurutiup Imanga IIBA*

Zone 3 – Ice Season

Not allowed = Limitation on Harvesting for Non-Inuit**

	Peary Caribou sea ice crossings*	Other key sea ice habitat*	Significant Benthic Areas
Recreational fishing	Allowed	Allowed	Allowed
Commercial fisheries	Allowed	Allowed	Allowed
Hunting, trapping, gathering (non-rights based)	Allowed	Allowed	Allowed
Bottom trawling	Not allowed	Not allowed	Not allowed

*Commercial shipping is not allowed

***No restriction on sport hunting as per the Tallurutiup Imanga IIBA*

Zone 3 – Open Water Season

Not allowed = **Limitation on Harvesting for Non-Inuit***

	Walrus haul-out buffer	Seabird colony buffers	Significant Benthic Areas	Beluga summer aggregation areas	Narwhal summer aggregation areas	Underwater cultural resource area
Recreational fishing	Not allowed	Allowed	Allowed	Allowed	Allowed	Allowed
Commercial fisheries	Not allowed	Not allowed	Allowed	Not allowed	Allowed	Allowed
Hunting, trapping, gathering (non-rights based)	Not allowed	Not allowed	Allowed	Not allowed	Allowed	Allowed
Bottom trawling	Not allowed	Not allowed	Not allowed	Not allowed	Not allowed	Not allowed

**No restriction on sport hunting as per the Tallurutiup Imanga IIBA*

What We Heard:
Tallurutiup Imanga
National Marine Conservation Area
Interim Management Plan

Consultation Report

January 2026

Table of Contents

1.0 Introduction

This report provides a summary of consultation process conducted between May 2018 and November 2025 while developing the Interim Management Plan (IMP) for Tallurutiup Imanga National Marine Conservation Area (NMCA), located in Nunavut. The development of an IMP for Tallurutiup Imanga NMCA is required by the *Canada National Marine Conservation Areas Act* (the Act) to finalize the establishment of Tallurutiup Imanga as an NMCA through an Order in Council. It will remain in place until a full management plan for the NMCA is developed and tabled in parliament, within five years following establishment under the Act, as required per section 9(1).

This Interim Management Plan (IMP) was developed by a Planning Committee consisting of representatives from the Qikiqtani Inuit Association, the Government of Nunavut, and the Government of Canada (Parks Canada with Fisheries and Oceans Canada and Transport Canada playing a supporting role).To draft the IMP, extensive consultation with Inuit, partners, stakeholders, and the Canadian public was conducted by the Tallurutiup Imanga NMCA Planning Committee. Perspectives shared through the various meetings, workshops, open houses, and community events played an integral role in the development of the IMP and associated vision, management objectives, and interim zoning plan. The consultation process for the Interim Management Plan is complete. However, the Aulattiqatigiit Board, the Inuit-Canada management board for Tallurutiup Imanga, will continue to work closely with rights holders, stakeholder groups, partners, and the associated communities (see Table 1), on the implementation of the Interim Management Plan and the overall management of Tallurutiup Imanga NMCA.

2.0 Background

Located in Nunavut, the boundaries of Tallurutiup Imanga NMCA encompass the length of Lancaster Sound, stretching from Qausuittuq (Resolute) in the west to Baffin Bay in the east, beyond the territorial waters into Canada's Exclusive Economic Zone. At approximatively 108,000 km^2, Tallurutiup Imanga NMCA represents nearly 2% of Canada's total marine area. This area is the ecological driver for much of the eastern Arctic and provides important habitat for nearly all Arctic marine species. Its waters are a migratory corridor for numerous species and essential habitat for polar bears, seals, walrus, bowhead and beluga whales, narwhal, and migratory birds. The area has sustained Inuit for generations and is an artery connecting communities and allowing travel throughout the High Arctic. Access to wildlife resources found in Tallurutiup Imanga NMCA is essential to Inuit food sovereignty and Inuit well-being and is critical for the region to retain a source of healthy country food.

As required by the *Nunavut Agreement*, an Inuit Impact and Benefit Agreement (IIBA) for Tallurutiup Imanga NMCA was signed in 2019 between the Qikiqtani Inuit Association (QIA) and the Government of Canada, as represented by Parks Canada, Fisheries and Oceans Canada, and Transport Canada. In addition to providing benefits to Inuit (e.g. QIA's Inuit Stewardship Program, Nauttiqsuqtiit), the IIBA establishes a consensus-based Canada-Inuit governance structure for Tallurutiup Imanga NMCA: the Aulattiqatigiit Board. This Board advises the Minister on any matters pertaining to NMCA management.

The Planning Committee conducted extensive consultations with the five communities associated with Tallurutiup Imanga NMCA identified in the IIBA, as seen in Table 1: Mittimatalik (Pond Inlet), Ikpiarjuk (Arctic Bay), Kangiqtugaapik (Clyde River), Qausuittuq (Resolute), and Aujuittuq (Grise Fiord) in 2018, 2019, 2024, and 2025.

Table 1: Communities associated with Tallurutiup Imanga NMCA

Qausuittuq **Resolute**	**Aujuittuq** **Grise Fiord**	**Mittimatalik** **Pond Inlet**	**Ikpiarjuk** **Arctic Bay**	**Kangiqtugaapik** **Clyde River**
the place with no dawn	*the place that never thaws*	*the place where the landing place is*	*the pocket*	*nice little inlet*
Located on Cornwallis Island. One of Canada's northernmost inhabited communities.	Located on Ellesmere Island, the northernmost inhabited community in Canada.	Located in northern Qikiqtaaluk, on the shores of Tasiujaq (Eclipse Sound).	Located in northern Qikiqtaaluk, on the shores of Admiralty Inlet.	Located in the Baffin Mountains along the northeastern coast of Baffin Island
Population (2021 Census)				
183	144	1,555	994	1,181
91.7% Inuit 67.7% Inuktitut-speaking	93.1% Inuit 85.7% Inuktitut-speaking	93.2% Inuit 92.9% Inuktitut-speaking	96.5% Inuit 97.5% Inuktitut-speaking	97.5% Inuit 97% Inuktitut-speaking
Average Age				
31.8 years	30.8 years	26.6 years	24.8 years	26.3 years

3.0 Consultation and Engagement Process

Consultation has been a core priority of the work to draft the Tallurutiup Imanga NMCA Interim Management Plan. Open and transparent consultations have facilitated awareness and understanding, fostering respect, and enhancing informed and balanced decision-making. Inclusive planning processes established important channels for ongoing dialogue, which in turn strengthened relationships between various levels of government, Inuit communities, partners, stakeholders, and the public. Legislative requirements for consultation are found in the Act (2002).

3.1 Phase I: Drafting the Interim Management Plan (2018- 2019)

3.1.1 Community Consultation

3.1.1.1 How We Consulted

Between May and July 2018, a series of community consultations were organized with the goal of gathering initial community input for the development of the IMP. In-person meetings were held in Mittimatalik (Pond Inlet), Ikpiarjuk (Arctic Bay), Kangiqtugaapik (Clyde River), Qausuittuq (Resolute), and Aujuittuq (Grise Fiord) with community representatives from Hamlet Councils, Hunters and Trappers Organizations, and the QIA established Community Lands and Resources Committees (CLARC). Meetings included ample time for discussion and comments. Open houses were also held at public spaces in each of the communities. These meetings were flexible, informal sessions where community members could drop in, view a short presentation, ask questions, and meet with Planning Committee members. In total, the Tallurutiup Imanga NMCA Planning Committee met with 181 community members.

In April and May 2019, a second in-person consultation updated community members on the IMP process, confirmed what was heard in the initial round of consultations, and asked for feedback on the vision, the draft management objectives and interim zoning. Similar to the 2018 consultations, the Planning Committee visited Mittimatalik (Pond Inlet), Ikpiarjuk (Arctic Bay), Kangiqtugaapik (Clyde River), Qausuittuq (Resolute), and Aujuittuq (Grise Fiord) and met with community representatives from Hamlet Council, Hunters and Trappers Organizations, and CLARC. There were also in-person open houses held in each community. In total, the Tallurutiup Imanga NMCA Planning Committee met with 158 community members through this round of engagement.

A full list of community consultation details for engagements in 2018 and 2019 can be found in Appendix A.

3.1.1.2 What We Heard

Discussions throughout consultations in Phase I revealed a strong community desire to use Inuit Qaujimajatuqangit (traditional knowledge) in management and decision-making and that an increased understanding of Tallurutiup Imanga NMCA would be important to move forward and guide research priorities. Climate change was identified as a driver for information gathering and research. In addition, the following key issues were identified:

3.1.1.2.1 Wildlife and Ecosystems Protection/Conservation

Numerous discussions with Mittimatalik (Pond Inlet) community members highlighted the importance of Tremblay Sound, Koluktoo Bay, Navy Board Inlet, and Milne Inlet as having high conservation value for narwhal calving grounds, post-calving and harvesting areas, and a desire to restrict or reduce shipping in these areas. Communities expressed that they were seeing wildlife declines and varying population levels associated with human industrial activities and would like those impacts to be reduced. . There were also concerns related to the effects that climate change was having on habitat and wildlife populations over the decades.

Many comments were heard in support of actions to reduce impacts on mammal migration routes, to prevent chasing/harassment of wildlife and intrusion into breeding areas. Research studies were also identified as being intrusive to communities and impacting wildlife populations; communities felt that research study methods tended to scare away wildlife and that these activities would impact both wildlife and hunting activities.

There was a direct relationship seen between the protection of wildlife and protection of the Inuit way of life. Food security was recognized as an important issue for communities along with access to healthy country meat for consumption. Communities want to ensure that wildlife continue returning and do not get diverted beyond community hunting grounds, which they have come to rely on. Communities specifically wanted to see better protection for walrus and other marine mammals, which they depend on for their livelihood.

There was a concern over the noise created by marine vessels and there is a perception that sonar devices in the ocean, as part of research studies, tend to scare off wildlife. It was felt that the noise resulted in reductions in population levels especially within seal populations. Many of the communities reported apparent declines in seal populations.

Marine mammals in the Qausuittuq (Resolute) area share migratory routes with Mittimatalik (Pond Inlet) and other communities. However, these wildlife routes also share the same pathway as shipping routes. These communities identified a need for more research monitoring related to wildlife populations in Tallurutiup Imanga NMCA calving areas, marine mammal migration, timing of migration, and associated changes over time. Community members warned against using historical data to describe current conditions since both physical and biological environments have changed.

Community members suggested using temporary/seasonal closures for portions of the year to protect important habitats or to protect wildlife at critical life stages. Critical areas were identified including polynyas where wildlife tended to congregate for feeding. Marine setbacks for ships from coastal migratory birds, including seabirds and sea ducks, were also recommended.

3.1.1.2.2 Management of Marine Shipping/Increased Vessel Traffic

Communities saw ship activities as a disturbance to the peaceful mind of the hunter and the natural activities of marine animals. Concern was expressed over the opening of Lancaster Sound to increased national and international shipping traffic and recommended improved monitoring, vessel speed restrictions, ice-breaking limitations, concentrated shipping routes, and other preventative measures. Communities were uncertain how to manage shipping traffic and wanted to ensure that a good plan is developed to address shipping-related concerns. There was also a desire by communities to be involved and aware of vessel and small craft movement within Tallurutiup Imanga NMCA and recommended improving communications and monitoring capabilities.

Communities expressed strong concern over potential spills, anchoring, ballast water release, and grey and black water dumping both inside and outside of NMCA boundary. There was strong concern with the proposed increase of the number of ships transiting between the Milne Port and Mittimatalik (Pond Inlet) and the disturbance of hunting areas due to the congregation of vessels waiting to dock at the Milne Inlet port. There was recognition that at that time many vessels were transporting iron ore through waters adjacent to their communities and there was worry over the potential increased number of vessels proposed in Phase 2 of the Baffinland project.

The communities saw a need for greater management of small boats (sailboats, yachts and zodiacs) and a desire to see ships using corridors to help reduce the negative impacts on marine mammals from vessel sounds. Other concerns included the production of wakes by large or fast-moving vessels that can be dangerous to hunters.

The community outlined concern that conditions and marine life in Oliver Sound and other areas, have changed due to shipping traffic. They had observed changes in migration routes and habitat and indicated that fewer species were moving through their usual areas, and that overall, fewer species were observed while hunting. There was fear that this would also happen in Ikpiarjuk (Arctic Bay), especially with cod and marine mammals. Community participants suggested that camera-based monitoring should increase to monitor vessel traffic.

The Aujuittuq (Grise Fiord) community observed more whales in their area. It was perceived that whales were taking an alternate route through the Aujuittuq area due to ship traffic.

3.1.1.2.3 Ice Breaking/Sea Ice Protection

Mittimatalik (Pond Inlet) community members expressed that their area was suffering the most impacts from shipping activities and as a result were extremely concerned with ice breaking activities and associated impacts. Inuit use the ice from freeze-up to break-up for seasonal outings, on-ice transportation routes/travel between communities, hunting, etc. The community viewed ice breaking as interfering with ice-related activities (due to loss of ice) and decreased opportunities for and the length of time available to utilize the ice.

Navy Board Inlet was identified as an area where a seasonal zone restricting ice breakers is desired. Some suggested not allowing any ice breakers within the NMCA to protect and maintain floe edges.

Concern was expressed related to the continuity of the floe edge, which prevents marine mammals from going west. Ice blocks movement of marine mammals who therefore do not go west but stay on the eastern side of the floe. The community indicated that they would like to prevent ships from going through these iced areas as ice breaking could allow the animals to continue west rather than stay in the area. Communities suggested restricting ships from ice breaking in the area during May and June.

3.1.1.2.4 Management of Cruise Tourism

There was concern over increased tourism and zodiac traffic associated with the cruise ship industry. Communities felt that many cruise ships do not follow speed limits and often chase or harass wildlife and interfere with hunting activities.

Community members from Mittimatalik indicated that recently there had been a lot of cruise ship activity along the southern Eclipse Sound fjords. Members wanted to see cruise ships excluded from these areas throughout the summer months. Mittimatalik (Pond Inlet), Kangiqtugaapik (Clyde River), and Ikpiarjuk (Arctic Bay), communities were concerned about the increasing cruise tourism activities.

Community members indicated that they would prefer not to see tourists in the area at all during bird nesting season, however at the time, tourists and vessels were allowed to approach nesting birds (Murres). Cape Hay and Croker Bay were identified as areas where cruise ships visit, and as a result, community members are concerned about potential impacts.

It was emphasized that community members do not go to an area if it has been disturbed by a cruise ship passing by because they know that the whales would be gone as a result of the disturbance. At the time, the Mittimatalik (Pond Inlet) Hamlet was being pro-active by working with the Parks Canada regional office to raise concerns about cruise ships. It was also felt that walrus haul-out sites have also been affected due to cruise ship activities.

3.1.1.2.5 Coordination of Emergency Response

Communities indicated that they were unsure of what to do if there was an incident with a ship, an oil spill or leak, or if a cargo ship became punctured. They identified a need for better spill response planning and training and community emergency management plans. An interest was expressed by communities to be involved in emergency responses near their communities, especially as they are often seen as first responders due to their proximity. They felt that better delineation of responsibilities could help with improved emergency response.

3.1.1.2.6 Improved Communications with Local Communities

Community members felt that they were not made aware of vessels coming into their areas, which was an ongoing concern. Improved communication between communities and users of the marine environment was recommended. Cruise ships and small vessels/sail boats often appear unannounced and usually provide no information prior to their arrival. Several communities indicated that they only find out about their presence when vessels are spotted or if they get into trouble and need assistance. This is thought to result from shifts in cruise ship itineraries, or inconsistent communication about these itineraries within communities.

Permitting was another concern raised. Communities indicated that they often do not know who has a permit and who is required to have a permit. Communities were keen to see organizations cooperate in this regard.

3.1.1.2.7 Enforcement/Pollution Control

Communities were concerned that regulations for the NMCA would not be enforceable and that infractions would go unnoticed (i.e. no consequences for people who do not follow regulations). For example, different regulations govern different parties transiting through and within Navy Board Inlet/Baffin Bay. Though Transport Canada regulations exist, the application of these rules varies by vessel groups (e.g., ships associated with industry/mining companies). Also, often research vessels were able to transit with no issues, while local search and rescue vessels were not allowed (or appear not to be allowed) in some areas. Community members were seeing activities that should not be occurring and felt that all vessel-types should be required to follow the rules without exemptions.

Communities were very concerned over enforcement on spills, ballast water, and dumping. They suggested introducing local community monitors and observation posts, which would be beneficial to enforcement goals.

Communities noted an increase in vessel traffic entering or transiting through Canadian waters. Foreign sailboats had been observed fishing (recreationally) in Ikpiarjuk (Arctic Bay) and in community fishing areas. These activities were a major concern for communities, particularly since it appeared to many that there was no regulation, enforcement, or permitting involved. Vessels were anchoring and were engaging in whatever activities they wanted with no consequences. As a result, the community recognized the need for monitoring and photo evidence of infractions or suspicious activity. There was strong support to have more on-site community observers through improved stewardship programs and increased powers to enforce restricted activities.

3.1.2 Stakeholder Consultation

A record of meeting dates and consulted stakeholder groups was established in 2018 and maintained throughout Phase I, while developing the draft IMP.

3.1.2.1 How We Consulted

From 2018 to 2020, stakeholders in the cruise, shipping, mining, fishing and tourism industries along with Nunavut Institutions, were engaged through presentations, meetings, and workshops. NGOs, research groups and academia were also similarly engaged to obtain input for the development of the IMP.

Nineteen engagement workshops, presentations, and meetings were held during Phase I with 81 attending organizations. Fourteen email exchanges were sent and received, with 64 organizational contacts who expressed support and concern for the types of restrictions that were being considered for inclusion in the IMP. Overall 443+ individual engagements were tracked during Phase I stakeholder consultation.

An overview of the stakeholders engaged, and the consultations undertaken in Phase I can be found in Appendix B.

3.1.2.2 What We Heard

Industry stakeholders brought forth the following key themes and topics:

- Concern about permitting processes with added layers of regulation, increased timing for issuing permits, and increased administration, costs and complexity
- Wanting anchoring restrictions that allow for flexibility due to safety reasons
- Ensuring proper and adequate enforcement
- Looking for flexibility with travel due to changing weather and ice conditions, for safety reasons
- Vessel size restrictions for inlets
- Assurance that zoning will not be overly restrictive to fisheries and future fisheries operations
- Clarification of the role of the Government of Nunavut for economic decisions in the area

NGOs and academia brought forth the following key themes and topics:

- Avoiding shipping industry breaking sea ice and crossing community transportation routes
- Inclusion of buffers and restrictions around areas where walrus, caribou, seal, seabird and narwhal live, and in consideration of these locations across the seasons
- Respect for community right of way, hunting rights by restricting area entry, uses, and activities allowed
- Vessel speed restrictions
- Bottom trawling

3.1.3 Developing the First Draft of the Interim Management Plan (IMP)

Development of the IMP slowed between Phase I and Phase II due to restrictions imposed during the Covid-19 pandemic. During this period, QIA and the Government of Canada continued discussions about the intended use of the IMP, reaching a resolution in 2023 before preparing the first draft.

Feedback gathered from communities and stakeholders during Phase I consultations informed the Planning Committee's work in developing this initial draft. The draft IMP outlined a vision, management objectives and targets, and a proposed zoning framework.

3.2 Phase II: Reviewing the Interim Management Plan (2024-2025)

Phase II involved another round of consultations with the five associated communities, as well as additional validation meetings to ensure that community and partners' goals and objectives for the IMP were correctly reflected in the draft. Phase II also included stakeholder and public consultation.

3.2.1 Community Consultation

3.2.1.1 How We Consulted

In March 2024, the Tallurutiup Imanga NMCA Planning Committee returned to each of the five communities with a first draft of the IMP: Mittimatalik (Pond Inlet), Ikpiarjuk (Arctic Bay), Kangiqtugaapik (Clyde River), Qausuittuq (Resolute), and Aujuittuq (Grise Fiord).

In-person meetings with community representatives from Hamlet Council, Hunters and Trappers Organizations, Nauttiqsuqtiit (Inuit stewards) and Community Land and Resource Committees (CLARC) were undertaken in each community. These meetings were in-depth, 2-day sessions that covered the entire IMP with the majority of time allotted for discussion and comments. Participants were asked to identify what values they would like to see protected and what were the threats to these values. In-person open houses were held at public spaces in each of the communities. These meetings were flexible, informal sessions for community members to drop in, view a short presentation, ask questions, and meet with Planning Committee members regarding the IMP. A total of 103 people were engaged at these sessions. A number of additions and changes were made to the IMP following this round of consultations.

The revised IMP was then taken back to the five communities again in December 2024/January 2025. The purpose of these meetings was to validate that what was said in the March 2024 consultations had been properly understood and correctly addressed in the revised IMP. These in-person validation meetings were attended by community representatives from Hamlet Councils, Hunters and Trappers Organizations, and Nauttiqsuqtiit, for a total of 51 people. These community representatives asked questions and provided insights on the management of Tallurutiup Imanga NMCA. No further concerns were raised on the revised draft of the IMP.

A full list of consultation details from Phase II can be found in Appendix C.

3.2.1.2 What We Heard

Feedback and input gathered during the March 2024 consultations raised the following key points:

3.2.1.2.1 Changes to Vision and Management Targets

The Vision is an inspiring description of what Tallurutiup Imanga NMCA should be like in 15-20 years. The key feedback heard on the Vision was that Tallurutiup Imanga NMCA is a special place, where visitors can come but need to be respectful of the natural and cultural environments, and that mental health benefits from the NMCA should be mentioned.

Based on community feedback, changes were made to the Vision to better emphasize that visitation must be respectful, and that Inuit must help to shape and manage tourism activities. A statement was added to make it clear that the NMCA must support Inuit self-determination and enhanced wellbeing, which includes mental health along with economic, social, and cultural development.

Management targets are a list of specific actions that need to be accomplished over the first five years. They were designed to address community priorities. When asked if anything was missing from the targets, participants expressed that programs and infrastructure for hunters were needed, including visitor centre or a food processing centre. The IIBA for Tallurutiup Imanga and related infrastructure agreements already commit to establishing QIA’s Nauttiqsuqtiit program and the construction of harbours and multi-use facilities. However, the Planning Committee added targets to the Interim Management Plan to support the implementation of these commitments. The communities also raised concerns about the enforcement of rules, especially on matters related to visitors and shipping, and the need for better coordination between the law enforcement agencies. Similarly, the Planning Committee added a target in the Interim Management Plan to address this issue.

3.2.1.2.2 Ice and Open Season Zoning Date Adjustments

There are differences in the environment, uses/activities, and wildlife migration between the time of the year when the area is mostly ice-covered and when open water dominates. A two-season zoning plan for each of the ice and open water seasons was presented at the community consultations in March 2024. Communities shared that it is getting harder to predict when freeze up and break up happens and there is a lot of variability from year to year. Most communities said freeze up and break up is happening a bit earlier than the proposed dates. Therefore, based on this community input, the dates for each zoning plan were adjusted to November 16 – July 20 for the ice zoning plan and July 21 – November 15 for the open water plan, with the Field Unit Superintendent having flexibility to change the dates if conditions warrant it and with the support from the communities.

3.2.1.2.3 Changes to Protection for Sea Ice

Icebreaking was listed in the draft as being prohibited during the ice season in certain areas, to protect species and critical ice habitat. Community consultations in March 2024 revealed that there was a need to extend the protection for sea ice further east off the entrance of Eclipse Sound to better protect the floe edge.

The draft IMP also had a list of exceptions for when travel through ice during the ice season could be allowed in certain circumstances in those areas. As a result of community input, an additional exception was added to the IMP to allow ice breaking for valid conservation reasons, such as freeing trapped whales.

3.2.1.2.4 Expanded Bird Colony Protection

In the draft IMP, bird colonies were given a strict year-round protection for nesting areas and additional habitat protection for foraging areas in the open water season. The Mittimatalik (Pond Inlet) community advised that the protection for bird colonies should be expanded along the coast of Buchan Gulf as there were additional bird nesting areas there. The IMP was revised to expand protection along the coast in the Buchan Gulf with a 100m strip of strict protection seaward of the cliffs, based on this community input.

We also heard that ballast water exchange should not be allowed in bird foraging areas, and that ships should be required to do ballast exchange before entering Nunavut. There was agreement with the proposed zoning, that there should be no sport hunting within 100 m of bird cliff at Cape Liddon.

3.2.1.2.5 Protection for Additional Walrus Haul-Out Areas

Within the draft IMP, there were habitat protection measures proposed for one walrus haul-out within the NMCA. Feedback was received that all additional walrus haul-out areas within the NMCA classified as ‘confirmed’ or ‘uncertain’ by DFO should be protected with the same measures to ensure that walrus are not disturbed. Hunters were concerned that there should be no access to haul-outs when hunting is in progress.

Based on community input, the IMP was revised to include protection for thirteen haul-outs including all known active haul-outs and three additional ones, as identified during the Qikiqtaaluk Wildlife Board consultations.

3.2.1.2.6 Increased Protection for Beluga Habitat

In the draft IMP, protection for beluga habitat including no commercial shipping, no installation of in-water infrastructure, no commercial fisheries, no non-rights-based hunting or trapping, was outlined for several areas in the NMCA. During consultations, communities told us that there was an additional beluga aggregation area along the northern coast of Sommerset island. Further, participants recommended that there be no motorized access during the open water season to prevent disturbance of beluga in the shallow waters. Based on this community input, the IMP was revised to add a new 1 km buffer along the north Somerset coastline. An aircraft buffer was also put in place in these zones, to reduce noise disturbance.

3.2.1.2.7 Increased protection for Narwhal

Concerns were raised at the March 2024 consultation sessions about increasing protection for narwhal. Communities recommended the addition of speed restrictions to narwhal habitat areas.

Based on what was heard from communities, the IMP was revised to include increased protection for areas where narwhal gather in the open water season. A speed recommendation of 9 knots was added for all identified narwhal habitat areas. Cruise ships were prohibited in Milne Inlet. Cruise and commercial ships were prohibited south of Eclipse Sound. Trembley Sound was designated as zone 1 with strict protection as a quiet refuge area for narwhal.

3.2.1.2.8 Addition of Areas of Special Importance (ASI)

During Phase I community meetings, specific areas were identified by communities for their importance to camp and hunt. During Phase II of consultations, the Planning Committee asked community members for more information about why the areas are important and what the threats to these areas were. All communities identified concerns about the disturbance of wildlife, traditional camping areas, cultural artefacts, and Inuit harvesting activities due to recreational activities and commercial tourism during the open water season.

Based on what was heard from communities about these important areas, the Planning Committee determined that these areas required a more tailored management approach and more flexibility than zoning could offer. As a result, the IMP was revised to designate these areas as 'Areas of Special Importance' (ASIs). ASIs were then added to the zoning maps to highlight their importance. The aim of these measures is to reduce impacts and to mitigate wildlife disturbances near areas of cultural significance, traditional campsites, and Inuit use of the area (e.g. harvesting, camping activities). The approach to managing ASIs will be ongoing and can be monitored and adapted with input from the individual communities.

In March 2024, communities recommended that Croker Bay and Dundas Harbour be strictly protected as zone 1, due to community concerns about damage to cultural areas on the shores of these bays, and general disturbance to wildlife. However, Parks Canada and the Aulattiqatigiit Board have no control over areas outside Tallurutiup Imanga NMCA jurisdiction and it would not be appropriate to use zoning to cut off access to land that is not under Parks Canada or QIA's administration. Therefore, it was determined that zoning was not an appropriate tool in these cases. This was explained to communities at the follow up validation meetings in December 2024 and January 2025 and there was understanding about why the request could not be addressed through zoning.

To address some concerns by communities, the IMP was revised to include Dundas Harbour as an ASI where visitors will require an orientation, be encouraged to hire a local guide, and discouraged from catch and release fishing. Ships will be encouraged not to travel into the area unless for safety reasons. Also, support will be provided for enhanced communication between communities and users so that the area will be used in a way that is respectful to the needs of the communities.

3.2.2 Stakeholder Consultation

3.2.2.1 How We Consulted

In Phase II, stakeholder consultation was open from May 22 until August 1, 2025. This included sector-specific meetings with stakeholder groups from mining, shipping, cruise ship, tourism, and fisheries industries. These industry groups were categorized as Teir 1 stakeholders. Prior to meetings, a draft copy of the IMP was distributed to 78 Teir 1 stakeholders across these industries.

During Tier 1 stakeholder meetings, a comprehensive presentation provided attendees with a walk-through of the draft IMP including an overview of Tallurutiup Imanga NMCA, key management goals/tools, and activities that are allowed/not allowed. The presentation also covered the work that took place to develop the draft IMP and an overview of the IMP contents (vision, objectives targets, and zoning). An explanation of inclusions and exclusions for Tallurutiup Imanga NMCA and the co-governance model was also provided. An overview of zoning was provided with some specific implications for each industry. There were 38 attendees to the draft IMP walk-through meetings.

Tier 2 stakeholder groups included non-government organizations (NGOs) and academia. They were sent an email with the draft IMP and asked to submit their feedback.

All stakeholders were encouraged to send feedback on all aspects of the draft IMP, for consideration by the Planning Committee.

At the request of the Association of Arctic Expedition Cruise Operators (AECO) and Baffinland Iron Mines Corporation, subsequent meetings were held to discuss their feedback and to ask questions of clarification regarding the draft IMP.

3.2.2.2 What We Heard

The Planning Committee heard back from 15 stakeholders in 8 industry sectors with feedback on the draft IMP. In total, 125 comments were submitted, that included the following key themes:

- Uncertainty about permitting
- Interest in being involved in other aspects of TI, especially research, search & rescue and ASI management
- Request to be consulted for future developments in TI
- Concerns about wildlife and habitat buffers
- Protection for marine mammals and limiting underwater noise
- Request for more bottom trawling restrictions
- Concerns about the level of restrictions on potential future industrial activities
- Comments about adaptive management approach
- Comments about conformity process (regulations, wastewater discharge, innocent passage)
- Request for more climate change planning

A full list of stakeholder consultation details for Phase II can be found in Appendix D.

3.2.3 Public Consultation

3.2.3.1 How We Consulted

The draft IMP was posted online for public consultation from June 23 to July 21, 2025. It was available at parks.canada.ca in English, French, and Inuktitut. The IMP website was visited 258 times and 173 of those views were considered, ‘engaged’ with a pageview lasting longer than 10 seconds. The Inuktitut version was visited 25 times.

The public was encouraged to review the draft IMP and send comments/feedback. It was posted on the Consulting with Canadians website and three Facebook and ‘X’ (formerly Twitter) posts were published during the consultation period via the

@ParksCanadaNunavut profile in both English and Inuktitut. These posts were also shared with @ParksCanada @QikiqtaniInuit @GovofNunavut profiles to extend coverage and reach. On the @ParksCanadaNunavut Facebook profile, the posts received 13,589 post views, 31 shares, and 43 link clicks through to the website.

3.2.3.2 What We Heard

One comment was received during public consultation that did not result in changes to the IMP.

"Please ban all sport and commercial hunting, trapping, and fishing and create this park as a safe place for animals."

3.2.4 Recommended Final Changes to IMP

After consideration of all stakeholder and public comments, the Planning Committee recommended the following eight changes to the IMP:

- Added the terms "Commercial tourism" and "Recreational activities" to the Glossary of Terms
- Clarified role of the Aulattiqatigiit Board (AB) in the Introduction
- Clarified Guiding Principle #3 about adaptive management and how it will be done cooperatively
- Clarified the responsibilities of the Canadian Coast Guard in Table 2.1
- Changed the zoning of Significant Benthic Areas during the ice season, so they have the same protection as during the open water season
- Added an exception to the zoning of Walrus Haul-out buffers to allow cruise ships to enter Radstock Bay and 3 other small inlets on the southern coast of Devon Island, with community support
- Changed the flight altitude restriction over Beluga summer aggregation areas during the Open Water Season from 5,000 ft to 2,000 ft
- Made the 9-knot speed limit voluntary in Narwhal summer aggregation areas

3.2.5 Community Check-ins

Before changes were accepted by the Aulattiqatigiit Board to the draft IMP, the Planning Committee connected back with communities in Fall 2025 to validate that these changes were accepted by communities.

3.2.5.1 How We Consulted

Each of the five community's Hamlet Councils and Hunter & Trapper Organizations (HTO) were sent a letter that provided an overview of the proposed changes. They were also offered an opportunity to meet and discuss the changes with the Planning Committee, ask questions, and clarify any of the edits.

Meetings were arranged with the Mittimatalik (Pond Inlet) Hamlet Council and HTO, the Qausuittuq (Resolute) Hamlet Council, and Kangiqtugaapik (Clyde River) HTO to discuss the recommended changes. The Planning Committee received confirmation from all five community Hamlet Councils that the changes were agreeable. Confirmations were also received from four HTOs that the changes were agreeable. The Planning Committee made many attempts to engage the Qausuittuq (Resolute) HTO and was able to confirm they received our message and passed it on to their members.

4.0 Next Steps / Conclusion and Recommendations

The Aulattiqatigiit Board, the Inuit – Canada joint management board for Tallurutiup Imanga, is satisfied with the amount of consultation conducted and has agreed to the changes made to the IMP in response to feedback received. On December 3, 2025, the Aulattiqatigiit Board approved the final version of the IMP to be submitted to the Nunavut Wildlife Management Board (NWMB) and forwarded to the Minister. Internal approvals have also been obtained from the Qikiqtani Inuit Association, Parks Canada, Transport Canada, Fisheries and Oceans Canada, and the Government of Nunavut (including cabinet approval).

The IMP will be forwarded to the NWMB for their review and approval at their regular meeting scheduled for June 24, 2026. In accordance with the *Nunavut Agreement*, the decision made by the NWMB will be forwarded to the Minister responsible for Parks Canada. The IMP will then be signed by the President of QIA, the Ministers for Parks Canada, Transport Canada and Fisheries and Oceans Canada, and the Minister of Environment for the Government of Nunavut.

The IMP will guide the management of Tallurutiup Imanga NMCA while a comprehensive 10-year Management Plan is developed within five years of the establishment of Tallurutiup Imanga NMCA. It will also be part of the report submitted to Parliament to finalize the establishment of Tallurutiup Imanga NMCA under the *Canada National Marine Conservation Areas Act*, by adding the boundary of Tallurutiup Imanga NMCA to Schedule 1 of the Act. Throughout the implementation of the IMP, the Aulattiqatigiit Board will continue collaborating with communities, partners, and stakeholders.

5.0 Appendix

Appendix A – Who We Heard From: Phase I Community Consultations

Table 1. Community members consulted from May to July 2018

Location	Date	Group	Type of Consultation	Estimated Number of Individuals
Clyde River	2018-07-04	Community Land and Resource Committee (CLARC)	In-person	4
Clyde River	2018-07-04	Hamlet Council	In-person	13
Clyde River	2018-07-05	CLARC and Hunters and Trappers Organization, QIA community liaison officer	In-person	7 (11-4 from previous CLARC meeting)
Clyde River	2018-07-05	Open house*	In-person	41
Arctic Bay	2018-05-25	Hunters and Trappers Organization, QIA community liaison officer, Inuit knowledge working group, Sirmilik National Park Joint Inuit/Government Park Planning and Management Committee	In-person	9 (11-2 overlapping with the open house)
Arctic Bay	2018-05-25	Hamlet Council	In-person	6
Arctic Bay	2018-05-25	Open house*	In-person	33
Resolute	2018-06-05	Hamlet Council, Hunters and Trappers Organization	In-person	7 (12-5 overlapping with the open house)
Resolute	2018-06-05	Open house*	In-person	8
Pond Inlet	2018-05-23	Hunters and Trappers Organization, CLARC, QIA community liaison officer, Sirmilik National Park Joint Inuit/Government Park Planning and Management	In-person	11

		Committee		
Pond Inlet	2018-05-24	Asungasungaat Area Co-Management Committee	In-person	12
Pond Inlet	2018-05-24	Open house*	In-person	13
Grise Fiord	2018-06-06	Hamlet Council, Hunters and Trappers Organization, Nirjutiqarvik National Wildlife Area Co-Management Committee	In-person	5 (10-5 overlapping with open house)
Grise Fiord	2018-06-06	Open house*	In-person	12
			TOTAL	**181**

**Indicates events that were open to the public.*

Table 2. Community members consulted in April to May 2019

Location	Date	Group	Type of Consultation	Estimated Number of Individuals
Clyde River	2019-04-15	Hamlet Council, Hunters and Trappers Organization, QIA community director	In-person	11 (13-2 overlapping with CLARC)
Clyde River	2019-04-16	CLARC, QIA community liaison officer	In-person	7
Clyde River	2019-04	Open house*	In-person	Unknown
Arctic Bay	2019-04-26	CLARC, Sirmilik National Park Joint Inuit/Government Park Planning and Management Committee, QIA community liaison officer, Nauttiqsuqtiit	In-person	19 (21-2 overlapping with Hamlet Council)
Arctic Bay	2019-04-25	Hamlet Council	In-person	15 (16-1 overlapping with Hunters and Trappers)

Arctic Bay	2019-04-25	Hunters and Trappers Organization	In-person	8
Arctic Bay	2019-04-26	Open house*	In-person	20
Resolute	2019-05-02	Hamlet Council, Hunters and Trappers Organization, Qausuittuq National Park Joint Inuit/Government Park Planning and Management Committee, QIA community liaison officer	In-person	11 (14-3 overlapping with the open house)
Resolute	2019-05-02	Open house*	In-person	17
Pond Inlet	2019-04-24	Hunters and Trappers Organization, Sirmilik National Park Joint Inuit/Government Park Planning and Management Committee, Inuit knowledge working group	In-person	8 (9-1 person overlapping with Hamlet Council)
Pond Inlet	2019-04-24	Hamlet Council	In-person	5
Pond Inlet	2019-04-24	Open house*	In-person	20-25
Grise Fiord	2019-04-30	Hamlet Council, Hunters and Trappers Organization, QIA community liaison officer	In-person	9
Grise Fiord	2019-04	Open house*	In-person	8
			TOTAL	**158**

**Indicates events that were open to the public.*

Appendix B – Who We Heard From: Phase I Stakeholder Consultations

Table 2. Stakeholders who were engaged in Tallurutiup Imanga NMCA IMP development sessions from 2018-2023

Date	Engagement Type	Industry Sector	Attending Organizations	# of Attending Organizations (#Attendees/ Contacts)
2018-04-23	Meeting (In person) Iqaluit, NU	NGO	WWF	1 (3 attendees)
2018-05-28	Workshop (Virtual)	NGO	Nature Conservancy of Canada Canadian Wildlife Service	2 (5 attendees)
2018-07-13	Meeting (In person) Iqaluit, NU	Nunavut Institutions	Nunavut Impact Review Board	1 (2 attendees)
2018-08-30, 31	Workshop (In-person) Dalhousie University, Halifax, NS	Academia	Dalhousie University Researchers ENGOs Indigenous Organizations	(50+ attendees)
2019-09-04	Meeting (In person) Iqaluit, NU	Nunavut Institutions	Nunavut Wildlife Management Board Submission and Presentation	1
2018-09-04	Meeting (Virtual)	Cruise	Adventure Canada AECO (Denmark) One Ocean Expedition Travel Nunavut Crystal Cruises (west coast) Arctic Adventures	5 (9 attendees)
2018-09-05	Meeting (Virtual)	Mining	Baffinland	1 (3 attendees)
2018-09-12	Workshop (In person) Iqaluit, NU and Gatineau, QC	Shipping	Aporta (Dalhousie University) NEAS Petronav Desgagnes Shipping Federation of Canada Fednav Woodwards Martech Polar Tactical Marine Solutions Ltd.	9 (12 attendees)
2018-09-17	Meeting	Fisheries	Nunavut Fisheries Association	4

	(Virtual)		AFA Qikiqtaaluk Corporation Baffin Fisheries	(9 attendees)
2018-10-17	Presentation (In person) Iqaluit, NU	Tourism	Travel Nunavut Industry Association AGM: Travel and tourism operators	10 (40+ attendees)
2018-10-17	Presentation (In person) Iqaluit, NU	Tourism	Association of Arctic Expedition Cruise Operators (AECO) Forum at Travel Nunavut AGM: AECO Travel and tourism operators	10 (25+ attendees)
2018-10-18	Letter to Minister	Nunavut Institutions	Asungasungaat Area Co-Management Committee (Bylot Island Migratory Bird Sanctuary)	1
2018-10-18	Letter to Minister	Nunavut Institutions	Nirjutiqarvik Area Co-Management Committee (Nirjutiqarvik National Wildlife Area/Coburg Island)	1
2018-10-30	Workshop (In person) Montreal, QC	Cruise and Shipping	Fednav Desgagnes Nunavut Eastern Arctic Shipping Inc. (NEAS) Shipping Federation of Canada Petro Nav Inc. Northwest Passage Marine (NWP) Hurtigruten Association of Arctic Expedition Cruise Operators (AECO) Baffinland Crystal Cruises Tactical Marine Solutions Ltd. Arctic Kingdom One Ocean Expeditions Adventure Canada Woodwards	16 (18 attendees)
2019-02-15	Letter to Minister	Nunavut Institutions	Sulukvaut Area Co-Management Committee (Prince Leopold Migratory Bird Sanctuary)	1
2019-03-07	Meeting (In person) Iqaluit, NU	Nunavut Institutions	Nunavut Wildlife Management Board Submission and Presentation	1
2019-04-14	Workshop (In person) Iqaluit, NU	Cruise	Quark Expeditions Adventure Canada Spirit of the Arctic Tourism Summit:	13 (20 attendees)

			One Ocean Expeditions Silversea Cruises Seabourn Holland America Abercrombie and Kent Eyos Expeditions Hurtigruten Lindblad Expeditions Association of Arctic Expedition Cruise Operators (AECO) Travel Nunavut Nunavut Development Corporation	
2019-04-16	Email (Incoming)	Nunavut Institutions	Qikiqtaaluk Wildlife Management Board Nunavut Inuit Wildlife Secretariat Grise Fiord, Arctic Bay, Pond Inlet, Clyde River, Resolute HTOs	6 (8 contacts)
2019-05-15, 16	Presentation (In person) Montreal, QC	Shipping	Canadian Marine Advisory Council (CMAC) Prairie and Northern Region: Shipping, resupply, navigational captains, operators, and Indigenous organizations	(80+ attendees)
2019-05-17	Meeting (Virtual)	Mining	Baffinland	1 (3 attendees)
2019-06-11	Email (Outgoing)	All	TriNav Mining North NWT & Nunavut Chamber of Mines Baffin Fisheries Arctic Fishery Alliance Eyos (cruise industry) Arctic Watch Arctic Kingdom (tourism) Arctic Bay Adventures Travel Nunavut Tides Canada Canadian Parks And Wilderness Society (CPAWS) Inuit Heritage Trust Nunavut Marine Council	14
2019-06-11	Letter (Outgoing)	Nunavut Institutions	Nunavut Wildlife Management Board	1
2019-06-18	Email (Incoming)	Fisheries	Nunavut Fisheries Association	1
2019-08-02	Email (Outgoing)	All	Travel Nunavut Industry Assoc. Arctic Bay Adventures Ltd.	33 (60+ contacts)

			Arctic Kingdom Arctic Watch/Weber Arctic Black Feather Polar Sea Adventures Quest Nature Tours Complete Expeditions EYOS – Yacht Expeditions Canada North Outfitting Association of Arctic Expedition Cruise Operators (AECO) One Ocean Expeditions Adventure Canada Oceans North Hurigruten Crystal Cruises Quark Expeditions Tactical Marine Solutions Ltd. Baffinland NWT-Nunavut Chamber of Mines Arctic Fishery Alliance Baffin Fisheries Coalition Nunavut Fisheries Association TriNav Fisheries FedNav Nunavut Eastern Arctic Shipping Inc. (NEAS) Desgagnes Transarctik, Inc Woodwards Petro-Nav Inc. Northwest Passage Marine Students on Ice University of Ottawa Quluq School	
2019-12-04	Letter (Outgoing)	Nunavut Institutions	Nunavut Wildlife Management Board Submission	1
2020-03-11	Letter (Outgoing)	Nunavut Institutions	Nunavut Wildlife Management Board Submission	1
2020-03-18	Meeting (Virtual)	Mining	NWT and Nunavut Chamber of Mines Baffinland Agnico Eagle Mines Ltd.	3 (7 attendees)
2020-11-03	Presentation (Virtual)	Shipping	Canadian Marine Advisory Council (CMAC) Prairie and Northern Region: Shipping industry, resupply, navigational captains, operators, and Indigenous organizations	(80+ attendees)
2021-01-28 – 2021-04-26	Emails (Incoming)	NGO	Oceans North	1 (3 contacts)

2021-04-29	Email (Incoming)	Tourism	Weber Arctic	1
2022-01-19	Letter (Outgoing)	Nunavut Institution	Nunavut Tunngavik Incorporated	1
2022-03-22	Presentation (Virtual)	Fisheries	Eastern Arctic Groundfish Stakeholder Advisory Committee: Northern Coalition Oceans North Qikiqtaaluk Corp	3 (4 attendees)
2023-03-31	Letter (Incoming)	NGO	Oceans North (with Mittimatalik HTO)	1
			TOTAL	**145** (443+ attendees)

Appendix C – Who We Heard From: Phase II Community Consultations and Validation

Table 1. Community members consulted in March 2024

Location	Date	Group	Type of Consultation	Estimated Number of Individuals
Clyde River	2024-03-18 2024-03-19	Hamlet Council, Hunters and Trappers Organization, Nauttiqsuqtiit	In-person	10
Clyde River	2024-03-18	Open House*	In-person	12
Arctic Bay	2024-03-27 2024-03-28	Hamlet Council, Hunters and Trappers Organization, Nauttiqsuqtiit	In-person	12 (14-2 people overlap with the open house)
Arctic Bay	2024-03-27	Open House*	In-person	20
Resolute	2024-03-30 2024-03-21	Hunters and Trappers Organization, Nauttiqsuqtiit, CLARC**	In-person	8
Resolute	2024-03-20	Open House*	In-person	7
Pond Inlet	2024-03-26	Hamlet Council, Hunters and Trappers Organization, Nauttiqsuqtiit	In-person	5 (7-2 people overlapping with the open house)
Pond Inlet	2024-03-26	Open House*	In-person	10
Grise Fiord	2024-03-22	Hamlet Council, Hunters and Trappers Organization	In-person	9 (10-1 person overlapping with the open house)
Grise Fiord	2024-03-22	Open House*	In-person	10
			TOTAL	**103**

**Indicates events that were open to the public.*

***The Resolute Hamlet Council was invited but did not attend the meeting.*

Table 2. Community members consulted in validation meetings in November 2024, December 2024, and January 2025

Location	Date	Group	Type of Consultation	Estimated Number of Individuals
Clyde River	2024-11-26	Hamlet Council, Hunter and Trappers Organization	In-person	10
Arctic Bay	2024-12-02	Hunter and Trappers Organization, Nauttiqsuqtiit**	In-person	9
Resolute	2024-12-04	Hamlet Council, Hunter and Trappers Organization, Nauttiqsuqtiit	In-person	8
Pond Inlet	2025-01-13	Hamlet Council, Hunter and Trappers Organization, Nauttiqsuqtiit	In-person	14
Grise Fiord	2025-01-16	Hamlet Council, Hunter and Trappers Organization	In-person	10
			TOTAL	**51**

***The Arctic Bay Hamlet Council was invited and had confirmed their presence but did not attend the meeting.*

Appendix D – Who We Heard From: Phase II Stakeholder Consultations

Table 1. Number of stakeholders who were sent draft IMP and whose feedback was requested

Industry Sector	Number of Stakeholder Organizations Contacted
Tier 1	
Mining	3
Fisheries	29
Cruise	4*
Tourism	19
Shipping	13
Tier 2	
Non-Government Organization (NGO)	9
Research/Academia	6
Nunavut Institutions	3
TOTAL	**86**

**Also distributed further to Association's membership*

Table 2. Number of tier 1 stakeholders who attended draft IMP virtual walk-through meetings

Date	Industry Sector	Attending Organizations	Number of Attending Organizations
2025-05-27	Mining	Baffinland Mining Association of Canada	2
2025-05-27	Fisheries	Arctic Fisheries Alliance Northern Coalition Nunavut Fisheries Association	3

2025-06-03	Cruise	Adventure Canada Association of Arctic Expedition Operators (AECO) Aurora Expéditions EYOS Expéditions FK Warren Ltd. Hapag-Lloyd Cruises Holland America Hurtigruten HX (Hurtigruten) Cruise Expeditions Mystic Cruises Ponant Expedition Group Quark Expéditions Royal Caribbean Group Seabourn Secret Atlas Viking Cruises	16
2025-06-04	Tourism	Weber Arctic	1
2025-06-04	Shipping	Fed Nav Petro Nav – Desgagnes	2
		TOTAL	**38**

Table 3. Summary of responses received during Phase II stakeholder and public consultation, May 22 to August 1, 2025.

Industry Sector	Stakeholder	Number of Comments
Tier 1		
Mining	Baffinland	31
	Mining Association of Canada	7
	NWT & Nunavut Chamber of Mines	9
Fishing	Makivvik Corporation	1
Cruise	Association of Arctic Expedition Operators (AECO)	11
Tourism	Black Feather	1
	Travel Nunavut	8

	Weber Arctic	4
Shipping	FedNav	1
Tier 2		
NGO	Canadian Parks and Wilderness Society (CPAWS)	10
	Oceans North	20
	SeaBlue Canada	4
	WWF Canada	14
Academia	Amundsen Science	1
	Researcher, Carleton University	3
	TOTAL	**125**

Summary Statement

This report summarizes the consultation process undertaken between May 2018 and November 2025 to inform the development of the Interim Management Plan (IMP) for Tallurutiup Imanga National Marine Conservation Area (NMCA), in Nunavut. The IMP is a legislative requirement under the *Canada National Marine Conservation Areas Act* and is a key step toward formal establishment of the NMCA. It will guide management for up to five years until a full management plan is developed and tabled in Parliament.

Tallurutiup Imanga NMCA spans approximately 108,000 km² across Lancaster Sound and surrounding waters, representing nearly 2% of Canada's marine area. It is ecologically significant, supporting diverse Arctic marine species and serving as a critical migratory corridor. The area is also central to Inuit culture, subsistence, and food security, providing essential access to country food and sustaining traditional ways of life.

The IMP was developed collaboratively by a Planning Committee composed of the Qikiqtani Inuit Association (QIA), the Government of Nunavut, and the Government of Canada, with support from federal departments. Governance of the NMCA is guided by the Inuit Impact and Benefit Agreement (IIBA), signed in 2019, which established a co-management framework through the Aulattiqatigiit Board.

Consultation Approach

The consultation process was conducted in two phases:

- **Phase I (2018–2019):** Focused on gathering initial input to inform the draft IMP.
- **Phase II (2024–2025):** Focused on reviewing, refining, and validating the draft plan.

Engagement included extensive consultations with five Inuit communities (Pond Inlet, Arctic Bay, Clyde River, Resolute, and Grise Fiord), as well as stakeholders from industry, NGOs, academia, and the general public. Methods included in-person meetings, workshops, open houses, online engagement, and written submissions.

Across both phases, hundreds of participants contributed input, ensuring the IMP reflects a broad range of perspectives.

What We Heard - Key Themes from Consultations

1. **Protection of Wildlife and Ecosystems**
   Communities emphasized the importance of safeguarding marine ecosystems and species such as narwhal, beluga, seals, walrus, and seabirds. Concerns were raised about declining wildlife populations, habitat disruption, and the cumulative impacts of industrial activity and climate change. The communities requested conservation measures

such as seasonal closures, habitat buffers, and protection of critical areas (e.g., calving grounds and polynyas).

2. **Management of Marine Shipping and Vessel Traffic**
   Increased shipping activity was identified as a major concern due to noise, pollution risks, and interference with wildlife and hunting practices. Communities called for stricter controls, including vessel speed limits, designated shipping areas, improved monitoring, and enhanced communication about vessel movements.

3. **Sea Ice Protection and Icebreaking**
   Sea ice is essential for travel, hunting, and ecological balance. Participants expressed concern about icebreaking activities disrupting traditional use and wildlife patterns. Recommendations included restricting icebreaking in sensitive areas and seasons to preserve floe edges and migration dynamics.

4. **Tourism Impacts**
   Growing cruise tourism raised concerns about wildlife disturbance, particularly during sensitive periods such as bird nesting. Communities supported stricter management of tourism activities, including limiting access to certain areas and seasons and ensuring respectful visitor behaviour.

5. **Emergency Preparedness and Response**
   Communities highlighted gaps in preparedness for marine incidents, such as oil spills. There was a strong desire for improved emergency response planning, training, and clear roles for local involvement.

6. **Communication and Enforcement**
   A lack of timely information about vessel activity and uncertainty around permitting were recurring issues. Participants emphasized the need for stronger enforcement mechanisms, consistent regulations across vessel types, and greater community involvement in monitoring and stewardship.

7. **Integration of Inuit Knowledge and Governance**
   The incorporation of Inuit Qaujimajatuqangit and local knowledge was identified as essential to effective management. Communities stressed the importance of Inuit leadership, co-management, and alignment with cultural values and practices.

IMP Review and Validation - Key Changes to the Interim Management Plan

Feedback from Phase II consultations led to several important revisions to the IMP, that were validated by the associated communities:

- Enhanced vision to emphasize respect for Inuit culture, support for self-determination, and recognition of mental health and well-being.

- Adjusted seasonal zoning dates to reflect changing ice conditions.
- Expanded protections for sea ice, bird colonies, walrus haul-outs, and beluga and narwhal habitats.
- Introduction of Areas of Special Importance (ASIs) to protect culturally and ecologically significant sites with flexible management approaches.
- Strengthened management targets related to enforcement, infrastructure, and community programs.
- Refinements to zoning, including speed recommendations, access restrictions, and activity prohibitions in sensitive areas.

Additional updates clarified governance roles, improved definitions, and adjusted certain operational measures (e.g., flight altitude restrictions, voluntary vessel speed limits).

Conclusion

The consultation process integrated diverse perspectives and strengthened relationships among Inuit communities, governments, stakeholders, and the public. The resulting IMP reflects a balance between conservation objectives, Inuit rights and priorities, and sustainable use.

The Aulattiqatigiit Board will continue to guide management, working collaboratively with partners and communities to ensure adaptive, responsive, and culturally appropriate stewardship of Tallurutiup Imanga NMCA.

The IMP establishes a strong foundation for long-term conservation and co-management, ensuring that this ecologically and culturally vital region is protected for future generations while supporting Inuit livelihoods and well-being.

Summary Statement

National Marine Conservation Areas are established and managed to protect and conserve representative marine areas for the benefit, education and enjoyment of the people of Canada and the world. They create enjoyable experiences for visitors, promote awareness and understanding among Canadians, and provide benefits for Indigenous peoples and coastal communities.

Tallurutiup Imanga National Marine Conservation Area (NMCA) Interim Management Plan (IMP) establishes the initial framework for the protection and management of one of the most ecologically and culturally significant marine regions in the Canadian Arctic. Located in Nunavut, Tallurutiup Imanga NMCA encompasses approximately 108,000 km² of marine waters stretching from Resolute in the west to Baffin Bay in the east and extending into Canada's Exclusive Economic Zone. The area plays a critical ecological role within the eastern Arctic marine ecosystem, and it has sustained Inuit for generations by providing access to wildlife resources, essential to food sovereignty and Inuit well-being. The interest in protecting international, national, and regional values of Tallurutiup Imanga by community members has been a recurring theme since the late 1970's, largely due to Inuit concerns over the prospect of future oil and gas development at that time.

This IMP provides strategic direction for the management of Tallurutiup Imanga NMCA while a ten-year management plan is developed within five years after the establishment of the NMCA. The interim plan outlines the vision, guiding principles, management objectives and associated targets and a zoning plan that will guide operations and consensus-based decision-making for Tallurutiup Imanga by the Inuit-Canada joint management board, the Aulattiqatigiit Board.

The plan was developed collaboratively by the Qikiqtani Inuit Association, the Government of Nunavut, and the Government of Canada (Parks Canada with support from Transport Canada and Fisheries and Oceans Canada). Extensive consultations were conducted from 2018 to 2025 with the five associated communities—Resolute, Grise Fiord, Arctic Bay, Pond Inlet, and Clyde River - as well as with stakeholders including industry representatives, environmental organizations, researchers, and the Canadian public.

Purpose and Scope

The IMP aims to protect Tallurutiup Imanga NMCA's ecosystems and cultural heritage while supporting sustainable use and respecting Inuit rights. It provides guidance for managing marine ecosystems, regulating activities, and supporting collaborative research, monitoring, and stewardship.

Key priorities include:

- Protecting marine biodiversity and critical habitats
- Supporting ecologically sustainable use of marine resources, in a manner consistent with the *Nunavut Agreement* and the *Canadian National Marine Conservation Areas Act*
- Protecting Inuit rights and harvesting practices
- Integrating Inuit knowledge in management decisions

- Supporting responsible economic activity and tourism while promoting community wellbeing
- Promoting collaborative research and monitoring

Ecological and Cultural Importance

Tallurutiup Imanga NMCA holds deep cultural and historical significance for Inuit communities. Inuit have relied on the region's marine resources for thousands of years. Today, communities adjacent to the NMCA continue to use the area for subsistence harvesting and travel. Access to wildlife resources within the NMCA remains essential to food security, cultural continuity, and community well-being.

Tallurutiup Imanga NMCA is widely recognized as one of the most biologically productive marine ecosystems in the Arctic and serves as an ecological driver for the eastern Canadian Arctic. The region supports a wide range of marine species and provides essential habitat for polar bears, walrus, seals, bowhead whales, beluga whales, narwhal, and migratory seabirds.

Governance and Co-Management

Management of Tallurutiup Imanga NMCA is based on a collaborative governance model established through the Inuit Impact and Benefit Agreement (IIBA) signed in 2019 between the Qikiqtani Inuit Association and the Government of Canada. The agreement ensures that Inuit rights, knowledge, and interests are central to the management of the NMCA.

A key component of the co-governance structure is the Aulattiqatigiit Board, a joint Inuit–Canada management board composed of equal representation from the Qikiqtani Inuit Association and the Government of Canada. The Board operates through consensus and is responsible for overseeing the planning, operation, and management of the NMCA.

Management also involves coordination with the Government of Nunavut and among several federal departments, including Parks Canada, Fisheries and Oceans Canada, the Canadian Coast Guard, Transport Canada, and Environment and Climate Change Canada, each of which retains responsibilities related to fisheries management, marine safety, environmental protection, and wildlife conservation.

Vision, Management Objectives and Zoning

The long-term vision for Tallurutiup Imanga NMCA is a thriving, globally significant ecosystem that sustains and empowers Inuit for generations to come and welcomes visitors to experience, appreciate, and respect its meaning to Inuit, Canada, and the Arctic region. Through collaborative governance, responsible stewardship, and ongoing research and monitoring, the NMCA will continue to support biodiversity, cultural heritage, and sustainable livelihoods for generations to come.

The IMP establishes four management objectives and associated targets to guide activities over the next five years. The objectives focus on the protection of Tallurutiup Imanga's natural and cultural environment; the sustainable use of natural resources while protecting Inuit rights and promoting community well-being; collaborative research and monitoring; and prevention, preparedness and response planning to increase public safety and the protection of the NMCA. In addition, a zoning framework is utilized as a spatial management tool that sets the management intent for different areas of the NMCA by dividing it into specific zones, each with a defined purpose and level of protection, objectives, and categories of allowable uses and activities.

As per the *Canada National Marine Conservation Areas Act*, the following activities are prohibited in all zones: use or disposition of public lands without authority; exploration and exploitation of non-renewable resources; and disposal of substances in waters except as authorized by a permit or as required for vessel safety and security.

Inuit rights, as set out in the *Nunavut Agreement*, and traditional use of the NMCA by Inuit are not subject to zone restrictions. The zoning regime for Tallurutiup Imanga NMCA recognizes and protects Inuit rights, particularly where use conflicts exist or are anticipated. In addition, the zoning regime does not restrict activities with respect to national security or sovereignty, safe navigation, defense, law enforcement, innocent passage and resupply of communities.

Guiding Principles

Management of Tallurutiup Imanga NMCA is guided by several key principles identified in the IMP:

- **Integration of Inuit Knowledge:** Inuit Qaujimajatuqangit (Inuit knowledge, values, and experience) informs research, monitoring, and management decisions.
- **Inuit Stewardship:** Inuit are part of the land and sea where healthy ecosystems sustain Inuit physical, mental and spiritual well-being and support cultural practices. Inuit are recognized as long-standing stewards of the region whose cultural practices support ecological sustainability.
- **Adaptive and Collaborative Management:** Management approaches will evolve in response to new scientific information, Inuit knowledge, and environmental change.
- **Precautionary and Ecosystem-Based Approaches:** Decision-making prioritizes ecosystem and human health and applies precaution where uncertainty exists.
- **Whole of Government Approach:** A coordinated approach involving federal and territorial departments to guide the management of Tallurutiup Imanga NMCA and support consistent decision-making, efficient resource use, and streamlined administration.
- **Alignment with Legal Frameworks:** Management is consistent with the Nunavut Agreement, the Canada National Marine Conservation Areas Act, and other applicable legislation.

Conclusion

The IMP for Tallurutiup Imanga NMCA is based on currently available Inuit Qaujimajatuqangit, western science, and discussions with local communities, stakeholders, Inuit organizations, and federal and territorial departments. The associated communities played an essential role in the development of the plan, by identifying their vision for the area, the values important to them and the potential threats to these values. The IMP also balances the protection of the environment and the respect of Inuit rights with the interests of stakeholders, where collaboration and adaptive management will be central to the ongoing management of Tallurutiup Imanga. The Aulattiqatigiit Board will work directly with the associated communities for the ongoing implementation the IMP, to ensure that their input inform the collaborative and adaptive management of Tallurutiup Imanga.

Nunavut

QIA

Parks Canada Parcs Canada

Tallurutiup Imanga

National Marine Conservation Area

Interim Management Plan

2026

2026

Tallurutiup Imanga
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Interim Management Plan

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Cette publication est aussi disponible en français.

For more information about the interim management plan or about
Tallurutiup Imanga National Marine Conservation Area

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Foreword

Text and signatures to come during signing.

President
Qikiqtani Inuit Association

Minister of Environment
Government of Nunavut

Minister of Fisheries
Government of Canada

Minister of Transport
Government of Canada

Minister of Environment,
Climate Change and Nature
Government of Canada

Recommendations

Recommended by:

Chief Executive Officer
Parks Canada

Field Unit Superintendent
Parks Canada

Letter of support from Aulattiqatigiit Board

Text and signatures to come during signing.

Co-Chair, Aulattiqatigiit Board
[Director, Qikiqtani Inuit Association]

Co-Chair, Aulattiqatigiit Board
[Field Unit Superintendent
Parks Canada]

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Photo: Nicole McFadden

Glossary of Terms

Associated communities: For Tallurutiup Imanga NMCA, the associated communities are Arctic Bay, Resolute, Pond Inlet, Clyde River, and Grise Fiord.

Aulattiqatigiit Board: The joint Inuit and Canada management board established through the Tallurutiup Imanga NMCA Inuit Impact and Benefit Agreement in accordance with section 8.4.11 of the *Nunavut Agreement*.

Commercial tourism: The practice of providing recreational activity services with the intent of generating revenue. It can involved services such as tours, charters, excursions, outfitting, accommodation, and equipment rental.

Country food: Traditional Inuit food, including game meats, migratory birds, fish, and foraged foods. In addition to providing nourishment, country food is an integral part of Inuit identity and culture and contributes to self-sustainable communities.

Cultural heritage: Includes both tangible cultural resources and intangible cultural heritage, such as cultural traditions, practices, knowledge, skills and beliefs.

Cultural resource: A human work, object, or a place that has evidence of human activity or has spiritual or cultural meaning, and that has been determined to be of heritage value and includes tangible and intangible elements. For greater certainty, intangible elements may include Inuit stories, legends, history, spirituality, practices, representations, expressions, knowledge, and skills.

Ecological sustainability: A state in which marine ecosystems are self-regulating and resilient, and whose structure, function, and capacity to provide ecosystem services are not compromised.

Ecologically sustainable use: Use of marine resources in a manner that meets the needs of present and future generations without compromising ecological sustainability.

Ecosystem: A dynamic complex of animal, plant and microorganism communities and their non-living environment interacting as a functional unit.

Fishing: Understood to mean "fishing" as defined under the *Fisheries Act*. For greater certainty, includes the harvest of any marine animal, including invertebrates, such as clams or shrimp.

Innocent passage: Passage of a vessel is considered innocent so long as it is not prejudicial to the peace, good order or security of the coastal State; such passage shall be continuous and expeditious. Full definition and context in Articles 18 and 19 of the *United Nations Convention on the Law of the Sea.*

Interim management plan: The interim management plan for Tallurutiup Imanga NMCA required under paragraph 7(1)(d) of the *Canada National Marine Conservation Areas Act.*

Inuit Impact and Benefit Agreement (IIBA): The Inuit Impact and Benefit Agreement for Tallurutiup Imanga NMCA, required under Article 8 of the *Nunavut Agreement.*

Inuit Nunangat: The homeland of the Inuit, where Inuit live and use the lands, waters and sea ice. In Canada, Inuit Nunangat includes Nunavut and the northern parts of Labrador, Quebec, Northwest Territories and Yukon.

Inuit Qaujimajatuqangit: The 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. This Inuit Qaujimajatuqangit definition refers to knowledge passed on from generation to generation and describes what it means to be Inuit, how to interact with others, and how to survive on the land.

Inuit use: Past, present, or future Inuit activities or endeavors related to natural, economic, social, or cultural resources and identified as Inuit rights by the *Nunavut Agreement*.

Management Advisory Committee: The advisory committee required under subsection 11(1) of the *Canada National Marine Conservation Areas Act* to advise the Minister on the formulation, review, and implementation of the Management Plan for Tallurutiup Imanga NMCA.

Management plan: The management plan for Tallurutiup Imanga NMCA required under section 8.4.13 of the Nunavut Agreement and Section 9 of the *Canada National Marine Conservation Areas Act.*

Marine protected area: An area in the marine environment that is defined and managed through legal and/or other effective means to achieve the long-term conservation of nature with associated ecosystem services and cultural values (adapted from the International Union for Conservation of Nature). In the context of NMCAs, "marine" includes both ocean environments and the Great Lakes.

National Marine Conservation Area (NMCA): A national marine conservation area of Canada named and described in Schedule 1 of the *Canada National Marine Conservation Areas Act.*

Nunavut Agreement: The *Agreement between 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 enactment by Parliament of the *Nunavut Land Claims Agreement Act,* S.C. 1993 c. 29.

Parks Canada: The Parks Canada Agency, the body corporate established by the *Parks Canada Agency Act.*

Precautionary principle: Where there are threats of environmental damage, lack of scientific certainty is not used as a reason for postponing preventative measures (*CNMCAA* preamble).

Recreational activities (non-extractive): Activities that are non-commercial that individuals engage in for enjoyment and well-being. These activities do not involve extracting renewable or non-renewable resources from the environment (for example, fish, whales, minerals, seaweed, etc.). Recreational activities could include things like boating, wildlife viewing, photography, traveling by snowmobile, or underwater exploration. This definition does not apply to Inuit use.

Sensitive ecosystem element: An ecosystem element that is at risk of being lost or compromised due to its intolerance to disturbance.

Small vessel: means small vessels as described in the *Small Vessel Regulations* (https://laws-lois.justice.gc.ca/eng/regulations/sor-2010-91).

Special feature: A natural or cultural feature of outstanding or unique value within Tallurutiup Imanga NMCA due to its rarity or particular importance.

Stakeholder: A person or group with an interest or concern related to the establishment and/or management of Tallurutiup Imanga NMCA (for example, environmental non-government organizations, fisheries associations and unions, commercial tourism operators and shipping organizations).

List of Acronyms Used

ASI	Area of Special Importance
CNMCAA	*Canada National Marine Conservation Areas Act*
IIBA	Inuit Impact and Benefit Agreement
NMCA	National Marine Conservation Area
UNESCO	United Nations Educational, Scientific and Cultural Organization

1.0 Introduction

Located in Nunavut, the boundaries of Tallurutiup Imanga National Marine Conservation Area (NMCA) encompass the length of Lancaster Sound, stretching from Resolute Bay in the west to Baffin Bay in the east, beyond the territorial waters into Canada's Exclusive Economic Zone (Figure 1). At approximatively 108,000 km^2, Tallurutiup Imanga NMCA represents nearly 2% of Canada's total marine area. It is the ecological driver for much of the eastern Arctic and provides important habitat for nearly all Arctic marine species. Its waters are a migratory corridor for numerous species and essential habitat for polar bears, seals, walrus, bowhead whales, narwhal, beluga whales and migratory birds. The area has sustained Inuit for generations and is an artery connecting communities and allowing travel throughout the High Arctic. Access to wildlife resources found in the NMCA is essential to food sovereignty and Inuit well-being and is critical for the region to remain a source of healthy country food.

The origin of the name Tallurutiup Imanga connects Inuit traditions and the land. Inuit believe that Devon Island resembles facial tattoos on a jawline. Tallurutit is the Inuktitut name for Devon Island and Imanga means a body of water surrounding an area.

The establishment of Tallurutiup Imanga as a National Marine Conservation Area reflects decades of work by Inuit, and supporting partners, to conserve this magnificent place. An Inuit Impact and Benefit Agreement (IIBA) towards the establishment of Tallurutiup Imanga NMCA was signed in 2019 between the Qikiqtani Inuit Association and the Government of Canada, as represented by Parks Canada, Fisheries and Oceans Canada and the Canadian Coast Guard, and Transport Canada. The IIBA provides benefits to Inuit and directions on the management of Tallurutiup Imanga NMCA, including the inclusion of Inuit Qaujimajatuqangit in decision-making, research and monitoring, cultural heritage, management planning, exploratory fisheries, marine shipping, and the promotion of Inuit rights.

In addition to transferring benefits to Inuit, the IIBA established the governance structure for Tallurutiup Imanga NMCA. The Aulattiqatigiit Board, the consensus-based joint Inuit and Canada management board, examines all steps, decisions, initiatives, and undertakings relating to the planning, operation, and management of Tallurutiup Imanga NMCA. The Aulattiqatigiit Board consists of three members appointed by the Qikiqtani Inuit Association and three appointed by the Government of Canada. Canada's appointees include senior representatives from Parks Canada, Fisheries and Oceans Canada, and a third member as determined by the Minister responsible for Parks Canada, who is currently an official from Transport Canada. Board members for the Qikiqtani Inuit Association are two senior officials from the organization and the Chair of the Imaq Committee, an Inuit advisory committee for the Qikiqtani Inuit Association which provides the perspectives of Inuit from the communities associated with Tallurutiup Imanga NMCA. The governance structure of the NMCA is completed by the Operations Committee, a joint Inuit and Canada committee which cooperates on operational aspects of managing the NMCA following the directions set by the Aulattiqatigiit Board.

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Photo: Nicole McFadden

who is currently an official from Transport Canada. Board members for the Qikiqtani Inuit Association are two senior officials from the organization and the Chair of the Imaq Committee, an Inuit advisory committee for the Qikiqtani Inuit Association which provides the perspectives of Inuit from the communities associated with Tallurutiup Imanga NMCA. The governance structure of the NMCA is completed by the Operations Committee, a joint Inuit and Canada committee which cooperates on operational aspects of managing the NMCA following the directions set by the Aulattiqatigiit Board.

The Board is responsible for the implementation of this interim management plan and future management plans. It works by consensus to make decisions on the operations and management of Tallurutiup Imanga NMCA, in accordance with the *Nunavut Agreement, the Canada National Marine Conservation Areas Act (CNMCAA)*, and the *Policy on the Establishment and Management of National Marine Conservation Areas* ("NMCA Policy"). The Board may consult with communities, engage with industry, and/or seek advice and expertise from any individual or organization, on any matters related to the management of Tallurutiup Imanga NMCA. The Board can also use management tools, such as temporary closure, to adapt to changing conditions, based on recommendations from subject matter experts.

1.1 Purpose and scope of the interim management plan

Consistent with the *Canada National Marine Conservation Areas Act (CNMCAA)*, this interim management plan provides guidance for the management of Tallurutiup Imanga NMCA. The vision, management objectives and targets, and zoning plan address key themes related to the protection and conservation of important habitats and biodiversity; the ecologically sustainable use and management of marine resources; protection for Inuit rights and promotion of benefits from the NMCA; recognition of Inuit cultural heritage and stewardship; the inclusion of Inuit Qaujimajatuqangit, and collaborative research and monitoring strategies.

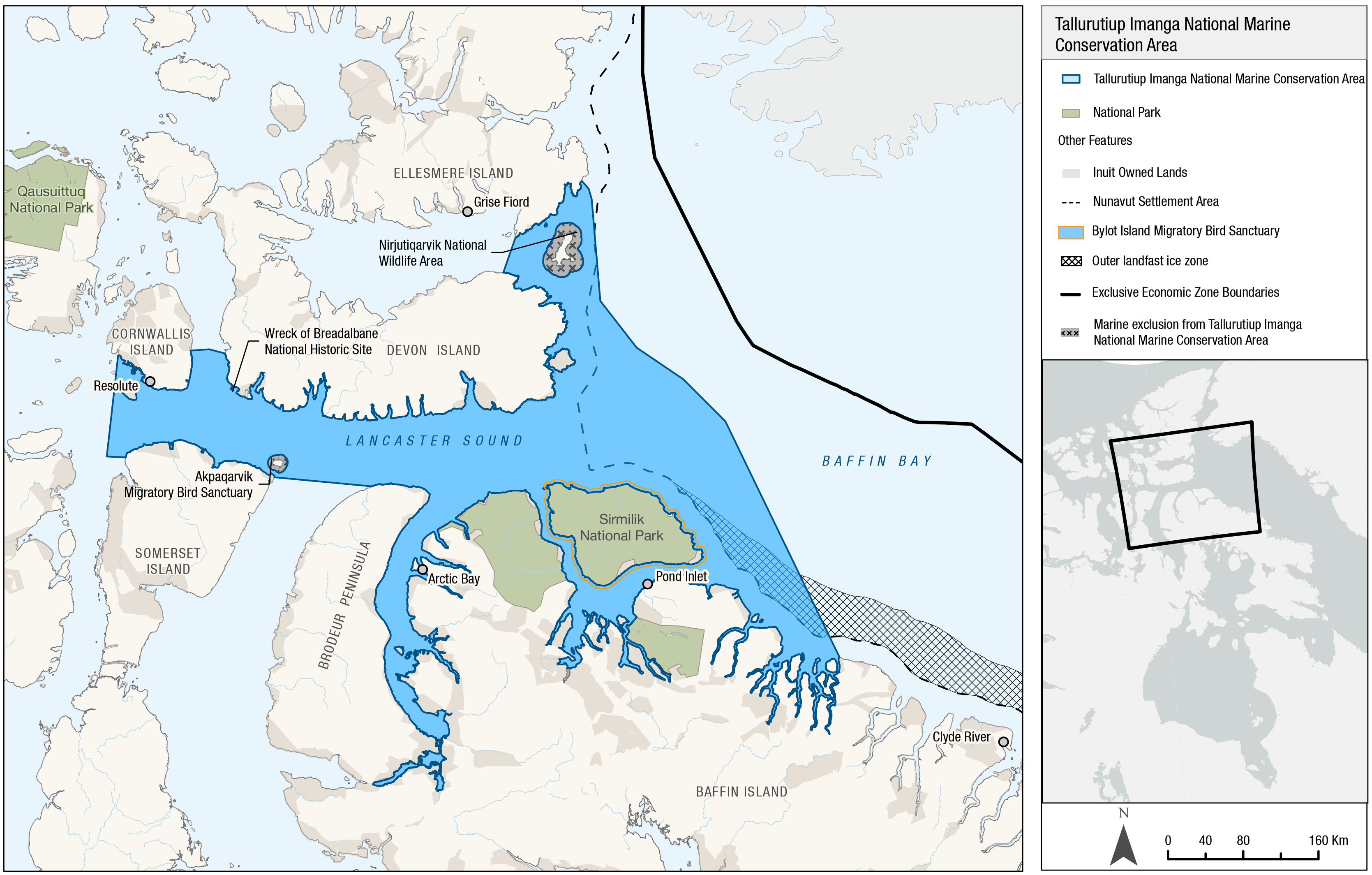


Figure 1.1 Map showing the location of Tallurutiup Imanga National Marine Conservation Area

This interim management plan was developed by a Planning Committee consisting of representatives from the Qikiqtani Inuit Association, the Government of Nunavut, and the Government of Canada (Parks Canada). The Planning Committee held extensive consultations with the five communities associated with Tallurutiup Imanga NMCA (Resolute, Grise Fiord, Arctic Bay, Pond Inlet, and Clyde River) and key stakeholders including the commercial tourism, fishing, and shipping industries, environmental non-governmental organizations, academia, and other Federal government departments in 2018 and 2019. These consultations informed the development of the content of this plan. In 2024 and 2025, consultations were again held with the associated communities to finalize this draft of the interim management plan.

This interim management plan will remain in place until a full management plan for the NMCA is developed and tabled in parliament within five years following establishment under the *CNMCAA*. The development of the full management plan will also rely on extensive consultations to identify a long-term vision for the NMCA, and provisions for ecosystem protection, human use, zoning, public awareness, and performance evaluation. The management plan will replace the interim management plan as the guiding document to manage the NMCA for up to ten years. Under the *CNMCAA*, management plans undergo review cycles at least every ten years and any amendments to the plan are required to be tabled in parliament.

Progress toward achieving the objectives and the effectiveness of the interim management plan are monitored on an ongoing basis. Reports on progress toward achieving the interim management plan objectives and targets will be shared with communities, partners, and stakeholders and made publicly available. Parks Canada shares its annual implementation report in June; this report is presented to the Aulattiqatigiit Board at a public meeting. Any feedback received is documented and used as input for the creation of the next management plan.

1.2 Establishment of Tallurutiup Imanga National Marine Conservation Area

NMCAs are established for the purpose of protecting and conserving representative marine areas for the benefit, education, and enjoyment of the people of Canada and the world (*CNMCAA* s. 4(1)). The *CNMCAA* enables Parks Canada to establish and manage a system of NMCAs that are representative of the Atlantic, Arctic and Pacific Oceans, and the Great Lakes.

The CNMCAA requires that marine conservation areas are:

> "…managed and used in a sustainable manner that meets the needs of present and future generations without compromising the structure and function of the ecosystems…with which they are associated" (*CNMCAA* s. 4(3))

NMCAs are places where Indigenous peoples continue their traditional and cultural practices—including accessing traditional foods—and fulfill their roles as stewards. Protecting marine biodiversity and ecosystems is of primary importance.

Between 2009 and 2017, the Lancaster Sound National Marine Conservation Area Feasibility Assessment Steering Committee, comprised of representatives from the

Qikiqtani Inuit Association, Government of Canada, and Government of Nunavut, worked together on an assessment to determine whether an NMCA was feasible and desirable in Lancaster Sound. The Steering Committee led years of consultations with local communities and stakeholders, and conducted studies related to ecological and Inuit knowledge, commercial tourism, fishing, and hydrocarbons. The committee found that the establishment of an NMCA to conserve and protect the Lancaster Sound region was both feasible and desirable. The process culminated in 2017 with *A National Marine Conservation Area Proposal for Lancaster Sound – Feasibility Assessment Report* which recommended the establishment of a NMCA and recommended a preliminary boundary of approximately 109,000 km^2 influenced significantly by Inuit Qaujimajatuqangit.

The recommendations included in the feasibility assessment were accepted through a Memorandum of Understanding between the Qikiqtani Inuit Association, the Government of Canada (Parks Canada) and the Government of Nunavut in August 2017. The Memorandum of Understanding also established a Planning Committee responsible for the development of this interim management plan and for recommending the final boundary for the NMCA. At the same time, Parks Canada and the Qikiqtani Inuit Association signed Terms of Reference to launch the negotiation of the IIBA towards the establishment of Tallurutiup Imanga NMCA, as required by the Nunavut Agreement. The Planning Committee finally recommended a slightly revised boundary of 108,000km^2, as described in the 2019 IIBA (Figures 1.1 and 1.2).

1.3 Inuit and the Environment: Cultural and Historical Background

Approximately 4,100 people currently live in communities, use camps, and access traditional sites along the shores of the NMCA. Throughout the year, the ecological abundance of this area provides for Inuit today as it has for generations. Inuit who call this place home are deeply connected to it by their history, culture, language, and traditions. Through harvesting, travel, and living within this area, Inuit have helped maintain ecological balance since the arrival of their ancestors, thousands of years ago. The many species that have co-existed with Inuit in this area continue to provide food and resources for clothing, shelter, and economic benefits. Inuit

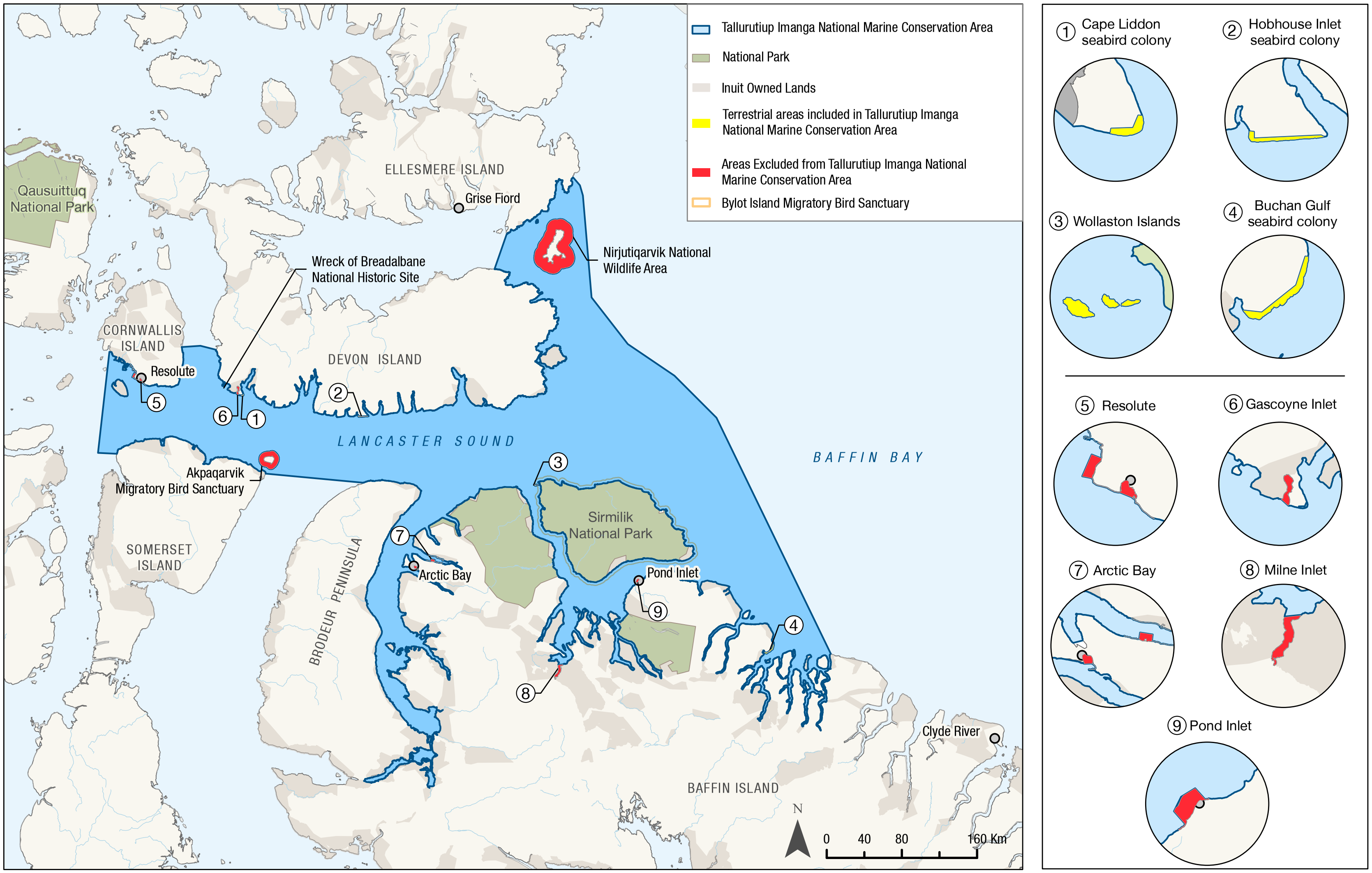


Figure 1.2 Map showing detail of the Tallurutiup Imanga NMCA boundary. Yellow areas are terrestrial areas that are included within the NMCA boundary; red areas are areas excluded from the NMCA.

have a deep knowledge of the animals of this area, as well as their habitats, biology, and behaviour. Inuit Qaujimajatuqangit encompasses all things important to Inuit relationships with the environment and, as such, is part of all decision-making. Inuit Qaujimajatuqangit is constantly generating new knowledge, and its application is critical to governance and management of Tallurutiup Imanga NMCA.

1.4 Importance of Conserving Tallurutiup Imanga

Tallurutiup Imanga NMCA is recognized as one of the most biologically productive and diverse Arctic marine areas in the world. Lancaster Sound is a major east-west waterway, encompassing significant portions of the maritime route from the North Atlantic, through the Canadian Archipelago and Arctic Ocean, and onwards to the Pacific Ocean. The region has supported Inuit year-round for millennia, as demonstrated by at least 46 known archaeological sites and continued subsistence use to this day. Inuit Qaujimajatuqangit carries the collective experience and harvesting traditions used in the area for generations.

At a national level, protecting Tallurutiup Imanga NMCA contributes to Parks Canada's long-term goal of establishing at least one NMCA in each of the 29 distinct marine regions of Canada. Tallurutiup Imanga NMCA represents the Lancaster Sound marine region in the Arctic Ocean and is the sixth region to be represented within the system of NMCAs.

Photo: Parks Canada

"Conservation and management of Tallurutiup Imanga is important because we have to protect the marine mammals, like seals and narwhals—especially when they are our main source of food."

James Simone, Pond Inlet

Lancaster Sound was identified by an International Union for the Conservation of Nature-Natural Resource Defense Fund 2011 report as a 'Super Ecologically and Biologically Significant Area' for the Arctic. The extent of Tallurutiup Imanga NMCA includes all or part of eight Ecologically and Biologically Significant Areas identified in the Canadian Arctic by Fisheries and Oceans Canada and three Key Terrestrial Habitat Sites for migratory birds. In addition, Tallurutiup Imanga NMCA, along with Sirmilik National Park, has been added to Canada's Tentative List for UNESCO World Heritage Sites as an exceptional representation of the high Arctic coastal ecosystem.

Current scientific data for Tallurutiup Imanga NMCA are relatively limited. However, two notable components to the biological features of the area are major concentrations of nesting and migratory marine birds, and nationally and globally significant concentrations of marine mammals including 75% of the global narwhal population. Populations of several marine mammals classified by the Committee on the Status of Endangered Wildlife in Canada as "Special Concern", including bowhead whales, beluga, walrus, and polar bear, rely on Tallurutiup Imanga NMCA and its adjacent shores for critical life stages such as foraging, breeding, and migration to and from summer habitats. The ecological importance of Tallurutiup Imanga NMCA also extends to the sea floor: there are areas of significant concentrations of corals and sponges within the NMCA.

A major reason for the abundant marine life in Tallurutiup Imanga NMCA is the presence of polynyas, large areas of open water surrounded by sea ice. Formed by a combination of ocean currents and winds, the nutrient rich waters of these polynyas provide abundant food and productive habitat for marine mammals, Arctic birds, and other species that make the Arctic ecosystem their home.

Ice breakup also begins earlier in certain regions of the NMCA than in the surrounding area because of these currents and winds: in early spring along the ice floe edge, nutrients well up to the surface, combining with sunlight to create 'hot spots' of biological productivity. The resulting abundance at the base of the food chain provides critical spring foraging habitat for fish such as Arctic cod and other species such as narwhal, beluga, bowhead whales, and large aggregations of marine birds. As ice gives way to open water, critical travel routes open for marine animals and people.

1.5 Economic Activities and Uses within Tallurutiup Imanga NMCA

In addition to subsistence hunting, fishing, gathering, and other traditional uses of Inuit harvesting marine resources, the core economic activities within the NMCA include commercial shipping (resupply to local communities and marine transportation for the Baffinland Iron Mines Corporation) and the commercial tourism industry (such as cruise and yacht excursions, kayaking, sport hunting, floe edge commercial tourism, wildlife viewing, dogsledding, snowmobiling and cultural education).

Commercial and exploratory fisheries are an emerging activity within Tallurutiup Imanga NMCA and of great interest to the associated communities as an opportunity for economic development. Inuit regularly harvest Arctic char for subsistence and as part of small-scale commercial fisheries. Other marine transportation activities include research vessels, international cargo ships transiting Lancaster Sound and Eclipse Sound, government vessels (for example, Canadian Coast Guard icebreakers, Department of National Defence activities, and resupply to the Nanisivik Naval Facility), as well as local and non-local pleasure craft.

1.6 Guiding Principles for the management of Tallurutiup Imanga NMCA

1. Use of Inuit Qaujimajatuqangit

Inuit values, experience, and Inuit Qaujimajatuqangit inform and guide all aspects of management for Tallurutiup Imanga NMCA.

2. Inuit Identity and Relationship with the Physical Landscape

Inuit are part of the land and sea and Tallurutiup Imanga NMCA is part of Inuit Nunangat. The physical, mental, and spiritual health of Inuit is dependent on a healthy ecosystem and the continuity of Inuit cultural practices, such as harvesting. Inuit rely on the environment and its wildlife for physical sustenance and cultural renewal, and in turn, Inuit are stewards of the NMCA dedicated to ensuring its long-term health and sustainability.

3. Cooperative Approach to Adaptive Management

Adaptive management is both a deliberate process for dealing with uncertainty and responding to new information by adjusting management to improve operational outcomes, and also an iterative process that learns from real-world outcomes of past management actions to improve future strategies. In managing Tallurutiup Imanga NMCA and implementing the interim management plan, the Aulattiqatigiit Board will make decisions through consensus governance, taking into consideration new information about changes to the environment, about changing human use, and about needs of Inuit in the associated communities, as well as results of past management actions. As new information becomes available, the Aulattiqatigiit Board will use various tools available to them (Appendix D) to adapt management strategies and address emerging changes.

4. Precautionary Principle and Ecosystem Approach

Management of Tallurutiup Imanga NMCA will be rooted in the precautionary principle and the twelve principles of an ecosystem approach from the Convention on Biological Diversity, which considers humans to be an essential component of the ecosystem (https://www.cbd.int/ecosystem/principles.shtml).

5. Whole of Government Approach

A whole of government approach with relevant federal and territorial government departments will be taken towards the management of Tallurutiup Imanga NMCA to ensure integrated and consistent decision making, the efficient use of resources, and to ensure administrative processes are as streamlined as possible.

6. Alignment with Canadian and International Law

The management of Tallurutiup Imanga NMCA will be consistent with the *Nunavut Agreement*, applicable federal and territorial laws, comply with Canada's domestic and international legal obligations, and allow for the proper conduct of the external affairs of Canada.

2.0 Planning Context

2.1 Legislative and Policy Context

The *CNMCAA* provides the legal authority and framework for Parks Canada to establish and manage Tallurutiup Imanga NMCA. The Minister of Fisheries and Oceans Canada and Minister of Transport Canada maintain their respective regulatory authorities within the NMCA and must agree on any management provision that relates to their respective areas of responsibility (Table 2.1). Parks Canada ensures coordination and collaboration among federal departments who have jurisdiction in the NMCA. The management of the NMCA will also be supported through regulations under the CNMCAA (currently in development and expected to come into force in 2026).

All parties with jurisdiction in Tallurutiup Imanga NMCA ensure their responsibilities are carried out in accordance with the enabling legislation and regulations, consistent with the *Nunavut Agreement*, the *CNMCAA*, the IIBA, other

Federal Body	Responsibility
Parks Canada	• Public lands (implications for managing Species At Risk, impact assessment) • All matters not the responsibility of another Minister • Coordination of federal management efforts
Fisheries and Oceans Canada	• Fishing, aquaculture and fisheries management , safe navigation, and ocean science
Canadian Coast Guard	• Responsible for search and rescue, icebreaking, environmental response
Transport Canada	• Marine navigation and marine safety • Aviation
Environment and Climate Change Canada (Canadian Wildlife Services)	• Management of Nirjutiqarvik National Wildlife Area, Akpaqarvik Migratory Bird Sanctuary, and Bylot Island Migratory Bird Sanctuary

Table 2.1 Shared Federal Responsibility

applicable legislation, regulations, NMCA Policy, NMCA management plans, and other policy instruments (Appendix C).

The Marine Safety and Security Branch of Transport Canada has the responsibility for ensuring that marine navigation in Arctic waters is conducted to mitigate the safety and environmental risks associated with marine navigation through the *Arctic Waters Pollution Prevention Act* and the *Canada Shipping Act.* In the Arctic, both Acts, along with the *Marine Transportation Security Act*, and their associated regulations are applied to provide Canada's operational regulatory regime governing marine safety, security, and environmental protection matters. The Marine Safety and Security Branch administers and enforces these Acts and associated Regulations.

Fisheries and Oceans Canada has responsibility for fisheries management and aquaculture in NMCAs, including Indigenous fisheries. Fisheries and Oceans Canada is responsible for the provision of aids to navigation, marine communication and traffic services. The Canadian Coast Guard is responsible for icebreaking, marine pollution response, and maritime search and rescue to ensure safe and accessible waterways.

In addition to the above, Environment and Climate Change Canada is mandated to protect migratory birds according to the *Migratory Birds Convention Act*. Parks Canada is responsible for administering the *Species at Risk Act* for federal lands and waters administered by Parks Canada, including Tallurutiup Imanga NMCA.

Once the NMCA is established under the *CNMCAA*, Parks Canada will replace the Nunavut Planning Commission in conducting conformity reviews for project proposals occurring within Tallurutiup Imanga NMCA. The requirements set out by, or under, any law for which Parks Canada has authority will replace any approved land use plans in conformity determinations. This interim management plan and subsequent full management plans will be tools used in both conformity reviews and subsequent impact assessment processes.

2.2 Roles of Other Government and Co-Management Bodies

Tallurutiup Imanga NMCA is a vast area, and cooperation with others is key for successful management.

Territorial Government

The Government of Nunavut will continue to play a role in such things as Nunavut Research Institute research permits, cultural heritage management, commercial tourism development, promotion and supports for a strong sustainable commercial tourism sector, investor confidence and promotion, wildlife management, and licensing within Nunavut.

Further to the IIBA, the Government of Nunavut shall remain involved in such matters as capacity building and training activities for Inuit (IIBA s. 10.4.1) and improving the understanding of the marine ecosystem and the potential for sustainable fishing opportunities (IIBA s. 16.1.4).

Photo: Nicole McFadden

The Government of Nunavut will seek active and continuous participation in the management of Tallurutiup Imanga NMCA, including seeking a seat on the Management Advisory Committee that will be responsible for the formulation, review and implementation of the Management Plan as per s.11(1) of the CNMCAA.

Institutions of Public Government

The institutions of public government as set out in the Nunavut Agreement will continue to play an important role within Tallurutiup Imanga NMCA. The Nunavut Wildlife Management Board will continue its role in decisions related to wildlife management. The Nunavut Impact Review Board will continue its role of screening and reviewing projects. When a project is proposed to take place both within and outside of the NMCA, the Nunavut Planning Commission will consider the components of the project outside of the NMCA and the Aulattiqatigiit Board will review the portions of the project inside the NMCA.

Protected areas within and adjacent to Tallurutiup Imanga NMCA

Governance of the NMCA provides continuity and alignment between protected areas that lie adjacent to or within the NMCA boundary and their associated co-management regimes and IIBAs (for example, Sirmilik National Park administered by Parks Canada and Akpaqarvik and Bylot Island Migratory Bird Sanctuaries and Nirjutiqarvik National Wildlife Area administered by the Canadian Wildlife Service of Environment and Climate Change Canada). This alignment will not diminish protection in either the NMCA or the other protected areas.

Photo: Nicole McFadden

Photo: Nicole McFadden

3.0

A Vision for Tallurutiup Imanga NMCA

Tallurutiup Imanga National Marine Conservation Area is a thriving, globally significant ecosystem that sustains and empowers Inuit for generations to come and welcomes visitors to experience, appreciate, and respect its meaning to Inuit, Canada, and the Arctic region.

The structure and function of the ecosystems of Tallurutiup Imanga NMCA are protected, remain strong and healthy, and are cooperatively managed by Inuit and the Government of Canada. The management of Tallurutiup Imanga NMCA acknowledges the key role that Inuit play as part of the Arctic ecosystem and as stewards of the NMCA. The cooperative management approach safeguards Inuit harvesting areas and activities, and supports Inuit self-determination over their general well-being, including economic, social, and cultural development. Marine resources are managed in an ecologically sustainable manner for the lasting benefit of coastal communities.

Inuit continue to directly rely on this region for sustaining their lives, enjoying year-round access to marine wildlife; practicing their culture and traditions such as hunting, being stewards of the land and waters; continuing to accumulate their vast knowledge, and maintaining strong connections with their youth, other Canadians, and the world. Ecologically sustainable and culturally respectful visitation are promoted, and Inuit play a central role in managing commercial tourism activities and sharing their knowledge with visitors.

Photo: Carey Elverum

Photo: Sima Sahar Zerehi

4.0 Management Objectives

The following management objectives and targets consider the recommendations of the report resulting from the 2017 feasibility assessment and the additional consultations conducted by the Planning Committee with the five associated communities and key stakeholders during 2018, 2019, 2024 and 2025. They guide the management of Tallurutiup Imanga NMCA over the anticipated five-year lifespan of the plan. The objectives describe the broad aspirational outcomes; the targets are more specific and serve to measure and report on progress toward each objective. The years specified in the targets refer to when within the five-year lifespan of the plan the target will be completed. The managing partners of the NMCA develop their respective annual workplans using the guidance of these objectives and targets in addition to the guidance provided in the IIBA.

Photo: Francine Mercier/Parks Canada

Objective 1: The natural and cultural heritage of Tallurutiup Imanga is protected and conserved.

Tallurutiup Imanga is the ecological driver of the eastern Canadian Arctic marine ecosystem, providing sustenance and essential habitat for a diversity of species, including species at risk. A healthy, productive marine ecosystem is critical for these marine species and for Inuit, who depend on the marine environment for livelihood, food security, and cultural continuity. Healthy ecosystems also have enhanced resilience to natural and human-induced disturbances and changes, including climate change. Tallurutiup Imanga NMCA managers will prioritize the protection and conservation of the rich biodiversity and unique ecosystems of Tallurutiup Imanga NMCA, from the flourishing colonies of marine animals living on the bottom of the ocean floor, to the sea ice on the surface that supports Inuit self-sufficiency, provides critical habitat, and drives biological productivity.

Managers will also ensure there is effective management of sites of cultural importance within Tallurutiup Imanga NMCA, which include Inuit cultural and spiritual sites, archaeological sites, and the Wreck of Breadalbane, to ensure they are cared for and protected. An effective zoning plan gives management the tools to protect natural and cultural heritage. Users must also be aware of the rules and guidelines in place to reduce impacts on wildlife habitat, sea ice, areas of importance to communities for sustenance and cultural activities, and the unique features of Tallurutiup Imanga NMCA. Clear, simple, and streamlined processes for issuing permits and authorizations will ensure users know when and where authorizations are required and ensure the impacts of activities are minimized.

Achieving the following targets will help accomplish this objective:

Target 1. The effectiveness of the interim zoning plan in protecting and conserving natural and cultural heritage is evaluated to improve the zoning plan if needed (for example, changes to zone boundaries, or the need for additional management tools to support zoning) by the end of year five.

Target 2. A plan that identifies effective communication tools to inform NMCA users about the protection and conservation of the natural and cultural heritage of Tallurutiup Imanga NMCA is completed by year two. Implementation of the identified tools begins in year three.

Target 3. Processes for issuing authorizations (such as permits or licenses) for activities in Tallurutiup Imanga NMCA are developed, and documented in a format that is publicly available, by the end of year two. These processes prioritize the protection of wildlife and Inuit use of the area in the management of other uses and activities within the NMCA. To the extent possible, these processes are streamlined with existing procedures.

Target 4. As per the Federal Marine Protected Areas Protection Standard, an assessment of the compatibility of the use of bottom trawl gear with the NMCA's conservation objectives is conducted in collaboration with communities and stakeholders, and a report delivered to the Aulattiqatigiit Board by the end of year five.

Target 5. A Cultural Resources Management Plan, or alternative management tools as directed by the Aulattiqatigiit Board (IIBA s. 12.2), is completed, and implemented by year two.

Target 6. An assessment of the need for increased protection of colonial seabirds and their habitat is completed in collaboration with the Canadian Wildlife Service, and a report with findings and recommendations delivered to the Aulattiqatigiit Board by year three.

Photo: Nicole McFadden

Objective 2: The sustainable use of marine and terrestrial resources in Tallurutiup Imanga NMCA respects Inuit rights, results in economic and social benefits for Inuit, and enhances the well-being of the associated communities.

Tallurutiup Imanga NMCA has seen significant increases in ship traffic related to commercial shipping and tourism over the past 25 years, with this growth projected to continue. Communities have expressed concerns about the impacts of ship activity on wildlife habitat and behaviour, and on the use, safety, and enjoyment of hunting, camping, and travel areas. Inuit access to wildlife resources found in Tallurutiup Imanga NMCA is essential to food sovereignty and Inuit well-being, and it is critical that the region continues to remain a source of healthy country food.

Ecologically sustainable economic activities are welcomed and encouraged in Tallurutiup Imanga NMCA. These activities will be managed to minimize adverse impacts on Inuit travel and rights; to provide benefits to the communities, and overall, to increase the wellbeing of those living in and around Tallurutiup Imanga. NMCA managers will actively work with communities and partners to identify and facilitate opportunities to realize social, economic, and cultural benefits from the NMCA. Community input will also be sought to develop and assess key indicators to measure and understand the impacts of the establishment of Tallurutiup Imanga NMCA on the wellbeing of the associated communities to better inform management decisions.

Achieving the following targets will help accomplish this objective:

Target 1. As part of the development of processes to issue authorizations (Objective 1, Target 3), terms and conditions are developed that require project proponents to document how their proposals respect Inuit rights and benefit the associated communities within two years.

Target 2. The tools needed to manage visitor behaviour in Tallurutiup Imanga NMCA and associated communities (for example, guidelines for cruise ships), to reduce the impact of visitation and increase the economic benefits to communities, are developed in collaboration with the communities and stakeholders, implemented, and communicated to users within two years.

Target 3. An assessment of effective methods of informing communities about marine vessel movements (across the range of vessel size), commercial activity, and marine navigation matters in Tallurutiup Imanga NMCA is completed within two years. Upon completion, the recommendations from the assessment are ready to be implemented.

Target 4. A strategy that outlines opportunities to build local capacity to benefit from economic opportunities in Tallurutiup Imanga NMCA, including, but not limited to, ecologically

Photo: L. Narraway

Photo: Jovan Simic

sustainable and culturally appropriate commercial tourism activities, is developed in partnership with communities and stakeholders within five years.

Target 5. Social, cultural, and economic indicators to assess the impact of Tallurutiup Imanga NMCA on the well-being of adjacent communities are co-developed with communities. The monitoring of these indicators commences within five years.

Target 6. In collaboration with the associated communities, an infrastructure plan is developed and ready to be implemented within two years to identify infrastructure needs to support operations and management of Tallurutiup Imanga NMCA (for example cabins or visitor reception center(s)). This infrastructure plan may include guidance on the implementation of the four infrastructure agreements made in 2019 related to Tallurutiup Imanga (community harbours in Grise Fiord and Resolute, Small Craft Harbours in Clyde River and Arctic Bay, multi-use infrastructure in the five associated communities, regional training center in Pond Inlet) if requested by one or more of the parties to those agreements. Such guidance is supplementary and not a prerequisite for implementation of those agreements.

Photo: Nicole McFadden

Objective 3: Collaborative research and monitoring increases awareness of Tallurutiup Imanga National Marine Conservation Area, informs decision making, and promotes knowledge collection and sharing.

Effective conservation of Tallurutiup Imanga NMCA requires current, sound information derived from a robust and active research and monitoring program. Inuit Qaujimajatuqangit and western science together will form the basis for decision making. Inuit Qaujimajatuqangit is an active knowledge base that must be used, applied, and shared on a continual basis to evolve and realize its full value. This emphasizes the importance of establishing opportunities for Inuit to participate in research and monitoring, and to share knowledge about Tallurutiup Imanga NMCA. Inuit in the associated communities have expressed concerns about the way research has been conducted and the impacts on their communities. The active participation of communities is key to shaping research and monitoring initiatives in the NMCA, to ensure that community concerns are addressed, and community priorities are reflected.

The Inuit Qaujimajatuqangit principle of Ikajuqtigiinniq (working together for a common cause) will guide the work under this objective. Collaboration with communities to design and conduct research and monitoring will increase community capacity. Further, collaboration and community involvement will result in a better understanding of ecosystem health and threats, and ensure resources are used wisely. As data is collected, used, and shared, the level of awareness of Tallurutiup Imanga NMCA and its significance to the Arctic region and the world will increase. Information sharing provides an opportunity to communicate to visitors and the public the central role that Inuit have played since time immemorial, and continue to play, as stewards and knowledge keepers of this valuable area.

Achieving the following targets will help accomplish this objective:

Target 1. A minimum of three indicators to monitor ecological sustainability that are based on Inuit Qaujimajatuqangit and western science are co-developed with communities and approved by the Aulattiqatigiit Board. The monitoring of these indicators commences within five years.

Target 2. Ensure there is a Research and Monitoring Strategy for the NMCA that meets all the requirements as listed in Article 13 concerning Research and Monitoring of the IIBA. The implementation of the strategy starts in year one.

Target 3. A plan to increase Inuit participation in, and benefit from, research and monitoring activities and that further supports the implementation of Article 13 of the IIBA concerning Research and Monitoring is developed and implemented by year four.

Target 4. Beginning in year two, an annual event is held in one of the five associated communities each year on a rotating basis, in partnership with the communities, for sharing stories, knowledge, and experiences related to Tallurutiup Imanga. This event fosters direct community engagement and contributes to cultural and environmental awareness.

Target 5. Guidelines for reporting results from research and monitoring activities are co-developed with communities within four years. Aligned with guidelines, research authorizations include requirements for results to be shared with the involved communities within 12 months of the completion of the project and for community feedback to be documented so it can inform future research and monitoring activities within Tallurutiup Imanga NMCA.

Photo: Nicole McFadden

Objective 4: Collaborative and coordinated prevention, preparedness, and response planning increases safety of the associated communities and NMCA users and the protection of Tallurutiup Imanga.

Increased human activity, pollution, the threat of oil spills, and the effects of climate change all pose threats to the protection and conservation of the marine environment, and the users of Tallurutiup Imanga NMCA. Increased vessel traffic and visitation increase the likelihood of requiring search and rescue or emergency response. However, the current capacity to respond to incidents is limited. Incident response and the enforcement of rules and regulations in the NMCA is currently decentralized and must be coordinated among a variety of parties, including federal departments, the Government of Nunavut, local search and rescue teams, harvesters, the Canadian Rangers, and communities.

With the establishment of Tallurutiup Imanga NMCA, and the corresponding change in Parks Canada's responsibilities, there is an opportunity to work together to increase resourcing and reduce the challenges related to emergency preparedness and enforcement. Cooperation and coordination between parties will clarify roles and responsibilities, improve the use of resources and infrastructure, increase the capacity to respond to emergencies; allow for better enforcement of rules and regulations, and overall improve the safety of users and the protection of the environment. The knowledge and experience held in the communities associated with the NMCA are crucial to developing and implementing measures needed to protect the public and the environment. Marine safety will be further supported through clear communication of safety measures needed to reduce the chance of an emergency or search and rescue operation. Further, the implementation of appropriate navigation aids will contribute to the overall ongoing protection of the marine area, communities, and other users.

Achieving the following targets will help accomplish this objective:

Target 1. A plan to improve emergency preparedness and response is developed in collaboration with relevant partners and implemented within three years. This plan includes, at a minimum, marine environmental and hazard response, and search and rescue.

Target 2. Needed safety measures in Tallurutiup Imanga NMCA, for both open water and sea ice seasons, are identified with partners and communities and compiled in a report, and these measures are communicated to the NMCA users within two years.

Target 3. A strategy to align prevention, compliance, and enforcement across governments, agencies, and other partners, which includes stronger and increased Inuit presence and representation in compliance and enforcement roles, is developed by year three and implemented by year five.

Target 4. A method for communities to report suspicious vessel activities or observations in Tallurutiup Imanga NMCA (for example, incidents of wildlife disturbance, pollution, or illegal hunting), and inquire about shipping activities, is implemented by the end of year one.

Target 5. A plan to identify navigation and communication aids needed to improve navigational safety (for example, buoys, markers, identification of safe harbours, improved charting of navigation routes) in Tallurutiup Imanga NMCA is developed with communities and stakeholders within four years.

Photo: Nicole McFadden

5.0 Zoning

5.1 Zoning Framework

Zoning is a spatial management tool that sets the management intent for different areas of an NMCA by dividing it into specific zones, each with a defined purpose and level of protection, objectives and categories of allowable uses and activities. As per the CNMCAA, each NMCA must have at least two zones, one that fosters and encourages ecologically sustainable use of marine resources, and one that fully protects special features or sensitive ecosystem elements. Ensuring that zones are of sufficient size and effective configuration is important to achieve the objectives of each zone. Zoning is implemented through a range of voluntary, policy, and regulatory measures by the appropriate authority or authorities (see section 2 and Appendix D).

Zoning provides certainty and predictability to managers and NMCA users and strives to minimize negative socio-economic impacts to Indigenous peoples, stakeholders, and coastal communities. In addition to the primary objectives laid out for each zone, the zoning plan may incorporate objectives to reduce conflicting or competing uses. As part of Parks Canada's regular management planning cycle, annual reporting and long-term monitoring studies are used to inform the evaluation of zoning efficacy within the NMCA and address conservation and ecosystem objectives and the needs of users.

This first zoning plan for Tallurutiup Imanga NMCA is based on the national Parks Canada NMCA zoning framework (Appendix A). The NMCA framework comprises four zones, each with a specific purpose, objectives, and set of allowable activities and uses. The purpose of each zone is described in Figure 5.1.

ZONE 1 STRICT PROTECTION	ZONE 2 GENERAL PROTECTION	ZONE 3 HABITAT PROTECTION	ZONE 4 MULTIPLE USE
PURPOSE Strictly protects special features and sensitive ecosystem elements that are susceptible to disturbance. Access and extractive uses are prohibited.	PURPOSE Protects special features, sensitive ecosystem elements and representative characteristics of the marine regions while providing for compatible access and non-extract uses. Extract use is prohibited.	PURPOSE Protects specific habitats while providing for compatible uses and extractive uses. Some uses are prohibited to support specific habitat conservation objectives.	PURPOSE Sustains the greatest range of uses that do not compromise, ecological sustainability, cultural resources, or heritage values.

Figure 5.1 The purpose of each zone in the NMCA zoning framework
(Source: Directive on the Management of National Marine Conservation Areas).

The following activities are prohibited in all zones:

- Use or disposition of public lands without authority (CNMCAA s. 12);
- Exploration and exploitation of non-renewable resources (CNMCAA s. 13); and
- Disposal of substances in waters except as authorized by a permit (CNMCAA s. 14) or as required for vessel safety and security.

In general, activities and uses that are consistent with the purpose and objectives of the zone are allowed, subject to applicable legislation, regulations, site-specific review processes, authorizations and permitting requirements. For all zones, impact assessments to assess and manage the impacts of proposed projects will be conducted as per the Nunavut Planning and Project Assessment Act and Parks Canada's policies and guidance on impact assessment. Cumulatively, all activities and uses in an NMCA must be conducted in a manner and at a rate and scale that are ecologically sustainable. More details on the allowable activities and uses in each zone, and what additional permissions or authorizations may be required (for example a permit or license), are described in Appendix A.

Inuit rights, as set out in the Nunavut Agreement, and traditional use of the NMCA by Inuit are not subject to zone restrictions. Inuit rights are often exercised to support food sovereignty, cultural practices, and community health and well-being. The zoning regime for Tallurutiup Imanga NMCA recognizes and protects Inuit rights, particularly where use conflicts exist or are anticipated.

In addition, the zoning regime and management of Tallurutiup Imanga NMCA does not restrict, prohibit, or have the effect of restricting or prohibiting activities or uses with respect to national security or sovereignty, safe navigation, defence, law enforcement and activities allowing for the proper conduct of the external affairs of Canada, including navigation through the ice. Canadian Coast Guard activities shall not be restricted, including those related to the resupply of northern communities, icebreaking, vessel safety, marine pollution prevention and response, and in the event of an emergency or in relation to search and rescue. Additional exceptions for activities such as research, compliance monitoring and the placement of navigational aids may be warranted to avoid unintended impacts to these important activities. Resupply of northern communities by private shipping companies is not restricted. In addition, provisions are not to apply to an individual vessel movement if the sole purpose of the vessel movement is to engage in innocent passage through the waters of the Canadian Arctic, without intending to stop while engaging in said passage through the Arctic waters.

5.2 Tallurutiup Imanga NMCA Zoning Plan

The Tallurutiup Imanga NMCA zoning plan is based on currently available Inuit Qaujimajatuqangit, science, and discussions with local communities, stakeholders, Inuit organizations, and federal and territorial departments, who identified areas and ecosystems in greatest need of protection.

Given the seasonal differences between open water and sea ice coverage, and the annual migration patterns of wildlife in the area, Tallurutiup Imanga NMCA has been divided into two seasonal zoning plans: one for the time of year when the area is largely ice-covered and one for the time of year dominated by open water. This seasonal approach to zoning helps manage the range of anticipated uses and wildlife conservation needs within the NMCA throughout the year. The dates for the ice season and open water season zoning plans are based on the Inuit seasonal cycle, which in Nunavut consists of six seasons with dates varying by region (Figure 5.2) and on consultations with the five associated communities.

Both the ice and open water season zoning plans contain only zone 1, 3 and 4 areas (Figures 5.3 and 5.4). There are currently no zone 2 areas in the NMCA.

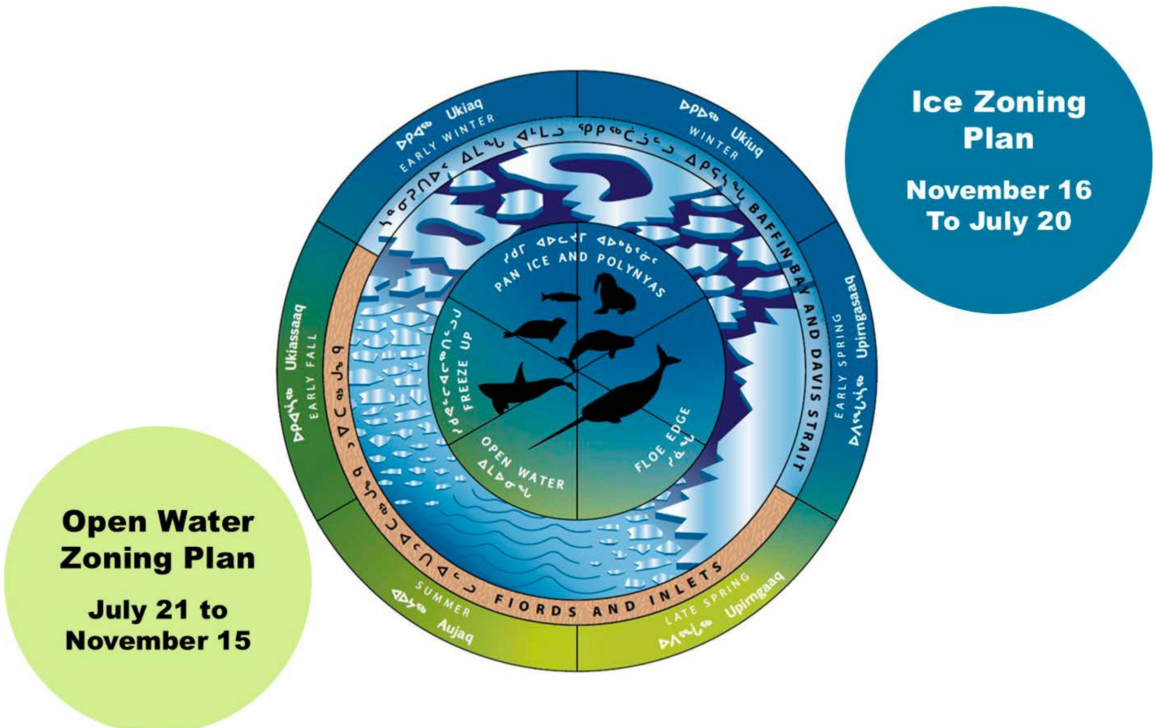


Figure 5.2 Effective dates and seasons for the ice season and open water season zoning plans for Tallurutiup Imanga NMCA based on the traditional Inuit cycle of seasons in the North Baffin region and community consultations.

5.2.1 Zone 1: Strict Protection

Zone 1 strictly protects special features and sensitive ecosystem elements that are susceptible to disturbance. Access and extractive use are prohibited. Research and monitoring activities consistent with the purpose and objectives of the zone and supporting the protection and conservation of the site may be permitted. Inuit rights, as set out in the *Nunavut Agreement*, and traditional use of the NMCA by Inuit are not subject to zone restrictions. Refer to Appendix A for details of allowable activities and applicable authorizations.

Zone Objectives:

- To protect special features and/or sensitive ecosystem elements in as undisturbed a state as possible.
- To restore or recover depleted or degraded special features and/or sensitive ecosystem elements.
- To provide reference areas for research.
- To contribute to maintaining biodiversity.

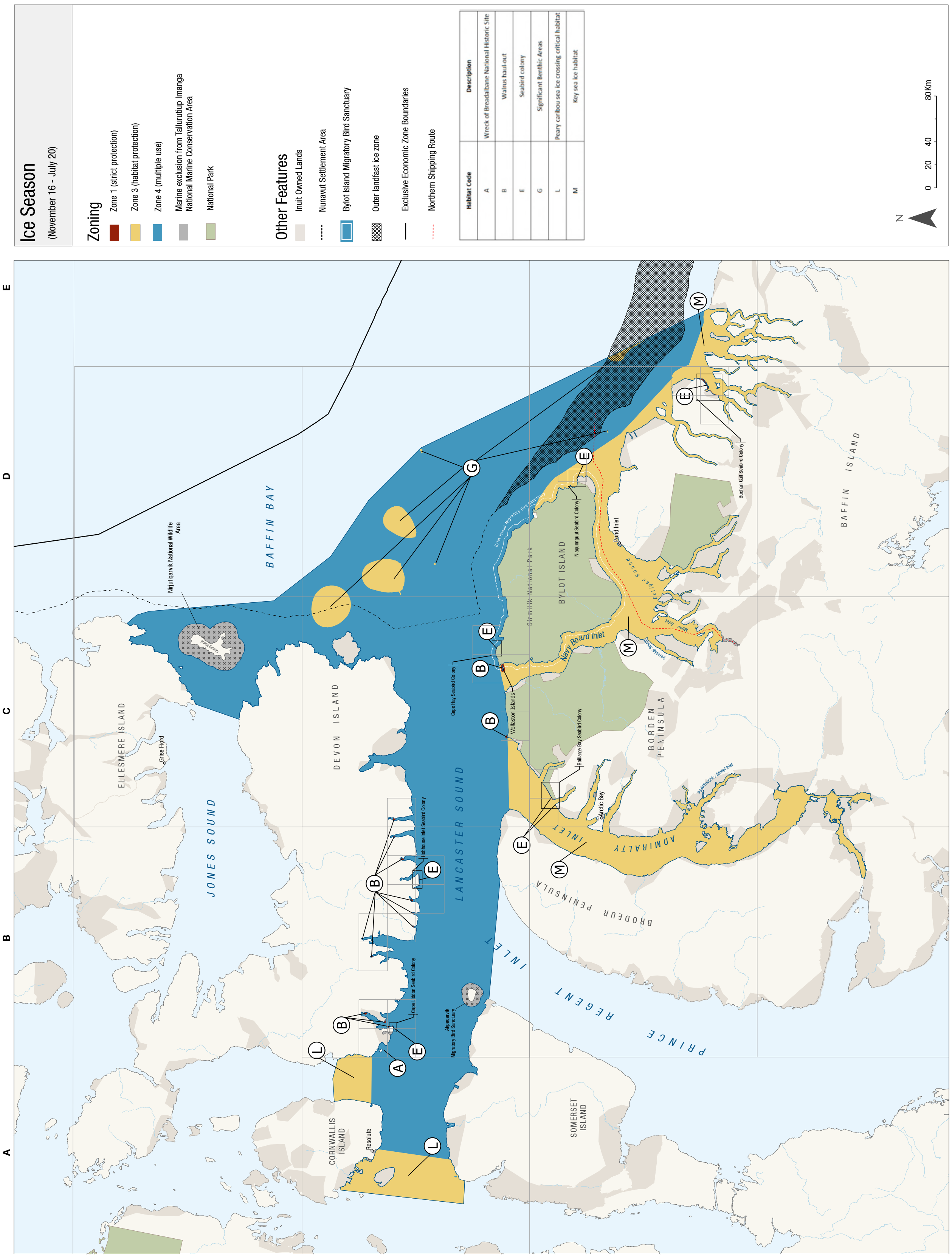
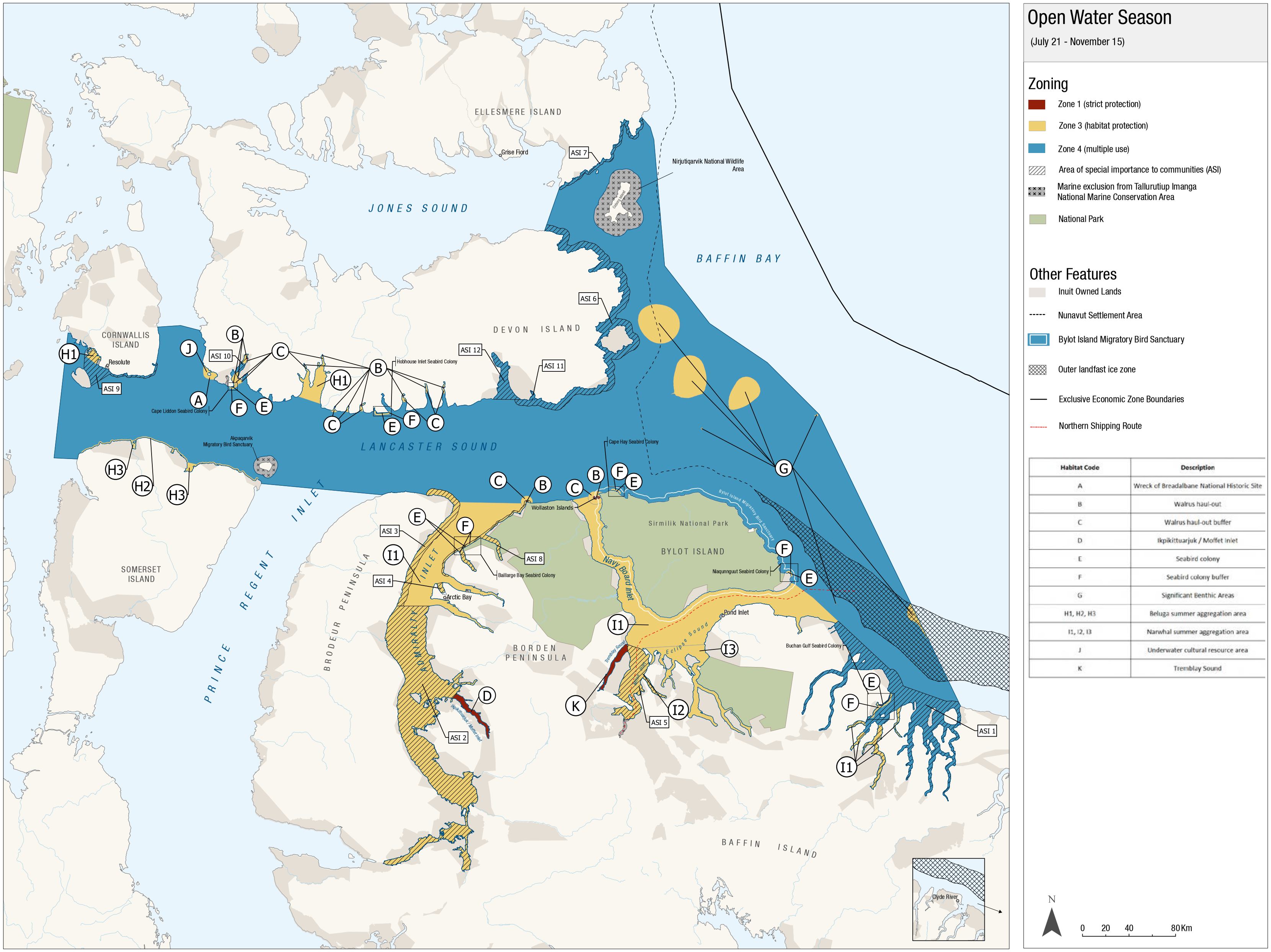


Figure 5.3 Tallurutiup Imanga NMCA ice season zoning plan.



Habitat Code	Description
A	Wreck of Breadalbane National Historic Site
B	Walrus haul-out
C	Walrus haul-out buffer
D	Ikpikittuarjuk / Moffet Inlet
E	Seabird colony
F	Seabird colony buffer
G	Significant Benthic Areas
H1, H2, H3	Beluga summer aggregation area
I1, I2, I3	Narwhal summer aggregation area
J	Underwater cultural resource area
K	Tremblay Sound

Figure 5.4 Tallurutiup Imanga NMCA open water season zoning plan.

The following areas are identified as requiring strict protection and thus have been designated Zone 1:

i. Wreck of Breadalbane National Historic Site of Canada (A in Figures 5.3 and 5.4): The Wreck of Breadalbane National Historic Site of Canada is located off the southeast coast of Beechey Island, at 74° 40′ 51″ north latitude and 91° 48′ 57″ west longitude. It is comprised of the wreckage of *Breadalbane*, a 19th-century, 500-ton sailing ship, including the hull, fragments of the vessel and the debris field caused by the sinking of the ship. It was designated a national historic site in 1983 because the ship was involved in the search for Captain John Franklin's lost expedition, and it is a well-preserved example of a mid-19th century merchant transport ship uniquely adapted for an Arctic voyage. The site is strictly protected to limit further deterioration of the archaeological site. The zone 1 area is a 250-m radius circle centered on the mid-point of the hull.

ii. Walrus haul-out sites (B in Figures 5.3 and 5.4): Walrus use pack ice for much of the year, but when suitable sea ice is unavailable, walrus haul out in herds ranging from several individuals to thousands of animals at terrestrial haul-out sites that offer easy access to the water for feeding and escape from predators or other disturbances. Walrus are known to show strong site fidelity to established haul-out sites. However, prolonged, or repeated disturbances may cause walrus to abandon their haul-outs. Their ability to recolonize these areas is unknown. Human disturbances that cause walrus to leave their haul-outs may impact population dynamics by causing stampedes (which result in mortality); interfering with feeding and increasing energy expenditures; masking walrus communications; impairing thermoregulation and increasing stress levels. Thirteen walrus haul-out sites are identified in Tallurutiup Imanga NMCA as "active" by Fisheries and Oceans Canada and/or by associated communities. For these sites, year-round strict protection has been applied as follows:

- For the Wollaston Islands (group of islands off the northeast corner of Bylot Island), the zone 1 area includes the islands themselves, plus a 1-km buffer around the perimeter of the islands.
- For all other haul-outs, the terrestrial haul-outs themselves are located on land outside the boundary of the NMCA. In these cases, any area that is located both within 1 km of the haul-out and within the NMCA boundaries is a zone 1.

The purpose of the year-round strict protection for these areas is to protect walrus and their habitat from disturbance; maintain habitat integrity and prevent abandonment.

iii. Seabird colonies (E in Figures 5.3 and 5.4): There are six key migratory bird habitat sites within and adjacent to Tallurutiup Imanga NMCA supporting multiple species of colonial seabirds:

a. **Cape Liddon seabird colony (southwest coast of Devon Island):** Supports approximately 4% of the national population of Northern Fulmar.

b. **Hobhouse Inlet seabird colony (south coast of Devon Island):** Supports approximately 11% of the national population of Northern Fulmar.

c. **Baillarge Bay seabird colony (northwest coast of Borden Peninsula):** Supports approximately 13% of the national population of Northern Fulmar.

d. **Cape Hay seabird colony (northwest Bylot Island):** Approximately 83 000 pairs of Thick-billed Murres and 12 000 pairs of Black-legged Kittiwakes, representing about 4% and 5% of the Canadian population, respectively, nest at Cape Hay.

e. **Niaqunnguut seabird colony (southeast Bylot Island):** Approximately 52,000 pairs of Thick-billed Murres and 3,000 pairs of Black-legged Kittiwakes, representing 2.3% and 1.1% of the Canadian populations, respectively, nest about 7 km north of Niaqunnguut.

f. **Buchan Gulf seabird colony (east coast of Baffin Island, southeast of Pond Inlet):** Supports approximately 4% of the national population of Northern Fulmar.

For three of these sites, the terrestrial coastal cliffs where the seabirds breed are included within the NMCA boundary: Cape Liddon seabird colony (southwest coast of Devon Island), Hobhouse Inlet seabird colony (south coast of Devon Island) and a portion of Buchan Gulf seabird colony (east coast of Baffin Island) (Figure 1.2).

These seabird colonies have high conservation value and are moderately to highly risk-intolerant. Seabirds use these areas from their spring arrival in the Arctic (starting about April 15) until their departure at the end of summer (about October 1) for nesting, chick rearing and foraging. The high concentrations of seabirds at these discrete sites, combined with their high-energy demands and sensitivity to disturbance during this life cycle stage, means that conservation of these Arctic seabird colonies has significant implications for the long-term survival of several species. The main threats to these seabird colonies are increasing disturbances from marine ship traffic, including human disturbance related to cruise ship tourism, and the risk of oil spills and operational releases originating from ships. A risk of bycatch from commercial fishing activities may become a future threat if fisheries expand in the Arctic and further into Tallurutiup Imanga NMCA.

To protect these seabird colonies, the nesting cliffs located within the NMCA boundary, where applicable, plus a 100-m buffer extending seaward from the cliff, for all colonies, are designated zone 1. Colonial seabirds exhibit strong nesting site fidelity, so zone 1 prohibitions are in place year-round to protect the nesting habitat for when the birds return.

iv. Ikpikittuarjuk/Moffet Inlet (D in figure 5.4): Ikpikittuarjuk/Moffet Inlet is valued by local communities, specifically Arctic Bay, for its abundance of bowhead whale, narwhal, walrus, and Arctic char. Local Inuit have observed a decline in char abundance in Ikpikittuarjuk/ Moffet Inlet. The area is zone 1 during the open water season (July 21 to November 15) to allow the population time to recover.

v. Tremblay Sound (K in figure 5.4): Eclipse Sound is used by narwhal during the open water season as a migration corridor between their summering and overwintering areas. Within the Eclipse Sound summer aggregation area, narwhal are concentrated within Milne Inlet and Tremblay Sound. These areas may provide refuge from killer whales which feed in Eclipse Sound. Tremblay Sound experiences little to no large vessel traffic and is an important harvesting area for Inuit. This is a contrast to Milne Inlet, where the Baffinland Iron Mine Corporation Mary River Port and associated vessel traffic is located. To maintain Tremblay Sound as a quiet refuge for narwhal, the area has been identified as zone 1 during the open water season (July 21 to November 15). Tremblay Sound has also been an important site for several narwhal research and monitoring studies. Research and monitoring activities consistent with the purpose and objectives of this zone and supporting the protection and conservation of the site will continue to be permitted when supported by the Aulattiqatigiit Board.

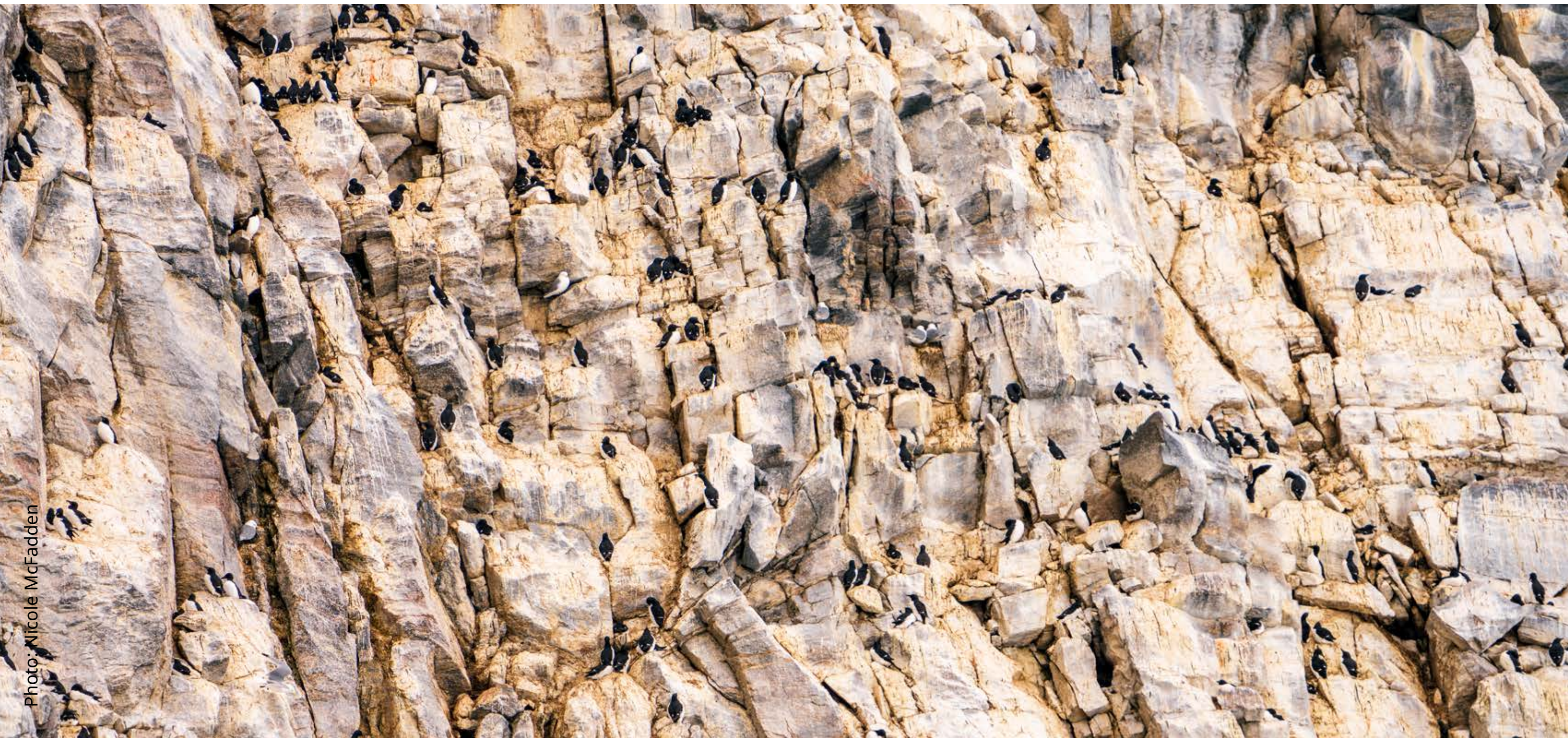


Photo: Nicole McFadden

Photo: Nicole McFadden

5.2.2 Zone 2: General Protection

Zone 2 protects special features, sensitive ecosystem elements and representative characteristics of the marine region while providing for compatible access and non-extractive uses. Extractive use is prohibited. Inuit rights, as set out in the *Nunavut Agreement*, and traditional use of the NMCA by Inuit are not subject to zone restrictions. Refer to Appendix A for details of allowable activities and applicable authorizations.

Zone Objectives:

- To protect representative characteristics of the marine region and contribute to maintaining biodiversity.
- To protect special features and/or sensitive ecosystem elements.
- To restore or recover depleted species or degraded habitats.
- To provide research opportunities.
- To provide opportunities for education and non-extractive recreation.
- To foster awareness, understanding and enjoyment of NMCAs.

There are currently no zone 2 General Protection areas in Tallurutiup Imanga NMCA. Through Article 16 of the IIBA for Tallurutiup Imanga NMCA, the Parties made a commitment to explore the potential for new sustainable fishing opportunities within and adjacent to Tallurutiup Imanga NMCA if compatible and consistent with management planning and the principles of conservation. Considering that there is little commercial fishing pressure in Tallurutiup Imanga NMCA at the present time, and that a prohibition on extractive uses through large zone 2 areas could negatively impact the outcome of Article 16 and potential economic opportunities stemming from sustainable fisheries, no zone 2 areas are designated in Tallurutiup Imanga NMCA.

While the Parties are implementing Article 16 commitments, an alternative approach has been taken with respect to zoning. Rather than implementing the concept of a large area with full protection as envisioned in zone 2, zone 3 has been used to protect sensitive ecosystem elements and representative characteristics of Tallurutiup Imanga NMCA without unduly limiting potential fisheries opportunities. The use of zone 2 will be reconsidered in the next management plan when recommendations on where any future potential fishery activity may be compatible with the management objectives of the NMCA are available (IIBA s.16.4.2).

5.2.3 Zone 3: Habitat Protection

Zone 3 protects specific habitats while providing for compatible access and extractive uses. Some uses are prohibited to support specific habitat conservation objectives. Inuit rights, as set out in the Nunavut Agreement, and traditional use of the NMCA by Inuit are not subject to zone restrictions.

Zone Objectives:

- To protect, conserve or restore a specific habitat.
- To support a range of uses that do not conflict with the specific conservation objective(s) of the zone.
- To provide opportunities for research, education and appreciation of the habitat protected by the zone.

Zone 3 allows for a customizable approach to allowable uses and activities. Therefore, most of the activities and uses are identified as conditional ('C') in zone 3 in the national framework (Appendix A). The list of allowable activities was assessed during zoning development based on the habitat being protected. The list of compatible activities and uses for each zone 3 area is specific to Tallurutiup Imanga NMCA; details on the allowed and prohibited activities are identified in tables 5.1 and 5.2. The limits, permits, and exceptions outlined in Appendix A apply within zone 3. The specific prohibitions and restrictions are different between seasonal zoning plans to account for the environmental changes between the ice and open water season and corresponding wildlife migration patterns and their relationship to Inuit use of the NMCA (Figure 5.2).

1. ICE SEASON (NOVEMBER 16 TO JULY 20)

During the ice season zoning plan, the following areas have been identified as Zone 3 – Habitat Protection:

i. Key sea ice habitat (L and M in Figure 5.3): The key sea ice habitat areas described below have been identified as zone 3 to protect the structure and function of sea ice habitat important for several wildlife species (for example, seals, polar bears, Peary caribou) and the exercising of Inuit rights (such as travel, access, and harvesting). All shipping activity is prohibited in these zone 3 areas during the ice season (November 16 to July 20), subject to safe navigation, and except for:

1) activities and uses listed in section 5.1;
2) shipping activity in a project approved on or before the date the amendment to add Tallurutiup Imanga NMCA to Schedule I of the CNMCAA comes into force,

when conducted in accordance with the terms and conditions of the project certificate in effect at that date[1]; and

3) valid conservation reasons that are assessed on a case-by-case basis (for example to free trapped whales).

The dates during which the prohibition on shipping activity is in effect may be varied to allow shipping before July 21 or after November 16 in all or part of these zones if the variation will not negatively impact:

- the structure and function of ice habitat and associated ecosystems;
- exercise of Inuit rights in the area;
- public safety; or
- recovery of species at risk[2].

The key sea ice areas included in the above are:

a) **Peary caribou sea ice crossing critical habitat (L in figure 5.3):** Peary caribou are listed as threatened under the *Species at Risk Act*. The final Recovery Strategy* for Peary caribou included the identification of two sea ice crossings within Tallurutiup Imanga NMCA as critical habitat. The critical habitat in Tallurutiup Imanga NMCA is the only bridge connecting two local populations. Under the *Species At Risk Act*, it is illegal to destroy any part of the critical habitat; any activity that inhibits the safe movement of caribou between islands when needed is considered destruction of critical habitat. This includes activity that prevents ice from forming, that breaks up the critical sea ice habitat immediately prior to anticipated caribou crossings, or that leaves an open channel for a length of time that blocks caribou movement. This includes any shipping activity that breaks sea ice or prevents ice from forming.

b) **Other key sea ice habitat (M in figure 5.3):** Admiralty Inlet, Navy Board Inlet, Eclipse Sound, and the fjords north of Clyde River have all been identified as key sea ice habitat. These areas are important wildlife habitat and valued by communities as on-ice travel routes and hunting grounds.

   - **Admiralty Inlet:** Significant to Inuit especially for Arctic Bay residents who hunt narwhal, polar bear, seal, caribou, geese, and fish in the southern portions of the inlet.
   - **Navy Board Inlet:** Characterized by several short, protected bays and Sirmilik National Park on either side, this narrow inlet is lined with Inuit camps.
   - **Eclipse Sound and Milne Inlet:** Valued by communities as hunting grounds and characterized by temporal features such as the floe edge. The attraction and subsequent abundance of wildlife to the floe edge draws hunters, visitors, and tour operators alike. Ice and wildlife found here are susceptible to disturbances such as early ice breaking and disturbance through ship passage.
   - **Fjords north of Clyde River:** Valued by communities as important wildlife habitat and for hunting grounds.

1. Such as Baffinland Iron Mines Corporation Mary River Project certificate term and condition no. 185
2. Sea ice can promptly reform (within a few days) after disturbance under specific conditions (such as weather conditions, and timing and frequency of the disturbance) and as such, it may be possible to transit through sea ice within areas identified as critical habitat without destroying critical habitat, if the sea ice critical habitat is available to Peary caribou when needed.

* www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/recovery-strategies/peary-caribou-2022.html

Activities and Uses	ICE SEASON ZONE 3 AREAS			Specific prohibitions and restrictions
	Peary Caribou sea ice crossings (L)	Other key sea ice habitat (M)	Significant Benthic Areas (G)	
Indigenous traditional use	✓	✓	✓	None
Research, monitoring, and restoration	✓	✓	✓	None
Recreational activities (non-extractive)	✓	✓	✓	None
Commercial tourism (non-extractive)	✓	✓	✓	**Key sea ice habitat (L and M)** • Commercial tourism activities that include shipping activity (for example, cruise ships) are prohibited. • Ice-based commercial tourism activities must not disturb Peary caribou.
Coastal and in-water infrastructure	✓	✓	✓	**Key sea ice habitat (L and M)** • Infrastructure that significantly breaks ice or prevents/ temporarily prevents ice from forming may not be permitted. Significant Benthic Areas (G) • Bottom-contact infrastructure not permitted.
Commercial shipping	✗	✗	✓	Not applicable
Recreational fishing	✓	✓	✓	**Significant Benthic Areas (G):** • Mobile bottom contact gear prohibited.
Commercial fisheries	✓	Recreational allowed	✓	**Key sea ice habitat (L and M)** • Commercial fishing activities that break ice or prevent/temporarily prevent ice from forming is prohibited. **Significant Benthic Areas (G):** • Mobile bottom contact gear prohibited.
Hunting, trapping, and gathering (non-rights based)	✓	✓	✓	None
Placement of artificial reefs for recreational purposes	✗	✗	✗	Not applicable
Bottom trawling	✗	✗	✗	Not applicable
Oil and gas and mineral exploration and exploitation	✗	✗	✗	Not applicable

Table 5.1 Allowable and prohibited activities and uses in ice season zone 3 areas. Applicable limits, permits and exceptions listed in Appendix A apply. Letters in column headings refer to Figure 5.3.

ii. Significant Benthic Areas (G in Figure 5.3): Seven 'Significant Benthic Areas' have been identified in Tallurutiup Imanga NMCA by Fisheries and Oceans Canada due to the presence of dense aggregations of sea pens, a type of colonial coral. Sea pen stands provide valuable structure and habitat diversity; alter flow regimes leading to nutrient retention and a more favourable environment for benthic invertebrates; and are often considered to be essential nursery habitat. Bottom contact fishing gear has been identified as a habitat threat as they can remove or damage sea pens and other species of corals and sponges. This is particularly true for organisms adapted to low natural disturbance levels, such as those found in the deep, cold waters of the Canadian Arctic. It may take some coral and sponge species decades or even centuries to fully recover from bottom trawling. Mobile bottom contact fishing gear is prohibited in these zone 3 areas to protect sea pen aggregations.

2. OPEN WATER SEASON (JULY 21 TO NOVEMBER 15)

During the open water season zoning plan, the following areas have been identified as Zone 3 Habitat Protection:

i. Walrus haul-out buffers (C in Figure 5.4): A further zone 3 buffer extending 4 km seaward from the outer edge of the zone 1 boundary is applied to walrus haul-outs to provide additional protection from disturbance during the open water season when walrus are congregating. Commercial shipping, and commercial and recreational fishing are prohibited. Recreational activities and commercial tourism are allowed in the zone 3 area, with the following restrictions based on vessel size (Figure 5.5):

- Vessels under 50 ft in length, such as kayaks and zodiacs, may navigate anywhere within the zone 3 area.
- Vessels 50 to 100 ft in length may enter the zone 3 area but must always remain at least 2 km from the haul-out (1 km from the outer edge of the zone 1 boundary).
- Vessels greater than 100 ft in length are prohibited from accessing or transiting through these zone 3 areas.

In addition, it is prohibited to pilot an aircraft at an altitude lower than 5 000 ft within walrus haul-out buffers, except as required for the safe operation of the aircraft, including take offs and landings.

Exceptions may apply for the following activities:

- Scientific research vessels or scientific research activities through the research permitting process.
- Commercial tourism operators with vessels > 100 ft seeking to enter the following areas on the southern coast of Devon Island, subject to permit conditions as stipulated in their business license. Commercial tourism operators seeking this exception must demonstrate community support for the exception.
  - **Radstock Bay**. This exception will allow vessels to transit through the Zone 3 areas associated with the two walrus haul-outs at the entrance of Radstock Bay.

These transits must maintain the maximum possible distance from the Zone 1 areas associated with these two walrus haul-outs, subject to safe navigation.

- **Graham Harbour, Parry Channel, and Blanley Bay.** This exception will allow vessels safe shelter in these bays. Vessel must shelter as far as possible from Zone 1 areas associated with walrus haul-outs in these bays.

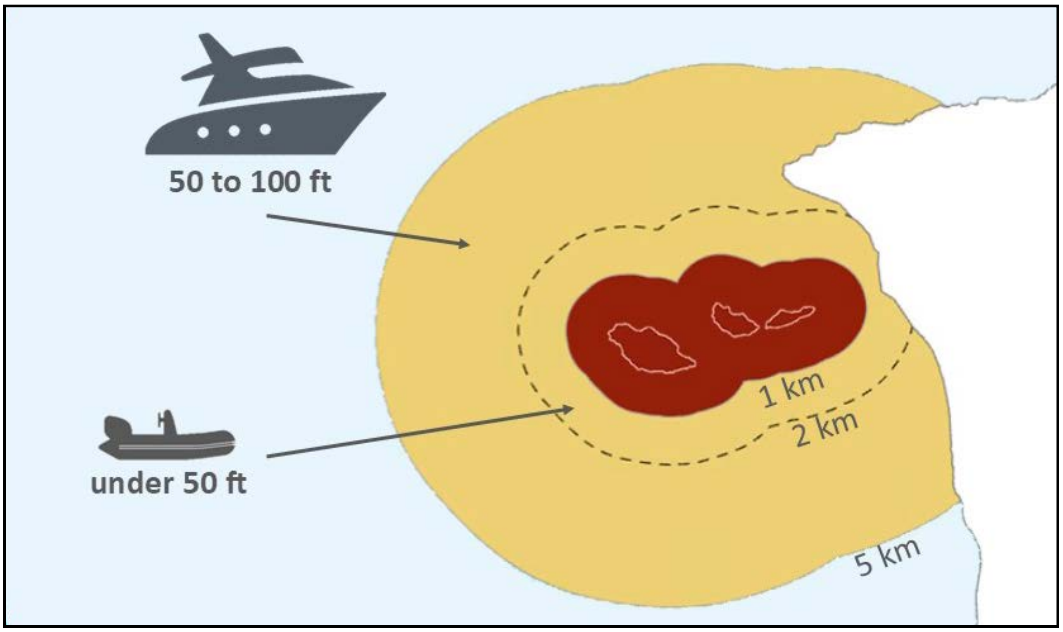


Figure 5.5 Approach distance restrictions based on vessel size for activities allowed in zone 3 walrus haul-out buffers. Dark red is zone 1, yellow is zone 3. There is no access to the zone 1 area, except with a research permit.

ii. Seabird colony buffers (F in Figure 5.4): A zone 3 buffer starting at the zone 1 boundary and extending 1.5 km seaward further protects seabird colonies during the open water season when birds are present. Commercial fishing, commercial shipping and transiting vessels are prohibited in zone 3 seabird colony buffer areas, other than as required for safety. Recreational activity, recreational fishing and commercial tourism vessels are allowed in the zone 3 area with the following restrictions based on vessel size (Figure 5.6):

- Vessels under 50 ft, such as kayaks and zodiacs, may navigate anywhere within the zone 3 area.
- Vessels 50 ft and greater in length may enter the zone 3 areas but must always remain at least 500 m from the colony.

A 500-m setback from the colony shall be observed by community resupply vessels when birds are present, except when adhering to it would prevent safe community resupply. In addition, it is prohibited to pilot an aircraft at an altitude lower than 1 100 m (3 500 ft) within the zone, except as required for the safe operation of the aircraft. Additional aerial, marine, and terrestrial migratory bird setbacks may apply for some authorized activities and uses.

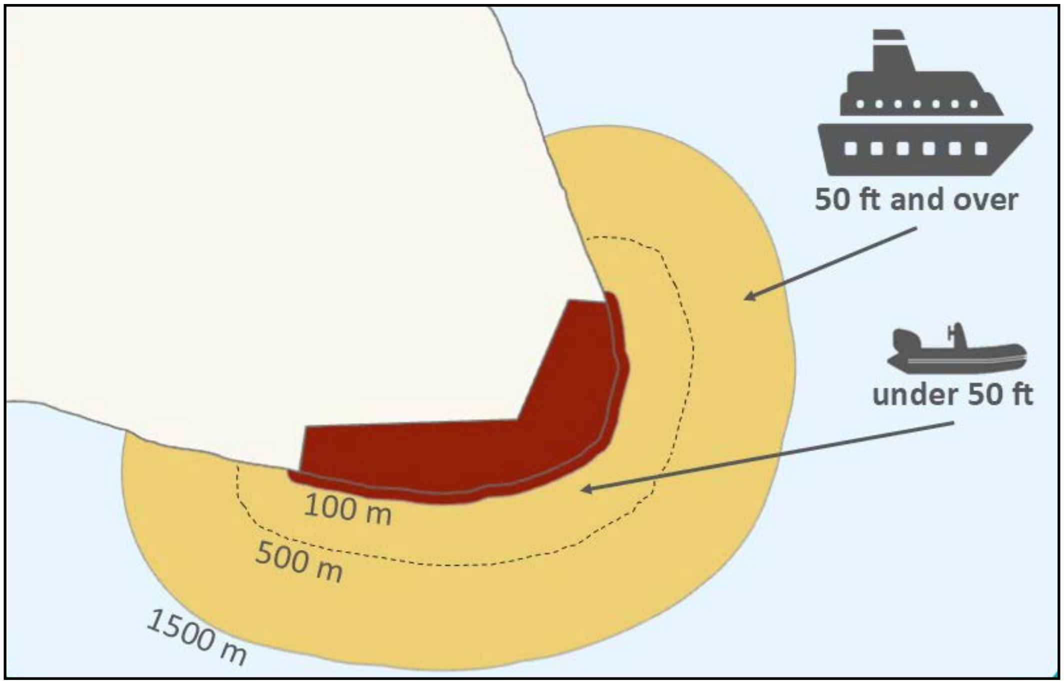


Figure 5.6 Approach distance restrictions for different vessel sizes for activities allowed in zone 3 seabird colony buffers. Dark red is zone 1, yellow is zone 3. There is no access to the zone 1 area, except with a research permit.

iii. Significant Benthic Areas (G in Figure 5.4): The seven 'Significant Benthic Areas' protected in the ice season are also protected in the open water season. Mobile bottom contact fishing gear is prohibited in these zone 3 areas to protect sea pen aggregations.

iv. Beluga summer aggregation areas (H1, H2, and H3 in Figure 5.4): Beluga whales from the Eastern High Arctic-Baffin Bay population spend the summer (approximately July to September) in the fiords and inlets around Somerset and Devon Islands before migrating to Sarvarjuaq (North Water Polynya) and west Greenland for the winter (approximately November to April). This beluga population has been assessed by the Committee On the Status of Endangered Wildlife In Canada as 'Special Concern' (November 2020). Belugas are sensitive to noise and disturbance and therefore can be negatively affected by some human activities (for example, icebreaking, boat and ship traffic, seismic surveys, low-flying aircraft). Noise propagates easily in shallow water estuaries. Four shallow estuaries known to be beluga summer aggregation areas have been identified in Tallurutiup Imanga NMCA and designated zone 3 to protect beluga habitat: Kippaarittuq/Cunningham Inlet, Garnier Bay, Maxwell Bay, and Allen Bay. These areas are important beluga molting and calving grounds that are revisited annually by large groups of belugas. In addition, a 1-km strip stretching along the entire northern coast of Somerset Island has been designated as zone 3 to protect aggregations of belugas. Activity restrictions in these areas are as follows:

- **Kippaarittuq/Cunningham Inlet and Garnier Bay (H3 in Figure 5.4):** To protect beluga in these small, shallow bays, no motorized access is permitted in these areas. Commercial shipping and commercial fishing are prohibited. It is prohibited to pilot an aircraft at an altitude lower than 2 000 ft except for safety reasons and for specified operational purposes such as take-offs and landings. The installation of coastal and in-water infrastructure is prohibited.
- **Maxwell Bay and Allen Bay (H1 in Figure 5.4):** In these larger bays, motorized access is allowed for commercial tourism and recreational activities. Commercial shipping and commercial fishing are prohibited. It is prohibited to pilot an aircraft at an altitude lower than 2 000 ft except for safety reasons and for specified operational purposes such as take offs and landings. The installation of coastal and in-water infrastructure is prohibited.
- **Northern coast of Somerset Island (H2 in Figure 5.4):** Motorized access is allowed for small vessels, so as not to impede terrestrial access along the coast. Commercial shipping and commercial fishing are prohibited. It is prohibited to pilot an aircraft at an altitude lower than 2 000 ft except for safety reasons and for specified operational purposes such as take-offs and landings. Small scale coastal and in-water infrastructure that would support access to terrestrial sites for commercial tourism or recreation activities may be permitted.


Photo: N. Boisvert


Photo: Diane Blanchard

v. Narwhal summer aggregation areas (I1, I2, I3 in Figure 5.4): The narwhal that inhabit Tallurutiup Imanga NMCA are a part of the Baffin Bay population; the largest narwhal population in the world. Narwhals from the Baffin Bay population overwinter in Baffin Bay and Davis Strait before migrating to recurring summer aggregation areas in the fiords and inlets of northeastern Canada and northwest Greenland. For harvest management purposes, the Baffin Bay population is divided into four summering stocks (Admiralty Inlet, Eclipse Sound, Somerset Island, and East Baffin) and two tentative stocks (Jones Sound and Smith Sound) based on these recurring summer aggregation areas. Although it was previously assumed that narwhal stayed in their summer aggregation area, more recent telemetry data suggests some mixing, especially between Eclipse Sound and Admiralty Inlet. Four summer aggregation areas fully or partially within the NMCA have been identified as zone 3:

1) Northern Eclipse Sound and Navy Board Inlet (I1) and Milne Inlet (I2);
2) the southern fiords of Eclipse Sound (I3);
3) Admiralty Inlet (I1); and
4) the portion of the East Baffin stock within Tallurutiup Imanga NMCA (fjords north of Clyde River (I1).

There is a voluntary maximum speed limit of 9 kn for all vessels of 300 GT or more in these zone 3 areas. Tremblay Sound, which is part of the Eclipse Sound summer aggregation area, has been identified as a zone 1 (see section 5.2 Zone 1). In addition, the southern fiords of Eclipse Sound (I3) and Milne Inlet (I2) have additional prohibitions to limit the level of disturbance, including a prohibition on cruise ship access in both and a prohibition on commercial shipping in the southern fiords.

vi. Underwater cultural resource area (J in Figure 5.4): There are cultural resources in the shallow waters in the waters surrounding Beechey Island. To protect known and potential cultural resources, diving and submersible use are prohibited, to prevent disturbance of the ocean floor or underwater artefacts.

Table 5.2 Allowable and prohibited activities and uses in open-water season zone 3 areas. Applicable limits, permits and exceptions listed in Appendix A apply. Letters in column headings refers to Figure 5.4.

Activities and Uses	OPEN-WATER SEASON ZONE 3 AREAS					
	Walrus haul-out buffer (C)	Seabird colony buffers (F)	Significant Benthic Areas (G)	Beluga summer aggregation areas (H1, H2, H3)	Narwhal summer aggregation areas (I1, I2, I3)	Underwater cultural resource area (J)
Indigenous traditional use	✓	✓	✓	✓	✓	✓
	Activity- and use- specific prohibitions and restrictions: None					
Research, monitoring, and restoration	✓	✓	✓	✓	✓	✓
	Activity- and use- specific prohibitions and restrictions: None					
Recreational activities (non-extractive)	✓	✓	✓	✓	✓	✓
	Activity- and use- specific prohibitions and restrictions: Walrus haul-out buffer (C) • Vessels greater than 100 ft in length are prohibited. • Vessels 50 to 100 ft in length must remain at least 1 km from the outer edge of the zone 1 area around the haul-out. • Vessels under 50 ft may navigate anywhere in the zone 3 area. • A minimum flying altitude of 5000 ft (1500 m) must be maintained, except for safety reasons and for specified operational purposes such as take offs and landings. Seabird colony buffers (F) • Transiting vessels are prohibited. • Authorized vessels 50 ft in length and greater must remain at least 500 m from the colony. • Authorized vessels under 50 ft may navigate anywhere in the zone 3 area. • A minimum flying altitude of 3500 ft (1100 m) must be maintained, except for safety reasons and for specified operational purposes such as take offs and landings. Beluga summer aggregation areas (H1, H2, H3): • A minimum flying altitude of 2000 ft (610 m) must be maintained in H1, H2, H3, except for safety reasons and for specified operational purposes such as take offs and landings. • Vessel access to H2 limited to small vessels. • No motorized vessel access in H3 (Kipparittuq/Cunningham Inlet and Garnier Bay). Narwhal summer aggregation areas (I1, I2, I3): • Voluntary speed limit of 9kn for all vessels of 300 GT or more. Underwater cultural resource area (J): • Diving and submersible use are prohibited.					

<table>
<tr><th rowspan="2">Activities and Uses</th><th colspan="6">OPEN-WATER SEASON ZONE 3 AREAS</th></tr>
<tr><th>Walrus haul-out buffer (C)</th><th>Seabird colony buffers (F)</th><th>Significant Benthic Areas (G)</th><th>Beluga summer aggregation areas (H1, H2, H3)</th><th>Narwhal summer aggregation areas (I1, I2, I3)</th><th>Underwater cultural resource area (J)</th></tr>
<tr><td rowspan="2">Commercial tourism (non-extractive)</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td></tr>
<tr><td colspan="6">Activity- and use- specific prohibitions and restrictions:

Walrus haul-out buffer (C)
• Vessels greater than 100 ft in length are prohibited.
• Vessels 50 to 100 ft in length must remain at least one km from the outer edge of the zone 1 area around the haul-out.
• Vessels under 50 ft may navigate anywhere in the zone 3 area.
• A minimum flying altitude of 5000 ft (1500 m) must be maintained, except for safety reasons and for specified operational purposes such as take offs and landings.

Seabird colony buffers (F)
• Transiting vessels are prohibited.
• Authorized vessels 50 ft in length and greater must remain at least 500 m from the colony.
• Authorized vessels under 50 ft may navigate anywhere in the zone 3 area.
• A minimum flying altitude of 3500 ft (1100 m) must be maintained, except for safety reasons and for specified operational purposes such as take offs and landings.

Beluga summer aggregation areas (H1, H2, H3)
• A minimum flying altitude of 2000 ft (610 m) must be maintained in H1, H2, H3, except for safety reasons and for specified operational purposes such as take offs and landings.
• Vessel access to H2 limited to small vessels.
• No motorized vessel access in H3 (Kipparittuq/Cunningham Inlet and Garnier Bay).

Narwhal summer aggregation areas (I1, I2, I3):
• Voluntary vessel speed limit of 9 kn for all vessels of 300 GT or more.
• Cruise ships are prohibited in the southern fiords of Eclipse Sound (I3) and in Milne Inlet (I2).

Underwater cultural resource area (J):
• Diving and submersible use are prohibited.</td></tr>
<tr><td rowspan="2">Coastal and in-water infrastructure</td><td>✗</td><td>✗</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td></tr>
<tr><td colspan="6">Activity- and use- specific prohibitions and restrictions:
Beluga summer aggregation areas (H1, H2, H3):
• The installation of coastal and in-water infrastructure in areas H1 and H3 is prohibited; coastal and in-water infrastructure for the purpose of access to terrestrial sites for commercial tourism or recreational activities may be permitted in area H2.
Significant Benthic Areas (G)
• Bottom-contact infrastructure not permitted.
Underwater cultural resource area (J):
• Bottom-contact infrastructure not permitted.</td></tr>
</table>

Activities and Uses	OPEN-WATER SEASON ZONE 3 AREAS					
	Walrus haul-out buffer (C)	Seabird colony buffers (F)	Significant Benthic Areas (G)	Beluga summer aggregation areas (H1, H2, H3)	Narwhal summer aggregation areas (I1, I2, I3)	Underwater cultural resource area (J)
Commercial shipping	✗	✗	✓	✗	✓	✓
	Activity- and use- specific prohibitions and restrictions: **Narwhal summer aggregation areas (I1, I2, I3):** • Voluntary vessel speed limit of 9 kn for vessels of 300 GT or more. • Commercial shipping is prohibited in the southern fiords of Eclipse Sound (I3).					
Recreational fishing	✗	✓	✓	✓	✓	✓
	Activity- and use- specific prohibitions and restrictions: **Seabird colony buffers (F):** • Transiting vessels prohibited. • Authorized vessels 50 ft in length and greater must remain at least 500 m from the colony. • Authorized vessels under 50 ft may navigate anywhere in the zone 3 area. **Significant Benthic Areas (G):** • Mobile bottom contact gear prohibited. **Beluga summer aggregation areas (H1, H2 H3):** • No motorized vessel access in area H3. • Vessel access to H2 limited to small vessels. **Underwater coastal resource areas (J):** • Mobile bottom contact gear prohibited					
Commercial fisheries	✗	✗	✓	✗	✓	✓
	Activity- and use- specific prohibitions and restrictions: **Significant Benthic Areas (G):** • Mobile bottom contact gear prohibited. **Narwhal summer aggregation areas (I1, I2, I3):** • Voluntary vessel speed limit of 9 kn for vessels of 300 GT or more. **Underwater coastal resource areas (G):** • Mobile bottom contact gear prohibited.					
Hunting, trapping, and gathering (non-rights based)	✗	✗	✓	✗	✗	✗
	Activity- and use- specific prohibitions and restrictions: None					
Placement of artificial reefs for recreational purposes	✗	✗	✗	✗	✗	✗
	Activity- and use- specific prohibitions and restrictions: Not applicable					
Bottom trawling	✗	✗	✗	✗	✗	✗
	Activity- and use- specific prohibitions and restrictions: Not applicable					
Oil and gas and mineral exploration and exploitation	✗	✗	✗	✗	✗	✗
	Activity- and use- specific prohibitions and restrictions: Not applicable					

5.2.4 Zone 4: Multiple Use

Zone 4 sustains the greatest range of uses that do not compromise ecological sustainability, cultural resources, or heritage values. Inuit rights, as set out in the Nunavut Agreement, and traditional use of the NMCA by Inuit are not subject to zone restrictions.

Zone Objectives:

- To foster a range of uses that do not compromise ecological sustainability, cultural resources, or heritage values.
- To provide research opportunities in areas with multiple uses.
- To provide opportunities for education and recreation.
- To foster awareness, understanding and enjoyment of NMCAs.

All other remaining areas within Tallurutiup Imanga NMCA are zoned as Zone 4 Multiple Use. The spatial extent of this zone is different in the ice and open water season zoning plans because of variations in the extent of zone 1 and 3 areas between the two plans. A broad range of ecologically sustainable activities and uses are allowed within this zone, including fishing, shipping, and commercial tourism, subject to applicable legislation, regulations, site-specific review processes, authorizations and permitting requirements. Activities and uses that enhance opportunities for local businesses and contribute to the well-being of Inuit and the associated communities are promoted in this zone. Limits, permits and exceptions outlined in Appendix A apply within zone 4.

5.3 Area of Special Importance

Several areas have been identified as being of special importance to communities predominantly for subsistence harvesting and camping (Area of Special Importance or ASI). These activities are part of Inuit cultural practices and maintaining cultural continuity. These activities are important for passing on knowledge and skills between generations through observation and practice and for making room for new approaches or practices to achieve the same ends. The disturbance of wildlife, of traditional camping areas, and of Inuit harvesting activities by recreational activities and commercial tourism during the open water season have been identified as concerns for these areas. The management of activities in these areas require more flexibility than is provided in the zoning plan to adapt to changing conditions and patterns of use. The designation of an ASI is a way to highlight that an area is of particular importance and requires a particular management focus to reduce disturbances to Inuit activities. **ASI designation complements zoning: any prohibitions and restrictions associated with the underlying zoning also applies in an ASI.**

Initial management strategies are identified in Table 5.3. This approach may be adjusted over time, with community consultation. Strategies could range from, for example, educating visitors on best practices to respect the reasons areas are important to the communities and avoid disruption of Inuit activities, to area closures. The approach to managing individual areas can be changed as needed. For activities requiring permits, conditions specific to an area may be added to the permit.

- **ASI 1 (fjords north of Clyde River):** Historically, this area was used by Pond Inlet and Clyde River Inuit for hunting and fishing. Currently the area is predominantly used by Inuit from Clyde River. There are also important camping sites in this area.
- **ASI 2 (southern Admiralty Inlet):** This is an area of abundant wildlife. It is significant to Inuit, especially for Arctic Bay residents, who hunt narwhal, polar bear, seal, caribou, geese and fish in the southern portions of the inlet. This area is also a Zone 3.
- **ASI 3 (strip along eastern shore of Brodeur Peninsula):** Valued by Arctic Bay residents as an important area for wildlife and as a hunting ground with traditional camping areas. The shallow waters off Cape Crawford, at the northeastern tip of Brodeur Peninsula, are a walrus feeding area. This area is also a Zone 3.
- **ASI 4 (Victor Bay):** Important hunting and camping area for Inuit from Arctic Bay. Ice stays in Victor Bay longer than in Arctic Bay, providing longer access to the floe edge. Victor Bay may become more heavily used with changing ice conditions. This area is also a Zone 3.
- **ASI 5 (Milne Inlet):** Abundant wildlife; current and historical harvesting area for Pond Inlet residents. Koluktoo Bay is a calving area, animals used to be more abundant in Milne Inlet. There are concerns that high levels of commercial shipping, low flights and use of acoustic devices are disturbing wildlife in the area; recreational use and commercial tourism add to the effects on wildlife. This area is also a Zone 3.
- **ASI 6 (southeast and northeast coasts of Devon Island):** Important hunting grounds for polar bear, narwhal, and walrus. There are also archaeological sites here.
- **ASI 7 (southeast coast of Ellesmere Island):** Abundance of wildlife in this area (walrus, polar bears, seals, narwhal, beluga). Although there is some hunting in this area, poor travel conditions limit use by Inuit. Archaeological sites show evidence of Inuit occupation; Greenlanders used this area.
- **ASI 8 (western shore of Borden Peninsula):** This area is rich in cultural resources, including traditional Inuit campgrounds (sod houses, tent rings) and ancient burial sites, demonstrating its continued use by Inuit over centuries. It is still used by Inuit today for hunting and camping. The area is used by marine mammals (bowhead, narwhal, seals, orcas) and is a polar bear denning area. This area is also a Zone 3.
- **ASI 9 (Resolute area and along coast of Cornwallis Island):** This area is used by Inuit from Resolute for harvesting and camping. The area is characterized partially by kelp beds. This area is also a Zone 3.

- **ASI 10 (Radstock Bay):** An important hunting area, both historically and at present, with an abundance of seals, walrus, and narwhal. There are also important cultural areas located on land around the bay.
- **ASI 11 (Dundas Harbour):** There is abundant wildlife in this area, and it is an important hunting area for walrus and for access to muskox. There are important cultural sites located on the shores of Dundas Harbour and it is historically important for its history with relocation.
- **ASI 12 (Croker Bay):** There is an abundance of whales (narwhal and beluga) in this area. There are also cultural resources (for example, ancient burial sites) on the shores.

Management approach	1	2	3	4	5	6	7	8	9	10	11	12
Recreational activities will be managed to reduce impact on Inuit use of area and valued components of the area	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
All permits will require registration and orientation, and area specific conditions may be added as needed	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Restrictions may be developed as needed for recreational and commercial tourism activities	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Recreational activities, commercial tourism operators and recreational fishers are encouraged to hire a local guide	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Potential impacts of vessel traffic are of concern: support enhanced communications between communities and other users to respect communities' interests	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Recreational fishing: catch and release discouraged									✓	✓	✓	✓
Preferred routing to community for cruise ships and commercial shipping is identified									✓			
Closure at start of open water season	✓											
No taking of glacier ice												✓

Table 5.3 Management approach for the Areas of Special Importance (ASI). Blank cells signify that the management approach does not apply for an area.


Photo: Diane Blanchard

6.0
Appendix

APPENDIX A – NMCA Zoning Framework

The NMCA zoning framework is comprised of four zones, each with a specific purpose, objectives and set of allowable activities and uses. Table A1 indicates the allowable activities and uses in each zone, and Table A2 lists the limits, permits, and exceptions to these activities and uses. Indigenous traditional use and rights-based activities consistent with section 35 of the *Constitution Act* continues in all zones.

Table A1. NMCA Allowable Uses and Activities[3]

✓ **Allowed.** Activity or use is generally consistent with the purpose and objectives of the zone and is allowed, subject to applicable legislation, regulations, site-specific review processes, authorizations and permitting requirements.

C Conditional. Activity or use is assessed at the site level during zoning development. Activity may be allowed **(✓)** if it aligns with the purpose and objective(s) of the zone. Section 5 describes what conditional activities (marked with **C** in the tables below) are allowed (✓) or not (✗) in Tallurutiup Imanga NMCA zones.

✗ **Not allowed.** Activity is inconsistent with the purpose of the zone or the NMCA and is not allowed.

Activities and Uses	FULL PROTECTION ZONES		ECOLOGICALLY SUSTAINABLE USE ZONES		Limits/Permits/Exceptions
	Strict Protection	General Protection	Habitat Protection	Multiple Use	
	Zone 1	Zone 2	Zone 3[4]	Zone 4	
Indigenous traditional use	✓	✓	✓	✓	Traditional use of an NMCA by Indigenous peoples will not be subject to zoning restrictions except for conservation, public health or public safety reasons, determined in consultation with Indigenous rights holders.
Research, monitoring, and restoration	C	✓	✓	✓	A research and collection permit from Parks Canada, and other applicable permits, are required.
Recreational activities (non-extractive)	✗	✓	✓	✓	Permits may be required.
Commercial tourism (non-extractive)	✗	✓	C	✓	A business license is required.
Coastal and in-water infrastructure	✗	C	C	✓	Authorization from Parks Canada is required.
Commercial shipping	✗	✓	C	✓	Conducted in accordance with Transport Canada's legislative and regulatory framework and consistent with international maritime law. Anchoring may be restricted to ensure bottom protection.
Recreational fishing	✗	✗	C	✓	Conducted in accordance with Transport Canada's legislative and regulatory framework and consistent with international maritime law. Anchoring may be restricted to ensure bottom protection.
Commercial fisheries	✗	✗	C	✓	Conducted in accordance with the Fisheries Act and its regulations, provincial/territorial regulations (for example, stated limits and licensing requirements) and the Interdepartmental Principles for Fisheries Management in Federal Marine Protected Areas.
Hunting, trapping, and gathering (non-rights based)	✗	✗	C	✓	Conducted in accordance with applicable regulations, including stated limits and licensing requirements.
Placement of artificial reefs for recreational purposes	✗	✗	✗	✗	Not permitted in NMCAs.
Bottom trawling	✗	✗	C	✓	Bottom trawling is not permitted in all zones in the national NMCA zoning framework as per the Government of Canada marine protected areas protection standard. The bottom trawling protection standard currently does not apply within Tallurutiup Imanga NMCA.
Oil and gas and mineral exploration and exploitation	✗	✗	✗	✗	Prohibition under the *Canada National Marine Conservation Areas Act*.

3. Activities related to Canadian sovereignty or security, other activities that are consistent with the purposes of the CNMCAA (for example, public safety, environmental protection, law enforcement) and emergency activities are not restricted by NMCA zoning.

4. Zone 3 is a customizable zone. The list of allowable activities depends on what habitat is being protected. Therefore, most of the activities and uses are identified as conditional ('C') in zone 3 in the national framework. Refer to tables 5.1 and 5.2 for list of allowable activities and uses within each zone 3 area in Tallurutiup Imanga NMCA.

APPENDIX B – Summary of Environmental Assessment

A strategic environmental assessment (SEA) was conducted on the Tallurutiup Imanga National Marine Conservation Area interim management plan. The purpose of the SEA is to incorporate environmental and socio-cultural considerations into the development of the interim management plan. Individual projects undertaken to implement management statement objectives at the site will be evaluated separately to determine if an impact assessment is required under the appropriate impact assessment regime.

The scope of this assessment includes the area within the boundary of Tallurutiup Imanga NMCA, and the period considered is five years from the date of the plan, at which time the interim plan will be replaced by the first management plan. The valued components considered include natural and cultural resources, visitor experience and the well-being of the associated communities.

The primary effects of this plan will be to increase protection in the marine area, and increase Inuit involvement, capacity, and benefit from the implementation of the NMCA objectives. Multiple customized processes, and guidelines will be developed in the next few years. All these tools will be developed collaboratively to inform decision-making and promote knowledge collection and sharing. The zoning in the interim management plan or new authorization of activities may be perceived as restrictive to some users, however, predictability in authorization processes or land or seabed use is beneficial for all users. This will protect and conserve the natural and cultural heritage of Tallurutiup Imanga and assure that sustainable use of marine and terrestrial resources in Tallurutiup Imanga NMCA respects Inuit rights, results in economic and social benefits for Inuit, and enhances the well-being of the associated communities.

There are positive environmental or sociocultural effects from providing a holistic vision and protection for Tallurutiup Imanga NMCA and no important negative environmental or sociocultural effects anticipated from the implementation of the interim management plan.

APPENDIX C – Supporting Regulations

Adapted from NMCA Policy document.

This appendix outlines the major pieces of Government of Canada legislation, formal agreements, regulations, and other policy instruments that inform or guide general NMCA establishment and management, as well as documents that guide the establishment of Tallurutiup Imanga NMCA establishment and management more specifically.

Legislation and Regulations

Arctic Waters Pollution Prevention Act and associated regulations
Canada National Marine Conservation Areas Act and associated regulations
Canada Shipping Act, 2001 and associated regulations
Canadian Environmental Protection Act, 1999 and associated regulations
Canadian Navigable Waters Act and associated regulations
Coastal Fisheries Protection Act and associated regulations
Fisheries Act and associated regulations
Migratory Birds Convention Act, 1994 and associated regulations
Nunavut Planning and Project Assessment Act
Species at Risk Act and associated regulations
United Nations Declaration on the Rights of Indigenous Peoples Act
Wrecked, Abandoned or Hazardous Vessels Act

Among the regulations that deal with shipping in the Canadian Arctic, the following are of note for Tallurutiup Imanga NMCA:

- *Arctic Shipping Safety and Pollution Prevention Regulations*
- *NordREG* (Arctic Canada Traffic Zone)
- *Arctic Waters Pollution Prevention Regulations*
- *Navigation Safety Regulations*

Formal Agreements

Nunavut Land Claims Agreement (1993)

Tallurutiup Imanga National Marine Conservation Area Inuit Impact and Benefit Agreement (2019)

Inuit Impact and Benefit Agreement for National Wildlife Areas and Migratory Bird Sanctuaries in the Nunavut Settlement Area (2016)

Inuit Impact and Benefit Agreement for Auyuittuq, Quttinirpaaq and Sirmilik National Parks (1999)

Parks Canada Policy Instruments

Directive on the Management of National Marine Conservation Areas (2022)
Directive on Impact Assessment (2019)
Mapping Change: Fostering a Culture of Reconciliation within Parks Canada (2019)
Policy and Directive on Partnering, Sponsorship and other Forms of Collaboration (2019)
Policy on the Establishment and Management of National Marine Conservation Areas (2022)

Other Policy Instruments

Government of Canada marine protected areas protection standard (announced in 2019)
Interdepartmental Principles for Fisheries Management in Federal Marine Protected Areas (2019)
Principles Respecting the Government of Canada's Relationship with Indigenous Peoples (2018)
Canada's Arctic and Northern Policy Framework (2019)
Inuit Nunangat Policy (2022)

APPENDIX D – Zoning and Management Tools

A variety of management tools may be used in the management of Tallurutiup Imanga NMCA in addition to zoning. These tools include:

- Regulatory tools administered by other federal departments (for example, *Fisheries Act, Oceans Act, Canada Shipping Act (2001)* or *Arctic Waters Pollution Prevention Act*)
- NMCA regulations under the CNMCAA. General regulations are nationally consistent and enforceable tools that will apply to all NMCAs established under the *Act* from coast to coast to coast and including the Great Lakes. These regulations are anticipated to come into force during the life of this interim management plan.
- Permits and other authorizing instruments that give individuals, organizations, or businesses the authority to carry out and activity or use in an NMCA, subject to conditions.
- The designation of special management areas to allow for customized activity prohibitions or restrictions within a specific part of an NMCA to manage specific activities on a temporary, seasonal, or longer-term basis. Special management areas are identified and implemented with Indigenous governing bodies, relevant government departments and other partners in NMCA management.
- Temporary closures to restrict specific activities or access to certain areas on a case-by-case basis in response to an urgent issue (for example, temporary prohibition on access to an area due to a temporary public safety hazard).
- Voluntary measures (for example voluntary vessel speed reduction).
- The development and publication of best practices and guidelines (for example, Cruise Industry guidelines, mariner’s guides) to guide user behaviour.
- Pro-active education, awareness, and communication with users.
- Notice to Mariners (NOTMAR): monthly and annual publications for mariners that provide important information for marine navigation in Canada, published by Canadian Coast Guard.
- NAVWARNs (Navigational Warnings) – information for mariners about changes to navigational aids and current marine activities or hazards, published by Canadian Coast Guard.
- Ship Safety Bulletins published by Transport Canada.
- Program development for users such as mariners, cruise ship operators, resupply companies, and private vessels.
- Other information products for mariners – for example Low Impact Shipping Corridor charts from the Canadian Hydrographic Services, electronic navigational charts, GPS shapefiles showing zoning.
- International Maritime Organization protocols and guidance for mariners.

Photo: Nicole McFadden

Tallurutiup Imanga
National Marine Conservation Area
Interim Management Plan

Presentation for Nunavut
Wildlife Management Board
June 2026

QIA Qikiqtani Inuit Association

Nunavut

Parks Canada Parcs Canada

Tallurutiup Imanga NMCA Planning Committee

Justin Buller, Jovan Simic
Qikiqtani Inuit Association

Michele LeBlanc-Havard
Government of Nunavut

Laurent Jonart
Government of Canada
(Parks Canada)

Support

Andrew Orawiec
Transport Canada

Kevin Tallon
Fisheries and Oceans Canada

Brigitte Bourdon, Karen Halley, Katriina O'Kane, Allison Stoddart
Parks Canada

Lou-Ann Cornacchio, Jamessee Moulton, Justin Hack
Government of Nunavut

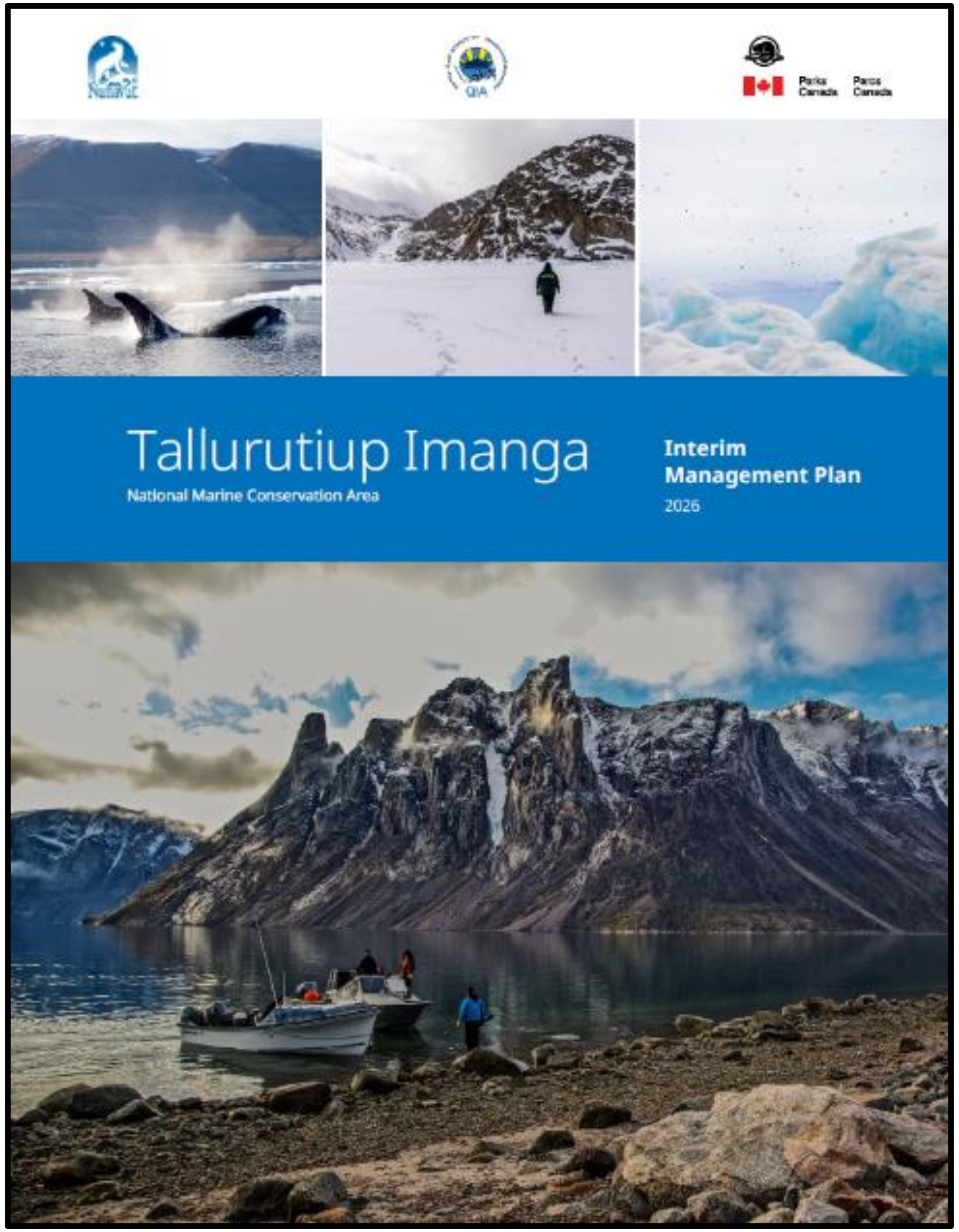
Purpose of presentation

1. Introduction to NMCAs and Tallurutiup Imanga
2. Review the development and provide an overview of the interim management plan
3. Provide details on aspects of the plan that fall under the NWMB's mandate
4. Request approval for the plan

Issue

Seeking NWMB approval on:

- ❑ **the Interim Management Plan for Tallurutiup Imanga NMCA**
  - In accordance with Section 5.2.34 (c) of the NA
- ❑ **non-Inuit limitations on harvesting in certain areas of Tallurutiup Imanga NMCA**
  - In accordance with Section 5.6.48 of the NA



Introduction to National Marine Conservation Areas

Parks Canada's
National Marine Conservation Areas (NMCAs)

- **Protect and conserve** representative marine areas for the **benefit, education and enjoyment of the people** living in Canada and the world
- Managed and used in a sustainable manner that **meets the needs of present and future generations** without compromising the structure and function of the ecosystems
- In NMCAs, DFO and Transport Canada retain their regulatory authorities, but within the context of the CNMCA Act

NMCA Management Goals

1. Protect marine ecosystems and biodiversity
2. Conserve cultural heritage
3. Manage use in an ecologically sustainable manner
4. Support Indigenous leadership in marine conservation
5. Contribute to the well-being of Indigenous peoples and coastal communities
6. Facilitate opportunities for meaningful visitor experiences
7. Enhance awareness and understanding of NMCAs
8. Advance effective collaboration for management

Activities in NMCAs

- Most activities allowed
  e.g., fishing, tourism, shipping
  - So long as they are done in an ecologically sustainable manner and in alignment with the purpose and objectives of the NMCA
- Activities managed using zoning or other management tools
  e.g., guidelines or best practices shared with users

- ☑ Inuit harvesting and use
- ☑ Commercial fisheries
- ☑ Tourism
- ☑ Shipping
- ☑ Recreational use
- ☑ Disposal at sea
- ☒ Oil and gas activities
- ☒ Mining activities


Introduction to
Tallurutiup Imanga

Tallurutiup Imanga Establishment

Dec 2009

Signing of Feasibility MOU

- QIA, GN and Government of Canada sign MOU

Feb 2017

Feasibility Assessment Complete

- Included IQ study by QIA and community consultations
- Assessment concluded an NMCA feasible; recommended a boundary

August 2019

Signing of Inuit Impact and Benefit Agreement

- QIA and Government of Canada sign IIBA
- Includes a final agreed-on boundary
- Establishes Inuit-Canada consensus-based governance

May-Sept 2023

Establishment proposal passes NPC and NIRB screening

- NPC provides positive conformity determination
- NIRB recommends a review is not required

anticipated

August 2026

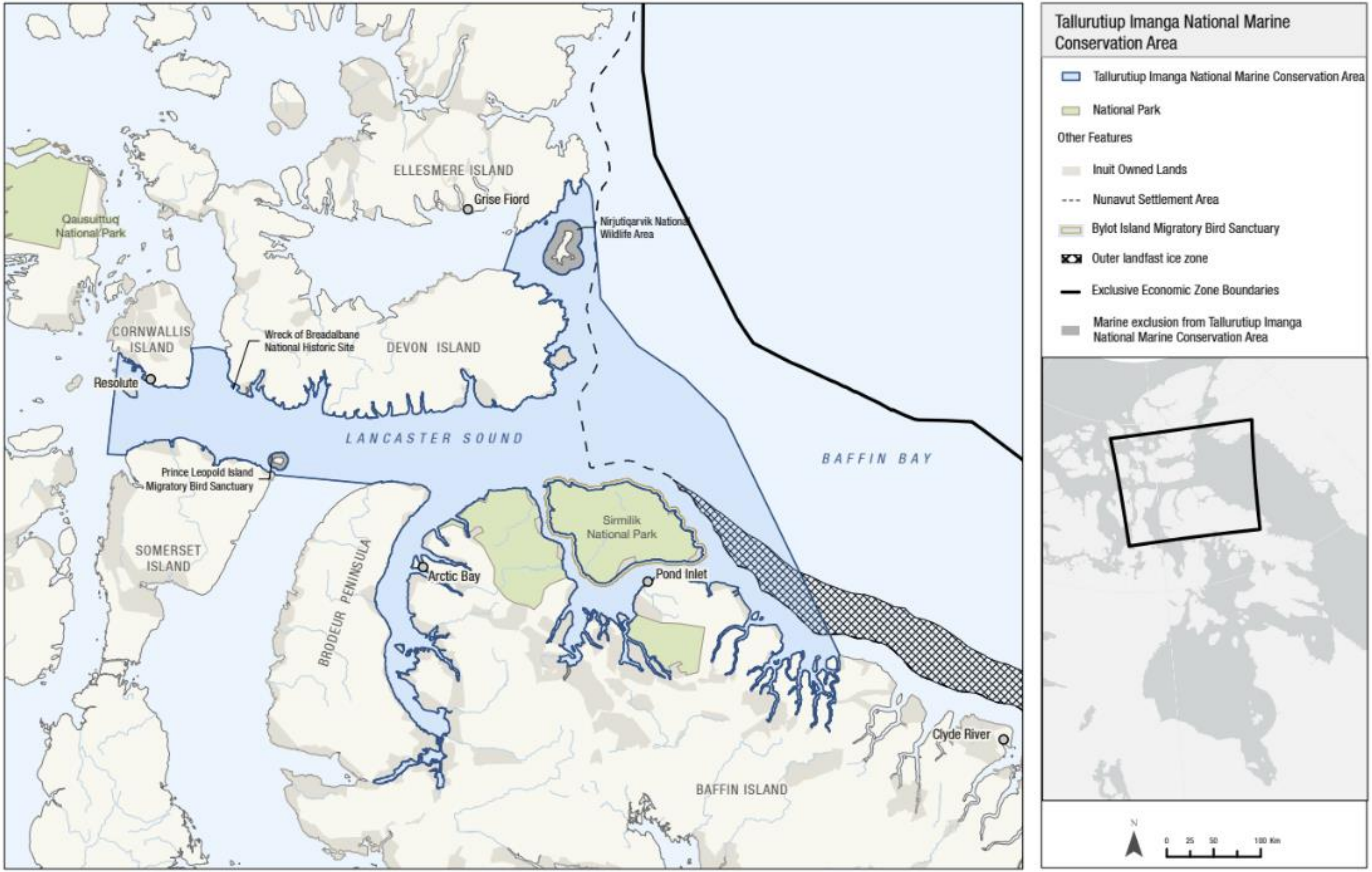
IMP Approved

- If NWMB approves, Ministers and President expected to sign in August

Late 2026

Legal establishment under *CNMCAA*

- A report that must include the IMP laid before Parliament
- Tallurutiup Imanga NMCA added to Schedule 1 of *CNMCAA*



Tallurutiup Imanga National Marine Conservation Area
Tallurutiup Imanga National Marine Conservation Area
National Park
Other Features
Inuit Owned Lands
Nunavut Settlement Area
Bylot Island Migratory Bird Sanctuary
Outer landfast ice zone
Exclusive Economic Zone Boundaries
Marine exclusion from Tallurutiup Imanga National Marine Conservation Area
ELLESMERE ISLAND
Grise Fiord
Nirjutiqarvik National Wildlife Area
Qausuittuq National Park
CORNWALLIS ISLAND
Resolute
Wreck of Breadalbane National Historic Site
DEVON ISLAND
LANCASTER SOUND
BAFFIN BAY
Prince Leopold Island Migratory Bird Sanctuary
SOMERSET ISLAND
BRODEUR PENINSULA
Sirmilik National Park
Arctic Bay
Pond Inlet
Clyde River
BAFFIN ISLAND
N
0 25 50 100 Km

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AULATTIQATIGIIT BOARD

Joint governance

QIA Director or department head for Tallurutiup Imanga NMCA

Chair of the Inuit Advisory Committee (Imaq)

A representative as determined by QIA

Parks Canada Field Unit Superintendent for Tallurutiup Imanga NMCA

A senior representative from Fisheries and Oceans Canada

A senior representative from another federal department

Aulattiqatigiit Board is a joint Qikiqtani Inuit Association and Parks Canada body created to guide the management of Tallurutiup Imanga National Marine Conservation Area (NMCA).

Imaq

- Article 6 of the Tallurutiup Imanga IIBA
- Provides advise to QIA on matters affecting Inuit
- Imaq chair sits on the Aulattiqatigiit Board
- Current membership includes QIA's community directors of the five associated communities

Development of Tallurutiup Imanga Interim Management Plan

Development of the Interim Management Plan

1 **Phase 1**

Drafting the IMP (2018-2023)

2 **Phase 2**

Reviewing the IMP (2024-2025)

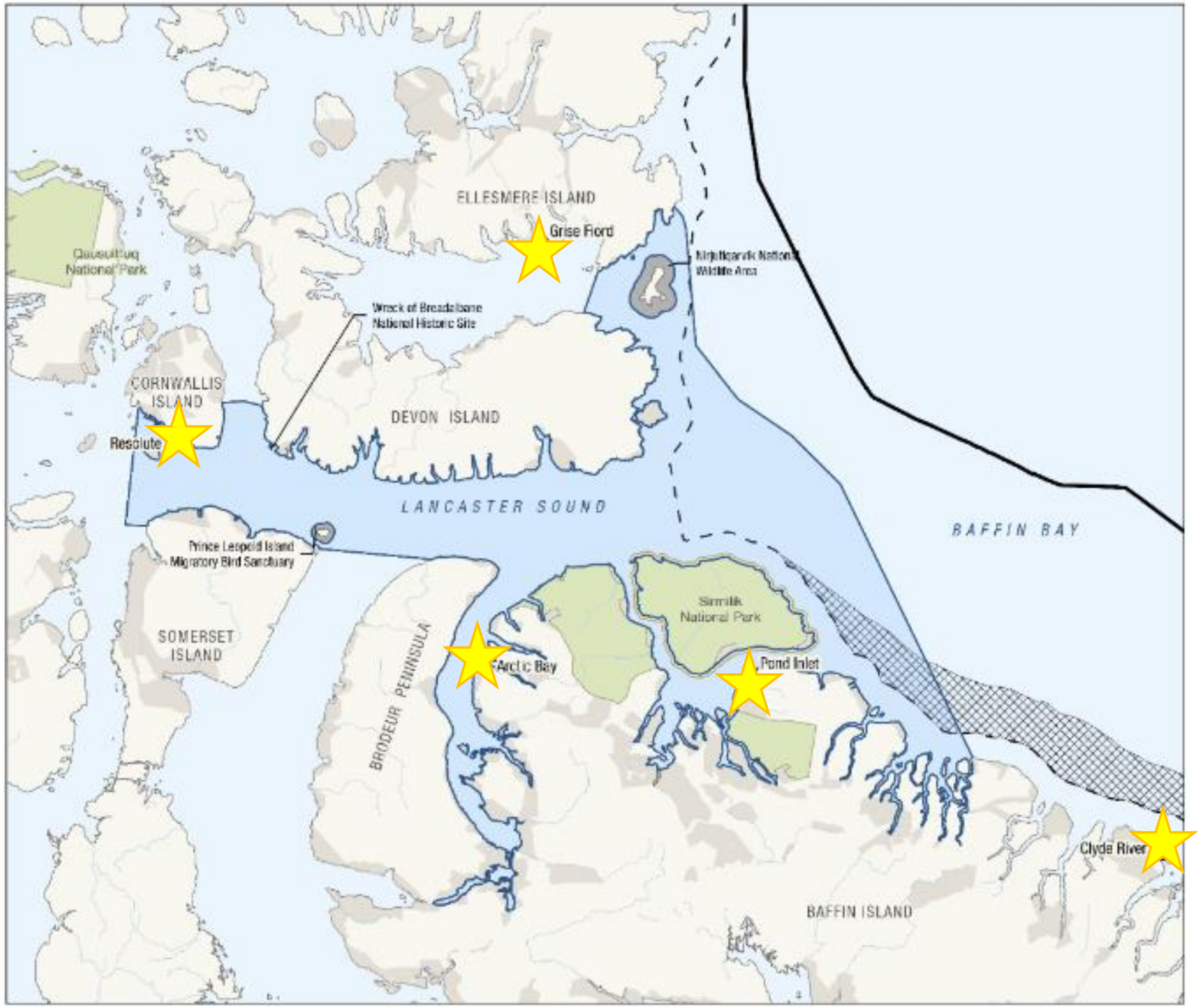
Communities Consulted

Tallurutiup Imanga Inuit Impact and Benefit Agreement defines the **Tallurutiup Imanga NMCA Communities** as:

- Arctic Bay
- Resolute
- Pond Inlet
- Clyde River
- Grise Fiord

Each community was visited **4 times from 2018 to 2025** in the process of developing the IMP:

1. May - July 2018
2. April - May 2019
3. March 2024
4. November 2024 - January 2025



Development of the IMP

1

Phase 1

Drafting the IMP (2018-2023)

Feasibility Assessment

- Tallurutiup Imanga NMCA Feasibility Assessment completed in 2017
- Summary of ecology, regional Inuit Qaujimajatuqangit, and economic considerations

Community Consultations

- 2 rounds of meetings with Grise Fiord, Resolute, Pond Inlet, Arctic Bay, and Clyde River

Stakeholder Consultations

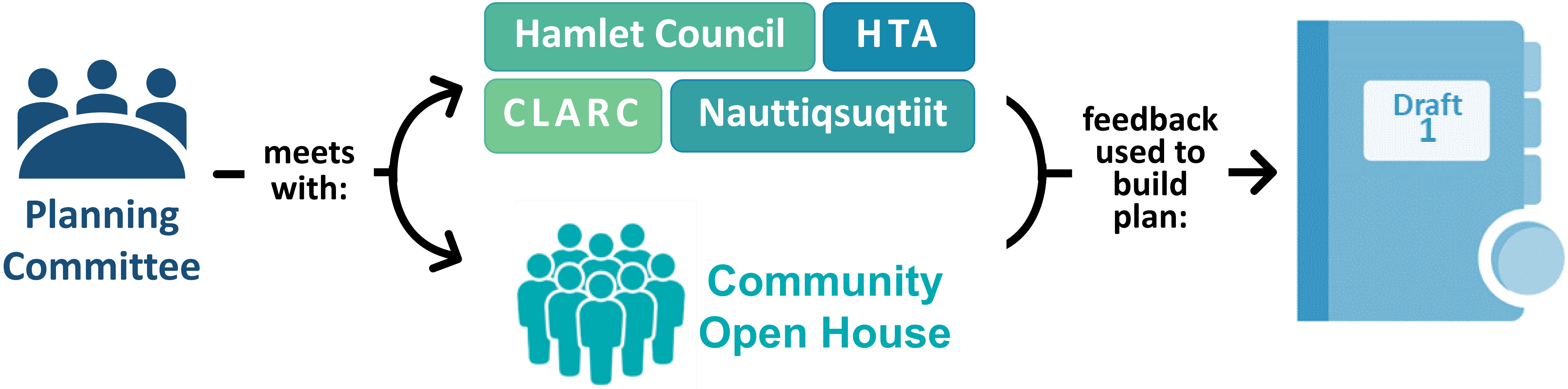
- Meeting and workshops held
- Cruise, shipping, mining, fishing tourism industries
- Nunavut institutions, NGOs, research groups, academia

Other data sources

- Draft NLUP and QWB submission
- Canadian Wildlife Service data
- Cruise ship data
- Sea ice, flow edge, polynya data

Phase 1 Community Consultations (2018-2019)

- Purpose of meetings was to hear community inputs and concerns regarding key issues
- 2 rounds of meetings held:
  - ✓ **May to July 2018**
  - ✓ **April to May 2019**



What we heard
Community Consultation 2018-2019

Protect and reduce impacts to wildlife , their habitat, and migration routes

Need to manage shipping traffic and impacts on wildlife and habitat

Concerns about ice breaking and a need for sea ice protection

Manage tourism adjacent to communities

What we heard
Community Consultation 2018-2019

Improve communications/ manage cooperatively

Ensure Inuit Qaujimajatuqangit is included in management and decision making

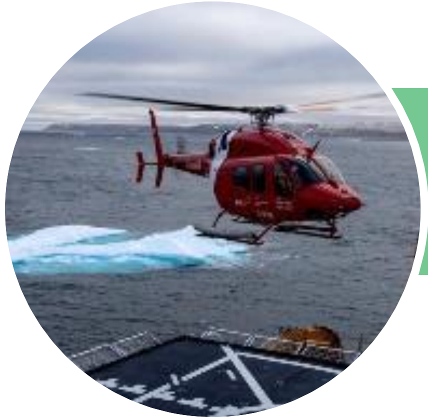
Set research priorities / training for Inuit to conduct research

Coordinated monitoring within TINMCA

What we heard
Community Consultation 2018-2019

Changing ice conditions/ climate change

Share knowledge and information



Coordination of emergency response

Enforcement

Development of the IMP

2

Phase 2

Reviewing the IMP (2024-2025)

Community Review

- 2 in-person meetings and one online validation with Grise Fiord, Resolute, Pond Inlet, Arctic Bay, and Clyde River

Stakeholder Review

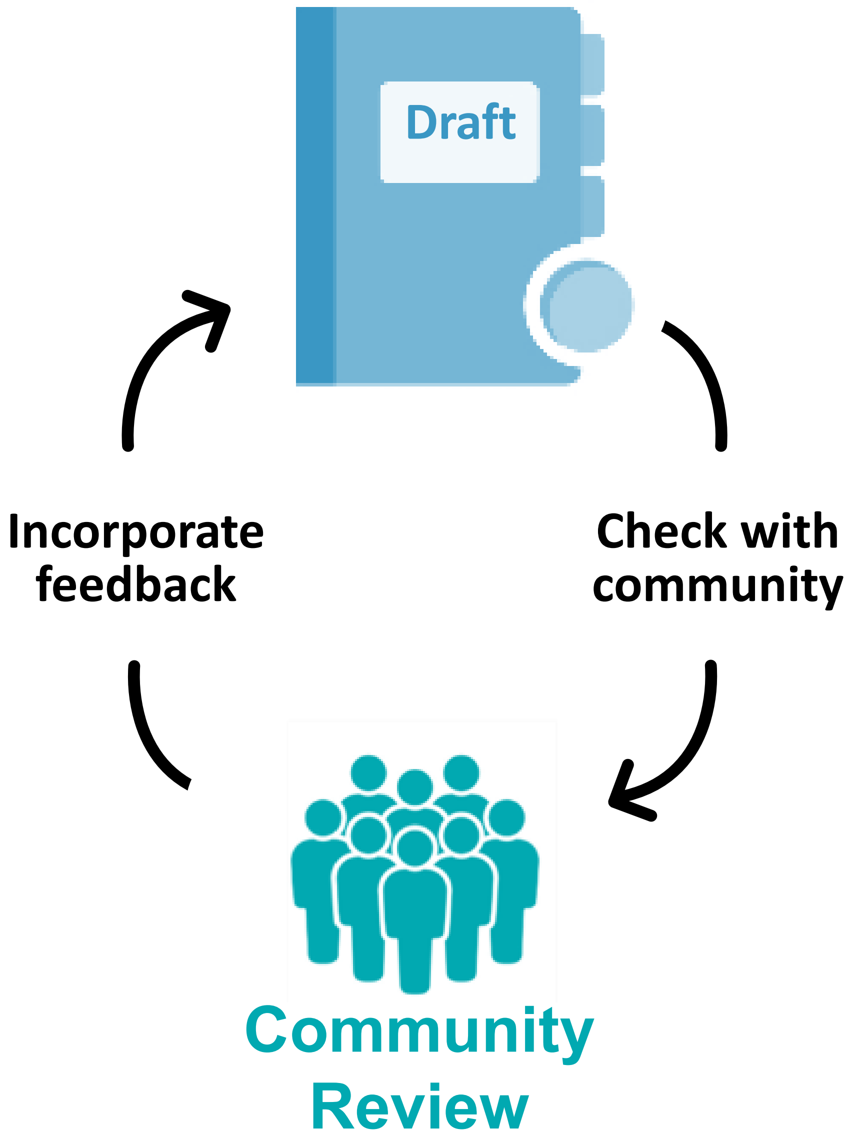
- Met with key industry stakeholders between May and September 2025
- Other stakeholders asked to review by email

Public Consultation

- IMP posted online June-July 2025

Phase 2 Community Review (2024-2025)

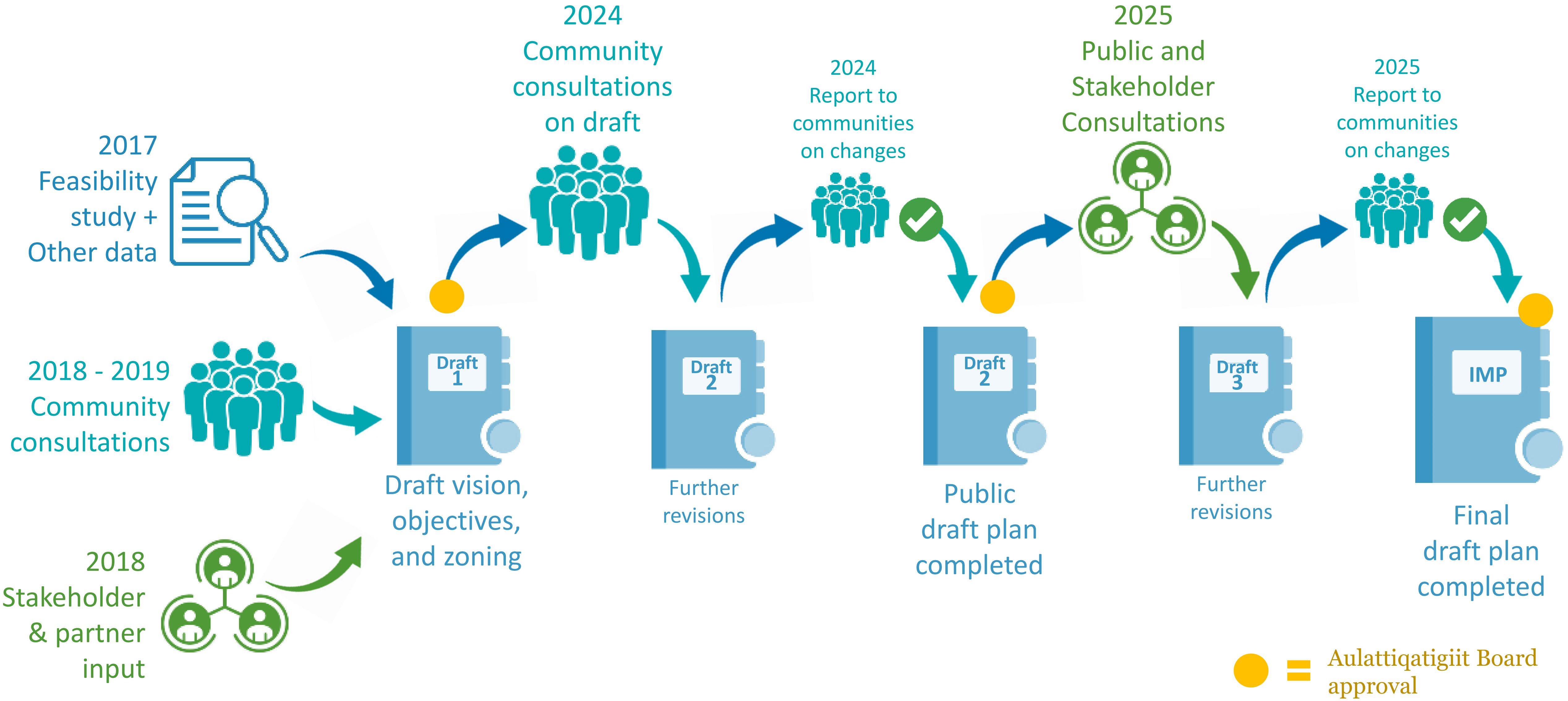
- Purpose of meetings was to review the draft IMP, and validate subsequent revisions
- 3 rounds of reviews held:
  - ✓ **March 2024**
  - ✓ **November 2024**
  - ✓ **Fall 2025**



What we heard
Community Review 2024-2025

- Changes made to vision statement to better reflect Inuit values
- Changes made to targets to address desire to prioritize infrastructure and expand protection for seabirds
- Changes to dates for seasonal zoning plans to better reflect current seasonal realities
- Changes to the zoning plan to address issues such as:
  - More protection for the floe edge
  - Additional walrus haul-out areas that needed protection
  - Additional measure to better protect beluga and narwhal habitat
  - Extending protection for seabirds along the Buchan Gulf
- Certain areas needed more flexible forms of protection, added Areas of Special Importance to communities
  - These areas are of particular importance to communities and require special management focus to reduce disturbances
- The communities validated all the changes

Development of the Interim Management Plan



Consultation and Engagement Summary

IMP

2018 - 2025

Community

5 Communities Consulted

- Clyde River
- Arctic Bay
- Resolute
- Pond Inlet
- Grise Fiord

493 Individuals Attended

- Hunters & Trappers Organizations
- Hamlet Councils
- CLARC
- Public Open Houses

43 In-person Meetings

Stakeholder

145 Organizations Engaged

33 In-person and Virtual Meetings

443 Individuals Attended

- NGOs
- Nunavut institutions
- Academia
- Industry
  - → mining, shipping, tourism, cruise, fisheries


Overview of
Tallurutiup Imanga
Interim Management Plan

What is the Interim Management Plan?

- Guidance for the Aulattiqatigiit Board and users
- Guides management until a full management plan developed
- The IMP is the last step required to establish Tallurutiup Imanga NMCA under the *Canada National Marine Conservation Areas Act*

Contents of the Interim Management Plan

Vision

Tallurutiup Imanga National Marine Conservation Area is a thriving globally significant ecosystem that sustains and empowers Inuit for generations to come and welcomes visitors to experience, appreciate, and respect its meaning to Inuit, Canada, and the Arctic region.

Objectives

Objective 1

- The natural and cultural heritage of Tallurutiup Imanga is protected and conserved.

Targets 1, 3, 4 and 6 are related to wildlife and wildlife habitat.

Objective 2

- The sustainable use of marine and terrestrial resources respects Inuit rights, results in economic and social benefits for Inuit, and enhances the well-being of the associated communities.

Objective 3

- Collaborative research and monitoring increases awareness, informs decision making, and promotes knowledge collection and sharing.

Target 1 is related to wildlife and wildlife habitat.

Objective 4

- Collaborative and coordinated prevention, preparedness, and response planning increases safety of the associated communities and NMCA users and the protection of Tallurutiup Imanga.

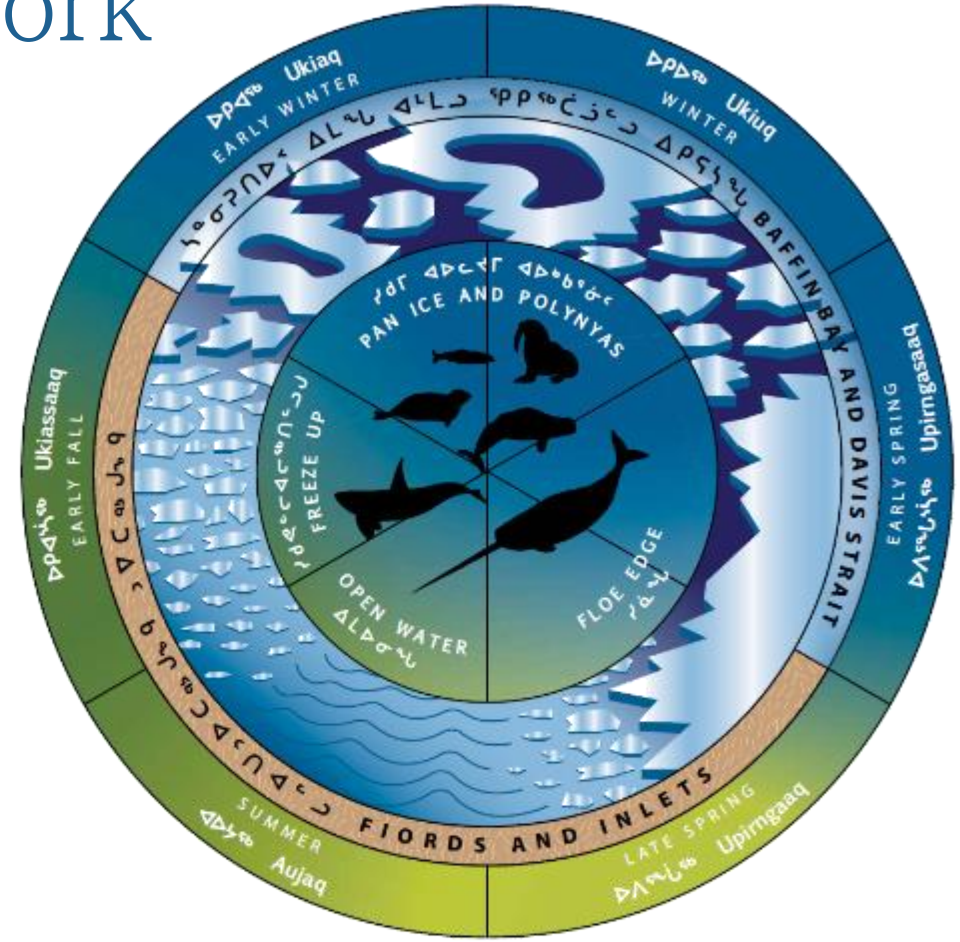
Objective 1

- **Target 1.** The effectiveness of the interim zoning plan in protecting and conserving natural and cultural heritage is evaluated to improve the zoning plan if needed (for example, changes to zone boundaries, or the need for additional management tools to support zoning) by the end of year five.
- **Target 3** - Processes for issuing authorizations (such as permits or licenses) for activities in Tallurutiup Imanga NMCA are developed, and documented in a format that is publicly available, by the end of year 2. These processes prioritize the protection of wildlife and Inuit use of the area in the management of other uses and activities within the NMCA. To the extent possible, these processes are streamlined with existing procedures.
- **Target 4** - As per the Federal Marine Protected Areas Protection Standard, an assessment of the compatibility of the use of bottom trawl gear with the NMCA's conservation objectives is conducted in collaboration with communities and stakeholders, and a report delivered to the Aulattiqatigiit Board by the end of year 5.
- **Target 6** - An assessment of the need for increased protection of colonial seabirds and their habitat is completed in collaboration with the Canadian Wildlife Service, and a report with findings and recommendations delivered to the Aulattiqatigiit Board by year 3.

Objective 3

- **Target 1** - A minimum of 3 indicators to monitor ecological sustainability that are based on Inuit Qaujimajatuqangit and western science are co-developed with communities and approved by the Aulattiqatigiit Board. The monitoring of these indicators commences within 5 years.

Zoning Framework



Ice Zoning Plan

November 16 to July 20

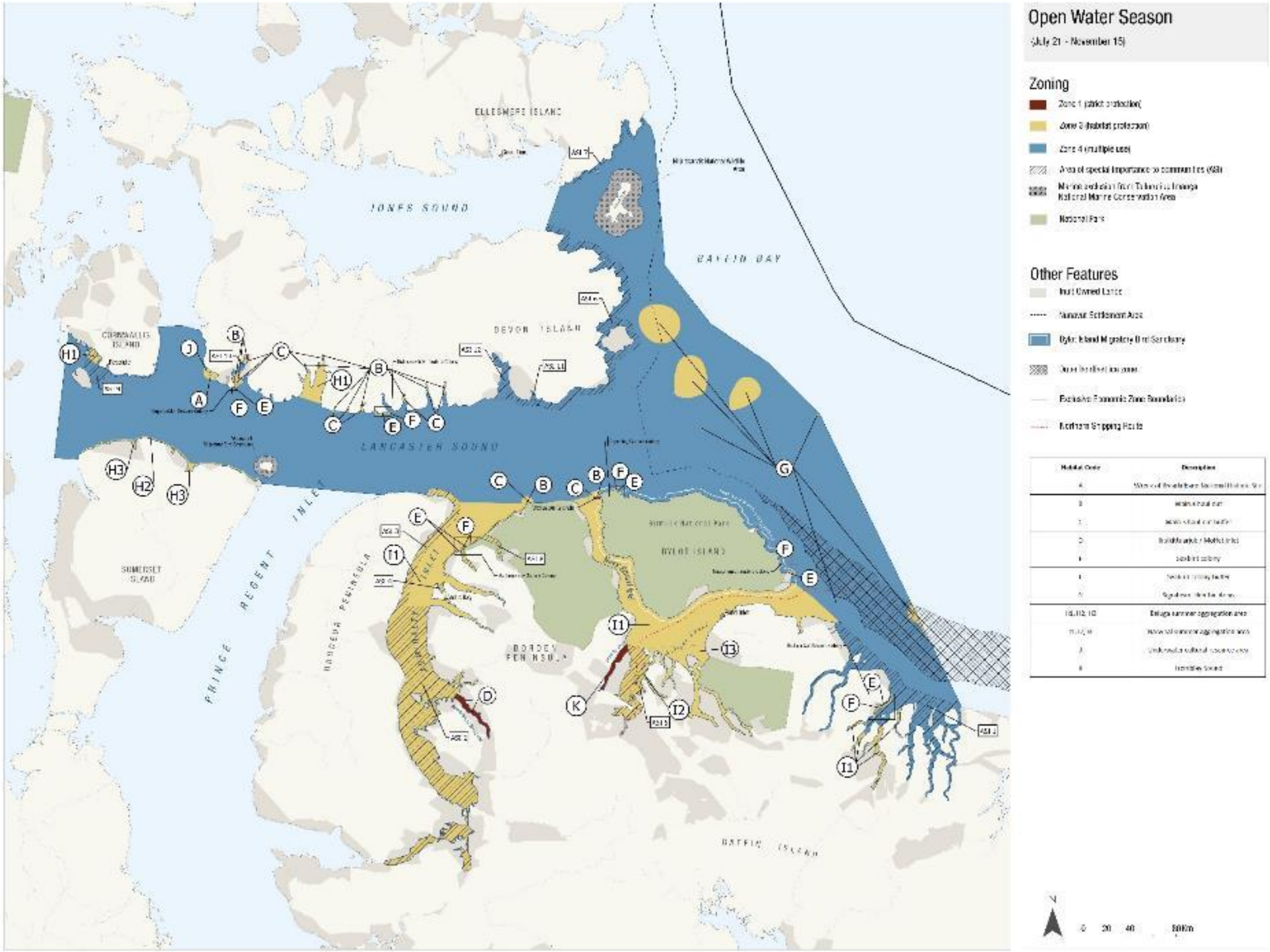
Open Water Zoning Plan

July 21 to November 15

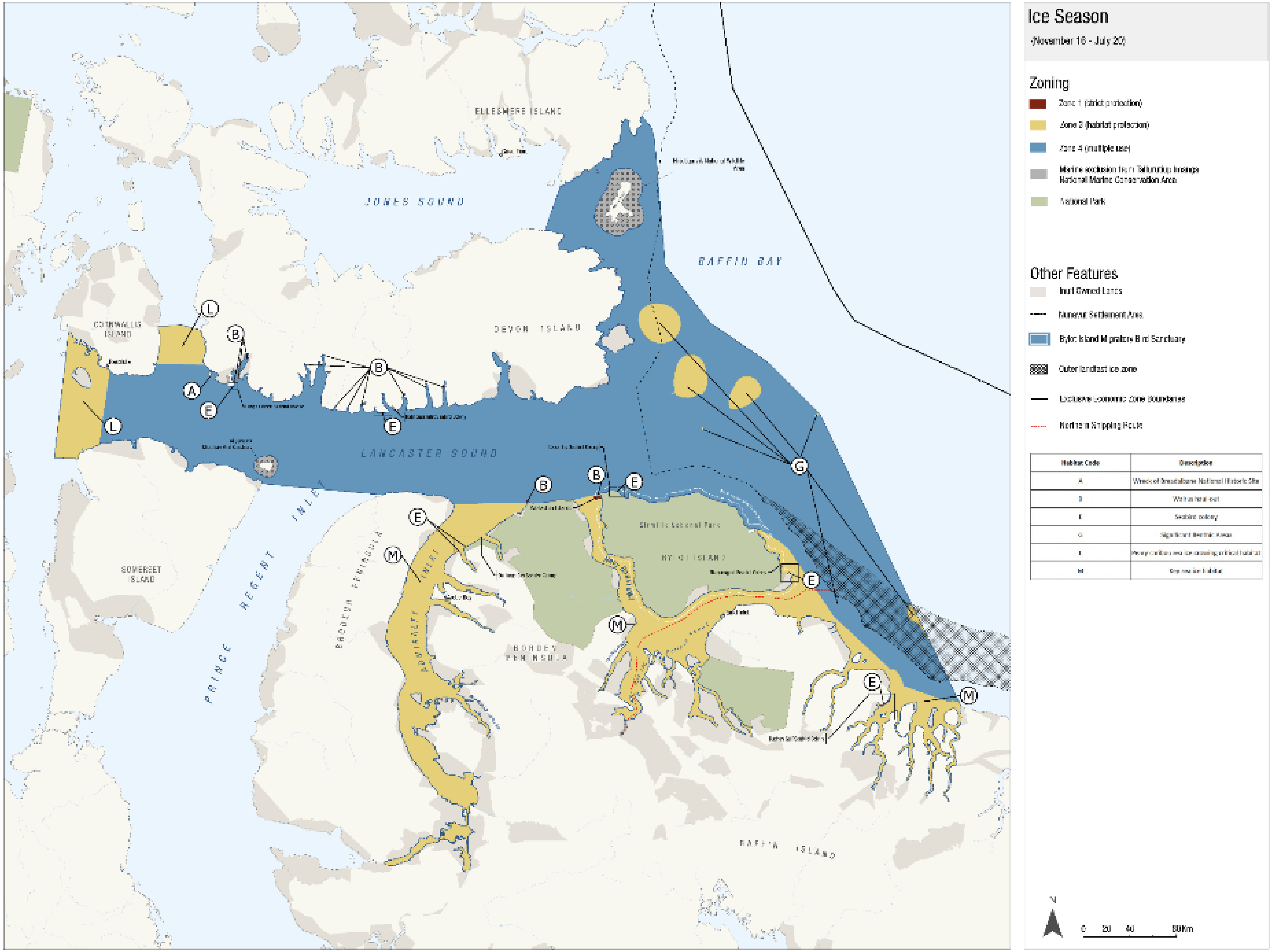
Exceptions to zoning

- Inuit traditional use and access not affected
- National security or sovereignty, defense, law enforcement activities
- Safety and emergency response activities
- Community resupply
- Vessels engaged in innocent passage without stopping

OPEN WATER SEASON

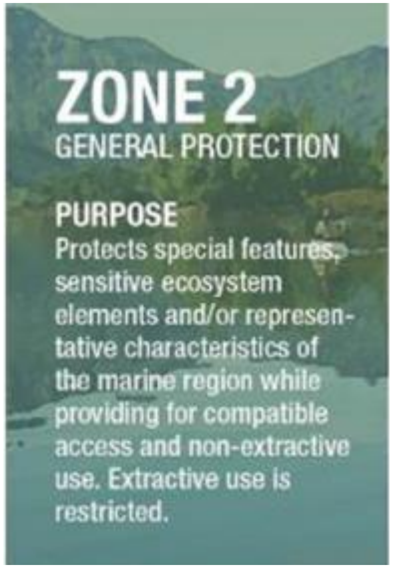


ICE SEASON


Ice Season
Zoning
Zone 1 (strict protection)
Zone 2 (habitat protection)
Zone 4 (multiple use)
National Park
Other Features
Inuit Owned Lands
Nunavut Settlement Area
Bylot Island Migratory Bird Sanctuary
Outer landfast ice zone
Exclusive Economic Zone Boundaries
Northern Shipping Route
Habitat Code
Description
Walrus haul-out
Seabird colony
Significant Benthic Areas
ELLESMERE ISLAND
JONES SOUND
BAFFIN BAY
DEVON ISLAND
CORNWALLIS ISLAND
LANCASTER SOUND
SOMERSET ISLAND
PRINCE REGENT INLET
BORDEN PENINSULA
BAFFIN ISLAND
N
0 20 40 80 Km

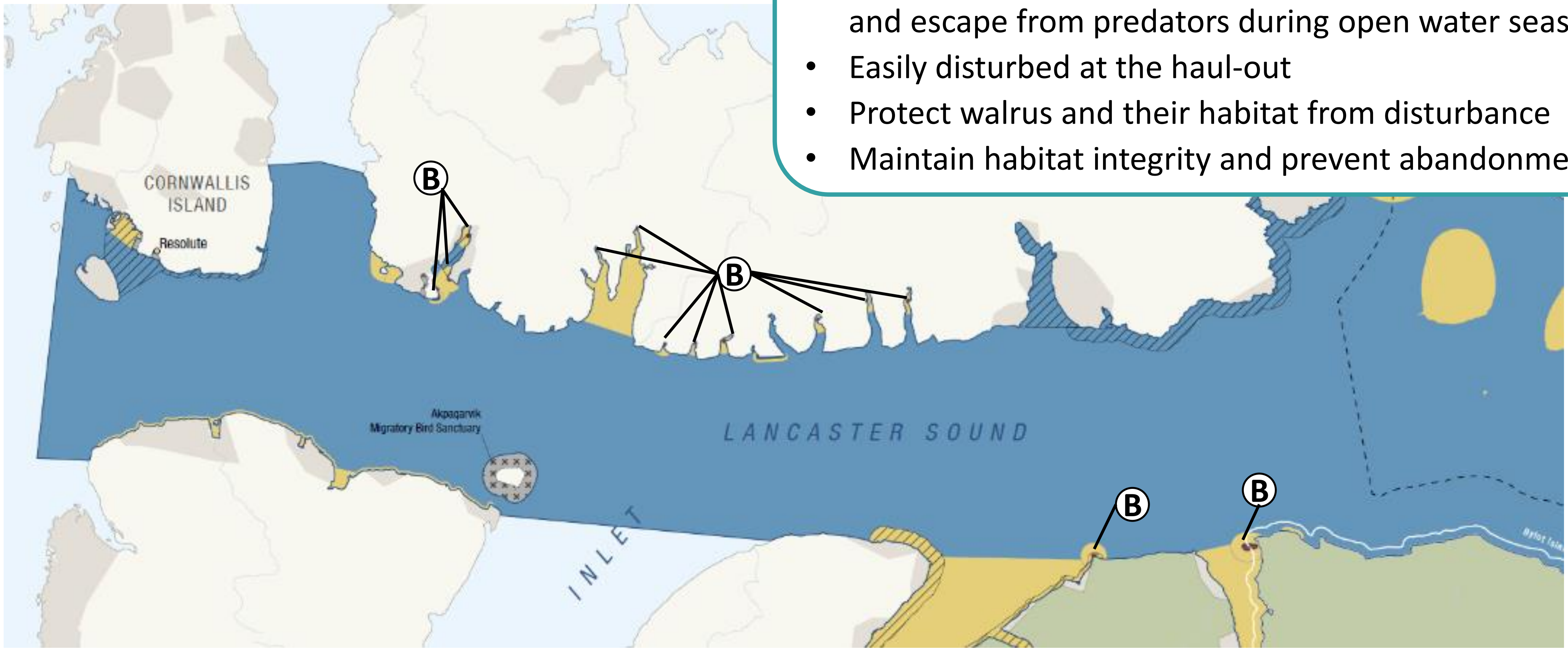
Zoning Walk Through

Zoning



Indigenous traditional use continues in all zones, consistent with Section 35 of the Constitution Act.*

Walrus haul-outs



What is protected and why

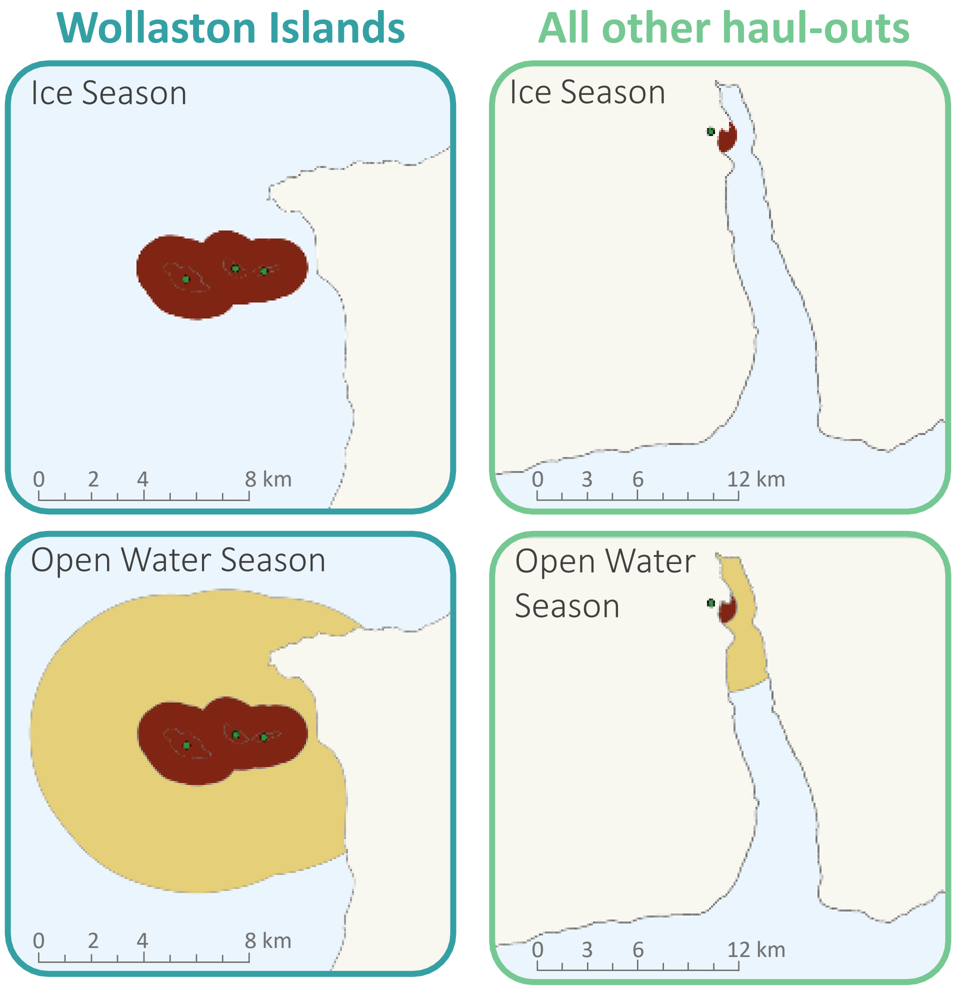
- 13 important walrus haul-out sites for resting, feeding and escape from predators during open water season
- Easily disturbed at the haul-out
- Protect walrus and their habitat from disturbance
- Maintain habitat integrity and prevent abandonment

Walrus haul-outs

- Zoning for walrus haul-outs developed to mirror the requirements outlined in the 2023 Recommended Nunavut Land Use Plan, as recommended by the Qikiqtaaluk Wildlife Board

- **Zone 1 - Strict protection (year-round):**
  - **For Wollaston Islands:** No access on islands and in water a 1-km buffer around islands
  - **For all other haul-outs:** No access in water a 1-km buffer around haul-out
  - Some research and monitoring allowed
  - **Harvesting restrictions:** All non-Inuit* harvesting prohibited in area

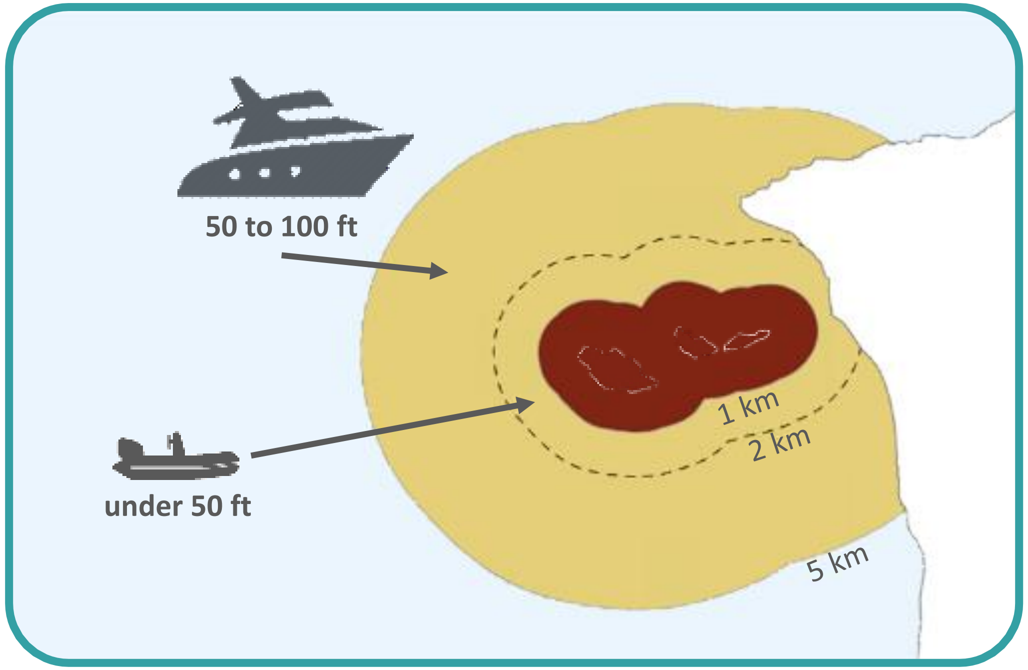
- **Zone 3 - Open water habitat protection:**
  - Buffer extending additional 4 km seawards
  - Prohibits commercial shipping, commercial and recreational fishing
  - Restriction based on vessel size for recreational and commercial tourism (see next slide)
  - Prohibits flying an aircraft at an altitude < 5 000 ft
  - Exceptions for research may apply though permitting process
  - **Harvesting restrictions:** All non-Inuit* harvesting prohibited in area

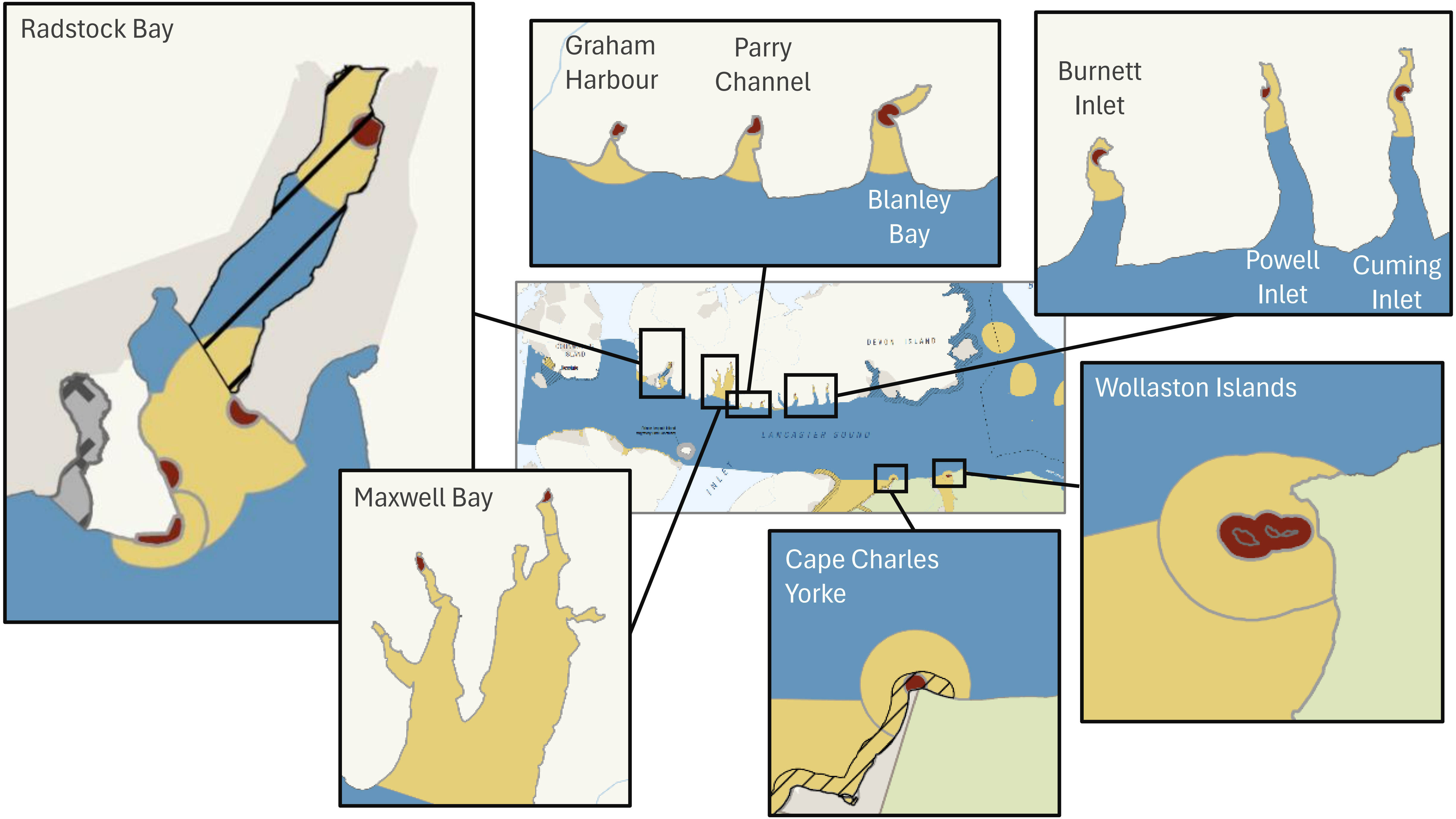


** Inuit traditional use, including hunting, fishing, trapping, and gathering **can continue** in all areas and zones of Tallurutiup Imanga NMCA*

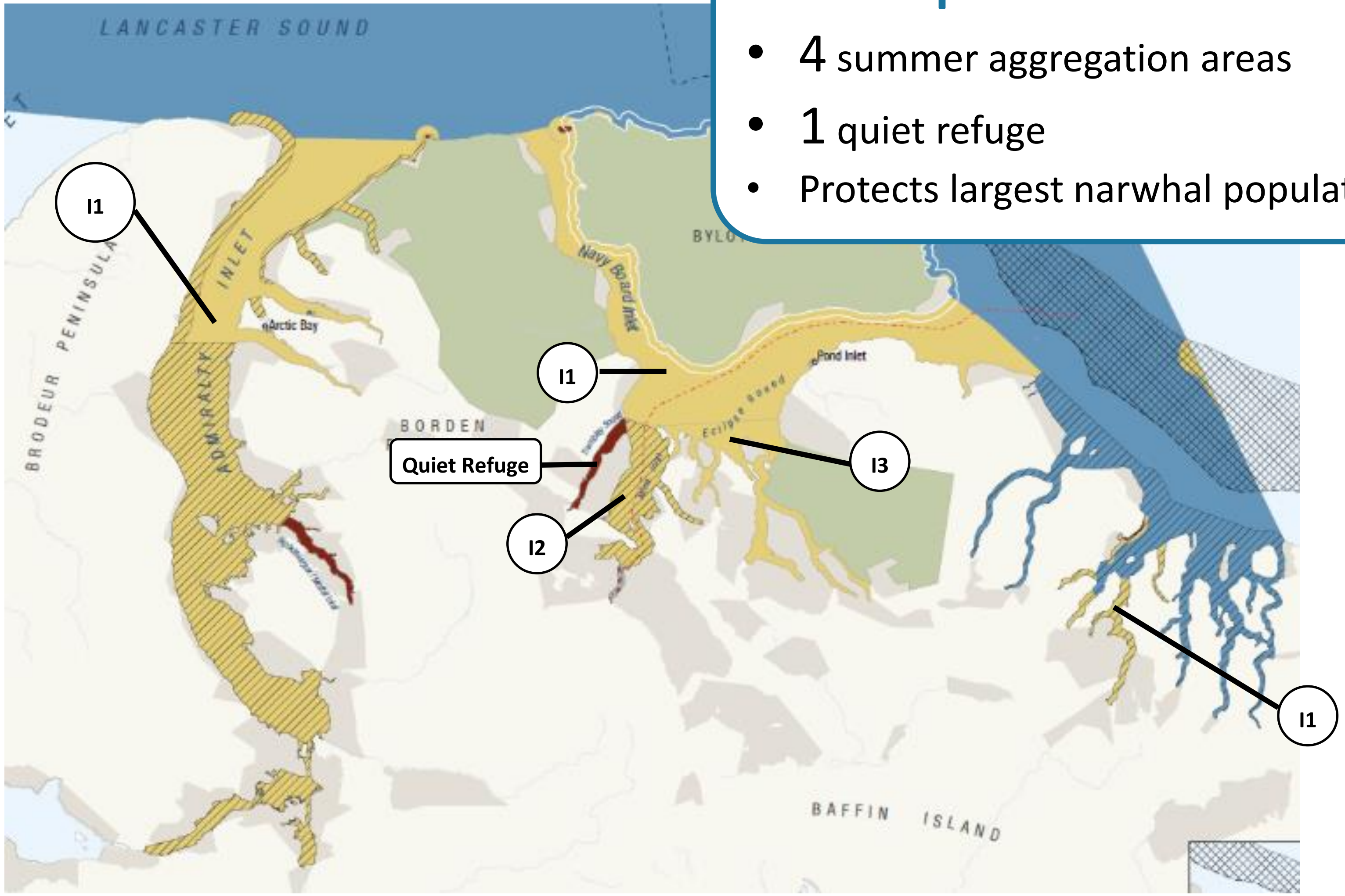
Walrus haul-outs

- **< 50 ft:** may navigate anywhere within the zone 3 area (e.g. kayaks, zodiacs)
- **50 - 100 ft:** may enter the zone 3 area but must always remain at least 2 km from the haul-out
- **>100 ft:** prohibited from accessing or transiting through these zone 3 areas




Radstock Bay
Graham Harbour
Parry Channel
Blanley Bay
Burnett Inlet
Powell Inlet
Cuming Inlet
DEVON ISLAND
LANCASTER SOUND
Wollaston Islands
Maxwell Bay
Cape Charles Yorke

Narwhal habitat

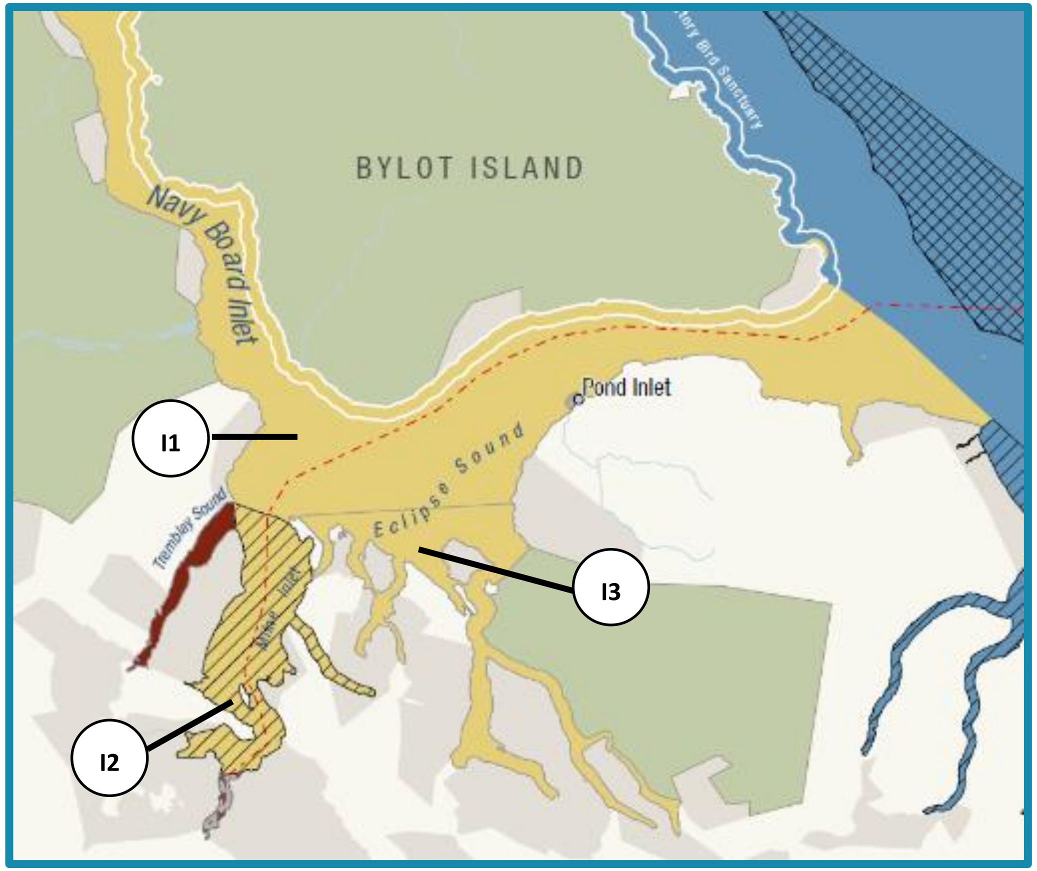


What is protected and why

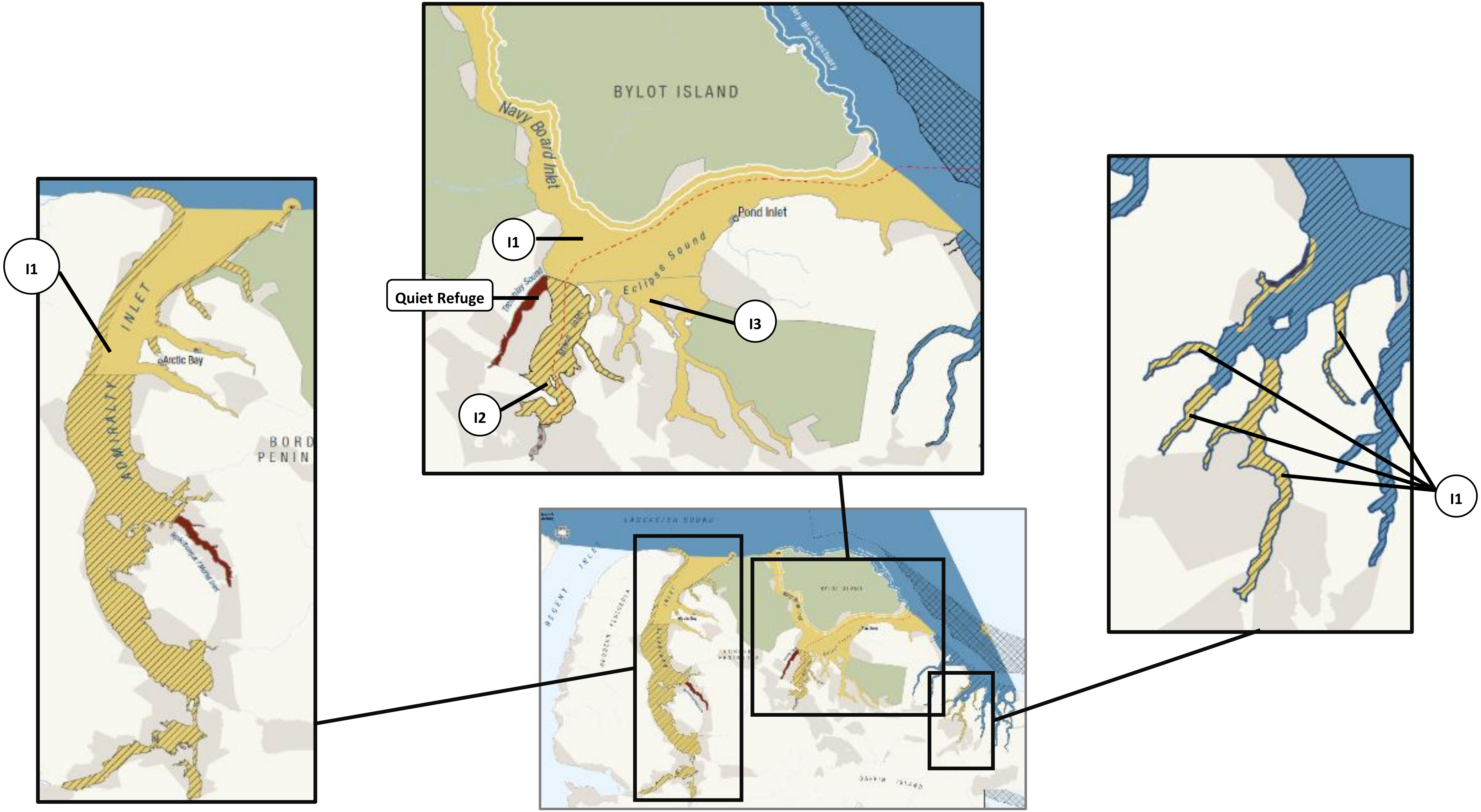
- 4 summer aggregation areas
- 1 quiet refuge
- Protects largest narwhal population in the world

Narwhal habitat

- **Zone 1 - Strict protection:**
  - No access to Trembley Sound during open water season; quiet refuge
  - Some research and monitoring allowed
  - **Harvesting restrictions:** All non-Inuit* harvesting prohibited in area
- **Zone 3 - Open water habitat protection:**
  - Speed limit of 9 knots for all vessels over 300 tons
  - Cruise ships prohibited in Milne Inlet (I2) and southern fiords of Eclipse Sound (I3)
  - Commercial ships prohibited in southern fiords of Eclipse Sound (I3)
  - **Harvesting restrictions:** All non-Inuit* bottom contact fishing gear is prohibited in area



** Inuit traditional use, including hunting, fishing, trapping, and gathering **can continue** in all areas and zones of Tallurutiup Imanga NMCA*

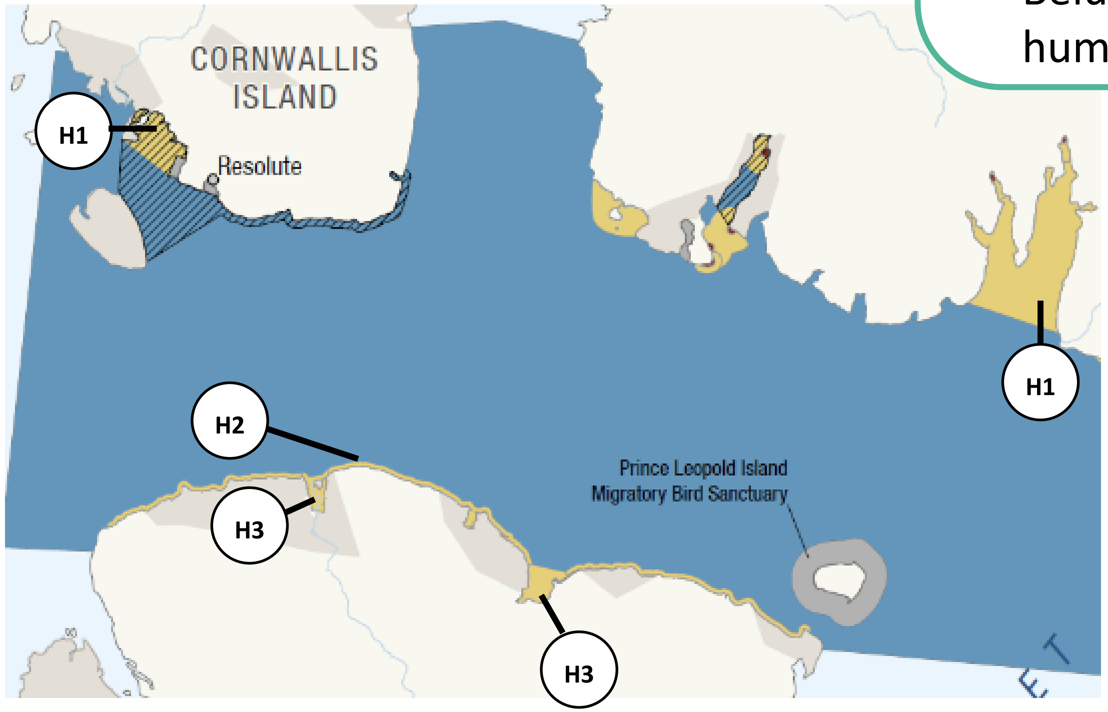


I1
INLET
Arctic Bay
ADMIRALTY
BORD
PENIN
BYLOT ISLAND
Navy Board Inlet
Pond Inlet
Eclipse Sound
I1
Quiet Refuge
I3
I2
I1

Beluga habitat

What is protected and why

- 4 shallow estuaries known to be important beluga nursery and molting grounds used yearly
- 1-km strip stretching along the entire northern coast of Somerset Island, and important aggregation area
- Belugas are disturbed by underwater noise from some human activities



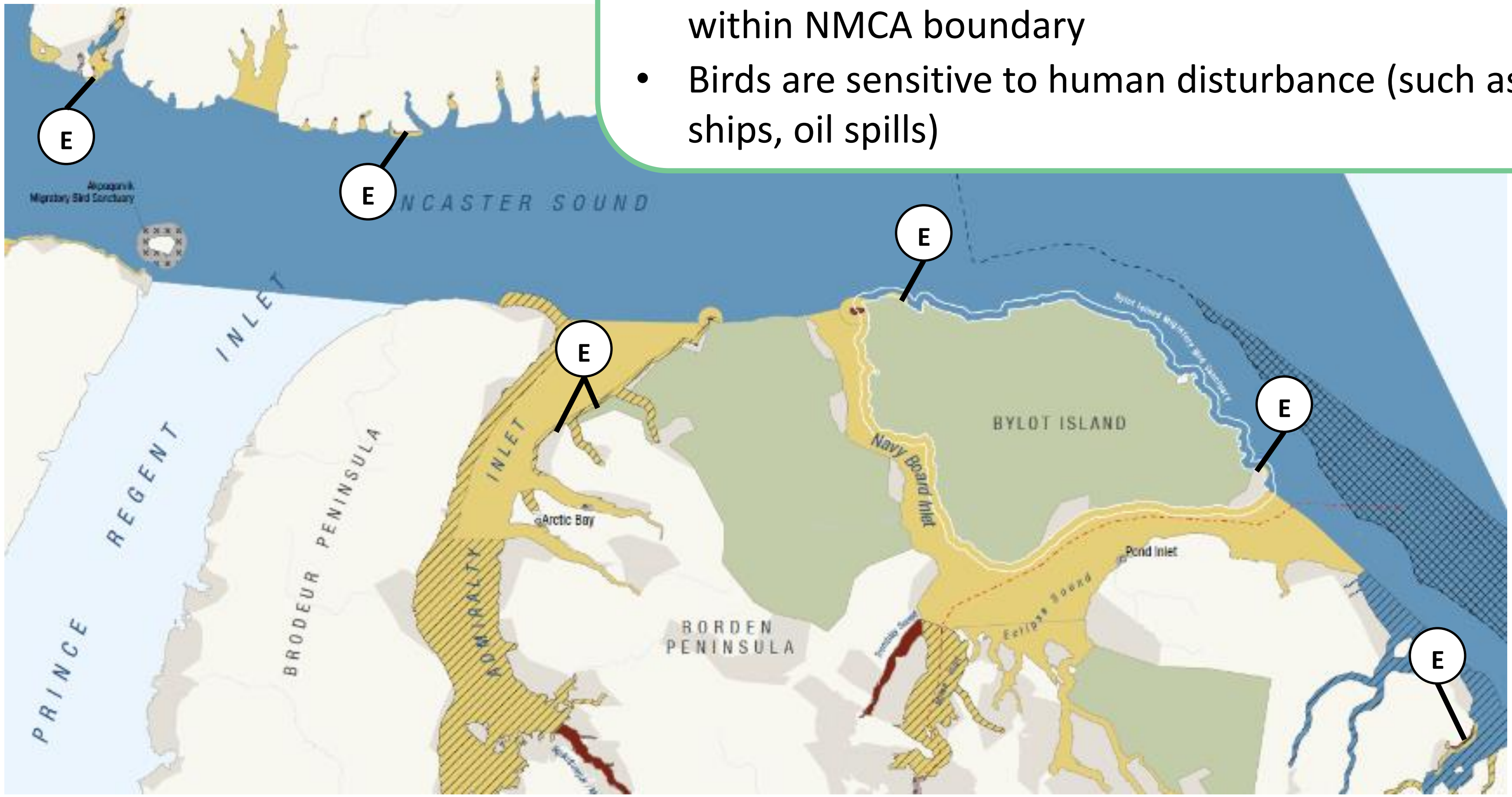
Zone 3 - Open water habitat protection:

- Prohibits flying an aircraft at an altitude < 5 000 ft
- No commercial shipping
- No commercial fisheries
- No new of coastal or in-water infrastructure (H1 & H3)
- H3 – Kippaarittuq/Cunningham Inlet and Garnier Bay
  - No motorized access
- H1 – Maxwell Bay and Allen Bay
  - Motorized access for tourism and recreation allowed
- H2 – Northern coast of Somerset Island
  - Motorized access for small vessels only
  - Small scale coastal and in-water infrastructure for tourism or recreation allowed
- **Harvesting restrictions:** Non-Inuit* hunting, gathering, trapping as well as commercial fishing prohibited in area

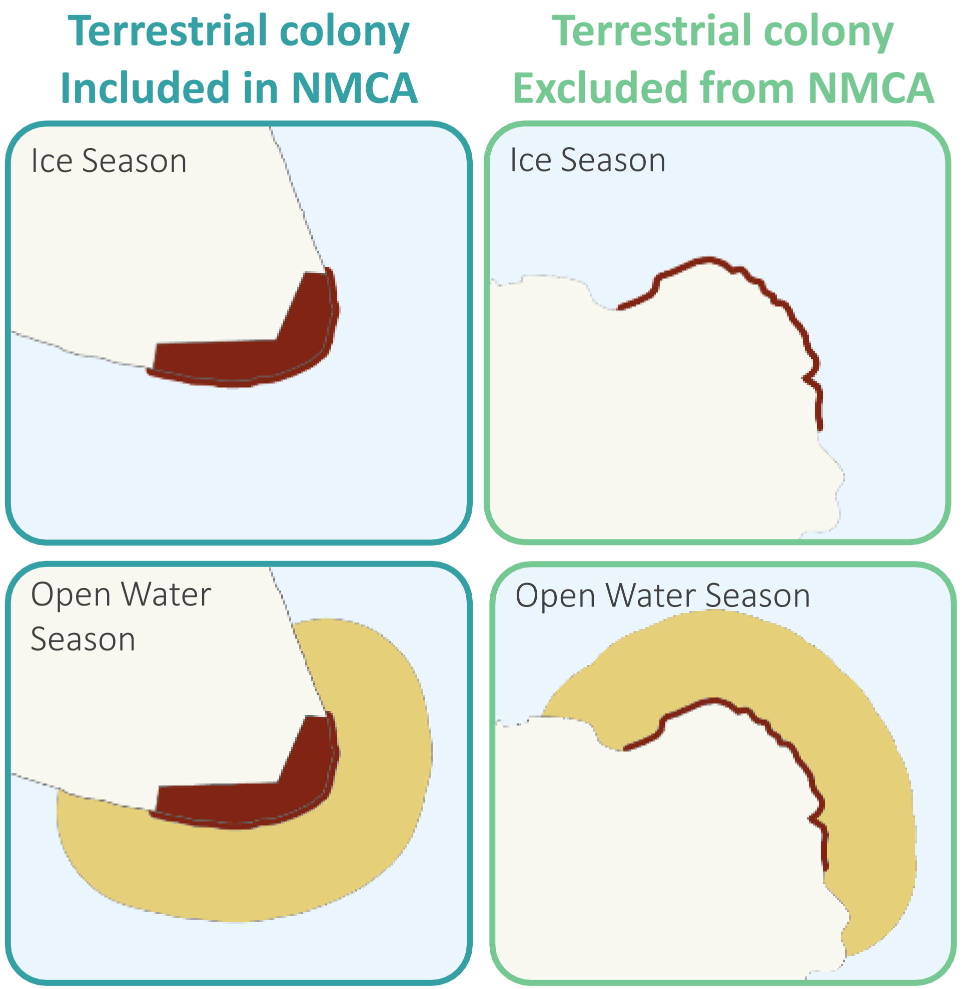
Seabird colonies

What is protected and why

- 6 key migratory bird habitat sites for nesting, chick rearing, and foraging
- For 3 of these sites, terrestrial coastal cliffs included within NMCA boundary
- Birds are sensitive to human disturbance (such as from ships, oil spills)



Seabird colonies

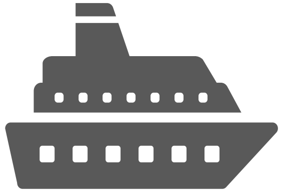


- **Zone 1 - Strict protection:**
  - No access to 100-m buffer from cliff for all 6 sites
  - No access to 3 nesting cliffs located within NMCA boundary
  - Some research and monitoring allowed
  - **Harvesting restrictions:** All non-Inuit* harvesting prohibited in area
- **Zone 3 - Open water habitat protection:**
  - Buffer extending additional 1.5 km seawards
  - Prohibits commercial fishing, commercial shipping and transiting vessels
  - Restriction based on vessel size for recreational and commercial tourism, and recreational fishing (see next slide)
  - 500-m setback for community resupply vessels when birds present
  - Prohibits flying an aircraft at an altitude < 3 500 ft
  - Additional aerial, marine and terrestrial migratory bird setbacks may apply
  - **Harvesting restrictions:** Non-Inuit* hunting, gathering, trapping as well as commercial fishing prohibited in area

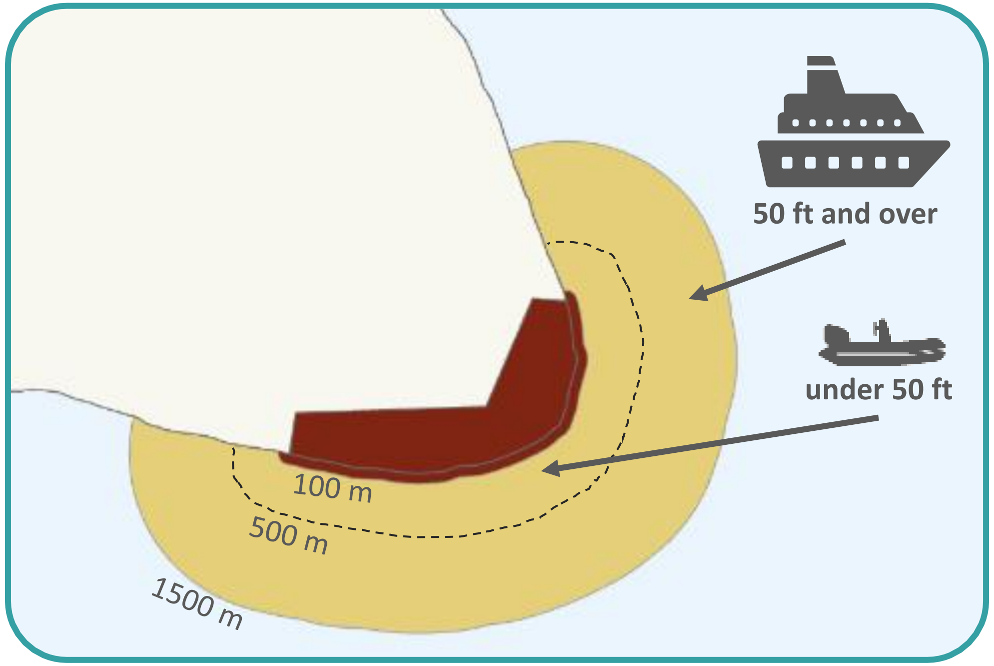
** Inuit traditional use, including hunting, fishing, trapping, and gathering **can continue** in all areas and zones of Tallurutiup Imanga NMCA*

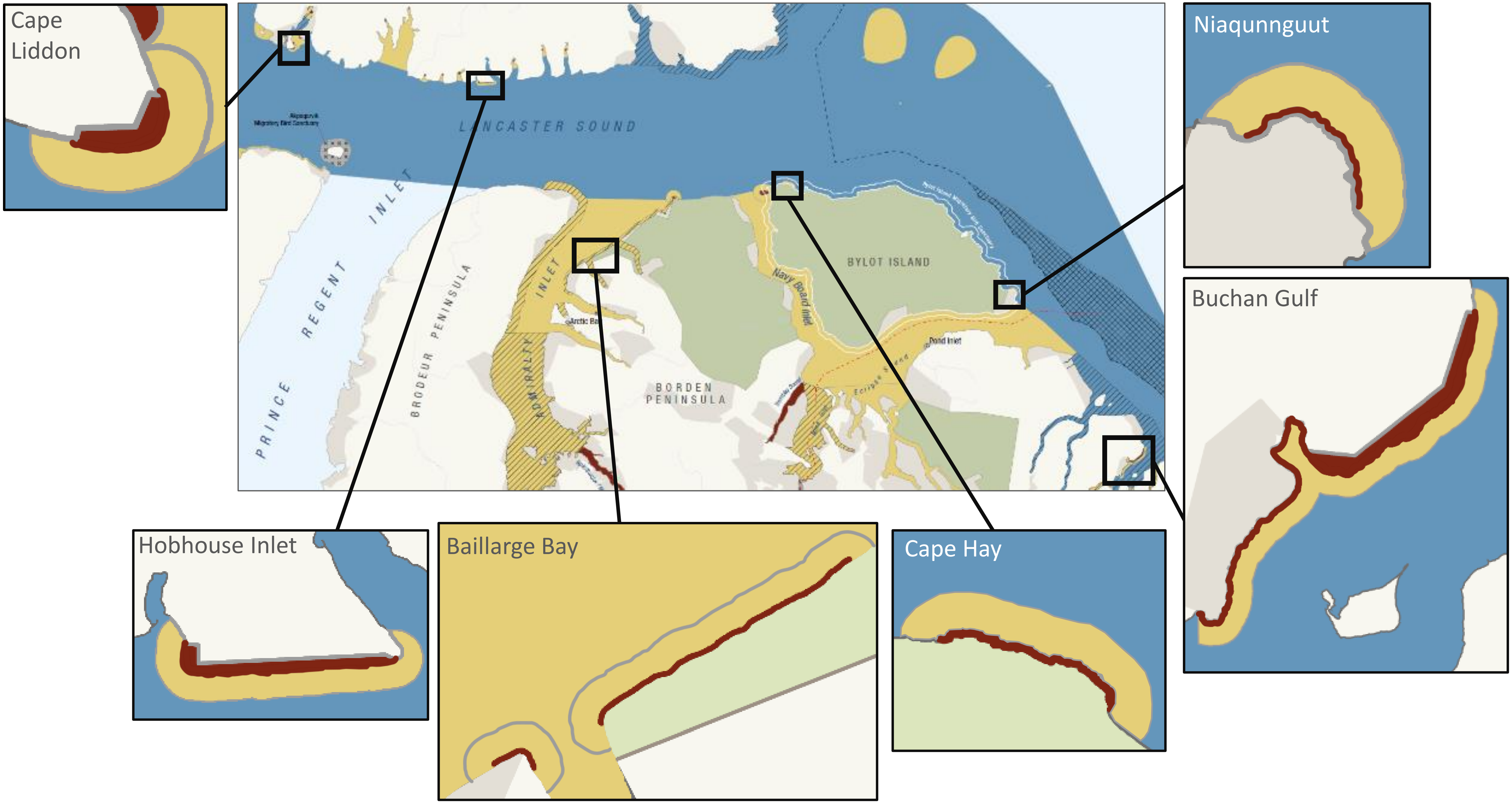
Seabird colonies

- **< 50 ft:** may navigate anywhere within the zone 3 area (e.g. kayaks, zodiacs)



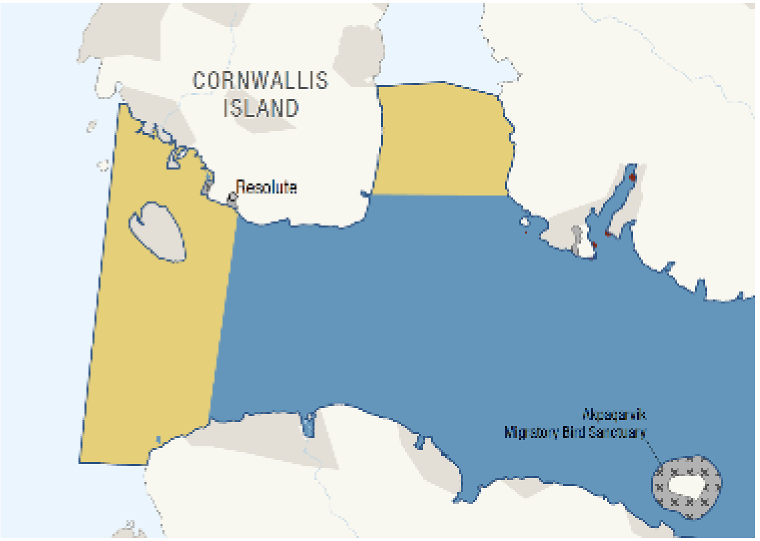
- **> 50 ft:** authorized commercial tourism vessels (e.g. cruise ships) may enter zone 3 area but must always remain at least 500 m from the colony

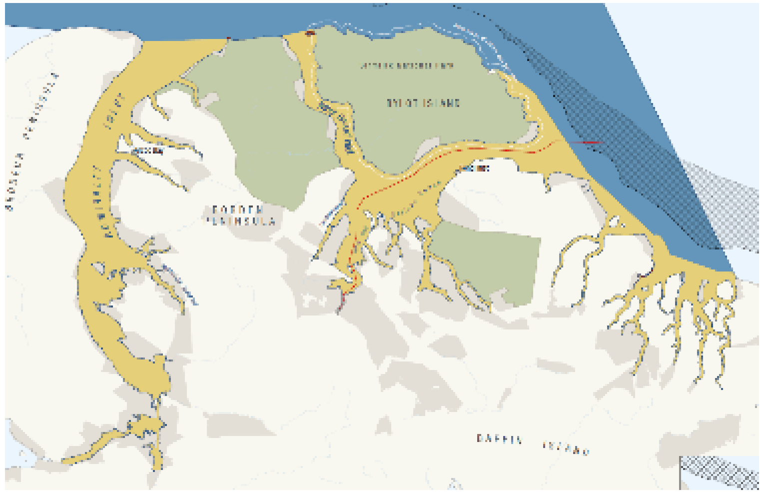




Cape Liddon
Niaqunnguut
LANCASTER SOUND
PRINCE REGENT INLET
BRODEUR PENINSULA
ADMIRALTY INLET
BORDEN PENINSULA
BYLOT ISLAND
Navy Board Inlet
Pond Inlet
Eclipse Sound
Buchan Gulf
Hobhouse Inlet
Baillarge Bay
Cape Hay

Sea ice habitat





What is protected and why

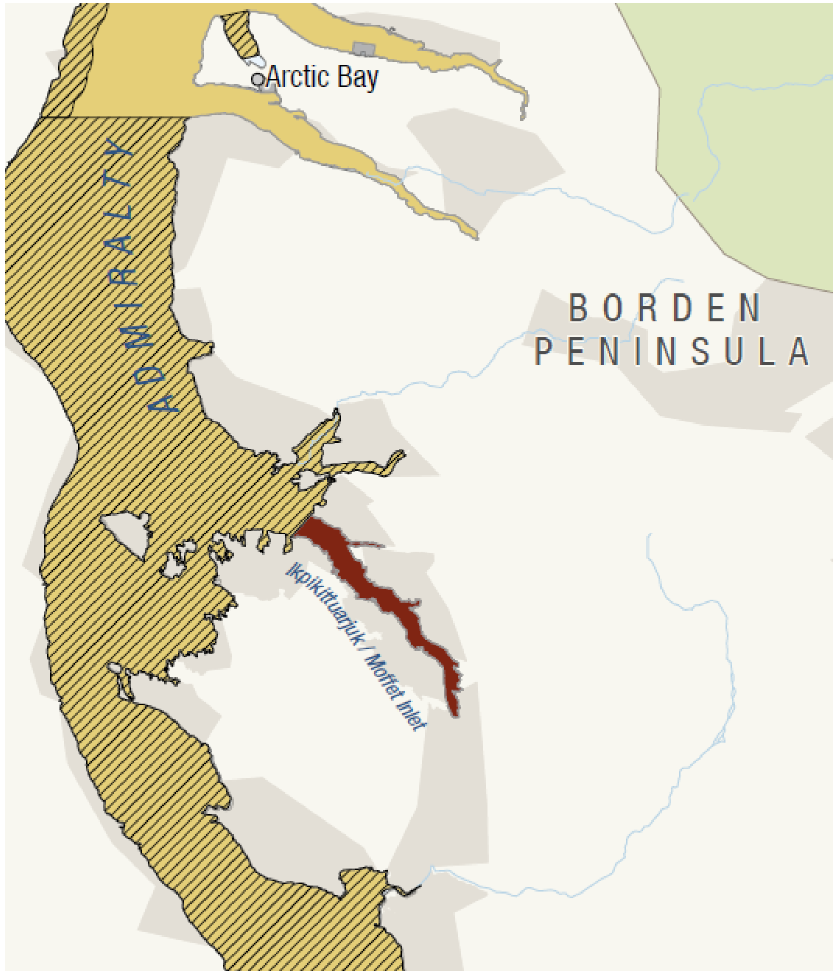
- Peary caribou ice crossings (critical habitat)
- Important habitat for wildlife (e.g., seals, polar bears)
- Valued by communities as on-ice travel routes and hunting grounds

Zone 3 – Ice season habitat protection:

- All shipping and cruise ship activity is prohibited from Nov. 16 to Jul. 20 except for:
  1. General exceptions to zoning*; and
  2. Shipping activity in project approved on or before the date Tallurutiup Imanga is established (project certificate terms and conditions apply)
  3. Valid conservation reasons that are assessed on a case-by-case basis (for example to free trapped whales).
- The dates the prohibition apply may be varied under certain conditions
- **Harvesting restrictions:** Bottom contact fishing gear is prohibited in area

* Inuit traditional use and access; National security or sovereignty, defense, law enforcement activities; Safety and emergency response activities; Community resupply; Vessels engaged in innocent passage without stopping

Ikpikittuarjuk / Moffet Inlet



What is protected and why

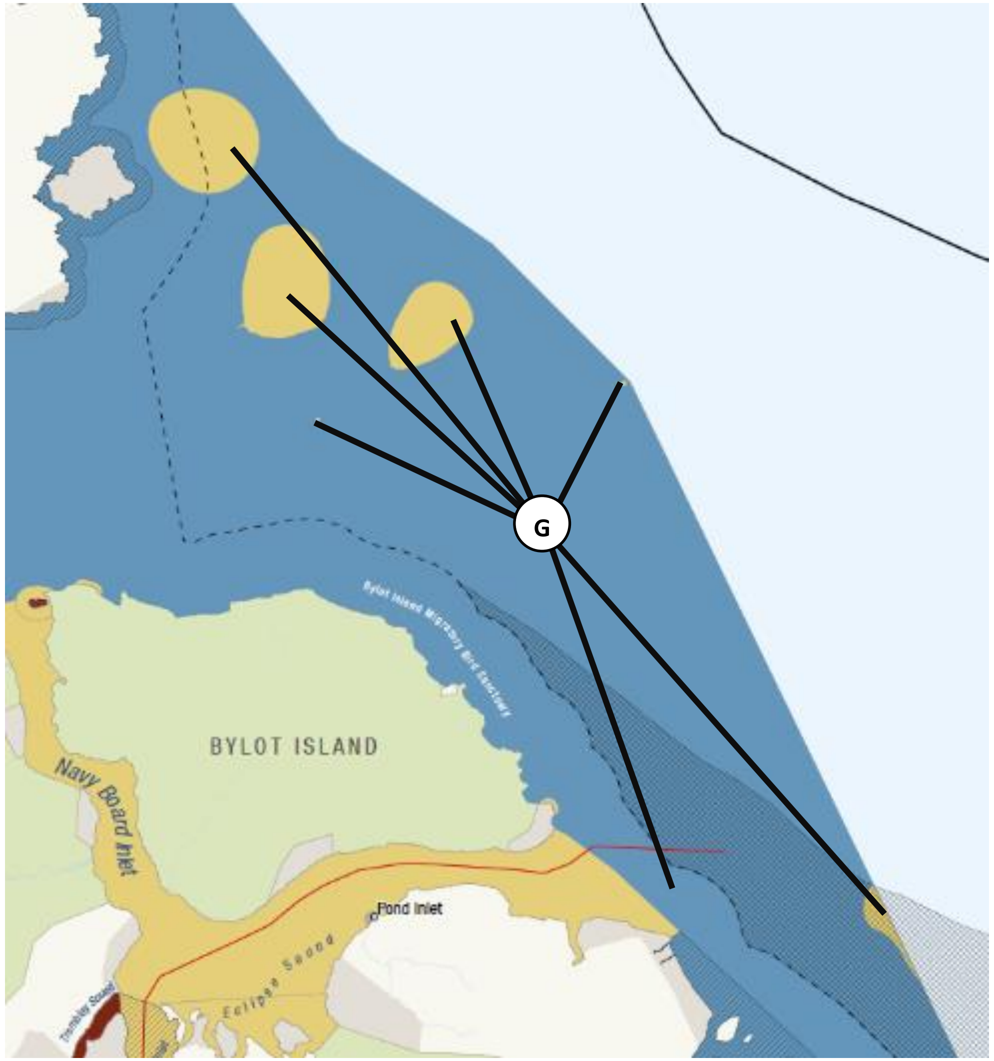
- Valued by local communities
- Abundance of bowhead, narwal, walrus and char
- Concern around decline in char population

Zone 1 - Strict protection:

- No access during open water season
- Some research allowed
- **Harvesting restrictions:** All non-Inuit* harvesting prohibited in area

** Inuit traditional use, including hunting, fishing, trapping, and gathering **can continue** in all areas and zones of Tallurutiup Imanga NMCA*

Significant benthic Areas



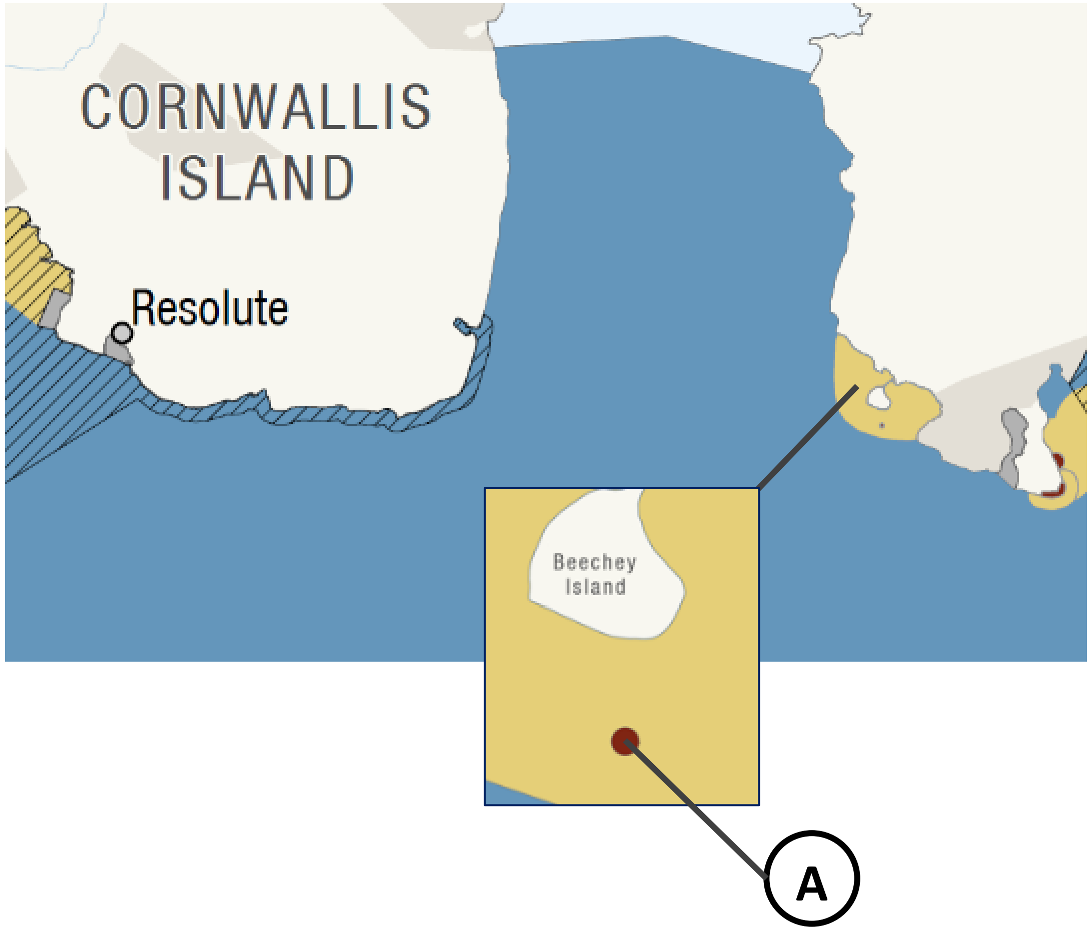
What is protected and why

- 7 important sea floor habitat areas for many species
- Special habitat due to sea pens, a type of coral
- Disturbing the sea floor can remove or damage these sea pens

Zone 3 – Open water habitat protection

- No mobile bottom contact fishing gear allowed
- No infrastructure installed on the sea floor
- **Harvesting restrictions:** Bottom contact fishing gear is prohibited in area

Wreck of Breadalbane



What is protected and why

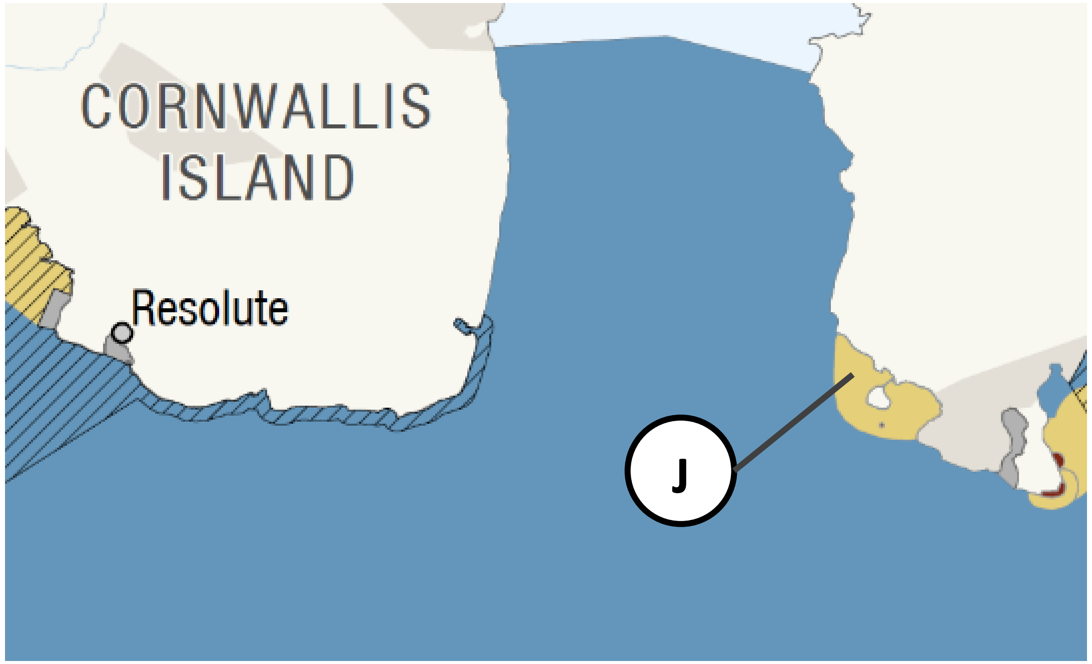
- Remains of a ship that was involved in the search for Captain John Franklin's lost expedition.
- Protect sensitive cultural resources by limiting further damage to the wreck

Zone 1 - Strict protection:

- No access 250-m radius circle centered on the mid-point of the hull
- Mobile bottom contact gear prohibited
- **Harvesting restrictions:** All non-Inuit* harvesting prohibited in area

** Inuit traditional use, including hunting, fishing, trapping, and gathering **can continue** in all areas and zones of Tallurutiup Imanga NMCA*

Underwater cultural resource area



What is protected and why

- Known cultural resources in the shallow waters surrounding Beechey Island
- To protect known and potential cultural resources

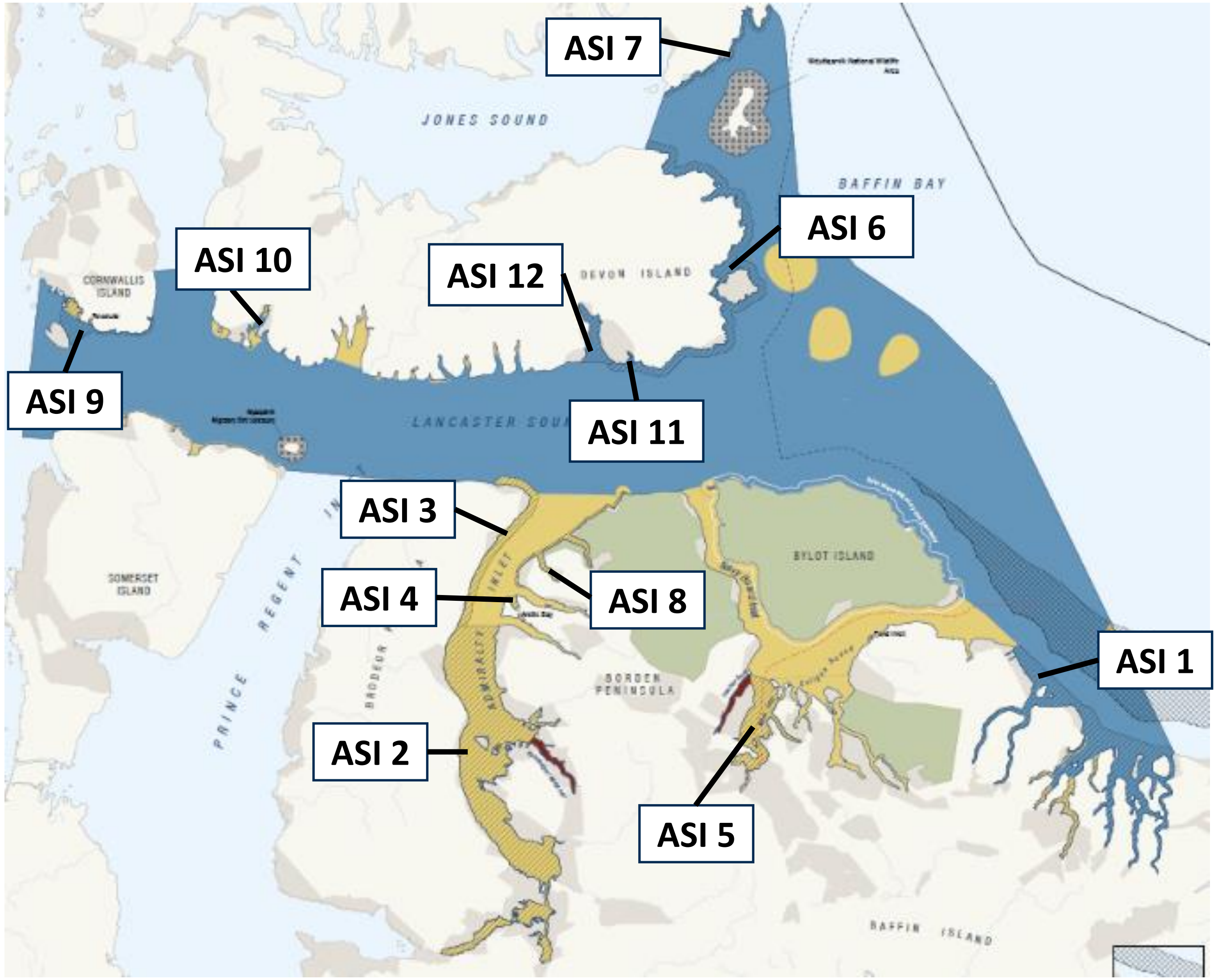
Zone 3 – Open water habitat protection

- Diving and submersible use are prohibited
- **Harvesting restrictions:** Bottom contact fishing gear is prohibited in area

Areas of Special Importance (ASI)

Important to Inuit cultural practices, more flexibility to adapt to changing conditions and patterns of use.

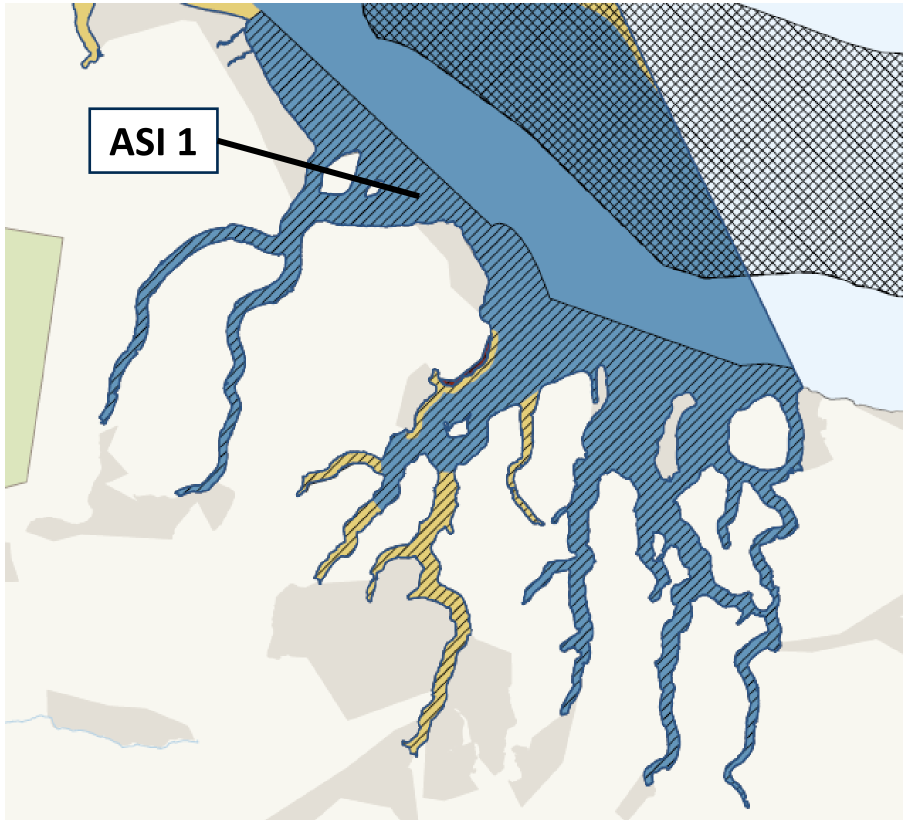
1. Fjords North of Clyde River
2. South Admiralty Inlet
3. Strip along shore of Brodeur Peninsula
4. Victor Bay
5. Milne Inlet
6. Southeast and northeast coast of Devon Island
7. Southeast coast of Ellesmere Island
8. North shore of Borden Peninsula
9. Resolute passage and Cornwallis Island coast
10. Radstock Bay
11. Dundas Harbour
12. Croker Bay



Areas of Special Importance

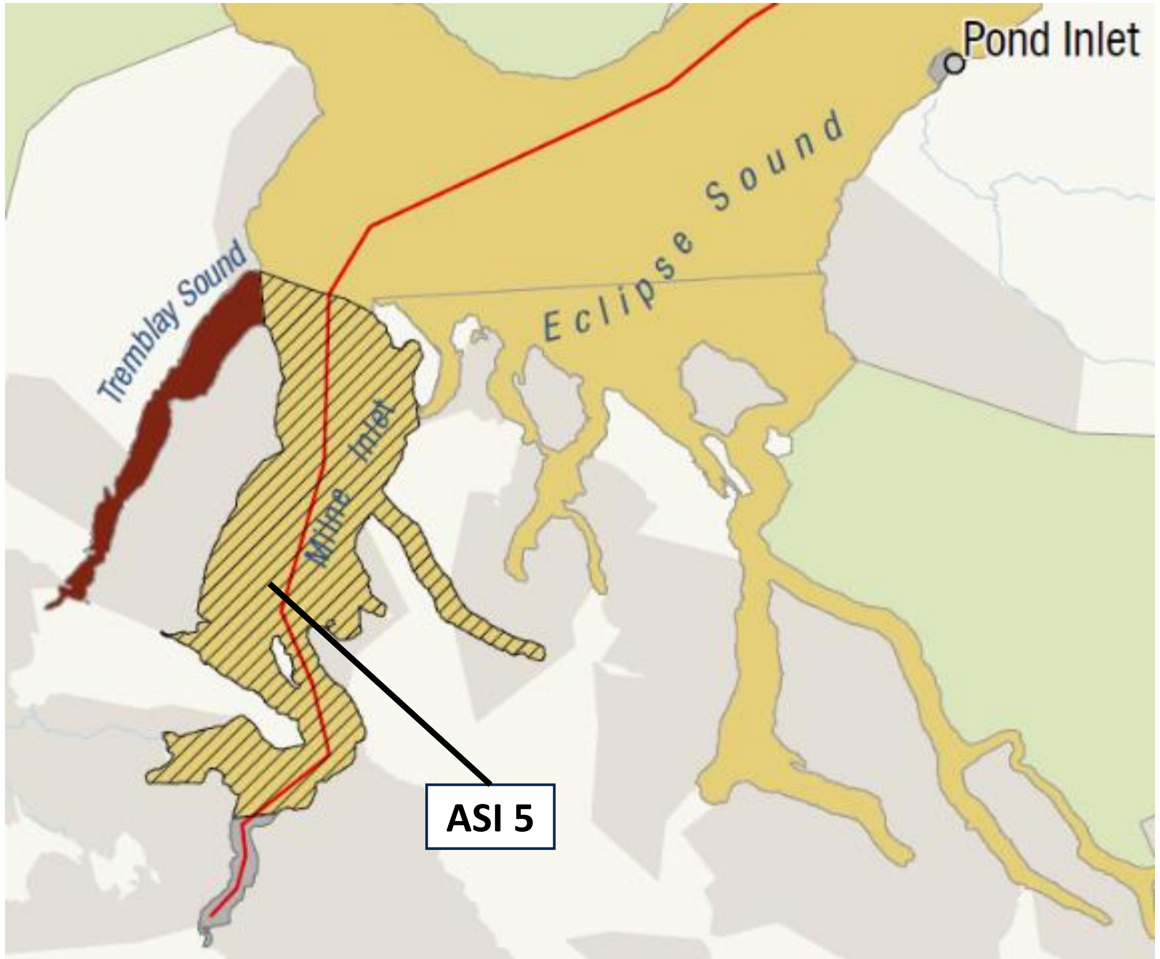
Management approach	1	2	3	4	5	6	7	8	9	10	11	12
Recreational activities will be managed to reduce impact on Inuit use of area and valued components of the area	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
All permits will require registration and orientation, and area specific conditions may be added as needed	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Restrictions may be developed as needed for recreational and commercial tourism activities	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Recreational activities, commercial tourism operators and recreational fishers are encouraged to hire a local guide	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Potential impacts of vessel traffic are of concern: support enhanced communications between communities and other users to respect communities' interests	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Recreational fishing: catch and release discouraged									✓	✓	✓	✓
Preferred routing to community for cruise ships and commercial shipping is identified									✓			
Closure at start of open water season	✓											
No taking of glacier ice												✓

ASI 1: Fjords North of Clyde River



- Visitor orientation.
- Visitors requested to hire local guide.
- Support enhanced communication between communities and other users to respect communities
- Ships requested not to travel into northern fiords.
- Up to 3-week closure beginning of open water season to protect community harvest in the southern fiords
- Zoning applies.

ASI 5: Milne Inlet



- Visitor orientation.
- Visitors encouraged to hire local guide.
- Support enhanced communication between communities and other users to respect communities
- Speed limit of 9 knots for vessels over 300 tons.
- Zoning applies: No cruise ships (narwhal protection).

NWMB Approval

For NWMB Approval

Section 5.2.34 (c)

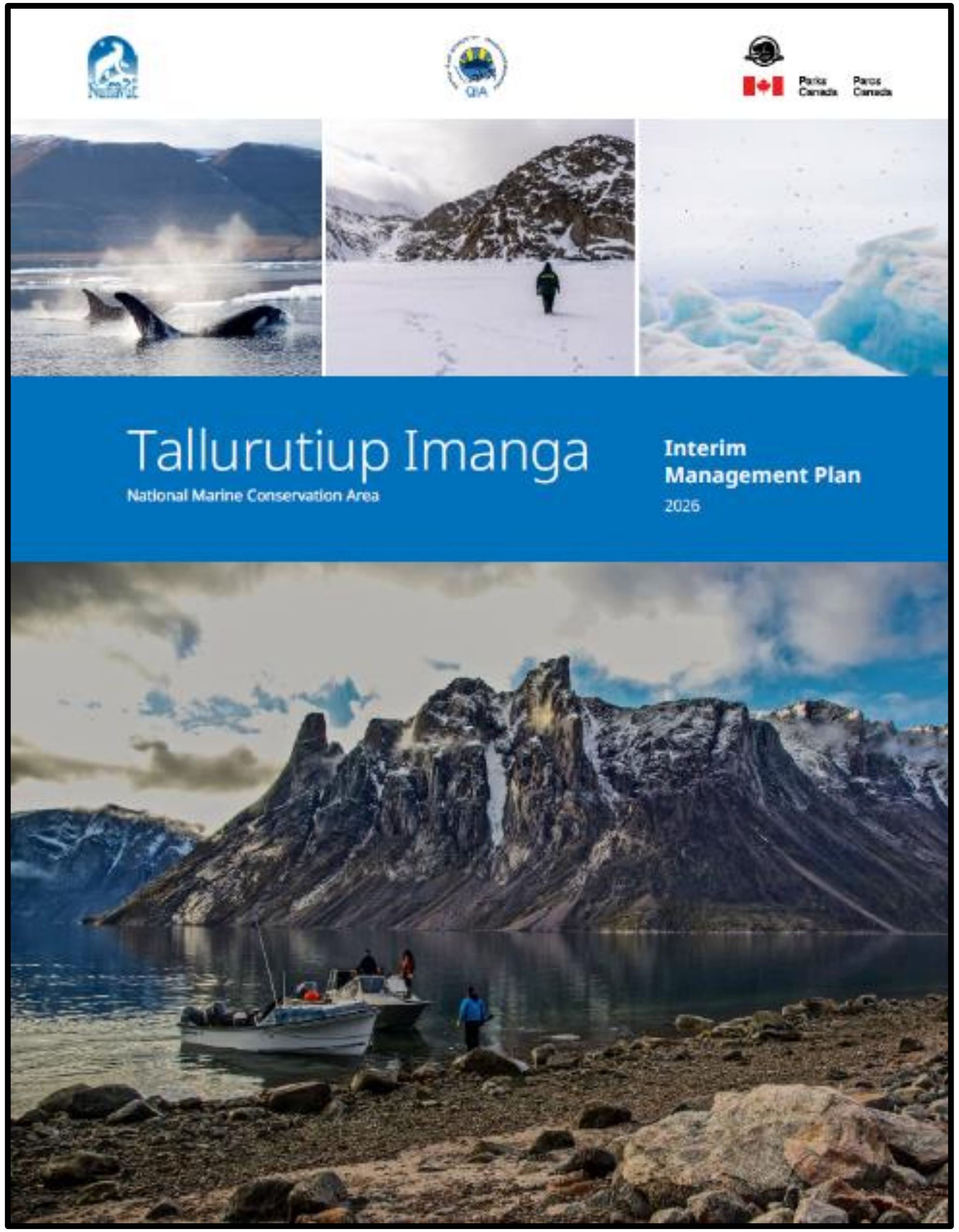
(c) approve plans for management and protection of particular wildlife habitats including areas within Conservation Areas, Territorial Parks and National Parks;

- ❑ Approve the Interim Management Plan for Tallurutiup Imanga NMCA

Section 5.6.48 - Non-Quota Limitations

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, non-quota limitations on harvesting in the Nunavut Settlement Area.

- ❑ Approve non-Inuit limitations on harvesting in Zones 1 and 3



Zone 1 – Ice and Open Water Season

Not allowed	= Limitation on Harvesting for non-Inuit*

***Access and extractive uses are prohibited throughout all Zone 1 areas for non-Inuit**

	Wreck of Breadalbane NHS of Canada	Walrus haul-out sites	Seabird colonies	Ikpikittuarjuk/ Moffet Inlet	Tremblay Sound
Recreational fishing	Not allowed	Not allowed	Not allowed	Not allowed	Not allowed
Commercial fisheries	Not allowed	Not allowed	Not allowed	Not allowed	Not allowed
Hunting, trapping, gathering (non-rights based)	Not allowed	Not allowed	Not allowed	Not allowed	Not allowed
Bottom trawling	Not allowed	Not allowed	Not allowed	Not allowed	Not allowed

**No restriction on sport hunting as per the Tallurutiup Imanga IIBA*

Zone 3 – Ice Season

Not allowed = **Limitation on Harvesting for non-Inuit****

	Peary Caribou sea ice crossings*	Other key sea ice habitat*	Significant Benthic Areas
Recreational fishing	Allowed	Allowed	Allowed
Commercial fisheries	Allowed	Allowed	Allowed
Hunting, trapping, gathering (non-rights based)	Allowed	Allowed	Allowed
Bottom trawling	Not allowed	Not allowed	Not allowed

*Commercial shipping is not allowed

***No restriction on sport hunting as per the Tallurutiup Imanga IIBA*

Zone 3 – Open Water Season

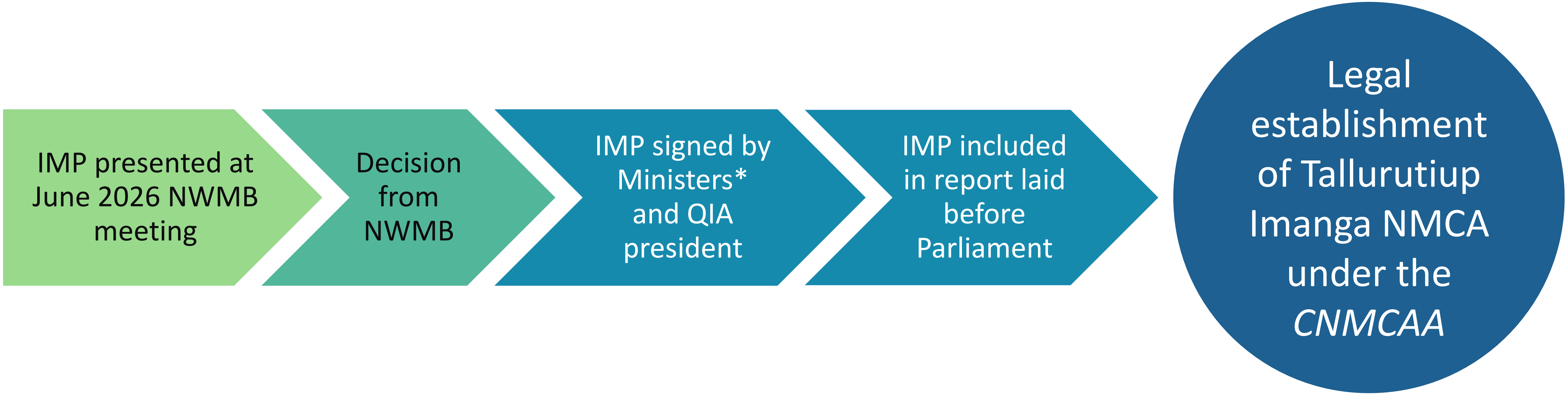
Not allowed	= **Limitation on Harvesting for non-Inuit ***

	Walrus haul-out buffer	Seabird colony buffers	Significant Benthic Areas	Beluga summer aggregation areas	Narwhal summer aggregation areas	Underwater cultural resource area
Recreational fishing	Not allowed	Allowed	Allowed	Allowed	Allowed	Allowed
Commercial fisheries	Not allowed	Not allowed	Allowed	Not allowed	Allowed	Allowed
Hunting, trapping, gathering (non-rights based)	Not allowed	Not allowed	Allowed	Not allowed	Allowed	Allowed
Bottom trawling	Not allowed	Not allowed	Not allowed	Not allowed	Not allowed	Not allowed

**No restriction on sport hunting as per the Tallurutiup Imanga IIBA*

Next Steps

Next Steps in the process



*For the Government of Canada: Minister of Environment, Climate Change and Nature; Minister of Transport; Minister of Fisheries.
For the Government of Nunavut: Minister of Environment.

Contact

tallurutiupimanga@pc.gc.ca

Qikiqtani Inuit Association
Justin Buller - jfbuller@dryasconsulting.ca

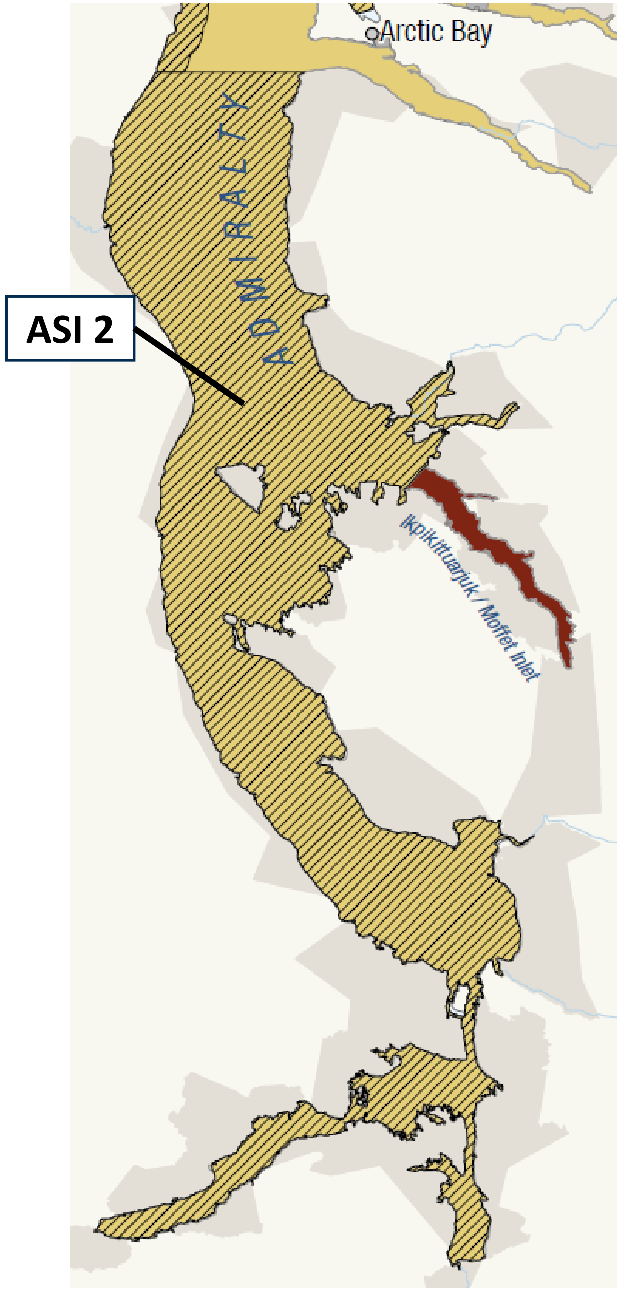
Government of Nunavut
environment@gov.nu.ca | 1-867-975-7700

Parks Canada
Laurent Jonart - laurent.jonart@pc.gc.ca | 867-222-1102

APPENDIX 1:
ASI Slides

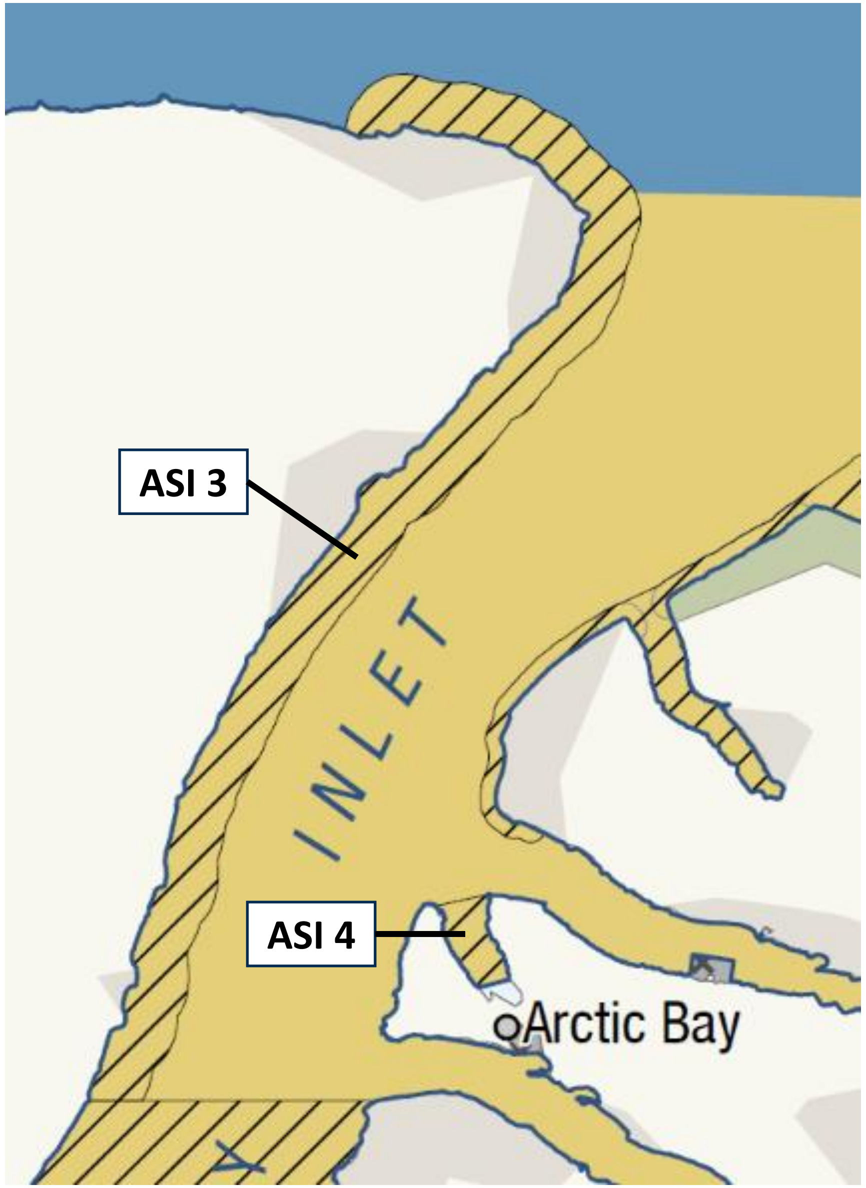
ASI 2: South Admiralty Inlet

- Orientation for visitors
- Visitors requested to a hire local guide.
- Support enhanced communication between communities and other users to respect communities.
- Speed limit of 9 knots for vessels over 300 tons for all Admiralty Inlet.



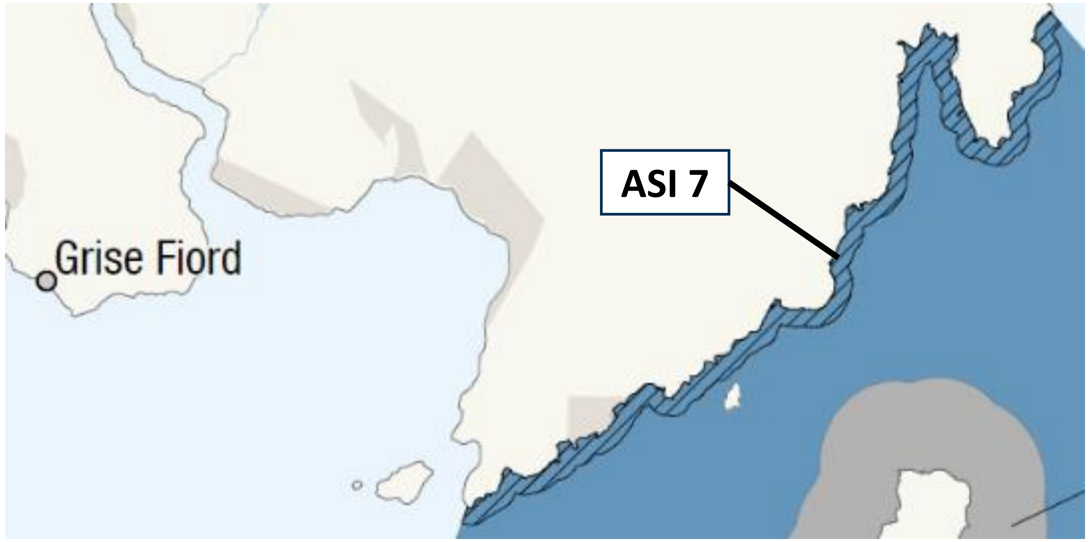
ASI 3: Strip along eastern shore of Brodeur Peninsula & ASI 4: Victor Bay

- Orientation for visitors
- Visitors requested to a hire local guide
- Support enhanced communication between communities and other users to respect communities.
- Request vessels to obtain community support before accessing close to the shoreline.
- Victor Bay: Request that visiting vessels avoid Victor Bay to prevent interference with community activities

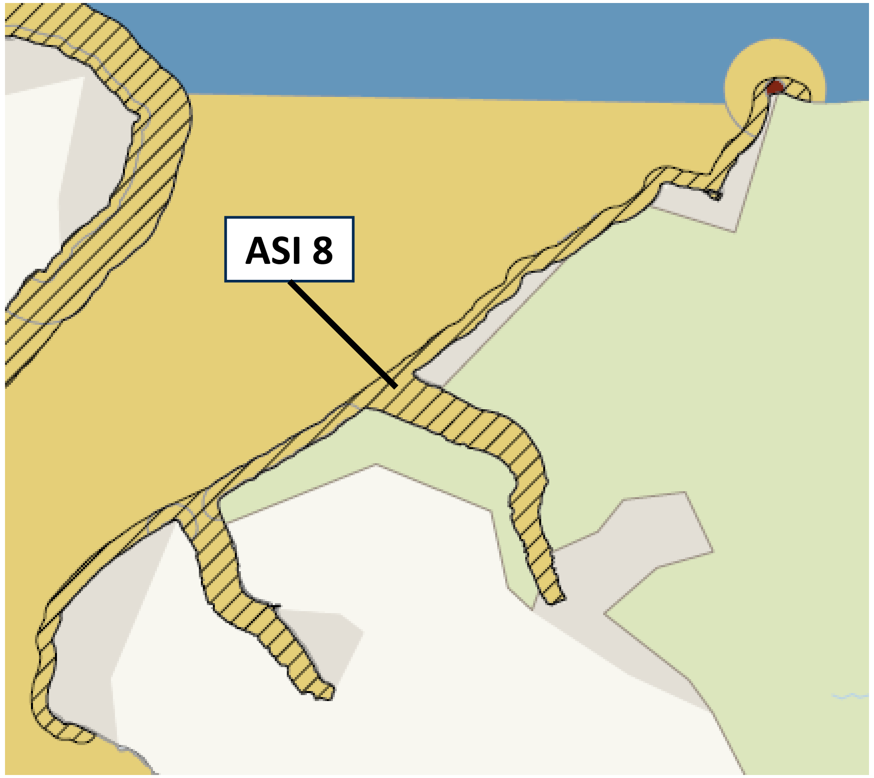


ASI 6: Southeast and northeast coasts of Devon Island
&
ASI 7: Southeast coast of Ellesmere Island

- Orientation for visitors
- Visitors requested to a hire local guide.
- Support enhanced communication between communities and other users to respect communities.

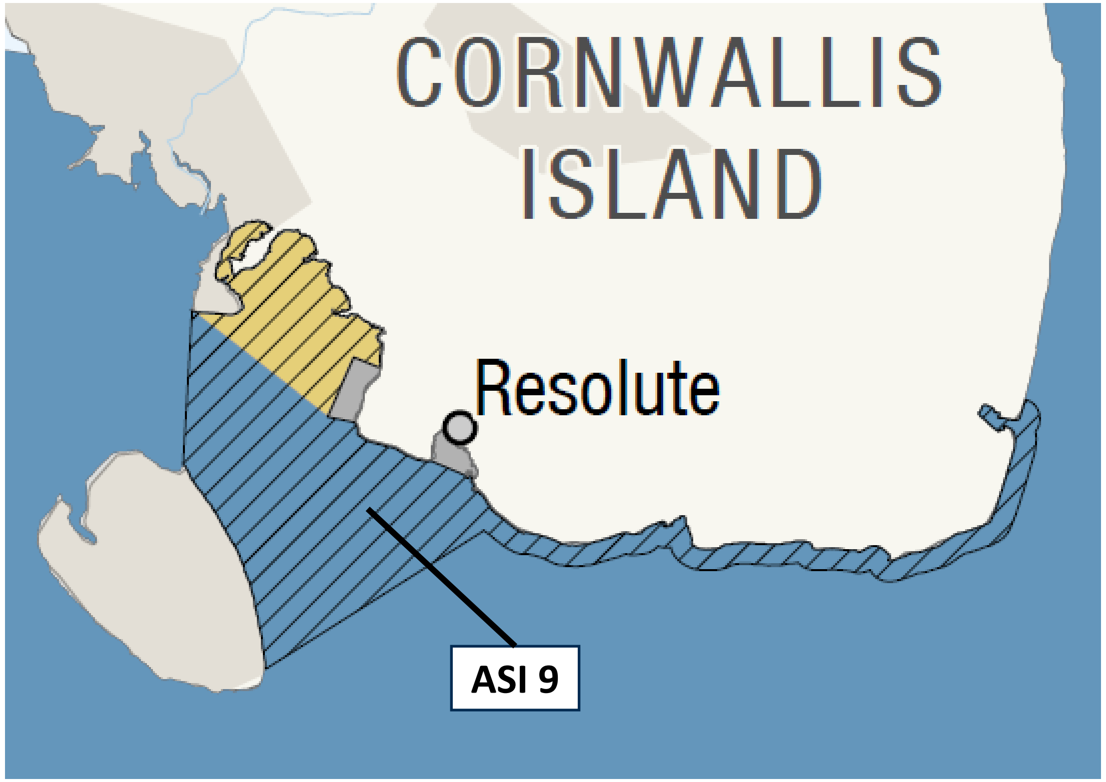


ASI 8: Western shore of Borden Peninsula



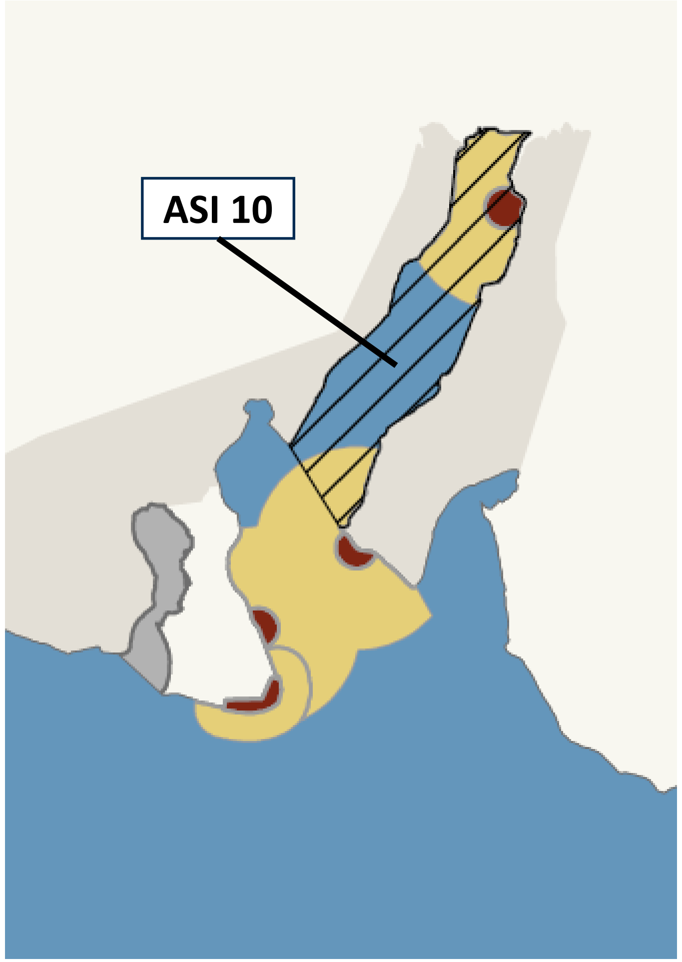
- Orientation for visitors
- Visitors requested to a hire local guide.
- Support enhanced communication between communities and other users to respect communities.
- Request vessels to obtain community support before accessing the area.

ASI 9: Resolute Passage and Cornwallis Island coast



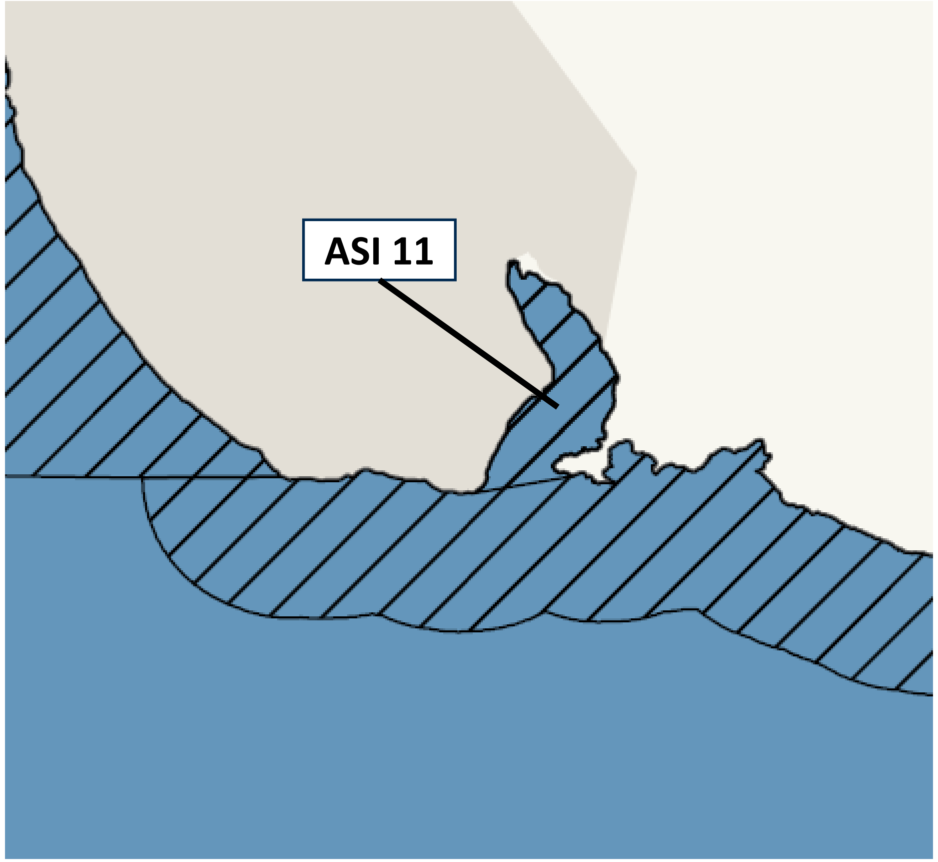
- Orientation for visitors
- Visitors requested to a hire local guide.
- Support enhanced communication between communities and other users to respect communities.
- Catch and release fishing will be discouraged.
- Preferred routes for cruise ships and commercial shipping will be identified.
- Community concerns about science and research. Permits will be required with community input on what is permitted or not.

ASI 10: Radstock Bay



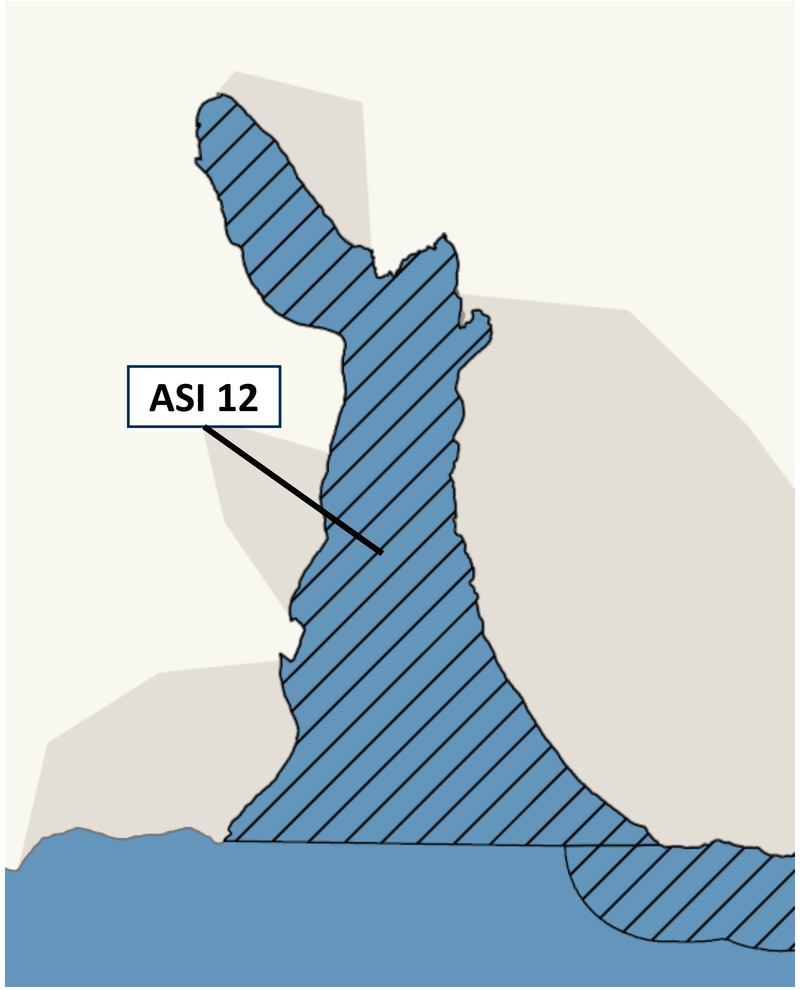
- Orientation for visitors
- Visitors will requested to a hire local guide.
- Support enhanced communication between communities and other users to respect communities.
- Ships are encouraged not to travel into these areas.
- Catch and release fishing will be discouraged.

ASI 11: Dundas Harbour



- Orientation for visitors
- Visitors will be encouraged to a hire local guide.
- Support enhanced communication between communities and other users to respect communities.
- Ships are encouraged not to travel into these areas.
- Catch and release fishing will be discouraged.
- Participants recommended strict protection for area (no access). But Parks Canada / AB has no control over land areas outside TINMCA and cannot use zoning to cut off access.
- Concerns about access to Dundas Harbour cultural sites have been communicated to GN.

ASI 12: Croker Bay



- Visitor orientation.
- Visitors encouraged to hire local guide.
- Support enhanced communication between communities and other users to respect communities
- Ships requested to avoid area.
- Catch and release fishing discouraged.
- No removal of glacier ice.
- Note: participants recommended strict protection for area.

Sport Hunting in Tallurutiup Imanga NMCA

No Restriction to Sport Hunting as per the IIBA:

8.1.3 To acknowledge that sports hunting and Inuit activities carried out within Tallurutiup Imanga NMCA shall continue after Tallurutiup Imanga NMCA is established as a national marine conservation area pursuant to the Canada National Marine Conservation Areas Act.

8.1.4 To acknowledge that sports hunting and Inuit activities will continue to be managed within Tallurutiup Imanga NMCA in accordance with the Nunavut Agreement and all applicable laws of general application.

8.5.1 The Parties acknowledge that sports hunting activities within Tallurutiup Imanga NMCA shall continue to be regulated and managed by applicable laws of general application and in accordance with the Nunavut Agreement.

8.5.2 The Aulattiqatigiit Board may provide recommendations as it deems appropriate to federal departments and agencies relating to the regulation of sports hunting activities within Tallurutiup Imanga NMCA including with respect to matters having the potential to impact Inuit participation therein.

8.5.3 Licences, permits, fees and other requirements that may be imposed by Parks Canada and Department of Fisheries and Oceans with respect to sports hunting shall not unduly or unreasonably constrain Inuit participation in sports hunting. The foregoing provision does not apply to existing DFO regulations that pertain to sports hunting.

SUBMISSION TO THE

NUNAVUT WILDLIFE MANAGEMENT BOARD

FOR

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

Issue: Carry-forward protocol and gear amendments for the Greenland halibut fishery in the Cumberland Sound Turbot Management Area (CSTMA)

Figure 1. Greenland halibut (*Reinhardtius hippoglossoides*).

Background

The Cumberland Sound Greenland halibut (turbot) fishery was established in 1986 and is located in the Pangnirtung Fjord, identified by the interim boundary (extending to the limit of the Nunavut Settlement Area) of the Cumberland Sound Turbot Management Area (CSTMA; Appendix 1). It is typically fished in the winter using long-lines set through holes in the land-fast sea ice, although some open-water summer fishing occasionally occurs.

The total allowable catch (TAC) was set at 500 tonnes (t) in 1994, that was subsequently established as a 500 t Total Allowable Harvest (TAH) of 500 t by the Nunavut Wildlife Management Board (NWMB) and the Department of Fisheries and Oceans (DFO) in 2005. This TAH is established separately from the Northwest Atlantic Fisheries Organization (NAFO) Subarea 0 offshore turbot fishery.

The fishery currently has one single, commercial licencee: the Pangnirtung Hunters and Trappers Association (PHTA) with multiple individual harvesters included on the licence.

This submission is seeking a request from the NWMB on two items:

1. Implementation of a standing carry-forward protocol for turbot in the CSTMA
2. Modification of an existing Non-Quota Limitation (NQL) to allow for the use of J-hooks in the CSTMA fishery.

Implementation of a standing carry-forward protocol in the CSTMA:

Turbot harvesting in the CSTMA is heavily dependent on sea-ice conditions and the capacity of the local fish plant to process and store fish. In years where conditions are favorable to harvesting, requests have been made by the PHTA to carry-forward a percentage of the previous season's unharvested TAH to the current fishing season. Carry-forward amounts in the past have been applied as per DFO's *Quota Carry-forward Guidelines for Atlantic Canada* (*the Guidelines*; Appendix 2) which state that the maximum percentage to be considered for carry-forward in any Atlantic fishery is 15 per cent of the TAC (or TAH), when the stock is considered to be in a healthy state. Carry-forwards in the CSTMA were approved on an individual basis in 2018, 2020, 2023, and 2026.

To reduce the timelines and paperwork required to approve carry-forwards, DFO, with support from the PHTA, is proposing the development of a standing carry-forward protocol for the CSTMA. This protocol, if approved, would allow for the immediate and automatic carry-forward of up to 15 per cent of unharvested CSTMA TAH from one fishing season to the next; with the current 500 t TAH the maximum carry-forward would be 75 t.

A standing carry-forward protocol, permitting up to 15 per cent of net allocation to be carried-forward from a previous season for the NAFO Subarea 0 offshore turbot fishery (applying the same principles as being proposed for the CSTMA) was recently approved via the Board – Minister decision making process in January 2026.

Science Information

DFO Science supports carry-forward amounts of up to 15 per cent when the stock is considered to be in a healthy state, in line with *the Guidelines*. While the CSTMA stock status is currently undefined under the DFO Precautionary Approach Framework, there are currently no concerns or indications that the stock is in an unhealthy state.

Modification of an existing Non-Quota Limitation (NQL) to allow for the use of J-hooks in the CSTMA fishery:

In 2011, a NQL for the use of #11-16 circle hooks on longlines was set in the CSTMA, with the primary objective of limiting incidental by-catch levels. Representatives from Pangnirtung Fisheries Ltd. have contacted DFO to indicate an interest in expanding to include the use of J-hooks in the CSTMA to provide greater flexibility in gear-type for both the on-ice and open water fishery. This includes the ability to use experimental, artificially baited hooks and providing enhanced ability to use Capelin as a local bait source.

There are no restrictions on hook type (i.e. circle hook vs. J-hook) in the NAFO Subarea 0 offshore turbot fishery.

Science Information

DFO Science has not identified any conservation concerns with the use of J-hooks when fishing longlines for turbot in the CSTMA and considers the risk of increasing the amount of incidental bycatch with the introduction of this gear type in the fishery to be negligible.

Consultation:

On March 3, 2026 DFO sent a letter (Appendix 3) to the PHTA requesting support for developing a carry-forward protocol and implementing the use of J-hooks into the CSTMA fishery. DFO indicated in the letter that with PHTA's support, the Department would seek a decision from the NWMB on the two items. In an email to the Department on March 11, 2026, the PHTA manager indicated that that their Board is supportive of this initiative.

Recommendation:

DFO is requesting the following decisions from the NWMB:

1. Implementation of a standing carry-forward protocol for the turbot fishery in the CSTMA.

The standing carry-forward protocol would allow for the automatic transfer of up to 15 per cent of unharvested CSTMA TAH to the following fishing season, in years where the stock is assumed to be in a healthy state.

2. Modification of an existing NQL to allow for the use of size #11-16 J-hooks, in addition to size #11-16 circle hooks in the CSTMA fishery.

Current NQLs for fishing gear in the CSTMA require that longline harvesters use size #11-16 circle hooks. Approval of the addition of size #11-16 J-hooks would provide additional flexibly to harvesters during the on-ice and open water fishery.

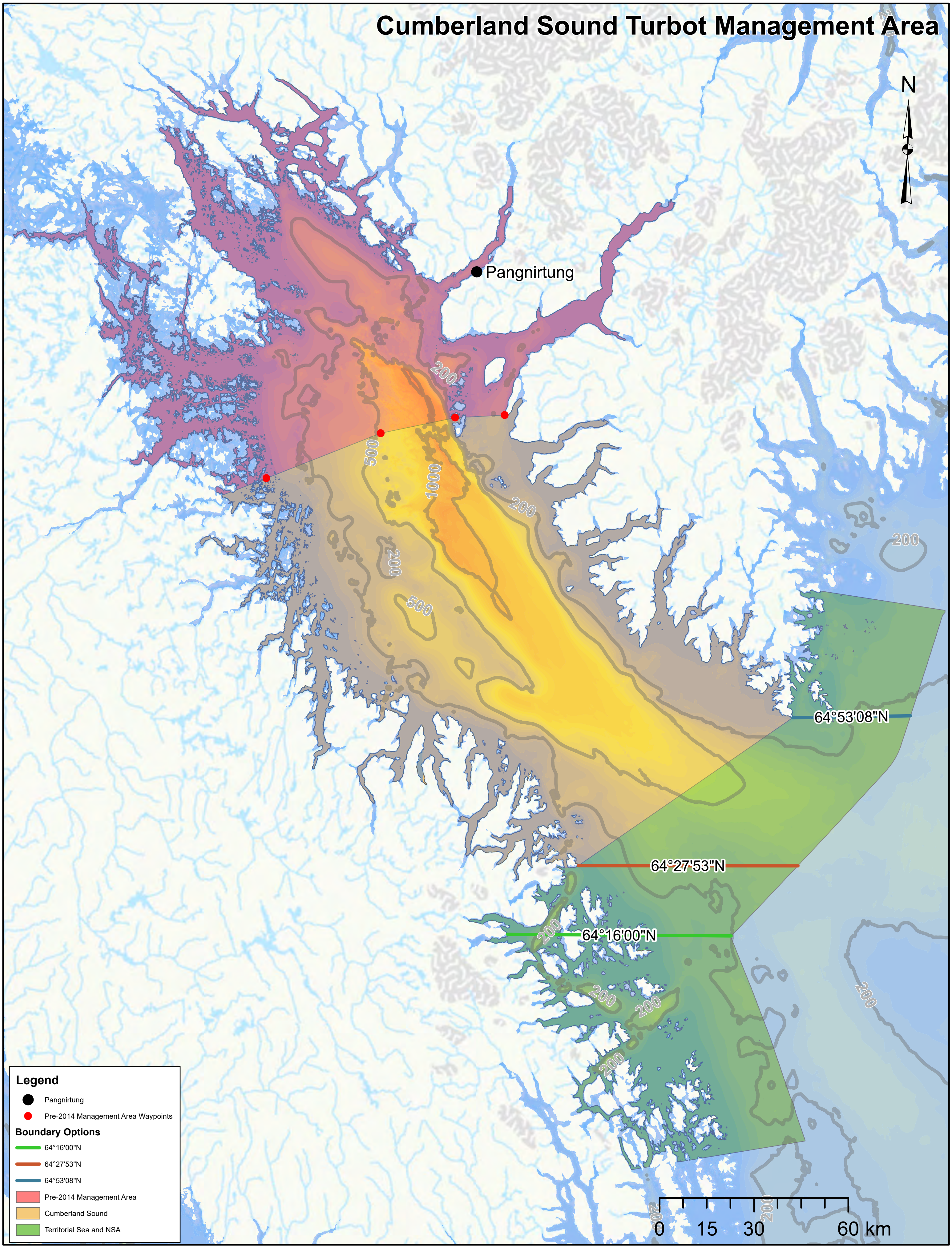
Prepared by: Matt Martens and Christi Friesen, Fisheries Management and Kevin Hedges, Science, Arctic Region, Fisheries and Oceans Canada.

Prepared: May 12, 2026

Appendices

Appendix 1 – Map of the Cumberland Sound Turbot Management Area
Appendix 2 – DFO's *Quota Carry-forward Guidelines for Atlantic Canada*
Appendix 3 – Request letter to the Pangnirtung Hunters and Trappers Association

Appendix 1


Cumberland Sound Turbot Management Area
N
Pangnirtung
200
500
1000
200
200
500
200
64°53'08"N
64°27'53"N
64°16'00"N
200
200
200
200
200
Legend
Pangnirtung
Pre-2014 Management Area Waypoints
Boundary Options
64°16'00"N
64°27'53"N
64°53'08"N
Pre-2014 Management Area
Cumberland Sound
Territorial Sea and NSA
0 15 30 60 km

Quota Carry-Forward Guidelines for Atlantic Canada

Effective February 15, 2016

The ability to carry forward quota in Atlantic fisheries will provide participants with increased flexibility to manage quota from one fishing year to the next. It will allow them to adjust to resource and market fluctuations and remove the incentive to overharvest for fear of losing quota at year end. However, carry forward can place added pressure on stocks which must be evaluated regularly. The approach outlined in these Guidelines is based on a consistent and transparent process and subject to factors such as the status and trajectory of the stocks in question, to ensure that sustainability of the resource is not compromised.

Carry forward guidelines are applicable for domestically managed quota based fisheries in Atlantic Canadian waters including northern waters. The guidelines will reflect biological factors identified in the appropriate Science Advisory Reports and other relevant factors and must be based on acceptable precautionary approach principles.

The carry forward of quotas is not applicable to fisheries taking place exclusively in International waters, or for straddling or highly migratory stocks which are shared with other nations unless prescribed in agreements with relevant nations or Regional Fisheries Management Organizations.

Objectives

Provide for the sustainable use of fishery resources by an economically viable and diverse industry through:

a) maximizing opportunities for licence holders to carry out their harvesting activities in the most efficient manner;
b) aligning resource harvest with economic factors; and
c) facilitating self-management of allocations to fishing industry.

Additionally, limitations may be imposed on quota carry forward provisions in order to limit the administrative burden for DFO.

Application

1. This policy applies to domestically managed quota-based fisheries in Atlantic Canada including Community Management Board quotas in the Maritimes, Aboriginal communal commercial quotas, competitive quotas, Individual Transferable Quotas (ITQs) and Enterprise Allocations (EAs) managed under annual or multi-year management cycles.

2. For fisheries under a multi-year management cycle, carry forward provisions are to be considered at the start of a new management cycle and be developed in consultation with stakeholders based on the most recent science advice for the new management cycle.

…/2

3. The percentage of quota that may be carried forward from year to year will be determined in consultation with stakeholders and will reflect scientific advice and conservation objectives. The maximum percentage that will be considered for any fishery to be carried forward is 15%; however special arrangements (e.g. higher levels of carry forward) could be considered for fleets that receive very small relative allocations (e.g. less than 5% of the TAC) in the fishery to facilitate optimal harvest planning.

4. The carry forward provision at the individual or other quota holder level will be applied following the 60-day quota reconciliation period. Any quota remaining from the previous fishing year (up to the maximum) will be automatically carried forward for the following year. Inclusion of in-season transferred quotas as eligible for carry forward will be considered with stakeholders in the development of carry forward provisions.

5. Quota carry forward will be considered when stocks are in the Healthy Zone. When stocks are in the Cautious Zone, quota carry forward will be considered if the stock is/has been on a positive trend and the TAC is increasing. Quota carry forward for stocks in the Critical Zone and declining stocks in the Cautious Zone should only be considered for exceptional circumstances. In the absence of a DFO Precautionary Approach Framework, a decision on the implementation of carry forward will be guided by latest science advice and the history of the stock. If the latest science advice does not cover the scenario of a specific carry forward, new scientific advice could be requested.

6. In cases where an audit of DFO records reveals reporting or other errors that resulted in a carry forward of quota that had already been fished, any quota carried forward in error will be reconciled from current or future holdings.

7. Where applicable, licence fees will be based on the initial quota allocated each year. Carry forward will be added to initial quotas without fees as they would have been paid for in the previous year.

8. Any quota that is carried forward on a licence is attached to the licence and will remain even if that licence is permanently transferred (re-issued).

9. Where applicable, permanent quota concentration limits will not be affected by any amount carried forward. However, these amounts may contribute to any temporary quota concentration limits, and this will be considered on a fishery by fishery basis.

Governance

…/3

1. The establishment of new/revised carry forward limits must be done in consultation with stakeholder advisory committees as well as relevant co-management boards and take into consideration the most recent scientific advice for each stock.
2. Approval of carry forward provisions will be at the Regional Director General or Regional Director level (as appropriate) responsible for the management of the fishery with concurrence from other DFO regions involved.
3. Approved Carry Forward provisions will be incorporated into the relevant Integrated Fishery Management Plan and/or Conservation Harvesting Plans (CHPs).

Fisheries and Oceans Canada | Pêches et Océans Canada

Regional Director General | Directeur général régional
Arctic Region | Région de l'Arctique

March 3, 2026

Mr. Simeonie Keenainak
Chairperson
Pangnirtung Hunters and Trappers Association

<u>Carry forward provisions and gear amendments for Greenland Halibut in the Cumberland Sound Turbot Management Area (CSTMA)</u>

Dear Mr. Keenainak:

I am writing to determine the Pangnirtung Hunters and Trappers Association's (PHTA's) interest and support for the following two items:

1. Implementation of a standing carry forward protocol for Greenland Halibut (Turbot) in the CSTMA.

As you are aware, carry forwards were previously approved for the CSTMA commercial fishery in 2018, 2020, and 2023 to allow up to 15% of the uncaught Total Allowable Harvest (TAH) of turbot to be fished in the following season. Recently, representatives from Pangnirtung Fisheries Ltd. have reached out to the department to express interest in the carrying forward of unharvested quota from 2025 into the 2026 fishing season.

To reduce the timelines and paperwork required to approve carry forwards, Fisheries and Oceans Canada (DFO) is proposing the development of a standing carry forward protocol for the CSTMA. This protocol, once approved, would allow for the immediate and automatic carry forward of a portion of unharvested CSTMA TAH.

DFO's *Quota Carry-Forward Guidelines for Atlantic Canada* (attached for your reference) state that the maximum percentage to be considered for carry forward in any Atlantic fishery is 15% of the TAH. Further, carry forwards should also take into consideration stock health.

As such, the department is seeking support from the PHTA to develop a standing carry forward protocol for the automatic transfer of up to 15% of unharvested CSTMA TAH to the following fishing season, in years where the stock is assumed to be in a healthy state. Applying this to the CSTMA's 500 tonnes (t) TAH would allow a maximum of 75 t of unharvested quota to be available for automatic carry forward, each fishing season. Should you agree, the department will seek a decision from the Nunavut Wildlife Management Board for implementation of this protocol at their regular meeting in June 2026.

Additionally, DFO seeks confirmation of the PHTA's support to carry forward up to 15% of the unharvested 2025 TAH into 2026.

2. Modification of an existing Non-Quota Limitation (NQL) to allow for the use of J-hooks in the CSTMA fishery.

Current NQLs for fishing gear in the CSTMA require that longline harvesters use size #11-16 circle hooks.

Representatives from Pangnirtung Fisheries Ltd. have contacted DFO to indicate an interest in including the use of J-hooks in the CSTMA to provide greater flexibility in gear-type for both the on-ice and open water fishery. As such, and as DFO considers the risk of increasing incidental bycatch with the introduction of J-hooks in this fishery to be negligible, DFO is requesting PHTA support to modify the hook NQL to include size #11-16 J-Hooks. If you approve, the department will seek a decision from the NWMB at their June 2026 meeting.

DFO appreciates the PHTAs collaboration in the sustainable management of the CSTMA fishery. For more information, contact the following Regional Fishery Manager:

Matt Martens
Regional Senior Fisheries Management Officer
Arctic Region, Fisheries and Oceans Canada
Telephone 431-336-4358
Matt.Martens@dfo-mpo.gc.ca

Yours sincerely,

Christi Friesen
Regional Manager, Fisheries Management Programs, Arctic Region
Fisheries and Oceans Canada

c.c.: Leigh Gustafson, NWMB
Jon Johannsson, Pangnirtung Fisheries Ltd.

SUBMISSION TO THE NUNAVUT WILDLIFE MANAGEMENT BOARD FOR DECISION
Meeting 002-2026

Issue:

The Department of Fisheries and Oceans (DFO) is proposing to repeal subsection 10(1), and amend subsection 18(2) of the *Northwest Territories Fishery Regulations* (NWTFR). Because this proposal could be seen as changing non-quota-limitations on harvesting in the Nunavut Settlement Area, DFO is seeking the Board's concurrence in accordance with the process established in the *Nunavut Agreement*.

Background:

A number of potential minor amendments to the NWTFR were identified by DFO following informal partner feedback and internal reviews.

The prohibition against the disposal of dead fish or any remains or offal in water or on ice found in subsection 10(1) of the NWTFR is proposed to be repealed. This provision has no current application because the disposal of dead fish or any remains on land can cause health and safety concerns.

Subsection 10(1) of the NWTFR reads as follow:

> *No person shall dispose of dead fish or any remains or offal of fish by leaving it in the water or on ice over the water.*

The method to determine mesh size for nets, specified in subsection 18(2) of the NWTFR, is proposed to be updated by removing the requirement that the measurement be made after the net be immersed in water for at least 30 minutes. The requirement for immersion prior to measurement addresses stretching of cotton nets. However, cotton nets are generally no longer used. Subsection 18(2) of the NWTFR reads as follows. The provision would be amended by removing the requirement that the twine be immersed prior to measuring.

> *For the purpose of subsection (1) or any licence condition, the mesh size of a net shall be determined by measuring the distance between the extreme angles of a single mesh inside and between the knots ~~after the twine has been immersed in water for at least 30 minutes and extended until straight without stretching or straining the twine or slipping a knot~~.*

Consultations:

No consultations were conducted given the low impacts of the potential amendments.

Prepared by:

Regulatory Affairs / Fisheries and Oceans Canada
E-mail : dfo.ncrregulatoryaffairs-affairesreglementairesrcn.mpo@dfo-mpo.gc.ca

Date: January 29, 2026

SUBMISSION TO THE NUNAVUT WILDLIFE MANAGEMENT BOARD
Meeting - June 24, 2026

FOR

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

Issue: Department of Fisheries and Oceans Canada (DFO) – Fisheries Management (FM) Operational Updates

Marine Mammals:

1. **Beluga: Belcher Islands – Eastern Hudson Bay (BEL-EHB)**
    - In 2025, 424 and 35 beluga (all stocks combined) were harvested by Nunavik and Sanikiluaq hunters, respectively. This represents approximately 118 and 20 beluga from the BEL-EHB stock.
    - DFO Science and Fisheries Management staff travelled to Sanikiluaq in March to meet with the HTO and present the results of the 2025 BEL-EHB beluga stock assessment (presented to the NWMB in February 2026).
    - A Canadian Science Advisory Secretariat (CSAS) regional peer-review took place in March 2026 to update the latest stock assessment based on 2025 harvest levels, and refine our understanding of the spatiotemporal distribution of beluga in different parts of their range during different seasons, Results are expected to be shared in summer 2026,
    - The Nunavik Beluga Management system is set to expire on January 31, 2027. DFO are aiming to bring co-managers from Nunavik and Nunavut together to discuss management of the shared stock.

2. **Narwhal**
    - The total reported landings for Narwhal management units in the 2025/26 harvest season were: Jones Sound 9, Smith Sound 0, Northern Hudson Bay 202, Somerset Island 45, East Baffin Island 70, Admiralty Inlet 194, and Eclipse Sound 215.
    - The annual in-person Nunavut Walrus Working Group occurred in Iqaluit, NU on February 10-11, 2026. The meeting was very productive, and the working group tentatively plans to submit a Request for Decision to the NWMB at its November meeting to alter the narwhal management system for Baffin Bay communities during the 2027-28 season. This draft system would involve distributing all-season and transferable tags to the communities and using a post-season analysis by DFO to determine usage of each stock.
    - A Canadian Science Advisory Secretariat (CSAS) regional peer-review meeting occurred in March 2026 to review two narwhal topics:
        - The first reviewed updated stock abundance estimates from the 2023 High Arctic Cetacean Survey. The publications will include updated

    - abundance estimates for the four Baffin Bay narwhal stocks, as well as the putative Jones Sound and Smith Sound stocks.
    - The second reviewed updated population abundance, probability of decline and limit reference point (LRP) for Northern Hudson Bay Narwhal. An LRP marks the boundary between the cautious and critical zones under DFO's Sustainable Fisheries Framework, and the Framework requires the development of LRPs for key regional fisheries.
    - The Science Advisory Reports and Research Documents from these CSAS meetings are expected to be published later this year.

3. Walrus

- The total reported subsistence landings for walrus within the Nunavut Settlement Area for the 2025/26 season is currently 0. However, 2025/26 walrus harvest reports have not yet been provided to DFO from most communities throughout Nunavut.
- The total reported landings of walrus by sport hunters in 2025/26 was 22.
- For the 2026/27 season, 112 walrus sport hunts were requested (Coral Harbour 83, Igloolik 8, Iqaluit 3, Rankin Inlet 3, and Sanirajak 15).
- The Nunavut Walrus Working Group in-person in Iqaluit on February 9 and 10, 2026. This was the first meeting in a few years with DFO Science in attendance and the working group discussed the recent work. The working group also conducted the annual performance review as described in the Walrus Integrated Fisheries Management Plan.
- The Abundance and Potential Biological Removal (PBR) Estimates for Canada's High Arctic Atlantic Walrus Management Stocks, Summer 2022 CSAS Science Advisory Report was published in October 2025.

4. Bowhead

4a. 2026 Bowhead Hunts:

- The Total Allowable Harvest (TAH) of Eastern Canada-West Greenland (ECWG) bowhead whales in Nunavut waters is 5 per year. This TAH is shared regionally: 2 per year in each of the Qikiqtaaluk and Kivalliq Regions, and 1 per year in the Kitikmeot Region.
- In each Region, a Bowhead Hunt Plan for each hunt is submitted to the Regional Wildlife Organization (RWO) for review and decision. RWOs then transmit their decision(s) to DFO and Nunavut Tunngavik Inc. (NTI). When NTI has completed the penthrite grenade training, DFO issues a Marine Mammal Fishing Licence to the Hunt Captain of each RWO-approved hunt,
- The Qikiqtaaluk Wildlife Board (QWB) and the Kitikmeot Regional Wildlife Board (KRWB) anticipate receipt of Bowhead Hunt Plans for review and decision in the coming weeks. It is not known at this time whether the Kivalliq Wildlife Board will receive Bowhead Hunt Plans for review and decision.
- DFO is ready to assist with collection of harvest information and biological samples for scientific analysis.

4b. Bowhead Co-Management:

- DFO's Sustainable Fisheries Framework requires the development of Limit Reference Points (LRP) for key regional fisheries. Previously, the development of LRPs for the ECWG bowhead fishery were difficult, because aerial surveys cannot include their vast geographic range.
- In response to a DFO Fisheries Management request for Science Advice, a DFO CSAS process was conducted. Invited participants included Inuit co-management representatives from Nunavut (NWMB and NTI) and Nunavik (Nunavik Marine Region Wildlife Board and Makivvik Corporation)
- A CSAS Science Response document is now publicly available and can be downloaded from the CSAS website: Science Response 2025/032.

Arctic Char:

1. Cambridge Bay:

- A pre-season fishery meeting was held in August 2025 at the Kitikmeot Foods Ltd. fish plant, where DFO Fisheries Management staff met with fishers to provide a refresher on the importance of logbooks to record catch-per-unit effort, bycatch, and discard information.
- The Arctic char commercial harvest took place at five sites in throughout the summer of 2025, yielding a total of 48,442 kg (round weight). The table below provides a detailed breakdown.

Location	Harvest
Surrey River	6,479 kg
Halokvik (30-Mile) River	5,000 kg
Ekalluk River	15,082 kg
Jayko River	16,880 kg
Lauchlan River	5,001 kg
Total Harvest (Round Weight in Kilogram)	48,442 kg

- DFO anticipates hosting a Cambridge Bay Arctic Char Integrated Fisheries Management Plan Working Group meeting during the current fiscal year. Recent results from genetic and telemetry studies indicate that the Cambridge Bay Arctic char commercial fishery is a mixed-stock fishery. These findings will guide discussions on the most appropriate management approach during the upcoming meeting.

2. Pangnirtung:

- The 2025/26 summer fishery in Cumberland Sound resulted in a total of approximately 15,048kg round weight of char reported landed at the Pangnirtung fish plant, and 132kg round weight of the winter fishery so far. Planning and preparations are underway for year-two of the Communal Fish Plan (CFP) Pilot Project.

3. **Kivalliq:**
    - The 2025/26 summer commercial Arctic char harvest in the Kivalliq region was approximately 16,719 kg (round weight) reported landed at Kivalliq Arctic Foods in Rankin Inlet.
    - In 2025, the third year of an acoustic telemetry study continued in Rankin Inlet with ongoing support and study design input from the Kangiqliniq HTO and Kivalliq Wildlife Board (KWB).
    - 55 Arctic char and 31 Greenland cod in the Rankin Inlet area were tagged with small acoustic transmitters to track species movements. To date, 120 Arctic char and 49 Greenland cod have been tagged.
    - With the assistance of two local technicians, various instruments were deployed in the marine environment around Rankin Inlet, including 33 acoustic receivers to record the movement of tagged fish, 1 hydrophone to record ship traffic, and 7 temperature and light recorders.
        - The acoustic receivers deployed in 2024 were recovered. Information on fish movement will be shared with the community when it is available.
    - The Microplastics and Contaminants study continued in 2025 with 32 sea-run Arctic char captured from the Diana River. The study is examining if Arctic fish species are consuming microplastics and where these contaminants are being stored in their body.
        - DFO also collected 1 Lake trout, 31 Greenland cod, 31 sculpin, 29 capelin, and zooplankton from the Rankin Inlet area to assess levels of marine microplastics. Results from this work will be shared with the community when they are available.
    - DFO received support from the KWB and the Kangiqliniq HTO to continue its marine fishes tagging/tracking, microplastics/contaminants, and Arctic char diet and muscle colour studies in 2026.
        - DFO also received support from the Kangiqliniq HTO to conduct a population assessment of the Diana River Arctic char population starting in 2026 pending funding. The community recently raised concerns about the population health due to anthropogenic and climate influences.

Greenland halibut (Turbot):

1. **Cumberland Sound Turbot Management Area (CSTMA)**
    - DFO received a request from the Pangnirtung Hunters and Trappers Association (PHTA), to carry forward unused 2025 turbot quota into 2026, which was approved and communicated to the PHTA on April 10, 2026. As per DFO's *Quota Carry-Forward Guidelines for Atlantic Canada*, harvesters are eligible to carry forward up to 75 t (or 15% of 2025's Total Allowable Harvest (TAH)) to the 2026 season, resulting in a 575 t TAH of turbot in the Cumberland Sound Turbot Management Area (CSTMA).
    - More than 80 fish harvesters registered under the HTA's licence to participate in the CSTMA fishery. As of April 27, 2026, 555 t of turbot (round weight) has been landed, and the fishery is ongoing.

- DFO Science is using a Baited Remote Underwater Video system to estimate the number of Greenland Sharks in Cumberland Sound and assess the impact of fishery bycatch mortality on the Greenland Shark population. The project started in 2023 and is scheduled to continue through 2026.

2. **Division 0A inshore**
   - The Minister has allocated 100 t of the Total Allowable Catch (TAC) for Greenland halibut in NAFO Division 0A to inshore fisheries development for the 2026 and 2027 fishing seasons.
   - Fisheries Management has issued licences for the community of Pond Inlet and Clyde River for quotas of 2 t and 15 t, respectively for the 2026 winter fishing season. Fishing is ongoing.

Fish Stocks Provisions:

- On November 9, 2022, DFO shared a proposal with stakeholders for a regulatory amendment to the *Fishery (General) Regulations* to identify the second batch of Major Fish Stocks that would be subject to the Fish Stocks provisions (sections 6.1-6.3) of the *Fisheries Act.* This included Arctic char stocks in Cambridge Bay and Cumberland Sound and Northern and Striped shrimp in the Eastern Assessment Zone (EAZ).
- The Fish Stocks provisions include obligations to maintain Major Fish Stocks identified in regulation at levels necessary to promote their sustainability and to develop and implement rebuilding plans for stocks that have declined to or below their Limit Reference Point.
- DFO staff presented this proposal to the Cambridge Bay Arctic char IFMP Working Group in June 2023 and the Pangnirtung HTO Board in July 2023, with general support for identifying Cumberland Sound and Cambridge Bay char stocks as Major Fish Stocks.
  - If these stocks are prescribed to the Fish Stocks provisions, there would be no immediate management changes as the stocks are considered healthy and the current management of the fishery is sustainable.
- On June 26, 2024, DFO requested an NWMB decision on whether the Board has the authority to approve plans to designate stocks as Major Fish Stocks under the Fish Stocks provisions.
- On July 22, 2024, the NWMB provided a response to this request for decision indicating that the Board considers the process of designating a stock as a Major Fish Stock an internal DFO management process and requested that DFO keep the NWMB informed when adding fish stocks located in the Nunavut Settlement Area or Nunavut-adjacent waters as Major Fish Stocks.
- In January 2025 information regarding Northern shrimp in the EAZ suggested that this stock is part of a larger stock complex, and thus the current stock area description and associated Limit Reference Point is no longer applicable. Given this information, consultation with stakeholders and rightsholders would need to occur before identifying this stock as major with the new proposed stock

structure. As a result, Northern and Striped shrimp in the EAZ has been removed from the second batch of Major Fish Stocks.

- The proposal to identify these stocks as Major Fish Stocks was pre-published in *Canada Gazette,* Part I, on October 12, 2024, for a 30-day public comment period that ended on November 11, 2024. No concerns were expressed regarding identifying these Arctic char stocks as major during this public comment period.
- The original proposed timeline to include these stocks in the regulation through publication of *Canada Gazette*, Part II, was spring 2025. There has been a delay in the process and publication of *Canada Gazette,* Part II, the timeline is undetermined at this time.
- An Arctic Region FSP Working Group has been formed as requested by Makivvik and the Nunavik Marine Region Wildlife Board. The objective of the working group is to develop regional guidance for FSP for the Arctic Region and how it is applied in the co-management context. In February 2026 the working group held their first meeting. While the NWMB considers FSP processes to be an internal DFO process, DFO has continued to invite NWMB staff to attend these meetings and supply all relevant documents.

Prepared by: Fisheries Management, Arctic Region – Fisheries & Oceans Canada

Submission Date: May 15, 2026

SUBMISSION TO THE NUNAVUT WILDLIFE MANAGEMENT BOARD June 2026

For

Information: **X** Decision:

Issue: Fisheries and Oceans Canada's Community-Based Marine Mammal Hunt Sampling Program

Background information:

- Fisheries and Oceans Canada (DFO) has organized a collaborative community-based hunt sampling program throughout Nunavut communities since the 1980s.
- With support and help from Hunters and Trappers Organizations (HTOs) and local hunters, walrus, seal, and whale tissue and organ samples are collected from subsistence hunts.
- These tissues support various stock assessment and ecological studies, including genetics analysis of skin, age estimation from counting growth layers in teeth, diet studies (stable isotopes analysis of skin and muscle and fatty acid analysis of blubber), and contaminants studies (e.g., liver, blubber).
- In addition to DFO, researchers from other government departments, universities, and other research institutes can also access samples if they receive approval of the communities who supplied the samples which are reviewed by the Sample Governance Committee.
- Each year, DFO prepares sample kits for each community that include labelled bags for each tissue, data sheets, and measuring tapes (Appendix I).
- Hunters are paid $150-240 for each returned sample kit, depending on the species. HTOs receive an administration fee of 25% for each returned kit.
- DFO also accepts samples from fish and invertebrates for use in diet and ecosystem-based studies. Sometimes, specific projects require different samples that are not typically included in the kits (e.g., walrus tusks). Extra money on top of the sample kit fee is paid to hunters for these samples.
- Samples are inventoried and stored frozen at DFO's Freshwater Institute and at CenterPort Cold Storage in Winnipeg, Manitoba.

Program summary 2024-25 (most recent year completed)

- A total of 272 sample kits were returned.
- Sample kits were returned from 12 participating communities throughout Nunavut, although the numbers of kits varied greatly by community (Appendix II).

- Sample kits of seven species were returned: beluga (56), narwhal (17), walrus (25), bearded seal (9), harbour seal (1), harp seal (10), and ringed seal (154). Ringed seal kits were returned from almost all of the 12 communities (Appendix II).
- A number of scientific studies that were supported by the sampling program were published in 2024-2025 (Appendix III). These studies help answer stock assessment and community-driven questions regarding Arctic marine mammals.
- These summaries have been included in a brochure to distribute among the communities.

Prepared by:
Cory Matthews and Tera Edkins, DFO Science, Winnipeg

Date:
9 April 2026

APPENDIX I

Whale Sample Kit Datasheet

ARPG-xx-1 ______

Hunters Name (optional): ____________________ * **Community**: ____________________

*** Date Killed**: ____________________
day / month / year

Kill Location: ____________________

*GPS Location: ______________ N
______________ W

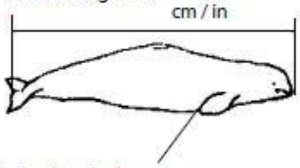
* Whale Type: ☐ Beluga ☐ Narwhal ☐ Other ____________________

* Sex: ☐ Male ☐ Female

* *(These must be completed for payment)*

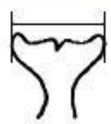
Part A: Measurements (measure in a straight line)

Total Length ________ cm / in

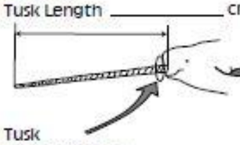


Fat depth at sternum: ______ cm / in

Fluke Width ________ cm / in



Exposed Tusk Length ________ cm / in



Tusk Circumference ________ cm / in

Total Tusk Length ________ cm / in

Put the following samples in the labelled bags or vials.

Part B: Ageing Structure ☐ Lower Jaw and / or embedded tusk (bag) ☐ Eye ball(s) (bag)

Part C: Tissue Samples (Cut fist-sized pieces of tissue and put in the labelled plastic bags.)
☐ Muktuk and Blubber (bag) ☐ Muscle / Meat (bag) ☐ Liver (bag)

Part D: Other Samples
☐ Ovaries (bag)

(Keep all samples frozen)

Other Comments: ____________________

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Datasheet and samples must be returned for payment.

Fisheries and Oceans Canada Pêches et Océans Canada

Canada

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ARPG-XX-1 ______

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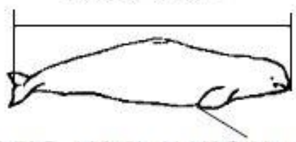

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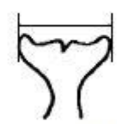

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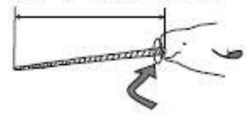

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ᑐᒑᖓᑕ ᓯᓚᑖᓂᖓᑦ:

______ cm / in
ᐃᓘᓐᓇᖓᑦ ᑐᒑᖓᑕ ᑕᑭᓂᖓᑦ:

ᐅᖅᓱᖓᑕ ᐃᑦᔪᓂᖓ ᓴᒃᕿᖓᑕ ᓴᐅᓂᖓ: ______ cm / in

ᐃᓚᖏᖅᑕᐅᔪᑦ ᖃᐅᔨᓴᕐᓂᒃᓴᐃᑦ ᐴᖅᑕᐅᓗᑎᒃ ᐳᓯᓚᐊᓇᔭᖏᓐᓄᑦ.

ᐃᓚᖓ B: ᐊᒃᑐᖏᓐᓄᑦ ᖃᐅᔨᓴᕈᑎᑦ: ☐ ᐊᓪᓚᖅ ᐊᓪᓚᕈᖓ ᐊᒻᒪ/ᐅᑦᓴᓪᓗᓐᓂᑦ ᑐᒑᖓᑦ (ᐴᒍ ᐳᓯᐅᒧᑦ) ☐ ᐃᔨᖓ(ᖏᑦ) (ᐳᓯᐅᒧᑦ)

ᐃᓚᖓ C: ᐃᓚᖏᓚᑎᑦᐱᐅᔪᑦ ᖃᐅᔨᓴᕐᓯᒪᔪᑦ (ᓇᑲᑎᒃᓗᒋᑦ ᐊᒻᒪᐅᑉ ᐊᖏᓂᖓᓂᖓᑦᑎᑐᑦ ᐊᒻᒪ ᐊᑎᖃᖅᐸᕆᐅᑎᓄᑦ ᐳᓯᐅᑎᓄᑦ ᐴᖅᑲᒃᓗᒋᑦ)

☐ ᒪᑦᑕᖓᓂ/ᐅᖅᓱᖓᓂ (ᐳᓯᐅᖅ) ☐ ᓄᑭᖓᓂ/ᓄᑭᐅᑉ ᐃᐱᒃᑕᖓᑕ ᓂᕿᖓᓂ (ᐳᓯᐅᖅ) ☐ ᑎᖑᒃ (ᐳᓯᐅᖅ)

ᐃᓚᖓ D: ᐊᓯᖏᑦ ᖃᐅᔨᓴᕐᓯᐊᑦ

☐ ᒪᒃᓂᖏᑦ

(ᖃᐅᔨᓴᕐᓯᒪᔪᓂᐊᖅᑐᓕᒫᑦ ᖃᐅᖅᑎᑕᐅᓯᒪᓗᑎᒃ)

ᐊᓯᖏᑦ ᐅᖃᐅᓯᖏᓪᓗᐊᑦ / ᑐᑭᓯᔭᐅᖁᔭᐅᔪᑦ: ______________________

____

____

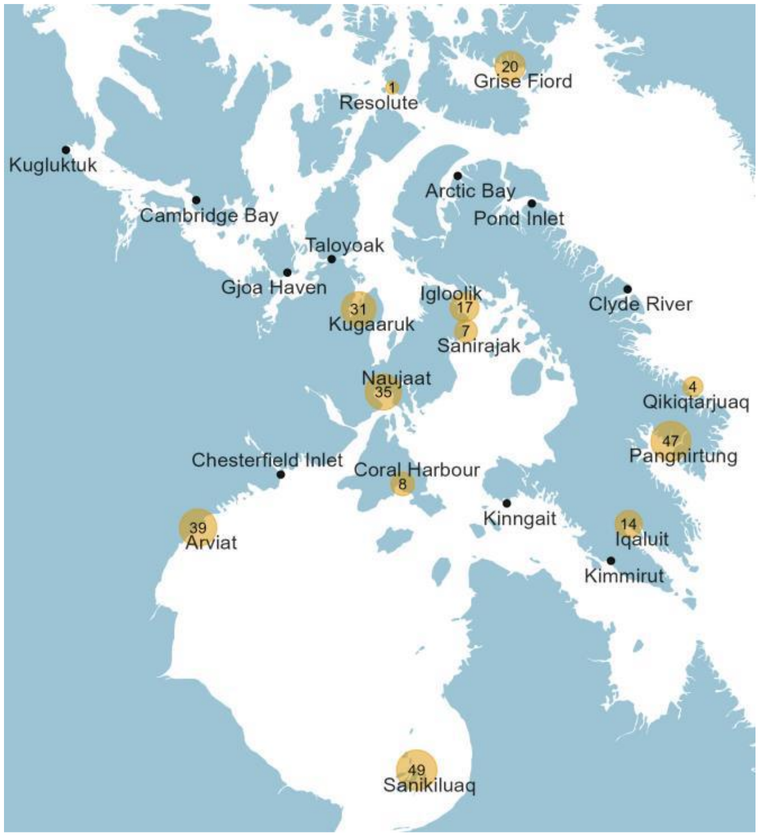
____

____

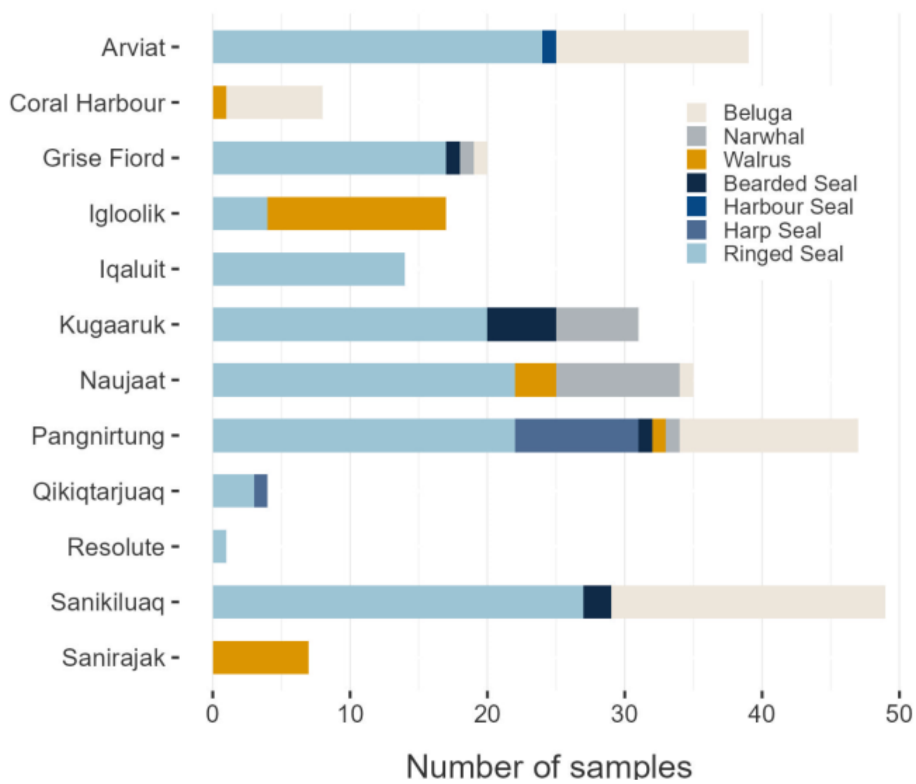
____

ᑎᑎᕋᕐᕕᑦ ᐊᒻᒪ ᖃᐅᔨᓴᕐᓯᒪᐃᑦ ᐅᑎᖅᑎᑕᐅᔭᕆᐊᓖᑦ ᐊᑭᓕᖅᑕᐅᓂᐊᕐᓗᓂ

APPENDIX II



1
Resolute
20
Grise Fiord
Kugluktuk
Cambridge Bay
Arctic Bay
Pond Inlet
Taloyoak
Gjoa Haven
31
Kugaaruk
Igloolik
17
7
Sanirajak
Clyde River
Naujaat
35
4
Qikiqtarjuaq
47
Pangnirtung
Chesterfield Inlet
Coral Harbour
8
Kinngait
39
Arviat
14
Iqaluit
Kimmirut
49
Sanikiluaq



Arviat
Coral Harbour
Grise Fiord
Igloolik
Iqaluit
Kugaaruk
Naujaat
Pangnirtung
Qikiqtarjuaq
Resolute
Sanikiluaq
Sanirajak
Beluga
Narwhal
Walrus
Bearded Seal
Harbour Seal
Harp Seal
Ringed Seal
0
10
20
30
40
50
Number of samples

APPENDIX III

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