Inuit Circumpolar Council

The Sea Ice Never Stops

Circumpolar Inuit Reflections on Sea Ice Use and Shipping in Inuit Nunaat

December 2014

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INUIT

Sustainable Development Working Group

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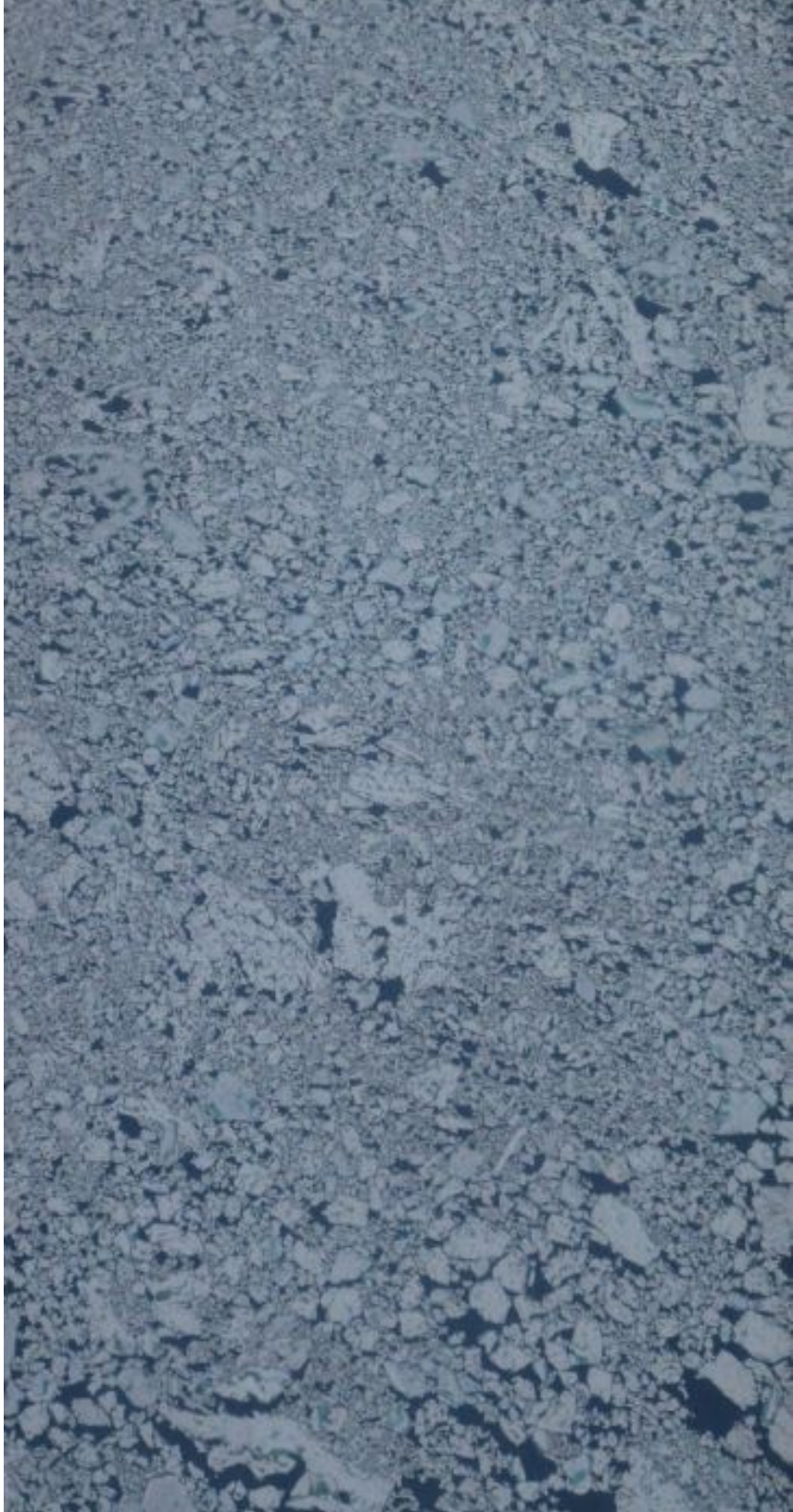


Where I live, the sea ice never stops. It's a living thing.

- Jayko Oweetaluktuk, Inukjuak, Nunavik, interviewed on March 15, 2008

Executive Summary

This report from the Inuit Circumpolar Council (ICC) contributes to the ongoing work of the Sustainable Development Working Group and the Protection of the Arctic Marine Environment working groups of the Arctic Council. As a Permanent Participant at the Arctic Council, ICC speaks on behalf of all 160,000 Inuit living in Greenland, Canada, Alaska and Russia.

The health and well-being of Inuit are inextricably tied to the Arctic environment. For millennia, we have been stewards of the Arctic, and our culture and subsistence traditions reflect our deep knowledge and respect for the land. Climate change is already impacting Inuit livelihoods, as melting sea ice and less predictable weather make it harder to utilize traditional knowledge. Increasingly uncertain weather and unstable sea ice have made it harder and riskier for us to travel and hunt on the land, infringing on our human right to a healthy environment. Inuit from Alaska, Canada, Greenland, and Russia are deeply concerned about current and potential impacts of climate change on our health, the health of our homeland, and the wellbeing of future generations. Traditional and scientific knowledge suggests that we have reached a critical point in terms of Arctic change; sea ice melt is quickening, and scientists predict an ice-free September by mid-century. The future health and wellness of our families and communities depends on our ability to maintain our livelihoods and pass on our cultural knowledge to the next generation.

This report investigates Inuit use of sea ice. It looks at existing sources of information regarding land use and occupancy to understand sea ice use, augmenting this with responses from interviews with Inuit hunters from Canada, Alaska, Greenland, and Chukotka (Russia) to provide a pan-Inuit perspective. It includes general predictions about the future in light of climate change and reduced sea ice based on the experience and traditional knowledge of Inuit hunters.

The central thread running through this study is that Inuit are a **maritime people***:* our entire culture and identity is based on free movement over the sea and sea ice. We rely on free movement, first and foremost, in order to eat, since so much of our diet is derived from hunting. This mobility is also essential in trade, communication, in obtaining supplies for traditional clothing and art, as well as to maintain pride in our rich cultural heritage. In order to take advantage of the sea ice our communities are predominantly coastal and, in some cases, travel by sea is the only means of moving in or out of our homes.

Inuit share a common culture based on similar hunting, fishing, and whaling patterns. There are regional variations because certain communities have easier access to various species, however, the centrality of sea ice to our culture and physical survival is something that we hold in common.

Because the goal of this report is to give voice to Inuit perspectives and concerns regarding the impact of changes in the Arctic, the text includes many direct quotations from Inuit residents of the North. Many interviewed for this report emphasize the importance of the sea to their everyday lives, and are very concerned that their voices be heard by the people whose decisions will affect their culture and livelihoods. The use of direct quotations is our means of presenting their concerns to a wider public. Please pay close attention to the words of the Inuit hunters. Inuit have lived in the Arctic for thousands of years and intend to live there for thousands more.

Key Findings:

1. *Inuit have a well-established maritime culture:* As our 2008 report explained, the sea is our highway. This reality shapes our culture and practices across Inuit Nunaat – our homeland. In wintertime, our highway is sea ice. In summertime, it is the open sea. The sea is integral to the Inuit way of life. Because we still rely on traditional food for a large portion of our diet, and because hunting and being out on the land are central to our culture, we continue to use the land and sea in the same way our ancestors did for thousands of years. This connection to land and ice gives Inuit a great sense of pride, a connection to the past, and a general well-being. While we have resolved to adapt to the changed climate and thinning ice as best we can – and show considerable confidence that we will succeed – we are less sure about what increased shipping and northern development may mean for our future.

2. *Inuit are adaptable and strong.* Inuit have been adapting to the extreme conditions and fluctuations in the Arctic our entire history. We are clearly a strong people or we would not have survived the rigors of the North for so many millennia. In these days, Inuit are adjusting to changes in sea ice conditions and migration patterns of the living resources. This is a challenge that we have dealt with successfully thus far, though we do have concerns, especially related to safety out on the ice and sea.

3. *Inuit continue to rely heavily on our traditional foods.* Traditional foods are centrally important to Inuit diet. The harvest of marine mammals, fish, crab, fowl, berries; the preparation and storage of these foods; and the sharing of this harvest with other Inuit in the home community and other communities is at the heart of culture and our way of life.

4. *Inuit are concerned with predictions that shipping in the Arctic will increase.* Inuit vary in their levels of concern, resignation, or acceptance that the number of ships coming through their homeland will increase. All agree that a higher tempo and new forms of maritime activity pose serious risks to Inuit and to the marine environment upon which we depend for sustenance. Inuit therefore advocate for strong regulations on shipping, primarily to minimize the impact on marine mammals and fish and to prevent disruption of seasonal hunting, but also for safety. None of our communities has the capacity to deal with a large search and rescue operation or pollution response.

5. *Inuit Insist upon Sustainable Use.* We have lived in the Arctic for thousands of years. It is our position that any action or intervention that affects our homeland must protect the environment, wildlife, and therefore Inuit in such a way that we can continue to live off this land.

Table of Contents

Foreword

Sea ice has always been part of my life. I spent much time as a child and as a teenager travelling to the coast and across the ice. I never questioned why it was there. It just was. But I did know it was special. It brought me, and my grandfather who almost always accompanied me, to places that I found exciting. It brought me to places that sustained us. We secured our livelihood on the ice. We hunted and we transported goods. We visited hunting camps of relatives and friends. We studied the ice and predicted weather and animal migration patterns. We did all this by travelling across, and observing, the sea.

This document is a collection of reflections on Inuit sea ice use from across Inuit Nunaat, our homeland that stretches from the far north-east part of Russia, across Alaska and Canada, to east coast of Greenland.

When I reflect back to my early days travelling on the sea, I feel a sense of awe. While it was a special place for me as a child, it is only today as an adult that I more fully understand the sea's profound relevance for all aspects of Inuit life: sustenance, beauty, story-telling, life-giving. It connects us to places, to people and to our environment. It is our highway to everything and to everywhere. As Jayko Oweetaluktuk of Inukjuak says in the pages that follow, “the sea ice never stops.”

Along with my sense of awe, today I also have a sense of concern. As the Arctic continues to change, so does our sea ice. Apart from the physical changes that our hunters and scientists are observing, the sea ice itself is under stress from impacts such as an increase in Arctic shipping. As noted in this report, “[t]o outsiders, ice is an impediment to transportation and access, something that must be broken or bypassed. It is seen as a barrier, blocking rather than enabling human activity.” We view sea ice as enabling. That is why I believe this project has been so helpful. It brings together commentary by Inuit sea ice users of what they see happening today, alongside descriptions of what organizations such as the Inuit Circumpolar Council and the Arctic Council are doing about the many challenges of today's Arctic seas. More importantly, it is my hope that what Inuit said to us about safety and proper management of shipping in the Arctic will spur us on to doing even more.

While I led the project that gave rise to this report, it is really written by the Inuit hunters and users of the sea who gave graciously of their time and their important knowledge. It is through their eyes that we interpret what sea ice means for them and for all Inuit. It is through their words that we understand how they continue to use the ice, in spite of the changes they see around them.

Apart from the Inuit hunters, I want to thank the Sustainable Development Working Group of the Arctic Council for providing the opportunity to highlight the important contributions of our hunters and to give them voice. I want to also thank the Government of Canada, the Kingdom of Denmark, and the United States of America for endorsing this project at the Arctic Council table. In particular, I am grateful for the financial support we received from Aboriginal Affairs & Northern Development Canada (AANDC).

Finally, I want to thank my fellow council members on the ICC executive council who asked ICC Canada to lead this project at the Arctic Council on ICC's behalf. Without my colleagues' support and guidance, this work would not have been possible.

Duane Ningaqsiq Smith
ICC Vice Chair (Canada)
President of ICC Canada

1. Introduction

1.1 Context

This expanded survey by the Inuit Circumpolar Council (ICC) is the product of an ongoing contribution to the Arctic Marine Shipping Assessment (AMSA) conducted by the Arctic Council. An earlier scoping report, *The Sea Ice is Our Highway: An Inuit Perspective on Transportation in the Arctic*, was produced in March 2008 to provide the authors of the AMSA with an Inuit perspective on the human dimension of shipping. Due to resource and time limitations, our earlier work focused on interviews within Canada. This publication updates and expands the content of this earlier report and includes material on the three other regions within the Inuit homeland – an important consideration in that, as a Permanent Participant at the Arctic Council, the Inuit Circumpolar Council speaks on behalf of all 160,000 Inuit living in Greenland, Canada, Alaska and Russia.

This initiative is important because it gives voice to Inuit, the people who have lived in the Arctic for thousands of years, sustaining and being sustained by the unique animals, fish, and fowl found here. Governments and industry have, for decades, used this same Arctic for their own purposes.

This report comes on the initiative of ICC and with the endorsement and support of the Arctic Council's Sustainable Development Working Group (SDWG) is intended to frame the dialogue from an Inuit perspective, and to discuss the issues related to land and sea ice use as we see them. From this discussion, the reader will come to learn how ice is central to how we have moved in the past and continue to move in the present.

"I've always lived with the ice at my side."

- Gerth Olsen, Sisimiut, Greenland, interviewed March 2014.

"Subsistence is our only way of life, so we have to work, to learn survival. You learn survival just by doing it, hunting, finding ways of making it easier for you."

- John Goodwin, Kotzebue, Alaska, interviewed March 2014

"To [me], not only to [me] but to the hunters, you have to have an association with the sea ice. To [me] it's almost like a gift because you have to depend on the conditions of the ice, and depending on the conditions it will have an effect on how much you're able to bring in terms of food on the table. So, it has an effect on how you live as a person, as a hunter. Because once we notice that the conditions start to deteriorate at any particular spot, the hunter doesn't necessarily become totally helpless but he knows that he's going to have more difficulty in trying to procure the animals that he needs to survive on. So you have to have that association with the ice."

- Joanasie Maniapik, Pangnirtung, Nunavut, interviewed May 12, 2004

"The ocean environment has to be safe. It has to exist in a liquid form and a frozen form because our people are winter dependent just as much as we are summer dependent. Just like seals in this area are so dependent on ice... We have to honour and respect that natural force."

- Austin Ahmasuk, Nome, Alaska, interviewed March 2014.

Inuit and the Arctic

Inuit live in the Arctic. Inuit live in the vast, circumpolar region of land, sea, and ice known as the Arctic. We depend on the marine and terrestrial plants and animals supported by the coastal zones of the Arctic Ocean, the tundra and the sea ice. The Arctic is our home.

Inuit have been living in the Arctic from time immemorial. Our home in the circumpolar world, Inuit Nunaat, stretches from Greenland to Canada, Alaska and the coastal regions of Chukotka, Russia. Our use and occupation of Arctic lands and waters pre-dates recorded history. Our unique knowledge, experience of the Arctic, and language are the foundation of our way of life and culture.

Inuit are a people. Though Inuit live across a far-reaching circumpolar region, we are united as a single people. Our sense of unity is fostered and celebrated by the Inuit Circumpolar Council, which represents the Inuit of Denmark/Greenland, Canada, USA and Russia. As a people, we enjoy the rights of all peoples.

Circumpolar Inuit Declaration on Arctic Sovereignty (2009)

As Inuit, we live in the vast, circumpolar region of land, sea and ice known as the Arctic. Our homeland spans all or parts of four countries: Greenland, Canada, the United States of America, and the Russian Federation.

When defining Inuit Nunaat, our "land," Inuit do not distinguish between the ground upon which our communities are built and the sea ice upon which we travel, hunt, and build igloos as temporary camps. The ice forms part of the 'landscape' in which people live; the sea ice attaches itself to the land allowing people to travel the trails that go back and forth over land and ice for much of the year. To Inuit, land is anywhere our feet, dog teams, or snowmobiles can take us. Far from being perceived as an obstacle, the sea ice enlarges Inuit territory, enables communication, and offers access to essential dietary resources.[1]

Accordingly, Inuit are a maritime people. Austin Ahmasuk of Nome, Alaska, explains:

"My people developed a maritime culture. For Alaska native people living on the coast, the idea of a maritime culture, those ideas and those stories …. For each area, each legend, each story … there's different aspects of that. But for our maritime culture, whereby products, animals and food products, prehistorically and historically, raw materials for tool making and things like that came from the ocean, they were vitally important for our survival. For marine mammal hunting like the bowhead whale and whaling, it meant that communities had to work together. Every part of a community works together to harvest a whale. Maritime hunting is something that requires cooperation and teamwork, whereas terrestrial hunting or trapping, really one person can do most of those kinds of hunting. But in terms of maritime hunting it involves boats and heavy gear. Marine mammals are not small, many of them are quite large. It involves working together. For my people it involves understanding local weather patterns, respecting and honouring the legends of the land and the sea which span many, many generations. For my family and my culture there are hundreds of actual accounts of various happenings, various stories that help us understand and put into perspective all these legends and what's happening to us in this modern day, which help us adapt."

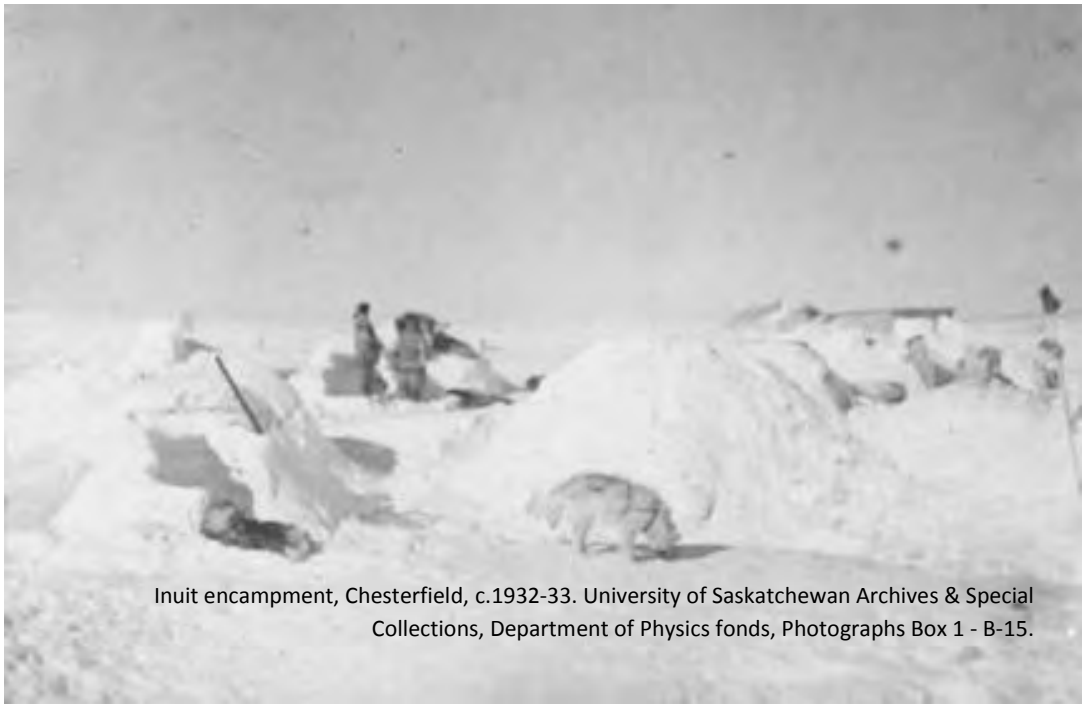
Circumpolar Inuit Reflections on Sea Ice Use and Shipping in Inuit Nunaat

Inuit conceive of sea ice differently than most of the rest of the world. To people who do not live in the region, ice is often considered an impediment to transportation and access, something that must be broken or bypassed. It is seen as a barrier, blocking rather than enabling human activity. The European explorers of the 18th and 19th centuries cursed it in their log books and, in extreme cases like the 1845 Franklin expedition, it led to death and disaster.

Not surprisingly, the explorers which met with the most difficulty or disaster were those who refused to adopt Inuit customs and knowledge. Others, like Fridtjof Nansen, Roald Amundsen, Knud Rasmussen, Robert Peary, and Vilhjalmur Stefansson adopted a more Inuit approach to travel and life in the North and met with far greater success. For these early explorers Inuit ways meant wearing skins and furs while using dog sleds for travel. In the 21st century Inuit tools have changed but the culture and traditional knowledge built upon centuries of life in the Arctic remains the same.

With few exceptions, Inuit settlements are located on coasts or on major waterways with easy access to the sea. This clearly reflects the importance of the sea to our Inuit way of life. Whether thickly frozen or open for the summer, the sea is our primary means of transportation and, historically, of communication. The usually ice-covered sea is our highway, the only physical connection between many of our communities and the only way we can access many of the animals we depend on for food. In the recorded Inuit lunar calendar, the formation of the landfast ice is known as *tusartuut.* It is a time in which the sea ice is historically solid enough to permit travel and visiting with people in other camps and, appropriately, means: 'hearing' news from other camps. Today, in summer, this travel is normally by boat and, in the winter, by snowmobile over the ice. Travel between Inuit villages is often dependent on these forms of maritime transportation. Many Inuit communities are even situated in such a way as to make them wholly reliant on the sea for egress. Many communities sit on islands, while others are surrounded by mountains or rough terrain or skirt an ice shelf. In such cases, residents wishing to visit neighbouring villages must travel by boat or over solid ice.[2]

Inuit have lived in intimate association with the Arctic environment for millennia, developing sophisticated environmental adaptations that have enabled us to thrive. To us, the ice is a *place* for travel. It is *also* a place for habitation. We are a maritime culture, and our culture, economy and identity depend upon our environment of ice and snow.



Inuit encampment, Chesterfield, c.1932-33. University of Saskatchewan Archives & Special Collections, Department of Physics fonds, Photographs Box 1 - B-15.

1.2 Scope of the Report

This report investigates Inuit use of sea ice, in response and in dialogue with the *Arctic Marine Shipping Assessment* (AMSA) *Report* (2009). It looks at existing sources of information regarding land use and occupancy to extract the highlights regarding sea ice, augmenting this with responses from interviews with Inuit hunters from Canada, Alaska, Greenland and Chukotka to provide a pan-Inuit perspective. It includes general predictions about the future in light of climate change and reduced sea ice based on the experience and traditional knowledge of Inuit hunters, but these predictions are not directed specifically to the AMSA timeline out to 2020.

The central thread running through this study is that Inuit are a **maritime people***:* our entire culture and identity is based on free movement on the land and sea. Indeed, we rely on free movement in order to eat, first of all, and also to obtain supplies for traditional clothing and art as well as to maintain pride in our rich cultural heritage. We also temporarily move out from our settlements to harvest resources that we sometimes barter or trade. Much of this movement takes place on the sea ice that surrounds and connects our communities.

Inuit share a common culture based on similar hunting, fishing and whaling patterns. There are certain variations by region because the communities have easier access to various species, however the centrality of sea ice to their culture and physical survival is something that we hold in common.

1.3 Methodology

The genesis of this work was ICC Canada President, Duane Smith, being struck by the changes that had occurred in the Arctic over the last 40 years, and that his fellow hunters were increasingly reporting on. He saw great worth in the data collected from the very comprehensive and wide-ranging Inuit land use and occupancy studies of the 1970s in Canada and wished to compare the experiences of today's Inuit hunters and users of sea ice with those interviewed back then. Understanding the significant scope and cost repeating such an undertaking would entail, the ICC Canada President saw value in taking "snap shots" in each of the countries in which Inuit live and do so through selective face to face interviews in Alaska, Chukotka, Greenland, and Canada, with a focus on coastal zone and sea ice use. In 2008, budget and time constraints allowed for ICC to interview only hunters in Canada and at the time published a report under the auspices of the Arctic Council's Sustainable Development Working Group as a contribution to the Arctic Marine Shipping Assessment (AMSA). That report was known as The Sea Ice is Our Highway: An Inuit Perspective on Transportation in the Arctic.

This report expands the 2008 work by including "snap shot" face to face interviews in the three countries beyond Canada and reviews some of the new literature that has been published since that time. As such, this report is based upon a mixed qualitative methodology, consisting of a detailed literature review of academic and policy studies, as well as interviews with Inuit selected based upon their experiences with the coastal zone and sea ice use.

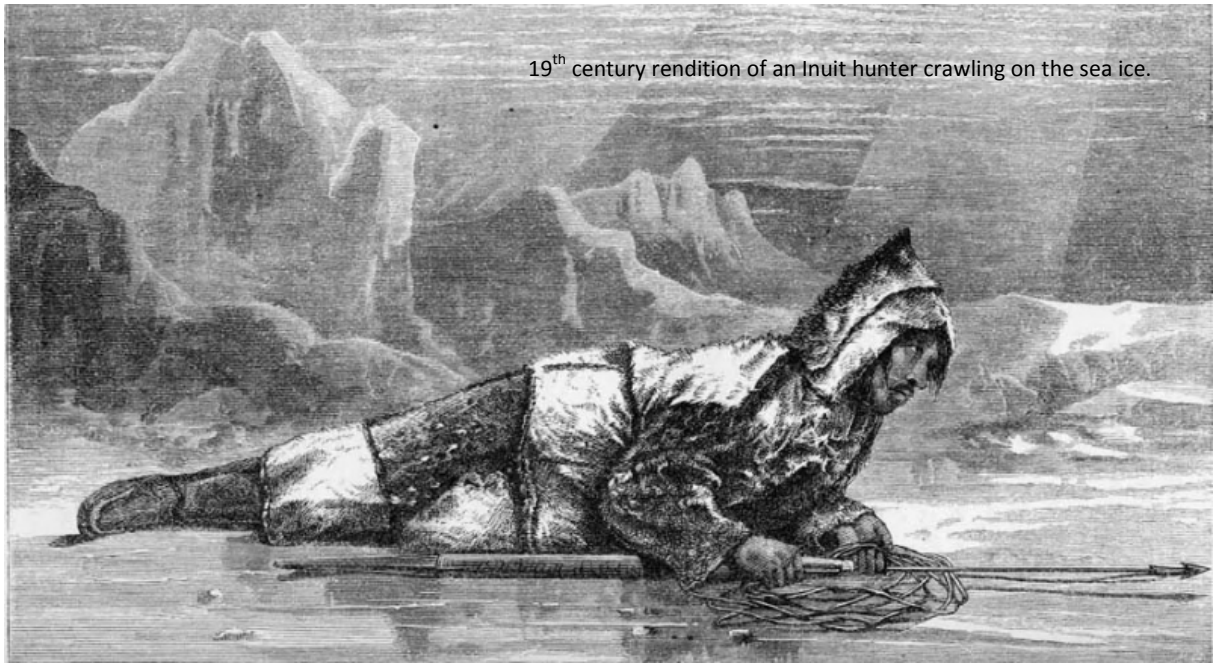
2. Moving to Follow the Game: Our Nomadic Tradition

Inuit have always relied on hunting for subsistence, a way of life that requires a great deal of movement to follow the migratory patterns of the wildlife and sea mammals in the region. Because the game and sea mammals in the Arctic ecosystem are highly transient, Inuit have adopted a nomadic lifestyle for much of our history, following a seasonal cycle and occupying different parts of the land depending upon the movements and availability of game.

Although most Inuit in Chukotka, Alaska, Canada, and Greenland now live in settlements, the traditional knowledge passed down from our elders to our children continues to reflect this nomadic tradition. Much of this knowledge is meant to hone the skills necessary for hunting and fishing. For example, Inuit hunters have "decoded" sea ice behaviour through our understanding of lunar phases, tidal currents, and winds.[3] In order to hunt and fish safely and effectively in the Arctic, we train our young people to understand the ice and the environment around them.

Long-term experience and continuous use of the sea ice are critical in evaluating ice safety and in survival more generally. Crushed ice, if not sufficiently fused, can turn into quicksand. Ice floes can crash into shorefast ice to knock it loose. Leads (large fractures in a cover of sea ice) can open unexpectedly and hunters can be trapped or killed. One resident of Alaska tells the story of fast moving ice pushing onto the shore and burying alive a young boy who was unprepared for such rapid shifts.[4]

Inuit use their understanding of the peculiarities of various types and combinations of wind and current, as well as local shoreline topography, to forecast ice conditions.[5] When moving over ice of unknown thickness, traditional methods are still the most reliable. One such method for testing thin ice involves stabbing the surface two or three feet ahead with a stick with a piece of iron attached to the bottom of it. "One tap and it's hard and doesn't go through right away, kind of dangerous," Nathaniel Kalluk explains. "Two taps, can travel with a snow machine but don't stop. Three to four taps, safe for travel and camping.[6]



19th century rendition of an Inuit hunter crawling on the sea ice.

Part of travelling on the ice, sometimes over long distances, is the ability to navigate based on landmarks

that the untrained eye might not perceive and the untrained memory might not be capable of archiving over long time periods. Outsiders typically do not think of sea ice as something that has a regular topography, but Inuit know that, in certain locations, the topography of sea ice is the same year after year. They see the same cracks, the same ridges, and the same leads. These ice features disappear during the summer but they return during the colder months. Inuit name some of these features, as they would name other physical features such as a hill or a bay.[7]

Out on the sea where there are fewer landmarks, and the features of the ice may change from year to year, traditional knowledge teaches hunters how to navigate using the sun, wind, and stars. A skilled navigator can use the ridges in the snow like a compass based on which direction the prevailing winds come from at that time of year. Additionally, he or she can use the location of the sun or, in the long Arctic nights, the stars, to deduce what direction he is travelling in. Another more widely-known navigational aid is the inuksuk, which acts as a marker for passers-by. In these ways and others, traditional knowledge enables us to travel over great distances without losing our way.

When a trip requires an overnight stay, or when a sudden storm or other setback leaves a traveller stranded on the ice, the traditional means of finding shelter is to build an igloo. Igloos are no longer used as seasonal shelter as they were in the recent past – several hunters interviewed for this report described growing up in igloos – but a seasoned hunter still knows how to build them and will do so if the situation requires it. Because igloos can be built quite quickly as shelter, they are an invaluable technology for the travelling Inuit, even today.

Warm clothing is also necessary for a long trip in the harsh Arctic climate. Inuit traditional knowledge passed down through the generations includes instruction on how to dry and stretch the skins of the animals harvested for food in order to make warm boots, pants, parkas, and mittens out of them. For example, caribou skins are often used for parkas, while sealskin is used for boots because it is waterproof.

This traditional knowledge is at the core of the Inuit way of life and has been developed and passed down from generation to generation. Movement will always be a necessary part of life in the Arctic and we do our best to prepare our young people for that reality.

2.1 Continued Importance of Traditional Diet

One thing that has remained constant in Inuit life is the centrality of "country food" to our diet. As in the former days when meat, fish, and blubber were dietary staples, augmented seasonally by berries and wildfowl eggs, Inuit today still rely heavily on foods obtained through hunting and gathering. For example, a Canadian government study shows that, as recently as 2005, the majority (68%) of adults in Inuit Nunaat are still harvesting country food. This same survey showed that sixty-five percent of Inuit lived in homes where at least half of the meat and fish consumed was country food. [8] In the Bering Strait the most recent data from harvest surveys show that households in the region harvest an average of more than 2,600 pounds of marine mammals per year. This points to the significant role marine life plays in this part of the world.[9]

"My grandfather ... taught me how to hunt. Because of that I lived, from a young boy to manhood, accordingly with the hunted mammals and fishes. At the age of 14 I started fishing by myself. From a very young age we were taught how to live and fish and how to preserve nature and its gifts to us. We were taught how to live with the animals and when to hunt for them or when not to. We were taught sustainable fishing and hunting and how to take care of the nature and its animals. These were the very first things my grandfather taught me, that's how it was back then."

- Adam Dahl, Sisimiut, interviewed March 2014.

"I'm still going to depend on harvesting, different species if it has to be. The majority of my food I still get from the land, I still depend on all the fish that we get and different ways to prepare it. Whale meat and seal meat, geese. You just change with the changes, I guess. I'll still be here. As long as I'm alive I'll keep doing what I'm doing."

- Frank Pokiak, Tuktoyaktuk, Inuvialuit Settlement Region, interviewed March 28, 2008.

"If the ice is gone, the animals are gone and then we are lost as hunters."

- Albert Nikolayevich Ankalin, Sireniki village, Providensky District, Chuktoka, interviewed March 2014

"In the winter we travel on the ice to get to the open sea by snowmobiles; in the summer we use duralumin boats. In the spring, when the ice is slightly thinner and the first seals begin to arrive, we travel across the bay area on snowmobiles in order to get to polynyas where the seal hunt takes place. For harvesting seaweed (the bay area is rich with different kelp variety) we drill holes and catch oopa (Halocynthia or sea potatoes)."

- Makotrik Igor Nikolaevich, Novoe Chaplino village, Magadan Regiona, Chutotka, interviewed March 2014

"Sea ice here becomes an extension of the land. It becomes a way of traveling and there are four species of ice seal that inhabit this area. One seal in particular makes extensive use of the shorefast ice, that's the ringed seal. The bearded seal makes use of the area just beyond the shorefast ice, amongst the moving ice. So seal hunting is a fairly big, involved, substantial effort. It involves traveling upon the ice, traveling in a safe manner, knowing where the open water is, accessing open water areas. I also use the sea ice as a platform for fishing. We fish through the ice for cod or crab, in wintertime iceborne crabbing is a popular activity here."

- Austin Ahmasuk, Nome, Alaska, interviewed March 2014

"As soon as the ice is thick enough to walk on, we take gill nets and we set them underneath the ice and that's how a lot of people fish. The nets float underneath the ice."

- Chucky Gruben, Tuktoyaktuk, Inuvialuit Settlement Region, interviewed March 31, 2008

Despite the increased difficulty in finding and harvesting big game and sea mammals due to thinning and less predictable sea ice, Inuit communities persist in maintaining their traditional diets. When asked whether changes in ice conditions were affecting their traditional diets, respondents spoke of having to travel farther or in a different month than usual; they spoke of dietary substitutions, such as hunting more musk-oxen when the caribou migration shifted away from their area; or they explained how melting permafrost has made the natural ice cellars used to age and store meat less effective. Not one of them said anything to suggest they were giving up on hunting despite the considerable challenges some were facing in getting out on the ice and land.

2.2 Harvesting What the Land and Sea Provides

Inuit are determined to maintain our traditional diet. We need to eat harvested meat because of the high cost of store-bought and to maintain our cultural traditions. Since traditional Inuit foods are rarely sold in stores, they must be obtained by hunters who crisscross the land and sea around their communities, regularly travelling hours, and sometimes days, to track down the wildlife and harvest what is needed for their families and communities.

Sea ice is essential to the hunt and, therefore, to the Inuit way of life. For the Qeqertarsuarmiut hunters of Western Greenland, the arrival of select marine mammals is directly related to the quality of the sea ice and the community invests a considerable amount of time observing and discussing the movement of that ice. The ability of hunters to relate different ice conditions to weather and coastal fluctuations is critical to a well-timed, safe, and successful hunting trip. "Sikuajogpoq [poor, or as in this case, late ice] does not form until late January or into February, as opposed to late-December time for good ice," one hunter explained. "If the ice does not form until late January, it is usually too late for good seal hunting and most trips you take are made in vain."[10]

Across the Arctic in Barrow Alaska, seasonal hunting makes extensive use of sea ice and its various features. In fall, shortly after freeze-up, Inuit rely on ice-fishing. In winter,

when ice becomes safer to traverse, hunters pursue ringed seals at breathing holes and in their dens. In spring, up to 40 crews of 10 to 20 people set out on the Chukchi Sea in pursuit of whales. In selecting sites for whaling camps, an intimate understanding of the ice is essential. Among the necessary considerations is the location of grounded pressure ridges, which are more stable than ungrounded ice; indentations in the edge of the shore-fast ice, in which whales are more likely to appear; the presence of old ice, offering additional stability as well as a source of drinking water; and patterns of cracks indicating the history of ice formation that winter and thus likely weak points where the ice may fracture and break off. With these considerations in mind, the whalers are also likely to move camp many times during the course of the season, both back and forth from the edge to the fallback sites, and to new sites altogether as ice conditions change.[11]

Over the last decade, hunters in Qasigiannguit, Greenland have noticed a lack of sea ice in their "own" places where they put nets for seals, as well as thin or uneven ice that inhibits access by dogsled to their usual hunting spots.[12] In western Alaska, the Yupik of St. Lawrence Island engage in a seasonal walrus hunt which is strongly affected by the condition of sea-ice. Leads or weak ice can block hunters while solid ice serves as their highway. When the climate changes and ice becomes less predictable, these (and other) traditional Inuit activities become more difficult. Speaking about the community of Gambell's walrus hunt, Leonard Apangalook says that he is now seeing: "lots of wind, poor ice conditions." He continues to say that "the polar pack has not been seen for the last 10-20 years … there is just local grown ice, which is less stable."[13]

Across the Bering Strait, the Inuit of Chukotka have had the same experience. Pinniped hunting has become more dangerous as the edge of the ice becomes thinner and more fragile. Walrus rookeries have decreased and/or moved, their migration has changed, the number of marine animals has decreased, and their fat content is lower. According to Chutkotkans, the meat of marine mammals, including whales, now tastes and smells bad.[14]

This issue of food security is critical for Inuit. Traditional food is vital to providing us with our dietary needs, and hunting lies at the core of our culture and economy. It sustains us, providing us with skills that we need in modern society, shaping our character, and teaching us strength and resilience.

"In our area even the meat itself has changed. For the past ten years or so, I get stomach problems, horrible cramps, when I eat seals and seafood. There is lots of sewage, garbage, and mining waste draining into the sea near Rankin Inlet, so eating the animals is giving us problems now. I know this is specific to our area, because when I went to Igloolik, I could still enjoy the traditional delicacies. I can't enjoy them here anymore because of the terrible side-effects."

- Lizzie Ittinuar, Rankin Inlet, Nunavut, interviewed March 15, 2008

"As we know in this modern day, PCBs and POBs exist in detectable levels in our marine resources. We know that they exist and we know those pollutants are coming from other parts of the world. If our marine resources were to become so impacted that they would be unhealthy to eat – then I could say, and then we might ponder what it means to lose a culture."

- Austin Ahmasuk, Nome, Alaska, interviewed March 2014

"I hope that the Arctic region will not become a zoo or a sanctioned area because the people living in the Arctic use the sea mammals for livestock."

- Adam Dahl, Sisimiut, Greenland, interviewed March 2014

Cape Dorset, Nunavut: A Case Study in Observed Changes to Sea Ice from the Inuit *Siku* (sea ice) Atlas

Cape Dorset is located on a small island of the same name off the southwestern tip of Baffin Island (i.e. Foxe Peninsula), in Hudson Strait (64°14'N, 76°40'W). Community members have observed, and are experiencing, considerable change in their local climatic and sea ice conditions. Through long term use and experience, elders and hunters observe changes over time based on a number of local indicators, but specifically in relation to sea ice, the most commonly used are:

Floe edge position

In Cape Dorset, the position of the floe edge [the point at which the sea ice stops and the open water begins] is often compared to its position relative to Aupaluqtuq Point. The ice normally only forms along the shoreline, but it is not freezing as far off shore anymore, so the floe edge is closer. Because the floe edge no longer seems to form 'properly,' it is more likely that the ice will break off at the floe edge with winds or currents. These kinds of **break-off events** have also been noted to be happening more often and unpredictably.

Even though observations seem to suggest a trend towards reduced sea ice extent and floe edges that are closer to town, there is still much variation between years. For example, in winter of 2007/2008 experts from Cape Dorset noticed an increase in ice cover as cold conditions that year led to more ice growth than had been seen for a number of years before that.

Weather

Just like the sea ice, weather conditions are different each year, but still, a number of aspects of **weather variability** are seen to be outside ordinary seasonal or annual expectations. Warmer winter temperatures were the most commonly observed weather changes. This was generally evaluated by:

- The decrease in ice crystal formation on people's faces and parka hoods;
- Fewer days of extreme cold as indicated by the lack of ice fog presence and diesel fuel no longer becoming gelatinous in the winter;
- More overcast conditions;
- The decreased need to wear caribou skin clothing;
- The use of canvas tents in January and February (where an igloo was required for adequate shelter in the past); and,
- People's breath while exhaling no longer crackles in mid-winter.

Often unpredictable weather or frequent weather shifts, were linked to changes in prevailing winds, or other indicators such as clouds, storms, and precipitation.

Winds

- Prevailing winds shifted (more SE winds, less NW winds) - more southerly winds push pack ice into the floe edge, leads to ice instability;
- No consistent prevailing wind direction, frequent directional shifts - leads to ice instability and break-off events;
- Colder winds - can facilitate ice formation;
- Warmer winds - can facilitate ice deterioration; and,
- Windier fall conditions – can affect ice formation.

Cape Dorset, 2004. *Northern Pix*

Clouds

- Cloud formations formerly used to predict weather conditions are no longer reliable.

Storms

- Fewer blizzards.

Precipitation

- Less snow accumulation.

Water Temperature

Even though comments were made about generally warmer weather, a number of local experts believe that it is the ocean - not the air - that is warming. For example, hunters and elders talked about the ocean water being:

- Warmer sensation to touch;
- The cold water layer being deeper in the ocean resulting in warmer surface layers, as evaluated through seal breathing holes;
- The slower speed of re-freezing after a surface layer of ice is broken in the winter; and,
- Some localized water temperature measurements.

This increased water temperature may be an important influential factor in the floe edge being closer to town, changes in freeze-up and break-up timing, and thinner sea ice.

Freeze-up timing

Experts in Cape Dorset noted that freeze-up is occurring later each year, and that the **freezing process** is taking longer.
Changes in freeze-up timing are often evaluated locally based on when:

1. The very early signs of freezing are visible; and,
2. The ice becomes travelable (i.e. thick enough for travel by dog team or snowmobile).

In Cape Dorset the sea ice can be used for travel when it is possible to cross the relatively narrow Tellik Inlet on sea ice, to reach Baffin Island. Approximately a one-month delay in freeze-up has been experienced in the past 10 years.
These later freeze-up conditions and different ice consistencies were often connected to the influences of shifting and unpredictable wind and weather patterns. Specific local indicators are used to identify changes in the freezing process, including:

- No *qanguqtuq;*
- No *qaikut;*
- *Ilu* not happening anymore;
- Ice no longer beginning to form from the bottom of the low tide zone; and
- *Naggutiit* refreeze roughly.

The shifting timing of ice formation not only has implications for winter ice conditions, but for spring as well.

Break-up timing

Experts in Cape Dorset noted that there is a shift towards ice breaking up sooner in the spring, and the **melt processes** occurring faster.
Break-up is often described as the time when the sea ice is no longer travelable. A later stage is when the ocean is ice-free (and boating is possible).
There are also commonly known areas that tend to melt earlier than others (usually associated with strong currents or nearby polynyas). These areas are now beginning to melt and open up to a month earlier than expected**, compared to 1960s conditions**. In addition, the faster speed of ice melting in the spring is believed to be linked to thinner and weaker (softer) ice conditions. All of these factors, along with weather influences, combine to mean that there is a shorter ice season.

Ice Thickness

Thinner ice conditions were frequently mentioned in Cape Dorset. **Local indicators are used to evaluate changes in ice thickness**, not necessarily specific measurements. Some of these indicators include when:

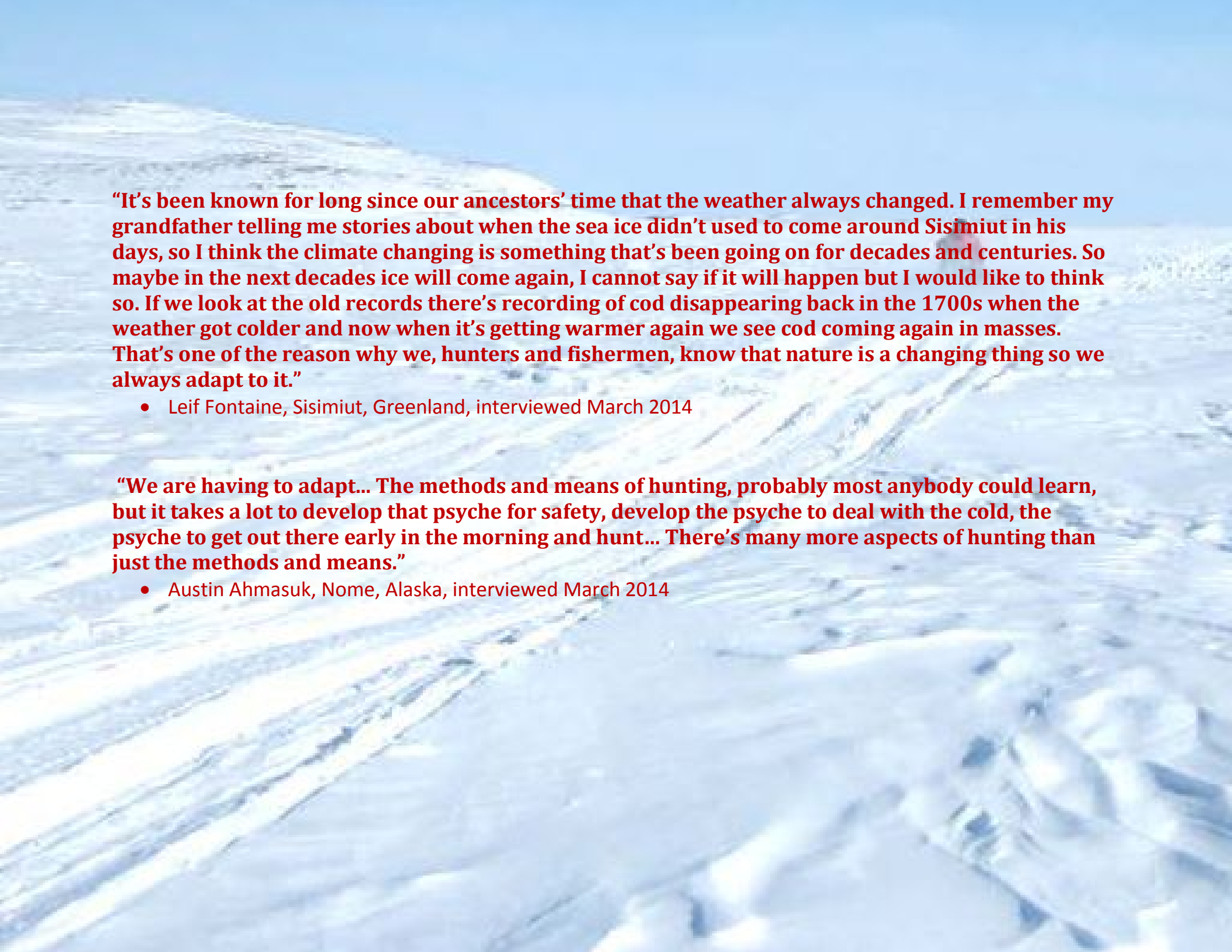
- Seal breathing holes are no longer as deep or tunnel-like;
- Ice at open cracks is no longer as deep;
- Ice is thinner in comparison to personal height – usually gauged when drilling a fishing hole or setting seal nets;
- Travel routes are not as sturdy or solid as previous years (e.g. more open water on the winter soap stone mine route, which can also link Cape Dorset to the community of Kimmirut);
- Multi-year ice is smaller and not present as frequently; and
- Formation of new saqvait (polynyas), or presence of more open water.

However, it is important to keep in mind that ice thickness evaluations can be different between people, depending on their height and visual depth perception, as well as the initial ice conditions which they use as a starting point for comparison. For example, areas with strong currents would be thinner to begin with, but may be experiencing a greater amount of thickness change. Because of this, there is a strong connection between thinner ice conditions and earlier spring ice break-up. It also links to the opening of new polynyas, as the ice is worn away more easily by the currents from underneath. Thinner ice conditions could also be created by more snowfall (it insulates the ice, and prevents thickening). Therefore, to evaluate ice thickness to determine safety for use means taking into account fall freeze-up conditions, geographic location (i.e. topographic, bathymetric, and current/tide effects), surface conditions, and seasonal weather.

Presence of moving or multi-year ice

The presence of multi-year ice (MYI) in Cape Dorset has also changed. Less MYI has been seen drifting nearby, and people note that the pans seem smaller. MYI pans are also not lasting through the summer anymore.

Source: http://sikuatlas.ca/cape_dorset_sea_ice_changes.html. Please see website for links to Inuit perspectives on these observed changes.



"It's been known for long since our ancestors' time that the weather always changed. I remember my grandfather telling me stories about when the sea ice didn't used to come around Sisimiut in his days, so I think the climate changing is something that's been going on for decades and centuries. So maybe in the next decades ice will come again, I cannot say if it will happen but I would like to think so. If we look at the old records there's recording of cod disappearing back in the 1700s when the weather got colder and now when it's getting warmer again we see cod coming again in masses. That's one of the reason why we, hunters and fishermen, know that nature is a changing thing so we always adapt to it."

- Leif Fontaine, Sisimiut, Greenland, interviewed March 2014

"We are having to adapt... The methods and means of hunting, probably most anybody could learn, but it takes a lot to develop that psyche for safety, develop the psyche to deal with the cold, the psyche to get out there early in the morning and hunt... There's many more aspects of hunting than just the methods and means."

- Austin Ahmasuk, Nome, Alaska, interviewed March 2014

3. Recent Adaptations

Over the past four millenia, Inuit have proven to be a highly adaptive people. We have learned new ways of travelling, adapted the construction of our snow houses to variations in climate, and adjusted our diet according to the availability of fish and wildlife. Only in the past one hundred years or so have we had ongoing contact with non-Inuit people, who we call *Qallunaat*. This contact has led to many changes for us, but we have worked hard to maintain our rich cultural heritage even as we adapt to the changes thrust upon us.

In our Alaskan and Canadian settlements, regular contact with the *Qallunaat* began in the early 20th century with the establishment of fur trading centres in many of our communities. Many Inuit changed their hunting patterns during this time in order to capitalize on the opportunity to sell furs. Trapping became a more important activity, while sealing declined somewhat. Trappers also hunted more wolves and other predators in order to protect the foxes along the traplines.[15] In this way, we began to engage with the economic system of the *Qallunaat* while maintaining our connection to the land and the animals.

Around the same time, Inuit began using rifles for hunting. This was a major change that affected every type of hunting. Also in the early 20th century, many Inuit whalers switched from traditional skin boats to schooners. In Alaska and the Inuvialuit Settlement Region this meant they no longer went as far inland to follow the caribou, instead, choosing to stay near the coast to concentrate on whaling and fishing.[16]

In the late 1950s and 1960s, many Inuit began using snowmobiles instead of, or in addition to, dog teams. This had a great effect on hunting and travel.

In recent years, hunters have begun using modern communication devices to stay in touch with other hunters or their families while out on longer trips. Interviews with Inuit in all four regions revealed that most use two-way radios or mobile phones to call home or talk to other hunters.

"I don't use the new gadgets much. Only when I'm going to an area known to be dangerous. But actually they can be dangerous too sometimes, because then you go by your compass or GPS when you should be going by your human senses. They are better in the summer on the water than out on the ice."

- James Kukkik, Hall Beach, Nunavut, interviewed March 14, 2008

"I can either travel by the stars or use GPS, nowadays. They keep advancing. Now they have maps and charts that show how deep the water is. Navigation now is a lot easier than before."

- Paulusie Novalinga, Puvirnituq, Nunavik, interviewed March 14, 2008

"I don't use GPS on the ice, knowing there might be open water anytime out there. I've noticed that people using GPS on the ice seem to get more into problems. The ice breaks up anytime here, so the trail you might have used breaks off sometimes. So I try and use what I've been taught out there and not rely on GPS."

- Loule Padluq, Kimmirut, Nunavut, interviewed March 14, 2008

"Lately, all the hunters have mobile phones. All the communications while travelling on the sea ice are handled primarily through mobile phones. In the past, we used radios. We also use marine compasses."

- Albert Nikolayevich Ankalin, Sireniki, Chukotka, interviewed March 2014

"The timing of hunting has changed considerably because with the change in the sea ice there's also a change in the weather. With the compound effect of changing weather, thinner ice has made things considerably different in my own lifetime."

- Austin Ahmasuk, Nome, Alaska, interviewed March 2014

"Today I have noticed changes in the ice. The patterns have changed a lot, causing dangerous hunting areas on the sea ice. The fall is long, it doesn't freeze as soon. In springtime the ice is melting very fast."

- Jayko Oweetaluktuk, Inukjuak, Nunavik, interviewed March 15, 2008

"In the past the ice used to be thicker and more hummocky; there used to be vast glacial fields rich with walruses. Such ice clusters used to be home to rookeries. These days, the ice is small, loose, hard to land on, and there are no animals on it anyway. Large ice fields stretch far from the shore; it takes some time and effort to get to them through the small ice. Therefore, there are much fewer animals now. They say that all the ice has moved northwards and does not quite reach us anymore."

- Alexander Alexandrovich Inmugye, Sireniki, Chukotka, interviewed March 2014

Others look up ice condition reports on the Internet. Many use GPS devices – although opinions on the usefulness of GPS varied, as quotes in the textbox suggest.

With all of these changes, some people think that Inuit have lost part of our culture. While it is true that the tools that we use are different than the ones we had at our disposal one hundred (or even fifty) years ago, at the core we are still the same. We may use fiberglass boats instead of skin boats and, in some areas, snowmobiles more often than dog teams. We may use rifles for much of our hunting instead of spears or wooden harpoons. We may live in stationary settlements and spend less time in temporary camps. But we Inuit are still hunters and we still rely on the hunt for a large part of our diet, which means we are still out on the land and sea, still travelling great distances to seek out the animals whose behaviour we know so well.

Inuit Traditional Knowledge has provided a wealth of information for researchers and policymakers seeking to understand the rapid pace of Arctic climate change, and its impact on ecosystems and communities. Inuit contributed traditional knowledge as part of the expert knowledge incorporated into the Arctic Council's *Arctic Climate Impact Assessment*, a state-of-the art report when it was published in 2005, and a model for integrating "two ways of knowing." Inuit knowledge played a key role in many community-led and collaborative projects and initiatives that were part of the global *International Polar Year* research initiative, documenting environmental change in Alaska, Canada, Greenland, and Russia. The Inuit Circumpolar Council contributed to a study on the *Circumpolar Flaw Lead System* in the Beaufort Sea, documenting the knowledge of Inuit communities who have occupied and used this area for thousands of years. Community-led and collaborative research has yielded many insights and details about change that complement scientific approaches, and have proven a valuable and reliable source of information for policy makers.

3.1 Thinning Ice and Changing Weather Patterns

Regional maps and descriptions of land and sea use show the vast territory covered by Inuit harvesters of sea mammals, fish, and game. As subsistence hunters, Inuit follow the animals as far as needed in each season, according to the overall conditions of that particular year. While Inuit do use the sea ice for general transportation in addition to hunting, we are practical people who harvest as close to our communities as possible. The fact that we often travel long distances as part of the hunt means our people from Chukotka to Greenland need free movement over the land and sea in order to continue our subsistence-based way of life.

As climate change and reductions in sea ice affect the migration routes of the land and sea animals we rely upon, it may be necessary for us to travel even farther than before in order to reach them. Inuit hunters are reporting many changes in the locations and times that our traditional animals can be found. In some communities this is reducing the territory that hunters need to cover, while in others they have to travel much further than before in order to harvest enough food for the communities. This is why we are very concerned that sea ice routes remain passable for hunters as well as the migratory game they follow, and that the entire Arctic environment be kept free from contamination – both in the areas we are now using regularly and in those areas where we may need to hunt in the future.

Summary of Observations of Environmental Change in the Canadian Arctic *(discussed in community workshops)*

Region	Inuvialuit Settlement Region					Nunavut			Nunavik			Nunatsiavut
Community	Paulatuk	Holman Island	Aklavik	Tuktoyaktuk	Inuvik	Repulse Bay	Kugaaruk	Arctic Bay	Puvirnituq	Kangiqsujuaq	Ivujivik	Nunatsiavut
OBSERVATIONS												
ICE												
Ice is thinner now.	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉
Earlier break up of ice.	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉
Later freeze up of ice.	◉	◉	◉	◉	◉		◉	◉	◉	◉	◉	◉
Permanent snowpacks/ icepacks are melting/ glaciers are melting.					◉	◉	◉	◉		◉	◉	

Source: Inuit Tapiriit Kanatami, *Unikkaaqatigiit: Perspectives from Inuit in Canada* (Ottawa: ITK, 2008), 69.

"You don't see as high pressure ridges as we used to see. Going out there, you used to see ice that piles up, after it hits the land-fast ice it usually just piles up with young ice. You don't see that as much. It still piles up, but not as high as it used to... as high as a couple of story houses."

- Frank Pokiak, Tuktoyaktuk, ISR, interviewed March 28, 2008

"Now it's basically smooth but growing up, from the time I started to go down when I was 16, we used dog teams and we had to have the dog teams go over ridges, pressure ridges. Back then they were high. Sometimes two or three stories high. So we had to go up and down to get to where we got to go. But now the ice is almost level. We don't have the high ridges anymore. We do further out, but not like it was in the past. Right now we don't have the multi-year ice, we just have the two or three year ice or the winter ice, which is up to two to four feet. In the past, at times when I was a kid and wasn't going out yet, they couldn't go out because the ice never left."

- George Olemaun, Barrow, Alaska, interviewed March 2014

"We used to go out fishing a lot in the fall. Because it freezes so late in the year, it gets dark really early by the time the ice is frozen enough for ice fishing. So I don't really go out fishing any more."

- Annie Napayok, Whale Cove, Nunavut, interviewed March 15, 2008

As the climate changes and the ice becomes less predictable, the connections between Inuit communities become more difficult to maintain. For example, residents of Repulse Bay, Nunavut have noticed that their traditional travel route to the nearby community of Igloolik has become more inaccessible due to changes in the snow and ice conditions. The resulted has been a decrease in the amount of travel between the communities.[17] In Greenland, travel from Qaanaaq to Siorapaluk (the most northerly community in the world) has become dangerous. When traveling by dog-team in 2007, for example, the ice was so thin that the dogs' legs were punching through. In Savissivik, a community of 40 people on the Greenlandic coast of Baffin Bay, thinning ice has made many traditional routes too dangerous to use. Coupled with the area's increasingly strong winds, there is now a period of potentially months when hunters are unable to go out onto the sea ice, but cannot hunt from motor boats either because there is too much ice in the water.[18]

Inuit have already begun adjusting their travel routes.[19] In 2013, at the *Circumpolar Inuit Response to Arctic Shipping Workshop*, ethnographer Dr. Claudio Aporta observed that this was becoming a common trend. "All of the [Inuit] we have spoken with are saying the floe edge is forming closer," he reported. "Old travel routes are becoming less reliable and knowledge is being challenged with such rapid changes."[20]

These uncertain conditions are also affecting Inuit hunting. The ability to move freely over long distances is foundational to hunting in the Arctic because the animals we hunt are constantly on the move. Seals, whales, polar bears, walrus, and geese are only a few such species which travel hundreds or thousands of kilometres during their annual migrations, and many of them depend on sea ice to do so. When ice conditions change, their migratory patterns must change as well. In some cases the changes are so extreme that they can no longer access their usual feeding or nesting areas, forcing them to adapt if possible or else face starvation and population loss. Because Inuit rely on these highly migratory species for our subsistence, our way of life requires a great deal of movement. We follow the animals as far as needed in each season, depending on the conditions of that particular year.[21]

At the appropriate times each season, Inuit hunters set out to find these animals as their migrations bring them through their area. Some communities are lucky to have a favourable cove for whales, a feeding ground for caribou, or a nesting area for wild birds nearby. Others must travel further away to find these sources of food. Some communities live in places where the floe edge – generally the best place to find sea mammals – is an hour away from shore. Others must travel three or four hours to reach it. These harvest conditions fluctuate from year to year, largely dependent on the weather. This is why we Inuit must be ready to travel long distances if necessary.

In a tough year it may be possible to mitigate the lack of large game or whales by taking more geese or ducks, ptarmigans, fish, or other small game. In general, however, unexpected difficulties mean that hunters must search further and further away until they manage to find enough big game or sea mammals to sustain the community until the next hunting season. "This past year we had a really hard time finding caribou," Pitseolak Panguartuq of Kangiqsujuaq, Nunavik, explained in 2008. "We travelled all over and didn't find any. We ended up going over to the island, which we never do, but finally there we managed to catch a caribou. It was really affecting our community already."[22] Fortunately, the community was spared the hardship of being completely without caribou for the winter because the hunters were able to cross the Hudson Strait from Nunavik to Nunavut.

When asked how his life might change because of poorer ice conditions in the future, Tommy Qaqqasiq from Pangnirtung, Nunavut said: "we'll use other equipment. People will still hunt. It's part of our life. When things change, you just have to go with it."[23] Alexander Alexandrovich Inmugye of Sireniki in Chukotka made a similar point, looking to the past for guidance in adapting to the future:

> **If the water is open, we use duralumin boats, wooden whaleboats. Last year, for the first time in many years, we built a skin canoe, which we will now register and use in the winter for travelling in the ice and small ice. Leather canoes can be carried through large ice fields. This is how it used to be in the old days. Now we will have to remember how they used to do it. We want to have**

"Now, for example it's mostly small ice that passes by our village and there is a lot of it. This makes it more problematic for us to go to sea plus there are no animals on small ice. In the past, all the ice that passed was big - whole fields of ice, often with walruses floating on them. There are winters now without any ice; it also happens that there is a lot of slush. Yes, there are changes, and many of them not in our favor. It used to be better when the ice was thicker and bigger – there were many more animals then."

- Albert Nikolayevich Ankalin, Sireniki village, Providensky District, interviewed March 2014

"Back [in the 1940s and 50s] we would wait for the sea to freeze because when it froze the mammals would come and when the fjords froze to ice then the mammals would come. When the fjords melted and the mammals were moving out again we would hunt for them again. Now in these days the fjords don't freeze as much and the sea ice is not as far and thick anymore. This result in the sea mammals not coming to the fjords."

- Abel Ludvigsen, Iqirasik, Greenland, interviewed March 2014.

"Ten, twenty years ago it used to be common to see six, seven, eight feet thick ice out there. Now you're lucky if you see three feet of ice. It makes it dangerous for travelling. You have to watch for cracks all the time, you have to watch for wind all the time... you can get stranded."

- Chucky Gruben, Tuktoyaktuk, ISR, interviewed March 31, 2008

> **more leather canoes in order to use them when the ice passes. After landing, when we travel on the ice field, we use snowshoes. It would be difficult to survive without our traditional knowledge; at sea one can never completely rely on new technologies.**[24]

No matter how hard things get, Inuit are not giving up on hunting. Even though climate change may prove to be the most difficult adaptive challenge we have ever faced, we will do whatever it takes to keep eating our traditional food.

Sea Ice and Healthy Communities: The Case of Rigolet, Nunatsiavut

Changes are affecting not only transportation and hunting but the emotional and psychological health of Inuit communities, such as Rigolet, Labrador. Activities out on the land and sea are of utmost importance to the physical, mental, emotional, and spiritual health and well-being of the community, evoking deep feelings and sentiments. As one experienced hunter put it, "*The truth of the matter is that the land is really, really special to me. And you know, besides my family, I would die for my land*." This connection to the land lies at the heart of being Inuit, and is intimately connected to people's identities and lifestyles. As another middle-aged woman who regularly travels on land to hunt and take photographs shared:

> *"Well, for me I like to spend a lot of time outdoors and just connecting somehow with the outdoors. I think it's just the nature. You can see the beauty in everything, whether it's an old tree stump, or if it's a wild animal that kind of gives you a little bit of a fright because they're a little too close if it's a wolf or something, or if it's just a matter of being able to harvest your own food. It's just all around good, I think, mentally and physically and emotionally for sure."*

For some, the connection was like an intimate relationship:

> "*Nature is to us another person. This other being that you connect with and you respect. And you just want to be there amongst it. You give it the respect, it'll give you the respect back. It has to be respected. You can't control it."*

For those who travel on the land and ice regularly, and maintain lifestyles of hunting trapping, and fishing, not being able to travel because of warmer weather and changes in ice patterns is restrictive and feels as though something fundamentally important to and in life is missing. As one older hunter and trapper explained, for him not being able to go out on the land

> *"feels almost like a handicap. Like you got some kind of handicap when you cannot get away. It is your normal pattern of life and all of a sudden you cannot. It feels like a handicap."*

Regardless of age, gender, or amount of time spent on the land, local studies have shown that Inuit agree that when going out on the land, and participating in hunting, trapping, fishing, and foraging, people become "emotionally healthier, mentally healthier.

Source: Cunsolo Willox et al, "'The Land Enriches the Soul': On climatic and environmental change, affect, and emotional health and well-being in Rigolet, Nunatsiavut, Canada," *Emotion, Space and Society* 6 (2013): 14-24.

4. Sustainability

In recent times, many people in business, government and universities have begun to speak about "sustainability." They speak about sustainable development, for example, which seems to mean different things to different people. There is also talk of economic sustainability and ecological sustainability. This is not a criticism of the people who promote these ideas, because it is certainly important to think about the long-term consequences of our actions. The point is simply this – as a people who have lived in harmony with our ecosystem for thousands of years, we Inuit have a very different concept of sustainability. For us, an action that can continue for ten or twenty, or even fifty years before its damaging effects are seen does not qualify as sustainable. A way of doing things, a way of living and behaving, must be done in such a way that it could continue for hundreds and thousands of years without harming the natural way of things in order for it to meet the Inuit standard of sustainability.

When thinking about sustainability, it is important to understand that we Inuit live in the Arctic. This is our home. This is where our people have lived for thousands of years and we intend to live here for thousands more. When we talk about the future, we are not talking about a five-year plan or even a ten-year plan. We are talking about our children and our children's children. We are talking about living in the same communities where we can see the evidence of our ancestors. We are talking about preserving our way of life and the natural environment it depends upon for hundreds and thousands of years. Interviews affirm, time and time again, that is what Inuit call sustainability.

The primary resource for Inuit is the animals. Our people have always known how to care for this resource. We live in harmony with the land. When we hunt, we only take what we need and make sure to leave enough of the herd so that it can replenish itself.

Inuit are practical people. We know that it is not possible to turn back the clock on change, so we do our best to adapt. For example, many of our people work in wage employment at the same time as they live off the land. This means we need the jobs that development will bring. We need them in our communities so that our young people do not need to move down south and so that

Healthy Arctic Communities

In the pursuit of economic opportunities in a warming Arctic, states must act so as to:

(1) put economic activity on a sustainable footing;
(2) avoid harmful resource exploitation;
(3) achieve standards of living for Inuit that meet national and international norms and minimums; and
(4) deflect sudden and far-reaching demographic shifts that would overwhelm and marginalize indigenous peoples where we are rooted and have endured.

The foundation, projection and enjoyment of Arctic sovereignty and sovereign rights all require healthy and sustainable communities in the Arctic. In this sense, "sovereignty begins at home."

- *Circumpolar Inuit Declaration on Arctic Sovereignty* (2009)

Economic development and social and cultural development must go hand in hand.

- *A Circumpolar Inuit Declaration on Resource Development Principles in Inuit Nunaat* (2011)

our men and women are able to live with their families. Ships are used to supply our communities with building materials and goods for our stores, and an increase in shipping might even bring a welcome reduction in the high cost of living in the Arctic. In some cases, hunters have even taken advantage of wildlife attracted to ship tracks in ice.

At the same time, Inuit are very concerned about the environmental effects of various activities associated with shipping and "economic development." We travel all over the land and sea, and so do the animals we eat. When any kind of disruption in the natural order of things occurs – for example, an oil spill, dumping of waste, or noise from machinery or ships – the animals are affected. This automatically affects our health and well-being as well, because we are left with a choice between two bad options: (1) stop hunting the animals which supply us with our meat, which would be a terrible tragedy for our culture and leave our communities without an affordable source of protein, or (2) continue to hunt and eat our traditional foods, with negative consequences for our health.

Resource development and shipping also affects Inuit society and culture. Speaking to the situation in Alaska, Austin Ahmasuk of Nome observes that:

> **Because of the changing climate, there are some sociopolitical factors taking place… The US Coast Guard are a regular presence in my community now, talking about transarctic shipping, shipping through the Bering Straits, and agencies that could impact fish and game, like the National Marine Fisheries Service, making plans for developing fisheries in the Arctic. Those type of sociopolitical forces could prove to be a very big impact to our people. If the cumulative effects ... might compound and become negative, those things could definitely change our lifestyle."**[25]

If development is to proceed, the ICC has explained that it must do so in a manner which does not damage the environment or the Inuit peoples' ability to use the sea-ice. The principles by which such development can take place are laid out in *A Circumpolar Inuit Declaration on Sovereignty in the Arctic*, adopted by the Inuit Circumpolar Council in 2009, and the *Circumpolar Inuit Declaration on Resource Development Principles* in 2011. These documents outline Inuit policy on development and stipulate the need for economic activity to be safe, sustainable and undertaken in close consultation with the local population.

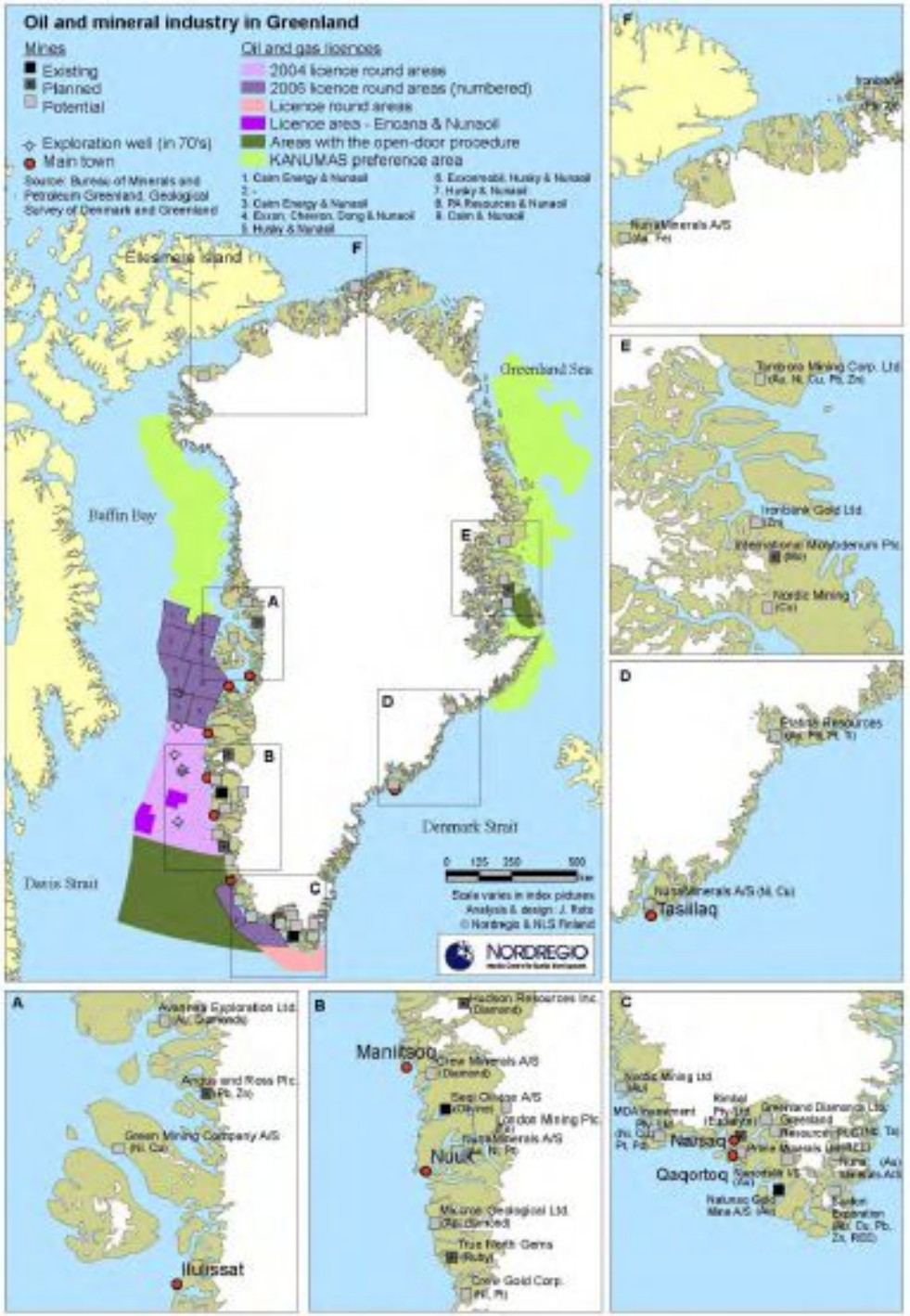
4.1 Resource Development Principles

Over the past decade, resource extraction industries have increasingly set their sights on exploiting offshore and onshore resources in Inuit Nunaat. Driven by high oil and mineral prices and the depletion of reserves elsewhere, global mining and oil companies have viewed the Arctic as the world's last untapped frontier for conventional oil and gas deposits, some of the largest base metal reserves ever discovered, and a treasure trove of strategic materials -- from rare earth elements to vast quantities of uranium and graphite.

Oil and gas exploration has commenced on a small scale in the Baffin Bay area and the Chukchi Sea. Companies are also beginning to map the Beaufort Sea and the waters of the eastern Canadian Arctic Archipelago. These are some of the last underexplored hydrocarbon basins in the world and likely contain the planet's few remaining large-scale, undeveloped oil deposits. The Chukchi-Beaufort Sea area is estimated to contain close to 40 billion barrels of oil. The waters around Greenland are estimated to hold close to 16 billion barrels of oil.[26] To date, exploration has been limited owing to the difficult environment and caution in the wake of the Gulf of Mexico spill. In Canada and Alaska, work has consisted largely of seabed mapping to delineate the most promising reserves. Exploratory wells have been drilled off Western Greenland by Cairn Energy, however no commercial reserves have been uncovered. Royal Dutch Shell has a drilling program planned for the Chukchi Sea, though these activities have been postponed over environmental concerns.

Mining plans are also well advanced for mineral reserves across Inuit Nunaat. In Canada, there are five mines now in operation in the Northwest Territories and Nunavut and an additional eighteen projected operations in various stages of development. In Alaska, zinc, lead and gold mining represents $3.1 billion in value.[27] Some of the largest new projects will lead to significant new activity in the region. The Mary River mine in Nunavut is one of the largest iron ore deposits in the world. In Greenland, foreign corporations have also begun exploring major gold, uranium, rare earth elements, and iron ore deposits.

Shipping over new maritime supply routes, established to build and sustain development and ship out resources, is as significant as the projects themselves. Massive resource carriers, drilling rigs, and service vessels will enter Arctic waters. On land, new pipelines and roads will connect mines and camps to ports and infrastructure networks. For



example, the Mary River mine will involve ore carriers moving through Foxe Basin and Hudson Strait – areas rich in walrus and other marine mammals. The effects of these new supply routes near (or through) Inuit hunting grounds are a significant concern to Inuit.

ICC insists that robust environmental and social impact assessment processes must be in place and followed in each of the Inuit regions, especially with regard to project development in the resources sector. Civil society and indigenous peoples' organizations must be given sufficient time, adequate resources, and full disclosure so they can provide essential input into these processes, taking into account the provisions of the UN Declaration on the Rights of Indigenous Peoples and the ILO Indigenous and Tribal Peoples Convention (No. 169). We have the right to participate in the decision-making processes related to the use of Inuit lands, seas, territories and resources, and to promote economic development polices based on the principles of free, prior and informed consent; the right to fair, impartial and open processes. Sound development of non-renewable resources in Arctic lands, territories and seas also requires that Inuit be educated and trained to participate significantly in the ownership, management, and employment associated with those initiatives, and that royalties and other revenues derived from resource development be shared equitably with Inuit.

The *Circumpolar Inuit Declaration on Resource Development Principles in Inuit Nunaat* (2011) explains:

> **Resource development results in environmental and social impacts as well as opportunities for economic benefits. In the weighing of impacts and benefits, those who face the greatest and longest-lasting impacts must have the greatest opportunities, and a primary place in the decision-making. This principle applies between Inuit Nunaat and the rest of the world, and within Inuit Nunaat.**
>
> **All resource development must contribute actively and significantly to improving Inuit living standards and social conditions, and non-renewable resource development, in particular, must promote economic diversification through contributions to education and other forms of social development, physical infrastructure, and non-extractive industries.**
>
> **Inuit welcome the opportunity to work in full partnership with resource developers, governments and local communities in the sustainable development of resources of Inuit Nunaat, including related policy-making, to the long-lasting benefit of Inuit and with respect for baseline environmental and social responsibilities.**

In short, a proper balance must be struck. Inuit desire resource development at a rate sufficient to provide durable and diversified economic growth, but constrained enough to forestall environmental degradation and an overwhelming influx of outside labour. Inuit recognize that responsible non-renewable resource development can also make an important and durable contribution to the well-being of current and future generations of Inuit. Managed under Inuit Nunaat governance structures, non-renewable resource development can contribute to Inuit economic and social development through both private sector channels (employment, incomes, businesses) and public sector channels

(revenues from publicly owned lands, tax revenues, infrastructure). Healthy communities and households require both a healthy environment and a healthy economy.

4.2 Increased Shipping: Current and Future Impacts

Shipping has increased in the circumpolar waters over the past decade; however the world has not seen the explosion of activity that some commentators predicted. The advantages of using the Arctic sea routes certainly appears compelling. For example: the route from Shanghai to Rotterdam along the Northwest Passage is 3,450 km shorter than going through the Suez Canal. From Shanghai to New York the difference is 3,850 km. From Shanghai to Rotterdam, via the Northern Sea Route, the savings would be close to 3,200 km.[28]

Most trans-arctic shipping activity is through the Northern Sea Route. There, the 2012 shipping season witnessed 46 complete transits. There was considerably less activity along the Northwest Passage, with only 21 transits that year. The rate of activity is increasing across the entire circumpolar region, but in global terms it is still miniscule compared to established shipping routes. The Suez Canal, for instance, sees roughly 18,000 transits per year while 13,000 ships navigate through the Panama Canal.[29] The impacts on Inuit, however, are still significant.

While activity in the waters of Inuit Nunaat has increased in recent years, this has largely been destinational traffic, namely vessels travelling to and from points in the Arctic rather than sailing through it. Traffic has been tourist, resource and supply based and the vessels involved have largely been owned or chartered by major resource or tourist companies rather than international shippers.

"I know from reports that transarctic marine traffic has increased substantially but you rarely ever see them because the shipping lanes are so far out that they're over the horizon… That's the scary thing. Marine traffic has increased substantially in this area, but you rarely ever see them. The fact that I don't see them is even more of a concern, the fact that the ships are so huge that they can't come to the port of Nome because Nome's port is too shallow. These deep draft vessels that are enormous and are carrying who knows what kind of commodity from whatever corner of the world."

- Austin Ahmasuk, Nome, Alaska, interview March 2014.

"Rumours about the opening of a seaway do disturb us. We don't want to see the shipping routes overlap with the migratory routes of whales and walruses."

- Alexander Alexandrovich Inmugye, Sireniki, Providensky District, interviewed March 2014

"[Increased shipping] is unavoidable, and if we are to develop like the rest of the world, then like always hunters and fisherman will do what they always do and adapt. More ships will come but the hunters and fishermen will adapt."

- Marius Olsen, Sisimiut, Greenland, interviewed March 2014.

"Noise is a really big factor for our marine mammals, they're really sensitive to noise. So if the ship traffic comes around, I'm afraid our resources are going to go away and adapt to a different area."

- John Goodwin, Kotzebue, Alaska, interviewed March 2014

"In one way [ships are] good for us. We need material, we need housing, we need goods, of course. But in another way, when it comes to hunting and fishing, there are less animals that come around our shores if there's a big boat off-loading, with its big lights and so on. That scares off some of the marine mammals that do come here. Therefore it affects the hunting when there's a big boat anchored in the middle of the bay."

- Paulusie Novalinga, Puvirnituq, Nunavik, interviewed March 14, 2008

"I really don't like it, alright. But there's nothing I can do about it, I guess… A lot of marine mammals are going to be affected by it. We live on the seal and the oogruk and the fish and if they get polluted, or with more traffic they get stressed…. The animals get sick too. Like we don't like loud noise sometimes, it can affect our health. Fish or animals have the same kind of feelings, and they're raised to react to noise."

- Percy Ballot Sr, Buckland, Alaska, interview March 2014.

"One time while I was travelling north of Sisimiut near Nassuttuup paava and I went past a transport ship, a tanker, travelling south when I noticed the tanker was dumping diesel oil. I think it was on purpose that they were dumping diesel because there was too much of spread of it and they were still sailing while dumping. It was around 1998. I still remember the stench from the diesel spread on the sea."

- Gerth Olsen, Sisimiut, Greenland, interviewed March 2014

Cruise ships are at the forefront of this trend. The number of these ships venturing beyond the 66th parallel has more than doubled over the past ten years – increasing at a rate far greater than the trend in Antarctic cruising, which began more than a decade earlier.[30] In 2010 there were 47 cruise ships in the Northwest Passage, 25 in Baffin Bay and eight in the High Arctic.[31] Tourism in Chukotka has also tripled between 2009 and 2011.[32]

For local communities, tourism can be a source of revenue but can also disrupt traditional and other activities. Like fishing but unlike other forms of shipping, tourism is likely to be focused on some of the same living resources (seabird colonies, marine mammals) that sustain local communities, thus increasing the potential for disruption and conflict.[33]

Even when ships proceed safely, they may still present a danger to the local communities. Icebreakers can disrupt the sea ice, cause earlier than normal breakups, and damage Inuit transportation corridors. Although icebreaker tracks can sometimes be passed over as soon as one hour after a ship passes, what was once smooth ice will be rubble that Inuit travelers might have to axe their way through. On transitional ice areas, passing ships can be even more dangerous. Hunters pursue bears and other game on ice floes and vessels moving between the hunters and the land could unwittingly separate those floes and strand the hunters.

Offshore oil and gas exploration brings opportunities for development but also heightens the risk of spills or contamination. For example, offshore licensing has resulted in heavy equipment, platforms, and an increasing number of ships in Greenlandic waters, as well as the prospect of drilling.

Inuit also worry that increasing traffic in the North will inevitably lead to more shipborne pollutants finding their way into the Arctic waters and the local ecosystem. This pollution includes the discharge of ballast water laden with non-native marine species. Exhaust emissions are a serious problem since oceangoing vessels are permitted to burn off high-sulphur fuels which would be illegal in most countries. (In

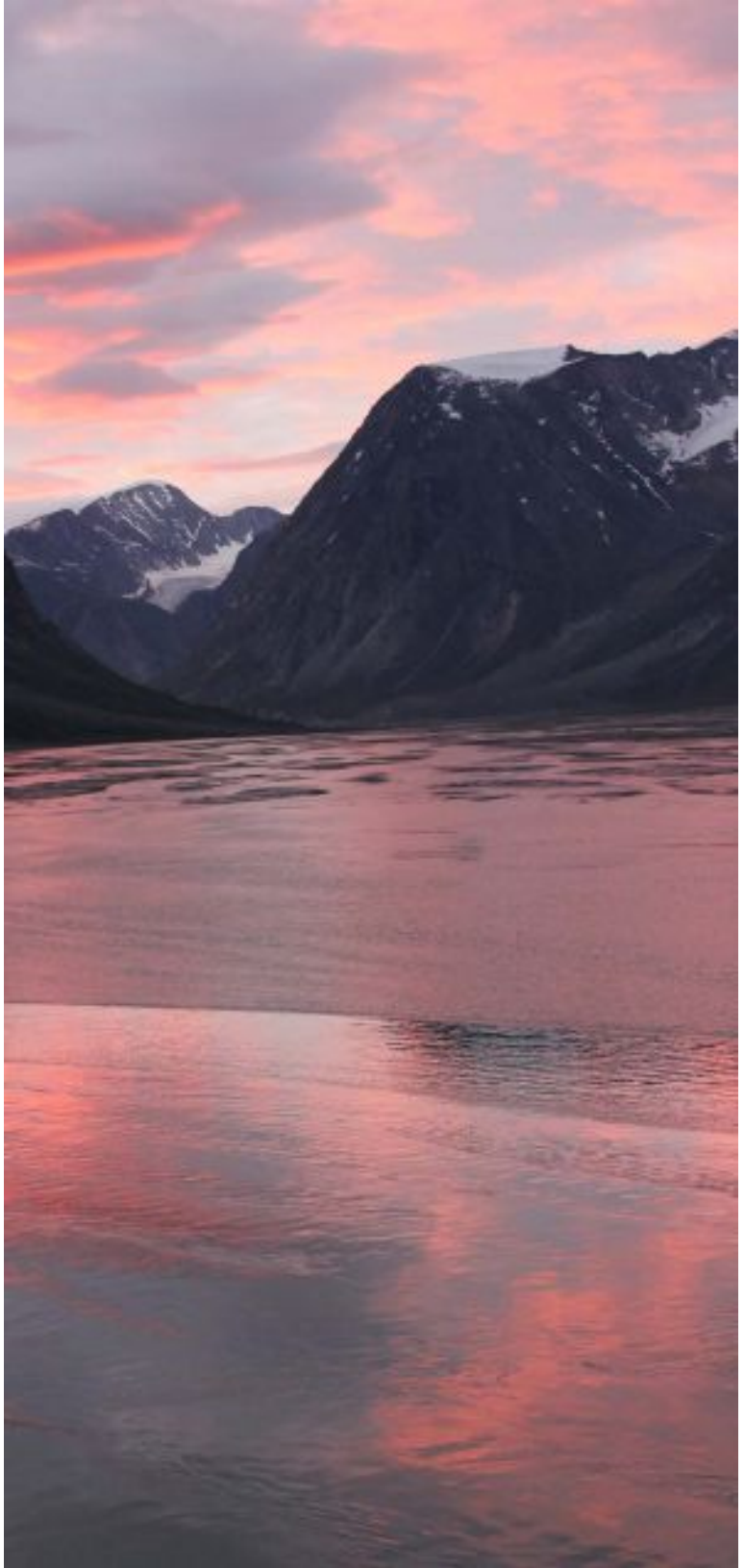
2011 the International Maritime Organization established a ban on such bunker fuel in the Antarctic, however its use is still permitted in the Arctic.) Sewage and grey water discharge can also create problems in public health and can kill aquatic life, as can jettisoned solid waste and garbage. Bilge water, which is often mixed with oil leaked from a ship's engine, can likewise harm marine life and damage the fragile northern environment.

Albert Nikolayevich Ankalin of Sireniki, Chukotka, recounted that:

> **When travelling in open water, we began to notice some contamination – we see more household garbage floating: plastic bottles, plastic bags, etc. After a storm the shore also tends to become dirtier. We don't measure the radiation because we have no instruments to do that, so I cannot say anything about that. However, three years ago I saw some seals that were bald and red-eyed. The ice does not seem to be too dirty, there's really no noticeable change there. Last year, we long sailed to reach a dark object, which we thought was a walrus; it turned out to be a drifting metal barrel.**[34]

Inuit also express fears that vessel noise can impact the movement of marine animals, thus affecting community hunting. Simon Idlout of Resolute, Nunavut, observed that "walruses used to come very close to the community, but since the ships have been coming in, we don't see walruses coming in anymore."[35] Marine mammals have very sensitive hearing and equate noise with danger. The Inuit know that traditional hunting often involves being very quiet and many hunters are concerned that the noise from large ships stresses animals, causing them to flee from perceived danger and displacing them from important habitat and hunting areas.[36]

Bowhead and other whales rely heavily on their hearing and are adept at using their voices to navigate in complete darkness through ice. Inuit fishers have reported significant decreases in sea life when seismic ships pass through an area.[37] These observations have been confirmed by a number of studies which have shown that seismic surveys, used by oil companies to chart the sea floor, can cause damage to whales' hearing. This noise threatens the livelihood of Inuit whale hunters in two distinct ways: it drives whales away from their hunting grounds and it injures the whales themselves. As air-breathing mammals, whales spend a great deal of



time near the surface of the water. Increased shipping and exploration increases the risks of vessels colliding with whales. There are about 50 licensed whaling captains in Pt. Barrow alone, responsible for supplying the community and their extended families across Alaska. Anything that disturbs the natural migration patterns, the calving grounds, or the health of the Arctic's whales will have a serious impact of the local community.[38]

Another example of the difficulties related to shipping comes from the community of Tuktoyaktuk on the Beaufort Sea coast: a key hub for supply ships servicing Inuit communities in the western Canadian Arctic. Because Tuk harbour is also teeming with various species of fish, it serves as an instructive example of colliding interests between economic activities and Inuit use of the sea. Inuvialuit hunter, trapper, and fisherman Chucky Gruben described the issues in 2008:

> **We have a hunters and trappers committee here, we take care of the wildlife. We deal with the people, we deal with the shipping companies. We have done some things where after freeze-up, the ships are not allowed to come into the harbour. But this past year, because of late shipping to other communities, we had to keep our harbour open longer than usual because the supplies hadn't gone out to the other communities.**
>
> **The community of Tuktoyaktuk is right in a harbour where a lot of fishing takes place. There's two entrances to the Tuk harbour. What we call the west entrance is where the smaller boats come in, and over by the east entrance is where the larger ships come in. The east entrance is a place where a lot of people here that do their fishing set their nets right in the channel. Because the ships had made a ship track through the east entrance, they kept it open up right until November sometime, and the people couldn't set their nets there because of the ships going back and forth. That is one of the impacts of shipping on our harvest.**
>
> **Usually with that kind of thing, we do have a say on whether the ships can use the area, but times are changing and every year we get applications to come into the harbour later and later. They wanted to do that the year before last, too, but we had to say no. Last fall we didn't really have a choice because there was still fuel and a lot of supplies that needed to go out to the other communities, so we had no choice.**

Inuit concerns over shipping relate not only to potential damage done to the northern waters and communities by spills and accidents, but also to the safety of the ships themselves. Many vessels entering Arctic waters are unprepared for the rigors of northern operations and, as the textbox suggests, Inuit are worried about the risks associated with cruise ships, holding dozens or even hundreds of passengers, entering their homeland with ever-increasing regularity.

The human and environmental dangers inherent in this activity were demonstrated in 2010 by the grounding in Nunavut waters of the *Clipper Adventurer*. Inuit communities are small and their disaster response capabilities limited. In the event of a serious accident like that of the Costa Concordia off Italy, Inuit worry that first responders would be overwhelmed by the task of assisting so many people. Whaling captain and community leader John Hopson Jr. told the *Circumpolar Inuit Response to Arctic Shipping Workshop* that, with only four communities and approximately 2000 people, Inuit in his area would not have the resources to go out and help if there was an accident with a cruise ship. These vessels appear 50 to 300 miles off the coast, he continued, and there is no infrastructure to even re-supply these ships. "There is nothing and it is mind-boggling."[39]

Inuit also raise a range of safety and security concerns related to the influx of visitors on ships. ""If a ship or sailboat comes, we need to know who they are and where they came from," George Olemaun of Barrow explains. "Because we never know. It's just local control and it's something we do, although it's state waters. [Federal or state authorities] should be there, but they're never there."[40]

"We have cruise ships that come in more often than in the past. But at the same time, we don't know who's there or what disease or anything that they might have. You know how the cruise ships are – something always happens."

- George Olemaun, Barrow, Alaska, interviewed March 2014.

"In recent years, all kinds of cruise ships are coming in to our area. Last year alone, there were maybe five or six cruise ships that came into town… There's a national park here in Pangnirtung, further inside the fiord, that's what they are coming to see. The tourists come into town and buy all kinds of art, like carvings, craft work, soapstone, whatever they can afford to buy. They help the artists. But hunters have been complaining about those ships because they go all over Cumberland Sound, even to the campsites. People are saying they are scaring away the animals, the mammals and whales. We are really noticing this because in the past couple of summers we hardly saw any narwhals around. Usually we catch our quota, but not in these past years."

- Tommy Qaqqasiq, Pangnirtung, Nunavut, interviewed March 13, 2008

"In the past it used to be just the barges passing our village. We had an agreement with them not to pass until we're done with our oogruk hunt. So they honoured that, so far. But I hear they're planning to have cruise ships. I don't know how that will work, especially hearing about their pollution. Dumping their waste out in the ocean. If they have an oil or gas leak, that would pollute the ocean. I don't know why they need to have cruise ships going by. It's good enough for the supplies that are needed. It's all money that people are wanting nowadays."

- Ruby (Ahwalick) Eningowak-Jones, Shishmaref, Alaska, interviewed March 2014.

"When someone is lost, everyone gets involved: some on the shore, while we set off into the sea as hunters. Primarily we search for our hunters or for hunters from other communities; that happens when a motor breaks down or something else happens. The fact is we live on the shore and must always partake in the search; this is our tradition: we must always help."

- Alexander Alexandrovich Inmugye, Sireniki, Providensky District, interviewed March 2014

"Safety would be our greatest concern. Making sure there is a way to rescue large vessels, because there's no way we can do that with the small boats that we have."

- Roy Ashenfelter, Nome, Alaska, interview March 2014.

"When these big trawlers gets in trouble in the sea ice they usually help each other out but we remember one instance in 2001 near Kangaatsiaq when a big trawler was caught by ice and forced into a reef and although all crew members were saved the ship itself sank to the sea. We know now that the Greenlandic Home Rule in corporation with the Danish defence force are making preparations to such accidents and making rescue plans. We have from our organisation, the National Association for Hunters and Fishers, proposed that these tourist cruise ships that are coming to Greenland should upon arrival have an experienced Greenlandic sailor board them to prevent accidents, especially because these waters north of Arctic have not been charted."

- Leif Fontaine, Sisimiut, Greenland, interviewed March 2014.

Similarly, a community member in Gjoa Haven told a reporter:

> **I'm concerned about the substantial increase in other [small] ships coming through the Arctic. There have been instances where they've taken locals out on to the boats with them as guests and they've shared their alcohol and other things with them which has led to problems on the boat and on the shore . . . but its [also about] making sure that there aren't terrorists or illegal immigrants or just unsavoury people.**[41]

Furthermore, many small vessels have been arriving totally unprepared for Arctic conditions – endangering not only the environment but themselves.

Collisions between Inuit craft and passing ships is also a concern. During the spring marine mammal migration, hunters in small boats can be found all over the Bering Strait region hunting for walruses and seals. Small boats are also active at other times of the year while hunting seals or whales, fishing, or traveling to other areas or communities. These small boats are vulnerable to collision with larger ships transiting the area.[42]

Accounts from communities across Inuit Nunaat reaffirm that the environment is vital to our entire way of life as Inuit. If something were to happen to our fragile Arctic ecosystem, our way of life would be lost and we as a people would be lost. Therefore, any activity in the Arctic, whether it is resource extraction, tourism, or military-related, must be undertaken according to the Inuit definition of sustainability – it must support the continuation of the Inuit way of life for thousands of years to come.

Case Study: Kawerak, Inc.'s Ice Seal and Walrus Project, Alaska

For millennia, Bering Strait region tribes have successfully harvested and observed the massive marine mammal migrations that pass through the region each year. These marine mammals are an integral part of local cultures and contribute to both food security and cultural identity. Communities have developed ingenious ways to harvest and retrieve these large mammals and to produce foods, tools, crafts and other items that utilize almost every part of the animals. Today, many local experts (experienced hunters and elders) in the Bering Strait region are concerned that increasing vessel traffic and development activities in the Arctic threaten both marine mammals and the local cultures that depend on them. Tribes here want to preserve the region's clean oceans, abundant marine life, and vibrant indigenous cultures. This document presents the primary threats to seals and walruses, and to seal and walrus hunting, identified by local experts, as well as specific responses supported by tribes in the region. This information was documented as part of Kawerak's Community-Based Documentation of Ice Seals and Walrus project, which involved interviews with 82 elders and hunters in 9 Bering Strait region communities from 2010-12.

Threats

Prey Depletion

The proposed expansion of industrial scale commercial bottom trawl fishing into the northern Bering Sea has alarmed tribes in the Bering Strait region. As one hunter explained, *"if bottom trawling wipes out the food sources, the animals will be wiped out."* An elder commented, *"Norton Sound is people's refrigerator. If they deplete food [for seals and walrus] people here will starve."* Industrial scale fishing activities may also deplete the fish species that feed spotted and ringed seals and damage the benthic habitat that provides prey such as clams for bearded seals and walruses. Local experts have observed that marine mammals tend to follow their prey, and as such, consider prey availability a critical habitat component. Industrial scale fishing (pelagic or non-pelagic), has the potential to disrupt the marine habitat and food chain.

Noise

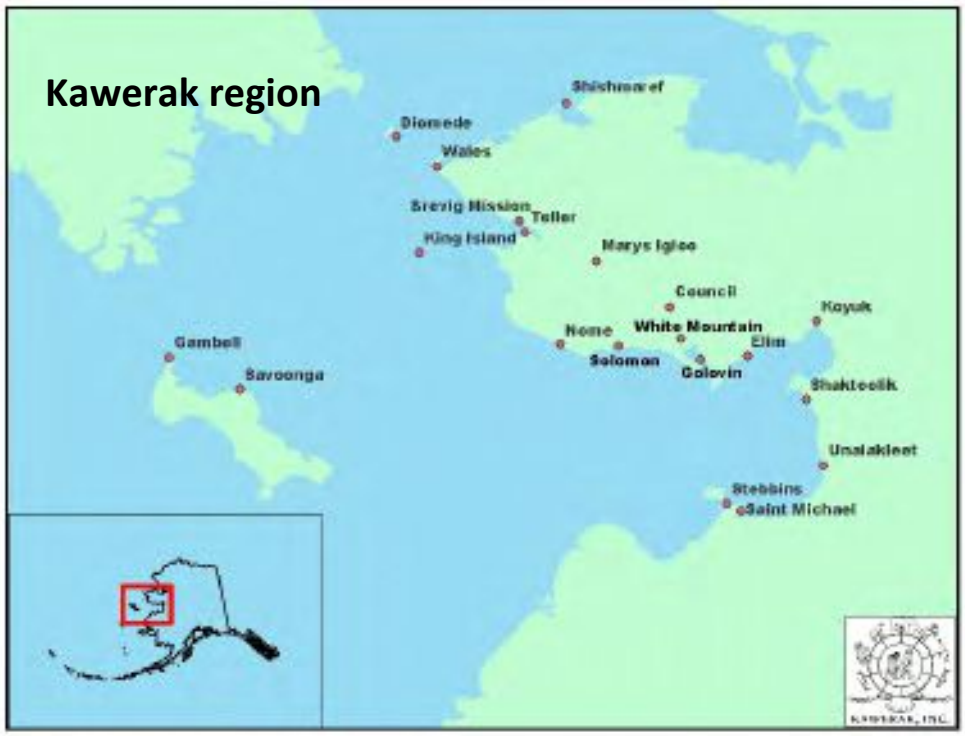
Marine mammals have very sensitive hearing, as they communicate with each other through sound. Hunters can listen to bearded seals (known in Elim as *aviu*: ones that holler) underwater by putting an ear to a boat paddle. Elders explain that traditional hunting involves being very quiet, as most marine mammals equate noise with danger and will flee from disturbance. Many local experts are concerned that the noise from large ships and development activities will stress animals, causing them to flee from perceived danger and displacing them from important habitat and hunting areas.

Pollution

Indigenous residents of the Bering Strait region eat marine mammal foods regularly. A harvest survey in 2005-2006 estimated that an average of 637 pounds of marine mammal per person were harvested that year by 12 communities in the region. Seal and walrus are eaten on an almost daily basis in some households, and seal oil, made from blubber, is an essential condiment and preservative in the region. Pollutants can accumulate in marine mammals, especially in their blubber. As such, ocean contamination is a serious public health threat for families dependent on marine foods. Additionally, a catastrophic event such as an oil spill could prove devastating to the marine environment and marine mammal populations that concentrate in the region. As walruses are very sensitive to smells and are known to avoid gasoline fumes, even moderate pollution could displace them from habitat areas.

Policies that do not respect local use patterns or match local environments

Bering Strait residents have regularly expressed concern that major decisions about the region are made by people who do not understand local environments or indigenous cultures. This is considered a potential threat to the subsistence way of life. For example, local experts expressed concern about the consideration of walruses, ringed, and bearded seals for listing under the Endangered Species Act. Hunters worried that, *"Once something is labeled threatened or endangered we become criminals."* And one elder commented that, *"All the food I eat being on the endangered species list, I might be on the endangered species list soon myself."*



Additionally, local experts noted that western scientific research conducted or used by management agencies often does not match with local environmental observations and knowledge, and many feel that research which does not incorporate local knowledge and observations will lead to poor management decisions.

Ship interference with subsistence users

During the spring marine mammal migration, hunters in small boats can be found all over the Bering Strait region hunting for walruses and seals. Small boats are also active at other times of the year while hunting seals or whales, fishing, or traveling to other areas or communities. These small boats are vulnerable to collision with larger ships transiting the area.

Additionally, large ships can displace the marine mammals that hunters are pursuing and prevent hunting success. Displacement of animals may lead to small hunting boats having to travel further from shore to pursue animals, which creates additional safety concerns for hunters.

Policy Responses

Keep bottom trawling and other industrial fishing out of the northern Bering Sea

Use environmental and safety regulations, such as a mandatory Polar Code, to reduce speeds, minimize noise, and to prohibit discharge in the Bering Strait region

Prevent spills through education, ship regulations, and improved spill response infrastructure

Use ship routing to reduce the chance of vessel collisions

More indigenous representation in policy-making

In summary, Bering Strait region tribes have a wealth of knowledge about the marine environment, a vested interest in the continuation of healthy ecosystems, and the right to pursue their traditional ways of life. The above recommendations should be incorporated into marine policy through ongoing government-to-government tribal consultation.

Source: Kawerak, *Policy-based recommendations from Kawerak's Ice Seal and Walrus Project* (Kawerak Social Science Program, Nome, Alaska, 2013.

Arctic Council Secretariat

4.3 The Arctic Marine Shipping Assessment and Inuit Responses

Austin Ahmasuk of Nome, Alaska, explained how changes in maritime activity in Inuit Nunaat, and the politics surrounding the "new Arctic," can bewilder and frustrate Inuit:

> **The whole situation is surreal because the long-time mariners like myself are not effectively consulted when it comes to marine shipping lanes, or even if there should be increased shipping... The political jockeying for the Arctic, the political jockeying for increasing the marine traffic through a transarctic route -- it makes me feel powerless... This whole economic drive, these economic incentives to do a faster route through the Arctic, in my mind, is going to leave people like myself with less say about what goes on up here because it will involve all of these countries throughout the world because international maritime law doesn't just involve the two bordering countries, US and Russia, it involves every country of the world!**[43]

As Inuit, we will continue to speak out forcefully on our rights to manage living resources and proactively inform others of our way of life and of our methods of practicing sustainable utilization and development.

The Inuit Circumpolar Council has issued two declarations that outline Inuit rights and responsibilities in relation to decision-making in an Arctic context.

The *Inuit Declaration on Sovereignty in the Arctic* details the rights of Inuit to be involved in all decision-making and governance processes that will impact Arctic lands and waters, which are their traditional homelands. This includes international negotiations related to Arctic shipping, environmental protection, resource development, and regional and global climate change monitoring and governance mechanisms.

The *Circumpolar Inuit Declaration on Resource Development (CIDRD)* details the rights of Inuit to be involved in all aspects of decision-making regarding resource development in Arctic lands and waters. As Aqqaluk Lynge explains, "Inuit want to inform these regulatory regimes and governments with a set of guidelines developed by Inuit in the circumpolar states."[44]

Arctic Marine Shipping Assessment

The 2009 Arctic Marine Shipping Assessment (AMSA) Report was the culmination of a multi-year Arctic Council effort that assessed ships, their uses of the Arctic Ocean, their potential impacts on humans and the Arctic marine environment, and their marine infrastructure requirements. While circumpolar in scope, the AMSA also considered regional and local perspectives in its assessment of current and future Arctic marine operations and activities. Various key findings and associated recommendations, when considered together, represent a strategic framework for

future action on enhancing marine safety and protecting the marine environment. AMSA's 17 recommendations fall under three broad interrelated themes: Enhancing Arctic Marine Safety, Protecting Arctic People and the Environment, and Building Arctic Marine Infrastructure.

ICC has been actively involved in promoting the implementation of the AMSA recommendations, especially those provisions that aim to protect Inuit seas and coastal zones. Accordingly, this section reflects on some of the key AMSA recommendations and how these relate to Inuit interests and activities.

AMSA Theme I — Enhancing Arctic Marine Safety

Inuit seek high environmental standards and controls for all ships operating in Inuit waters.

Linking with International Organizations (and States)

As ICC Canada President Duane Smith told the *Circumpolar Inuit Response to Arctic Shipping* workshop in March 2013, Arctic shipping:

> **touches upon many other issues that are impacting Inuit and the Arctic region. In fact, I can think of no other issue that does this. It is insufficient to simply point to the reality of climate change and leave it at that. Arctic shipping cannot be discussed by us, for example, without first understanding issues of Arctic sovereignty: who owns the Arctic?, who has rights to traverse the Arctic?, where do the boundaries of each Arctic state end?, and what role can Inuit play in addressing these matters? ... Neither can Arctic shipping be isolated from the larger issue of international Arctic governance: how can Inuit play a greater role at the Arctic Council on these matters?, how can Inuit best express their views at the International Maritime Organization (IMO) where a polar code is being developed?, or at the UN Law of the Sea Convention (UNCLOS), which is the international instrument used by Arctic states to assert their boundary claims?**[45]

ICC works diligently to promote the interests, rights, and concerns of Inuit with respect to governance across the circumpolar region. Accordingly, we insist that Arctic governments treat the Inuit homeland as an integral whole as it pertains to policies and programs targeting the Arctic. Nation states must recognize Inuit rights and responsibilities in relation to Inuit waters, seas and passages that Inuit have used from time immemorial. Pursuant to this reality, ICC will continue to engage in discussions with states that are interested in Arctic matters in order to educate them of our rights and interests and to engage in partnerships where merited.

As Inuit we must be at the table when decisions are being made about our homeland. ICC insists that the human dimension should be the most important element in determining what investments are to be made and for whom they will be made. As a coastal and maritime people, our voices help to ensure that this remains central to the dialogue. We protested our exclusion from the Arctic-5 summits because these meetings were about the Arctic Ocean coast. By excluding the Arctic Council and not inviting Inuit to share their perspectives on Arctic maritime issues, the Arctic states essentially "prorogued the Arctic Council." This is unacceptable, because the coastline and the sea are, as Duane Smith explained, "exactly where Inuit live."[46]

ICC will continue to use the Arctic Council as a key arena to further the interests of Inuit and, while working cooperatively with others in the Council, be vigilant about maintaining and strengthening the unique role of ICC as a permanent participant in the Arctic Council. At the same time, ICC encourages the Arctic states to include Inuit in all bi-lateral and multi-lateral meetings of importance to Inuit, and to do so with the same direct and meaningful manner as at the Arctic Council.

The Arctic Council is a forum for decision-making based on transparency, access, and collaboration. Member states and Permanent Participants collaborate to address specific issues of shared concern through working groups, meeting frequently to increase shared knowledge on contaminants, environmental monitoring, conservation and environmental protection, emergency preparedness, and sustainable development. For Inuit and other indigenous peoples, having a formal mechanism through which to participate in regional decision-making is critically important. Transparency of information and participation in decision-making on issues that impact local communities is also a right guaranteed by the *United Nations Declaration on the Rights of Indigenous Peoples* (UNDRIP).

The historic adoption by the United Nations General Assembly in 2007 of the UNDRIP affirms, among other things, that all peoples contribute to the diversity and richness of civilizations and cultures, that indigenous peoples should be free from discrimination, have rights to self-determination, and are equal to all other peoples, while recognizing their right to be different and to be respected as such. Universal human rights instruments including the rights of indigenous peoples worldwide, including those of Inuit, are still not fully acknowledged nor implemented and Inuit must continue to work alongside others to achieve the goal of full recognition of Inuit rights.

Along these lines, ICC will continue to participate in international bodies such as the Convention on the International Trade of Endangered Species (CITES), the World Conservation Union (IUCN), the International Whaling Commission (IWC), the North Atlantic Marine Mammal Commission (NAMMCO), and the World Trade Organization (WTO) to defend and promote the right of Inuit to harvest marine mammals and to trade their product on a sustainable basis. It will also seek new ways to submit Inuit perspectives for inclusion in other initiatives being developed by international organizations.

Measures for Arctic Shipping

ICC, through its participation in the Arctic Council's working group "Protection of the Arctic Marine Environment" and another one "Emergency Prevention, Preparedness and Response", continues to push for better ship design, and an overall plan to regulate the change that is sure to come in Arctic shipping. New rules are needed to ensure that development and shipping unfold in a safe and sustainable manner.

ICC also follows the International Maritime Organization (IMO) on these matters and supports the development of a mandatory Polar Code that takes Inuit needs and interests into consideration. This code, currently under consideration at the IMO, will unify and strengthen the full range of regulations governing ship design, construction, and operation for northern waters. The need for mandatory and universal regulations was recognize by Arctic Marine Shipping Assessment in 2009 and by the Arctic Council in its 2011 Nuuk Declaration. ICC also highlights the need for such regulations in the *Circumpolar Inuit Declaration on Resource Development*. Because of the close links between Inuit communities and the sea and ice surrounding their communities, the prevention of spills and shipping accidents is a vital concern. Recent accidents, such as the grounding of the Diskos II (2007), the Clipper Adventurer (2010), and the Kulluk (2013), demonstrate precisely how dangerous Arctic navigation can be and how important rigorous shipping standards are for safe operations.

ICC has a long history of supporting international, national, and regional efforts to reduce the worldwide emissions of contaminants that end up

"If accidents should happen here in Greenland there's no prepared rescue. There's no ready rescue teams or procedure for it that's why it can be very dire if any accident should occur. I have heard of the Danish Defence Force doing rescue practice during summer but I feel we're not ready for such an accident. Because the circumstance can never be predicted we don't have any plan prepared for crew rescue, ships rescue or even oil spill containment. Because protecting these waters still is under the jurisdiction of the Danish Defence Force they will have to come up with a good plan for it dealing with such accidents and because I know there are not many Greenlandic people who apply for the defense force I fear that they're not ready. To be ready they will have to educate the rescue team properly and give them the best equipment. Because currently it can only be the Danish Defence Force and the big trawlers that will be able to come to the aid, they're the only ones capable of coming to help."

- Gustav Enoksen, Sisimiut, Greenland, interviewed March 2014.

in the Arctic and negatively affect Inuit. It also includes action to acknowledge the role of short-lived climate forcers such as black carbon (the tiny particles known as soot produced by ships, airplanes and diesel-powered generators) and to reduce their presence in the Arctic.

Even with every safeguard in place the possibility remains that shipping or resource development will result in damage to the Arctic environment. In such an eventuality, the only reasonable approach to mitigation is for the entirety of the cost to be borne by the party responsible for the damage.

In accordance with relevant provisions of the *Rio Declaration on Environment and Development*, the *Inuit Declaration on Resource Development* states that any development in Inuit Nunaat must follow the 'polluter pays' principle and this must be applied in all stages of project planning, assessment, implementation and reclamation.[47] The formalization of this principle in law will follow different paths in each Arctic state, however it will entail the removal of the regulatory caps on absolute financial liability to ensure that the entire cost of environmental damage and lost income amongst the Inuit population is covered by the polluter.

Since shipping is an international industry and contamination from development activities can cross national boundaries the ICC supports the development of an international mechanism and funds targeted towards liability and compensation for oil pollution damage resulting from offshore activity, with an emphasis on oil exploration and exploitation.[48]

Arctic Search and Rescue (SAR)

Many Inuit hunters spoke about the importance of preparing for accidents associated with increased shipping activities. Austin Ahmasuk of Nome explains that if a major accident occurred in the Bering Strait:

Our community would not be able to react very well. Our hospital has some 20-30 beds. We have a larger hospital [than others], but we are not well equipped to handle a major disaster. In this community, every resource would be taxed, stressed beyond limit if a major disaster were to occur in this area or indeed anywhere near this area because Nome is a regional hub but there are no communities anywhere in western Alaska that are equipped to deal with a major disaster. They don't have the resources.[49]

He also noted that the US Coast Guard "make efforts to try to communicate with our communities, but more often than not the municipalities and the state agencies tend to dominate the conversation and leave out the mariner, like myself."

This statement highlights various Inuit concerns. While we have our own search and rescue capabilities in place on the local and regional levels, the growing scale and scope of maritime activities increases the likelihood of major scenarios beyond our capabilities. In light of the Arctic search and rescue instrument signed in 2011 (the first legally-binding instrument developed under the auspices of the Arctic Council), we are interested in seeing what a more robust, circumpolar search and rescue concept might look like. Inuit leaders have also urged states to support better systems of training for, and better equipment to conduct, search and rescue and other forms of disaster response.

Elders also worry that younger generations do not have as much knowledge as they should to navigate and live safely on the land. Within communities, sharing traditional and local knowledge that helps with *prevention* are as important as those investments directed towards search and rescue once people are lost, injured, or trapped on the sea ice, open water, or the land.

AMSA Theme II — Protecting Arctic People and the Environment

Survey of Arctic Indigenous Marine Use

ICC will continue to use the findings, and build upon the work, of past Inuit land use and occupancy studies and similar research to effectively and proactively respond to the increasing use by others of Inuit sea ice, waters, and coastal zones. This report – a product of Phase II of the SDWGs "A Circumpolar-Wide Inuit Response to the AMSA" – reflects efforts to broaden the consultative process with Inuit communities to assess their current use of the sea and how it compares with records from early land and marine use studies.

The *Arctic Biodiversity Assessment* includes a Traditional Ecological Knowledge (TEK) compendium of observations in its report, and CAFF (through the Circumpolar Biodiversity Monitoring Program) is working with partners, including Inuit, across the Arctic to implement the Arctic Marine Biodiversity Monitoring Plan, which incorporates community-based monitoring and citizen science into its monitoring plans.

Inuit are also contributing to marine use studies at the national level. For example, the Canadian Department of Fisheries and Oceans prepared *Conversations with Nunavut Communities on Areas of Ecological Importance*, a 2011 report that documented traditional Inuit knowledge of important environmental areas. The Government of Nunavut has been conducting coastal resource inventories, which document and map Inuit knowledge of land and marine use and locations of many coastal and marine species, since 2007. In the United States, Kawerak, Inc. is conducting a major study to prepare maps showing seasonally defined habitat and subsistence use areas for seals and walrus on the U.S. side of the Bering Strait, in collaboration with nine federally recognized tribes. Furthermore, the Northwest Arctic Borough established a Subsistence Mapping Project in 2011 to identify and map subsistence resources and inform decisions about energy and infrastructure development. The

"The difference between science is they study and research and then they predict, whereas our knowledge is from our oral history and what we see and observe. What we meet. So there's a difference there and it's something that at times is a conflict. It goes against our traditional knowledge when the scientists say to do this and do that. At the same time we've got to prove to them what we know! But it's just the way it is. … We adapt. We've seen changes, we adapt."

- George Olemaun, Barrow, Alaska, interviewed March 2014.

"Making the scientific community aware of our knowledge is important. We have a long history of being on the land and we want to provide local and traditional information that science does not have."

- Inuk from Inuvik, ISR, quoted in *Unikkaaqatigiit*, 8.

"People who say they are experts have not even been in the communities. There are a lot of people famous for being big talkers on climate change. Yes, they may do something in the south, by eliminating products, or whatever is causing the climate change, but they can't do anything up in the north, really. They're just all talk. They don't know anything about the north. They haven't even been up north."

- Jayko Oweetaluktuk, Inukjuak, QC, interviewed March 15, 2008

"I think that the scientists should be asking the big questions and not the smaller questions about the sea getting warmer and its effect on the sea mammal's behaviour and their food. For instance the Appa (guillemot) which was formerly closer to the shore and gotten further away from it and I think it's because of their food that they have ventured further into the sea. These mammals that hunt for their food in the frozen fjords follow them when the fjords melts and that is how we hunt for them."

- Abel Ludvigsen, Iqirasik, Greenland, interviewed March 2014

project seeks to foster cooperation with government agencies and provide a foundation for integrating scientific information with local and traditional knowledge.

Engagement with Arctic Communities

ICC wholeheartedly supports the efforts of the Arctic Council and other bodies to improve communication with Inuit, as an Arctic coastal people. These relationships help us develop mechanisms to better engage and coordinate with the shipping industry and other economic actors, particularly during the planning phase of a new marine activity, to reduce risks, increase community benefits, and help reduce the negative impacts from shipping.

Inuit have generated much success by working collaboratively with others, including those with knowledge systems different from ours, and by contributing to the work of international and Arctic-wide research, as well as bodies such as the United Nations and the Arctic Council, while at the same time remaining true to our own knowledge systems and promoting our rights.

There is a growing opportunity for Inuit to meaningfully engage in Arctic science and research, and at the same time play a role in promoting ethical and responsible research practices that stress the importance of bringing knowledge back to Inuit communities.

Accordingly, ICC will continue to work with circumpolar and national partners to development a strategy to implement the proper integration of community-based monitoring and research into research activities related to shipping and the marine environment more generally. For

example, the negative impact on Inuit food security brought on by the effects of contaminants, climate change, and regulatory decisions taken by others on polar bears, seals, and other mammals demands our close attention. We strive to incorporate Inuit food security issues into our work on health, nutritious foods, sustainable utilization of wildlife, contaminants, biological diversity, and climate change. Furthermore, ICC will continue to pursue all available avenues to combat human-induced climate change, and to develop ways to adapt to the new Arctic reality, including insisting on the inclusion of Arctic Inuit communities in international climate change adaptation funding.

Inuit interviewed through this project also expressed the need for other forms of compensation to support hunters. For example, Annie Napayok of Whale Cove, Nunavut, noted in 2008:

> ***People talk a lot about adaptation, but they never really talk about solutions or compensating the Inuit who are losing their equipment or even dying because of accidents. There should be some kind of body for us to go to if we lose a skidoo, or have to take extra long hours and pay for gas to rescue people having problems far away. These problems are not our fault, they are related to the big developments going on up north. So they should start talking about helping the Inuit who have to go through this kind of thing.***[50]

Inuit, as a people, are committed to supporting our hunters in their struggle to adapt to the new Arctic. The ICC Nuuk Declaration (2010) encouraged more discussions with Inuit hunters through national Inuit organizations and, where appropriate, through their regional-level entities, to help develop international sustainability covenants that both strengthen and promote the rights of Inuit to use resources in a wise and prudent manner. Furthermore, it reiterates the earlier ICC Utqiagvik Declaration (2006) pledge to promote the redefinition of hunting activities and use of renewable resources by Inuit as a profession within all international human rights fora.

To protect the Inuit way of life, ICC will continue to fight unethical and unfair trade restrictions placed on our own products, including the unjust European Union action to ban seal and other marine mammal products. Our traditional seal hunt is sustainable. The meat plays an important part of the healthy Arctic diet and the trade of our sealskin products helps our local village economies enormously. Accordingly, Inuit will continue to hunt seals, develop modern sealskin fashions, and create new markets for these products. The misguided response of the European Union to the misinformation propagated by animal-rights activists reaffirms the importance of Inuit efforts to educate international audiences about the people, the communities, and the way of life they are ruining when they imposing constraints on traditional livelihoods.

Natasha Latreille

Inuit are also working within our communities to more fully engage children and youth: the key to a sustainable future. Promoting accessible and practical learning experiences, respectful of traditional ways, that bring youth and less experienced hunters on the land to learn from elders and experienced hunters is another way of building capacity. In other cases, research activities promote skill development and the co-creation of knowledge with non-Inuit scientists. For example, ICC Canada has played a leading role in the Circumpolar Flaw Lead System Study since 2008. It has facilitated an Inuit circumpolar youth experience on board the research icebreaker *Amundsen*, organizing the first ever on board climate change policy workshop with circumpolar Inuit leadership and initiating a community based monitoring exercise that has fed into the broader Sustaining Arctic Observing Networks initiative of the Arctic Council. Reports have set out the knowledge of changing ice conditions and the impacts on wildlife, hunting and the land in the Inuvialuit Settlement Region. Guided by a central concept that respects both Western science and Traditional Knowledge, the project developed and used a research process that focused on the belief in the complementary nature of these two knowledge systems. It is based on the premise, "Two Ways of Knowing", which values the contributions of two different yet interconnected modes of knowledge that, together, contribute to a greater understanding of the flaw lead system near Banks Island. This concept relies on both scientific studies of the physical environment and the knowledge of Inuvialuit who live in the region. Together, this information helps explain changes to the physical environment and the corresponding impacts on the marine ecosystem and its inhabitants. In this way, this project has been advancing our understanding and approach by bringing together science and Traditional Knowledge of indigenous peoples to study the Arctic environment.

Arctic Council Secretariat

Areas of Heightened Ecological and Cultural Significance

Inuit have participated in Arctic Council efforts to encourage Arctic states to identify areas of heightened ecological and cultural significance and to implement measures to protect these areas from the impacts of Arctic marine shipping. For example, CAFF, SDWG and AMAP published a 2012 report identifying areas of heightened ecological and cultural significance within the Arctic marine environment. The Arctic Biodiversity Assessment (ABA) and the Circumpolar Biodiversity Monitoring Program (CBMP) also support these initiatives, as does the implementation of marine biodiversity monitoring plans. ICC will support ongoing efforts to promote these efforts, which are still in their "infancy."[51]

Specially Designated Arctic Marine Areas

PAME has initiated a project that will explore the need for, and as appropriate make recommendations regarding, internationally designated areas in the high seas area of the Arctic Ocean that warrant protection from the risks posed by international shipping activities. ICC supports this initiative.

Protection from Invasive Species

Inuit are concerned about the risk of introducing invasive species through ballast water and other means, and strongly encourage prevention measures for waters within Inuit Nunaat. Anti-fouling and ballast water conventions partly address this issue, but these usually take the form of guidelines. They should be mandatory.

Oil Spill Prevention

Inuit are worried about oil spills. An oil spill in the Arctic environment would be a disaster for the entire ecosystem and those of us who depend upon it. The Deepwater Horizon spill in the Gulf of Mexico has shown that such a disaster is possible, even with modern drilling technology and safeguards. In the Arctic, the damage caused by such a spill would have been magnified by the presence of sea ice. At present, there is no reliable means of cleaning oil from an ice-covered area. Oil contamination would kill marine life and render the region unproductive for years, perhaps decades. Such a disaster would destroy traditional Inuit fisheries and hunting grounds. Given that our culture is so connected to harvesting marine mammals, an oil spill would risk irreparable damage to Inuit society itself.

John Hopson Jr. welcomes oil and gas activities, but under Inuit conditions and rules. Industry must allow us to protect ourselves which means regulating how many ships, people and routes are entering the Arctic. It is "kind of like being stuck between a rock and a hard place," he notes. Inuit want to hunt but they also need economic development. The question remains whether and how these activities can co-exist.[52]

"I am a politician and member of the board of Municipality of Central Greenland and after the election of 2013 we have made a committee for preservation of sea mammals and fish to make fishing and hunting for mammals more sustainable. This will help us with stopping poaching and overfishing so the municipality will be able to regulate these. I am the chairman of that committee and so I feel that the hunters and fishers are being heard more."

- Marius Olsen, Sisimiut, Greenland, interviewed March 2014.

"The seals, the bearded seal, spotted seal that migrate up north utilize Kotzebue and the bay as a stopover, on top of the ice... [The spring hunting season] starts in June until the ice starts moving north, they stay on the ice and they move up north with it. That's their molting season. So it's real important that our ice conditions are pretty fair, meaning thick and not melting, because they ride on the big icebergs… So the ice conditions have got to be pretty normal."

- John Goodwin, Kotzebue, Alaska, interviewed March 2014

"The [Greenland] National Association for Hunters and Fishers has cautioned that the breeding grounds where birds and sea mammals come to give birth or lay eggs should not become a travelled area or fishing area. These areas should be sanctioned all year around and we have recommended that there should be no activity at all, no fishing, no hunting, no oil drilling and no sailing in these waters."

- Leif Fontaine, Sisimiut, Greenland, interviewed March 2014.

Inuit need to have full confidence that any offshore operator's corporate safety culture is aligned with their own values. For example, in order to ensure the continued health of the local environment and their communities, Inupiat in northern Alaska have actively pursued higher standards and increased accountability for any and all offshore exploration and development. They are not opposed to economic development but they insist that it be undertaken in a manner which does not impact traditional Inuit activities or threaten to damage the environment on which the community relies upon for subsistence.[53] Accordingly, Inuit communities, in cooperation with environmental groups, launched legal action in 2009 to stop drilling in the region, on the basis that the lease sales were rushed and inadequately analyzed and that the US government and Shell had failed to consider the cumulative effects of development on bowhead whales. The Inupiat culture and diet revolves around the hunting of walruses, seals, and especially bowhead whales. Science is only just beginning to develop an understanding of how development and other activities affect marine mammals.

This caution is, however, matched by an understanding that oil exploration brings tremendous economic benefits. The town infrastructure in Point Barrow was built entirely with oil money. Itta, the 66-year-old former mayor of the North Slope Borough, commented that "my biggest responsibility was maintaining the economic well-being of the borough, and that largely has to do with maintaining oil in the pipeline." Itta, a whaling boat captain, emphasized that Inupiat concerns about the whale hunt are as much about culture as food:

> **We have a culture that has survived one of the harshest environments on earth for thousands of years, and that culture is really what's at stake… No one person can catch a whale. It takes a whole community. Because of the whale, we share, we are very close, we come together. Without it, our way of life -- what we pass on to our kids and grandkids -- would be diminished. The whale is what binds us.**[54]

Working with oil companies and, when necessary, through the courts, the local communities have forced concessions which take into consideration traditional needs. Shell, for instance, has agreed to cease drilling during whale hunts. The American government and the oil industry are also pursuing studies on the impacts of seismic mapping and man-made noises on the lifecycles and health of marine mammals in the Chukchi Sea.

In the future, development of the Chukchi Sea, and all Inuit lands and waters, can only take place in consultation and with the consent of the local Inuit. Planning must take into consideration Inuit culture, land and sea ice use, and other local requirements. The experience in the Chukchi Sea has demonstrated that private corporations and governments cannot rush development and that the needs, experiences, and expertise of the local Inuit must always be central to determining how development can and should proceed.

Addressing Impacts on Marine Mammals

As the statements throughout this report reaffirm, Inuit are a people who depend highly on marine mammals for our physical and cultural survival. Accordingly, we will continue to partner with relevant international organizations to further assess the effects on marine mammals due to ship noise, disturbance and strikes in Arctic waters. We will also work with the international community to develop appropriate mitigation strategies.

Building the Arctic Marine Infrastructure

The AMSA report highlighted the critical importance of improved Arctic marine infrastructure to enhance safety and environmental protection in support of sustainable development. This includes better training in ice navigation, navigational charts, communications systems, port services, accurate and timely ice information, places of refuge, icebreakers, better systems to monitor and track Arctic marine activity, and improved circumpolar pollution response capabilities.

This infrastructure is important for the safety of shipping and, therefore, for the continued health of the Arctic ecosystem and Inuit communities. While each Arctic state is making improvements to its northern capabilities, far more needs to be done. Before development can begin in earnest the systems, training, and equipment needed to respond to a disaster must be in place and ready to be deployed. Preventative measures and regulations must also be finalized and applied in the hope that mitigation efforts will never be required.[55] Navigational safety is one side of the Arctic's infrastructure needs, the other is the development of Inuit communities themselves. Communication, business, travel, and resupply could all be made easier with investments in northern infrastructure. Although the infrastructure serving Inuit communities varies across the Arctic, the combination of small populations, distance from major ports and markets, and high costs means that many communities operate with facilities that are below the norm in their countries. This contributes

When compared with marine infrastructure in the world's other oceans, the Arctic is significantly lacking throughout most of the circumpolar north.

- *Arctic Marine Shipping Assessment, 2009*

At present, in the Arctic there is nothing, no equipment, and no infrastructure. People in the North are not ready to deal with a disaster.

- *Senator Charlie Watt of Canada*

"The marine infrastructure deficit in Nunavut definitely increases the cost on everything ... from the cost of housing, to the construction of all the buildings,"

- *Suzanne Paquin, President of Nunavut Eastern Arctic Shipping*

Previously, the shore line was bigger and wider – one could drag a boat ashore where the wave would not reach it. In the past, hunting lodges for the equipment and canoe racks were also located on the shore; now no maintenance structures are built on the shore because the shore has become very narrow.

- *Albert Nikolayevich Ankalin*

"There used to be a lot more fishes in the sea: pollock and cod. In one session in the fall I could catch enough fish to last the entire winter; now it is rare to catch a big fish."

- Alexander Alexandrovich Inmugye, Sireniki, Chukotka, interviewed March 2014

"Around this area of Sisimiut our profession is changing from hunting to primarily fishing. We've always seen all around Greenland that hunters and fishers adapting fairly quickly to changes. So I have no doubt that fishing will be developed more around Sisimiut. I also know we will always hunt for walrus and beluga even though it's becoming more difficult."

- Leif Fontaine, Sisimiut, Greenland, interviewed March 2014

"Commercial fishing must be conducted in accordance with sustainable practices and in conjunction with Inuit and relevant management bodies."

- Cathy Towtongie, President, Nunavut Tunngavik Inc. (NTI), March 2013

to the high costs of consumer goods and food in Inuit communities. It also is an impediment to developing a diversified economy, limits trade, tourism, and resource development.[56]

Inuit must benefit from resource development in Inuit Nunaat. ICC policy is therefore that all resource development must contribute actively and significantly to improving Inuit living standards and social conditions, and non-renewable resource development, in particular, must promote economic diversification through contributions to, amongst other things, the development of infrastructure.[57] New ports and harbours will assist Inuit fishers and lower the cost of resupply. New investments in information technology will provide Inuit communities with improved communications and better access to the wider world. New schools and community facilities will foster Inuit culture.

Investment in new infrastructure will also be required to assist Inuit communities to adapt to changes in climate, sea ice, and shore lines. In their implementation of mechanisms for adaptation to climate change, states and the international community as a whole must commit to paying the cost of climate change adaptation measures and especially in upgrading the fuel-related infrastructure in *Inuit Nunaat* regions and communities to assist Northern communities to move away from carbon fuels.

4.4 Commercial Fishing

Over the past fifty years, the global consumption of fish has increased rapidly. From an average of 9.9 kg in the 1960s it has grown to 16.4 kg as recently as 2005. The greatest rise in consumption has taken place in Asia where China is consuming more to feed its growing and urbanizing population.[58] As demand for fish increases in tandem with ice melt, foreign fishing fleets may seek to establish a larger position in Arctic waters. At present, however, this activity is relatively limited. A survey conducted by the Arctic Marine Shipping Assessment indicated the presence of roughly 1,600 fishing vessels in the Arctic each year.[59] This is not a small number but the activity takes place in a few key areas, including the Bering and Barents seas; on the west coast of Greenland; and around Iceland and the Faroe Islands. In the Arctic Ocean and the Canadian Arctic Archipelago, activity is mostly limited to small-scale subsistence activity. Since fishing in the Arctic takes place up to the ice

edge, not in close ice pack conditions, operations are in completely or seasonally ice-free or low ice concentration areas and opportunistic in nature.[60]

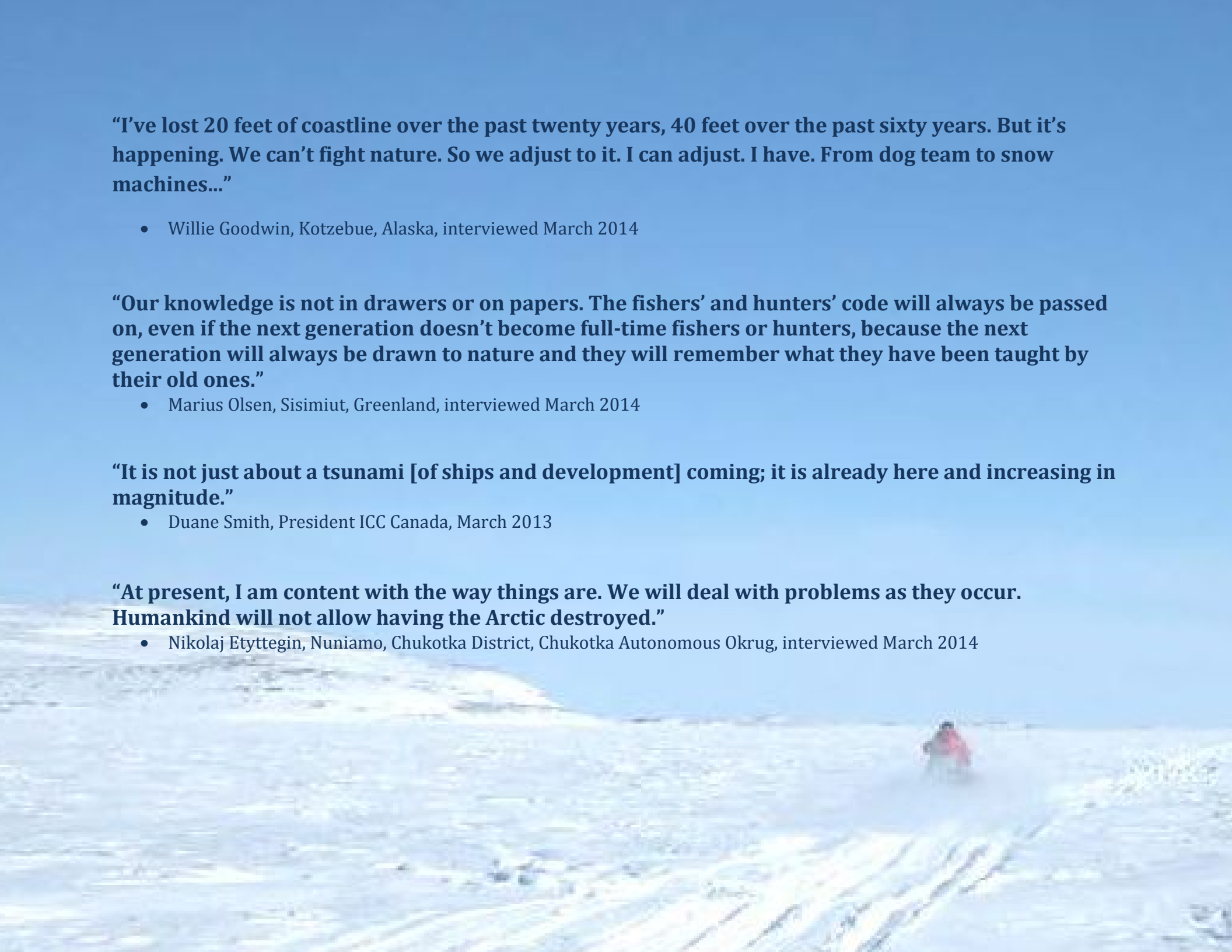
The AMSA report clearly indicates that fishing levels will increase as the ice recedes. In Greenland in particular, the development of a shrimp fishery has already had major impacts on coastal communities and on the island's population as a whole, since shrimp now constitute a major export. In Alaska, participation in commercial fisheries has substantial social and economic impacts on communities – both positive and negative.[61]

Inuit are worried about fishing activity expanding to include unregulated or under-regulated fishing fleets. While the Arctic contains healthy stocks of fish, particularly of Arctic Cod, it could be depleted rapidly. Northern fish species have a lower level of productivity and growth than do similar species elsewhere. Stocks accumulated over the years can be rapidly exhausted by excessive fishing.[62] The world's understanding of the region's stocks is also so limited than there is no way to know for sure what would constitute overfishing. Without such baseline knowledge, any new commercial fishing risks causing serious harm to the environment and the well-being of Inuit communities.

It is imperative that the development of fishing in the Arctic proceed within well-established rules and procedures. Individual Arctic states have regulations governing fishing within their territorial waters and Exclusive Economic Zones, but there are gaps in the international regulatory environment, most particularly concerning shared and anadromous fish stocks. Large sections of the Arctic marine area are not covered by regional fisheries management arrangements.

If increased harvesting is allowed to proceed it must follow Inuit policies on sustainable development. ICC has been clear in its position that resource development in Inuit Nunaat must be sustainable. It must serve the needs of Inuit today without compromising the ability of Inuit to meet the needs of tomorrow. Fisheries must only be developed with a greatly improved understanding of the resource and how it can be harvested without impacting the lives of Inuit or the availability of fish for future generations.

Eva Kruemmel



"I've lost 20 feet of coastline over the past twenty years, 40 feet over the past sixty years. But it's happening. We can't fight nature. So we adjust to it. I can adjust. I have. From dog team to snow machines…"

- Willie Goodwin, Kotzebue, Alaska, interviewed March 2014

"Our knowledge is not in drawers or on papers. The fishers' and hunters' code will always be passed on, even if the next generation doesn't become full-time fishers or hunters, because the next generation will always be drawn to nature and they will remember what they have been taught by their old ones."

- Marius Olsen, Sisimiut, Greenland, interviewed March 2014

"It is not just about a tsunami [of ships and development] coming; it is already here and increasing in magnitude."

- Duane Smith, President ICC Canada, March 2013

"At present, I am content with the way things are. We will deal with problems as they occur. Humankind will not allow having the Arctic destroyed."

- Nikolaj Etyttegin, Nuniamo, Chukotka District, Chukotka Autonomous Okrug, interviewed March 2014

5. Conclusions

As Inuit, we are mindful of the growing scale and pace of environmental change in the circumpolar Arctic and economic, social, and cultural challenges facing Inuit, including those presented by shipping and other marine activities in Inuit Nunaat.

The respectful sharing of resources, culture, and life itself with others is a fundamental principle of being Inuit, and is the fabric that holds us together as one people across four countries.

Nevertheless, recent developments at the international level affecting Inuit, and the rapid growth of interest and external activity in the Arctic by powerful states, industry, researchers, and special interests, will undoubtedly continue. Increasing interest in the utilization of the Arctic marine environment and its associated resources and will demand considerable attention and vigilance from ICC. Inuit, as a marine indigenous people living in vast areas of the Arctic, including Arctic coasts, have rights associated with managing the Arctic marine environment for present and future generations. We must support a healthy and abundant source of renewable resources for Inuit of tomorrow. We also have marine stewardship responsibilities for all humankind.

Inuit have a well-established maritime culture

In the Arctic, the sea ice is our highway in wintertime and the open sea is our highway in summertime. The sea is integral to our way of life as Inuit. Because we still rely on traditional Inuit food for a large portion of our diet, and because hunting and being out on the land are central to our culture, we continue to use the land and sea the same way our ancestors have done for thousands of years. This gives us a great sense of pride, connection to the past, and general sense of well-being. While we have resolved to adapt to the changed climate and thinning ice as best we can, we are less sure about what increased maritime activities may mean for our future.

Inuit are adaptable and strong

Inuit have long been admired for our ability to live in harsh climatic conditions and to adapt our subsistence practices to cultural and environmental change. For thousands of years, we have thrived in our Arctic homeland, drawing on our Traditional Knowledge for subsistence hunting, and to maintain our cultural and spiritual connection with the land, ice, and animals. Inuit have already begun to develop local adaptations to the changes we are experiencing, including investing in community freezers to make food storage and sharing easier, and developing new training programs on emergency preparedness and sea ice safety, among other innovations.

Although Inuit are resilient and adaptive, the scale of changes in the Arctic will require significant investment in new and updated infrastructure, as well as investment in land skills and practices. These adaptations are significantly beyond the reach of Inuit communities, and will require global and national level leadership and commitment of resources. As the Arctic Monitoring and Assessment Program recently stated: “Everyone who lives, works or does business in the Arctic will need to adapt to changes in the cryosphere. Adaptation also requires leadership from governments and international bodies, and increased investment in infrastructure.”[63]

Inuit continue to rely heavily on our traditional foods

Traditional foods are centrally important to Inuit diet. The harvest of marine mammals, fish, often crab, fowl, berries; the preparation and storage of these foods; and the sharing of this harvest with other Inuit in the home community and other communities is at the heart of Inuit culture and our way of life.

Inuit are concerned with predictions that shipping in the Arctic will increase

Inuit vary in our levels of concern, resignation, or acceptance that the number of ships coming through our homeland will increase. We all agree that a higher tempo and new forms of maritime activity pose serious risks to Inuit and to the marine environment upon which we depend for sustenance. Inuit advocate for strong regulations on shipping, primarily to minimize the impact on marine mammals and fish and to prevent disruption of seasonal hunting, but also for safety. None of our communities has the capacity to deal with a large search and rescue operation.

Inuit Insist upon Sustainable Use

> We have lived in the Arctic for thousands of years. It is our position that any action or intervention that affects our homeland must protect the environment, wildlife, and therefore Inuit in such a way that we can continue to live off this land. Inuit strongly encourage those making plans regarding the Arctic to remember the land claims agreements, self-government arrangements, and international legal instruments that call for consultation and informed consent.

In the face of climate change and the potential for greater use of the Arctic by newcomers, we urge anyone making any plans regarding our land and sea to remember who has been living in the Arctic for thousands of years, and who will continue to live here for thousands more. As Duane Smith highlights, "Inuit must increasingly take firm control of their own destiny while at the same time working collaboratively and harmoniously with those that seek to interact with them. This is the Inuit way."[64]

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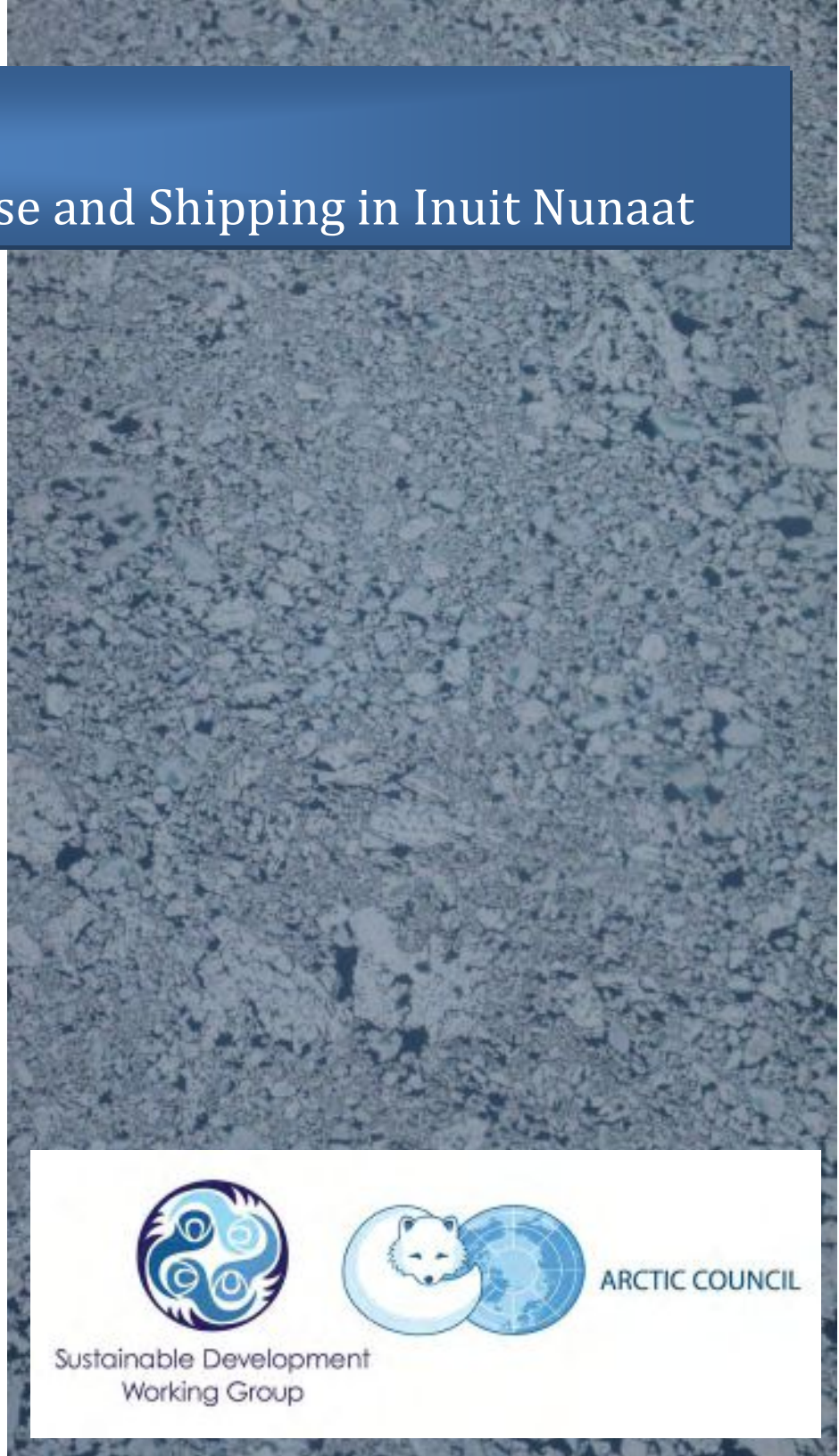
The Sea Ice Never Stops

Circumpolar Inuit Reflections on Sea Ice Use and Shipping in Inuit Nunaat



As a Permanent Participant at the Arctic Council, ICC speaks on behalf of all 160,000 Inuit living in Greenland, Canada, Alaska and Russia.

The health and well-being of Inuit are inextricably tied to the Arctic environment. For millennia, we have been stewards of the Arctic, and our culture and subsistence traditions reflect our deep knowledge and respect for the land. Climate change is already impacting Inuit livelihoods, as melting sea ice and less predictable weather make it harder to utilize traditional knowledge. Increasingly uncertain weather and unstable sea ice have made it harder and riskier for us to travel and hunt on the land, infringing on our human right to a healthy environment. Inuit are deeply concerned about current and potential impacts of climate change on our health, the health of our homeland, and the wellbeing of future generations. Traditional and scientific knowledge suggests that we have reached a critical point in terms of Arctic change; sea ice melt is quickening, and scientists predict an ice-free September by mid-century. The future health and wellness of our families and communities depends on our ability to maintain our livelihoods and pass on our cultural knowledge to the next generation.

This report investigates Inuit use of sea ice. It looks at existing sources of information regarding land use and occupancy to understand sea ice use, augmenting this with responses from interviews with Inuit hunters from Canada, Alaska, Greenland, and Russia to provide a pan-Inuit perspective. It includes general predictions about the future in light of climate change and reduced sea ice based on the experience and traditional knowledge of Inuit hunters.

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