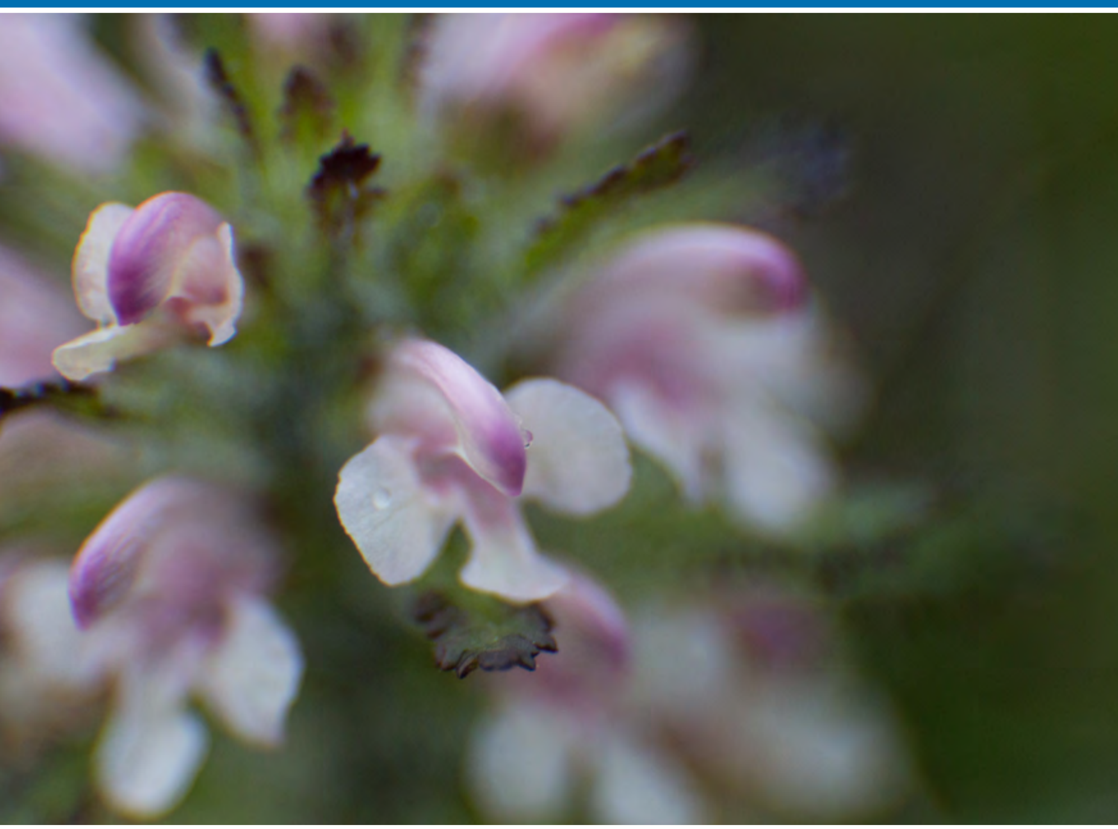
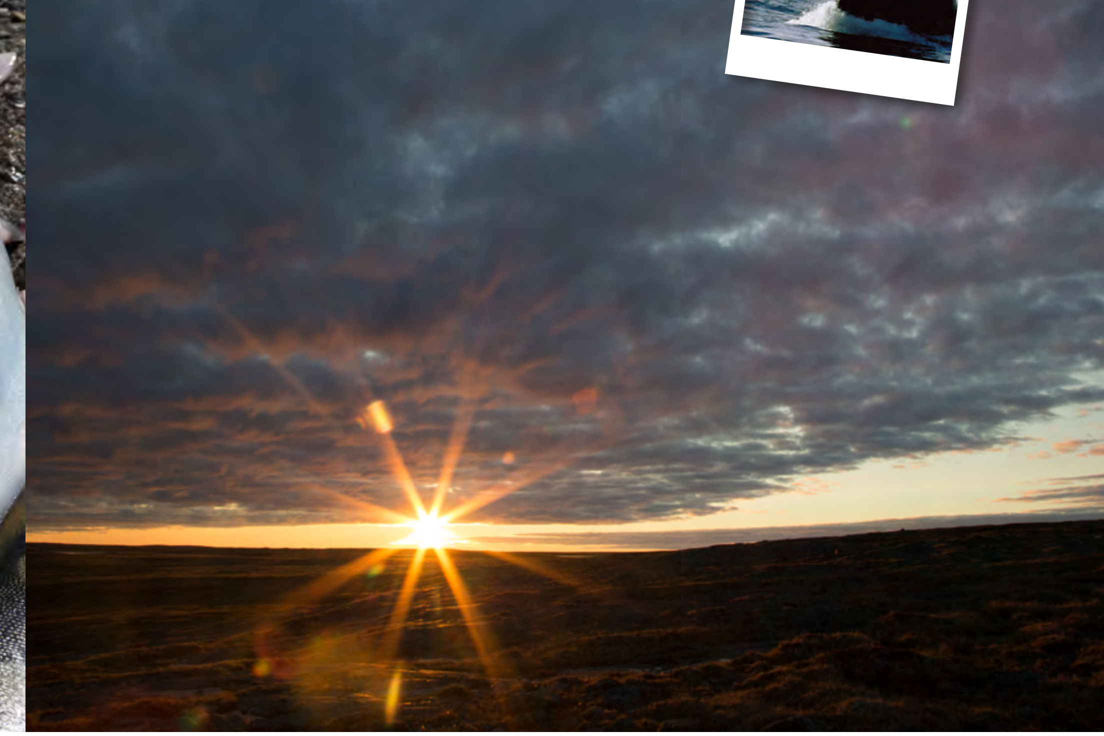
NUNAVUT COASTAL RESOURCE INVENTORY





Grise Fiord

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Department of Environment
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Ministère de l'Environnement

Nunavut Coastal Resource Inventory – Grise Fiord
2012

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EXECUTIVE SUMMARY

This report is derived from the Hamlet of Grise Fiord and represents one component of the Nunavut Coastal Resource Inventory (NCRI). "Coastal inventory", as used here, refers to the collection of information on coastal resources and activities gained from community interviews, research, reports, maps, and other resources. This data is presented in a series of maps.

Coastal resource inventories have been conducted in many jurisdictions throughout Canada, notably along the Atlantic and Pacific coasts. These inventories have been used as a means of gathering reliable information on coastal resources to facilitate their strategic assessment, leading to the promotion of economic development, coastal management, and conservation opportunities. In Nunavut, the coastal resource inventory has two additional applications: the preservation of traditional knowledge (Inuit Qaujimajatuqangit, or IQ) and the preparation for forthcoming environmental changes, particularly those driven by climate change.

The Fisheries and Sealing Division of the Department of Environment (DOE) initiated this inventory in 2007 by conducting a pilot project in the community of Igloolik, Nunavut. The NCRI has since been completed in the following communities:

- 2008 Kugluktuk and Chesterfield Inlet
- 2009 Arctic Bay and Kimmirut
- 2010 Sanikiluaq
- 2011 Qikiqtarjuaq and Gjoa Haven
- 2012 Iqaluit, Naujaat, and Grise Fiord

This report presents the findings of the coastal resource inventory of Grise Fiord, which was conducted from October to November 2012.

Inventory deliverables include:

- A final report summarizing all of the activities undertaken as part of this project;
- Provision of the coastal resource inventory in a GIS database;
- Large-format resource inventory maps for the Hamlet of Grise Fiord, Nunavut;
- Provision of all documents used and methodologies followed during the process of completing the project; and
- Key recommendations on both the use of this study as well as future initiatives.

Grise Fiord was visited in October and November of 2012 to conduct on-site interview sessions. A total of nine interviews were conducted. During the interviews we asked participants about the coastal species they currently observe or have previously observed in the area and had them draw the location of their observations on the maps that we provided. We used photographs to help participants identify the species they have seen. The interviews lasted between 1.5 - 4 hours, depending on the participant. The data collected throughout the interviews was compiled into a database and the maps were digitized and analyzed.

The maps produced in the interviews are presented here, organized into the following categories: Marine Mammals, Fish, Birds, Invertebrates, Marine Plants, Areas of High Diversity, and Other.

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INTRODUCTION

This document is one in a series of reports produced by the Nunavut Coastal Resource Inventory (NCRI). The overall goal of this initiative is to conduct inventories in all 26 of Nunavut's coastal communities. Each community is unique in terms of its physical environment, oceanographic setting, organisms present, and the interests and approaches of its hunters and trappers.

THE COASTAL RESOURCE INVENTORY

A coastal resource inventory is a collection of information on coastal and aquatic resources and activities gained principally from interviews with elders and hunters in each community. Coastal resources are defined as the animals and plants that live near the coast, on the beaches, on and around islands, above and below the surface of the ocean, above and below sea ice, on the sea floor, and in lakes and rivers.

All of the community-specific data is digitized and mapped using a Geographic Information System (GIS). This approach can be an effective tool to assist with management, development, and conservation of coastal areas.

Resource inventories have been conducted along Canada's Atlantic and Pacific coasts. The information has been used to provide the foundation for an integrated coastal management plan, to assist with the protection of important coastal areas, and to facilitate environmental impact assessments, sensitivity mapping, and community planning. Coastal resource inventories have also provided different levels of government with the tools to engage in strategic assessments, informed development, and enlightened stewardship.

The principle source of information for community-based coastal inventories is traditional knowledge or, in Inuktitut, Inuit Qaujimajatuqangit (IQ), gathered through interviews. Over the past 50 years, Inuit have transitioned from a resource-based nomadic life style to a wage-based economy. Coastal and land-based activities remain extremely important, contributing to Inuit quality of life, providing income and food, and as a significant part of the Inuit culture. The NCRI aims to retain some of this valuable knowledge by engaging community elders, hunters and fishers to document the presence, distribution, and characteristics of various coastal resources. IQ is unique in that it is qualitative, intuitive, holistic, spiritual, empirical, personal, and often based on a long time-series of observations (Berkes 2002). It is particularly useful for recording historical data that are unattainable in any other manner. A complementary coupling of IQ and scientific knowledge may provide a means to better understand and manage coastal resources.

Information on coastal resources may provide insights regarding the potential for future fisheries development or other economic opportunities. Given the high unemployment rates in many of Nunavut's coastal communities, it is increasingly important to identify areas of potential economic development. In order to determine both feasibility and long-term sustainability of a new fishery, information on species-specific abundance and distribution of fish stocks (or other coastal resources) must be obtained. Combining communal knowledge of local resources can be a vital step in establishing a commercialized fishery. This information could also lead to the identification of potential coastal parks and related tourism opportunities. This may include sensitive coastal areas, breeding grounds, important species, and unique habitats. Attaining this information comes with much responsibility, however, and should be accompanied by a vision for the resource, coupled with an implementation plan. The resource should be thoughtfully governed from the outset to avoid unsustainable exploitation.

Figure 1. Map of Nunavut

IQ embodies both tangible and intangible Inuit knowledge. Conserving this knowledge has importance in its own right and for its potential to inform future management plans. Some communities have expressed an interest in exploring development options using a database that has its origins in the living memories, experience, history, and skills of the people who live there. Other communities have opted for a continuation of existing practices: the gathering of extant knowledge into a form that could assist informed decision-making. Regardless, there is growing urgency throughout the Territory to identify, record, and conserve Nunavut's traditional, biological, cultural, and ecological knowledge.

There is increasing concern over the impact of climate change on the Arctic environment. Over the past 20 years, an increasing number of arctic researchers have commented on the predicted impacts of climate change on the marine environment (Tynan and DeMaster 1997, Michel et al. 2006, Ford et al. 2008a, 2008b, Moore and Huntington 2008). Additionally, the Intergovernmental Panel on Climate Change has reported that the increase in global temperatures is very likely caused by human activity, and that warming is predicted to occur faster in the Polar Regions than anywhere else on the planet (IPCC 2007, 2014). Many changes are predicted to occur in recurrent open water sites, with the potential to affect various coastal resources. Specific impacts can be expected on water stratification and its role in nutrient renewal, the balance between multi-year and annual ice, the duration and location of open water, and the impacts of tidal mixing and topographic upwelling. These physical changes could influence the marine food web through the prevalence of ice algae, the timing and magnitude of primary and secondary production, and changes in the distribution, abundance, and success of traditional species. Inuit can expect significant environmental changes in sea ice, fast ice, coastal erosion, animal behaviour, and population abundances, to name a few. For instance, apparent changes in polar bear health and abundance have been linked to climate change driven shifts in sea ice formation and movement. The coastal resource inventory provides a means of collecting information on environmental changes observed by community members.

PERSONNEL AND PROJECT DELIVERABLES

The Coastal Resource Inventory of Grise Fiord was conducted by Department of Environment (DOE) staff with the assistance of the Marine Institute of Memorial University of Newfoundland. Overall project leadership was provided by Wayne Lynch, Director, Fisheries and Sealing Division.

Project deliverables include:

- A final report summarizing project activities;
- The Nunavut Coastal Resource Inventory in a GIS database;
- A series of large-format resource inventory maps;
- Access to all documentation pertaining to project completion; and
- Recommendations on the use of this study and future initiatives

METHODOLOGY

COMMUNITY SELECTION

Criteria to guide community selection were established prior to the start of the NCRI process and were based on a series of interviews with a broad range of individuals, all of whom had some prior experience working with traditional knowledge and/or communities. Community selection did not depend on meeting the requirements of every single criterion, but rather on the general picture conveyed by the responses to these queries. The present criteria are as follows:

- Is the selected community willing to participate in the project?
- Is the community considered to be an important source of data on coastal resources?
- Are any other projects underway in the community that might be complementary to the coastal inventory?
- Does the community possess an existing repository of oral history that could be made available to the project?
- Does the community have a strong but under-utilized or under-managed connection with a particular resource animal, such that inventory data could prove useful?
- Does the community wish to acquire or use any of the coastal inventory data produced by the project?
- Is the community presently involved in a commercial fishery?
- Is the community currently seeking infrastructure for which the coastal inventory study might prove supportive?
- Does the community have a strong and broadly-accepted leadership available to assist the project?
- Does the community have a close association with a park or a protected area?

COMMUNITY VISITS

Grise Fiord was visited for on-site interview sessions from October 31 to November 2, 2012. A scoping session was designed to put into place all of the elements that were required to properly conduct the interviews. This process depended on the support and participation of the Grise Fiord Hunters and Trappers Organization (HTO) and the Hamlet office. The HTO formally agreed to support this initiative by providing an annotated list of local Inuit hunters and trappers who, in their opinion, were among the most knowledgeable and accomplished members of the community and could best satisfy the requirements of the interview process. The final selection of nine interviewees (Appendix 1) was made by NCRI project personnel. In addition, HTO personnel recommended the names of individuals who could be used as translators and student observers. These individuals were contacted, and tentative interview schedules were established.

THE INTERVIEWS

Six individuals were present during each interview: the interviewee, an interviewer, a translator, a recorder, a science consultant, and a student observer. The interviewer followed a defined protocol that placed emphasis on a series of predetermined questions and photographs of various living resources thought to occur in the area. Maps covering the area of interest and colour coded pencils were provided for interviewees to illustrate locations of interest. Interviewees were encouraged to supplement their responses by drawing on the maps provided to annotate their verbal remarks. Specific categories addressed in the interviews included: interviewee life-history information; locations of outpost camps; archaeological sites; travel routes and hunting/fishing areas frequented; the geographic occurrence of mammals, fish, birds,

invertebrates, and plants; linkages between coastal resources; present and future environmental changes; and potential economic development (e.g. the possibility of an emergent fishery). Qualitative data was gathered in the form of individual opinions, assumptions, and conclusions.

Annotations on the maps were coded to enable future identification and reference. Follow-up questions were asked of the interviewee, clarifications were elicited, and, if appropriate, discussion ensued about the information presented. The entire process was recorded using audio and video equipment, while selected portions were simultaneously manually recorded. Manual recording was used to maintain a running record of all map annotations and codes. This permitted the analysis of interviews to proceed without first transcribing the audiotapes. The interviews varied from 1.5 - 4 hours, depending on the individual being interviewed.

POST-INTERVIEW METHODOLOGY

All of the data manually recorded throughout the interview was entered into a spreadsheet, using audio and video data for verification when needed. The maps were scanned and the hand drawn data was digitized using Geographic Information System (GIS).

NON-INTERVIEW DATA ACQUISITION

Data on marine resources can be found scattered throughout many different sources including scientific papers, government reports, environmental impact assessments, and maps,however, three surveys with similar geographic breadth and goals have proven to be especially useful. The three-volume "Inuit Land Use and Occupancy Study" was undertaken in the early 1970s and published in 1976 by Indian and Northern Affairs. It grew out of the documentation required by the land claim process and was used to substantiate Inuit claims to residency and land use. The study contained detailed information on traditional land use up to that time, based on interviews with Inuit in each community. It used topographic maps to outline regions associated with hunting, trapping, and fishing activities for every community in Nunavut over three periods: pre-contact, the trading period up to the 1950s, and the present (early 1970s). The third volume is an atlas that displays the results. The original research is available in Ottawa at the National Archives and a copy is also available at the Legislative Library in Iqaluit.

The second is the Nunavut Atlas co-published in 1992 by the Canadian Circumpolar Institute and the Tunngavik Federation of Nunavut. This atlas is largely data collected for the Inuit Land Use and Occupancy Study. The resource data and maps are great resources but the information is approximately 35 years old. Relevant maps from this volume are presented in this report (Figures 36-37).

The third document is the *Nunavut Wildlife Harvest Study* produced by the Nunavut Wildlife Management Board in 2004 as mandated by the Nunavut Land Claim Agreement. Harvest data was collected monthly from Inuit hunters from 1996 to 2001. The purpose of the study was to determine the current harvesting levels and patterns of Inuit use of wildlife resources. Once completed this information was to be used to manage wildlife resources in Nunavut.

DATA MANAGEMENT AND ANALYSIS

Data collected through interviews and research were, when appropriate, plotted on working maps. In order to stay within the size of the geographic area under discussion, the scale of the map is kept relatively small. The scale was common to all maps to permit relatively easy comparisons. Information was separated according to resource categories and all information associated with a specific geographic location was entered into a tabular database. The development, care, and maintenance of this tabular database are extremely important, not only as a storage facility for information, but as an active repository accessed by users with diverse interests.

Data management also included protecting the confidentiality of the data. Each interviewee provided their

Figure 2. The study area extent discussed in the Grise Fiord interviews

consent to be interviewed, as well as audio recorded and videotaped. Any person or organization wishing to access NCRI data must provide written justification to the NCRI Steering Committee and agree to the terms outlined in the Data Release Form.

GIS INTERFACE

Once the inventory maps and database were completed, they were entered into a GIS that creates computer-generated maps. It also links information to the geographic locations contained in the database. Attributes associated with each piece of data include information such as the species name, the interviewee source, and the time of year it was observed.

INTERACTIVE ATLAS

The NCRI results are published in community-specific reports that are shared with project partners (community HTOs, Hamlets, high schools, and all interviewees) and that are publicly available in hard-copy and PDF formats.

Reports are currently produced in English and Inuktitut. The results from all communities are also displayed online in an interactive atlas, with this information available within a year of interviews in a community. The reports can take up to two years to produce. Links to access the Atlas: ncriatlas.ca and http://www.gov.nu.ca/environment/information/nunavut-coastal-resource-inventory.

RESOURCE INVENTORY

The observations below provide highly personal insights that could warrant additional investigation.

MARINE ENVIRONMENT

The geographic area identified by interviewees as the normal range of their hunting and fishing activities extends throughout Jones Sound. This area extends into Norwegian Bay, Baumann Fiord, Vendom Fiord, and Makinson Inlet.

HUNTING/FISHING

Grise Fiord hunters/fishers depend on a broad array of animals to supply their country food needs. Ensuring access to and availability of country food continues to be an issue of importance and concern for the community.

- A decrease in beluga has been observed over the past 2-3 years
- Participants indicated that there are now many more narwhal in the area
- An increase in polar bear numbers was indicated
- Interviewees noted that there are fewer walrus on the north side of Jones Sound, on Ellesmere Island. They also indicated an increase in walrus on the south side of Jones Sound, on Devon Island. Participants noted that there were less walrus during tagging projects; however, their numbers seem to be increasing now
- Participants noted fewer harp seals this year
- A decrease in the number of ringed seals has been observed by interviewees
- Some interviewees noted that there is now more char, while others thought char numbers have decreased near town
- It was noted that clams could become overharvested if not properly managed
- Interviewees indicated that there are less naked sea butterflies at the floe edge than before
- An increase in bearded seals was observed by participants

HEALTH, SIZE, AND PRESENCE

Throughout the course of the interviews references were repeatedly made regarding the health, size, or presence/absence of different species.

- There was some discrepancy in the responses from interviews regarding polar bears
- Some interviewees noted that there are not as many large polar bears, some indicated that bears were healthy, while others noted that bears were large, especially in the fall
- Participants noted that polar bears are not as afraid of humans and wander more into town
- Interviewees indicated that cackling geese arrived in the area in the late 1980s
- It was noted that seals are more variable in size than before and are generally smaller

CHANGES UNDERWAY

Participants commented on changes in their local area regarding species and climate change:

- Interviewees indicated the ice-free season is longer now, with sea ice melting sooner and breaking up faster. It was observed that sea ice is less stable, with less summer ice These changing ice conditions have made travelling more dangerous
- Interviewees noted that glaciers are melting and receding quickly. Larger pieces of ice caps and glaciers are breaking off and less water is running off glaciers in the summer affecting the conditions of trails
- Participants noted increased coastline erosion due to larger waves. It was indicated that there is now more wind and less snow in the area
- New species of birds and insects have been observed in the area

ECONOMIC DEVELOPMENT

Interviewees discussed the following with regards to social changes and economic development in their area:

- Most interviewees noted that there are not enough fish in the area to be used as a commercial resource; however, some participants indicated that there may be enough fish in further areas to produce income or jobs for people in the community
- It was noted that narwhal tusks could be used in a commercial way
- Participants indicated that seals could be sold as finished products
- The interviewees indicated that fixing the community freezer would be beneficial to the community
- Participants noted that a wharf, dock, or breakwater would be a great asset to the community to facilitate trips on the land as well as protect the shoreline
- It was indicated that the VHF repeater system should be expanded
- A participant noted that commercial fishing facilities for winter fishing could be beneficial to the community
- Interviewees noted that halibut and char fishing could have economic development potential
- It was indicated that a larger quota for muskox and a processing facility are needed
- It was suggested that glacier water be bottled to provide income for the community
- Interviewees thought an archery club for youth would be beneficial

- Participants suggested a sport hunt for walrus, polar bears, or other mammals should be developed
- Interviewees supported the idea of developing tourism in the area. It was suggested that cabins or other accommodations could be built for tourists. An interviewee indicated support for tourism on land, but does not support ship traffic in the area. Other options for tourism included sightseeing and skiing
- Participants were concerned about low flying helicopters and increased shipping activity disturbing wildlife
- It was noted that fuel drums and batteries were left on the land in the past and never cleaned up. The interviewees were concerned about this source of pollution
- Interviewees were concerned about coal mining development and its effects on wildlife

MARINE RESOURCES IN A PHYSICAL SETTING

The coastal communities of Nunavut are diverse, extending over 27° of latitude and 60° of longitude. In addition to different geomorphologies, climates, and wildlife they also experience widely different marine environments. These include: significant differences in residual circulation, tidal range, tidal currents, tidal mixing, shore-fast leads, ice-edge upwelling, topographic upwelling, and polynyas, all of which influence the abundance, diversity and concentration of marine animals and plants. The oceanographic context in which these organisms occur, especially the causal mechanisms that contribute to population dynamics, is an essential prerequisite to understanding changes that occur over time.

One of the stated goals of this initiative is to develop the capacity to monitor Nunavut's marine resources within the context of climate change. Organisms will experience the impacts of climate change, both directly and indirectly, through changes in their physiology and through variations in their physical or biological environments. Responsible monitoring of marine resources will require more than just a quantitative assessment of certain species; it will require an ecosystem approach that, by definition, includes the physical factors at play in that system.

RECURRENT OPEN WATER AND ARCTIC BIOLOGY

The presence of open water in winter can be a chance occurrence that reflects either temporary or recurring conditions. Temporary open water sites are largely unpredictable and have limited usefulness to animals and humans. Alternatively, recurrent open water sites are a physical indicator of one or several predictable physical processes that result in spatial and temporal reliability.

The formation of recurring open water sites in ice-covered seas, including polynyas, pack ice edges, and shore-fast leads reflect local geography, ice conditions, and water movements such as upwelling and tidal mixing. There is a positive correlation between recurrent open water sites and abundance of marine organisms. Stirling (1980, 1997) identified increases in the abundance of birds, seals, and whales with proximity to ice edges, polynyas, and pack ice. In some cases, animals are drawn to these sites for practical reasons such as the availability of breathing holes, a platform to haul out and rest, predator avoidance, pupping, or moulting (Stirling 1997). Ultimately, recurrent open water sites encourage a non-homogeneous distribution of animals that is linked to greater biological productivity.

Major contributing factors in the abundance of marine organisms observed at reoccurring open water locations is due to food availability, the product of primary production in phytoplankton, ice algae, and marine plants. Algal groups are important but their relative contributions can vary depending on ice conditions and available light. Ice algae can represent 5 to 30% of the total primary production (Alexander, 1974; Harrisson and Cota, 1991; Legendre et al 1992). Plant material is grazed and enters into the food web, supplying energy to invertebrates, such as copepods, amphipods, and shellfish, to fish such as Arctic Cod, to mammals such as seals, narwhal, walrus, and polar bears, and to birds such as Thick-Billed Murres, Northern Fulmars, Black-Legged Kittiwakes, and Black Guillemots. This results in a form of oasis or hotspot in an otherwise ice-covered area. With climate change, the sea ice thinning faster and earlier in the spring and sunlight sufficient to drive photosynthesis, especially in ice algae, is available sooner. These conditions are extending both the growing and grazing seasons, in some cases by as much as two months.

These open water sites also appear to have great importance to the peoples that have occupied the Arctic for several thousand years. Archaeological data obtained from historic Inuit habitation sites, coupled with modern sea ice extremes, have been used to infer a strong causal relationship between polynyas and historic Inuit settlement patterns (Henshaw 2003). Schledermann (1980) drew attention to the fact that the early settlers of present-day Nunavut did not create settlements in random fashion. Since they depended almost entirely on food resources obtained through hunting, settlements were usually located within reasonable proximity of game, which often meant areas of recurrent open water. Schledermann (1980) also found a close correlation between the distribution of recurring polynyas in the eastern Canadian High Arctic and the abundance of archaeological sites from the Thule culture which specialized in hunting marine mammals

OCEANOGRAPHIC FACTORS THAT CONTRIBUTE TO OPEN WATER

The Hamlet of Grise Fiord is located in the High Arctic on the southern part of Ellesmere Island, adjacent to Jones Sound. As Nunavut's most northerly community, it lies 1,160 km north of the Arctic Circle (approx 76°25'N, 82°54'W).

TIDAL MIXING

Even at somewhat limited velocities, tidal currents can produce sufficient turbulence to generate the vertical mixing capable of forming and maintaining a polynya. A slow-moving tidal current that encounters a shallow and/or narrow strait increases in velocity, promoting vertical mixing. Tidal mixing also delivers nutrients, which promote plant and algal growth when sufficient light is available, especially in summer months. Examples of this phenomenon are the well-known polynyas in Fury and Hecla Strait at the head of Foxe Basin (Hannah et al 2009).

POLYNYAS

If the Arctic were covered with a thick, seamless layer of sea-ice, many of the organisms that currently exist there and contribute to the region's productivity would find it impossible to survive. Polynyas and leads provide the necessary breaks in the ice that permit sunlight to penetrate and photosynthesis to proceed (in both planktonic and ice-based algae), allow mammals to breath, and permit over-wintering birds to feed. Wind, water movement, and heat transfer are among the primary factors that contribute to the establishment and maintenance of these open water sites.

Polynyas have long been viewed as extraordinary because of the obvious contradiction of open water occurring in conditions that promote ice. The explanation for this phenomenon is twofold: in some cases the introduction of heat forestalls ice formation, while in others any newly formed ice is rapidly removed. The process is controlled by wind and/or ocean currents, which remove any ice formed at the site. Other factors include turbulence from surface waves or currents that can inhibit ice formation, adjacent coastlines, and shore-fast ice or ice bridges that prevent ice from drifting into polynyas (Hannah et al 2009).

Recurring polynyas typically occur near shoals and islands, within the land-fast ice. There are two types of polynyas that reoccur each year: those that remain open all year long and those that only freeze over for one or two of the coldest months of the year. Animals such as seals, walrus and some migratory sea birds use these polynyas as important over-wintering areas.

Although strong tidal currents, sometimes associated with the formation of polynyas, have been observed on the west side of King William Island, there are no known polynyas in this area. This may be due to the lack of a deep basin in the area to act as a reservoir for warm water (Hannah et al 2009).

LAND-FAST LEADS (FLAW LEADS)

Extensive systems of land-fast leads occur throughout the Arctic. Land-fast ice generally comprises first-year ice, possibly mixed with multi-year remnants, that is fixed to the coast. This ice platform extends outward, eventually merging with offshore pack ice (Sterling 1981). The physical presence of this ice cover modifies tidal and wind energy, dramatically changing circulation (George 2004). Eventually, a fracture or crack may develop between the attached ice and the free-floating pack ice due to offshore winds, or through the actions of coastal currents. These leads are normally linear in shape and run parallel to shorelines. They are recurrent and predictable in their location and are among the areas where open water is found most consistently during winter and early spring. Because of these factors, land-fast lead systems are of great biological importance.

The boundary between the ice edge and the beginning of the lead is an ecosystem that is very important and has been identified as biologically rich and diverse by many elders and previous research. For instance:

- The land-fast ice edge is an important Inuit hunting site (Crawford and Jorgenson 1990)
- During late spring and early summer, large numbers of sea birds and marine mammals congregate at the edges of land-fast ice (McLaughlin et al. 2005)
- Ringed seals and polar bears are the only marine animals that regularly occupy extensive land-fast coastal ice (Tynan and DeMaster 1997)
- Bearded seals prefer relatively shallow water (<150 m) with thin shifting ice and leads kept open by strong currents (Tynan and DeMaster 1997)
- Along with polynyas, land-fast lead systems and ice edges play key roles in influencing the abundance and distribution of marine mammals and sea birds (McLaughlin et al. 2005)
- Satellite observations of polar bears in multi-year ice show that they are often associated with leads (Stirling 1997)

Figure 3. Map of known polynyas in Nunavut

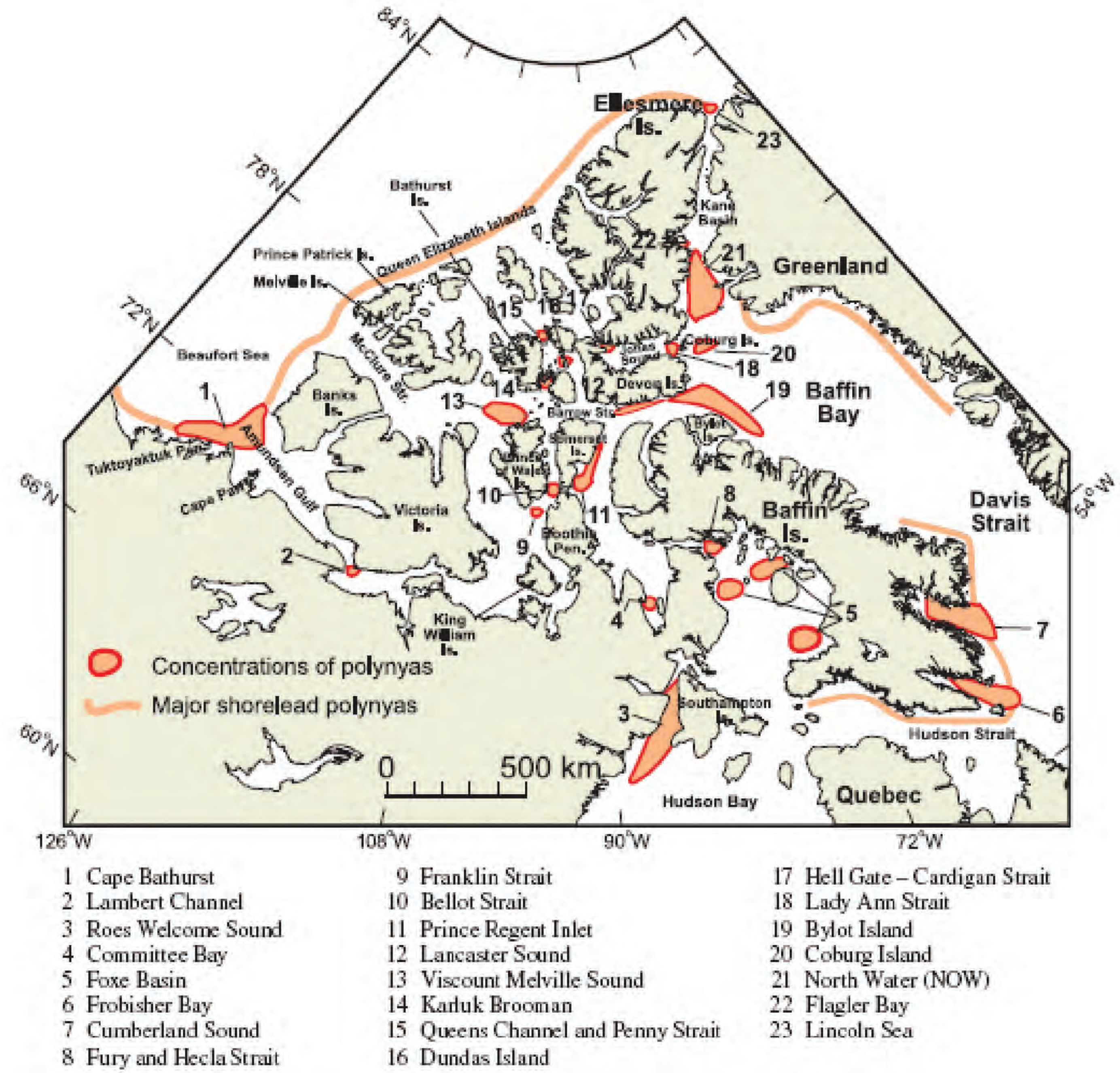


FIG. 1. A map of known polynyas in the Canadian Arctic, adapted from Barber and Massom (2007) and Stirling (1981). The Karluk Brooman polynyas were identified by Schledermann (1980) and Brown and Nettleship (1981).

- High densities of arctic cod are found immediately below the edge of land-fast sea ice, linked to the availability of high concentrations of copepod prey (Crawford and Jorgenson 1990)
- Near the ice edge the diet of adult ringed seals and narwhal is composed primarily of arctic cod while amphipods and copepods are consumed in smaller numbers (Bradstreet and Cross 1982)

The reasons for greater biological abundance and diversity associated with land-fast leads and ice edges are largely the same as those outlined above for recurrent open water;however, upwelling is an additional mechanism that appears to occur at shore-fast and pack ice edges.

UPWELLING: TOPOGRAPHIC AND ICE-EDGE

Upwelling is a mechanism by which colder, deeper water is moved to the surface, where it can create and/or maintain ice-free open water. Topographic upwelling occurs where a current moving through warmer subsurface water is deflected or welled upward toward the surface by a bottom structure such as a sill, bank, or ridge (Tee et al. 1993).

Ice-edge upwelling occurs when wind blows parallel to the ice edge and causes surface water to move away from the edge. The surface water is then replaced from below (Tang and Ikeda, 1989). The upwelling zone may be several kilometres wide and draw subsurface water from depths of up to 100 metres. This phenomenon has been observed in the Bering Sea (Alexander and Niebauer 1981), the Arctic Ocean (Buckley et al. 1979, Johannesen et al. 1983) and off the coast of Newfoundland (Tang and Ikeda 1989).

Upwelled water usually carries nutrients into the upper layer where, with sufficient light, both phytoplankton and ice algae can grow and provide a strong stimulus to the local food web. This is one explanation for why polynyas and shore-fast leads are so productive.

MARINE RESOURCES IN THE CONTEXT OF GLOBAL WARMING

Over the past 20 years, many Arctic researchers have commented on the impending probability of global warming, with its predicted impacts on the marine environment as well as the abundance, diversity, and well-being of marine organisms (Tynan and DeMaster 1997, Michel et al. 2006, Moore and Huntington 2008). Changes may occur affecting water stratification and its role in nutrient renewal, the balance between multi-year and annual ice, the relative importance of ice algae, the timing and magnitude of primary and secondary production, and changes in traditional species distributions and hunting sites, amongst others. Each of these changes could exert some influence on the food web and the state of the resources as presently defined.

MAPS AND TABLES

The following group of maps summarizes the geographic context, species locations, and information from earlier studies (derived from the *Nunavut Atlas*). The maps are accompanied by data in tables, which provide additional detail, along with descriptive information, when available. Table 1 describes the map codes used in the tables.

Table 1. Guide to map codes

CATEGORY	MAP CODE
Present {since year 2000}	Appended with 'P'
Historic {before year 2000}	Appended with an 'H'
Everywhere (seen all over/no specific place/only where they go)	Appended with a upper case 'E'
High Abundance	Appended with an 'A'
Migration (use arrows to indicate direction)	Appended with an 'M'
Spawning / Nesting / Denning / Calving / Pupping areas	Appended with an 'S'
Nursery Area	Appended with an 'N'
Significant Area of High Diversity	SADP
Significant Unique Area	SAUP
Significant Area for Other Reason	SAOP
Other	OTH
Area Known Best (area most familiar with or a travel route)	AKB
Camp / Cabin (typically modern)	CAMP

Generally, maps comprise groupings of several species or a single species as reported in multiple interviews. Species and interviews are normally color-coded and locations are labeled with a number. The first number in the label refers to a specific interview while the second is a location identifier. These labels can be used to look-up relevant information in the table associated with each map.

The species identified by interviewees as being distributed "Everywhere" are not mapped in this report. The designation of "Everywhere" was used when interviewees felt that the organism under discussion has been observed everywhere throughout their travels and places with which they are very familiar. Giving a species an "Everywhere" designation does not confer any information about abundance nor should it be presumed to be ubiquitous; it is only a measure of distribution relative to where the interviewee has been. "Everywhere" data is provided in the table of data following the maps.

Some species were described by a portion of the interviewees as being "Everywhere" while other interviewees provided specific locations for the same species. In these cases, an asterisk has been placed after the species name in the title of the map. For example, arctic char is written as "Arctic Char*" in the map title because it was reported in specific locations, as well as being "Everywhere". The asterisk simply provides a visual cue that the species has two designations.

Please note that the data presented on birds has been further qualified in Appendix 3. Of all the species presented to the interviewees, birds (e.g. sandpipers or gulls) present the greatest challenge in proper identification; a challenge often encountered by even the keenest observers. To assist in interpreting the data, Appendix 3 compares observations recorded through the inventory with literature and sightings by other authors. In the future, inventory work will endeavour to qualify all species reported in a similar way.

Note: The asterisk (*) after some species names in the titles of the maps indicates that the species was also considered to be seen "Everywhere" by some interviewees. Species identified as being "Everywhere Only" are shown by the use of a solid bullet in the Map legend.

MAPS - PRESENT

Figure 4. Campsites and travel routes interviews 1 to 4

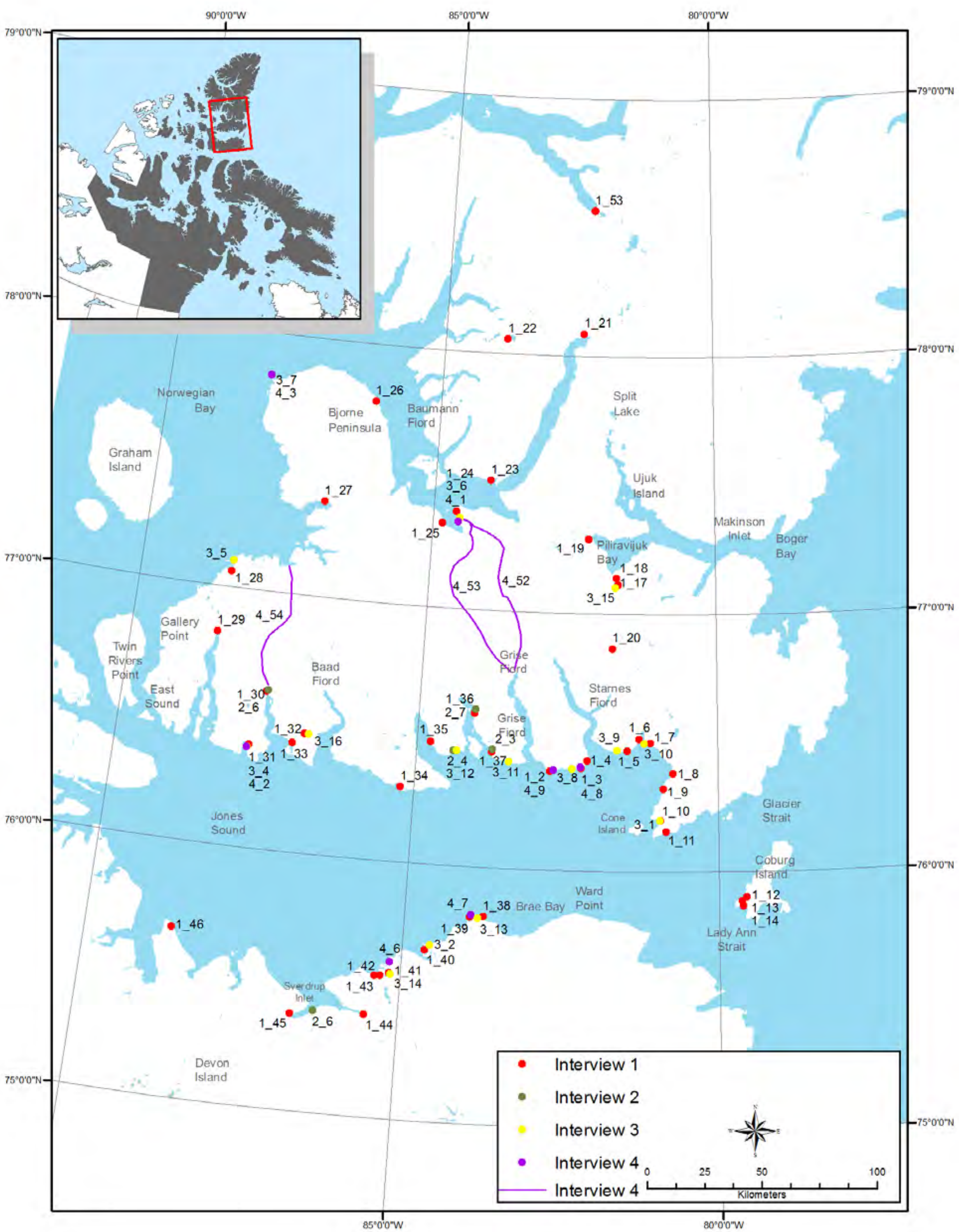


Table 2. Campsites and travel routes interviews 1 to 4

MAP CODE	INTERVIEW CODE	CATEGORY	MONTHS	COMMENTS
1_2	GF_01_1012	Camp		Winter for seal hunting
1_3	GF_01_1012	Camp		Spring for seal hunting
1_4	GF_01_1012	Camp		Winter/spring for seal hunting
1_5	GF_01_1012	Camp		Spring/winter for muskox hunting
1_6	GF_01_1012	Camp		Spring for muskox hunting
1_7	GF_01_1012	Camp		Spring for seal hunting
1_8	GF_01_1012	Camp		Spring for geese hunting
1_9	GF_01_1012	Camp		Spring for whale hunting
1_10	GF_01_1012	Camp		Winter/spring for bear hunting
1_11	GF_01_1012	Camp		Winter/spring for bear hunting
1_12	GF_01_1012	Camp		Winter/spring for bear hunting
1_13	GF_01_1012	Camp		Spring/summer camp
1_14	GF_01_1012	Camp		Spring/summer camp
1_17	GF_01_1012	Camp		Summer camp
1_18	GF_01_1012	Camp		Summer camp
1_20	GF_01_1012	Camp		Summer camp
1_21	GF_01_1012	Camp		Summer camp
1_22	GF_01_1012	Camp		Spring camp
1_23	GF_01_1012	Camp		Spring camp
1_24	GF_01_1012	Camp		Spring, summer, or winter cabin
1_25	GF_01_1012	Camp		Spring/summer camp
1_26	GF_01_1012	Camp		Spring for caribou hunting
1_27	GF_01_1012	Camp		Spring camp
1_28	GF_01_1012	Camp		1 spring cabin and 3 winter cabins

MAP CODE	INTERVIEW CODE	CATEGORY	MONTHS	COMMENTS
1_29	GF_01_1012	Camp		Spring camp
1_30	GF_01_1012	Camp		Winter and summer camp
1_31	GF_01_1012	Camp		Spring camp
1_32	GF_01_1012	Camp		Fishing camp
1_33	GF_01_1012	Camp		Spring/summer camp
1_34	GF_01_1012	Camp		Spring/summer camp
1_35	GF_01_1012	Camp		Summer camp
1_36	GF_01_1012	Camp		Summer camp
1_37	GF_01_1012	Camp		Spring camp
1_38	GF_01_1012	Camp		Spring and summer camp
1_39	GF_01_1012	Camp		Spring and summer camp
1_40	GF_01_1012	Camp		Spring and summer camp
1_41	GF_01_1012	Camp		Spring and summer camp
1_42	GF_01_1012	Camp		Spring and summer camp
1_43	GF_01_1012	Camp		Spring and summer camp
1_44	GF_01_1012	Camp		Spring for fishing
1_45	GF_01_1012	Camp		Summer for fishing
1_46	GF_01_1012	Camp		Summer camp
2_1	GF_02_1012	Camp		Spring camp
2_2	GF_02_1012	Camp		His year-round cabin is here
2_3	GF_02_1012	Camp		Spring/summer camp
2_4	GF_02_1012	Camp		Spring/summer camp
2_5	GF_02_1012	Camp		Summer camp
2_7	GF_02_1012	Camp		Summer camp

MAP CODE	INTERVIEW CODE	CATEGORY	MONTHS	COMMENTS
3_1	GF_03_1012	Camp		Winter camp
3_2	GF_03_1012	Camp		Winter camp
3_5	GF_03_1012	Camp		Winter cabin
3_6	GF_03_1012	Camp		Winter cabin
3_8	GF_03_1012	Camp		Spring/summer camp
3_9	GF_03_1012	Camp		Spring/summer camp
3_10	GF_03_1012	Camp		Spring/summer camp
3_11	GF_03_1012	Camp		Spring/summer camp
3_12	GF_03_1012	Camp		Spring/summer camp
3_13	GF_03_1012	Camp		Spring/summer camp
3_14	GF_03_1012	Camp		Spring/summer camp
3_15	GF_03_1012	Camp		Spring/summer camp
3_16	GF_03_1012	Camp		Spring/summer camp
4_1	GF_04_1012	Camp		Cabin used all year
4_2	GF_04_1012	Camp		Cabin used for sport hunts etc.
4_3	GF_04_1012	Camp		Cabin
4_6	GF_04_1012	Camp		Cabins used all year
4_7	GF_04_1012	Camp		
4_8	GF_04_1012	Camp		Spring camp
4_9	GF_04_1012	Camp		Cabin
4_52	GF_04_1012	Travel Route	Jan to May	
4_53	GF_04_1012	Travel Route	Jul to Sep	
4_54	GF_04_1012	Travel Route	Jul to Sep	

Figure 5. Campsites interviews 5 to 9

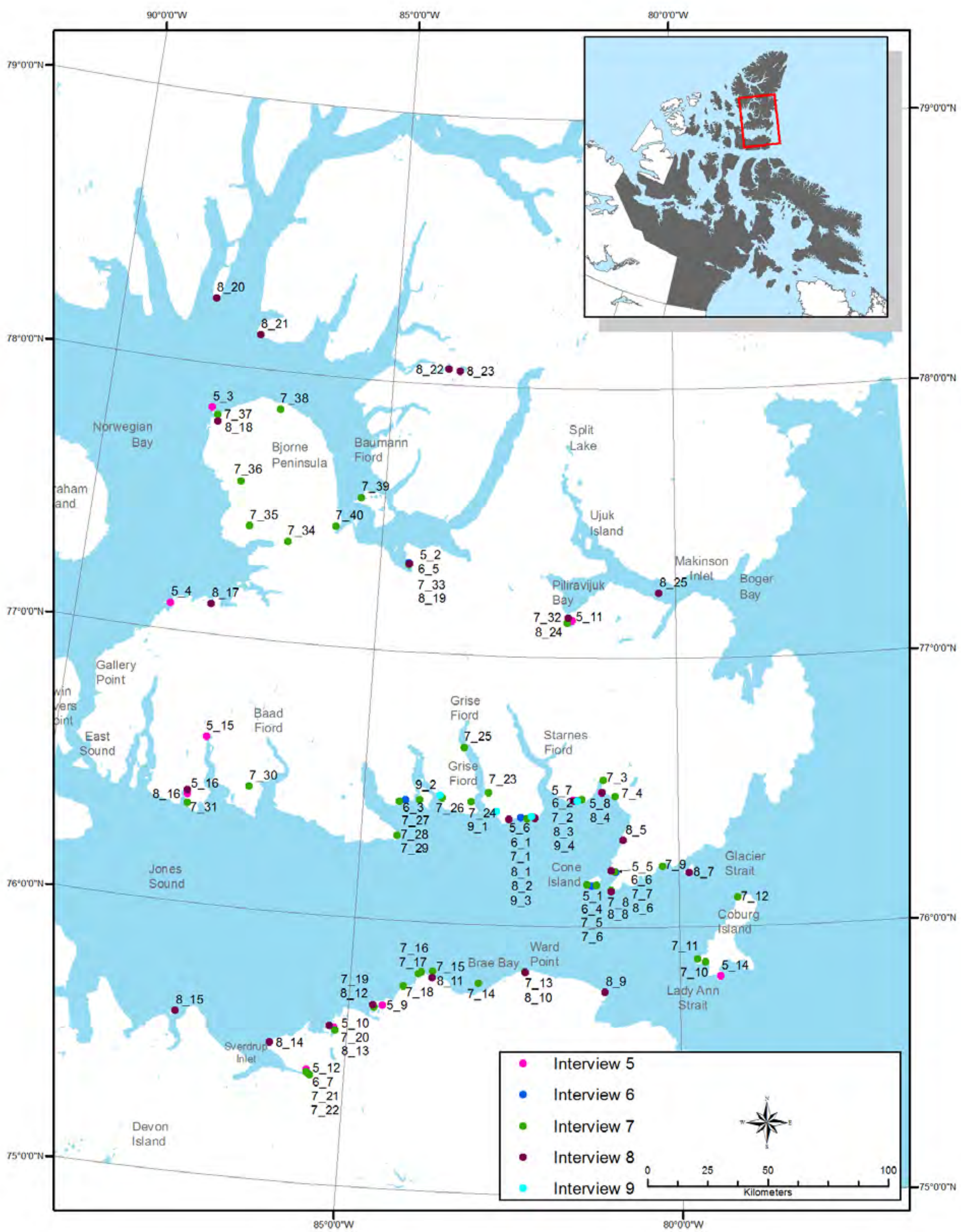


Table 3. Campsites interviews 5 to 9

MAP CODE	INTERVIEW CODE	CATEGORY	MONTHS	COMMENTS
5_1	GF_05_1012	Camp		Family cabin used from spring to freeze up
5_2	GF_05_1012	Camp		Cabin used from March to June
5_3	GF_05_1012	Camp		Spring cabin
5_4	GF_05_1012	Camp		Spring/summer cabin
5_5	GF_05_1012	Camp		Cabin
5_6	GF_05_1012	Camp		Spring camping
5_7	GF_05_1012	Camp		Spring camping
5_8	GF_05_1012	Camp		Spring camping
5_9	GF_05_1012	Camp		Cabin
5_10	GF_05_1012	Camp		Spring fishing camp
5_11	GF_05_1012	Camp		Spring fishing camp
5_12	GF_05_1012	Camp		Spring fishing camp
5_14	GF_05_1012	Camp		Early summer camp (eggs)
5_15	GF_05_1012	Camp		
5_16	GF_05_1012	Camp		Cabin
6_1	GF_06_1012	Camp	Jun, Jul	
6_2	GF_06_1012	Camp	Jun, Jul	
6_3	GF_06_1012	Camp	Jun, Jul	
6_4	GF_06_1012	Camp		Winter camp
6_5	GF_06_1012	Camp		Winter camp
6_6	GF_06_1012	Camp		Winter camp
6_7	GF_06_1012	Camp		
7_1	GF_07_1012	Camp		Spring camp
7_2	GF_07_1012	Camp		Spring camp
7_3	GF_07_1012	Camp		Spring camp
7_4	GF_07_1012	Camp		Spring camp
7_5	GF_07_1012	Camp		Spring camp
7_6	GF_07_1012	Camp		Spring camp
7_7	GF_07_1012	Camp		Spring camp
7_8	GF_07_1012	Camp		Spring camp
7_9	GF_07_1012	Camp		Spring camp

MAP CODE	INTERVIEW CODE	CATEGORY	MONTHS	COMMENTS
7_10	GF_07_1012	Camp		Spring camp
7_11	GF_07_1012	Camp		Spring camp
7_12	GF_07_1012	Camp		Spring camp
7_13	GF_07_1012	Camp		
7_14	GF_07_1012	Camp		
7_15	GF_07_1012	Camp		
7_16	GF_07_1012	Camp		
7_17	GF_07_1012	Camp		
7_18	GF_07_1012	Camp		
7_19	GF_07_1012	Camp		
7_20	GF_07_1012	Camp		
7_21	GF_07_1012	Camp		
7_22	GF_07_1012	Camp		
7_23	GF_07_1012	Camp		
7_24	GF_07_1012	Camp		
7_25	GF_07_1012	Camp		
7_26	GF_07_1012	Camp		
7_27	GF_07_1012	Camp		
7_28	GF_07_1012	Camp		
7_29	GF_07_1012	Camp		
7_30	GF_07_1012	Camp		
7_31	GF_07_1012	Camp		
7_32	GF_07_1012	Camp		
7_33	GF_07_1012	Camp		
7_34	GF_07_1012	Camp		
7_35	GF_07_1012	Camp		
7_36	GF_07_1012	Camp		
7_37	GF_07_1012	Camp		
7_38	GF_07_1012	Camp		
7_39	GF_07_1012	Camp		
7_40	GF_07_1012	Camp		

MAP CODE	INTERVIEW CODE	CATEGORY	MONTHS	COMMENTS
8_1	GF_08_1012	Camp		Spring camp
8_2	GF_08_1012	Camp		Spring camp
8_3	GF_08_1012	Camp		Cabin
8_4	GF_08_1012	Camp		Spring camp
8_5	GF_08_1012	Camp		Summer camp
8_6	GF_08_1012	Camp		Cabin
8_7	GF_08_1012	Camp		Camp for bear hunting
8_8	GF_08_1012	Camp		Camp for duck hunting
8_9	GF_08_1012	Camp		Spring camp for bear hunting
8_10	GF_08_1012	Camp		Spring camp for bear hunting
8_11	GF_08_1012	Camp		Camp for muskox and caribou (Devon Island)
8_12	GF_08_1012	Camp		Cabins
8_13	GF_08_1012	Camp		Spring camp for fishing
8_14	GF_08_1012	Camp		
8_15	GF_08_1012	Camp		
8_16	GF_08_1012	Camp		
8_17	GF_08_1012	Camp		Cabins
8_18	GF_08_1012	Camp		Cabin
8_19	GF_08_1012	Camp		Cabin
8_20	GF_08_1012	Camp		
8_21	GF_08_1012	Camp		
8_22	GF_08_1012	Camp	Apr, May	
8_23	GF_08_1012	Camp	Apr, May	
8_24	GF_08_1012	Camp		
8_25	GF_08_1012	Camp		
9_1	GF_09_0513	Camp		
9_2	GF_09_0513	Camp		
9_3	GF_09_0513	Camp		
9_4	GF_09_0513	Camp		

Figure 6. Areas with significant diversity and areas important for other reasons

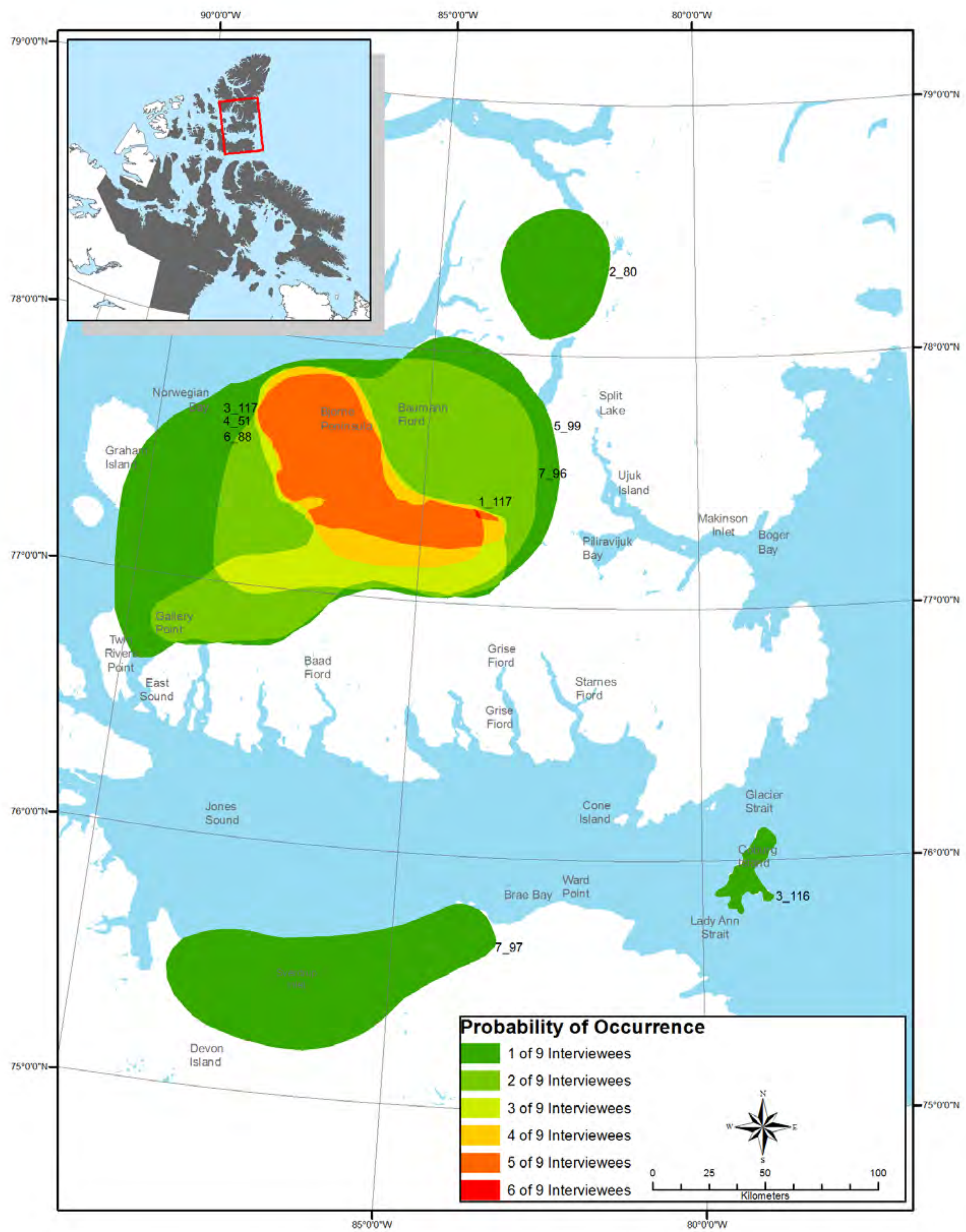


Table 4. Areas with significant diversity and areas important for other reasons

MAP CODE	INTERVIEW CODE	CATEGORY	COMMENTS
1_117	GF_01_1012	Other	Big fossils and petrified trees here
2_80	GF_02_1012	Diversity	Area that is really nice and he would like it protected
3_116	GF_03_1012	Other	Would like to see it protected. It is popular for birds nesting.
3_117	GF_03_1012	Other	Should be protected from mining exploration. It's important to caribou.
4_51	GF_04_1012	Other	Nice tall grasses, good for caribou.
5_99	GF_05_1012	Other	Important to people here and to caribou. Should be protected.
6_88	GF_06_1012	Other	Important for caribou
7_96	GF_07_1012	Other	Good caribou country
7_97	GF_07_1012	Other	Good for caribou and fish

Figure 7. Probability of occurrence for Arctic Char

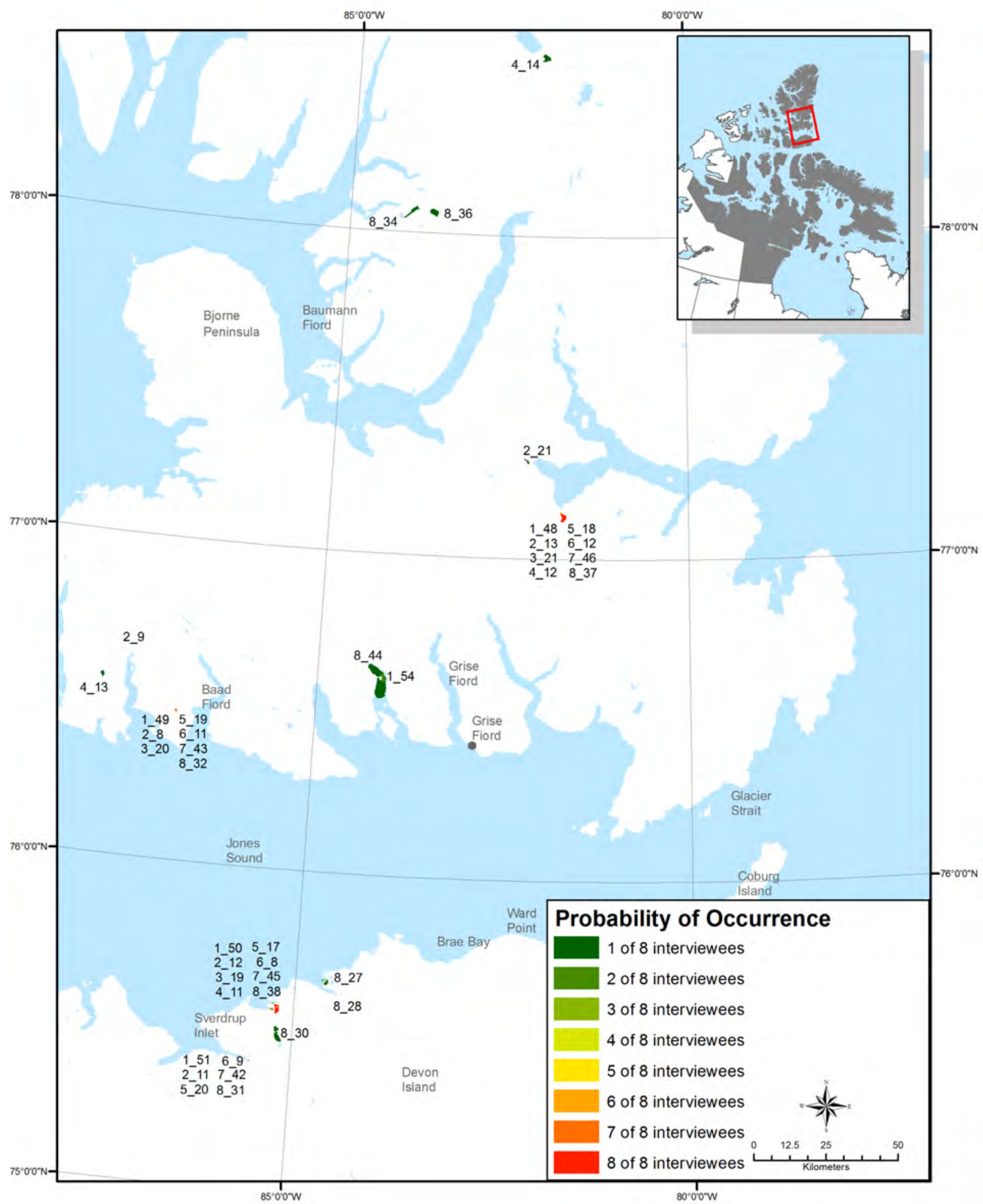


Table 5. Probability of occurrence for Arctic Char

MAP CODE	INTERVIEW CODE	MONTHS	COMMENTS
1_48S	GF_01_1012	October	
1_49S	GF_01_1012	October	
1_50	GF_01_1012		
1_51	GF_01_1012		
1_52	GF_01_1012		
1_54	GF_01_1012		Caught once
1_71	GF_01_1012		
2_8	GF_02_1012	Apr, May	
2_9	GF_02_1012	Feb, Mar, Jul, Aug	
2_10	GF_02_1012	Apr to Aug	
2_11	GF_02_1012	Feb to Jun	Char are getting bigger and fatter here
2_12	GF_02_1012	Mar, Apr	Char are getting bigger and fatter here
2_13S	GF_02_1012	Aug to Oct	
2_21	GF_02_1012		
3_17	GF_03_1012	May, Jun	
3_18	GF_03_1012	May, Jun	
3_19	GF_03_1012	May, Jun	
3_20S	GF_03_1012	Aug, Sep	
3_21S	GF_03_1012	Aug, Sep	
4_11	GF_04_1012	March to Jun	Used more (fatter and larger)
4_12	GF_04_1012	Mar to Jun	Used less (longer and skinnier)
4_13	GF_04_1012		Used less (more than 6 years ago)
4_14	GF_04_1012		
5_17	GF_05_1012	Apr to Jun	
5_18	GF_05_1012	Apr to Jun	
5_19	GF_05_1012	Apr to Jun	
5_20	GF_05_1012	Feb, Mar	
5_21	GF_05_1012		
6_8	GF_06_1012	Apr to Jun	Possible commercial fish
6_9	GF_06_1012	Mar, Apr	
6_10	GF_06_1012	Apr to Jun	
6_11	GF_06_1012	Apr to Jun	
6_12S	GF_06_1012	Aug Sep	
7_41	GF_07_1012	Feb, Apr, May	
7_42	GF_07_1012	Feb, Apr, May	
7_43	GF_07_1012	Apr, May	
7_44	GF_07_1012	Apr, May	
7_45S	GF_07_1012	Aug, Sep	
7_46S	GF_07_1012	Aug, Sep	
8_26	GF_08_1012	Jan to Jun	
8_27	GF_08_1012		
8_28	GF_08_1012		
8_29	GF_08_1012		
8_30	GF_08_1012		
8_31	GF_08_1012		
8_32	GF_08_1012		
8_33	GF_08_1012		
8_34	GF_08_1012		
8_35	GF_08_1012		
8_36S	GF_08_1012		
8_37S	GF_08_1012		
8_38S	GF_08_1012		
8_44	GF_08_1012	Jul, Aug	New to this area in the last few years.

Figure 8. Areas of occurrence for Arctic Flounder, Adolf's Eelpout, Arctic Eelpout, McAllister's Eelpout, Aurora Unernak, and Shulupaoluk

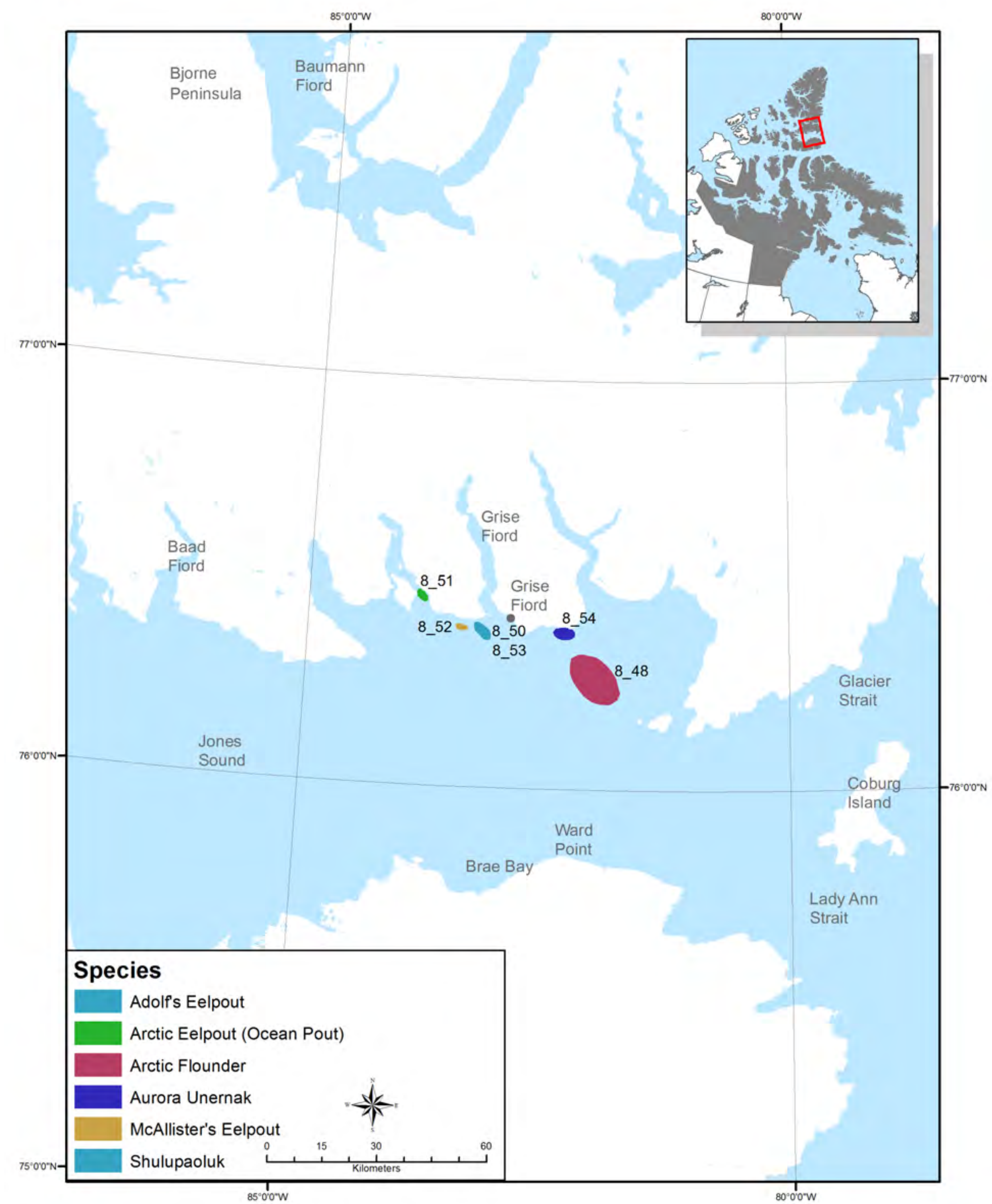


Table 6. Areas of occurrence for Arctic Flounder, Adolf's Eelpout, Arctic Eelpout, McAllister's Eelpout, Aurora Unernak, and Shulupaoluk

MAP CODE	INTERVIEW CODE	SPECIES	MONTHS	COMMENTS
8_53	GF_08_1012	Adolf's Eelpout	Apr, May	Caught longlining for turbot
8_51	GF_08_1012	Arctic Eelpout (Ocean Pout)	August	
8_48	GF_08_1012	Arctic Flounder	Apr, May	
8_54	GF_08_1012	Aurora Unernak		
8_52	GF_08_1012	McAllister's Eelpout	August	
8_50	GF_08_1012	Shulupaoluk	Apr, May	Caught longlining for turbot

Table 7. Pale Eelpout, Northern Hagfish, and Rainbow Smelt everywhere data

MAP CODE	INTERVIEW CODE	SPECIES	MONTHS	COMMENTS
1_66E	GF_01_1012	Pale Eelpout		Found on tidal flats
1_67E	GF_01_1012	Northern Hagfish		Found on tidal flats
8_57E	GF_08_1012	Northern Hagfish		Where tidal flats drop off into deep water
1_65E	GF_01_1012	Rainbow Smelt	Jul, Aug	

Figure 9. Probability of occurrence for Arctic Cod

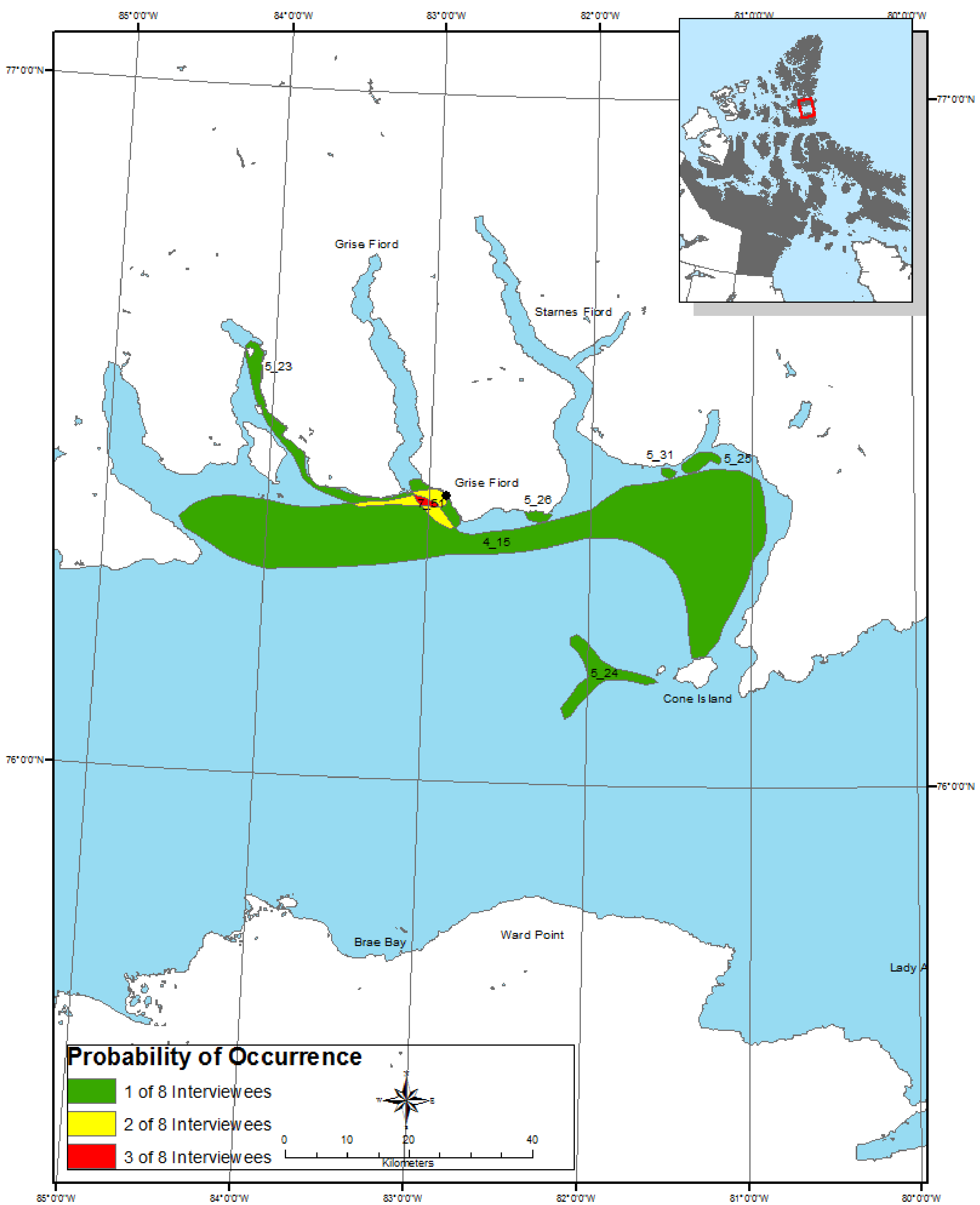


Table 8. Probability of occurrence for Arctic Cod

MAP CODE	INTERVIEW CODE	MONTHS	COMMENTS
3_25	GF_03_1012	Aug, Sep	
4_15	GF_04_1012	Jul, Aug	Large schools followed by whales
5_23	GF_05_1012	Jul, Aug	
5_24	GF_05_1012	Mar to Jun	
5_25	GF_05_1012		
6_21	GF_06_1012	June	
7_51	GF_07_1012	May to Aug	
1_59E	*GF_01_1012*	*June*	*Small ones everywhere*
2_23E	*GF_02_1012*		*Everywhere. Often seen in leads in the sea ice and in seal holes*
5_26E	*GF_05_1012*		*Everywhere. Also found in or near seal holes*
7_52E	*GF_07_1012*	*Apr to Sep*	*Everywhere*
8_46E	*GF_08_1012*	*August*	*Everywhere*

Figure 10. Areas of occurrence for Atlantic Cod, and Toothed Cod

Table 9. Areas of occurrence for Atlantic Cod, and Toothed Cod

MAP CODE	INTERVIEW CODE	SPECIES	MONTHS	COMMENTS
4_16	GF_04_1012	Atlantic Cod	Apr, May	Rare. Caught through ice in deep water.
8_45	GF_08_1012	Atlantic Cod	Jun, Jul	Caught on hooks through cracks in ice
1_60	GF_01_1012	Toothed Cod	June	
2_22E	GF_02_1012	Atlantic Cod		Everywhere

Figure 11. Probability of occurrence for Greenland Halibut

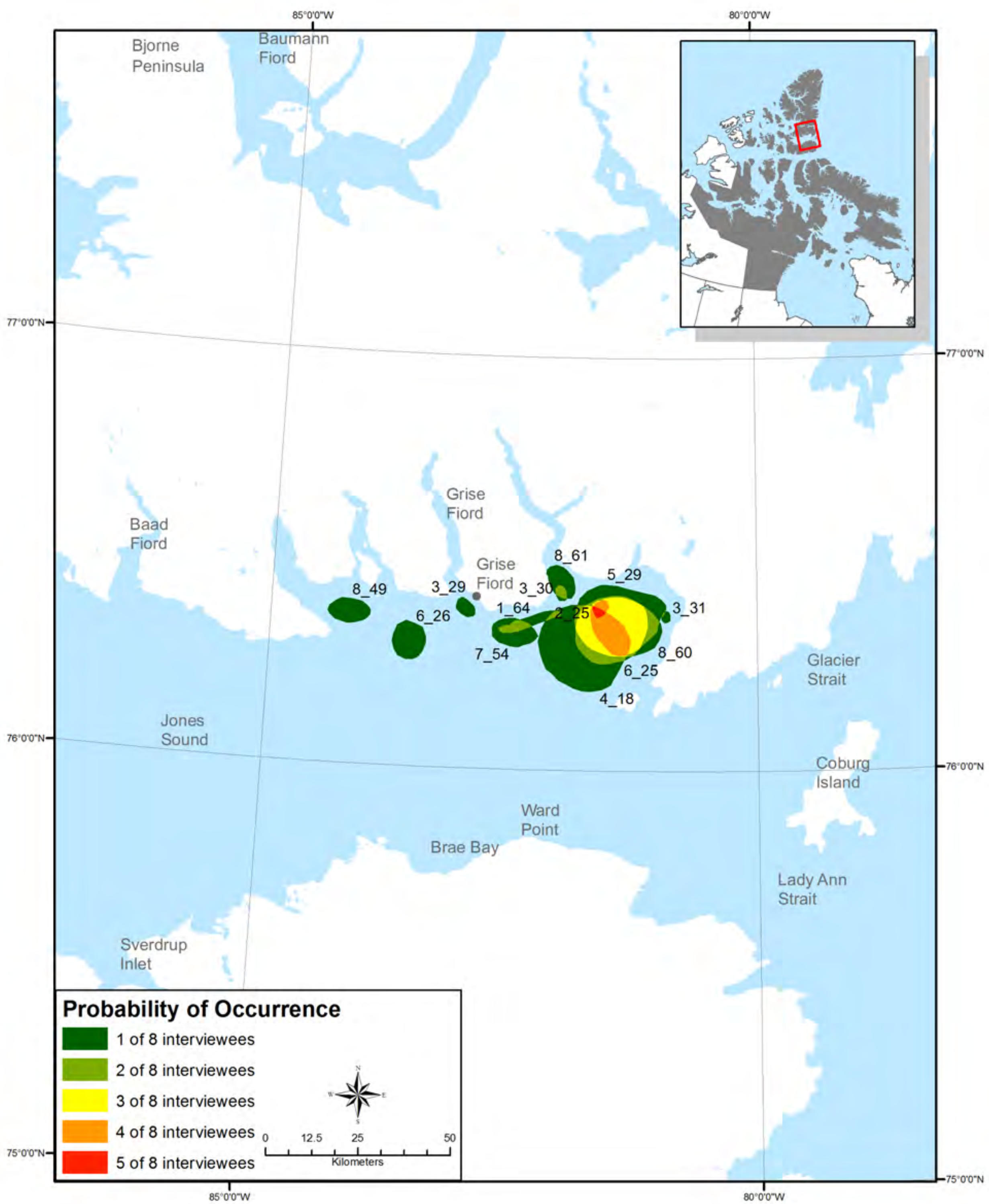


Table 10. Probability of occurrence for Greenland Halibut (Turbot)

MAP CODE	INTERVIEW CODE	MONTHS	COMMENTS
1_63	GF_01_1012		Found near seal holes on ice
1_64	GF_01_1012		Found near seal holes on ice
2_25	GF_02_1012	Mar to May	Found in seal holes or near them
3_29	GF_03_1012	Apr, May	
3_30	GF_03_1012	April	Found near seal hole
3_31	GF_03_1012	April	Found near seal hole
4_18	GF_04_1012	Apr, May	
5_29	GF_05_1012	Apr to Jun	Found dead near seal holes
6_25	GF_06_1012	Apr to Jun	Found in seal holes (smaller fish)
6_26	GF_06_1012	Apr to Jun	Found in seal holes (smaller fish)
7_54	GF_07_1012	Apr, May	Found a small one beside a seal hole
8_49	GF_08_1012	Apr, May	
8_60	GF_08_1012		
8_61	GF_08_1012		

Figure 12. Probability of occurrence for Arctic Skate

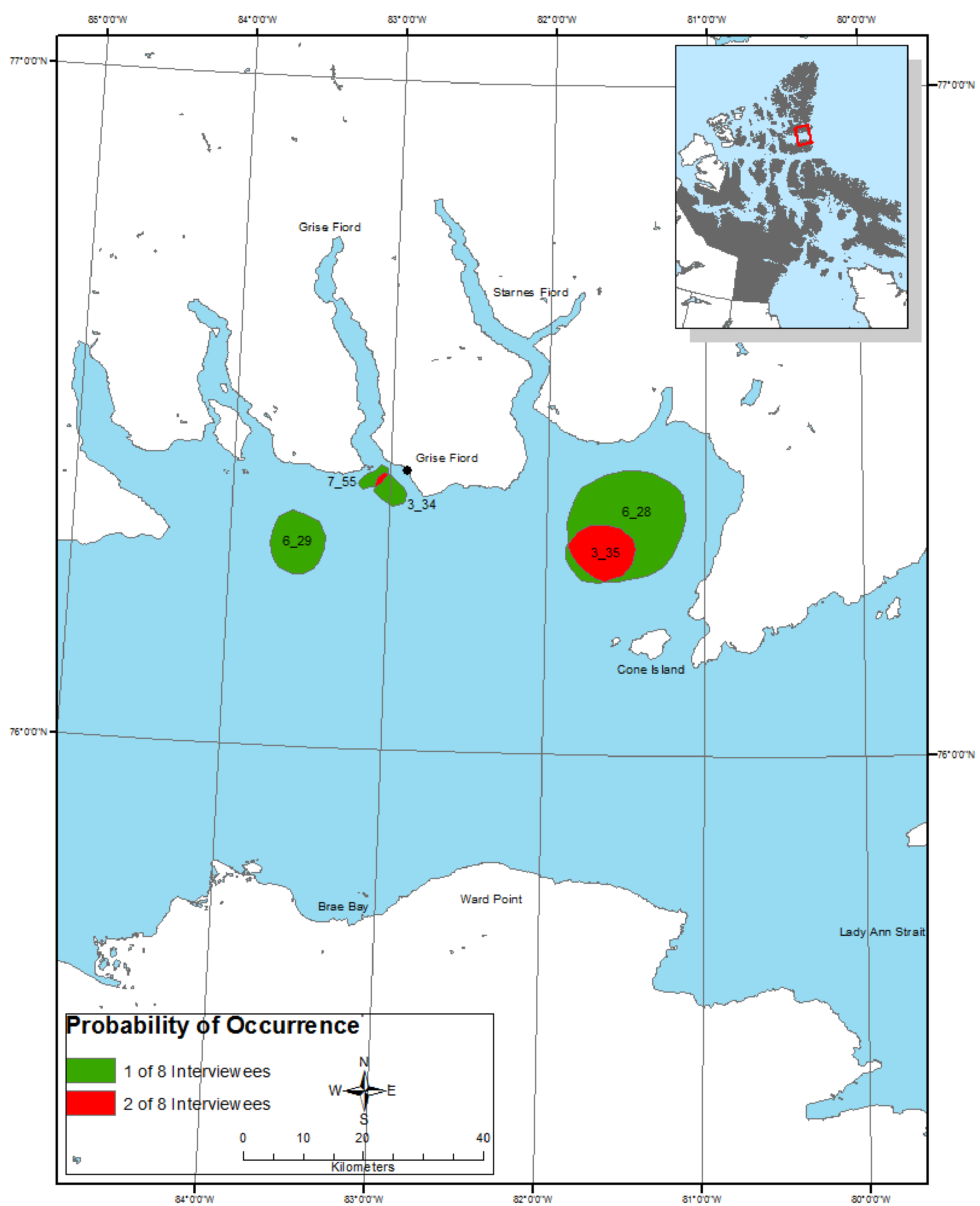


Table 11. Probability of occurrence for Arctic Skate

MAP CODE	INTERVIEW CODE	MONTHS	COMMENTS
3_34	GF_03_1012	May	Caught in turbot test fishery
3_35	GF_03_1012	May	Caught in turbot test fishery
6_28	GF_06_1012	Apr, May	
6_29	GF_06_1012	Apr, May	
7_55	GF_07_1012	Apr, May	
1_68E	GF_01_1012		Everywhere. Found near seal holes
8_58E	GF_08_1012		Everywhere

Figure 13. Probability of occurrence for Greenlandic Shark

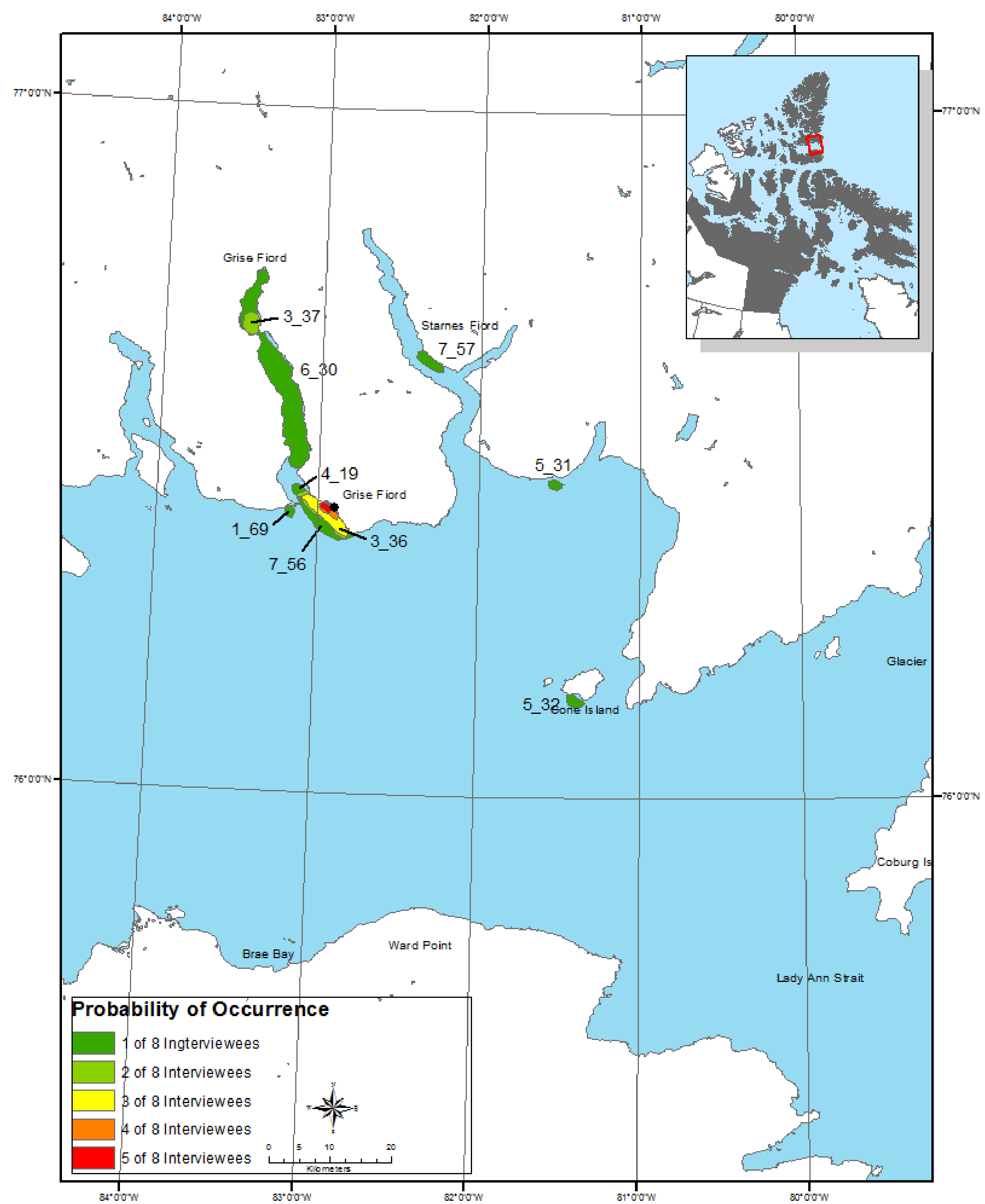


Table 12. Probability of occurrence for Greenlandic Shark

MAP CODE	INTERVIEW CODE	MONTHS	COMMENTS
1_69	GF_01_1012		
1_70	GF_01_1012		
3_36	GF_03_1012		
3_37	GF_03_1012		
4_19	GF_04_1012		Found when cutting up whales or caught in seal net
5_30	GF_05_1012	Jul, Aug	
5_31	GF_05_1012	Jul, Aug	
5_32	GF_05_1012	Jul, Aug	
5_33	GF_05_1012	Jul, Aug	
6_30	GF_06_1012	Jul, Aug	Seen when cutting up harvest
7_56	GF_07_1012	Jul, Aug	Found near whale kill
7_57	GF_07_1012	Jul, Aug	Found near whale kill
2_26E	GF_02_1012		Everywhere
8_59E	GF_08_1012	Jun, Jul	Everywhere

Figure 14. Areas of occurrence for Arctic Staghorn Sculpin, Shorthorn Sculpin, Atlantic Seasnail, and Leatherfin Lumpsucker

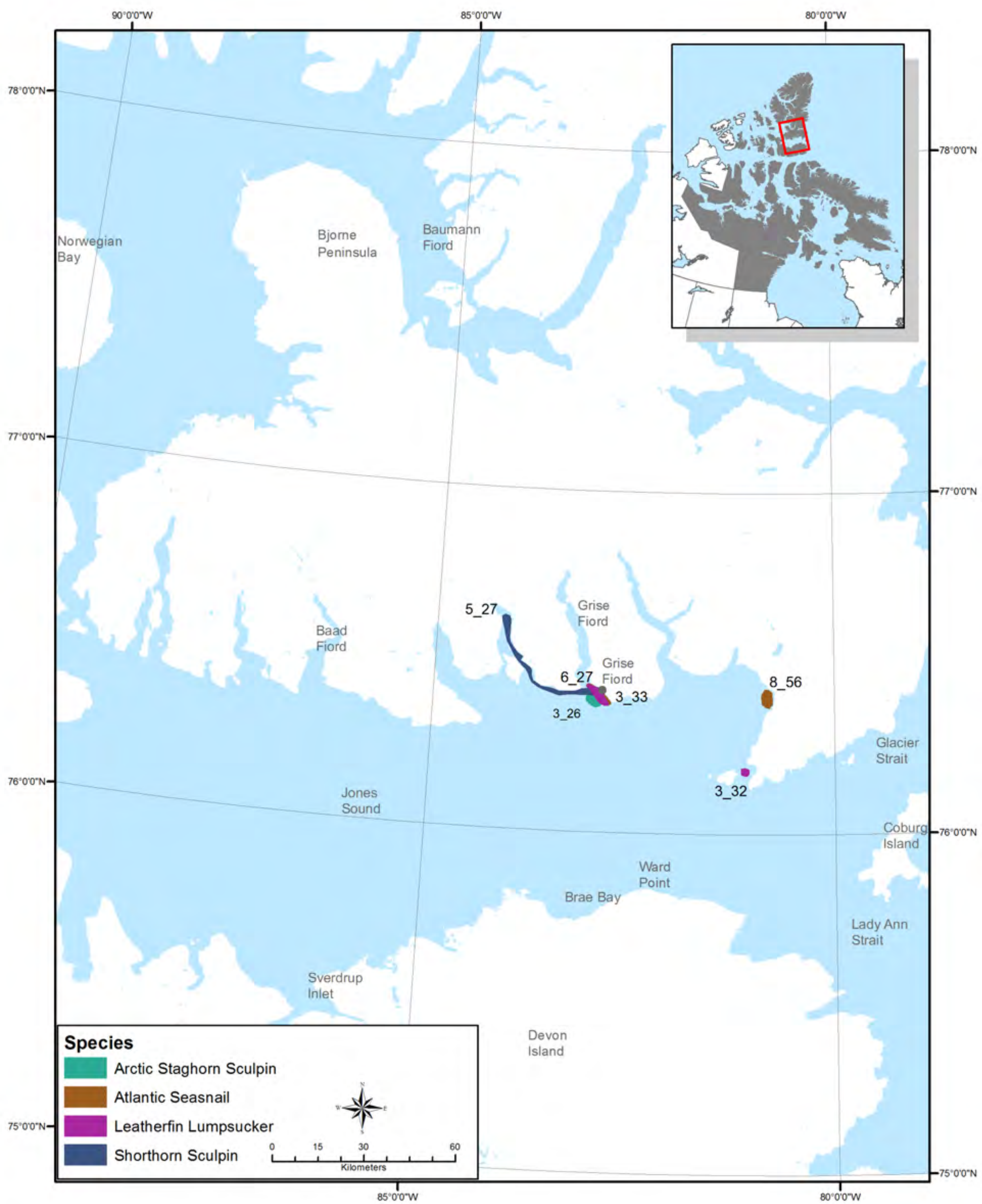


Table 13. Areas of occurrence for Arctic Staghorn Sculpin, Shorthorn Sculpin, Atlantic Seasnail, and Leatherfin Lumpsucker

MAP CODE	INTERVIEW CODE	SPECIES	MONTHS	COMMENTS
3_26	GF_03_1012	Arctic Staghorn Sculpin		
3_33	GF_03_1012	Atlantic Seasnail		Found at low tide, stuck to rocks
8_56	GF_08_1012	Atlantic Seasnail		
3_32	GF_03_1012	Leatherfin Lumpsucker	April	Found near seal hole
6_27	GF_06_1012	Leatherfin Lumpsucker	Jul, Aug	Seen in summer, about 15 cm in long
5_27	GF_05_1012	Shorthorn Sculpin		

Table 14. Twohorn Sculpin, Arctic Staghorn Sculpin, Shorhorn Sculpin, Bartail Seasnail, and Hamecon everywhere data

MAP CODE	INTERVIEW CODE	SPECIES	MONTHS	COMMENTS
3_27E	GF_03_1012	Arctic Staghorn Sculpin		
6_22E	GF_06_1012	Arctic Staghorn Sculpin		
8_55E	GF_08_1012	Bartail Seasnail	May to Aug	
1_62E	GF_01_1012	Hamecon		
1_61E	GF_01_1012	Shorthorn Sculpin		
2_24E	GF_02_1012	Shorthorn Sculpin		
3_28E	GF_03_1012	Shorthorn Sculpin		
4_17E	GF_04_1012	Shorthorn Sculpin		
5_28E	GF_05_1012	Shorthorn Sculpin		
6_24E	GF_06_1012	Shorthorn Sculpin		
7_53E	GF_07_1012	Shorthorn Sculpin	Year-round	
8_47E	GF_08_1012	Shorthorn Sculpin	Year-round	
6_23E	GF_06_1012	Twohorn Sculpin		

Figure 15. Probability of occurrence for Land-locked Char

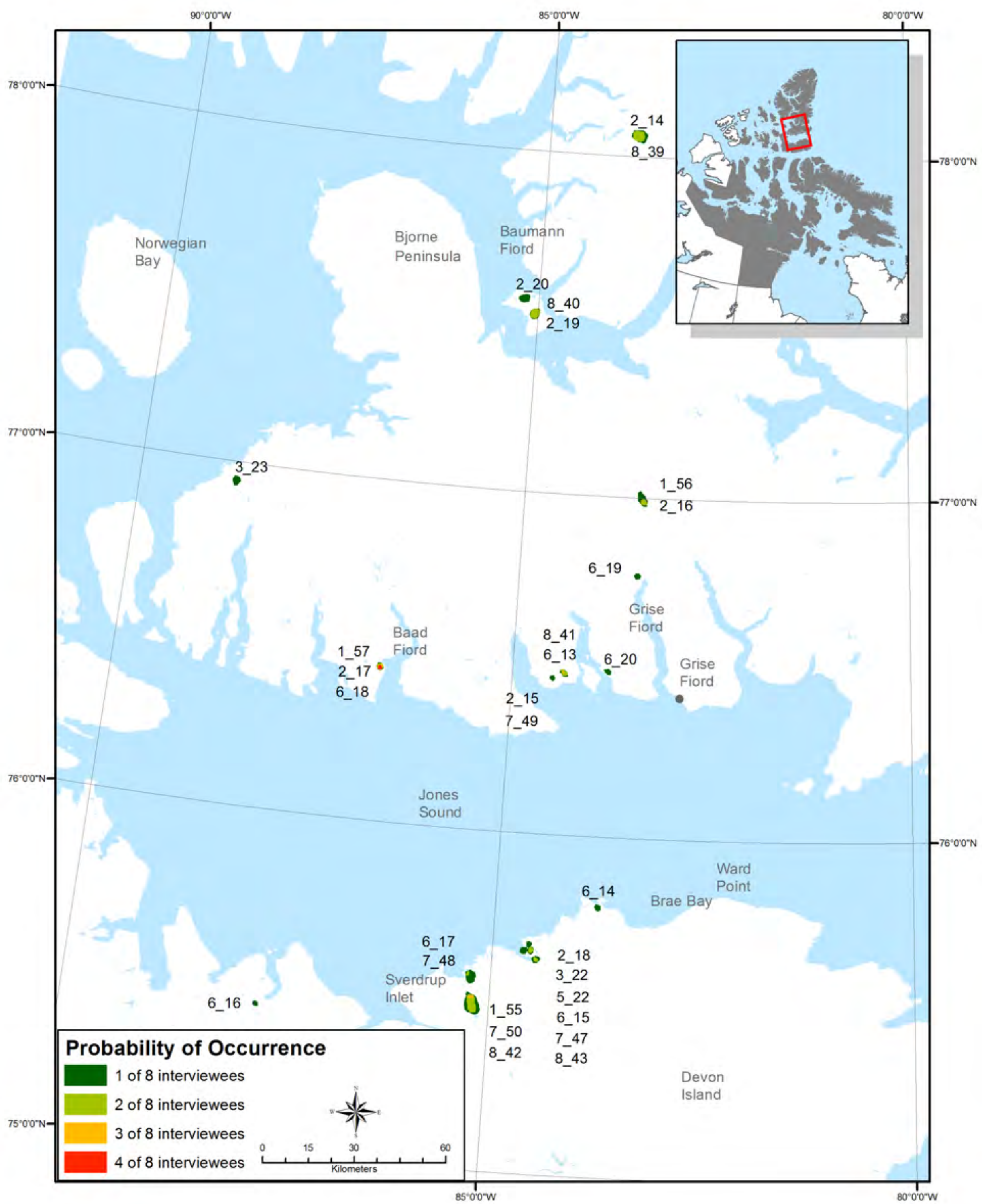


Table 15. Probability of occurrence for Land-locked Char

MAP CODE	INTERVIEW CODE	MONTHS	COMMENTS
1_55	GF_01_1012		
1_56	GF_01_1012		
1_57	GF_01_1012		
1_58	GF_01_1012		
2_14	GF_02_1012		
2_15	GF_02_1012		
2_16	GF_02_1012		Small ones here
2_17	GF_02_1012		
2_18	GF_02_1012		
2_19	GF_02_1012		
2_20	GF_02_1012		
3_22	GF_03_1012		
3_23	GF_03_1012		
3_24	GF_03_1012		
5_22	GF_05_1012	Mar to May	
6_13	GF_06_1012		Not fished anymore, small fish
6_14	GF_06_1012		Not fished anymore, small fish
6_15	GF_06_1012		Not fished anymore, small fish
6_16	GF_06_1012		Not fished anymore, small fish
6_17	GF_06_1012		Not fished anymore, small fish
6_18	GF_06_1012		Not fished anymore, small fish
6_19	GF_06_1012		Not fished anymore, small fish
6_20	GF_06_1012		Not fished anymore, small fish
7_47	GF_07_1012		
7_48	GF_07_1012		
7_49	GF_07_1012		
7_50	GF_07_1012		
8_39	GF_08_1012		
8_40	GF_08_1012		
8_41	GF_08_1012		
8_42	GF_08_1012		
8_43	GF_08_1012		

Figure 16. Areas of occurrence for Deep Sea King Crab, Crayfish, Mysid Shrimp, Northern Shrimp, Striped Shrimp, Amphipod, and Acorn Barnacle

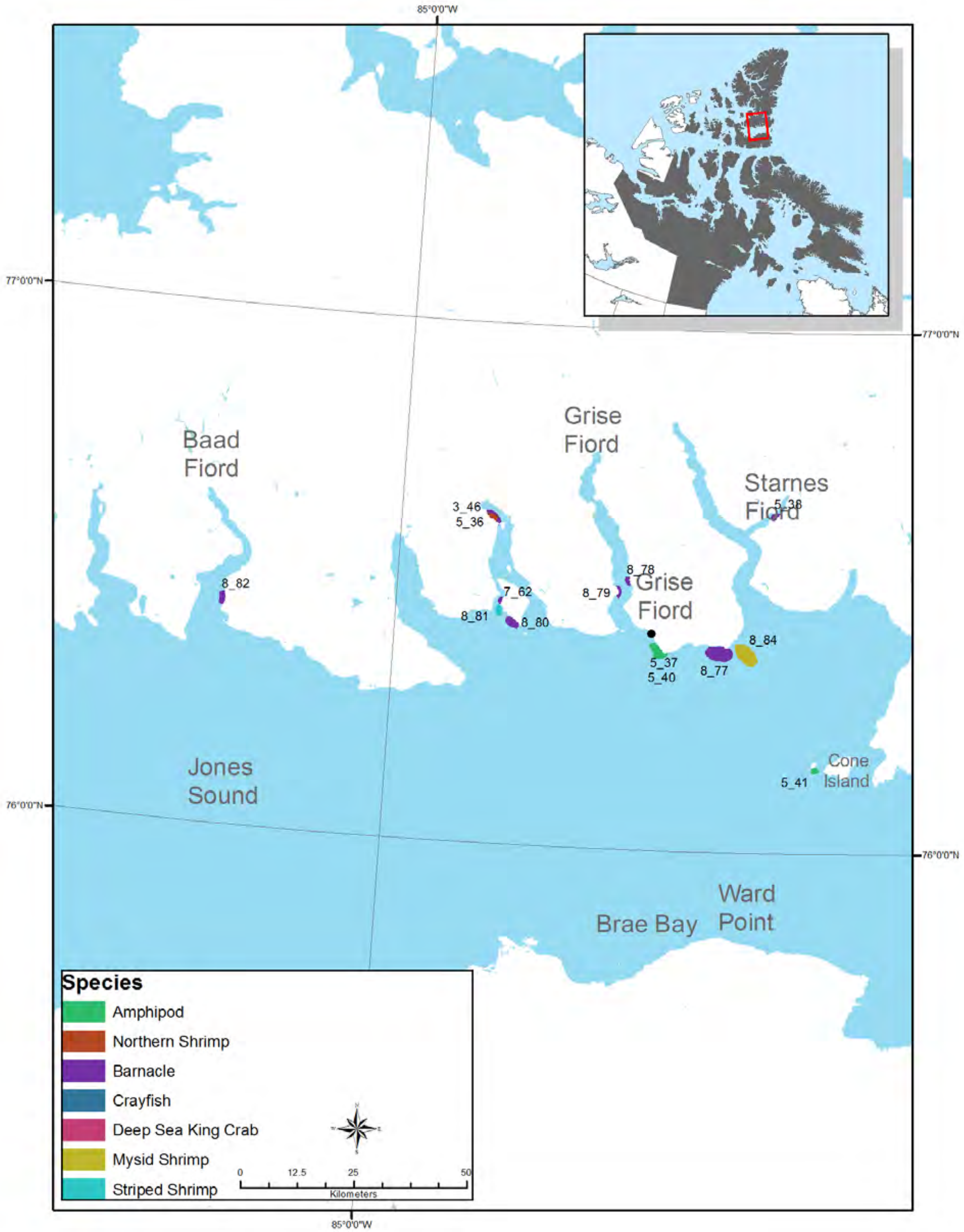


Table 16. Areas of occurrence for Deep Sea King Crab, Crayfish, Mysid Shrimp, Northern Shrimp, Striped Shrimp, Amphipod, and Acorn Barnacle

MAP CODE	INTERVIEW CODE	SPECIES	MONTHS	COMMENTS
3_45	GF_03_1012	Amphipod		
5_40	GF_05_1012	Amphipod		
5_41	GF_05_1012	Amphipod		
6_38	GF_06_1012	Amphipod	Year-round	
7_61	GF_07_1012	Amphipod		
5_36	GF_05_1012	Acorn Barnacle		
5_37	GF_05_1012	Acorn Barnacle		
5_38	GF_05_1012	Acorn Barnacle		
8_77	GF_08_1012	Acorn Barnacle		Found in same areas as clams
8_78	GF_08_1012	Acorn Barnacle		Found in same areas as clams
8_79	GF_08_1012	Acorn Barnacle		Found in same areas as clams
8_80	GF_08_1012	Acorn Barnacle		Found in same areas as clams
8_81	GF_08_1012	Acorn Barnacle		Found in same areas as clams
8_82	GF_08_1012	Acorn Barnacle		Found in same areas as clams
1_81	GF_01_1012	Crayfish		
5_42	GF_05_1012	Deep Sea King Crab	Jul, Aug	
8_84	GF_08_1012	Mysid Shrimp		
3_46	GF_03_1012	Northern Shrimp		Smaller, shells of these
7_62	GF_07_1012	Striped Shrimp	Jul, Aug	Found after a storm
1_82E	GF_01_1012	Amphipod		Everywhere
2_34E	GF_02_1012	Amphipod		Everywhere
4_22E	GF_04_1012	Amphipod	Apr to Jun	Everywhere. Found in seal holes
5_39E	GF_05_1012	Amphipod		Everywhere
8_83E	GF_08_1012	Amphipod		Everywhere
1_83E	GF_01_1012	Acorn Barnacle		Everywhere. Found on tidal flats

Figure 17. Areas of occurrence for Blue Mussel, Icelandic Scallop, Whelk, Naked Sea Butterfly, and Arctic Moonsnail

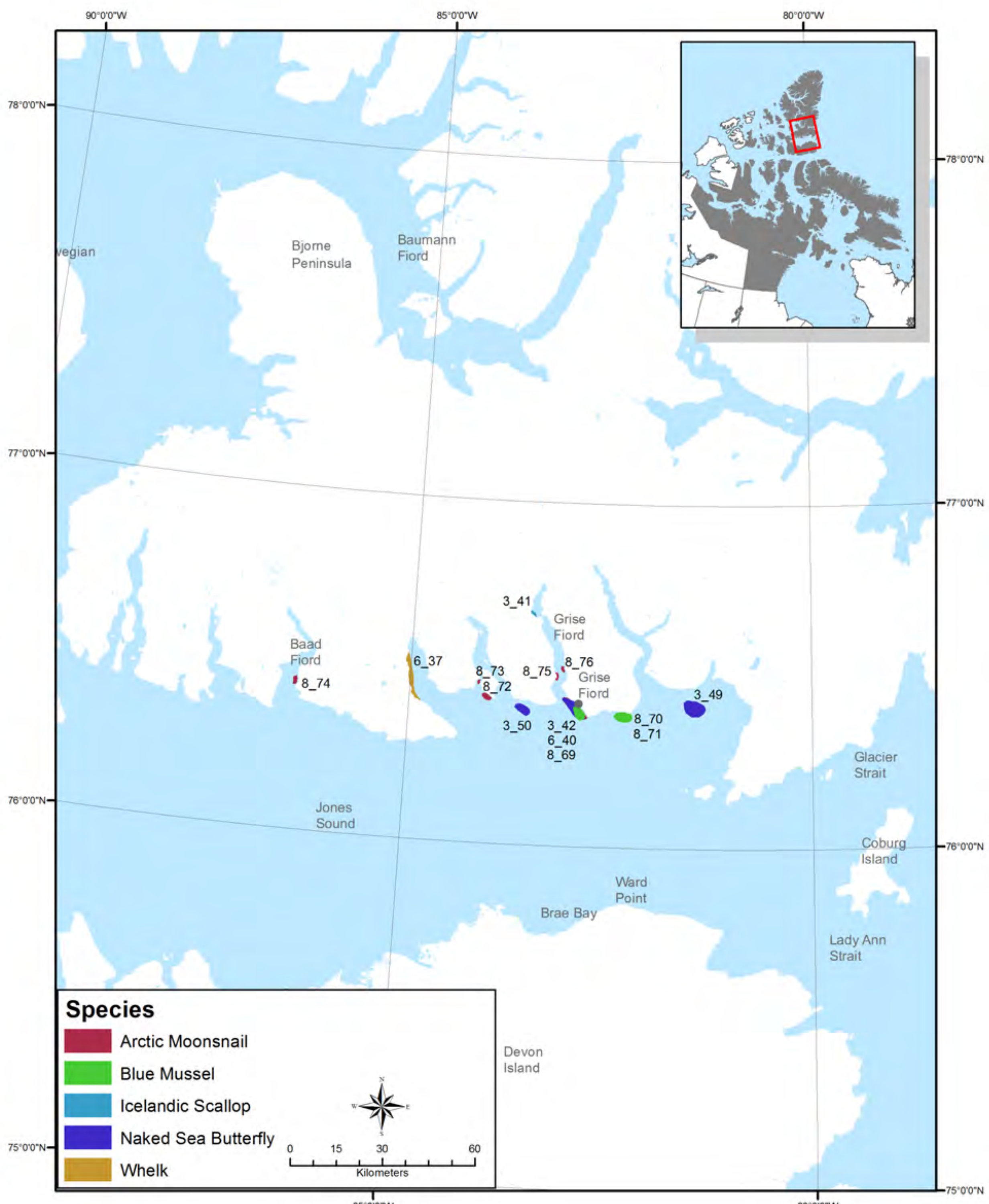


Table 17. Areas of occurrence for Blue Mussel, Icelandic Scallop, Whelk, Naked Sea Butterfly, and Arctic Moonsnail

MAP CODE	INTERVIEW CODE	SPECIES	MONTHS	COMMENTS
3_42	GF_03_1012	Arctic Moonsnail		
8_71	GF_08_1012	Arctic Moonsnail		
8_72	GF_08_1012	Arctic Moonsnail		
8_73	GF_08_1012	Arctic Moonsnail		
8_74	GF_08_1012	Arctic Moonsnail		
8_75	GF_08_1012	Arctic Moonsnail		
8_76	GF_08_1012	Arctic Moonsnail		
8_69	GF_08_1012	Blue Mussel		
8_70	GF_08_1012	Blue Mussel		
3_41	GF_03_1012	Icelandic Scallop		
3_49	GF_03_1012	Naked Sea Butterfly		
3_50	GF_03_1012	Naked Sea Butterfly		
5_46	GF_05_1012	Naked Sea Butterfly	Year-round	
6_40	GF_06_1012	Naked Sea Butterfly	October	
6_37	GF_06_1012	Whelk	Jul to Sep	

Table 18. Arctic Moonsnail, Cockle, Icelandic Scallop, Naked Sea Butterfly, Naked Shelled Sea Butterfly Tortoiseshell Limpet, and Whelk everywhere data

MAP CODE	INTERVIEW CODE	SPECIES	MONTHS	COMMENTS
3_43E	GF_03_1012	Arctic Moonsnail		
1_74E	GF_01_1012	Cockle		Found on shores and in walrus stomachs
2_29E	GF_02_1012	Cockle		Shells only on shore
3_40E	GF_03_1012	Cockle		Found in walrus stomachs
1_75E	GF_01_1012	Icelandic Scallop		
1_77E	GF_01_1012	Naked Sea Butterfly		
2_31E	GF_02_1012	Naked Sea Butterfly		
8_90E	GF_08_1012	Naked Sea Butterfly	Aug to Oct	
1_78E	GF_01_1012	Naked Shelled Sea Butterfly		
7_63E	GF_07_1012	Naked Shelled Sea Butterfly		
8_91E	GF_08_1012	Naked Shelled Sea Butterfly	Aug to Oct	
3_44E	GF_03_1012	Tortoiseshell Limpet		
1_76E	GF_01_1012	Whelk		
2_30E	GF_02_1012	Whelk		Shells only on shore

Figure 18. Probability of occurrence for Truncate Softshell Clam

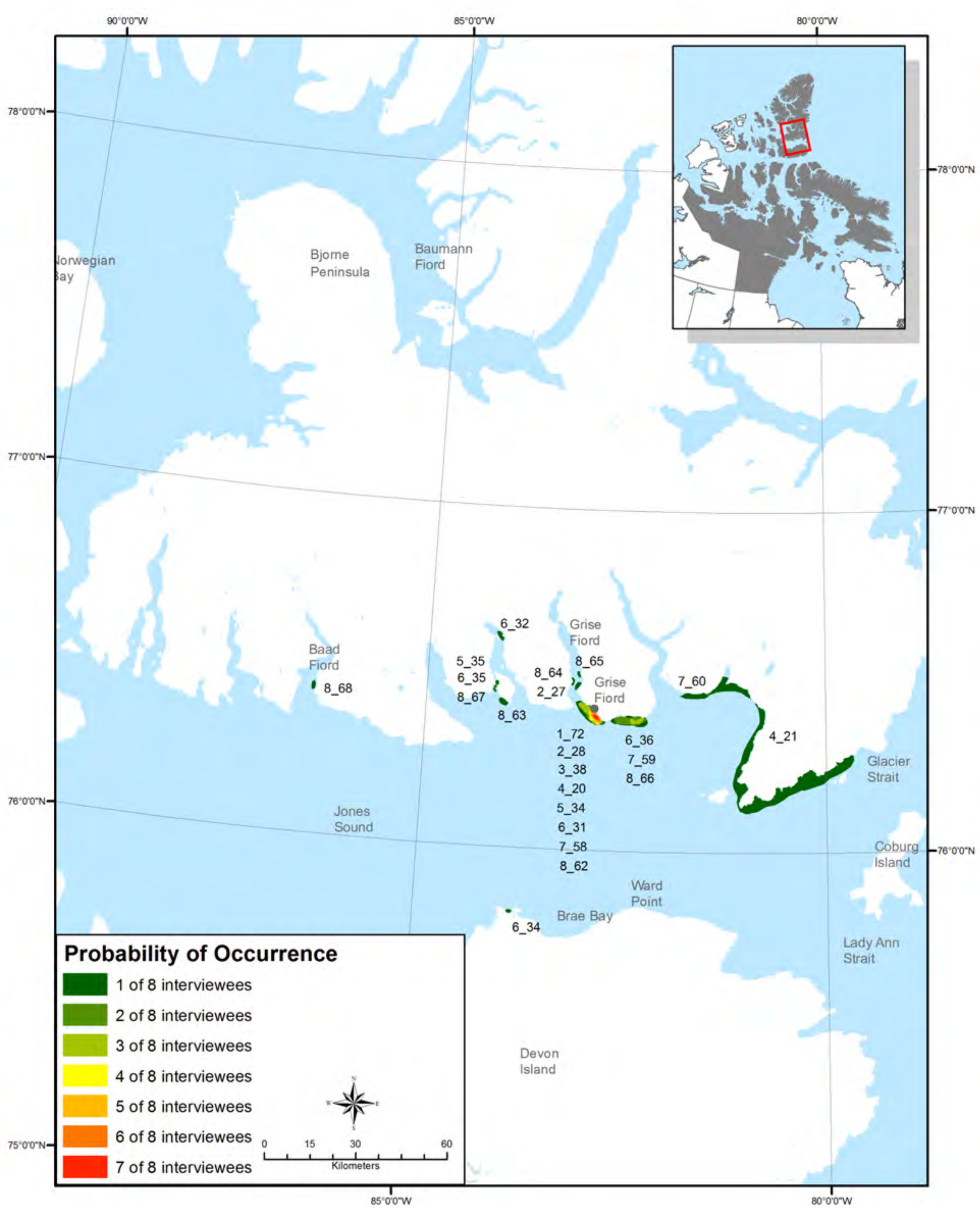


Table 19. Probability of occurrence for Truncate Softshell Clam

MAP CODE	INTERVIEW CODE	MONTHS	COMMENTS
1_72	GF_01_1012		
1_73	GF_01_1012		
2_27	GF_02_1012		
2_28	GF_02_1012		
3_38	GF_03_1012		
4_20	GF_04_1012		
4_21	GF_04_1012		Found in walrus stomachs
5_34	GF_05_1012	Jul to Sep	
5_35	GF_05_1012	Jul to Sep	
6_31	GF_06_1012	Jul to Sep	
6_32	GF_06_1012	Jul to Sep	
6_33	GF_06_1012	Jul to Sep	
6_34	GF_06_1012	Jul to Sep	
6_35	GF_06_1012	Jul to Sep	
6_36	GF_06_1012	Jul to Sep	
7_58	GF_07_1012		
7_59	GF_07_1012		
7_60	GF_07_1012		
8_62	GF_08_1012	Jul, Aug	
8_63	GF_08_1012	Jul, Aug	
8_64	GF_08_1012	Jul, Aug	
8_65	GF_08_1012	Jul, Aug	
8_66	GF_08_1012	Jul, Aug	
8_67	GF_08_1012	Jul, Aug	
8_68	GF_08_1012		
3_39E	GF_03_1012		Everywhere

Figure 19. Areas of occurrence for Polar Sea Star, Northern Atlantic Sea Cucumber, Pale Sea Urchin, and Orange Finger Sponge

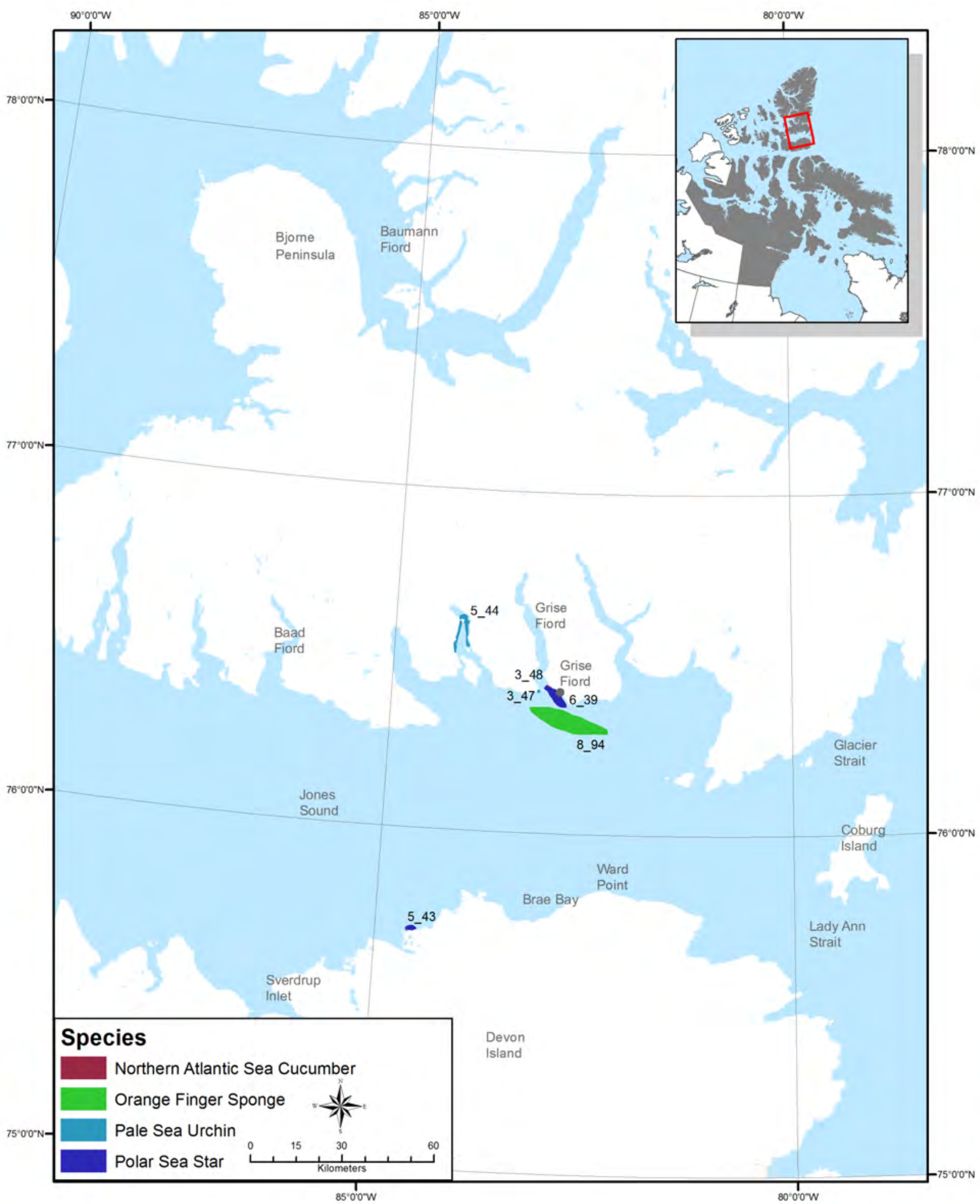


Table 20. Areas of occurrence for Polar Sea Star, Northern Atlantic Sea Cucumber, Pale Sea Urchin, and Orange Finger Sponge

MAP CODE	INTERVIEW CODE	SPECIES	MONTHS	COMMENTS
5_43	GF_05_1012	Polar Sea Star	Jul, Aug	
6_39	GF_06_1012	Polar Sea Star		Found on beaches
3_48	GF_03_1012	Northern Atlantic Sea Cucumber		Also found in bearded seal stomachs
3_47	GF_03_1012	Pale Sea Urchin		Climb up his seal nets
5_44	GF_05_1012	Pale Sea Urchin		
5_45	GF_05_1012	Pale Sea Urchin		
8_94	GF_08_1012	Orange Finger Sponge		Seen when turbot fishing

Table 21. Northern Basket Star, Mud Star, Polar Sea Star, Pale Sea Urchin, Ctenophore, Jellyfish, Sea Anemone, and Plankton Worm everywhere data

MAP CODE	INTERVIEW CODE	SPECIES	MONTHS	COMMENTS
8_87E	GF_08_1012	Northern Basket Star		Found in deep water. Caught while turbot long lining.
8_86E	GF_08_1012	Mud Star		Found on muddy bottom
1_80E	GF_01_1012	Polar Sea Star		
2_33E	GF_02_1012	Polar Sea Star		
8_85E	GF_08_1012	Polar Sea Star		
1_79E	GF_01_1012	Pale Sea Urchin		
2_32E	GF_02_1012	Pale Sea Urchin		
4_23E	GF_04_1012	Pale Sea Urchin		Found in shallow places. Caught in seal nets. Found in seal/walrus stomachs.
8_88E	GF_08_1012	Pale Sea Urchin		
1_85E	GF_01_1012	Ctenophore		
2_36E	GF_02_1012	Ctenophore		
1_84E	GF_01_1012	Jellyfish		
2_35E	GF_02_1012	Jellyfish		Only small ones
3_51E	GF_03_1012	Jellyfish		
4_24E	GF_04_1012	Jellyfish	Aug, Sep	Red colored, large (30 cm), with small ones around it. Found on beaches.
6_41E	GF_06_1012	Jellyfish		
7_64E	GF_07_1012	Jellyfish		
8_92E	GF_08_1012	Jellyfish		
8_89E	GF_08_1012	Sea Anemone		Found in rocky areas, not too deep
8_93E	GF_08_1012	Plankton Worm		Found in shallows

Figure 20. Probability of occurrence for Bearded Seal

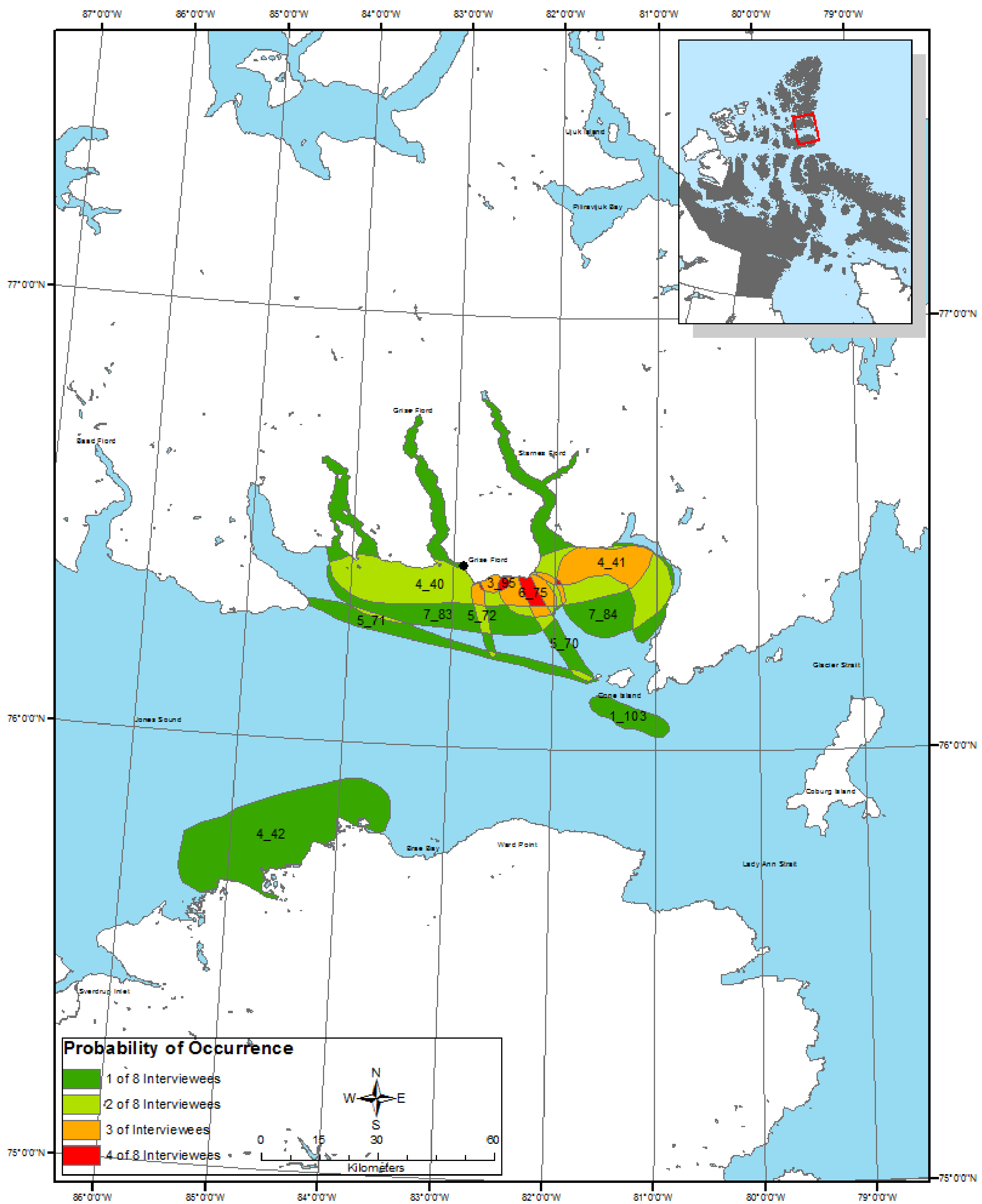


Table 22. Probability of occurrence for Bearded Seal

MAP CODE	INTERVIEW CODE	MONTHS	COMMENTS
1_103	GF_01_1012		
3_95	GF_03_1012	May, Jun	Sometimes larger groups here
4_40	GF_04_1012	Jun to Sep	
4_41	GF_04_1012	Feb to May	Breathing holes
4_42	GF_04_1012	Feb to May	Breathing holes
5_70	GF_05_1012	Jun, Jul	Lots along leads here
5_71	GF_05_1012	Jun, Jul	Lots along leads here
5_72	GF_05_1012	Jun, Jul	Lots along leads here
5_73	GF_05_1012	Mar to Sep	
6_75	GF_06_1012		More around this year
7_83	GF_07_1012	Apr to Sep	
7_84	GF_07_1012	Apr to Sep	
1_102E	GF_01_1012		Everywhere
2_64E	GF_02_1012	Jun to Oct	Everywhere
3_94E	GF_03_1012		Everywhere. Mainly near land or in fiords
4_39E	GF_04_1012	Year-round	Everywhere
6_74E	GF_06_1012	Apr to Jun	Everywhere. More around this year
8_127E	GF_08_1012		Everywhere

Figure 21. Areas of occurrence for Harbour Seal, and Hooded/Crested Seal

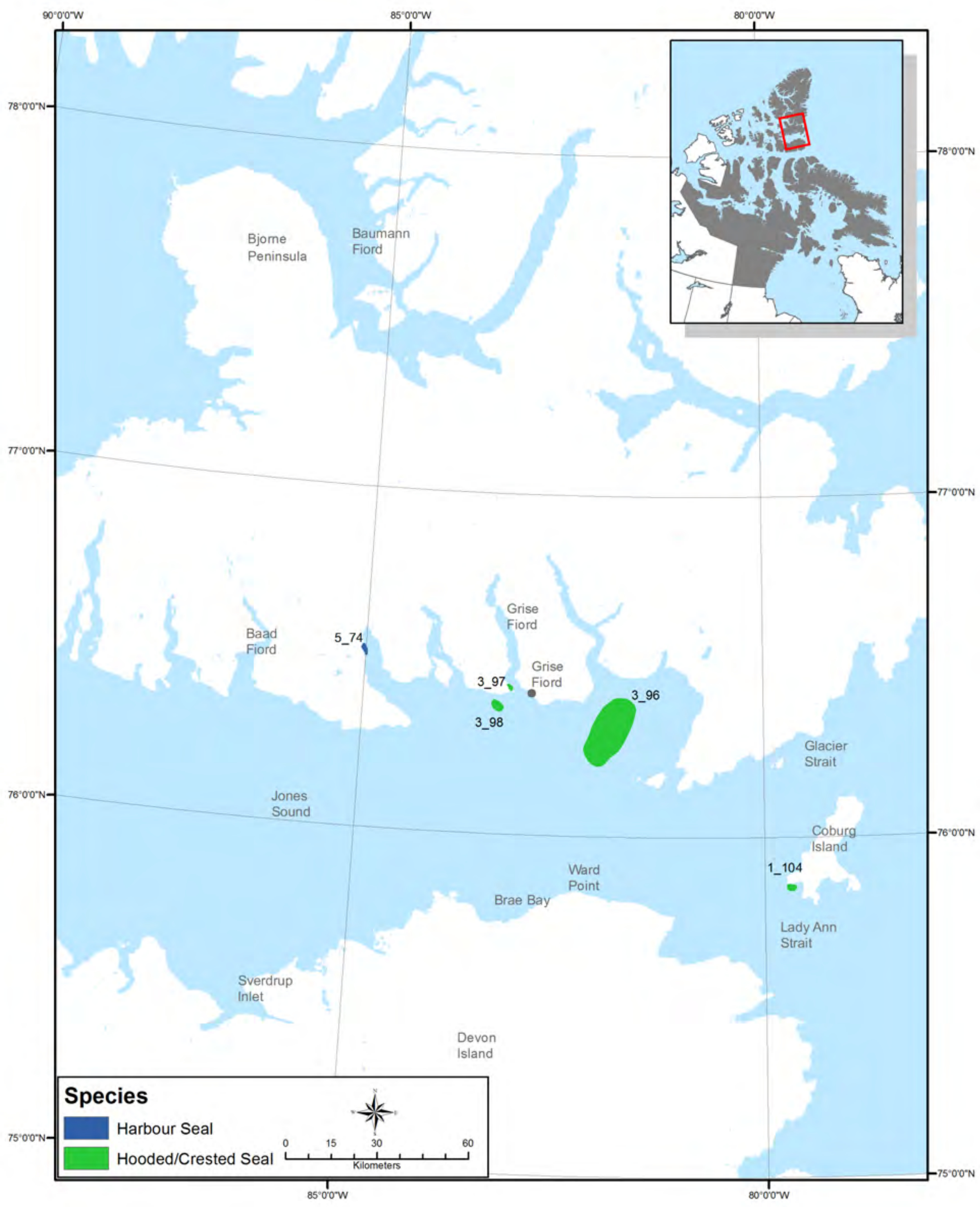


Table 23. Areas of occurrence for Harbour Seal, and Hooded/Crested Seal

MAP CODE	INTERVIEW CODE	SPECIES	MONTHS	COMMENTS
5_74	GF_05_1012	Harbour Seal	Jul, Aug	Possibly a harbour seal. Caught in glacier runoff area.
1_104	GF_01_1012	Hooded/Crested Seal		Not common
3_96	GF_03_1012	Hooded/Crested Seal	August	Not common
3_97	GF_03_1012	Hooded/Crested Seal		Not common
3_98	GF_03_1012	Hooded/Crested Seal		Not common
8_128	GF_08_1012	Hooded/Crested Seal	Jul to Sep	

Figure 22. Probability of occurrence for Harp Seal

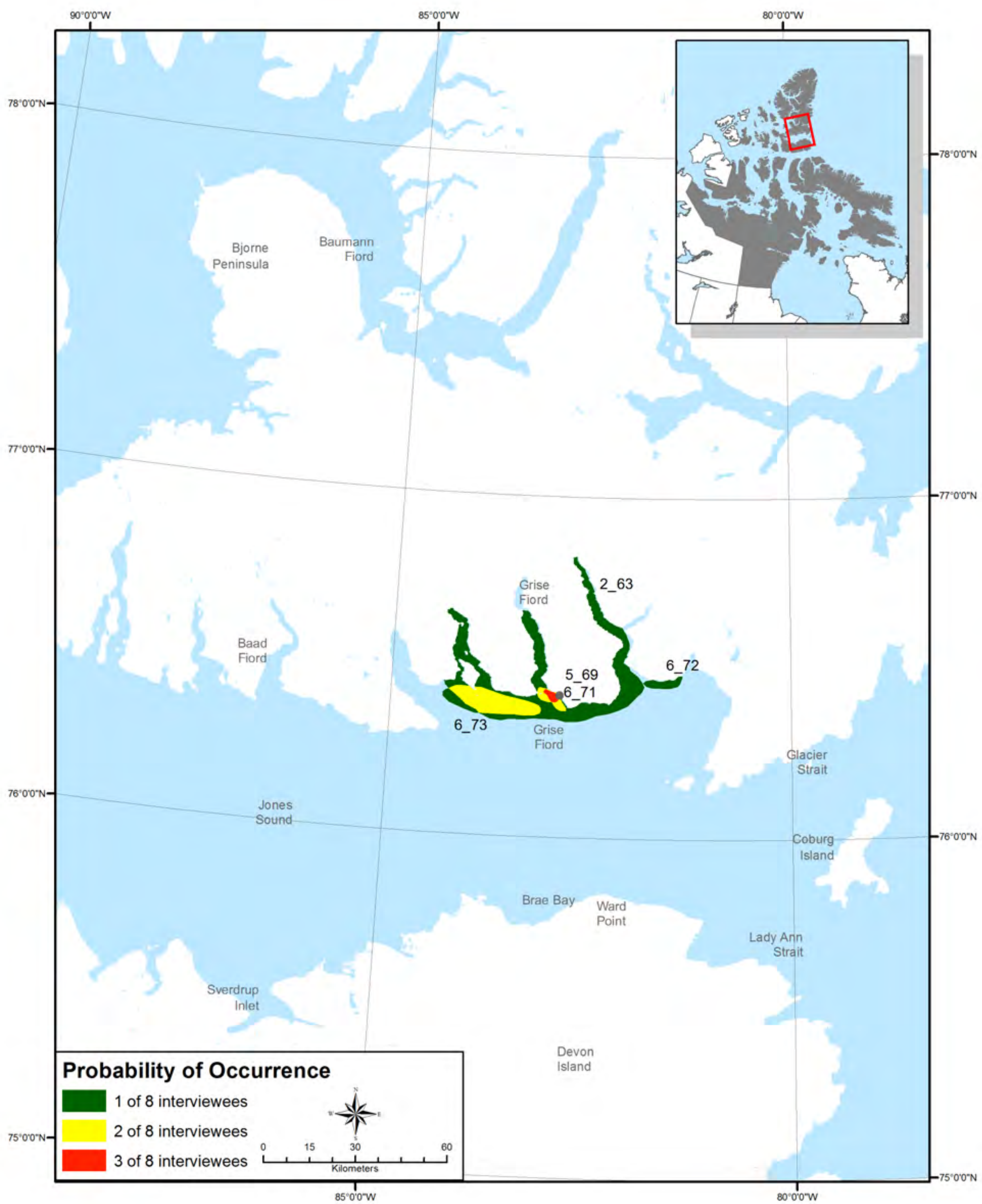


Table 24. Probability of occurrence for Harp Seal

MAP CODE	INTERVIEW CODE	MONTHS	COMMENTS
2_63	GF_02_1012	Jun to Oct	
6_71	GF_06_1012	Jul to Oct	Not many this summer
6_72	GF_06_1012	Jul to Oct	Not many this summer
6_73	GF_06_1012	Jul to Oct	Not many this summer
1_101E	GF_01_1012		Everywhere. Migrate to open water in winter. Less this summer than usual
2_62E	GF_02_1012		Everywhere
3_93E	GF_03_1012	Jul to Sep	Everywhere
4_38E	GF_04_1012	Jul to Oct	Everywhere. Fewer this year
5_69E	GF_05_1012		Everywhere. Fewer around this summer
7_82E	GF_07_1012	Jul to Sep	Everywhere
8_126E	GF_08_1012	Jul to Oct	Everywhere

Figure 23. Probability of occurrence for Beluga

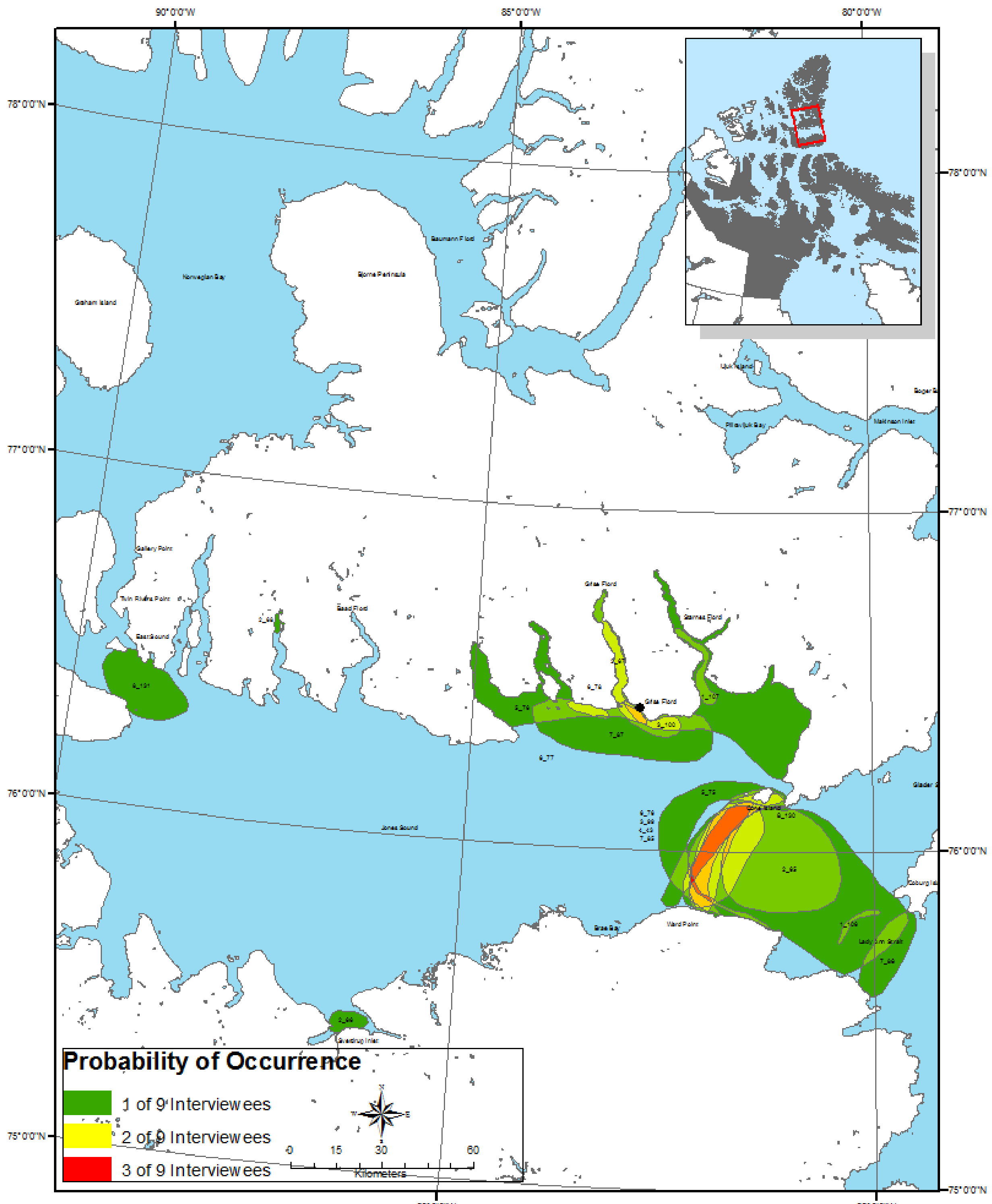


Table 25. Probability of occurrence for Beluga

MAP CODE	INTERVIEW CODE	MONTHS	COMMENTS
1_106	GF_01_1012	Feb to May	
1_107	GF_01_1012	September	
1_108	GF_01_1012	September	
2_65	GF_02_1012	Jan to Mar	
2_66	GF_02_1012	Jul to Sep	
2_67	GF_02_1012		There used to be more here, but less now
2_68	GF_02_1012	Jul to Sep	
3_99	GF_03_1012	Apr to Jun	Found at floe edge in spring
3_100	GF_03_1012	Jul, Aug	
3_101	GF_03_1012	July	
4_43	GF_04_1012	Jan to Jun	
5_75	GF_05_1012	Mar to Jul	Fewer beluga this year.
5_76	GF_05_1012	Aug to Oct	Fewer beluga this year.
6_76	GF_06_1012	Apr to Jun	Less in summer, still lots at floe edge in winter/ spring
6_77	GF_06_1012	Jul to Sep	Less in this area now
6_78	GF_06_1012	Jul to Sep	Less in this area now
7_85	GF_07_1012	Apr to Jun	
7_86	GF_07_1012	Apr to Jun	
7_87	GF_07_1012	Jul to Sep	
8_130	GF_08_1012	Jan to May	
8_131	GF_08_1012	Jan to May	
1_105E	GF_01_1012		Everywhere
8_129E	GF_08_1012	Year-round	Everywhere. Usually found in small groups

Figure 24. Migration routes for Beluga

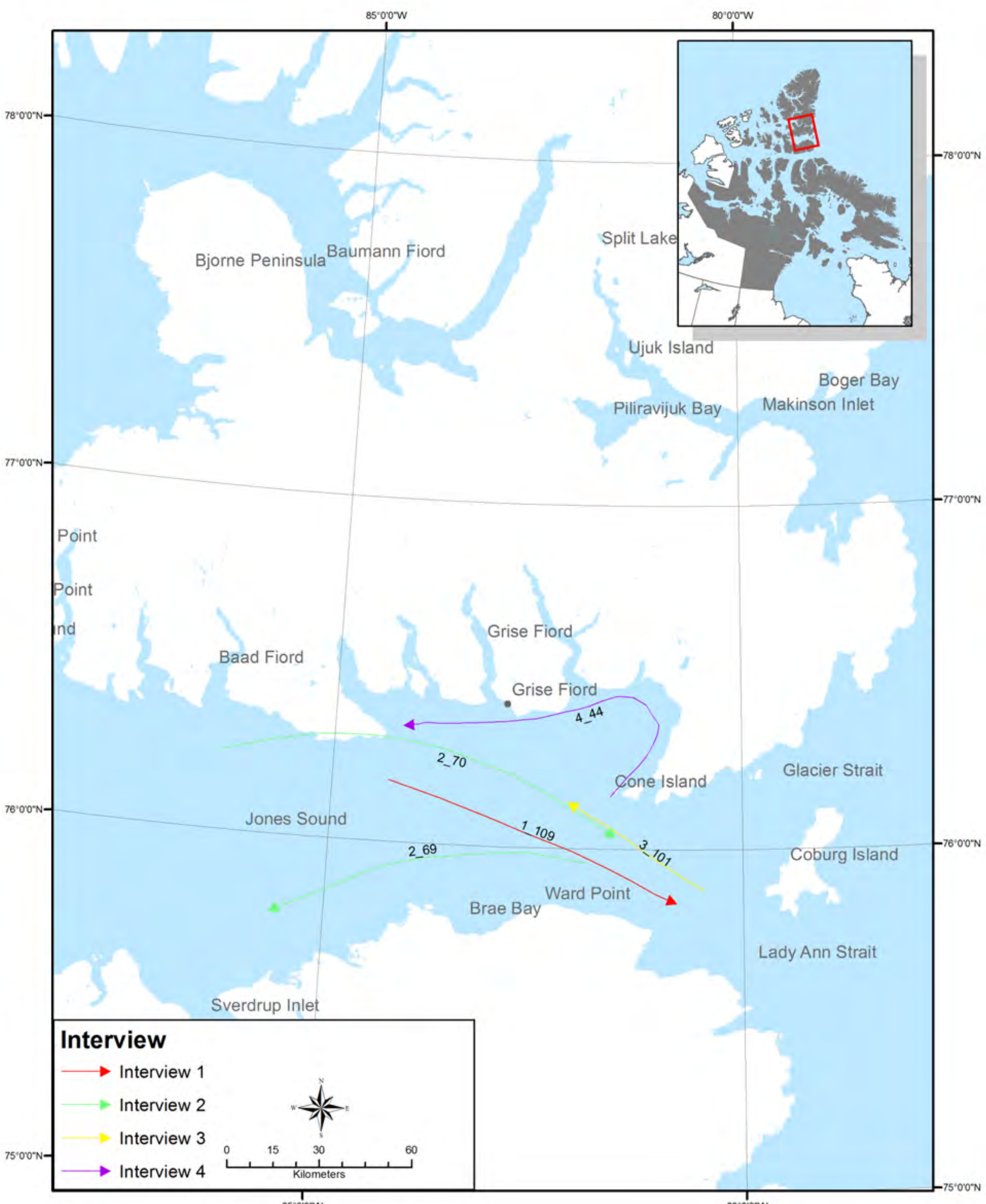


Table 26. Migration routes for Beluga

MAP CODE	INTERVIEW CODE	MONTHS	COMMENTS
1_109M	GF_01_1012		Migrate to floe edge in winter
2_69M	GF_02_1012		Spring migration route
2_70M	GF_02_1012	Sep, Oct	Fall migration route
4_44M	GF_04_1012	Jul, Aug	Migration route (following narwhal)

Figure 25. Areas of occurrence for Bowhead Whale, and Common Minke Whale

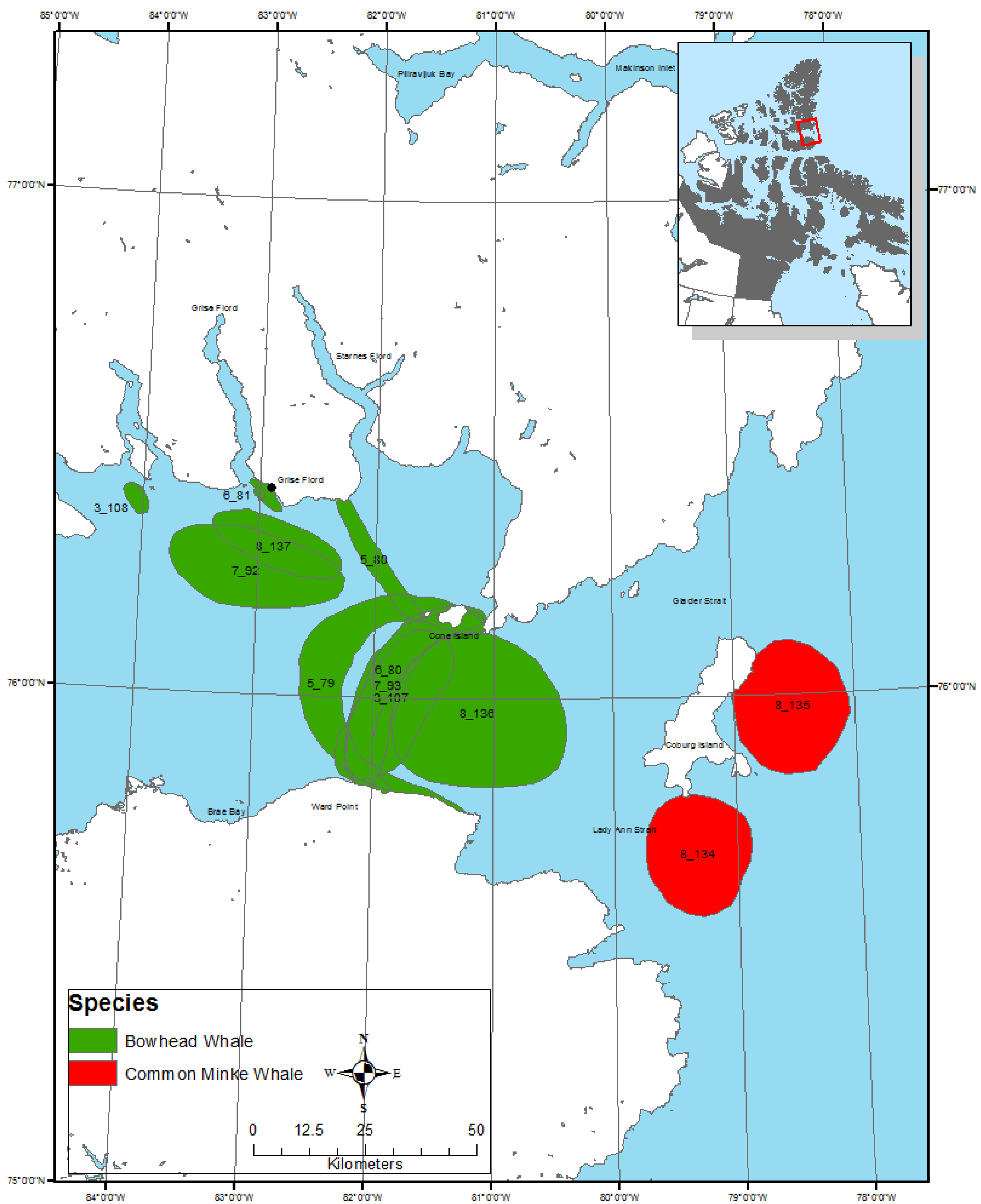


Table 27. Areas of occurrence for Bowhead Whale, and Common Minke Whale

MAP CODE	INTERVIEW CODE	SPECIES	MONTHS	COMMENTS
2_74	GF_02_1012	Bowhead Whale	August	
3_107	GF_03_1012	Bowhead Whale	Apr to Jun	Fairly rare in the area
3_108	GF_03_1012	Bowhead Whale	Jul, Aug	Fairly rare in the area
5_79	GF_05_1012	Bowhead Whale	Mar to Jun	
5_80	GF_05_1012	Bowhead Whale		First time he's ever seen one on a lead
6_80	GF_06_1012	Bowhead Whale	Apr, May	
6_81	GF_06_1012	Bowhead Whale	Jul, Aug	
7_92	GF_07_1012	Bowhead Whale	Apr, May	If floe edge is in this area
7_93	GF_07_1012	Bowhead Whale	Apr, May	If floe edge is in this area
8_136	GF_08_1012	Bowhead Whale	Jun to Sep	
8_137	GF_08_1012	Bowhead Whale	Jun to Sep	
8_134	GF_08_1012	Common Minke Whale	Year-round	
8_135	GF_08_1012	Common Minke Whale	Year-round	

Figure 26. Probability of occurrence for Narwhal

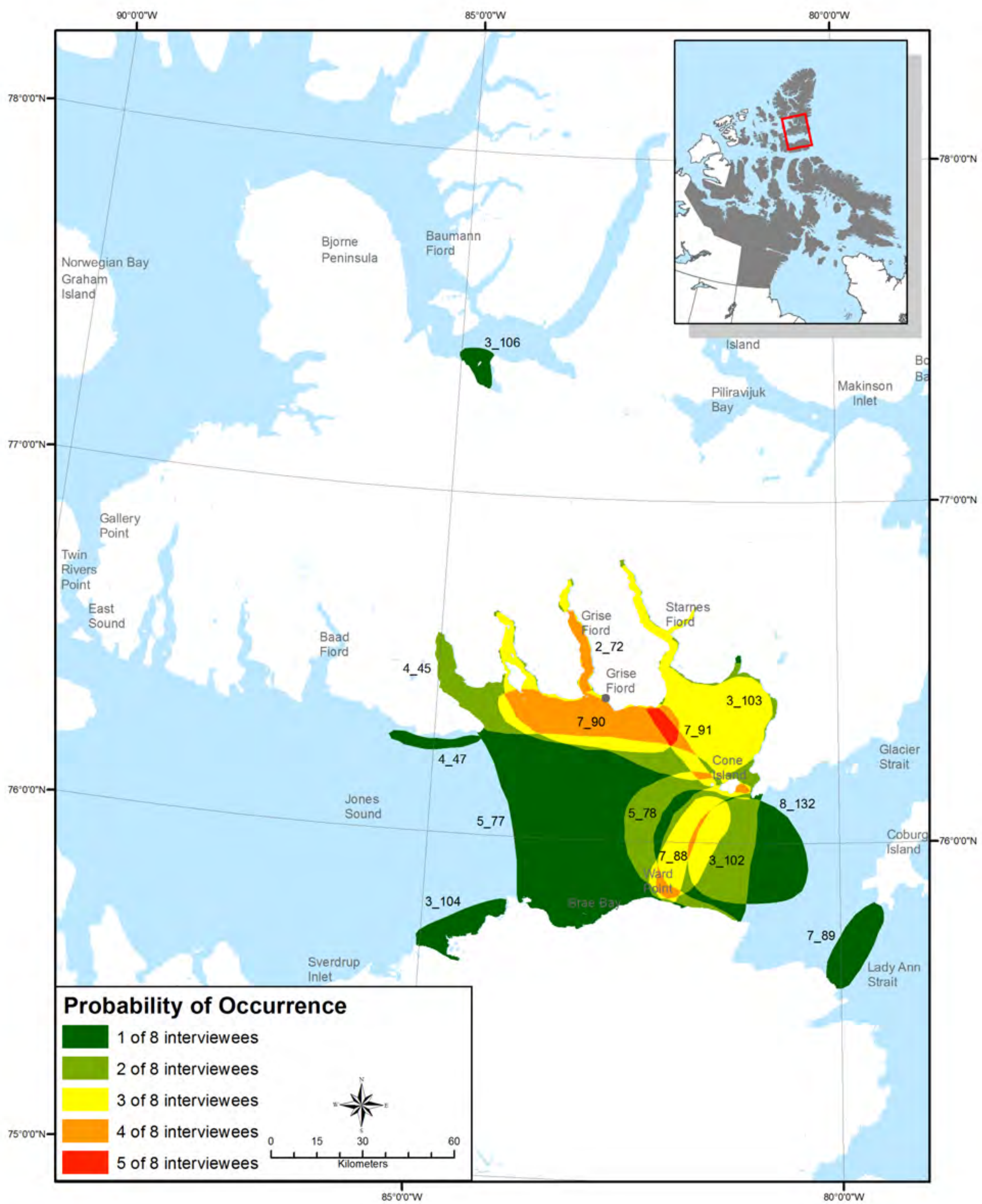


Table 28. Probability of occurrence for Narwhal

MAP CODE	INTERVIEW CODE	MONTHS	COMMENTS
2_72	GF_02_1012	Jul to Sep	
3_102	GF_03_1012	Apr to Jun	Found at floe edge in spring
3_103	GF_03_1012	Jul, Aug	
3_104	GF_03_1012	Jul, Aug	
3_106	GF_03_1012	Jul, Aug	
4_45	GF_04_1012	Jul to Sep	
4_47	GF_04_1012	Jul to Sep	
5_77	GF_05_1012	Mar to Oct	Lots around.
5_78	GF_05_1012	Mar to Jun	Follow leads in from the floe edge toward town. Lots around.
7_88	GF_07_1012	Apr, May	
7_89	GF_07_1012	Apr, May	
7_90	GF_07_1012	Apr to Aug	
7_91	GF_07_1012	Apr to Jun	
8_132	GF_08_1012	Jan to May	
1_110E	GF_01_1012		Everywhere
6_79E	GF_06_1012	Apr to Oct	Everywhere. More narwhal now
8_133E	GF_08_1012	Jul to Oct	Everywhere. Stable numbers

Figure 27. Migration routes for Narwhal

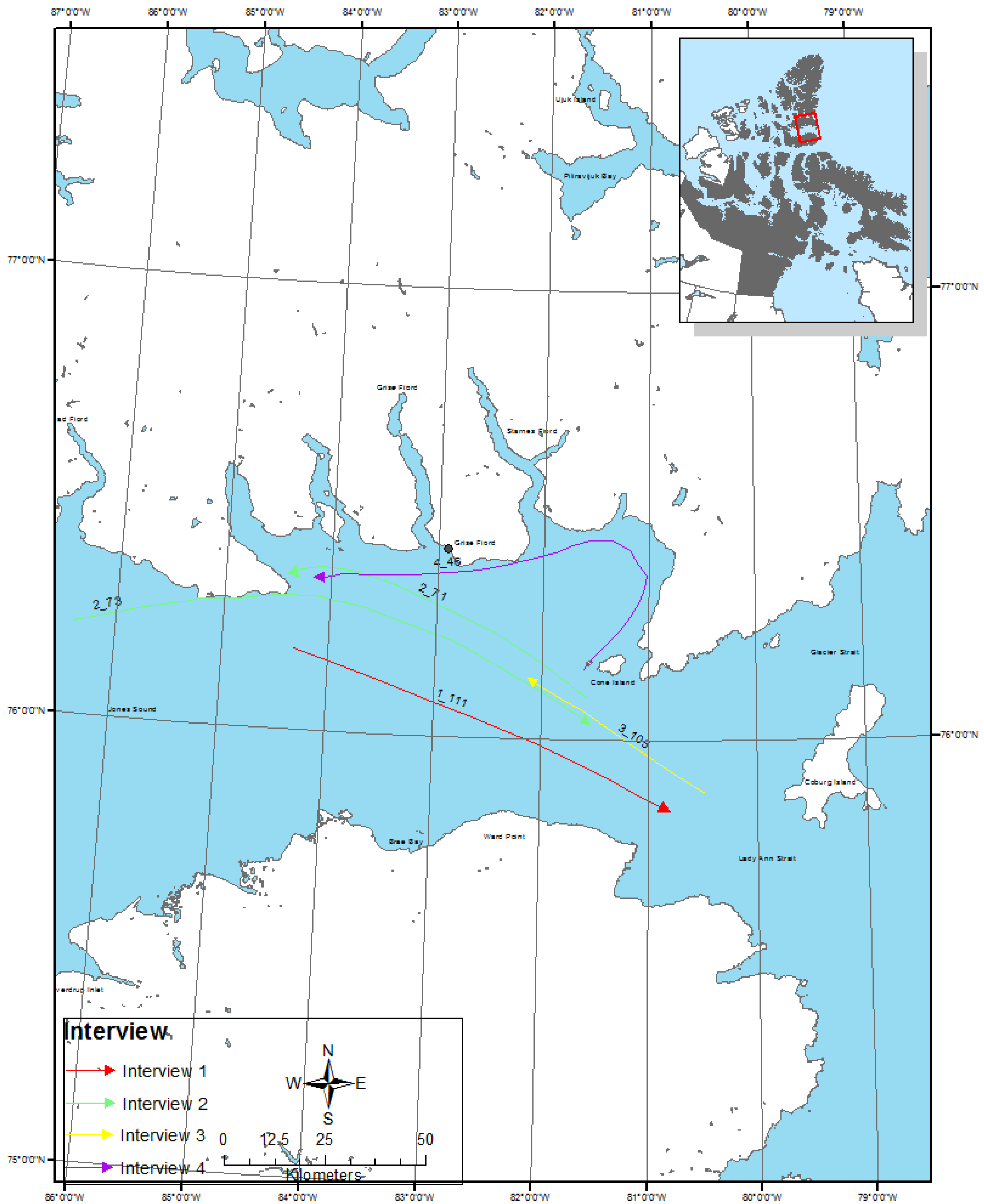


Table 29. Migration routes for Narwhal

MAP CODE	INTERVIEW CODE	MONTHS	COMMENTS
1_111M	GF_01_1012		Migrate to floe edge in winter
2_71M	GF_02_1012	Jun, Jul	Spring migration
2_73M	GF_02_1012	Sep, Oct	
3_105M	GF_03_1012	Jun, Jul	Narwhal migration
4_46M	GF_04_1012	Jul, Aug	Migration route

Figure 28. Probability of occurrence Polar Bear

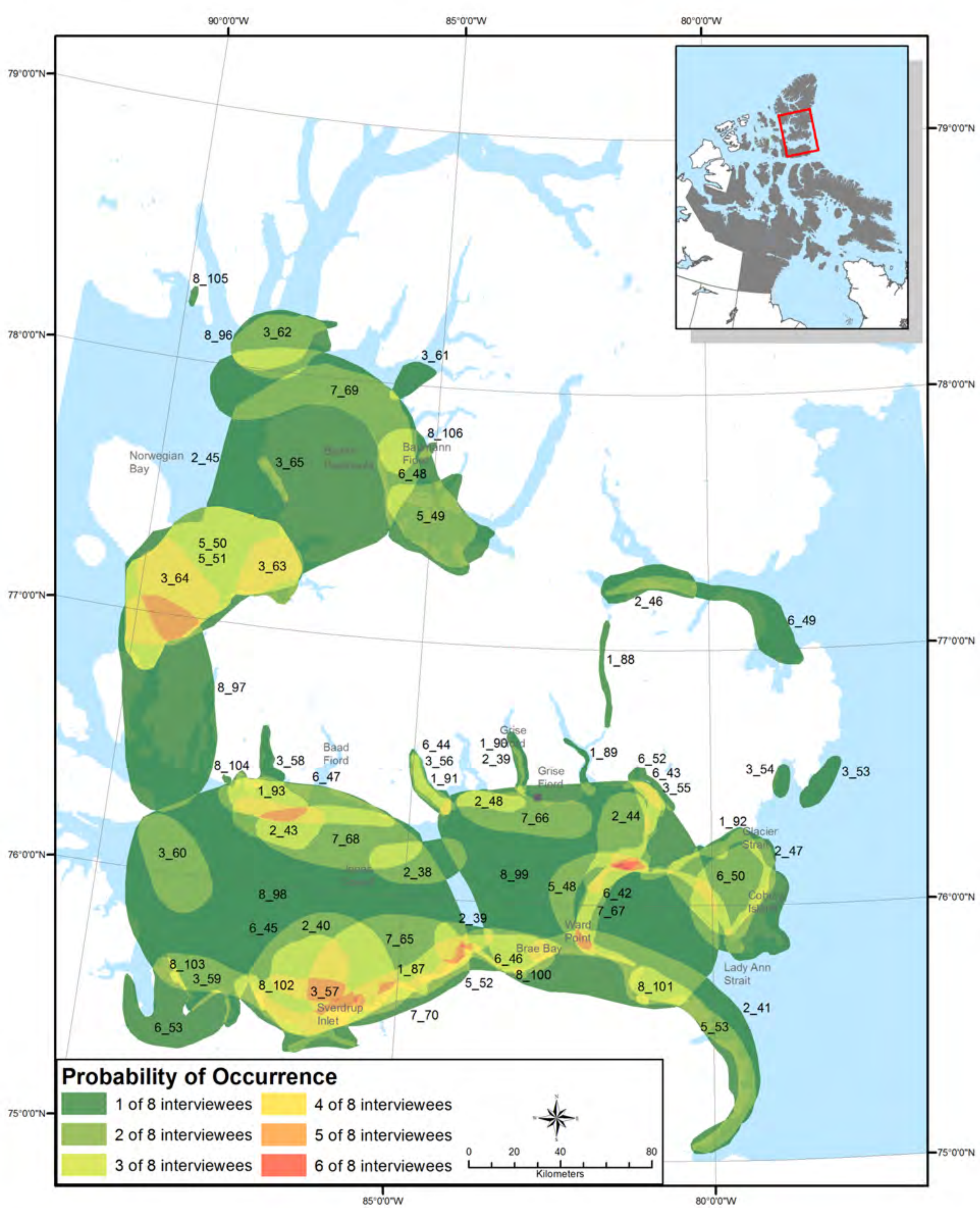


Table 30. Probability of occurrence Polar Bear

MAP CODE	INTERVIEW CODE	MONTHS	COMMENTS
1_87	GF_01_1012	Jul, Aug	Bears move towards the east here
1_88	GF_01_1012		Bears follow this route all year
1_89	GF_01_1012	Mar, Apr	Bears hunt seal pups here
1_90	GF_01_1012	Mar, Apr	Bears hunt seal pups here
1_91	GF_01_1012	Mar, Apr	Bears hunt seal pups here
1_92	GF_01_1012	Mar to Jun	
1_93	GF_01_1012		
2_38	GF_02_1012	Mar to Jun	
2_39	GF_02_1012	Mar to Jun	
2_40	GF_02_1012	Mar to Jun	
2_41	GF_02_1012	Jul to Sep	
2_43	GF_02_1012	Mar to May	
2_44	GF_02_1012	Mar to May	
2_45	GF_02_1012	Mar to May	
2_46	GF_02_1012	Mar to May	
2_47	GF_02_1012	Mar, Apr	
2_48	GF_02_1012	Oct, Nov	When ice is forming
3_53	GF_03_1012	Apr, May	
3_54	GF_03_1012	April	
3_55	GF_03_1012	April	
3_56	GF_03_1012	April	They hunt seal pups here
3_57	GF_03_1012	April	
3_58	GF_03_1012	April	
3_59	GF_03_1012	April	
3_60	GF_03_1012	April	
3_61	GF_03_1012	April	
3_62	GF_03_1012	April	
3_63	GF_03_1012	April	
3_64	GF_03_1012	April	
3_65	GF_03_1012	Mar, Apr	

MAP CODE	INTERVIEW CODE	MONTHS	COMMENTS
5_48	GF_05_1012	Mar to Jun	
5_49	GF_05_1012	Mar to Jun	
5_50	GF_05_1012	Mar to Jun	Bigger bears here
5_51	GF_05_1012	Mar to May	
5_52	GF_05_1012	Mar to May	
5_53	GF_05_1012	Jul to Sep	
6_42	GF_06_1012	Mar to Jun	
6_43	GF_06_1012	Apr to Jun	
6_44	GF_06_1012	Apr to Jun	
6_45	GF_06_1012	Year-round	
6_46	GF_06_1012	Year-round	
6_47	GF_06_1012	Apr to Jun	
6_48	GF_06_1012	Apr to Jun	
6_49	GF_06_1012	Apr to Jun	
6_50	GF_06_1012	Apr to Jun	
6_51	GF_06_1012		Migration routes
6_52S	GF_06_1012	Mar to May	
6_53S	GF_06_1012	Mar to May	
7_65	GF_07_1012	April, May	
7_66	GF_07_1012	Jan to May	
7_67	GF_07_1012	Mar to May	
7_68	GF_07_1012	Mar to May	
7_69	GF_07_1012	Mar to May	
7_70S	GF_07_1012	Mar, Apr	
8_96	GF_08_1012	Mar to May	
8_97	GF_08_1012		
8_98	GF_08_1012		
8_99	GF_08_1012		
8_100S	GF_08_1012	March	
8_101S	GF_08_1012	March	

MAP CODE	INTERVIEW CODE	MONTHS	COMMENTS
8_102S	GF_08_1012	March	
8_103S	GF_08_1012	March	
8_104S	GF_08_1012	March	
8_105S	GF_08_1012	March	
8_106S	GF_08_1012	March	
1_86E	GF_01_1012		Everywhere. Lots on Devon Island in summer
2_37E	GF_02_1012	Year-round	Everywhere
3_52E	GF_03_1012		Everywhere
4_25E	GF_04_1012	Year-round	Everywhere
5_47E	GF_05_1012		Everywhere
8_95E	GF_08_1012	Year-round	Everywhere

Figure 29. Migration routes for Polar Bear

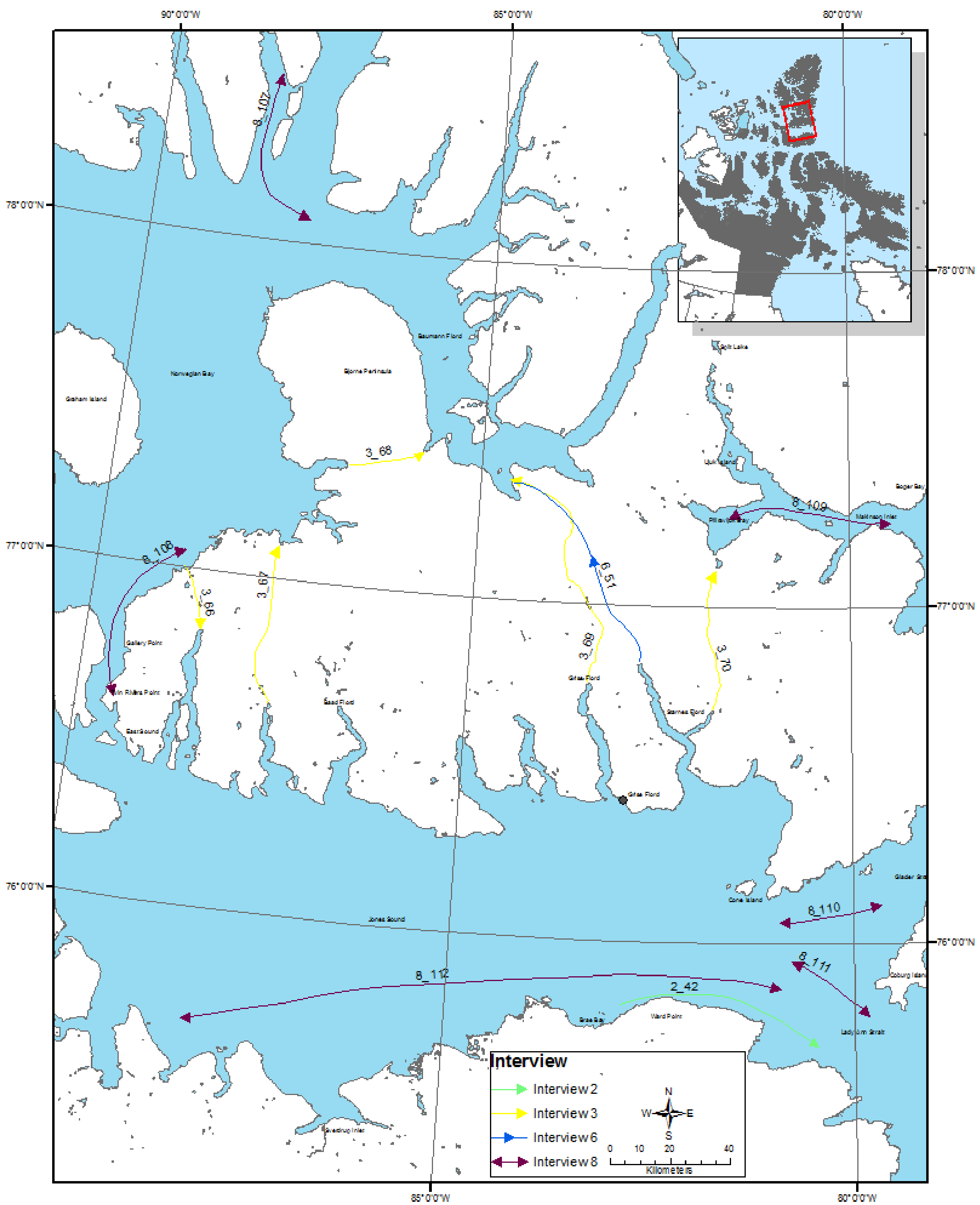


Table 31. Migration routes for Polar Bear

MAP CODE	INTERVIEW CODE	MONTHS	COMMENTS
2_42M	GF_02_1012	Jul to Sep	Migration route (west to east)
3_66M	GF_03_1012		Migration route
3_67M	GF_03_1012		Migration route
3_68M	GF_03_1012		Migration route
3_69M	GF_03_1012		Migration route
3_70M	GF_03_1012		Migration route
8_107M	GF_08_1012		Migration route
8_108M	GF_08_1012		Migration route
8_109M	GF_08_1012		Migration route
8_110M	GF_08_1012		Migration route
8_111M	GF_08_1012		Migration route
8_112M	GF_08_1012		Migration route

Figure 30. Probability of occurrence for Ringed Seal

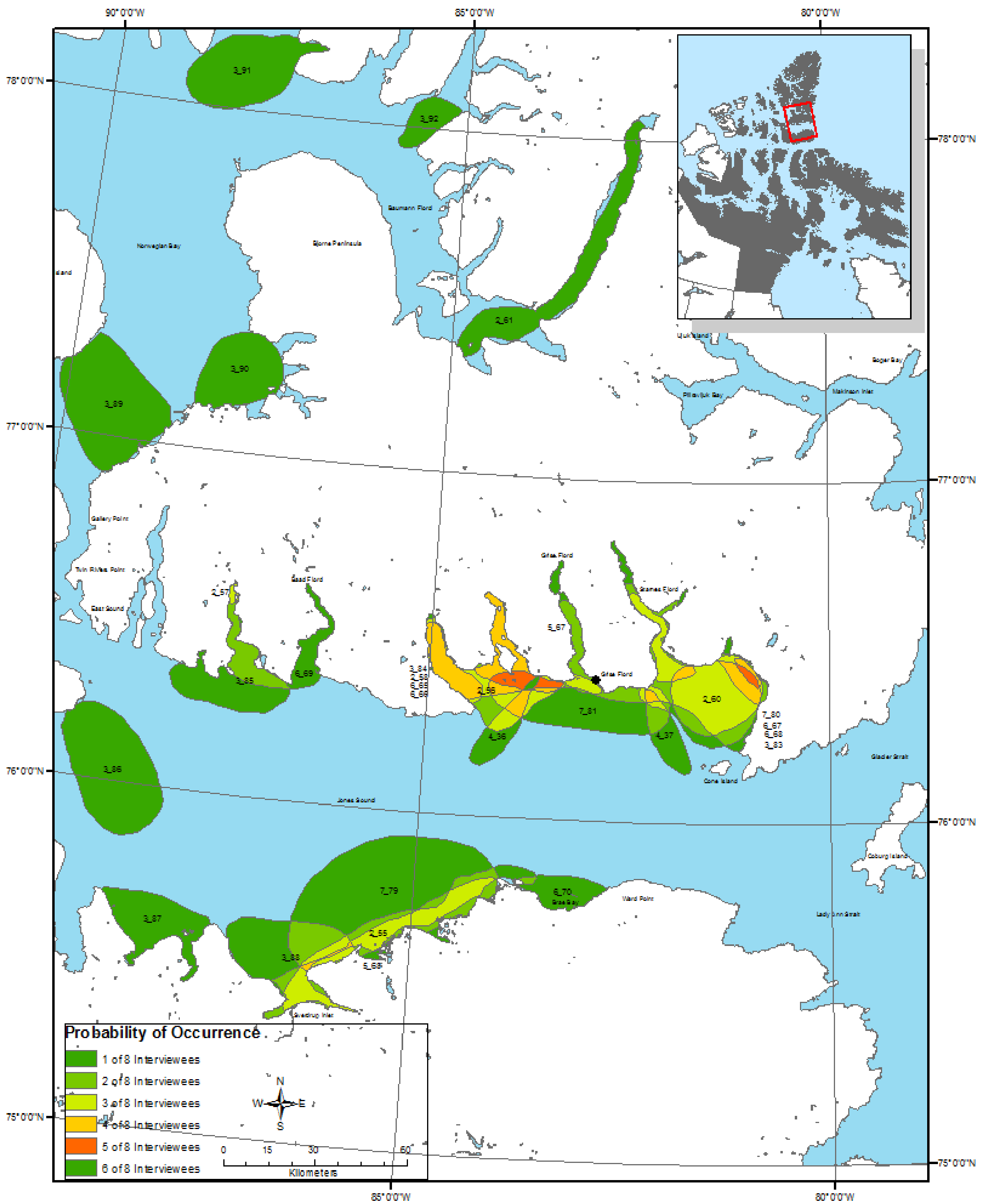


Table 32. Probability of occurrence for Ringed Seal

MAP CODE	INTERVIEW CODE	MONTHS	COMMENTS
2_55	GF_02_1012	Apr, May	
2_56	GF_02_1012		He likes to hunt seals here
2_57	GF_02_1012	Jul, Aug	
2_58S	GF_02_1012	March to May	Pupping area
2_59S	GF_02_1012	March to May	Pupping area
2_60S	GF_02_1012	March to May	Pupping area
2_61S	GF_02_1012	March to May	Pupping area
3_83S	GF_03_1012	April	
3_84S	GF_03_1012	April	
3_85S	GF_03_1012	April	
3_86S	GF_03_1012	April	
3_87S	GF_03_1012	April	
3_88S	GF_03_1012	April	
3_89S	GF_03_1012	April	
3_90S	GF_03_1012	April	
3_91S	GF_03_1012	April	
3_92S	GF_03_1012	April	
4_36	GF_04_1012		Generally smaller seals
4_37	GF_04_1012		Generally larger seals
5_67S	GF_05_1012	Apr, May	
5_68S	GF_05_1012		
6_65S	GF_06_1012	March to May	
6_66S	GF_06_1012	March to May	
6_67S	GF_06_1012	March to May	
6_68S	GF_06_1012	March to May	
6_69S	GF_06_1012	March to May	
6_70S	GF_06_1012	March to May	
7_79S	GF_07_1012	Mar, Apr	
7_80S	GF_07_1012	Mar, Apr	
7_81S	GF_07_1012	Mar, Apr	
8_124	GF_08_1012	Year-round	
8_125S	GF_08_1012		
1_100E	GF_01_1012		Everywhere
2_54E	GF_02_1012		Everywhere
3_82E	GF_03_1012	April	Everywhere
4_35E	GF_04_1012	Year-round	Everywhere
5_66E	GF_05_1012	Year	Everywhere
6_64E	GF_06_1012	Year	Everywhere
7_78E	GF_07_1012		Everywhere

Figure 31. Probability of occurrence Walrus

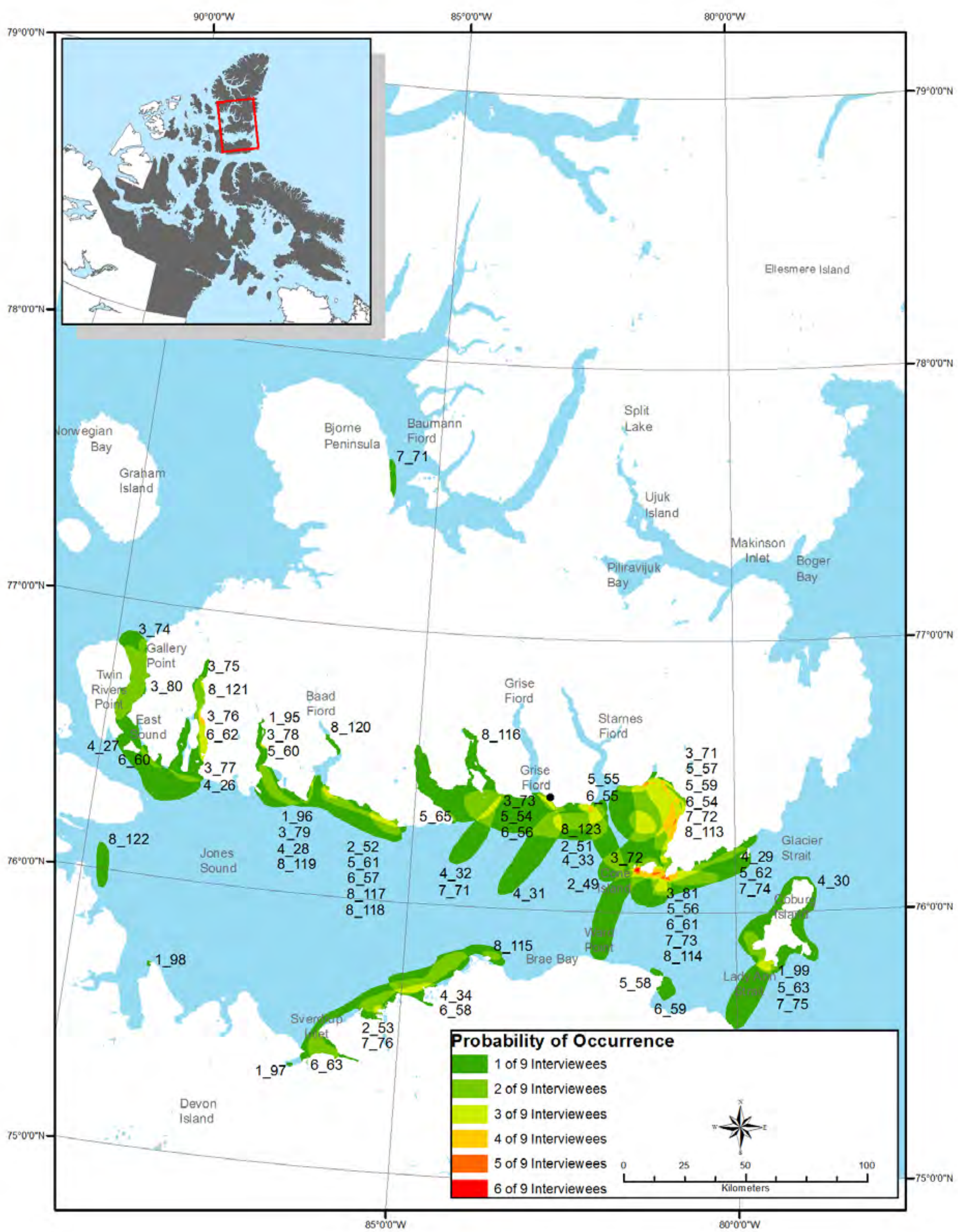


Table 33. Probability of occurrence Walrus

MAP CODE	INTERVIEW CODE	MONTHS	COMMENTS
1_95	GF_01_1012	Jun to Sep	Summer on land (i.e. haulouts)
1_96	GF_01_1012	Jun to Sep	Summer on land (i.e. haulouts)
1_97	GF_01_1012	Jun to Sep	Summer on land (i.e. haulouts)
1_98	GF_01_1012	Jun to Sep	Summer on land (i.e. haulouts)
1_99	GF_01_1012	Jun to Sep	Summer on land (i.e. haulouts)
2_49	GF_02_1012	Jun, Jul	
2_51	GF_02_1012	Jun, Jul	Walrus like to feed here after breakup
2_52	GF_02_1012	Jul to Sep	
2_53	GF_02_1012	Jul to Sep	
3_71	GF_03_1012	July	
3_72	GF_03_1012	July	
3_73	GF_03_1012	July	
3_74	GF_03_1012	April	
3_75	GF_03_1012	Aug, Sep	Walrus haulout
3_76	GF_03_1012	Aug, Sep	Walrus haulout
3_77	GF_03_1012	Aug, Sep	Walrus haulout
3_78	GF_03_1012	Aug, Sep	Walrus haulout
3_79	GF_03_1012	Aug, Sep	Walrus haulout
3_80	GF_03_1012	Year-round	Polynya here in winter
3_81	GF_03_1012	Feb, Mar	
4_26	GF_04_1012	Jul, Aug	
4_27	GF_04_1012	Jan to May	Polynya here
4_28	GF_04_1012		
4_29	GF_04_1012	Apr to Jun	
4_30	GF_04_1012	Jan to May	
4_31	GF_04_1012	Jan to May	Walrus breathing holes along cracks
4_32	GF_04_1012	Jan to May	Walrus breathing holes along cracks
4_33	GF_04_1012	Jan to May	Walrus breathing holes along cracks
4_34	GF_04_1012	Jul to Sep	Walrus basking on ice in summer
5_54	GF_05_1012		
5_55	GF_05_1012		
5_56	GF_05_1012		
5_57	GF_05_1012		
5_58	GF_05_1012	Mar to May	In cracks

MAP CODE	INTERVIEW CODE	MONTHS	COMMENTS
5_59	GF_05_1012	Jul, Aug	
5_60	GF_05_1012	Jul to Sep	Haulout
5_61	GF_05_1012		Haulout
5_62	GF_05_1012	May, Jun	
5_63	GF_05_1012	Apr to Jun	
5_64	GF_05_1012	Jul to Oct	
5_65	GF_05_1012		
6_54	GF_06_1012	August	
6_55	GF_06_1012	August	
6_56	GF_06_1012	Jul, Aug	
6_57	GF_06_1012	Jul, Aug	
6_58	GF_06_1012		
6_59	GF_06_1012	May, Jun	
6_60	GF_06_1012	Jul to Sep	
6_61	GF_06_1012	Year-round	
6_62	GF_06_1012		
6_63	GF_06_1012	Jul to Sep	
7_71	GF_07_1012	Apr to Aug	
7_72	GF_07_1012	Apr to Aug	
7_73	GF_07_1012	Apr to Aug	
7_74	GF_07_1012	Apr to June	
7_75	GF_07_1012	Feb, Mar	If the floe edge is here
7_76	GF_07_1012	Jul to Sep	Haulout place
7_77	GF_07_1012	Jul to Sep	Haulout place
8_113	GF_08_1012	Jul to Sep	
8_114	GF_08_1012	Feb to May	
8_115	GF_08_1012	Jul to Sep	
8_116	GF_08_1012	Apr to Sep	
8_117	GF_08_1012	Jul to Sep	Sometimes walrus go on land here
8_118	GF_08_1012	Jul to Sep	
8_119	GF_08_1012	Jul to Sep	
8_120	GF_08_1012	Jul to Sep	
8_121	GF_08_1012	Jul to Sep	Haulouts on points in this area

MAP CODE	INTERVIEW CODE	MONTHS	COMMENTS
8_122	GF_08_1012		
8_123	GF_08_1012		
1_94E	GF_01_1012	Year-round	Everywhere
2_50E	GF_02_1012		Everywhere

Figure 32. Areas of occurrence for Dulse, Edible Kelp, Goose Grass, Hollow-Stemmed Kelp, and Sea Colander

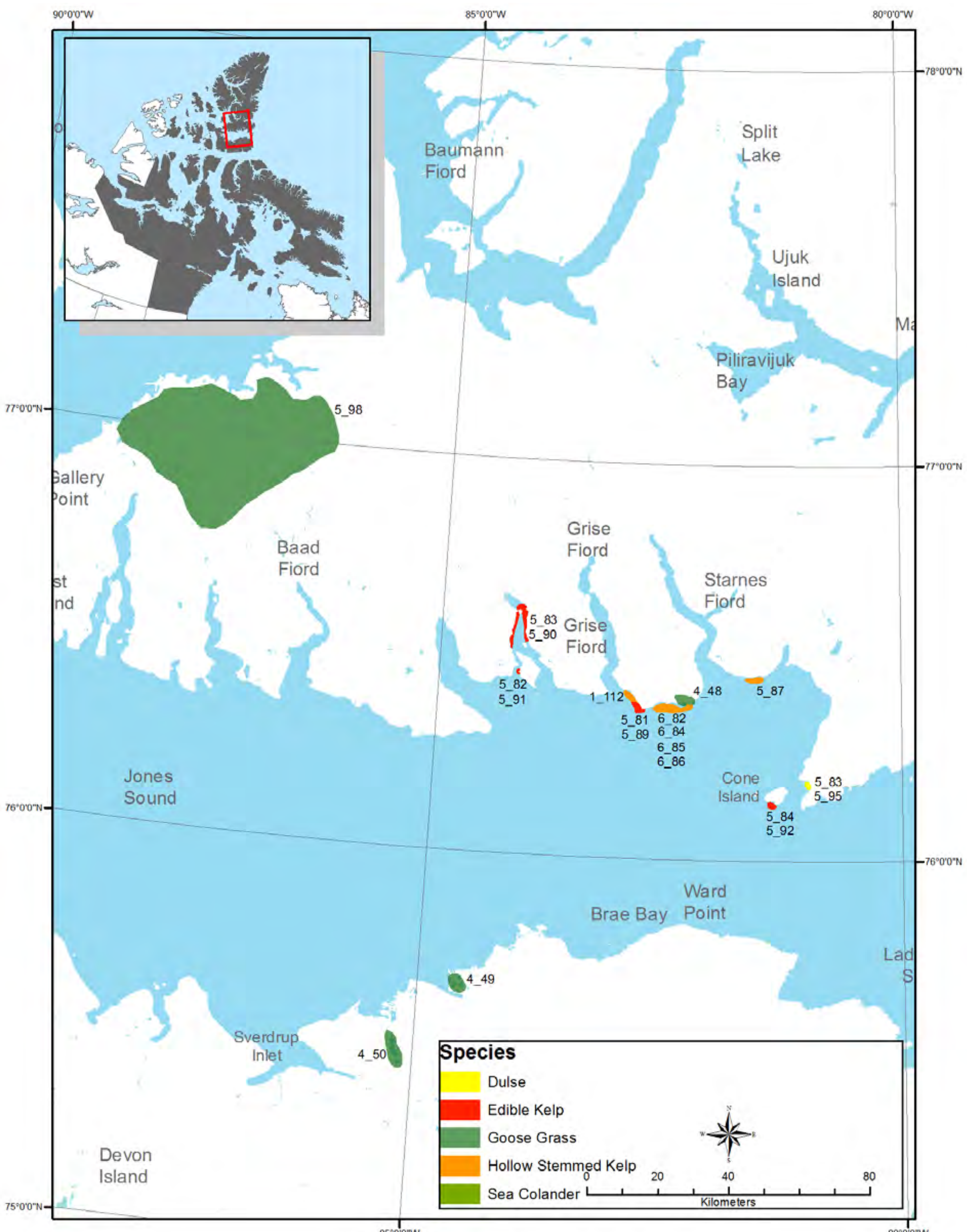


Table 34. Areas of occurrence for Dulse, Edible Kelp, Goose Grass, Hollow-Stemmed Kelp, and Sea Colander

MAP CODE	INTERVIEW CODE	SPECIES	MONTHS	COMMENTS
6_86	GF_06_1012	Dulse		Seems to be more this year. Found floating in summer.
5_89	GF_05_1012	Edible Kelp		
5_90	GF_05_1012	Edible Kelp		
5_91	GF_05_1012	Edible Kelp		
5_92	GF_05_1012	Edible Kelp		
5_93	GF_05_1012	Edible Kelp		
6_84	GF_06_1012	Edible Kelp		
4_48	GF_04_1012	Goose Grass	Jul to Sep	
4_49	GF_04_1012	Goose Grass	Jul to Sep	
4_50	GF_04_1012	Goose Grass	Jul to Sep	
5_98	GF_05_1012	Goose Grass		More grasses on north side near Norwegian bay
1_112	GF_01_1012	Hollow-Stemmed Kelp		
5_81	GF_05_1012	Hollow-Stemmed Kelp	Jul to Sep	
5_82	GF_05_1012	Hollow-Stemmed Kelp	Jul to Sep	
5_83	GF_05_1012	Hollow-stemmed Kelp	Jul to Sep	
5_84	GF_05_1012	Hollow-Stemmed Kelp	Jul to Sep	
5_85	GF_05_1012	Hollow-Stemmed Kelp	Jul to Sep	
5_86	GF_05_1012	Hollow-Stemmed Kelp	Jul to Sep	
5_87	GF_05_1012	Hollow-Stemmed Kelp	Jul to Sep	
6_82	GF_06_1012	Hollow-Stemmed Kelp		
6_85	GF_06_1012	Sea Colander		

Table 35. Bladder Wrack, Dulse, Edible Kelp, Eel Grass, Floating Buttercup, Goose Grass, Hollow-Stemmed Kelp, Sea Colander, Spiny Sour Weed, and Variableleaf Pondweed everywhere data

MAP CODE	INTERVIEW CODE	SPECIES	MONTHS	COMMENTS
1_115E	GF_01_1012	Bladder Wrack		
2_79E	GF_02_1012	Bladder Wrack		
3_114E	GF_03_1012	Bladder Wrack		
5_96E	GF_05_1012	Bladder Wrack		Not near glaciers
8_143E	GF_08_1012	Bladder Wrack		
3_112E	GF_03_1012	Dulse		
5_95E	GF_05_1012	Dulse		Not near glaciers
8_141E	GF_08_1012	Dulse		
1_113E	GF_01_1012	Edible Kelp		
2_75E	GF_02_1012	Edible Kelp		
3_110E	GF_03_1012	Edible Kelp		Cooked in broth with seal meat
5_94E	GF_05_1012	Edible Kelp		
7_94E	GF_07_1012	Edible Kelp		Seen on shores after storms
8_139E	GF_08_1012	Edible Kelp		
1_116E	GF_01_1012	Eel Grass		Found on tidal flats
5_97E	GF_05_1012	Floating Buttercup		
7_95E	GF_07_1012	Goose Grass		Near little streams
8_145E	GF_08_1012	Goose Grass		
2_76E	GF_02_1012	Hollow-Stemmed Kelp		
3_109E	GF_03_1012	Hollow-Stemmed Kelp		
5_88E	GF_05_1012	Hollow-Stemmed Kelp	Jul to Sep	
6_83E	GF_06_1012	Hollow-Stemmed Kelp		
8_138E	GF_08_1012	Hollow-Stemmed Kelp		Found in shallow water or floating
1_114E	GF_01_1012	Sea Colander		
2_77E	GF_02_1012	Sea Colander		
3_111E	GF_03_1012	Sea Colander		
8_140E	GF_08_1012	Sea Colander		Found in shallow rocky areas
2_78E	GF_02_1012	Spiny Sour Weed		
3_113E	GF_03_1012	Spiny Sour Weed		
8_142E	GF_08_1012	Spiny Sour Weed		Inside smells nice and sweet
3_115E	GF_03_1012	Variableleaf Pondweed		Found in lakes only
6_87E	GF_06_1012	Variableleaf Pondweed		Found in lots of ponds
8_144E	GF_08_1012	Variableleaf Pondweed		

Figure 33. Areas of occurrence for Cackling Goose, Snow Goose, Common Eider, and King Eider

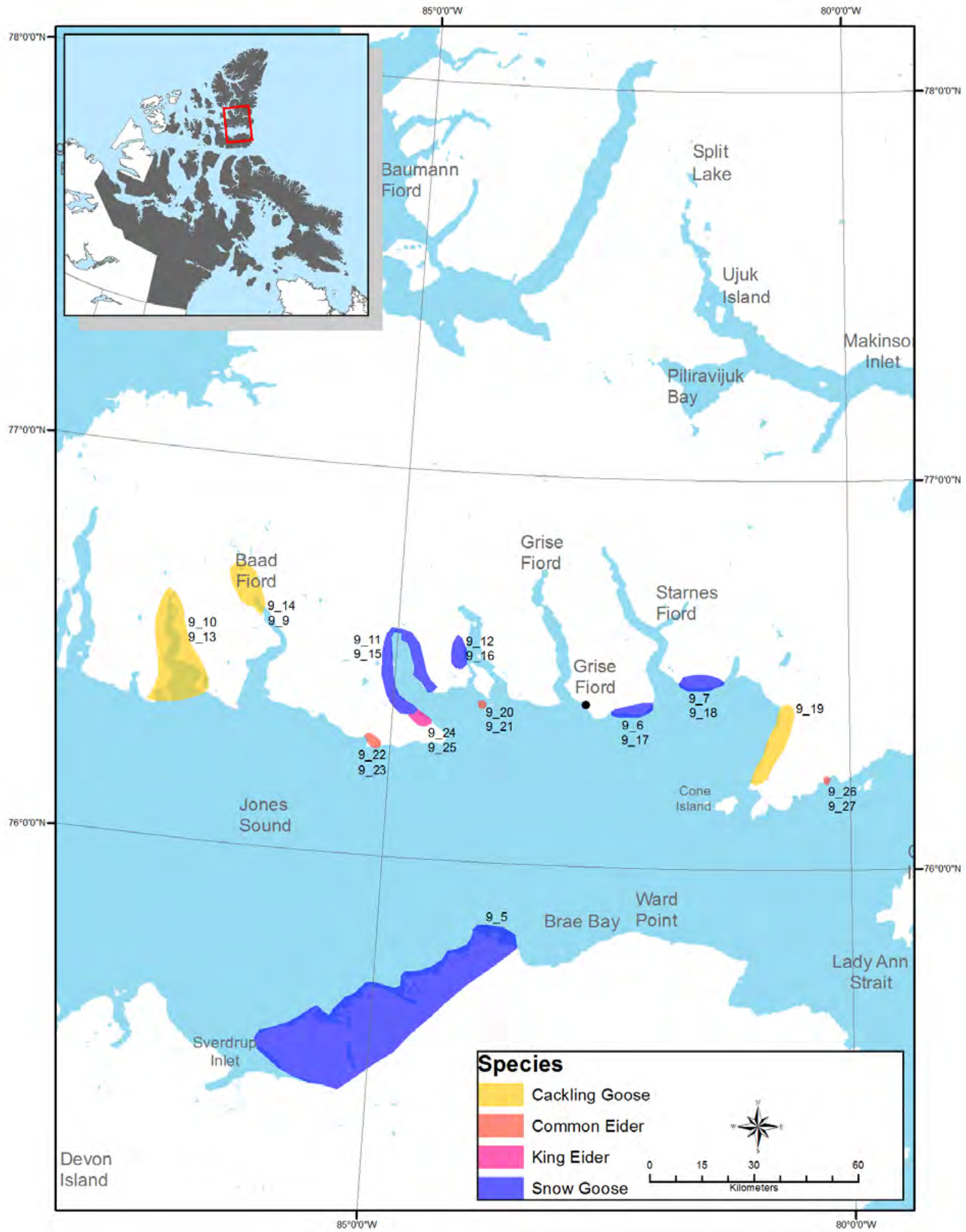


Table 36. Areas of occurrence for Cackling Goose, Snow Goose, Common Eider, and King Eider

MAP CODE	INTERVIEW CODE	SPECIES	MONTHS	COMMENTS
9_13	GF_09_0513	Cackling Goose	May to Sep	
9_14	GF_09_0513	Cackling Goose	May to Sep	
9_15	GF_09_0513	Cackling Goose	May to Sep	
9_16	GF_09_0513	Cackling Goose	May to Sep	
9_17	GF_09_0513	Cackling Goose	May to Sep	
9_18	GF_09_0513	Cackling Goose	May to Sep	
9_19	GF_09_0513	Cackling Goose	May to Sep	
9_5	GF_09_0513	Snow Goose	May to Sep	
9_6	GF_09_0513	Snow Goose	May to Sep	
9_7	GF_09_0513	Snow Goose	May to Sep	
9_8	GF_09_0513	Snow Goose	May to Sep	
9_9	GF_09_0513	Snow Goose	May to Sep	
9_10	GF_09_0513	Snow Goose	May to Sep	
9_11	GF_09_0513	Snow Goose	May to Sep	
9_12	GF_09_0513	Snow Goose	May to Sep	
9_21S	GF_09_0513	Common Eider	May to Sep	
9_23S	GF_09_0513	Common Eider	May to Sep	
9_24S	GF_09_0513	Common Eider	May to Sep	
9_27S	GF_09_0513	Common Eider	May to Sep	
9_20S	GF_09_0513	King Eider	May to Sep	
9_22S	GF_09_0513	King Eider	May to Sep	
9_25S	GF_09_0513	King Eider	May to Sep	
9_26S	GF_09_0513	King Eider	May to Sep	
9_29E	GF_09_0513	Common Eider	May to Sep	Everywhere
9_28E	GF_09_0513	King Eider	May to Sep	Everywhere
9_30E	GF_09_0513	Long-Tailed Duck	May to Sep	Everywhere

Figure 34. Areas of occurrence for Northern Fulmar, Black-Legged Kittiwake, Glaucous Gull, and Thayer's Gull

Table 37. Areas of occurrence for Northern Fulmar, Black-Legged Kittiwake, Glaucous Gull, and Thayer's Gull

MAP CODE	INTERVIEW CODE	SPECIES	MONTHS	COMMENTS
9_35S	GF_09_0513	Northern Fulmar		
9_36S	GF_09_0513	Northern Fulmar		
9_40S	GF_09_0513	Black-Legged Kittiwake		
9_44S	GF_09_0513	Glaucous Gull		
9_46S	GF_09_0513	Glaucous Gull		
9_45S	GF_09_0513	Thayer's Gull		
9_47S	GF_09_0513	Thayer's Gull		Nest on lakes, rocks, islands, everywhere
9_48S	GF_09_0513	Thayer's Gull		Nest on lakes, rocks, islands, everywhere

Table 38. Rock Ptarmigan, Red-Throated Loon, Northern Fulmar, Ruddy Turnstone, Sanderling, Arctic Tern, Black-Legged Kittiwake, Glaucous Gull, Ivory Gull, and Thayer's Gull everywhere data

MAP CODE	INTERVIEW CODE	SPECIES	MONTHS	COMMENTS
9_31E	GF_09_0513	Rock Ptarmigan	Year-round	
9_32E	GF_09_0513	Red-Throated Loon	Jun to Sep	As lakes melt, they go inland
9_33E	GF_09_0513	Red-Throated Loon		
9_34E	GF_09_0513	Northern Fulmar		Stay overwinter
9_37E	GF_09_0513	Ruddy Turnstone		
9_38E	GF_09_0513	Sanderling		
9_49E	GF_09_0513	Arctic Tern		Nest with eiders.
9_39E	GF_09_0513	Black-Legged Kittiwake		
9_43E	GF_09_0513	Glaucous Gull		
9_41E	GF_09_0513	Ivory Gull		Nest in glacier outcrops
9_42E	GF_09_0513	Thayer's Gull		

Figure 35. Areas of occurrence for Black-Guillemot, Horned Puffin, Thick-Billed Murre, and Snowy Owl

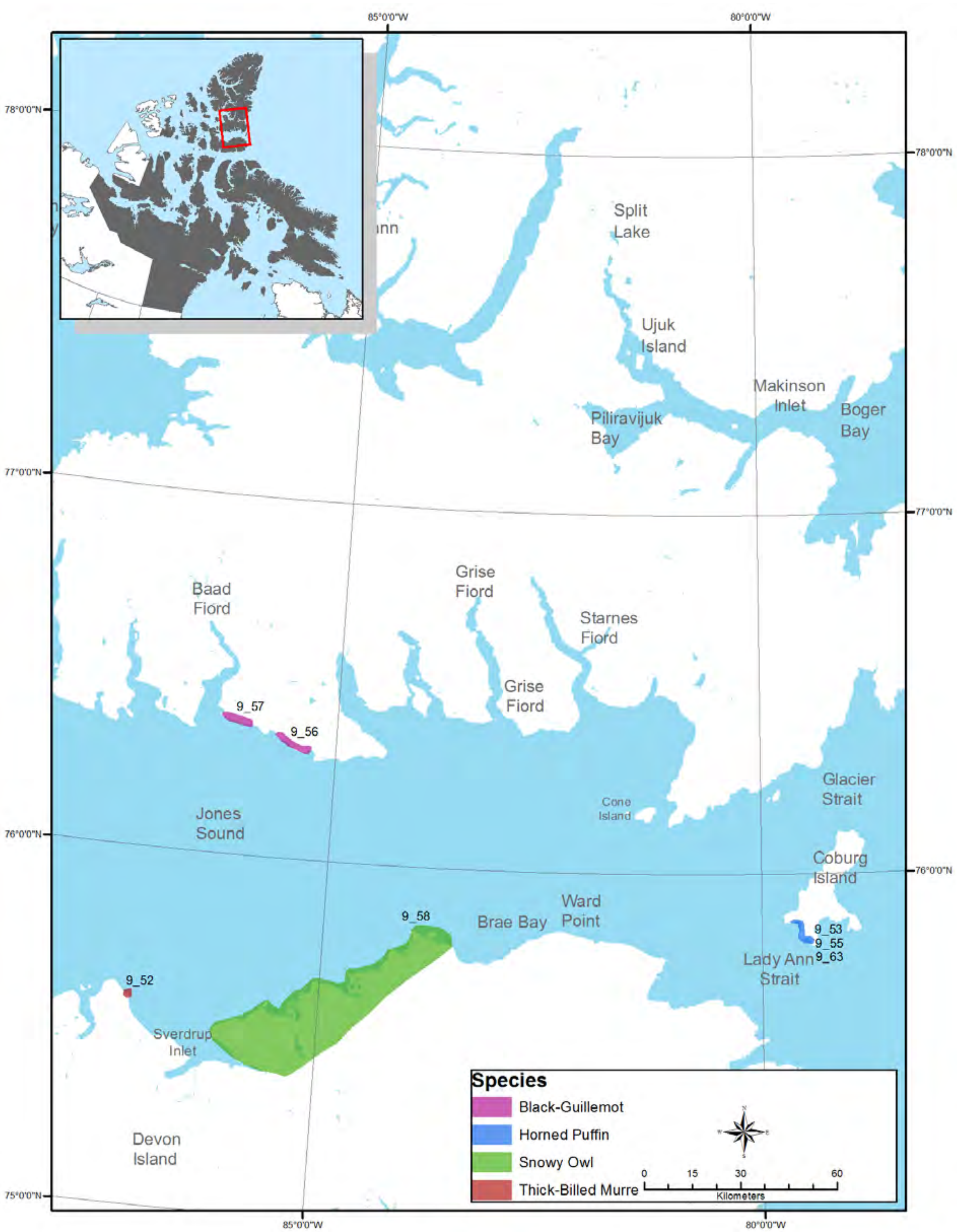


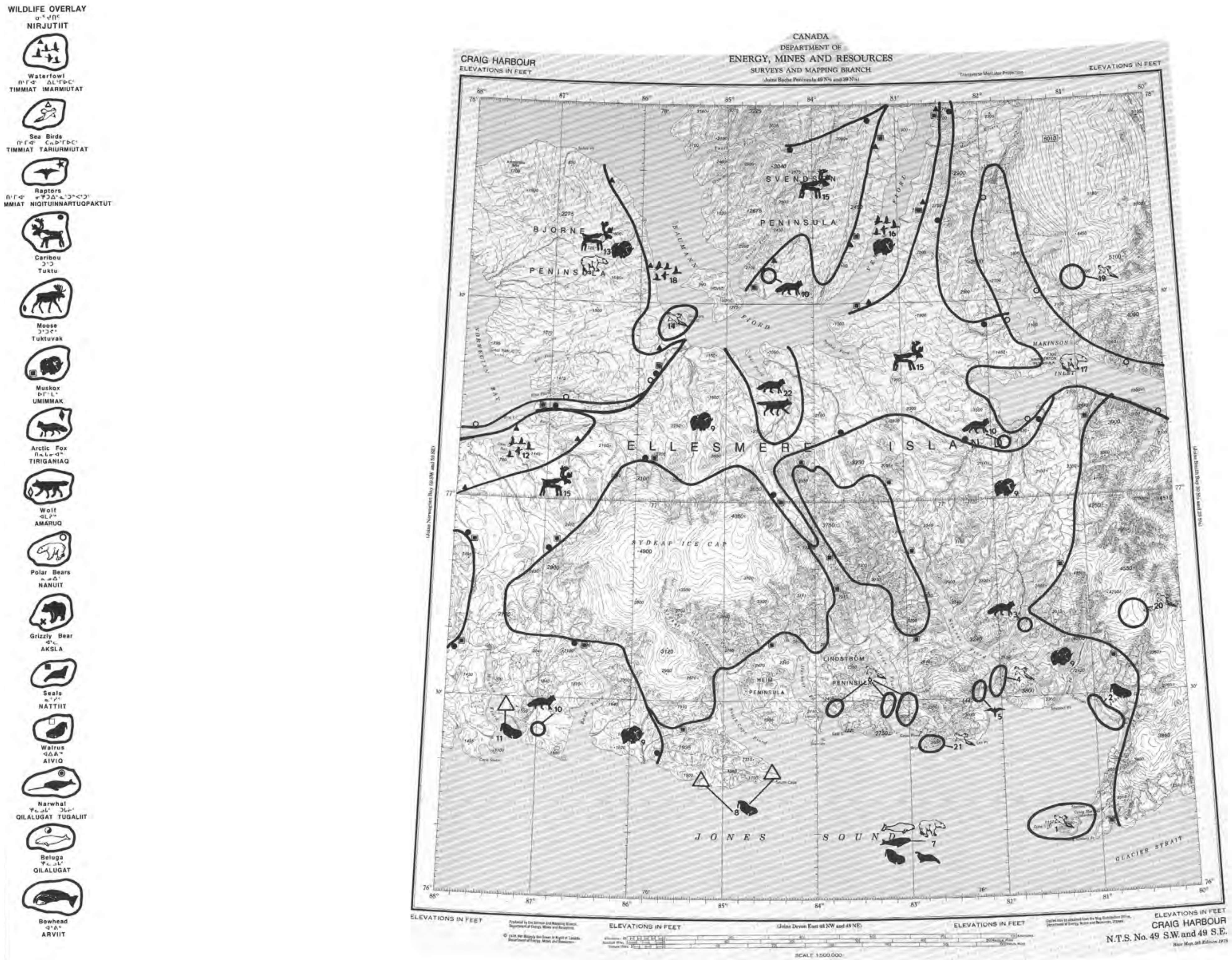
Table 39. Areas of occurrence for Black-Guillemot, Horned Puffin, Thick-Billed Murre, and Snowy Owl

MAP CODE	INTERVIEW CODE	SPECIES	YEAR	MONTHS	COMMENTS
9_55S	GF_09_0513	Black-Guillemot			
9_56S	GF_09_0513	Black-Guillemot			
9_57S	GF_09_0513	Black-Guillemot			
9_63S	GF_09_0513	Horned Puffin			Found in open water
9_52S	GF_09_0513	Thick-Billed Murre			
9_53S	GF_09_0513	Thick-Billed Murre			
9_58	GF_09_0513	Snowy Owl	1980s		Found in 1980s, but not anymore

Table 40. Long-Tailed Jaeger, Pomarine Jaeger, Black-Guillemot, Common Raven, Fox Sparrow, Lapland Longspur, and Snow Bunting everywhere data

MAP CODE	INTERVIEW CODE	SPECIES	MONTHS	COMMENTS
9_51E	GF_09_0513	Long-Tailed Jaeger		
9_50E	GF_09_0513	Pomarine Jaeger		
9_54E	GF_09_0513	Black-Guillemot		
9_59E	GF_09_0513	Common Raven		
9_60E	GF_09_0513	Fox Sparrow		
9_61E	GF_09_0513	Lapland Longspur		
9_62E	GF_09_0513	Snow Bunting	Apr to Oct	

Figure 36. Nunavut Atlas – Craig Harbour



CRAIG HARBOUR

INUIT LAND USE

1GF Grise Fiord Inuit hunt marine mammals throughout the marine areas of this map. Ringed seals are taken year-round in the nearshore waters and fiords of Southern Ellesmere Island (Jones Sound)and during winter and spring in Baumann and Vendom Fiords, Makinson Inlet and Norwegian Bay. Polar bears are hunted from October to May in all marine areas of this map. Harp seals, narwhals, and belugas are taken in summer and fall in the fiords and nearshore waters of southern Ellesmere Island (Jones Sound), while walruses are hunted in these same waters during the spring and fall and at the southern nearshore waters and fiords, and around Sor Fiord. Test fishing for Greenland halibut and skate has been carried out off of Grise Fiord and in adjacent nearshore waters.

2GF This area is used for muskox hunting by Grise Fiord residents (a total of four muskox may be taken here). Some caribou are harvested in this area, and traditional fishing sites are occupied every year.

3GF Grise Fiord residents may kill a maximum of 23 muskox in this area. Most animals are taken in the central part of this area (at the head of Baumann Fiord, including Hoved Island). But muskox are killed elsewhere, especially on the Bjorne Peninsula. Caribou (and wolves, when encountered) are hunted estensively throughout this area. Fishing sites in this area are utilized during late winter and spring.

4GF These are the main skidoo travel route to hunting areas in the northern portion of the Grise Fiord hunting territory.

5GF This travel route was formerly used by Grise Fiord Inuit to reach their northern hunting areas, but it has largely been replaced by the less difficult route to the west.

6 These Mountains or glaciated regions are not used at present by Grise Fiord Inuit. It should be noted that a narrow coastal strip at the seaward margins of these areas is utilized by Grise Fiord Inuit.

WILDLIFE

1 SEABIRDS
Thousands of gulls, primarily glaucous gulls, nest on the cliffs of Cone and Smith Islands.

2 WALRUSES
Hundreds of walruses haul out along the base of Jakeman Glacier. These are largely females, the males going farther west into Jones Sound.

3 ARCTIC FOXES
An Arctic fox den is located here.

4 SEABIRDS
A colony consisting primarily of glaucous gulls numbering over 100 is found here.

5 RAPTORS
This is the breeding territory of a pair of either peregrine falcons or gyrfalcons.

6 SEABIRDS
Approximately 200 glaucous and Thayer's gulls breed in colonies on each side of Grise Fiord.

7 BELUGAS, SEALS, NARWHALS, POLAR BEARS AND WALRUSES
The third greatest concentration of walrus occurs here (after the Southampton and Foxe Basin regions) and walruses are found scattered along the coast of Ellesmere Island during the summer. Walruses move into Jones Sound in August and September and move back out in October. They winter in the open water area of Baffin Bay known as "North Water". Walruses also overwinter in open water in Glacier Strait.

Polar Bears are common in Jones Sound along the ice edge.

Ringed seals numbering in the tens of thousands remain in Jones Sound all year. Bearded seals enter Jones Sound in July with the first appearance of large cracks in the ice. They leave in October to winter in the open water areas of Baffin Bay and in the vicinity of Coburg Island. The population of bearded seals in Jones Sound is estimated at between 1,000-2,000. Herds of hundreds of harp seals that have migrated from the Gulf of St. Lawrence and Newfoundland enter Jones Sound in August and September with the breakup of the ice and move out again in October. Depending on the ice conditions, the number of harp seals spending the summer in Jones Sound varies from 1,000-10,000.

Narwhals migrate into Jones Sound in herds of 20-50 animals during August and September and move out in October.

8 WALRUSES
These are hauling out locations for walruses.

9 MUSKOX
The coastal lowlands of Jones Sound constitute muskox range. The population of muskox on southwestern Ellesmere Island (including the Bjorne Peninsula and the area south of Baumann Fiord) has been estimated at 295 animals. The population of muskox on the southeastern portion of Ellesmere Island (primarily the area south of Makinson Inlet is estimated to be 175 animals.

10 ARCTIC FOXES
An Arctic fox den is located at these sites.

11 WALRUSES
Approximately 50 walruses have been observed hauled out at this location.

12 WATERFOWL
Greater snow geese breed in this traditional area in the hundreds. Brant also occur here.

13 MUSKOX, CARIBOU AND POLAR BEARS
The coastline of this area is used by polar bears for denning. Polar bears move up and down the west coast of the Bjorne Peninsula following the open water leads and hunt seals in the area.

The Bjorne Peninsula is inhabited by Peary caribou numbering in the hundreds.

Muskox also occur in the area in good numbers.

14 SEABIRDS
A large seabird colony of undetermined species occurs along approximately one-half mile of cliffs here. The population of birds is estimated at well over 10,000.

15 CARIBOU
Caribou are widely distributed throughout this area. The Sor Valley is probably the richest valley in the area and constitutes an important range for tens of Peary caribou. Arctic hare occur in large herds in the Sor Fiord area.

16 MUSKOX AND WATERFOWL

These coastal areas are used as winter range by muskox numbering approximately 25 animals.

Greater snow geese breed and molt in this area.

17 POLAR BEARS

Polar bears are found along Makinson Inlet.

18 WATERFOWL

Greater snow geese breed and molt along the west coast of Baumann Fiord.

19 SEABIRDS

A nesting colony of ivory gulls occurs on cliff faces in the ice fields north of Makinson Inlet.

20 SEABIRDS

A colony of ivory gulls occurs in the ice fields here, but nesting has not been confirmed.

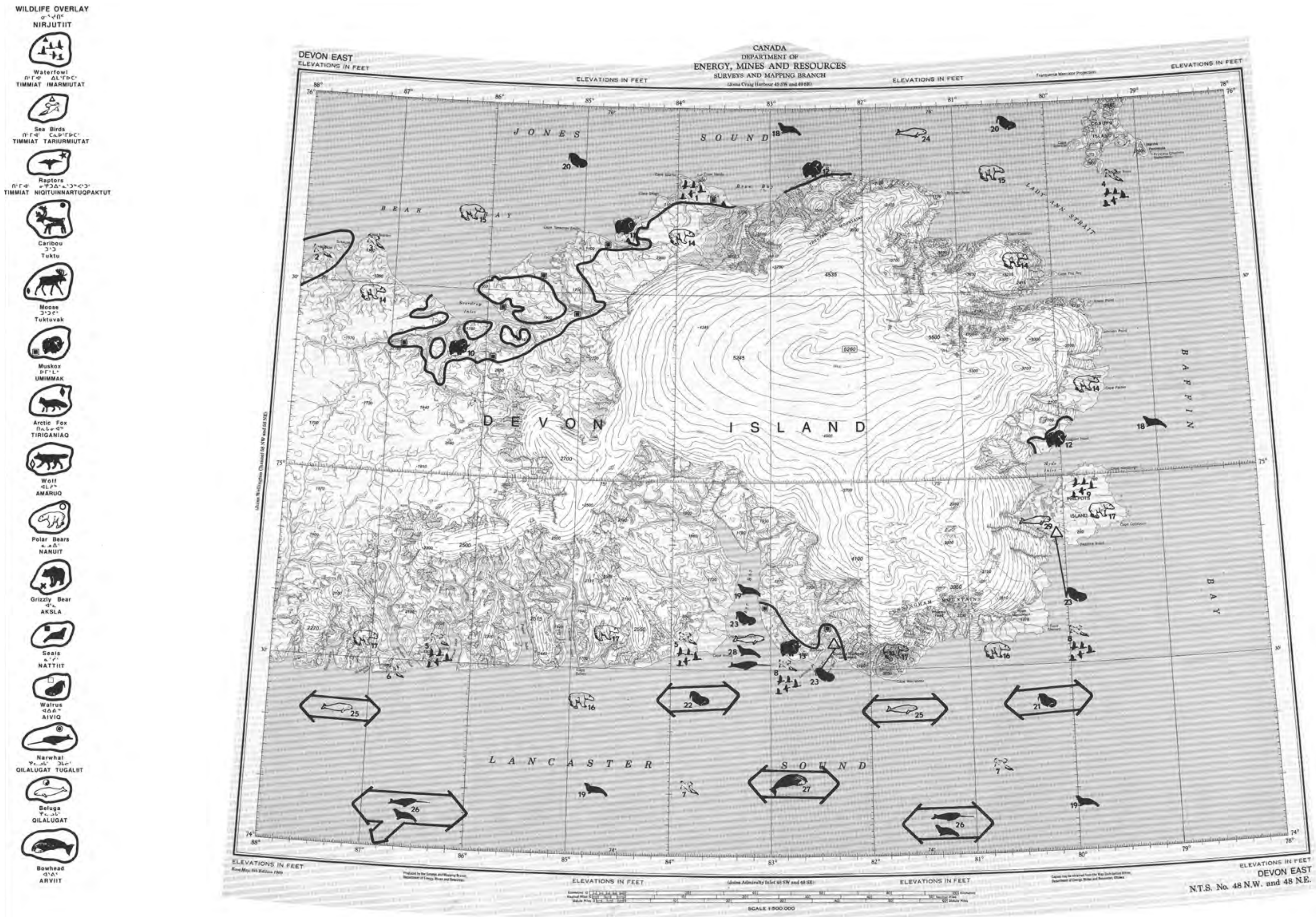
21 SEABIRDS

Approximately 2000 pairs of northern fulmars nest in this location.

22 WOLVES AND ARCTIC FOXES

Wolves and Arctic foxes are commonly seen inland from the Sor Fiord.

Figure 37. Nunavut Atlas – Devon East



LEGEND – NUNAVUT ATLAS – DEVON EAST

1. WATERFOWL
Up to 400 greater snow geese molt in this area and a few scattered pairs nest here during spring and summer. Other important waterfowl that nest and molt in these areas include oldsquaw, and king and common eiders.

2. SEABIRDS
The steep coastal cliffs in this area, which extend to the west, are used for nesting by an estimated 10,000 pairs of black guillemots, probably the largest colony of these seabirds in the Canadian Arctic. A colony of glaucous gulls is also found in this area.

3. SEABIRDS
The Cape Svarten area is used for nesting by small colonies of black guillemots and Thayer's gulls.

4. SEABIRDS AND WATERFOWL
The location of this island at the western edge of the Baffin Bay polynya (North Water) makes it extremely important for seabirds. An estimated 200,000 pairs of thick-billed murres and more than 1,000 pairs of black-legged kittiwakes nest on the steep cliffs at Cambridge Point from May through September. Lesser numbers of murres and kittiwakes nest on the cliff faces at Princess Charlotte Monument. The bays at the south end of the island are used regularly by numerous eiders and oldsquaws during the molt in August.

5. SEABIRDS AND WATERFOWL
This extensive area that extends to the west encompasses much of the nearshore and coastal areas of south Devon Island. It is an important area for many thousands of birds, particularly seabirds. The area is also used extensively for feeding by northern fulmars, thick-billed murres, and black guillemots from June to October, and is important for black-legged kittiwakes during July and August. Blanley Bay and Hobhouse Inlet are particularly important feeding and staging areas for fulmars and kittiwakes in summer and fall and for murres in spring. Small breeding colonies of gulls occur throughout this area. Also, small breeding colonies of greater snow geese are found inland.

6. SEABIRDS
The steep coastal cliffs between Hobhouse and Stratton inlets are used by one of the largest nesting colonies (estimated at 75,000 pairs) of northern fulmars in North America. This area is also used by some nesting Thayer's gulls, glaucous gulls and black guillemots.

7. SEABIRDS
Although densities of seabirds are greater near shore, large numbers of fulmars, murres and kittiwakes use all of the offshore portions of Lancaster Sound.

8. SEABIRDS AND WATERFOWL
The southeast coast of Devon Island from Croker Bay to Philpots Island is a critical area for the production and survival of a major portion of the seabird population in the eastern Canadian Arctic. It is a major feeding area for five northern fulmar colonies (155,000 pairs), thick-billed murres (600,000 breeding pairs) and black-legged kittiwakes (60,000 breeding pairs). This area is also heavily used by Greenland dovekies during May. A small glaucous gull colony is located near the head of Croker Bay, and other important species within the area include Thayer's gulls and ivory gulls.

A small concentration of greater snow geese breed and molt in the coastal lowlands between Croker Bay and Dundas Harbour. In some years this lowland is used for molting by numerous eiders and oldsquaw.

9. WATERFOWL
This area around Philpots Island is an important breeding area for Pacific brant. The area is also used for breeding by hundreds of greater snow geese.

10. MUSKOX
Scattered lowland meadows throughout these areas provide important year-round range for small numbers of muskox. The area presently supports over 70 muskox, with most animals found in the lowlands between Cape Newman Smith and the east side of Sverdrup Inlet.

11. MUSKOX
This small area provides critical range for muskox on Devon Island. At present this area provides year-round range for over two-thirds of the total estimated population of 375 muskox for the entire island.

12. MUSKOX
These small areas around Hodgson Head and Ward Point provide important range for small herds of muskox.

13. MUSKOX
Lush lowland meadows within these areas provide important range for about 30-40 muskox. The area encompassing the east side of Croker Bay and the head of Dundas Harbour is particularly important.

14. POLAR BEARS
The north coast of Devon Island, extending inland for about 10-20 km, is an important maternity denning area in fall and winter, and a summer area for polar bears. The area to the east of Belcher Glacier has been identified as a low density denning area and the area around Hyde Inlet and Philpots Island is a probable summer retreat for polar bears.

15. POLAR BEARS
Concentrations of polar bears are found in Jones Sound during spring and early summer. Their numbers and density are dependent upon ice conditions.

16. POLAR BEARS
Polar bears concentrate on the fast ice along the south Devon coast and on the offshore pan ice to hunt seals in spring. Breeding takes place on the ice during this period.

17. POLAR BEARS
The south coast of Devon Island, extending inland for about 20 km, is an important maternity denning area in fall and winter and a summer area for polar bears. Bears generally den in the vicinity of bays and fiords and in river valleys. Coastal summer retreats are especially important to female bears, family groups and young males. The Cape Sherard and Philpots Island areas are also known summer retreats for polar bears.

18. SEALS
Ringed seals, and a lesser number of bearded seals, occur throughout the marine portion of this map sheet. Some harp seals have also been reported in the Jones Sound area during summer.

19. SEALS
Thousands of ringed seals inhabit the eastern part of Lancaster Sound year-round. In winter, seals are dispersed throughout the sound, while in summer there are concentrations in coastal areas (e.g. Croker Bay). The less common bearded seal also tends to concentrate along the south coast of Devon Island. The extensive areas of shallow water with their productive banks provide food for bearded seals which are bottom feeders.

20. WALRUSES
Walruses are seen in Jones Sound during summer. They appear to enter this area from the east in early summer and leave before freeze-up in fall.

21. WALRUSES
Walruses leave their winter grounds which are probably at the southern edge of the pack ice in Davis Strait, in the pack ice of the north water polynya, and along the southwest coast of Greenland, and then enter Lancaster Sound from the east coast of Devon Island. Although some animals travel this route in early spring, the peak movement occurs in June. It appears that some walruses return to the winter grounds along a more southerly route, near the coasts of Bylot and Baffin Islands. Some walruses (less than 1,000) remain in the sound during winter.

22. WALRUSES
Hundreds of walruses move west along the south coast of Devon Island in July. Small concentrations of animals occur in Stratton and Burnett inlets and in Blanley Bay in July. The return eastward dispersion takes place in September before fall freeze-up.

23. WALRUSES
From June to September, Croker Bay, Dundas Harbour and the shallow waters between Cape Sherard and Philpots Island are summer concentration areas for walruses. These are preferred areas because the shallow waters over productive banks allow walruses to feed on mollusks and various bottom organisms. Two haul-out sites are located on the east side of the entrance to Dundas Harbour and at the southwest corner of Philpots Island.

24. BELUGAS
Beluga whales have been reported in the area during the open water season, particularly along the Jones Sound ice edge.

25. BELUGAS
Some beluga whales enter Lancaster Sound as the ice breaks up in spring. The first arrivals move through the ice floe lead along the south coast of Devon Island. Peak numbers of belugas (10,000-15,000) migrate during June, and continue to the summer area further west. The return eastward migration in September is usually rapid, with large herds moving along the south coast of Devon Island.

26. NARWHALS AND SEALS
Narwhals (10,000-30,000) arrive in Lancaster Sound from their winter grounds at the southern edge of the pack ice in Davis Strait between May and July. Peak westward migration occurs in mid-July. Some narwhals travel offshore, while the remainder travel along the northern and southern shores of the sound. The return eastward movement follows a similar route in September and October. Many harp seals migrate into Lancaster Sound in July and continue west to Barrow Strait. Some seals summer along the south coast of Devon Island. In September, seals return along this route and then move southeast to spring breeding areas off the coast of Newfoundland and in the Gulf of St. Lawrence.

27. BOWHEADS
Probably fewer than 100 endangered bowhead whales enter Lancaster Sound in June and July. These solitary animals move west along the south coast of Devon Island and also travel in mid-channel. Some bowheads spend the summer in the open waters of the sound where they feed on plankton. The return eastward migration is along a similar route. Some killer whales occasionally appear in the sound in the summer.

28. BELUGAS, NARWHALS AND SEALS
Beluga whales, harp seals and some narwhals occur in Croker Bay during September.

29. BELUGAS
Hundreds of beluga whales occupy Bethune Inlet during their fall eastward migration. Arctic cod, the primary food item, makes Bethune Inlet a major feeding area in September.

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Community of Grise Fiord
Hamlet of Grise Fiord
HTO Board Members and Chairpersons

Department of Environment, Government of Nunavut
Interviewees – Grise Fiord
Liza Ningiuk, Aksajuk Ningiuk, Kavavow Kiguktak, Anonymous, Marty Kuluguqtuq, Imooshie Nutarajuk, Raymond Mercredi, Tom Kiguktak, Looty Pijamini

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Legislative Library, Iqaluit

Fisheries and Marine Institute of Memorial University of Newfoundland, Newfoundland

Nunavut Wildlife Management Board, Iqaluit

COLLECTED REFERENCES

Ainley, G.A., C.T. Tynan and I. Stirling. 2003. Sea Ice: A Critical Habitat for Polar Marine Mammals and Birds. In: Sea Ice: an Introduction to its Physics, Chemistry and Geology, Thomas, D.N. and G.S. Dieckmann (eds.), Blackwell Publishers, 240-266.

Alexander, V. 1974. Primary productivity regimes of the nearshore Beaufort Sea, with reference to the potential role of ice biota. In: J.C. Reed and J.E. Sater (Editors), The Coast and Shelf of the Beaufort Sea. Arctic Institute of North America, Arlington, Va. Pp. 604-635.

Alexander, V. and H.J. Niebauer. 1981. Oceanography of the eastern Bering Sea ice edge zone in spring. Limnology and Oceanography 26: 1111-1125.

American Ornithologists Union. 1998. The A.O.U. Checklist of North American Birds (Seventh Edition). Washington, D.C. and supplements thereto through the 49th supplement, 2008.

Ashkui Project. Combining Traditional Ecological Knowledge and Western Science: URL: http://www.ec.gc. ca/EnviroZine/english/issues/26/print_version_e.cfm

Berkes, F. 1993. Traditional Ecological Knowledge in Perspective. Pp 1-10, In: Inglis, J.T. (ed.) Traditional Ecological Knowledge: Concepts and Cases. International Program on Traditional Ecological Knowledge, Canadian Museum of Nature, Ottawa and International Development Research Centre, Ottawa. 150 pp.

Berkes, F, R., Huebert, H. Fast, M. Manseau and A. Diduck. 2005. Breaking Ice: Renewable Resource and Ocean Management in the Canadian North. University of Calgary Press, 396 pp.

Bradstreet, M.S.W. and W.E. Cross. 1982. Trophic Relationships at High Arctic Edges. Arctic 35: 1-12.

Bray, R. 1943. Notes on the Birds of Southampton Island, Baffin Island and Meleville Peninsula. Auk 60:504-536

Brook, R., M. M'Lot and S. McLachlan. 2006. Pitfalls to avoid when linking traditional and scientific knowledge. pp 13-20 In : (Riewe, R. and J. Oakes, eds.) Climate Change: linking traditional and scientific knowledge. Aboriginal Issues Press.

Buckley, J.R., T. Gammelsrod, J.A. Johannessen, O.M. Johannessen and L.P. Roed. 1979. Upwelling: Oceanic Structure at the Edge of the Arctic Ice Pack in Winter. Science 203: 165-167.

Canadian Wildlife Service. 2007. Northwest Territories/ Nunavut Bird Checklist Survey program data. Available online at http://www.pnr-rpn.gc.ca/checklist

Committee on the Status of Endangered Wildlife in Canada (COSEWIC). Wildlife Species Search. Available online: http://www.cosewic.gc.ca/eng/sct1/ searchform_e.cfm Acessed online: 28/06/2011. Last updated:01/06/2011

Crawford, R. and J.Jorgenson. 1990. Density Distribution of Fish in the Presence of Whales at the Admiralty Inlet Landfast Ice Edge. Arctic 43: 215-222.

Csanady, G.T. 1982. Circulation in the coastal ocean. D. Reidel, Dordrecht, The Netherlands, 279 pp.

Department of Fisheries and Oceans. Aquatic Species at Risk. Accessed online at: http://www.dfo-mpo.gc.ca/species-especes/search-location-recherche-endroit-eng.htm. Last updated; 02/06/2011.

DFO 2009. Web Tide Model http://www.mar.dfo-mpo.gc.ca/science/ocean/ coastal_hydrodynamics/WebTide/webtide.html

Dyke, A.S., J. Hooper and J.M. Savelle. 1996. A History of sea ice in the Canadian Arctic Archipelago based on post-glacial remains of the bowhead whale (Balaena mysticetus). Arctic 49: 235-255.

Dyke, A.S. and J.M. Savalle. 2001. Holocene History of the Bering Sea Bowhead Whale (Balaena mysticetus) in its Beaufort Sea Summer Grounds off Southwestern Victoria Island, Western Canadian Arctic. Quaaterney Research 55: 371-379.

Ellis, D. V. 1956. Observations on the migration, distribution and breeding of birds in the Canadian Arctic during 1954 and 1955. Dansk Ornithologisk Forenings Tidesskrift 50:207-230

Ford, J.D., B. Smit, J. Wandel, M. Allurut, K. Shappa, H. Ittusarjuat, and K. Qrunnut. 2008a. Climate change in the Arctic: current and future vulnerability in two Inuit communities in Canada. Geographical Journal 174: 45 – 62.

Ford, J.D., T. Pearce, J. Gilligan, B. Smit and J. Oakes. 2008b. Climate change and hazards associated with ice use in northern Canada. Arctic, Antarctic and Alpine Research 40: 647- 659.

George, J.C.C., H.P. Huntington, K. Brewster, H. Eicken, D.W. Norton and R. Glenn. 2004. Observations on Shorefast Ice Dynamics in Arctic Alaska and the Responses of the Inupiat Hunting Community. Arctic 57(4): 363-374.

Gilligan, J., J. Clifford-Pena, J. Edye-Rowntree, K. Johansson, R. Gislason, T. Green and G. Arnold with J. Heath and R. Brook. 2006. The value of integrating traditional, local and scientific knowledge. pp 3-12 In: Riewe, R. and J. Oakes, (eds.) Climate Change: linking traditional and scientific knowledge. Aboriginal Issues Press.

Godfrey, W. Earle. 1986. The Birds of Canada (Revised Edition). National Museum of Natural Sciences, Ottawa, Canada.

Hannah, C.G., F. Dupont and M. Dunphy. 2009. Polynyas and Tidal Currents in the Canadian Arctic Archipelago. Arctic 62 (1): 83-95.

Harrisson, W.G. and G.F. Cota. 1991. Primary production in polar waters: Relation to nutrient availability, In: E. Sakshaug, C.C.E. Hopkins and N.A. Oritsland (eds.), Proc. Pro Mare Symp. On Polar Marine Ecology (Trondheim, 12-16 May 1990. Polar Res. 10(1): 87-104.

Hay, K. 2000. Final Report of the Inuit Bowhead Knowledge Study. 2000. Nunavut Wildlife Management Board.

Henshaw, A. 2003. Polynyas and Ice Edge Habitats in Cultural Context: Archaeological Perspectives from Southeast Baffin Island. Arctic 56 (1): 1-13.

Hohn, E. Otto. 1968. The Birds of Chesterfield Inlet, District of Keewatin, NWT, Canada. Canadian Field Naturalist 82(4):224-262.

Huntington, H.P. 2000. Using traditional Ecological knowledge in science: methods and applications. Ecological Applications 10(5): 1270-1274.

Ingram, R.G., J. Bacle, D.G. Barber, Y. Gratton, and H. Melling. 2002. An overview of physical processes in the North Water. Deep Sea Research II, 49: 4893-4906.

Ingram, R.G., E. Carmack, F. Mclaughlin and S. Nicol. 2005. Polar Ocean Coastal Boundaries Pan-Regional Overview. In: Robinson, A.R., Brink, K.H. (eds.) The Sea, Vol. 14: The Global Coastal Ocean, Regional Studies and Syntheses, Wiley, New York, pp 61-81.

Ingram, R.G. and S. Prinsenberg. 1998. Coastal Oceanography of Hudson Bay and Surrounding Eastern Canadian Arctic Waters. In: Robinson, A.R., Brink, K.H. (eds.) The Sea, Vol. 11: The Global Coastal Ocean, Regional Studies and Syntheses, Wiley, New York, pp 835 -862.

International Union for Conservation of Nature (IUCN). The IUCN red list of endangered species. Available Online at: http://www.iucnredlist.org/apps/redlist/search Acessed online; 28/06/2011

Inuit Land Use and Occupancy Project (1976), Volumes 1-3; Indian and Northern Affairs ISBN 0-660-00-401-1

Inuit Qaujimajatuqangit of Climate Change in Nunavut. 2005. (Four Volumes: North Baffin Region; South Baffin Region; Kivalliq Region; and, Kitikmeot Region)

IPCC 2007a. Summary for Policy Makers. In: Climate Change 2007: The Physical Science Basis. (February 2007) Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. IPCC Secretariat, c/o WMO 7bis, Avenue de la Paix. C.P. No 2300, 1211 Geneva 2, Switzerland, 18 pp. (www.ipcc.ch/)

IPCC 2007b. Summary for Policy Makers. In: Climate Change 2007: Climate Change Impacts, Adaption and Vulnerability. (April 2007). Working group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. IPCC Secretariat, c/o WMO 7bis Avenue de la Paix, C.P. No 2300, 1211 Geneva 2, Switzerland, 23 pp. (www.ipcc.ch/)

IPCC 2007c. Summary for Policy Makers. In: Climate Change 2007: Mitigation. Contribution of Working Group III to the Fourth Assessment. (August 2007) Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, United Kingdom and New York. (www.ipcc.ch/)

IPCC 2007d. Summary for Policy Makers. In Climate Change 2007: Synthesis Report. Approved in detail at IPCC Plenary XXVII (Valencia, Spain 12 – 17 November 2007). (www.ipcc.ch/)

Johannessen, O.M., J.A. Johannessen, M. Morison, B.A. Farrelly and E.A.S. Svendsen. 1983. The Mesoscale oceanographic conditions in the marginal ice zone north of Svalbard in early fall 1979. J. Geophysical Research 88: 2755-2769.

Legendre, L., S.F. Ackley, G.S. Dieckmann, B. Gulliksen, R. Horner, T. Hoshia, I.A. Melnikov, W.S. Reeburgh, M. Spindler, and C.W. Sullivan. 1992. Ecology of sea ice biota. 2. Global significance. Polar Biol. 12: 429-444.

McGhee, R. 1993. Ancient Peoples of the Arctic. UBC Press, in association with the Canadian Museum of Civilization, Vancouver.

McLaughlin, F.A., E.C. Carmack, R.G. Ingram and W.J. Williams, 2005. Oceanography of the Northwest Passage In The Sea, Vol. 14: The Global Coastal Ocean, Regional Studies and Syntheses, A.R. Robinson and K.H. Brink (eds.), John Wiley and Sons, Inc., New York, pp 1213-1244.

Melling, H. 2000. Exchanges of freshwater through the shallow straits of the North American Arctic. In: The Freshwater Budget of the Arctic Ocean, E.L. Lewis et al (eds.), Kluwer Academic Publishers, Dordrecht, 479-502.

Michel, C., R.G. Ingram and L.R. Harris. 2006. Variability in oceanographic and ecological processes in the Canadian Arctic Archipelago. Progress in Oceanography 71: 379- 401.

Moller, H., F. Birkes, P. O'Brian Lyver and M. Kislalioglu. 2004. Combining science and traditional ecological knowledge: monitoring populations for co-management. Ecology and Society 9(3): [online]. http://www.ecologyandsociety.org/vol9/iss3/art2

Moore, S. and H.P. Huntington. 2008. Arctic marine mammals and climate change: impacts and resilience. Ecological Applications 18(2), Supplement: S157-S165.

Nunavut Wildlife Management Board. 2004. The Nunavut Wildlife Harvest Study - Final Report. 822 p.

O'Brien, J. P., M.D. Bishop, K.S. Regular, F.A. Bowdring, T.C. Anderson. 1998. Community-Based Coastal Resource Inventories in Newfoundland and Labrador – Procedures Manual. Fisheries and Oceans, St. John's, Newfoundland

Priest, H. 2004. The Nunavut Wildlife Harvest Study. 2004. Nunavut Wildlife Management Board.

Prinsenberg, S.J. 1986a. The circulation pattern and current structure of Hudson Bay. Pp. 187-204, In: Martin, I.P. (ed.) Canadian Inland Seas. Elsevier Oceanography Series.

Prinsenberg, S.J. 1986b. On the physical oceanography of Foxe Basin. Pp. 217-236, In: Martin, I.P. (ed.) Canadian Inland Seas. Elsevier Oceanography Series.

Prinsenberg, S. 1988. Ice ridge contributions to the freshwater contents of Hudson Bay and Foxe Basin. Arctic, 41:6-11.

Prinsenberg, S.J. and N.G. Freeman. 1986. Tidal heights and currents in Hudson Bay and James Bay. Pp. 205-216, In: Martin, I.P. (ed.) Canadian Inland Seas. Elsevier Oceanography Series.

Pyle, Peter and David F. DeSante. 2006. English and Scientific Alpha

Codes for North American Birds through the 47th AOU Supplement. The Institute for Bird Populations, Pt. Reyes, CA.

Renaud, Wayne E., Stephen R. Johnson and P. Dianne Hollingdale. 1979. Breeding Birds of Arctic Bay, Baffin Island, N.W.T., with notes in the Biogeographic Significance of the Avifauna. Arctic. 32(2):122-134

Richard, Pierre. 2001. Marine Mammals of Nunavut. Qikitqtani School Operations, Box 1330, Iqaluit, Nunavut, X0A 0H0.

Richards, Jim, and Tony White. 2008. Birds of Nunavut: A Checklist (private publication, sponsored by Environment Canada).

Riewe, R. 1992. Nunavut Atlas. 1992. Canadian Circumpolar Institute (co-published by Tungavik Federation of Nunavut. ISBN 0838-133X

Saville, D.B.O. 1951. Bird Observations at Chesterfield Inlet, Keewatin, in 1950. Canadian Field Naturalist 65(4):145-157.

Schledermann, P. 1980. Polynyas and prehistoric settlement patterns. Arctic 33 (2): 292-302

Schledermann, P. 1990. Crossroads to Greenland, Arctic Institute of North America, Calgary, 364 pp.

Shortt, T. M., and H. S. Peters. 1942. Some recent bird records from Canada's Eastern Arctic. Canadian Journal of Research 20:338-348

Sibley, David Allen. 2004. Identification of Canada and Cackling Goose, Updated, October 7, 2004 http://www.sibleyguides.com/canada_cackling.htm

Smith, M. and B. Rigby. 1981. Distribution of polynyas in the Canadian Arctic. Pp. 6-28, In: Polynyas in the Canadian Arctic. Stirling, I. and H. Cleator (eds.) Occasional Paper, Number 45, Canadian Wildlife Service.

Soper, J. D. 1928 A faunal investigation of southern Baffin Island. National Museum of Canada Bulletin 53: 76-116

Stewart, D.B. and W.L. Lockhart. 2004. Summary of the Hudson Bay Marine Ecosystem Overview. Prepared by Arctic Biological Consultants, Winnipeg, for Canada Department of Fisheries and Oceans, Winnipeg, Mb. Draft vi + 66 pp.

Stirling, I. 1980. The Biological Importance of Polynyas in the Canadian Arctic. Arctic 33: 303-315.

Stirling, I. 1997. The importance of polynyas, ice edges, and leads to marine mammals and birds. J. of Marine Systems 10: 9-21.

Stirling, I., H. Cleator. And T.G. Smith. 1981. Marine Mammals. pp. 45-58, In: Polynyas in the Canadian Arctic (Stirling, I. and H. Cleator (eds.). Occasional Paper, Number 45, Canadian Wildlife Service.

Sutton, George Miksch. 1931. Notes on Birds Observed Along the West Coast of Hudson Bay. Condor 33:154-159.

Tang, C.L. and M.Ikeda.1989. Ice-Edge Upwelling off the Newfoundland Coast during LIMEX. Atmosphere-Ocean 27: 658-681.

Tee, K.T., P.C. Smith and D. Levaivre. 1993. Topographic Upwelling off the Coast of Nova Scotia. J. Physical Oceanography 23(8): 1703-1726.

Tynan, C.T. and D.P. DeMaster. 1997. Observations and Predictions of Arctic Climate Change: Potential Effects on Marine Mammals. Arctic 50: 308-322.

Welch, H.E., M.A. Bergmann, T.D. Siferd, K.A. Martin, M.F. Curtis, R.E. Crawford, R.J. Conover, and H. Hop. 1992. Energy flow through the marine ecosystem of the Lancaster Sound region, Arctic Canada. Arctic, 45: 343-357.

APPENDIX 1
INTERVIEWEE BIOGRAPHIES

INTERVIEW	NAME	BACKGROUND
GF_01_1012	Liza Ningiuk	Liza was born in Pangnirtung in 1949 and grew up in Clyde River. In 1960, she moved to Alexander Fiord and has lived in Grise Fiord since 1962. Liza started hunting at the age of 5 and in Grise Fiord at the age of 13. She still actively hunts for most animals, although she does not collect bird egg anymore.
GF_02_1012	Aksajuk Ningiuk	Aksajuk was born in Pond Inlet in 1946. He moved to Denis Harbour on Devon Island and then returned to Pond Inlet. This was followed by moves to Craig Harbour, Alexander Fiord in 1951, and Pond Inlet in 1957, before relocating to Grise Fiord in 1959. Aksajuk also lived in Resolute from 1974 to 1978. He has hunted his entire life and continues to harvest most animals today, although he does not travel as far as when he was younger.
GF_03_1012	Kavavow Kiguktak	Kavavow was born near Arctic Bay in 1957. He moved to Pangnirtung at 8 years old and has lived in Grise Fiord since 1966. He started hunting at the age of 9 and still hunts most animals today.
GF_04_1012	Anonymous	
GF_05_1012	Marty Kuluguqtuq	Marty was born at an outpost camp in Cumberland Sound in 1963. He has lived in Pangnirtung from 1966 to 1980 before going to high school in Iqaluit. He has lived in Grise Fiord since 1966. Marty started hunting when he was 5 years old and still hunts today.
GF_06_1012	Imooshie Nutarajuk	Imooshie was born in Arctic Bay in 1950 and has lived in Grise Fiord since 1958. He started hunting when he was 11 years old and still hunts most animals now, although not as often as before.
GF_07_1012	Raymond Mercredi	Raymond was born in Saskatchewan in 1959 and grew up in the Northwest Territories and in British Columbia. He has lived in Grise Fiord since 1978. Raymond started hunting at the age of 18 and he still actively hunts.
GF_08_1012	Tom Kiguktak	Tom was born in Grise Fiord in 1969, where he has lived all his life. He started hunting when he was very young and still hunts today, although he does not hunt bowhead whales anymore.
GF_09_0513	Looty Pijamini	Looty was born in 1953 in an area between Qikiqtarjuaq and Clyde River. He moved to Grise Fiord in 1962 and started hunting when he was 9 or 10 years old. He stopped hunting in 1999 for health reasons.

APPENDIX 2
ACRONYMS AND ABBREVIATIONS

CRI - Coastal Resource Inventory

CLEY - Department of Culture, Language, Elders and Youth

CWS - Canadian Wildlife Service

DFO - Department of Fisheries and Oceans (Government of Canada)

DOE - Department of Environment (Government of Nunavut)

DSD - Department of Sustainable Development (Government of Nunavut)

ED & T - Department of Economic Development and Transportation (Government of Nunavut)

GC - Government of Canada

GN - Government of Nunavut

HTO - Hunter/Trapper Organization

INAC - Indian and Northern Affairs (Government of Canada)

IQ - Inuit Qaujimajatuqangit

IPCC - Intergovernmental Panel on Climate Change

NRCan - Natural Resources Canada (Government of Canada)

NRI - Nunavut Research Institute

NTI - Nunavut Tunngavik Incorporated

NWMB - Nunavut Wildlife Management Board

TK - Traditional Knowledge

TEK - Traditional Ecological Knowledge

APPENDIX 3 BIRD EVALUATION

SPECIES	GODFREY	SNYDER (1957)	CWS	ROBARDS ET AL. (2000)	BLACK ET AL. (2012)	MALLORY AND GILCHRIST (2005)	PATTIE (1990)	MISC.	RICHARDS AND WHITE (2008)	NCRI INTERVIEW	COMMENTS ON NCRI INTERVIEW SPECIES ONLY
Greater White-fronted Goose					x				MB		
Snow Goose	x	x	x		x	x	x		MB	x	ok
Brant	x	x			x	x	x		MB		
Cackling Goose					x				MB	x	unlikely
Canada Goose	x	x			x	x			MB		
Mallard				x					V		
King Eider	x	x	x	x	x	x	x		MB	x	ok
Common Eider	x	x	x	x	x	x	x	x	MB	x	ok
Long-tailed Duck	x	x	x	x	x	x	x	x	MB	x	ok
Rock Ptarmigan	x	x	x		x		x		PB	x	ok
Red-throated Loon	x	x	x		x	x	x		MB	x	ok
Pacific Loon					x	x	x		MB		
Yellow-billed Loon					x		x		MB		
Northern Fulmar	x	x	x	x	x	x	x	x	MBw	x	ok
Rough-legged Hawk			x						MB		
Peregrine Falcon					x		x		MB		
Gyrfalcon	x	x	x	x	x				PB		
Black-bellied Plover		x			x		x		MB		
American Golden-Plover							x		MB		
Common Ringed Plover	x	x		x			x		MB		

SPECIES	GODFREY	SNYDER (1957)	CWS	ROBARDS ET AL. (2000)	BLACK ET AL. (2012)	MALLORY AND GILCHRIST (2005)	PATTIE (1990)	MISC.	RICHARDS AND WHITE (2008)	NCRI INTERVIEW	COMMENTS ON NCRI INTERVIEW SPECIES ONLY
Ruddy Turnstone	x	x	x	x	x		x		MB	x	ok
Red Knot	x	x			x		x		MB		
Sanderling	x	x					x		MB	x	ok
Semipalmated Sandpiper			x						MB		
White-rumped Sandpiper					x		x		MB		
Baird's Sandpiper	x	x	x		x		x		MB		
Pectoral Sandpiper					x		x		MB		
Purple Sandpiper	x	x			x		x		MB		
Dowitcher sp.							x		**		
Red Phalarope	x	x			x		x		MB		
Black-legged Kittiwake	x	x	x		x	x	x	x	MB	x	ok
Ivory Gull	x	x	x		x	x	x	x	MBw	x	ok
Sabine's Gull		x					x		MB		
Thayer's Gull		x			x	x	x		MB	x	possible
Iceland Gull	x								MB		
Glaucous Gull	x	x	x	x	x	x	x	x	MBw	x	ok
Great Black-backed Gull					x				Mb		
Arctic Tern	x	x	x		x	x	x		MB	x	ok
Horned Puffin									-	x	No*
Atlantic Puffin								x	MB		

SPECIES	GODFREY	SNYDER (1957)	CWS	ROBARDS ET AL. (2000)	BLACK ET AL. (2012)	MALLORY AND GILCHRIST (2005)	PATTIE (1990)	MISC.	RICHARDS AND WHITE (2008)	NCRI INTERVIEW	COMMENTS ON NCRI INTERVIEW SPECIES ONLY
Pomarine Jaeger			x		x	x	x		MB	x	probable
Parasitic Jaeger	x	x	x	x	x	x	x		MBw		
Long-tailed Jaeger	x	x	x		x	x	x		MB	x	ok
Dovekie	x	x			x				MBw		
Thick-billed Murre	x	x	x		x	x		x	MBw	x	ok
Black Guillemot	x	x	x		x	x	x	x	MBw	x	ok
Snowy Owl	x	x	x		x		x		PB	x	ok
Common Raven	x	x	x	x	x		x		PB	x	ok
Horned Lark					x		x		MB		
Bank Swallow					x				A		
Barn Swallow							x		V		
Northern Wheatear	x	x			x		x		MB		
American Pipit					x		x		MB		
Lapland Longspur	x	x	x		x		x		MB	x	ok
Snow Bunting	x	x	x	x	x		x		MB	x	ok
Yellow-rumped Warbler					x				A		
American Tree Sparrow					x				Vb		
Savannah Sparrow					x		x		MB		
Fox Sparrow									A	x	doubtful
White-crowned Sparrow					x				MB		
Hoary Redpoll	x	x					x		MB		

* Horned Puffin is only found in western Canada
** (Short-billed) Dowitcher is not listed by Richards and White for the arctic islands

RICHARDS & WHITE CODES:

M = migrant
B = breeds
P = permanent resident
A = Accidental
V = vagrant
w =winter records
b = may breed

BASELINE DATA BIBLIOGRAPHY

American Ornithologists Union Check-List of North American Birds. 1998. (7th Edition) and Supplements.

CWS. Canadian Wildlife Service NWT/NU Checklist Survey

Godfrey, W. Earl. 1986. Birds of Canada (Revised Edition). National Museums of Canada. 595 pp.

Richards, Jim, & Tony White. 2008. Birds of Nunavut: A Checklist (p. 1-22)

Snyder, L. L. 1957. Arctic Birds of Canada. University of Toronto Press. 310 pp.

SUPPORTING BIBLIOGRAPHY

Black, Ameil, H. Grant Gilchrist, Karel A. Allard and Mark L. Mallory. 2012. Incidental observations of birds in the vicinity of Hell Gate Polynya, Nunavut: species, timing and diversity. *Arctic* 65(2):145-154

France, R. L., and M. Sharpe. 1982. Newly Reported colonies of Ivory Gulls on southeastern Ellesmere Island. *Arctic* 45(3):306-7

France, R. L., and M. Sharpe. 1992. First record of the Rough-legged Hawk, *Buteo lagopus*, from Ellesmere Island, Northwest Territories. *Canadian Field-Naturalist* 106(4):511-512

Frisch, T., and W.C. Morgan. 1979. Ivory Gull colonies in southeastern Ellesmere Island, arctic Canada. *The Canadian Field- Naturalist* 93(2):173-4 (Ivory Gull)

Frisch, Thomas. 1983. Ivory Gull colonies on the Devon Island ice cap, arctic Canada. *Arctic* 36(4):370-371

Mallory, M. L., and A. J. Fontaine. 2004. Key marine habitat sites for migratory birds in Nunavut and the Northwest Territories (Nunavut Site 6 – Eastern Jones Sound). CWS Occ. Papers, No. 109 (Thick-billed Murre, Black Guillemot, Atlantic Puffin, Glaucous Gull, Ivory Gull, Black-legged Kittiwake, Northern Fulmar, Long-tailed Duck, Common Eider)

Mallory, Mark L., and H. Grant Gilchrist. 2005. Marine birds of the Hell Gate Polynya, Nunavut, Canada. *Polar Research* 24(1):87-93

McLaren, Peter L. and Wayne E. Renaud. 1982. Seabird concentrations in late summer along the coasts of Devon and Ellesmere Islands, N.W.T. *Arctic* 35(1):112-117 (Northern Fulmar, Black-legged Kittiwake, Glaucous Gull, Ivory Gull)

Parmelee, D. F., and S. D. MacDonald. 1960. The birds of west-central Ellesmere Island and adjacent areas. Nat. Mus. Can., Bull. No. 169, Biol. Series No. 63 (Rock Ptarmigan, Ruddy Turnstone, Snowy Owl, Northern Wheatear)

Pattie, Donald L. 1990. A 16-year record of summer birds on Truelove Lowland, Devon Island, Northwest Territories, Canada. *Arctic* 43(3):275-283

Prach, Raymond W., and Alan R. Smith. 1992. Breeding distribution and numbers of Black Guillemots in Jones Sound, N.W.T.

Renaud, Wayne F., and Michael S. W. Bradstreet. 1980. Late winter distribution of Black Guillemots in northern Baffin Island Bay and the Canadian High Arctic. *Canadian Field-Naturalist* 94(4):421-425 (Black Guillemot)

Robards, Martin, H. Grant Gilchrist and Karel Allard. 2000. Breeding Atlantic Puffins, *Fractercula arctica*, and other bird species of Coburg Island, Nunavut. *Canadian Field-Naturalist* 114(1):72-77

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