Policies and Practicalities of Shipping in Changing Ice Conditions:

A case study from Cape Dorset, Nunavut

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Abstract

Control over arctic waters is becoming increasingly important as sea ice declines and interest in shipping increases. Canada in particular is a key player in international debates around arctic shipping and sovereignty. To explore the role of Inuit in these debates this thesis seeks to: i) interpret how sea ice in the Canadian Arctic is understood and described in legal Acts and Agreements; and, ii) investigate how Inuit knowledge and use of sea ice is (or is not) incorporated into these understandings and descriptions. Policy analysis was combined with community-based research in Cape Dorset, Nunavut to address these issues. Results highlight that: i) Inuit and governments possess fundamentally different understandings of sea ice; ii) Inuit sea ice knowledge and use are not well incorporated in policies; and iii) there is a lack of communication between Inuit and governments regarding arctic shipping and sovereignty. There is, however, community and broader interest in cooperating to improve the situation, which holds great potential for future mutual benefit.

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Chapter 1 - Introduction

1.1 The politics of sea ice

Climate change is one of the most pressing issues affecting the world today. Although this is a global problem, analysts agree that the Arctic will be the region that is earliest and most severely impacted by these expected changes (Pharand, 2007; IPCC, 2007; ACIA, 2004). The Arctic environment is already experiencing unprecedented changes, impacting both the people and animals that reside there as well as sparking international political debates and interest. Coinciding with this climatic change, there has been an international movement towards polar research, most notably the International Polar Year (IPY) 2007-2008. Within the framework of IPY, significant research effort has been placed on understanding the impacts and implications of climate change on arctic environments, people, and animals. Of particular interest to this study, among others, are the effects of climate change on sea ice, the uses of sea ice and ice-filled waters, and the associated sovereignty implications with increased northern access.

Sea ice is a key characteristic of the Arctic environment. With recent climatic warming, there have been dramatic global reductions in sea ice thickness and extent, and this trend is projected to continue (ACIA, 2004; Barber *et al*., 2008; Birchall, 2006; Bravo, 2008; Grumet *et al*., 2001; IPCC, 2007; Mahoney *et al*., 2009; Michel *et al*., 2006). Related to this trend, sea ice is forming later in the year and breaking up earlier, resulting in an overall decrease of sea ice presence in the circumpolar arctic (Barber *et al*., 2008; Michel *et al*., 2006). These changing sea ice conditions have significant, yet

fundamentally different, implications for two important stakeholders: northern governments and Inuit (the Indigenous peoples of arctic regions).

Changes to sea ice cover have garnered a great deal of publicity as countries recognize the potential benefits of a reduction in sea ice extent. Sea ice, when present, is viewed as a barrier preventing access and travel in the Arctic region. As a result, the Canadian government expresses some of the changes to sea ice extent and thickness as being beneficial. Reduced sea ice cover and thickness are believed to open up the Arctic environment with increased potential for shipping, and as a result there is recently heightened interest in the historically significant Northwest Passage routes through the Arctic Ocean (Huebert, 2001, 2003; Kubat et el., 2005). The expectation that the Northwest Passage will become more feasible to navigate - and over longer durations - is largely shared by international shipping companies and other countries. As a result, various nations, including Canada, are rushing to claim "their" area of the Arctic so that they are able to control how, and by whom, it is used (Beauchamps *et al*., 2008; Bilder, 1970; Carnaghan, and Goody, 2006; Johnston, 2002; Pharand, 2007). Overall, states (including the United States, Japan, Russia, Denmark, and Norway) are concerned with the potential to benefit from an ice-free Arctic. It is important, however, to acknowledge that less ice does not mean no ice, or necessarily easier navigation. Even with reduced sea ice extent, the presence of sea ice still poses significant hazards to ocean vessels. In an effort to exert control and regulate shipping (especially with regards to safety and environmental protection), international, federal and territorial Acts and Agreements have

been developed. Combined, these recent developments have thrust Canada's arctic region into the midst of an international debate over control and access to the Arctic Ocean.

Commonly left out of these political debates and discussions are the Inuit. The region in question is home to Canada's Inuit population, who use the sea ice and ice-filled waters year-round. A state-centric view of the Arctic ice exists where little recognition seems to be placed on how changing sea ice conditions, and associated increased arctic shipping, may impact community and individual safety and livelihoods. Therefore, I focused my thesis research on the topics of politics and sovereignty in relation to arctic sea ice, and how Inuit knowledge of the sea ice environment is (or is not) being incorporated into northern policy and politics.

1.2 Research questions

In order to better understand the politics of sea ice in the Canadian context, my research seeks to answer the following two questions:

i) How is sea ice in the Canadian Arctic understood and described in legal terms by international, federal and territorial governments, and Inuit land claims agreements?

ii) How is Inuit knowledge and use of sea ice incorporated into these understandings and descriptions?

1.3 Research goals

In order to address my research questions, my research goals involve investigations to better understand:

- how sea ice is described and understood politically;
- how Inuit of Cape Dorset use, and understand sea ice;
- how Inuit of Cape Dorset view shipping in the Arctic;
- how governments regulate and control shipping in the Arctic;
- how Inuit understand and view the political discussions of sovereignty in the Arctic;

- how Inuit are involved in the debates and discussions regarding the changing Arctic; and,
- how governments and land claims agreements integrate Inuit views and perceptions into related policy.

1.4 Cape Dorset, Nunavut

In order to gain in-depth Inuit perspectives on issues related to my research questions and goals, the community of Cape Dorset, Nunavut, was selected as a case study (Figure 1-1). Cape Dorset is located on an island of the same name off the southwest coast of Baffin Island, along the Hudson Strait (64°14'N, 76°) (Laidler and Elee, 2008). The *Inuktitut* word for Cape Dorset is *Kinngait*, which translates as "mountains" (Laidler and Elee, 2008: 52-53) or hills (McElroy, 2008) due to the fact that

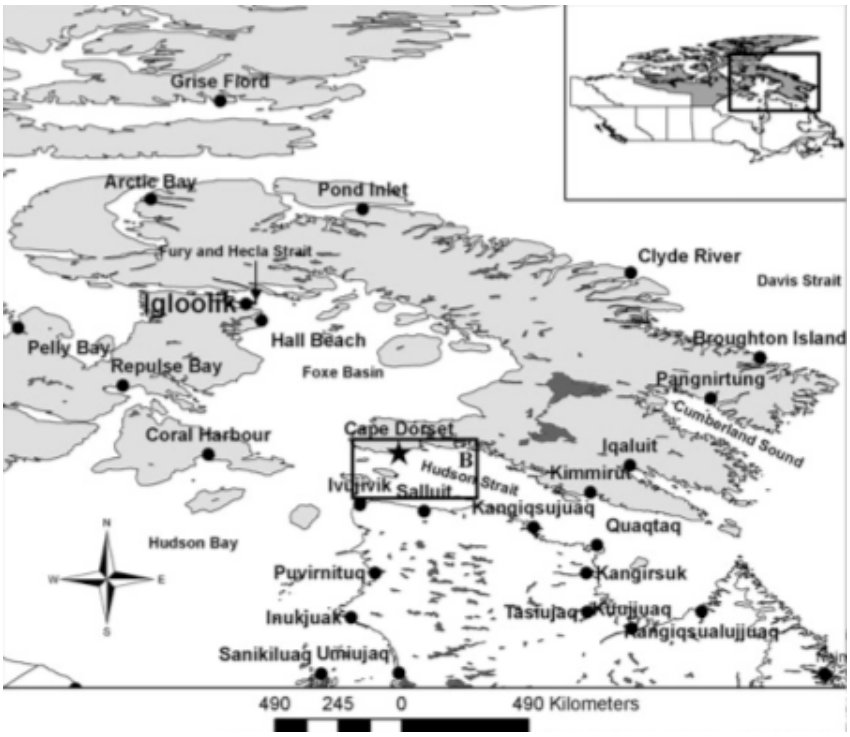


Figure 1-1: Map of Cape Dorset and surrounding area, including the Hudson Strait (Laidler and Elee, 2008: 53)

Cape Dorset Island contains a 243 meter high mountain that is part of the Kinngait Range (Municipality of Cape Dorset, 2008a). Cape Dorset is known as the "Capital of Inuit Art" with many artists residing in the community (Municipality of Cape Dorset, 2008b: 1). In 2006, Cape Dorset had a population of approximately 1,236 (Statistics Canada, 2006) where principal economic activities include carving, print- making (stonecut and lithography), and drawing by world-renowned artists (Municipality of Cape Dorset, 2008c). Soap stone carving is a particularly well practiced and popular activity in the community. This is made possible by the close proximity of two soap stone mines. Of particular importance to the community, the West Baffin Eskimo Cooperative has been a major buyer and distributor (abroad) of local art since the 1950s (McElroy, 2008).

Cape Dorset is located along the shorelines of the Hudson Strait. This is a dynamic waterway with strong currents, and an important shipping route as it connects the port of Churchill (with rail access) to shipping networks in the Labrador Sea (Kubat *et al*., 2006). The Hudson Strait does not freeze over in the winter, enabling shipping year-round, and preventing the extensive formation of ice around the community (Laidler and Elee, 2008). For this reason, the community of Cape Dorset is also referred to as *Sikusilaaq*, which translates into "where there is no ice" by local Inuit (Laidler and Elee, 2008). As a result, both changing ice conditions and shipping practices are currently impacting the community of Cape Dorset. This renders Cape Dorset an interesting case study to examine the impacts of increased shipping locally, and to then inform potential considerations for other arctic communities and regions.

In addition, my research is part of an IPY project titled the "Inuit Sea Ice Use and Occupancy Project" (ISIUOP). This project was inspired by the impacts changes in the Arctic climate will have on sea ice and the Inuit. ISIUOP identifies itself as a "collaborative project investigating the importance, uses, and knowledge of sea ice from the perspective of northern communities and Inuit experts" (ISIUOP, 2008: 1). The Inuit Sea Ice Use and Occupancy Project brings together three projects that are centered on four communities in Nunavut and three in Nunavik, Canada. Cape Dorset is one of the communities involved with ISIUOP. As a result, a strong partnership between ISIUOP project leaders and the community was already established, which facilitated early contacts and easier establishment of research relationships to aid my portion of this research project. Overall, situating my Master's research within the context of ISIUOP collaborative research efforts, as well as its overarching objectives, team members and support system, has benefitted my work. It has allowed me to focus on an area that is underrepresented, and little understood - how sea ice is framed in the political and government debates and literature, alongside northern community perspectives.

1.5 Thesis overview

Chapter 2 describes the current literature, providing context and background for the study. Overall, this research bridges a number of different topics including climate change, Inuit use of sea ice, concepts of sovereignty, and Arctic sovereignty debates. By bringing together these different topics, I seek to inform the current discussions of sovereignty and sea ice in a unique way.

Chapter 3 describes the methodology of the study. This includes an overview of political ecology - as the theoretical framework for this research - as well as an examination of the concepts of Traditional Knowledge and *Inuit Qaujimajatuqangit.* This is followed by a description of the context of the research, using standards outlined by ISIUOP protocols. Finally, this section details the methods used in the study, including semi-structured interviews, participatory mapping, sea ice trips, as well as critical policy review and analysis.

Chapter 4 describes the results of the study, and is divided into four sections for ease of presentation: sea ice, travel, changes and sovereignty. Each section includes an examination of what was learned from the Inuit contributors and what is found within the selected Acts and Agreements.

Chapter 5 provides an analysis and discussion of the results. This section is also divided into the four sections: sea ice, travel, change and sovereignty. Here I analyze these topics by bringing together results from the broader literature, interviews with Inuit, Inuit organizations' publications, government operations descriptions, and the formal Acts and Agreements.

Finally, Chapter 6 provides a summary of the thesis, presenting a number of conclusions and final recommendations.

Chapter 2 - Literature Review

2.1 Background

2.1.1 The geography of the Canadian Arctic islands and waters

The Canadian Arctic is an expansive and unique environment, as well as being a homeland for Inuit (Shadian, 2007; Simon, 2007, 2009). It makes up one third of Canada's land mass and half of its shoreline (Simon, 2009). In general, the Canadian Arctic lies north of the treeline and is the coldest area of Canada (Bone, 2009). The Arctic archipelago stretches 3,000 kilometers along its base, with a coastline made up of "73 major islands of more than 50 square miles in area, and some 18,114 smaller ones" (Pharand, 2007: 15). Within the water surrounding the Arctic islands, "nearly all… are seeded with countless islands, rocks and reefs" (Pharand, 2007: 16). Due to the cold climate, these waters remain frozen for most of the year, and the relatively short open water season is never truly free of ice. On land, the Arctic consists of mostly permanently frozen ground with limited plant growth, where the warmest month has a mean temperatures of less that 10°C (Bone, 2009). Due to its extreme climatic conditions, the Arctic region is highly sensitive to global climate change, and experiences slow recovery time from disturbances. As a result, the greatest effects of climate change are occurring in the polar regions. The following section will outline one the key aspects of the northern marine environment, that is also an important indicator of (and contributor to) global climate change: the sea ice environment.

2.2 Sea Ice

2.2.1 Climate change science and declining sea ice cover

The Earth's climate is being affected greatly by anthropogenic inputs, more specifically, the global release and accumulation of carbon dioxide and other greenhouse gases which are causing the climate of the Earth to change (ACIA, 2004; Barber *et al*., 2008; IPCC, 2007; Pharand, 2007). These climate changes are particularly intense in the Arctic and can be seen in both the marine environment as well as terrestrial ecosystems (ACIA, 2004; Barber *et al*., 2008; Michel *et al*., 2006; Pharand, 2007; Simon, 2007). Temperature in particular is a prominent indicator of climatic change (Hansell *et al*., 1998). For example, "paleoclimate evidence, which is mostly indicative of summer conditions, shows that the Arctic in the summer is now warmer than at any time in at least the past 400 years" (Chapin *et al*., 2005b: 657). In addition, it has been found in the past few decades that the average temperature of the Arctic has risen at twice the rate of the rest of the world (ACIA, 2004; IPCC, 2007). The air temperature over sea ice has increased 1.22°C per decade over the past twenty years (Michel, 2006). Specifically within the Canadian Arctic this trend can be seen by the average daily temperatures in Resolute Bay, Nunavut (Figure 2-1). The wide-ranging changes that are being experienced in the Arctic are said to be "an early indication of the environmental and societal significance of global warming" (ACIA, 2004: 8).

Sea ice is recognized to be a key characteristic of the Arctic environment, which also has a high sensitivity to climate change (Lietaer, *et al*., 2008). The Arctic Climate Impact Assessment (ACIA) is at the forefront of Arctic climate change studies

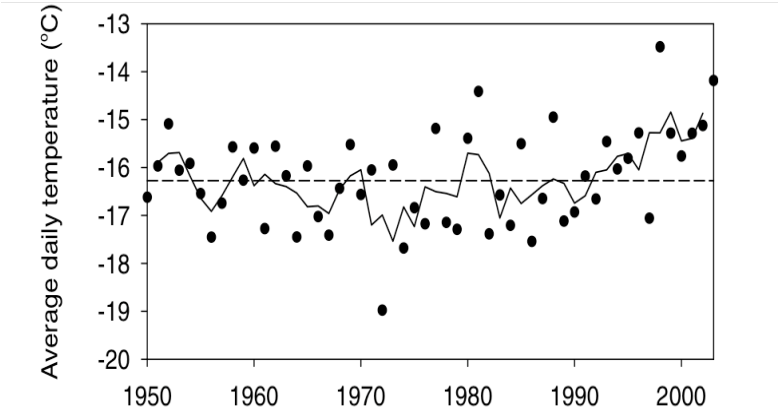


Figure 2-1: The yearly average daily temperature in Resolute, Nunavut from 1950-2003 (Michel *et al*., 2006: 384)

(Bravo, 2008), and identifies declining sea ice cover to be a major component (key finding 6) (ACIA, 2004). "Since 1978 [the] annual average arctic sea ice extent has shrunk by 2.7% [actual values between 2.1 to 3.3%] per decade, with larger decreases in summer of 7.4% [actual values between 5.0 to 9.8%] per decade" (IPCC, 2007: 7). Over the last thirty to fifty years, observations have shown that during all seasons, the extent of circumpolar arctic sea ice is declining, and this trend is expected to continue (ACIA, 2004; Barber *et al*., 2008; Grumet *et al*., 2001; Michel *et al*., 2006). The annual sea ice extent is estimated to have diminished by approximately 5-10%, whereas the thickness is estimated to have reduced by approximately 10-15% (ACIA, 2004: 82). Overall it has been found that freeze-up is occurring later in the year, and spring melt is occurring sooner (Barber *et al*., 2008; Michel *et al*., 2006). The overall rate of sea ice melting has exceeded initial scientific model predictions, and is currently accelerating (Birchall, 2006). This has significant implications for Inuit and animals because many aspects of the Arctic environment are tied to the seasonal cycles and dependent on the timing of freeze-up and break-up (Michel *et al*., 2006).

In recent years, increased inter-annual sea ice variability has also been observed (Grumet *et al*., 2001; Michel *et al*., 2006; Pharand, 2007), which makes hunting and traveling more difficult. It is predicted that even if the general trend follows a declining sea ice extent, between years there could be a high degree of summer sea ice cover (Griffiths, 2004). For example, the recent record low of sea ice extent was documented in the fall of 2005, and the record minimum summer sea ice extent was documented in September 2007 (Barber *et al*., 2008). Across the Arctic, the most severe reductions in sea ice are seen near Alaska and the Barents Sea, whereas there was an increase in sea ice concentration observed in the Canadian North (Barber *et al*., 2008). The Canadian increase has been associated with the central Arctic ice pack becoming trapped against the Queen Elizabeth Islands. Notwithstanding there have been overall sea ice reductions around most Arctic communities (Barber *et al*., 2008). It is acknowledged that since 2002 there have been dramatic reductions in sea ice due to the "unprecedented decline in summer sea ice over the last three years" (Barber *et al*., 2008: 10).

2.2.2 Impacts of climate change in the Arctic

Changes to the climate and environment in the Arctic region have implications for the rest of the world and vice-versa. There are global feedback mechanisms in place where local changes lead to changes in regional trends, which compound to contribute to global changes (Chapin *et al*., 2005b; IPCC, 2007). Global atmospheric and oceanic circulation patterns are also affected by changing sea ice conditions, which can lead to variations in global heat transfer as well as heightened concentration of pollutants and chemicals in the Arctic (Barber *et al*., 2008; Michel *et al*., 2006). Therefore, changing

sea ice conditions, and associated salinity, temperature, and circulation patterns, in turn affect the marine food chain and have far-reaching implications for arctic environments and the communities that rely on them (Hansell *et al*., 1998).

2.3 Use

2.3.1 Inuit use of sea ice

There is archaeological evidence that "Inuit have been coastal people living on the sea ice as well as the land" for over 5000 years (Riewe, 1991: 3; also see Bravo, 2008). Their coastal routes are tied to their lifestyle of harvesting marine wildlife (Aporta 2009; Marecic, 1999/2000). Traditionally, Inuit have had the largest travel range of any hunting and gathering peoples; in Nunavut 34% of that area is marine-based (Riewe, 1991). Currently, all but one of the communities in Nunavut are situated along the coast and almost all of the landfast area of Nunavut is being used (Riewe, 1991: 5). Landfast ice is defined as ice that is generally immobilized and attached to the land (Michel *et al*., 2006: 383).

Over time Inuit have "perfect[ed] an adaptation to one of the earth's most unique environments" (Nelson, 1969: 9). This adaptation has involved studying, watching and experimenting on the ice environment in order to avoid danger (Nelson, 1969: 10). The ecosystem dominated by sea ice sustains a variety of life forms highly adapted to these arctic conditions (Henderson, 2007). Sea ice is used to support subsistence and commercial activities, and continues to be intertwined into nearly all aspects of Inuit life (Berkes *et al*., 2001; Gearheard, *et al*., 2006; Henderson, 2007; Laidler and Elee, 2006). "Inuit well-being depends on their hunters' access to populations of marine mammals,

which in turn depends on keeping the sea ice in a stable state by not interfering with seasonal patterns for formation and melting" (Bravo, 2008: 162). In addition, at all times of the year, dealing with marine environments is an everyday activity as most activities involve travel over the sea (Aporta, 2002; Barber *et al*., 2008). During the fall, winter and spring most hunting and traveling in the Arctic is carried out on solid landfast ice (Aporta, 2002; Barber *et al*., 2008).

The role of travel in the Arctic for Inuit is identified as being "an important part of Inuit identity" (Aporta, 2009: 138). Specifically within Cape Dorset, Nunavut it was found that "sea ice was described as being as important for local travel as highways are in southern Canada" (Laidler and Elee, 2006: 158). In communities such as Igloolik, Nunavut traveling over the ice occurs nine months of the year (Aporta, 2002: 342). As a result of this extensive use, sea ice is a well-known and well identified territory, as show by the Inuit development of a unique naming system for features on the sea ice (Aporta, 2002; Laidler and Elee, 2008; Laidler and Ikummaq, 2008; Laidler *et al.*, 2008; Muller-Wille, 1989-90). Given this constant use, hunters have intricate knowledge of the ice, its geography, and its dynamics. Hunters are able to "decode the sea-ice behaviour through their understanding of lunar phases, tidal currents and winds" (Aporta, 2002: 352). As such, "knowledge of ice involves an understanding of a vast array of interrelated factors including crystal formation, temperature, salinity, wind, currents, and shoreline and sea bed topography" (Riewe, 1991: 6; also see Laidler, 2006, 2007; Laidler and Elee, 2008; Muller-Wille, 1989-90). Overall, "Inuit knowledge of sea ice is… highly rational and is based on a body of precise knowledge, detailed linguistic terms and rule-bound practices,

which, like any form of expert knowledge, become to a certain extent embodied and intuitive" (Bravo, 2008: 164).

As Inuit in the Canadian Arctic spend substantial amounts of time using the sea ice (for travel, hunting, or leisure), it can be argued that sea ice becomes an extension of the land. Communities, in the past, lived on sea ice in camps to improve access to wildlife and increase warmth (Aporta, 2002: 344). The sea ice is a warmer platform because of some heat transfer from the higher water temperatures below the ice surface (in comparison to the colder temperatures of frozen ground). To this day, hunters in Igloolik (as well as Cape Dorset and other Nunavut communities) keep their dog teams on the sea ice for this same reason (Aporta, 2002).

Based on the previously discussed changes to the environment, Inuit use of sea ice is being affected by climate change. For example, in Sachs Harbour, Northwest Territories the community has noticed that multi-year ice (ice that survives a minimum of two summer seasons) no longer comes close to the town in the summer months (ACIA, 2004; Nichols, *et al*., 2004). This multi-year ice is home to seals (a source of food that the community of Sachs Harbour depends on) making hunting more difficult as the species moves further from the community (Ashford *et al*., 2001). Overall, reductions in sea ice extent and area are limiting communities' activities in the Arctic.

2.3.2 Local impacts of changing sea ice

Beyond the environmental impacts of changing sea ice conditions, Inuit communities that still use the sea ice regularly for travel, hunting, and leisure are also greatly affected. Inuit rely on the predictability of sea ice for many of their daily

activities, but recently sea ice conditions have become increasingly unpredictable leading to more dangerous travel and increased accidents (Barber *et al*., 2008; Ford and Smit, 2004). Furthermore, Inuit observations of sea ice change support many of the previously mentioned scientific findings.

Observations of the changing local sea ice conditions at the community level provide not only unique important fine-scale information which could contribute to scientific studies, but there is also increased interest in learning from Inuit sea ice experts to direct studies towards aspects that are detailed information to be combined with scientific studies, but it ensures that the information is relevant to the communities (Mahoney *et al*., 2009). Across the Arctic, communities are witnessing and documenting a variety of changes to the environment and more specifically the sea ice (Ashford *et al*., 2001; Ford and Smit, 2004; Ford *et al*., 2006; Gearheard *et al*., 2006; Laidler and Elee, 2006; Nickels *et al*., 2006).

One study in particular, the *Siku-Inuit-Hila Project,* has built upon these observations to facilitate research exchanges between the communities of: i) Clyde River, Nunavut, ii) Barrow, Alaska and iii) Qaanaaq, Greenland (Mahoney *et al*., 2009). This resulted not only in the extensive documentation of changing conditions, but the establishment of a small local sea ice monitoring network across the arctic region to quantitatively and qualitatively monitor change over the long term and enable regional comparisons.

Similarly, community-based ice monitoring has also been established in the Inuvialuit Settlement Region of the Northwest Territories and in Clyde River, Nunavut.

Local observations indicate that freeze-up is occurring later, break-up is happening faster, overall sea ice is thinning and there is a longer open-water season (Barber *et al*., 2008; Gearheard *et al*., 2006). This knowledge comes from the extensive use of sea ice for hunting and traveling.

Changes to the Arctic climate and environment have differing implications for the stakeholders who rely on being able to predict sea ice conditions and behavior. Variations with which sea ice changes impact several areas:

- transportation for those who are seeking to use the sea ice (Inuit who count on sea ice as a travel and hunting platform); and
- transportation for those who are seeking to avoid the sea ice (when shipping in arctic waters sea ice is seen as a barrier and a hazard)

(Aporta, 2002; Byers *et al*., 2005; Fenge, 2007/08).

2.3.3 Shipping and the Northwest Passage

As sea ice reduces in area and thickness, it is believed that the Arctic waters will open and render it easier for ships to transit these previously inaccessible areas. Typically, the navigation season of the Arctic waters begins when there is less than 50% total sea ice cover (ACIA, 2004). Across the Canadian Arctic, the shipping season tends to begin when the ice starts to break up, usually in July, and closes around October with the onset of freeze-up, with some variations (Pharand, 2007).

The Northwest Passage (Figure 2-2), a historic transit route through the Arctic connecting the Atlantic and Pacific Oceans, is of particular interest when investigating implications of changing sea ice conditions for northern shipping. The Arctic, and this route in particular, has been linked to Canadian heritage, identity (i.e. Canada as the ‘true north strong and free’), as well as epic journeys of European explorers (Bilder, 1970;

Charron, 2005; McRae, 2007; Shadian, 2007; Simon, 2007). The Northwest Passage is characterized as being capable of "sav[ing] international shipping companies an estimated 35% [in time] on a voyage between Europe and the Orient" (Birchall, 2006: iii). This route eliminates between 4,000 and 8,000 nautical miles in distance traveled, in addition to canal fees, when compared to the alternative (i.e. the Panama Canal) (Charron, 2005; Huebert, 2003; Pharand, 2007). Further attraction to the Northwest Passage stems from the provision of protection and shelter for ships from storms in the open ocean, making it a safer route to travel (Huebert, 2001). The Northwest Passage is actually made up of seven potentially useable channels, providing a number of route options that wind through the Arctic Archipelago (Figure 2-2) (Bilder, 1970; Bankes, 1987; Charron, 2005; Pharand, 2007). There are, however, some key challenges to using the Northwest Passage. First, the Northwest Passage is "navigable for about 4 months of the year, but with considerable assistance and escorting by icebreakers" (Pharand, 2007: 3). Second, even during the summer months, vessels transiting these waters need to be "ice-strengthened" (Charron, 2005: 831). Third, it is important to understand that a 4-month shipping season does not necessarily consist of 120 consecutive days where ships are able to transit. The conditions of the passage are dynamic and can change on a daily basis. Fourth, compounding this difficulty, it takes approximately 6 or 7 clear days to sail across the Northwest Passage (Griffiths, 2004). All of these factors need to be taken into consideration when transiting the Passage, at present and in the future.

There are additional concerns when it comes to shipping in Arctic waters, particularly in light of climate change. Of primary concern is safety relating to both the

safety of marine vessels and passengers, as well as the environment (ACIA, 2004; Barber *et al*., 2008; Pharand, 2007). With the impacts of climate change it is expected that the number of ships traveling and the speed at which they travel will increase as ice cover declines. This will increase the likelihood for damage to vessels and pollution of the environment (Kubat *et al*., 2005). There is also the very real possibility that thinning

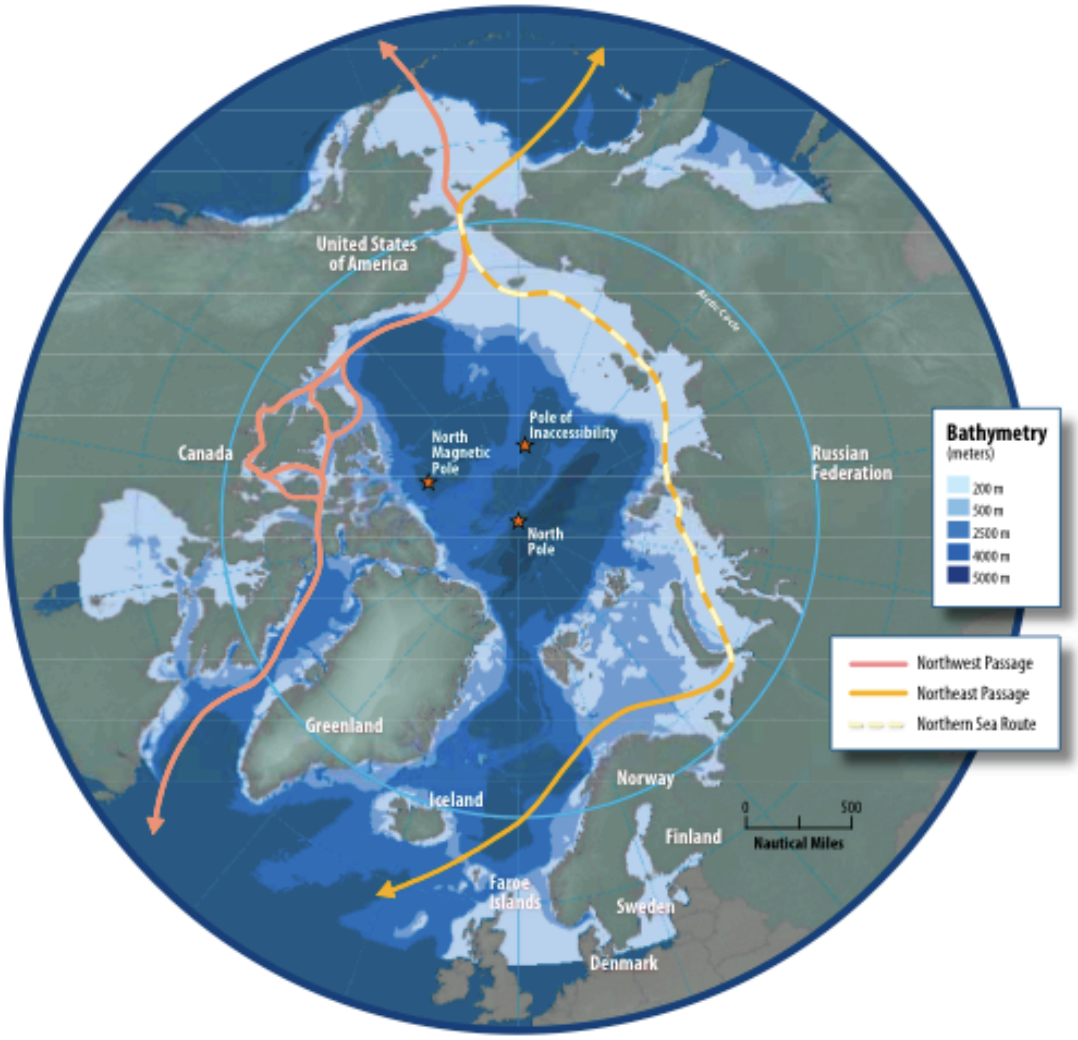


Figure 2-2: Map of the Northwest Passage through Canada's Arctic region (Arctic Council, 2009: 17)

ice will be more hazardous to shipping (Johnston, 2002). These hazards are numerous:

- as the layer of sea ice thins, it will become more dynamic and mobile with increased propagation of icebergs (ACIA, 2004; Birchall, 2006)
- "multiyear ice [will] make its way southward and clog some of the channels and straits" (Pharand, 2007: 3; also see Kubat *et al*., 2006).

Key examples of environmental disturbances include the potential for oil spills and other industrial accidents (ACIA, 2004; Bilder, 1970; Charron, 2005; Pharand, 2007; Wade, 2008). The results of such accidents have significantly longer lasting and detrimental effects on the environment when occurring in the Arctic given the region's particular ecosystem (ACIA, 2004; Bilder, 1970; Mulvihill *et al*., 2001; VanderKlippe. 2006). The Arctic region is extremely sensitive to disturbances as its average annual cold temperatures result in a long recovery rate from environmental damage. A primary example of this is the *Exxon Valdez* oil spill in Alaska's Prince William Sound in 1989. Despite the aggressive cleanup, in 2003, oil from the *Valdez* spill was uncovered by researchers in the beaches of Prince William Sound, and the oil was found to be "like it was two or three weeks after the spill" (ACIA, 2004:85). The frozen environment in Alaska protected the oil and increased both its lifespan and impact on the ecosystem. In Nunavut there have also been oil spills. For example in 1996 the *Hanseatic* hit a sand bar near Cambridge Bay, Nunavut and had a "minor oil leak" (Huebert, 2001: 87). These potential environmental impacts and the associated safety threat to ships' crew may also have detrimental impacts on the people and animals who occupy the region. Inuit rely on the marine environment (including marine mammals) and sea ice for their way of life, which includes hunting and traveling (Aporta, 2002; Berkes *et al*., 2001; Bravo, 2008;

Laidler and Elee, 2006; Nelson, 1969 Riewe, 1991), and as such they are also sensitive to changes to their environment.

2.3.4 Shipping policies

In an effort to regulate shipping practices and ensure environmental protection in marine arctic regions, a number of policies have been developed. However, these policies are not widely discussed in the current body of literature, much less how they specifically address issues related to sea ice. At the international and federal levels of jurisdiction the policies regulating arctic shipping do focus on efforts to prevent environmental damage (eight have been selected for this project, as outlined in Section 3.3.3). When it comes to Canadian Arctic waters the responsibility rests with Transport Canada as part of the Arctic Waters Pollution Prevention Act (AWPPA, 1985) and the associated Arctic Shipping Pollution Prevention Regulations (Kubat *et al*., 2007; Kubat *et al*., 2005). The AWPPA was designed to protect the Arctic marine environment from damage (Charron, 2005; Simon, 2007). Throughout this Act the Canadian government sets provisions insisting "that vessels be appropriately strengthened" in order to transit the Arctic waters (Griffiths, 2004: 10). In addition, it enables the government to affirm "a 100-mile pollution prevention zone in the area" (Shadian, 2007: 332). This Act was "seen as a vital tool to protect the distinctive way of life of Canada's northern communities" (Charron, 2005: 840).

As a result of climate change both Inuit use of the sea ice, and shipping in ice filled-waters of the the arctic region, are being altered. Along with these practical implications, broader international changes are occurring, as well, international interest in

the Arctic marine areas is also increasing as questions of, and challenges to, sovereignty are being raised.

2.4 Sovereignty

Sovereignty is an important concept as sea ice changes and demand for shipping increases (Bankes, 1987; Birchall, 2006; Byers and Lalonde, 2005; Charron, 2005; Ellient-Meisel, 1999; Griffiths, 2009; Huebert, 2001, 2003, 1995; Kaludjak, 2006; McRae, 2007; Simon, 2007, 2008, 2009). Griffiths states that "sovereignty is the first language of southern Canadians as they consider Arctic affairs" (2004: 13). Southern Canadians regard the Arctic as a territory that is to be owned. This is intrinsically different from northern Canadians who regard the Arctic as their homeland. It is important to acknowledge these two fundamentally different viewpoints over the concepts of sovereignty, and territory: that of Aboriginal peoples, specifically Inuit in this case, and the Canadian state. Overall, the ideas behind the creation of a nation-state were "based on European models of political and social organization – dramatically different from how indigenous groups have traditionally organized" (Parrish, 2006/2007: 297). It is thus important context to better understand the differing conceptualizations of sovereignty and territory between government and Inuit perspectives. As Barsh identified, politics is viewed as "an institution for usefully channeling the energies of ambitious men and women," whereas for aboriginal groups "leadership is a burden upon the selfless, an obligation for the most capable, but never a reward for the greedy" (1986: 191).

2.4.1 Government concepts of sovereignty and territory

There are a number of core concepts defining sovereignty, as recognized by nation-states, including notions of autonomy, control and legitimacy (Litfin, 1997: 169). In this context, autonomy is considered independence, control is power, and legitimacy is recognition by other states (Litfin, 1997: 169). Griffiths further articulates these concepts, defining sovereignty as "the ability of the state to exercise recognized rights of exclusive jurisdiction within a territorially delimited space" (2009: 3). This definition acknowledges the independence of the state's exclusive jurisdiction, the control of the state in exercising rights, and the legitimacy of the state having recognized rights. Similarly, sovereignty refers to an independent state that has "supreme legitimate authority within a territory" (Elliot-Meisel, 1999: 408; also see McRae, 2007; Parrish, 2006/2007) where the powers and authority of states end "at the border" (Parrish, 2006/2007: 295). More specifically, legitimacy refers to being recognized by other states, and also refers to maintaining this accepted power. An important aspect of sovereignty includes the ability to protect and defend one's claims of sovereignty (Elliot-Meisel, 1999). In order to maintain sovereignty you must be the only state residing in the area, you must hold power over the area and this must all be recognized by other states. It is understood that states eventually "recognize each other as equals… [accepting] that they [are] equally independent in asserting control over the respective territories ruled" (Knight, 1985: 252). Overall, states are ultimately responsible for "protecting the identity in its territory" (Knight, 1985: 252).

International laws are important for sovereignty and maintaining order between states. The pressures of established international laws and standards by the international community are in place to help to ensure peaceful relations and hold states responsible and accountable for their actions. International laws themselves rely on the principles of sovereignty, equality, and recognition in order to be accepted and followed (Knight, 1985).

2.4.2 Inuit concepts of sovereignty and territory

Aboriginal groups in Canada, including Inuit, traditionally possess unique views of the world and concepts of sovereignty and territory that differ significantly from those commonly accepted by the Canadian state. The following will outline some broadly similar elements of Canadian Aboriginal characterizations of sovereignty and territory (with a primary focus on the Inuit). This includes traditional perspectives, as well as how Aboriginal groups have more recently conformed to work within the accepted government concepts, as well as land claims that have served to "push the boundaries" so to speak (e.g. Nunavut Land Claims Agreement).

2.4.2.1 World-views

Traditional Aboriginal world-views are fundamentally different from Western perspectives. In fact, it is difficult to translate words such as government, sovereignty and politics into most Aboriginal languages (Cassidy, 1990). To Aboriginal peoples, the concept of territory includes the idea that there is an inseparable relationship between people and the environment. As a result, Aboriginal peoples see themselves as stewards over territory and believe that they must protect the environment so that others (people,

environment, spirits and animals) can prosper (Kinsley, 1995). This is similar for Inuit, whereby the environment is not a separate entity (Aporta, 2002). Furthermore, Inuit perceptions of territory have been described as being established through memory and people's mental images of the environment (including land, sea and sea ice) (Aporta, 2002; Nuttall, 1992). Inuit world-views and values are said to "[blend] the acquisition of food and shelter with the need to belong and the need to acquire knowledge" (Henderson, 2007: 41).

Resource acquisition for pre-contact Inuit culture was governed by utilitarianism, where maximizing the good of the group, the "efficiency of human and natural resources" was key (Henderson, 2007: 41). Similarly, co-operation was, and to some degree still is, fundamental to the functioning of the group (Henderson, 2007). Much of this is a result of the challenging arctic environment in which Inuit live, where survival often rests on the combined work of a family, or sharing of resources and assistance between groups. Hunting and providing for the "collective survival of the larger social group" (Henderson, 2007: 42) was the intension of traditional Inuit hunters.

2.4.2.2 Customary law

It is widely accepted that prior to the arrival of Europeans, Aboriginal peoples (including the Inuit) followed a set of customary laws that established obligations and rights (Denhez, 1984). Customary law is a "system of unwritten rules for dealing with conflict" (Purich, 1992: 12). It is something that is understood by the community and represents community consensus. Traditional Inuit society was governed by a series of taboos, actions that were deemed inappropriate in particular circumstances (Boas, 1901;

Henderson, 2007). Individuals that broke taboos could expect strong consequences, including illness, difficulty in hunting, or even death. These consequences were not imposed by other Inuit, but were believed to be a direct result of their transgressions, or actions for which they were not remorseful (Henderson, 2007).

Inuit leaders were usually those "best able to provide for the group, possessing a skill set that could cope with such phenomenon as weather patterns, ice conditions and hunting grounds and techniques as well as the butchering of animals and the catching of meat" (Henderson, 2007: 48). Leaders' (often elders) possessed "a high degree of expertise in all the skills necessary" (Bennett and Rowley, 2004: 95) and their roles were focused on providing for the group rather than policing. Within the Inuit communities, elders were responsible for "maintaining the moral and social standards of the social group… [correcting] the wrong being done" (Henderson, 2007: 49). Leaders also played the important role of "remind[ing] people of the values and laws by which they lived" (Bennett and Rowley, 2004: 97).

2.4.2.3 Ownership and property

The concept of property varies culturally as it is socially constructed (Nadasdy, 2002). For the government, the concepts of property and ownership are at the heart of its operations. On the other hand, for Aboriginal groups the concept of property, in the terms that are commonly used by nation-states and within capitalist discourses, did not arise until contact with European colonizers (Nadasdy, 2002). Prior to colonization, Arctic Aboriginal peoples maintained complex relationships with the environment and one another, where rights to lands and resources were based on use (Nadasdy, 2002). The

beliefs, values, systematic use, and social relations that constituted peoples' relationships with the land provided the conceptual framework for measuring legitimacy of claims to the land (Nadasdy, 2002). This is a fundamentally different way of looking at land, as opposed to the emphasis on defining property control and boundaries in order to claim ownership. Most Aboriginal groups share the view that no one can own or have mastery over the land, the land is simply there and people see themselves as a part of the land rather than separate from it (Nadasdy, 2002). Henderson states that for the Inuit "there was no concept of private land ownership" (2007: 43). Historically, Inuit did not consider that the land could belong to anyone, when people travelled to different areas they freely used the land and resources as needed (Henderson, 2007). This is also seen in the traditional sharing of food and resources, whereby Inuit attempted to ensure that other's needs were always met (Henderson, 2007).

Generally, the Western idea of ownership was introduced with colonial encounters, and was fundamentally different from Aboriginal views and approaches (Mackenzie and Dalby, 2003). Aboriginal peoples regarded themselves as "enmeshed in a complex web of reciprocal relations and obligations with the land and the animals upon it" (Nadasdy, 2002: 10). One example of such conflicting views is highlighted in the naming of geographic areas and places.

2.4.2.4 Naming

Inuit, like many Aboriginal groups, maintain their strong traditions through oral history (Aporta, 2009). As a result, language marks territory, with different areas reflecting different cultures, languages and ways of life (Woodward *et al*., 1998). For

example, Inuit have established an intricate system of naming places where "the names of places were traditionally kept in people's memories and transmitted in narratives" (Aporta, 2009: 137). These place names are widely known in the community and are attached to the names of concrete geographic locations (Aporta, 2002; Muller-Wille, 1989-90). However, these traditional names also identify and describe hazards, animals, winds, myths, areas of safety and most importantly, journeys. Place names are said to be "indicators of the type and intensity of land use and occupancy in specific physical environments and cultural areas" (Muller-Wille, 1989-90: 17), identifying a unique oral approach to defining space and place. If one is not aware of the place names of an area, they are thus at a disadvantage when attempting to utilize the environment.

Inuit place names are quite different from colonial naming systems. The colonial approach was essentially that of imposition, whereby explorer's names or the names of foreign authorities were used to define landscapes or identify locations. The emphasis in early Arctic exploration was thus on possession, asserting power and ownership over an area, and naming as a means of claiming (both the physical landscape, as well as personal glory). In contrast, *Inuktitut* (the Inuit language) names have deeper meanings, often associated with place or experience descriptions. A key example in Nunavut is the capital city that was named Frobisher Bay after the explorer Martin Frobisher, while Inuit refer to it as Iqaluit (the place with many fish) (Alia, 2007; McElroy, 2008). Similarly, Cape Dorset was named as such "by the explorer Luke Foxe in 1631 to honor a British nobleman" (McElroy, 2008: 99). However, as previously mentioned, the *Inuktitut* name for Cape Dorset is *Kinngait* which means mountains or hills and is thus descriptive of the

immediate landscape (Laidler and Elee, 2008; McElroy, 2008). Other examples of the colonial legacy of naming include Hudson Bay, James Bay, Hall Beach, and Baffin Island, all named after explorers; King William Island and Queen Elizabeth Islands were named after foreign authorities and sponsors; and Gjoa Haven was named after a famous Norwegian ship that traveled through the Arctic (McElroy, 2008). Much of northern Canadian geography reflects such European claims through naming, but the other interesting component of this naming trend was the typical regional scale at which colonial naming took place (sought to claim) in comparison to the typically local scale at which Inuit naming took place (sought to use/describe).

2.4.2.5 Boundaries

Boundaries are a relatively new concept for the Inuit. Historically, Inuit were nomadic, traveling in response to seasonal changes and animal migrations, as well as a form of longer term adaptation (Purich, 1992; Aporta, 2004). Therefore, the initial definition or enforcement of state boundaries was difficult for Inuit to comprehend, or acknowledge, as fixed borders on paper had no real meaning when adjusting to seasonal or annual rhythms of the environment.

Boundaries in Arctic regions are particularly unique, as they are not necessarily easily defined by the meeting of land and water. It has been suggested that "the real boundary is not the shoreline; it is the line of contact between shore-fast ice and moving ice, the floe edge" (Denhez, 1984: 139). This is the boundary for "traditional Inuit occupancy, for ecological and environmental considerations, it is the location of the most intense biological activity" (Denhez, 1984: 139). This "line" has always marked the

boundary for Inuit "land-based transportation" (Denhez, 1984: 139). It has thus been recommended that legal considerations include the floe edge, and not only the shore line, in order to more accurately represent Inuit rights (Denhez, 1984). However, history has shown that state definitions of territorial boundaries have "rarely [been] friendly to indigenous peoples" (Parrish, 2006/2007: 297).

*2.4.2.*6 *Conformity*

The Canadian court's concepts of ownership and property do not adequately represent the complexities of the relationship between Aboriginal peoples, animals and the land. As a result, Aboriginal groups had to re-frame their own beliefs and understandings of the world based on "fundamentally different assumptions" into explanations and descriptions of their relationship with the land into a language that the courts could understand, or "speak in the language that power understands" (Nadasdy 2002: 2,10). In the process of doing this, they were forced to "put aside their discomfort with the idea of owning land and animals, and elect[ed] to participate in land claim process[es] because they [saw] it as the only realistic chance they ha[d] to preserve their way of life" (Nadasdy 2002:18). The use of terms such as property, rights, and title have often led to tensions "between Aboriginal beliefs about the proper relationship between people and the land and the need to defend their interests" (Nadasdy 2002:13).

Self-government is also an important concept when discussing Aboriginal concepts of sovereignty in the Canadian context. Self-government is "the right of a community to govern its own affairs. It does not mean independence from Canada; rather, it means defining the terms under which an Aboriginal community is part of the larger

federal state… [it] means control over those matters of local interest that have a direct impact on daily lives" (Purich, 1992: 19). Decisions affecting the Aboriginal community, if made by the group themselves, are most often done in the best interest of the people themselves. Such self-determination was among the principal goals of the negotiations leading to the Nunavut Land Claims Agreement.

2.4.2.7 Nunavut Land Claims Agreement

Canadian sovereignty in the Arctic was secured through Agreements which "stipulated that Aboriginal people cede, release, and surrender their territories and settle on lands reserved to them by the government… extinguish[ing] Aboriginal title to large tracts of land" (Blackburn, 2007: 623). The concept of Aboriginal title is based on the rights to use resources of the land resulting from long term use and occupancy of a region; Justice Thomas Berger, acknowledges that this should be based on Aboriginal concepts of ownership (Swiderski 1992:34). Where Aboriginal title exists, it refers to traditional lands used for hunting and trapping that were never ceded or surrendered by treaty or purchase (Bone 2003:190). Aboriginal rights refers to "the body of rights that was vested in a people (prior to the arrival of Europeans) under their own legal system, rights that were not interrupted by any statute subsequent to the arrival of Europeans and that continue to be rights enforceable under the recognized principles of <u>continuity of law</u>" (Denhez, 1984: 133, original emphasis). Therefore, modern Land Claim Agreements are based on the premise of upholding both Aboriginal title and rights, in the negotiations of appropriate claims.

Land claims are seen as a way to "incorporate Aboriginal people's unique relationship to the land into existing legal and political institutions of the Canadian state" (Nadasdy 2002:2). They are based on Aboriginal groups proving their areas of use and occupation in order to develop a case for legitimacy over tracts of land. Land claims require the translation of cultural beliefs, values and practices into a language that is understood by "Euro-Canadian bureaucrats, lawyers, and politicians" (Nadasdy, 2002: 2), and are thus a process to place ownership and jurisdiction within a Canadian context, not an Aboriginal one (Sparke, 2005). Land Claims Agreements are seen by Aboriginal groups as the only viable option to preserve their way of life including a way to "figure out how to keep the land and animals safe for their children and grandchildren" (Nadasdy, 2002:1; also see Macklem, 1993; Sparke, 2005).

The largest and most unique Agreement between the Inuit and the Canadian government is the Nunavut Land Claims Agreement (NLCA). The Inuit Land Use and Occupancy Project (Freeman, 1976) was essential for the negotiations as it documented historic and current land use patterns of Inuit in the Nunavut settlement area (McElroy, 2008) to prove the extent of use and occupancy, and help to define the settlement and new territorial boundaries. The Agreement was settled in 1993 and provided Inuit of the Eastern Arctic with title to the largest Land Claim in Canada's history and the creation of the territory of Nunavut (Marecic, 1999/2000: 282; also see Kaludjak, 2006). Inuit Tapirisat of Canada (ITC) (now Inuit Tapiriit Kanatami – ITK) represented Inuit throughout the early negotiations and later created the Tungavik Federation of Nunavut (TFN) (now Nunavut Tunngavik Incorporated – NTI) to represent all Inuit communities

in the region (McElroy, 2008) and ensure full implementation of the Agreement. Provisions of the NLCA include:

- title to approximately 355 842 square kilometers of land,
- subsurface mineral rights to 10% of that area
- $1.148 billion compensation over fourteen years
- harvesting rights
- the establishment of co-management boards
- establishment of the Nunavut territory
  (McElroy, 2008: 157; also see Fenge, 2007/08).

However, these newly defined title and rights were exchanged for the extinguishment of aboriginal title, and any further claims to lands in this region.

As part of the NLCA, the newest Canadian territory of Nunavut was created on April 1 1999 (Figure 2-3). This is also the first territory in a modern state to be both administered and governed by Aboriginal peoples, specifically Inuit (Marecic, 1999/2000). Although it operates as a public government, Inuit are meant to have proportional representation (to their percentage of the territorial population) in the public service, to increase Inuit employment in government agencies and thus control in decision-making (Purich, 1992). In addition, the Government of Nunavut is highly decentralized (Purich, 1992), allowing many different communities to be involved and dispersing employment opportunities and related local benefits. Today in Nunavut, *Inuktitut* and Inuit culture have been incorporated into government operations as well as daily community life, such as through "radio broadcasts in Inuktitut, the bilingual stop signs… and the trilingual telephone book for the eastern Arctic" (Purich, 1992: 17).

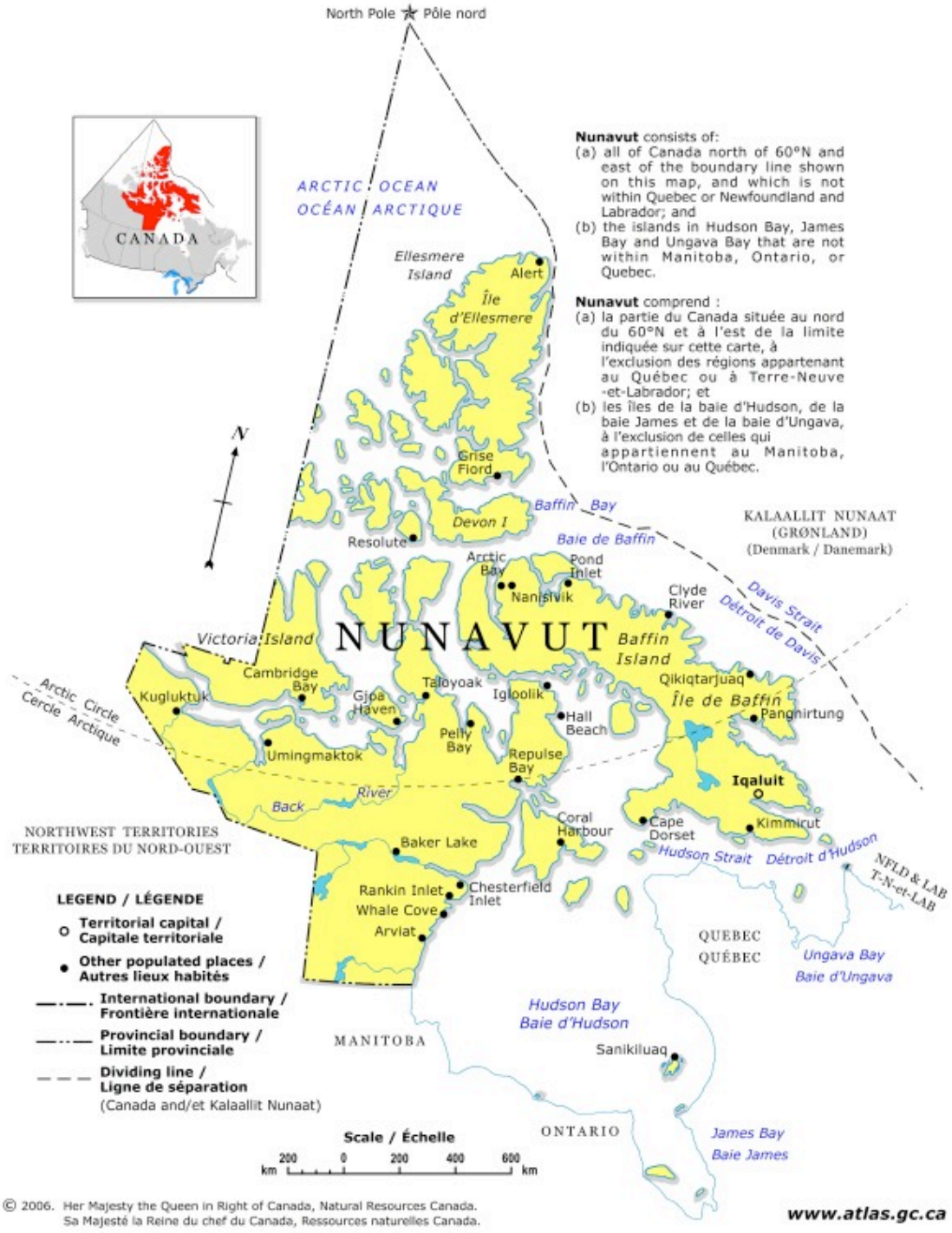


Figure 2-3: The Territory of Nunavut (Atlas of Canada, 2006)

2.4.3 Arctic sovereignty

Historically, Canada maintains sovereign title over the Arctic islands and some Arctic bodies of water. Canada obtained sovereignty over the Hudson Bay and Hudson Strait from the Hudson Bay Company (who acquired them in 1670) in 1870. Ten years later (in 1880), Canada obtained sovereignty over the Arctic islands from Great Britain. (Denhez, 1984; Pharand, 2007; Schledermann, 2003; Purich, 1992; Bankes, 1987). It is believed that Canada's main interest in the Arctic region has revolved around asserting or defending sovereignty and developing resources (Purich, 1992; Duffy, 1988). Initially, the federal government essentially ignored Inuit populations, allowing them to pursue their way of life relatively undisturbed. Upon gaining administration over the Arctic region, Canada's focus was on asserting sovereignty over the new territory, paying little attention to the Inuit population who resided there and were now part of Canada (Purich, 1992: 24). This significantly changed with southerners moving north as fur traders, missionaries and military personnel. The Arctic was then viewed as a "strategic location" (Bankes, 1987: 286) and thus used by governments and other non-Inuit for strategic placement of airfields, personnel, and access to resources and remote areas.

The first imposition of an outside way of life on Inuit came with missionaries and fur traders. They established posts and missions throughout the Arctic; by 1911 the Hudson Bay Company had over one hundred trading posts (McElroy, 2008; Purich, 1992). A post was established in the Cape Dorset area in 1913 (McElroy, 2008). Overall, the Hudson Bay Company had a large impact on Inuit by introducing them to contracts, wages, and by extension, government services and support systems (Purich, 1992).

Encouraged by the government, the Hudson Bay Company "moved Inuit" to areas "so that it could exploit fur resources" (Purich, 1992: 36; also see McElroy, 2008). The Nascopie was a famous Hudson Bay ship that visited Cape Dorset, and other communities, transporting Inuit trappers throughout the region (McElroy, 2008). Around the same time (1890s) missionaries began moving north in an effort to bring Christianity and formal education to the Inuit (Purich, 1992; McElroy, 2008).

The next group of non-Inuit to move north was the Canadian military during World War II, with the construction of military bases throughout the Arctic (McElroy, 2008). These bases were run by and for both the United States and Canada, and served as refueling stations for aircrafts on their way to England (McElroy, 2008). Following the end of World War II the military bases were entirely managed by the Royal Canadian Air Force (McElroy, 2008: 64). Military interest in northern Canada continued with the construction of the Distant Early Warning (DEW) line in the late 1950s, again in partnership with the United States (Bankes, 1987; Mortished, 2007; Purich, 1992). The DEW line consisted of a series of radar stations across the arctic that "could give a four-to-six-hour warning" of foreign invasion (Duffy, 1988). Overall, Canada's exertion of sovereignty in the Arctic is characterized as reactive, focusing on a response to threats rather than proactively engaging with northern communities as a different way of bolstering sovereignty (Bankes, 1987; Simon, 2007).

As part of its efforts to exert control, the Canadian government established fixed settlements for Inuit communities in the late 1950s (Alia, 2007). This involved the involuntary relocation of many Inuit. Inuit were traditionally nomadic and lived in small

camps throughout the Arctic, but with concern for starvation, scarce resources, and the provision of health and education services, the government established settlements and insisted on Inuit moving to them permanently (see Section 4.1). The most extreme example of this being relocations of Inuit from more southern camps to the High Arctic communities (Alia, 2007; Henderson, 2007; Fenge, 2007/08). In the mid-1950s the Canadian government moved Inuit families from northern Quebec and Pond Inlet to Craig Harbour and Resolute Bay in the High Arctic (McElroy, 2008). In total "92 people in 16 families were forcibly relocated" (McElroy, 2008: 135). It is believed that this was carried out by the Canadian government in order to "strengthen sovereignty claims" in all areas of the Arctic (McElroy, 2008: 135). The locations of these settlements were not based on traditional cultural centers for the Inuit, but on southern activities such as strategic trading posts and military bases (Duffy, 1988; Henderson, 2007).

2.4.3.1 Current Arctic sovereignty issues

At present, Arctic sovereignty remains a primary concern for the Conservative Canadian government. It is accepted that the Arctic islands and mainland, are for the most part, Canadian. However, Canada's claims of sovereignty over the marine environment are still being questioned by other countries. There has been a long history of debate regarding any claim of sovereignty over Arctic waters, including – and especially centered around - the Northwest Passage (Bilder, 1970; Birchall, 2006). Given the projected effects of climate change and the increasing potential for use of the Northwest Passage as a shipping route, this debate has gathered new steam.

To summarize the primary debate, Canada would like the Arctic waters to be classified as internal Canadian waters, whereas other countries, such as the United States, Japan, Russia, Denmark, Norway and the European Union would like it to be designated international waters (Beauchamps *et al*., 2008; Bilder, 1970; Carnaghan, and Goody, 2006; Johnston, 2002; Pharand, 2007). If the waters are considered internal, they would be governed by Canadian regulations and laws, where ships are required to obtain permission to enter and travel through them (Beauchamps *et al*., 2008). However, if they were deemed to be international, they would be governed by international laws (Beauchamps *et al*., 2008). This would put authority in the hands of the United Nations under the Law of the Sea Convention (Westermeyer and Goyal, 1986). However, there is concern over whether or not an international organization could "adequately address the arctic navigation concerns" (Westermeyer and Goyal, 1986: 344), which could lead to freedom for all to transit the Arctic region, and could limit Canada's ability to deny passage to transiting vessels (Huebert, 2001).

Skeptics suggest that Canada's claim to Arctic waters and the Northwest Passage are "not backed by an ability to defend, exploit, escort ships, or patrol the Passage year round" (Elliot-Meisel 1999: 407). Highlighting the inadequacy of current surveillance, in 1999 a Chinese vessel visited Tuktoyaktuk, Northwest Territories surprising Canadian authorities (Huebert, 2001). "Canadian officials did not learn of the vessel's entry into Canadian waters until it actually arrived" (Huebert, 2001: 87). Historically, the United States is said to have "posed the greatest challenge to Canadian claims of sovereignty" (Huebert, 2001: 90). There are notable past instances where ships transited

Canadian Arctic waters without consent from the Canadian Government, and thus not demonstrating respect towards Canadian sovereignty by requesting permission to enter or transit the waters. This includes the *Manhattan* in 1968 and 1970, as well as the *Polar Sea* in 1985 (Bankes, 1987; Bilder, 1970; Fenge, 2007/08; Huebert, 1995, 2001; Griffiths, 2004; Johnston, 2002; Pharand, 2007; Shadian, 2007; Simon, 2007; Westermeyer and Goyal, 1986). In all of these cases, the United States government "refused to acknowledge Canadian sovereignty over the waters and declined to request permission for crossing the Northwest Passage when asked to do so by the Canadian government" (Huebert, 1995: 344; also see Beauchamps *et al*., 2008; Charron, 2005; Pharand, 2007; Schledermann, 2003). Canada's response to these events, other than increased military presence, was the creation of the Arctic Waters Pollution Prevention Act (1985).

One recurring aspect of Canada's sovereignty claims in the Arctic is the use of long-term Inuit use and occupancy to support national claims. Today, Inuit are seen by many as "keepers of the Arctic" (Simon, 2008: 68) where culturally speaking, Canada relies on the Inuit occupancy of the North for its sovereignty (Fenge, 2007/08; Kaludjak, 2006; Simon, 2007). Similarly, it has been found that the Inuit have "permitted Canada to survive as an arctic nation" through their ability to flourish in the Arctic and "their intimate knowledge of their environment" (Riewe, 1991: 8). Furthermore, Inuit use of the sea ice supports Canada's claims to sovereignty over the Arctic waters (Bravo, 2008; Huebert, 2001; Kaludjak, 2006; Pharand, 2007; Riewe, 1991;). With the presence of sea ice for most of the year, the argument exists that Inuit, citizens of Canada, live and hunt

in the water and land areas of the North (Johnston, 2002) and thus these are clearly within Canadian jurisdiction based on "a continuous residential presence" (Johnston, 2002: 147). The importance of sea ice in Canada's claims over sovereignty is highlighted in the following statement by Secretary of State for External Affairs, Joe Clark in 1985:

> "Canada's sovereignty in the Arctic is indivisible. It embraces land, sea, and ice. It extends without interruption to the sea-ward facing coasts of the Arctic islands. These islands are joined and not divided by the waters between them. They are bridged for most of the year by ice. From time immemorial Canada's Inuit people have used and occupied the ice as they have used and occupied the land" (External Affairs Canada, 1985).

As opposed to the Canadian government's interest in the Arctic, the Inuit interest in the North is related to stewardship and not control (Charron, 2005). The fact "that Inuit live [in the Arctic] just as they have for thousands of years" (Shadian, 2007: 339) supports Canada's claims to sovereignty. Therefore, with newly emerging concern over arctic sovereignty the Canadian government has turned to the Inuit for help, emphasizing how "Canadian Inuit and Canada's Arctic sovereignty [continue to be] invariably linked" (Fenge, 2007/08: 85; also see Shadian, 2007). Inuit are critical partners in Canadian Arctic sovereignty. This thesis will evaluate how well the Inuit have actually been a part of this process and use this evaluation to make recommendations on how it could be improved in the future to ensure a more inclusive politics of sea ice.

Chapter 3 - Methods

3.1 Theoretical framework

3.1.1 Political Ecology

The theoretical framework of political ecology has broadly guided my analysis of Cape Dorset, and of the political views, different understandings, and concerns regarding sea ice changes in the Arctic. Political ecology is concerned with both environmental and social aspects of a given reality, in addition to politicizing environmental concerns (Johnstone *et al*., 2000). As described by Walker, political ecology "combines the concerns of ecology and the broadly defined political economy" (2005: 74). Moreover, Paulson *et al*. (2003: 7), states that "political ecology research focuses on legislative, financial, or cultural phenomena hypothesized as vital to ecological processes." Therefore, political ecology can be considered as "a research effort to expose the forces at work in ecological struggle and document livelihood alternatives in the face of change" (Robbins, 2004: 13). Furthermore, political ecology is "focused on unequal power relations, conflict and cultural 'modernization' under a global capitalist political economy" (Walker, 2005: 74). Thus political ecology allows one to question the relationship between economics, politics and the environment (Robbins, 2004), while also analyzing associated power struggles and how they affect environment issues (Cruikshank, 2001; Paulson *et al*., 2003; Walker, 2006). Additional key concepts within political ecology consider:

- how social relations that organize resource use may lead to excessive pressure on the environment;
- the existence of many different positions, perceptions, interests and rationalities related to the environment; and,

- the relationships between globally interconnected political and economic processes and their compounding influences on local realities (Gezon *et al*., 2005).

Therefore, broadly speaking, political ecology is concerned with "context-specific struggles over access and the political consequences of environmental change" (Reed *et al*., 2003: 329). As some scholars advocate, political ecology can thus be used as a tool to effect "fundamental changes in the management of nature and the rights of people, directly or indirectly working with state and non-governmental organizations to challenge current conditions" (Robbins, 2004: 5). Political ecology is, therefore, a particularly useful framework within which to situate my research because my research interests centre on understanding community and governmental policy perspectives on sea ice environments and uses, in a changing environmental and increasingly politicized context. Of particular relevance to the analysis of the impacts of changing sea ice environments to transportation and travel in the Arctic (and related effects on indigenous populations), are the issues of resource development, unequal power relations, socio-economic impacts of sea ice change, and the consideration of differing perspectives and scales of analysis.

First, politics and geography are "inevitably and irrevocably inter-twined... [where] the basic theme linking these subjects is the impact of human activities on our natural surroundings, and vice versa" (Young, 1987: 391). Humans, through our actions, are constantly interacting with - and changing - the environment. This is a result of the complex relationship that exists "between the land and our use of it" (Young, 1987: 396), whereby the influence of our highly industrialized way of life on global climate change is a prime example. Therefore, it is clear that the changing sea ice environment has the

potential to detrimentally affect the livelihood of Canada's Inuit peoples. At the same time, changes to sea ice are creating new opportunities for shipping and for utilizing and accessing the Arctic environment, sparking new national and international interests to exert control over the circumpolar region, to access and profit from natural resources and polar trade routes. My research attempts to uncover these interests/pressures through the analysis of various policy documents detailing government legislations around sea ice and navigation in ice-covered waters, and the resulting implications of these pressures on Inuit communities living in the Canadian north who are reliant on predictable ice cover and dynamics.

Second, unequal power relations can be seen in the current discussions of sovereignty and sea ice changes where Canadian Inuit are often marginalized (or completely ignored) in decisions and actions taken by Canadian or foreign governments. Power struggles have emerged mainly around the issue of access to northern sea routes, in relation to economic development potential (i.e. mineral, oil and gas), under the premise of sovereignty interests. Furthermore, there are different interpretations of environmental changes and their effects at various scales. Therefore, I will examine whose knowledge is privileged in arctic decision-making, and in what ways community and policy perspectives are interrelated.

Third, there are a number of socio-economic (and broader) implications of climate change (Ford, *et al*., 2006). Current environmental changes and stresses in the Arctic are forcing Inuit to adapt their way of life. Their adaptive capacity is challenged by the changing conditions, as Inuit social relationships, economic means and political

influences have been, and are currently, in transition. I will investigate the socio-economic impacts of sea ice changes in communities through examining how sea ice changes, political pressures, and tourism are affecting local livelihoods.

Finally, it is important for me to investigate both policy and community understandings of sea ice and sovereignty, thus delving into differing perspectives on issues that are bringing these 'worlds' together. In so doing, it is necessary to consider various scales (geographic and jurisdictional) from local to international. My research will bring together the understandings of territorial, federal and international governing bodies with local Inuit community perspectives and the understandings and opinions of Inuit organizations including Inuit Tapiriit Kanatami (ITK), Nunavut Tunngavik Inc. (NTI) and the Inuit Circumpolar Conference (ICC) as they apply to sea ice and sovereignty.

3.1.2 Concept recognition

3.1.2.1 Traditional Knowledge and Inuit Qaujimajatuqangit

The concepts of traditional knowledge and, in the Inuit context, *Inuit Qaujimajatuqangit* (IQ), can be used alongside political ecology as they recognize different perspectives, social networks, and environmental knowledge alongside unique cultural and political practices. Traditional knowledge has been defined as "a cumulative body of knowledge, practice, and belief, evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment" (Berkes, 2008: 7). In this context, tradition is considered "cultural continuity transmitted in the form of social

attitudes, beliefs, principles, and conventions of behavior and practice derived from historical experience" (Berkes, 2008: 3), and ecological knowledge is considered "knowledge, however acquired, of relationships of living beings with one another and with their environment" (Berkes, 2008: 5). In the Canadian North "aboriginal peoples often refer to their 'knowledge of the land' rather than to ecological knowledge" (Berkes, 2008: 5). Land "includes the living environment" (Berkes, 2008: 5) and is not limited to the physical land, but also the sea ice, and water. Overall, Inuit recognize that humans and the environment should be considered as parts of a whole. They are intrinsically linked and have enormous influences and effects on each other. This research attempts to understand, incorporate and respect this foundational knowledge gained by people through living and connecting with the land.

In the Canadian Arctic, the term IQ was coined by Inuit in the context of the new reality created by the territory of Nunavut (GN, 2006). This term is preferred when discussing all aspects of Inuit knowledge, and way of life. IQ is defined as "encompass[ing] all aspects of traditional Inuit culture including values, world-views, language, social organizations, knowledge, life skills, perceptions and expectations" (Anonymous 1998:1 as cited in Wenzel 2004: 240). This is, in fact, the guiding principle adopted by the Government of Nunavut (GN), and used by many academics to broadly refer to Inuit knowledge (see Laidler, 2006; Wenzel, 2004), in an effort to incorporate more relevant terminology in relation to Inuit knowledge, practices, and beliefs in governance and research. In the context of my own work and research in Cape Dorset, it was important to recognize and understand what this concept entails. IQ

involves respecting traditional and contemporary perspectives, thoughts and actions, decision-making, resourcefulness, and environmental stewardship (Wenzel, 2004). IQ is also considered as a type of conceptual framework, and remains a changing concept, evolving as Inuit face new challenges and new opportunities (Wenzel, 2004). It has been well established that "Inuit have knowledge of many natural processes occurring in their ecosystem including seasonal cycles, rivers, currents, sea ice, food webs and seasonal foods" (McDonald and Dalby, 1997: 9) and that "Inuit knowledge of ecosystem[s are] founded on respect for the environment and its processes and for the wildlife they share the region with" (McDonald and Dalby, 1997: 9). It is my intention to reflect on such understandings through the study of how Inuit of Cape Dorset understand and use the sea ice. Inuit have developed a deep understanding of their environmental context and surroundings, through their long-term observations, uses, and experiences of the land, water, sea, and ice around their communities and in the places were they used to live before moving to the settlements. Within the limits of the thesis, and given my relatively short exposure to Inuit life and the concept of IQ, I have done my best to incorporate Inuit perspectives and understanding of the sea ice, weather, travel, shipping and sovereignty.

3.2 Research approach

My research was partially funded by and conducted within the Inuit Sea Ice Use and Occupancy Project (ISIUOP). ISIUOP is funded by the Canadian Federal International Polar Year (IPY) Programme, and is led by Dr. Claudio Aporta, and based out of Carleton University. It was inspired by the recognition

that there was very little understanding and documenation of Inuit use and knowledge of the sea ice. It was also triggered by the impacts that a changing Arctic climate is having on sea ice extent and distribution, and the effects that this is having on Inuit communities who rely on the ice for their way of life. ISIUOP identifies itself as a 'collaborative project investigating the importance, uses, and knowledge of sea ice from the perspective of northern communities and Inuit experts' (ISIUOP, 2008: 1). As such, ISIUOP has brought together four projects centered on four communities in Nunavut, and three in Nunavik (northern Québec), Canada. Broadly, ISIUOP builds on previous sea ice research carried out by a number of community and university researchers, with the intention of further mapping and documenting local sea ice use and knowledge, developing new technologies for monitoring sea ice conditions, and creating new educational resources through an interactive online atlas, for use by northern communities, researchers and decision-makers (ISIUOP, 2008).

ISIUOP relies on the combined knowledge and efforts of a number of different researchers working in various communities throughout the Eastern Arctic. Therefore, the project took necessary steps to ensure the use of a similar research approach in each community to: i) maintain collaborative research relations; and, ii) enable elements of comparison on a few key topics. For example, two other ISIUOP researchers, Dr. Gita Laidler and Kelly Karpala traveled to Pangnirtung and Igloolik, Nunavut, during the same time that I was in Cape Dorset. Through our respective field work efforts, the three of us used some consistent interview questions and mapping techniques to enable later

comparison and combination of data. However, since the research foci were also community- and research-specific, I undertook a number of research activities specific to my interests on the connections between sea ice travel and use, changing environmental conditions, and sovereignty debates from community and policy perspectives.

Given that I am dealing with both Inuit and non-Inuit views and policies, it was necessary to incorporate a variety of research methods, as part of a mixed-methods approach (Sandelowski, 2000). This involved employing a number of different qualitative methods in order to combine various results to better address the driving research questions. Combining methods thus allowed me to deepen the insights from my study and expand its scope (Sandelowski, 2000).

3.3 Research stages

3.3.1 Ethics

ISIUOP applied for Carleton ethics approval, and a Nunavut Research License, as a whole project - covering all involved researchers at Carleton University. As my research was carried out as a component of ISIUOP, the previously approved project-wide ethical protocols were used to guide my own work. For example, the information pamphlets and consent forms used in my research were developed by Laidler and Aporta for ISIUOP, with contact details adjusted to reflect my involvement. These forms allowed interviewees to determine the level of consent that they were comfortable with (see Appendix A). The consent forms were provided in both English and *Inuktitut*, and I worked closely with Community Researcher Pootoogoo Elee wherever interpretation was required for unilingual *Inuktitut* speakers. Once the consent levels were finalized, and

forms signed (or verbally approved), one copy was kept for project records, and one copy was kept by the participant. Of the twenty (20) participants, all except two (2) consented to the interviews being recorded with a digital audio recording device, and seventeen (17) of the participants consented to photographs being taken as part of the interview process. All but three (3) participants consented to being identified in the research results. The three participants that wished to remain anonymous will be referred as "Anonymous" through this thesis. Furthermore, the data gathered through this study will be preserved upon completion of the project.

3.3.2 Policy selection

An important component of my research was a policy analysis of government documents in order to understand how governments, at all levels, consider sea ice, travel, regulations and use of Arctic waters and shipping - and the degree to which they incorporate Inuit knowledge. I limited my investigation to Agreements and Acts that were specifically focused on the Arctic environment, waters, and associated use. The selection process began by investigating the policies and documents that were referred to by other researchers investigating Arctic sovereignty issues (particularly important was the analysis of documents by Indian and Northern Affairs Canada, Transportation Canada, the GN, and the United Nations). Specifically, I focused on documents pertaining to oceans and shipping, and within Arctic regions of Canada, wherever possible. In order to gain a broad understanding of jurisdictional differences, I included documents from international joint bodies, two levels of government (national, and territorial) as well as the land claims agreement in Nunavut. In total I examined one (1) International

Agreement, three (3) Canadian Federal Acts, and four (4) Nunavut Acts and Agreements (see Table 3-1).

3.4 Field research methods

The fieldwork component of my research was carried out in Cape Dorset, Nunavut. Cape Dorset is an established partner community of ISIUOP, as well as an excellent case study due to its close proximity to open water year round. Methods employed during community-based fieldwork involved semi-directed interviews, participatory mapping, and experiential trips in order to begin to understand Inuit perspectives on changing sea ice and politics in relation to access to - and use of - northern waters/sea ice. However, prior to the actual field work a preliminary meeting was arranged with the local Community Research of Cape Dorset, who was already collaborating with ISIUOP.

3.4.1 Preliminary meeting with community researcher

ISIUOP established strong partnerships with individuals from each of the partner communities over the first two years of the project, and previous community-based research (see Laidler, 2007). Pootoogoo Elee is the community researcher in Cape Dorset, and it was recommended that I work closely with him to facilitate field work in the community. A preliminary meeting with Elee was arranged between February 15 and 22, 2008 in Iqaluit, Nunavut, as part of an ISIUOP project planning and training meeting. During this meeting Elee and I discussed my research goals - as well as broader project goals - to identify our respective roles during the community-based field work. I continued to communicate with him by phone prior to the field season, to finalize field

Table 3-1 : Summary and description of the eight policies and agreements examined for this thesis

Year	Policy Document	Jurisdictional Level	Brief summary of policy focus
1982	The United Nations Convention on the Law of the Seas	International	Prompted by the desire to settle, in a spirit of mutual understanding and cooperation, all issues relating to the law of the sea and aware of the historic significance of this Convention as an important contribution to the maintenance of peace, justice and progress for all people of the world
1985	The Arctic Waters Pollution Prevention Act	National	An Act to prevent pollution of areas of the arctic waters adjacent to the mainland and islands of the Canadian arctic
1996	The Oceans Act	National	An Act respecting the oceans of Canada
2001	The Canadian Shipping Act	National	An Act respecting shipping and navigation and to amend the Shipping Conferences Exemption Act, 1987 and other Acts
1993	The Nunavut Land Claims Agreement	Territorial	An Agreement between the Inuit of the Nunavut Settlement Area as represented by the Tungavik Federation of Nunavut and Her Majesty the Queen in Right of Canada
1993	The Nunavut Act	Territorial	An Act to establish a territory to be known as Nunavut and provide for its government and to amend certain Acts in consequence thereof
1993	The Nunavut Land Claims Agreement Act	Territorial	An Act respecting an Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada
2002	The Nunavut Waters and Nunavut Surface Rights Tribunal Act	Territorial	An Act respecting the water resources of Nunavut and the Nunavut Surface Rights Tribunal and to make consequential amendments to other Acts

work and logistical arrangements. The development of this working relationship was prioritized through the recognition that a strong partnership with the community researchers is of outmost importance for effective local collaboration and providing representative research results.

3.4.2 Interviews

The major component of my field research consisted of semi-directed interviews that combined questions with participatory mapping. Throughout the interviews these two methods complimented each other as they were both used to elicit and document explanations regarding the topics in question.

3.4.2.1 Semi-directed interviews

Semi-directed interviews are an effective means of gathering and documenting IQ (Huntington , 1998; Gibbs, 2001; and Laidler and Elee, 2008). One on one conversations enabled in-depth discussion on particular topics. While I usually guided the conversations, I also allowed the direction and scope of the interview to follow "associations identified by the participant" (Huntington, 1998: 3). Therefore, no fixed questionnaire was used, or time limits placed on the discussions. Instead, an interview guide (see Appendix B) was used to ensure topic coverage related to my research questions, as well as to a few specific questions to contribute to the broader ISIUOP. The general themes covered in the interviews included:

- Personal background
- Knowledge of sea ice, including its importance and uses
- Use of boats around the community
- Knowledge of marine shipping, including routes, sightings, and impacts around the community (and in the Arctic in general)
- Government actions and regulations regarding shipping in Arctic waters

3.4.2.2 Participant selection

Participants in the community of Cape Dorset were selected based on purposeful sampling (their knowledge and expertise related to my topic of interest), and were identified with the assistance of: i) Dr. Gita Laidler, ii) Pootoogoo Elee, and iii) snowball sampling. Therefore, key informants were specifically selected based on the needs and purpose of the study (Coyne, 1997). Snowball sampling then involved asking the participants for recommendations of other individuals to interview who may also have knowledge of the topics discussed (Faugler and Sargeant, 1997). We attempted to include a range of participants based on age and gender; however, the majority of the individuals recommended were middle aged to older men who frequently went out on the land hunting and traveling. This is often the case in Inuit communities as men have traditionally been the ones carrying out extensive hunting and traveling on the sea ice. As previously mentioned, a total of twenty (20) interviews were conducted, sixteen (16) of which included some aspects of participatory mapping. Overall I interviewed seventeen (17) men and three (3) women whose ages ranged from 25 to 92 years old with the majority around 50-60 years of age.

3.4.2.3 Interview protocols

The majority of the interviews (17 of 20) were arranged by Elee who called, and in some occasions made house visits, in order to explain the project and to invite them to participate. I arranged three (3) of the interviews with English-speaking individuals I had identified during my time in Cape Dorset. Interviews were scheduled at the convenience of the participants, and took place in their location of preference. Sixteen (16) of the

interviews took place at the Malikjuaq Visitor's Centre (Figure 3-1) (a quiet, public place to which the Hamlet Office generously provided us access), two (2) interviews were held at participants' houses, and two (2) took place at the participant's place of employment.

For all interviews except three (3), Elee's interpretation was required, as the participants were most comfortable speaking *Inuktitut*. Interview lengths ranged from thirty (30) minutes to three (3) hours, and participants were provided with multiple short breaks at their convenience. Upon completion of the interviews, the participants were given an honorarium ($50/hour) to compensate for their time. This amount was determined by ISIUOP based on what other team members had done in the past, and in accordance with International Polar Year (IPY) and Nunavut Research Institute standards. The honorarium was accompanied by small gifts including chocolates, granola bars, teas, dried soup, gum and hot chocolate to show my appreciation. Also predetermined by ISIUOP, the community researcher Elee was paid $50/hour for interpreting and $20/hour for assistance (e.g. help provided in discussing my topic and questions, arranging interviews, etc.)

Figure 3-1: The Malikjuaq Visitor's Centre in Cape Dorset where the majority of the interviews took place (Photo: Karen Kelley)

3.4.2.4 Participatory mapping

Maps are important sources of information and learning tools, and were selected for use in interviews as a means of helping participants to tell their stories, document their spatial knowledge, and elaborate in responses to my questions. Aboriginal participatory mapping, as a data collecting method, dates back to the 1960s where it was used as a "[component] of larger studies documenting land use and occupancy for the purpose of negotiating aboriginal rights" in land claims (Chapin *et al*., 2005a: 623). A key example of this was the Inuit Land Use and Occupancy Project directed by Freeman (1976). This project documented the extensive land use and occupancy of Inuit throughout Canada's arctic region to become the basis of the Nunavut Land Claims Agreement (1993) (and the inspiration for ISIUOP). Therefore, I conducted thematic mapping (in this case focused on sea ice conditions, uses, and changes, along with shipping routes, sightings, accidents, etc.) using simplified topographic base maps that allowed the participants to be familiar with the territory being discussed (Burrough, 1986; Lo *et al*., 2007). This form of mapping has been given many different labels including: traditional land use mapping, Indigenous mapping, participatory mapping, land use and occupancy studies, and so on (Chapin, 2005a). Here I use the term participatory mapping.

Maps are recommended as a good starting point for discussions, as well as being a means for documenting information (Huntington, 1998). Mapping can also enable individuals to bring up their knowledge of the surrounding area and their sense of place (Chambers, 2006). It was my intention to capture some of the remarkable Inuit environmental knowledge and visually represent it in maps of the area. Through mapping

sessions participants were reminded of additional information and topics that may have been forgotten or overlooked during the interviews. For example, when discussing travel routes the interviewees would describe places they have travelled to verbally, based on memories. When encouraged to draw their travel route, they often remembered additional ideas and topics while tracing the features on the map. This would, in turn, spark new stories or descriptions of their travels, uses and experiences. In addition, maps themselves provide a unique visual medium for documenting and representing Inuit interactions with their territory. For example, many people told stories of becoming lost while traveling by boat due to choosing the wrong direction in poor visibility, and becoming disoriented. As a result, I carried out aspects of participatory mapping, to show "who goes where for what" (Chambers, 2006: 4), in relation to sea ice and open water use around Cape Dorset.

3.4.2.5 Participatory mapping protocols

The mapping component of the interview incorporated two different types of base maps, which were used in different parts of the interviews depending on the questions asked. For information that was tied to specific geographic locations I used four 1:250 000 scale National Topographic Service (NTS) map sheets that were stitched together (Figure 3-2). The four Map Sheets were in UTM Zone 18 (i.e. 36B, 36C, and 35N) and UTM Zone 17 (i.e. 36D), all of which use the North American Datum (NAD) 1983. These maps were selected and compiled by Dr. Gita Laidler for her previous research in Cape Dorset (Laidler, 2007), to make one composite map of the local area. These maps were used in accordance with Laidler's previous work so they could be easily compared and incorporated into general ISIUOP outputs. When the questions referred to broader,

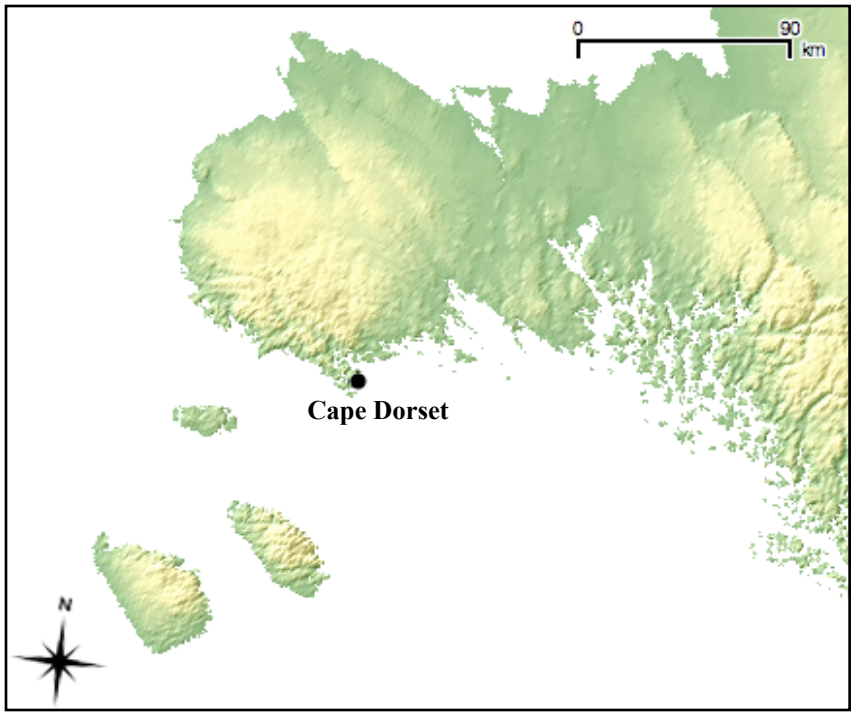


Figure 3-2: Map representing the area covered by the NTS base maps used in Cape Dorset for participatory mapping.

region-like areas, a much larger compilation of 1:250 000 maps was used to cover the entire extent of Baffin Island (reprojected to Lambert Conformal Conic Projection, GRS70 Ellipsoid, first standard parallel +49d, second standard parallel +77d, Central Meridian -95d, Datum NAD83 to avoid UTM Zone overlap issues) (Figure 3-3). This map too, was consistent with the map used by Laidler and Karpala in Pangnirtung, and Igloolik, respectively. Mapping was only carried out during interviews that took place in the Malikjuaq Visitor's Centre, due to time and space constraints, and in order to minimize any inconvenience to participants who opened up their homes and places of employment to this study. For each participant a clear sheet of mylar was fixed over the base maps. Before the mapping session began, the mylar was carefully marked

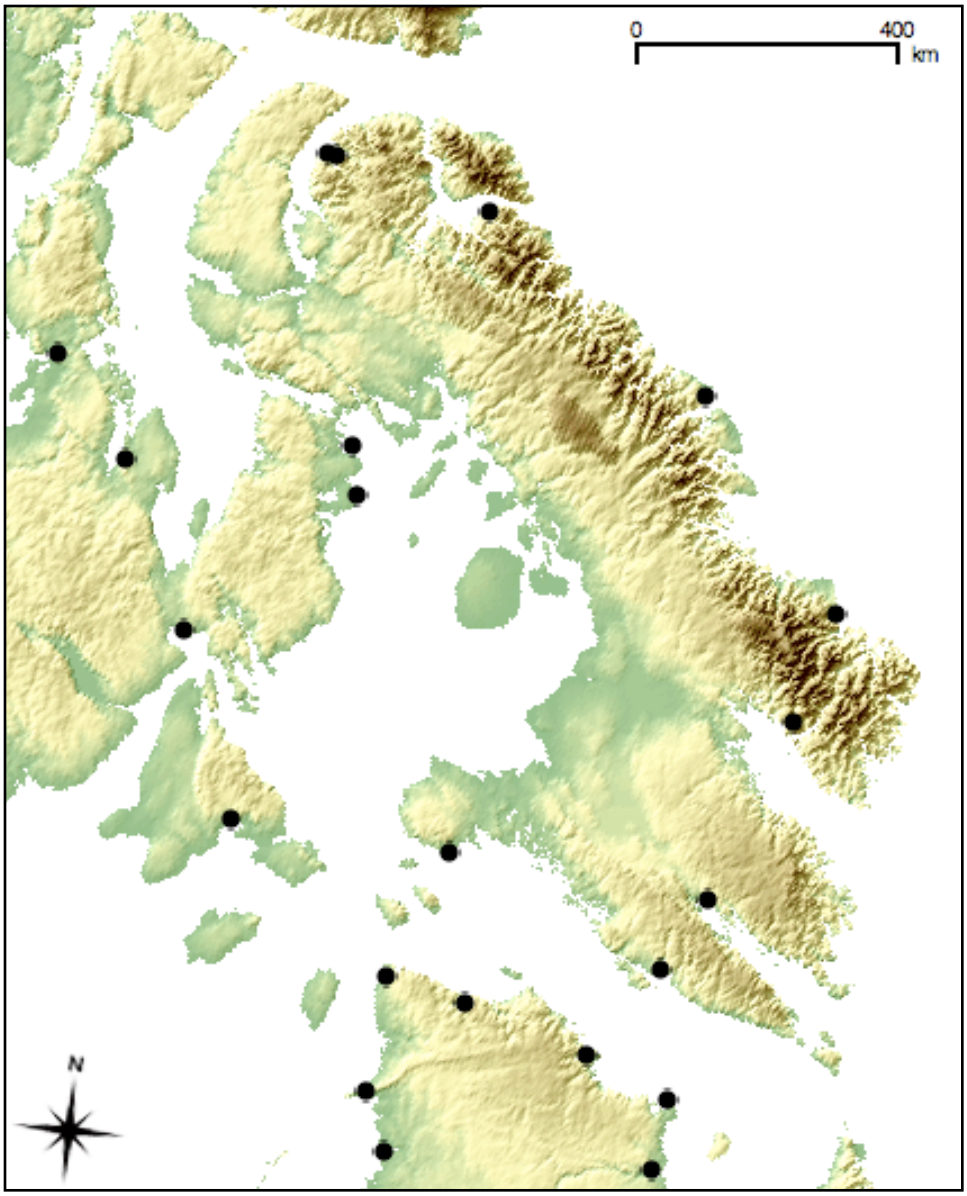


Figure 3-3: Map representing the area covered by the regional base map used in Cape Dorset for participatory mapping.

Legend:
● community

so that it could be registered to the same place on the base map at a later time and facilitate accurate digitizing. During the first few interviews the maps were fixed to the table in front of the participants (Figure 3-4); however, Elee and I later decided that it would be easier for the participants to refer to the maps if they were fixed to the walls of the interview room (where they could see the entire map) (Figure 3-5), and thus we set up the maps accordingly. For any participants who could not/would not stand to work with wall maps, a swivel chair was available for their use, and the map placement was adjusted accordingly (on the wall or table). A separate mylar sheet was used for each participant, and each base map, to ensure clarity and to avoid influencing participants' views with others' interpretations. A variety of permanent markers, in multiple colours, were made available for participant use, and wherever possible a different colour was used to indicate different features. Detailed notes were made on the maps to identify individual features along with the colours, for later ease of identification and to avoid misinterpretation.

There were three topics in the interviews that were particularly well suited to these mapping sessions. The first topic focused on the NTS base maps to encourage participants to think about sea ice and its uses on a local scale. The second focused on participants' use of boats and what they knew of shipping in the area, and used both the NTS and regional base maps. The third topic focused on travel routes that linked communities and other destinations around Baffin Island, and used only the regional base map. The most common features drawn on the maps were:

- the floe edge;
- tidal cracks;

- dangerous areas of the sea ice;
- wildlife harvesting areas;
- travel routes by boat, ship, snowmobile, and dog team and;
- sea ice features that impact boating and shipping.

Participants were also invited to draw any features on the map that were important to them. They were given a great deal of freedom in how to draw and display their responses to the specific questions and topics that were being discussed. Throughout the mapping session I worked closely with Elee to make sure that I understood what the marks represented and the appropriate labels to use. Overall, the maps resulting from the interviews do not necessarily represent a precise representation of exact trails, routes and locations (i.e. could not be used for navigational purposes due to scale and potential manual error); however, they do provide an accurate representation of the features, uses, and interactions with sea ice and open water around Cape Dorset as understood by the participants. Part of the trails mapped were incorporated in to Aporta's study on Inuit trails (Aporta, 2009).

Figure 3-4: Pootoogoo Elee (right) and Kooyoo Ragee (left) during the participatory mapping session of the set up on with the maps set up on the table (Photo: Karen Kelley)

Figure 3-5: Quppi Tukiki during an interview with the maps set up on the walls in the background (Photo: Karen Kelley)

3.4.3 Participant observation

Participant observation is an important component of fieldwork in order to better understand the information that is being shared (Laidler and Elee, 2008; Ford and Smit, 2004; Nelson, 1969). This method involved participating in activities on the sea ice, or in open water, that the community members commonly undertake. Participating in the activities that are being discussed and investigated helped me to better comprehend the topics discussed in interviews. For example, most participants described aspects of traveling by boat in and around the Cape Dorset area. It was not until I was able to travel by boat that I was able to truly understand what is involved in boating in arctic waters, and related activities such as maneuvering around floating ice or hunting (Figure 3-6 and Figure 3-7). Participant observation complements the other fieldwork methods by providing valuable opportunities to experience the sea ice first hand and gain a better understanding of how Inuit use the sea ice. While I was on a snowmobile trip I was able to witness first hand the quality of the sea ice in the spring (Figure 3-8 and Figure 3-9) and the distance to the floe edge. Going out on the land (including water and ice) with Inuit experts is "encouraged by elders as the best way to learn about sea ice" in Cape Dorset (Laidler and Elee, 2008: 54).

3.4.3.1 Participant observation protocols

During my time in Cape Dorset I arranged to participate in two experiential trips. In order to make the most of this experience, I arranged for them to take place towards the end of my stay, after I had already conducted a number of interviews. The first trip

Figure 3-6: Karen Kelley during the boat trip around the Cape Dorset area (Photo: Timmun Alariaq)

Figure 3-7: Moving ice in the open water nearby Cape Dorset taken during the boat trip (Photo: Karen Kelley)

was arranged by Elee to travel by snowmobile to the floe edge on June 5 2008. Our guide was Mangitak Kellypalik (see figure 3-8 and 3-9), an Inuit expert from Cape Dorset who has also worked on other ISIUOP-related projects. The second trip was arranged through Huit Huit Tours, a local outfitting company. This trip involved spending a full day on a boat traveling in the nearby open water on June 7 2008 (see figures 3-6 and 3-7). My guide for this trip was Timmun Alariaq along with his son. Both trips were well documented with photographs in order to capture what I was experiencing including:

- sea ice conditions,
- sea ice use,
- navigation,
- interactions with Inuit,
- wildlife, and
- the landscape.

In addition, our travel routes (and stops) were recorded using a global positioning system (GPS), in order to locate our trips after the fact, and to link it to other information (i.e. photos) taken along the way.

Figure 3-8: My guide Mangitak Kellypalik on a snowmobile during our trip to the floe edge, traveling during early melt stages (Photo: Karen Kelley)

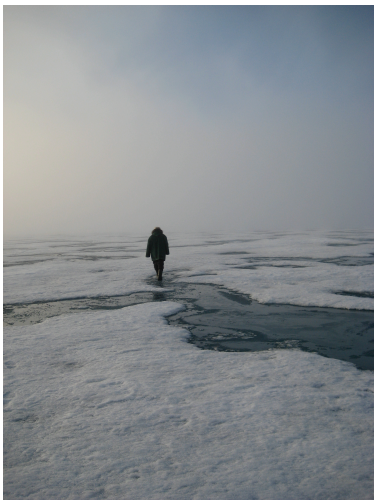


Figure 3-9: My guide Mangitak Kellypalik walking around the early melt stages of sea ice during our trip to the floe edge (Photo: Karen Kelley)

3.4.4 Reporting back

I recognize the importance of reporting back the results generated through this project to the community. Therefore, interim reports were created in October, 2008, reminding people of the purpose of field work undertaken in June, along with a description of activities during the trip, a summary of next steps, and acknowledgments of local community support (see Appendix C). This report was mailed to those individuals in Cape Dorset who had contributed during initial field work. In addition, I was able to return to Cape Dorset in March, 2009, helping out with Laidler's ISIUOP research, which provided a valuable opportunity to visit with previous participants in person and hand deliver a summary of preliminary research results (see Appendix D).

3.5 Data analysis

Given the variety of types of information gathered as part of this research, a number of data analysis techniques were used. These include compiling and analyzing the

content of the policy documents, transcribing and analyzing all of the audio recordings from the interviews, and digitizing and analyzing the maps.

3.5.1 Policy analysis

The eight (8) selected Acts and Agreements were analyzed using the following predetermined key words:

- Ice/frozen/sea ice
- Inuit/Aboriginal
- Marine/shipping/ship/vessel,
- Transit/navigation/travel
- Oil/waste/garbage/dumping
- Animal/wildlife

Each Act and Agreement was carefully read to determine if any of the themes were discussed and how. The documents were manually coded using different coloured tags to identify the themes. These themes directly related to my research objectives of learning how sea ice is described in policy documents, how control and regulation of ships is outlined, what forms of environmental protection are in place, and how Inuit are included in these policies. The information summarized from these Acts and Agreements was then analyzed in relation to the four broad themes of specific interest to my research, including: sea ice, travel and use, change, and sovereignty.

3.5.2 Interview transcript analysis

All interviews were recorded and transcribed word-for-word using open source software ExpressScribe. As I do not speak or understand *Inuktitut*, the transcripts only include English translations. Given that my understandings of the interview content is only based on the English, it must be acknowledged that some of the nuanced descriptions from the original *Inuktitut* may be missed. I attempted to minimize any

detrimental impacts to my results by working closely with Elee prior to the interviews to clarify any conceptual issues with my questions, and requested clarifications for participant responses wherever necessary during and directly after the interviews.

Content analysis was then undertaken using the completed transcripts. This was done manually with the assistance of Atlas.ti (version: WIN 5.2) software as a tool that facilitates the coding and theme compilation process. I created thematic codes to identify key topics in each of the transcripts. The codes were based on interview questions, as well as additional themes that were discussed by the participants. I did not code words alone, but encompassed statements to ensure that the entire context of explanation was maintained. Organizing the selected statements into specific themes and topics aided to identify commonalities or discrepancies between the information provided by the different participants. In total I created forty codes (see Appendix E), whereby some of the codes appeared to be more relevant to my specific research and questions while others were identified as supplementary information. Some of the most relevant themes to analyses in this thesis are:

- Impact of shipping
- Government
- Boat
- Community involvement
- Sea ice
- Importance of sea ice

Upon completion of the coding process, I was able to compile the related information thematically, while maintaining the interview information related to specific statements. These codes and themes were used to highlight results and analyze the information

obtained through the interviews with the Acts and Agreements and supplementary literature.

3.5.3 Map digitizing

Given my limited experience working with geographic information systems (GIS), I received initial training from research associates at the Geomatics and Cartographic Research Centre at Carleton University. For the purposes of my work, GIS was used as a tool for visualizing the spatial representations created through participatory mapping, as a complement to other methods of analysis. However, in order to effectively represent these maps digitally, I had to digitize the hard copy maps.

Digitizing involves creating digital copies of maps and features by drawing points, lines and polygons (as representations of geographical features) on a computerized map. In order to digitize accurately, geographic referencing - or georeferencing - must first be undertaken. Geographic referencing "is defined as the fixing of the locations of real-world features within the spatial framework of a particular coordinate system" (Lo *et al*., 2007: 36). Given that I used multiple base maps I had to carry out different processes for digitizing. All of the NTS (local) maps were digitized using the same method and software while the regional map was digitized using a combination of methods and software.

The stages I used to prepare all of the maps included:

1. **Geographically referencing the mylar sheets.** This process began with lining up each mylar sheet (Figure 3-10) to the appropriate base map that was used during the interview, using the reference marks made on the mylar. In addition, the

coordinates of each of the outside map corners had to be identified/marked to facilitate digital georeferencing.

2. **Scanning the maps.** In the absence of a large format digitizing tablet, I used a portable scanner in the GCRC to scan each map (Figure 3-11). The composite map was significantly larger than the scanner. As a result, it required a number of different scans to cover all of the information. Each individual scan was saved with a unique file name that would enable later identification. Scans of the maps were then used to enable on-screen digitizing.
3. **Image stitching.** The scanned map portions then had to be digitally re-compiled, which was done using the computer software Double-Take. This software allowed the movement, rotation, and tilting of the individual images in order to accurately stitch them together to create a digital map that replicated the original.

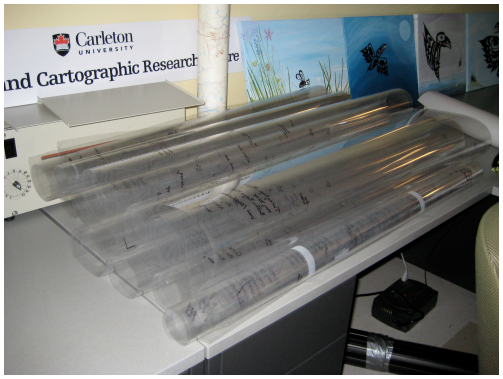


Figure 3-10: The stack of mylar sheets that were used for participatory mapping in Cape Dorset and digitized in the GCRC lab (Photo: Karen Kelley)

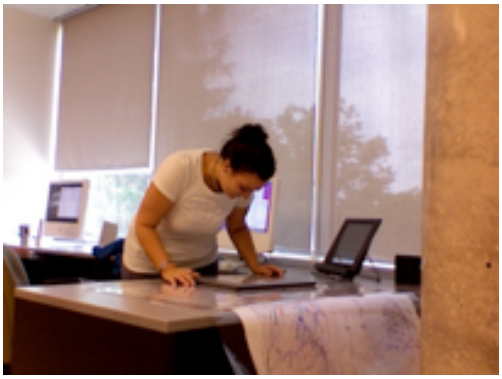


Figure 3-11: Karen Kelley scanning one of the maps in the GCRC lab (Photo: Peter Pulsifer)

The NTS maps were digitized using the open source GIS program QuantumGIS (QGIS) Version 1.0.0 in the GCRC. Based on the features drawn, I only needed to use the mapsheets from Zone 18. The stages used to digitize the NTS maps included:

1. **Downloading and loading the original NTS base maps.** These were downloaded from the Atlas of Canada website and loaded into the project as a layer. These maps were already georeferenced so it was then a matter of registering the scanned image to the base map.
2. **Georeferencing the scanned maps.** The resulting scanned and stitched image of a participant's map was not linked to any geographic location, it was essentially a picture of the original marked up map. As a result, the images needed to be loaded into the QGIS project and georeferenced using QGIS' georeferencer tool. Using the corner coordinates indicated on each map sheet (as previously marked on the mylar), the images could then be registered to the same coordinates on the digital base map, creating a new digital map layer (with the scanned image) that could then be loaded along with the NTS base maps.
3. **Digitizing the scanned maps.** This involved using QGIS tools to create lines, points and polygons of the features drawn by participants, by tracing each individual features on the maps. Layers of the project were created based on their feature type (e.g. floe edge, crack, dog team route, beluga hunting etc) and were identified by the interviewee who contributed the information.
4. **Creating attribute tables.** A detailed attribute table was created for each feature (line, point, polygon) in order to ensure that all necessary information regarding

the feature was associated with it. This included the name of the person who created the map, the researcher who conducted the interview and digitized the map, the date the interview took place (i.e. the map was created), the community area represented in the map, and any additional feature descriptions (see Appendix F).

5. **Verifying the digitized maps.** I was able to verify the digitized maps by periodically hiding layers to see how they matched up with the digital base maps. Since I was tracing the scanned image, I was only able to see the base map when I hid the new image layer I was creating. Once I completed all the digitizing, I was able to hide the scanned image and what remained was a geographically referenced replica of the scanned image.

The regional maps were digitized using Memory Map Navigator with a small section being finished using QGIS. Memory Map Navigator had a preloaded base map of the entire Baffin region. Since this software does not allow you to import different layers (as QGIS did) the digitizing had to be done based on visual comparison.

1. A single computer screen shared the stitched digital image of the participant's map on one side and a copy of the base map on the other. With careful examination of geographic features such as rivers, inlets, and islands on both the maps, I drew lines and points to replicate the lines and points drawn by the participants to the best of my ability. As this was done by sight, there is a larger potential for manual error than in the previous digitizing described. However, it is important to note that in general it is difficult for the participant to be precise

regarding the drawing of ice/water routes because of the scale of the map and the topographic reference points in water bodies, and thus individual error may be more prevalent but the representation is still valuable.

2. The individual lines and points were saved and named based on a complete description of the specific feature including the community, individual, date and brief description of the feature. Once all of the lines and points for each of the maps were completed, they were saved as shape files (.shp) and brought to the GCRC for further work.
3. In the GCRC, an attribute table was created for these points and lines, in the same format as the one for the NTS maps (see Appendix F) to ensure that all descriptive details were saved along with their associated features.

3.5.4 Interpretation of maps

Compiling all of the participants' maps into a series of map composites enabled me to better understanding Inuit perspectives of the key topics which include: i) sea ice conditions, ii) travel, iii) shipping. These maps provide a snap shot of the topic and provides a useful reference to complement transcript analysis. Throughout the results section I have included maps relevant to the subsections in order to better understand:

- how sea ice conditions are changing (location of the floe edge, occurrences of early melt areas etc.)
- travel routes (on land and sea ice) around Cape Dorset, and any associated destinations (mine, hunting etc.)
- boating routes around Cape Dorset, including associated destinations (hunting etc.)
- shipping routes, sightings and sinking sites around Cape Dorset

Overall, incorporating Inuit sea ice expert's spatial representations based on participatory mapping provides a more comprehensive interpretation of the topics of interest.

3.5.5 Integrated analysis

The previosly described methods allowed for the collection of a great deal of information regarding Inuit experiences and opinions, as well as other information related to policies. To address my research questions it was essential to bring together the data gathered through these diverse methods in an integrative manner to effectively evaluate their interconnections in relation to the understandings of sea ice, travel and use, and sovereignty in policy documents, and to what degree Inuit perspectives are incorporated into these forms of legistlation.

Chapter 4 - Results

Based on the policy analysis and field work undertaken as part of this research, the emerging results are organized into the same three broad themes as introduced in the literature review (Chapter 2) with the addition of a section on change. Thus, the first section focuses on perspectives of sea ice in policy and community contexts, the second highlights aspects of travel and use on sea ice or in ice-filled waters, the third examines changes to sea ice and associated implications, and the fourth explores notions of sovereignty from governmental and Inuit perspectives. However, prior to presenting the results related to these themes, it is important to first provide some background information on the community of Cape Dorset.

4.1 Community perspectives on changes to community structure

Cape Dorset, like many communities in Nunavut, has undergone significant changes during the lifetime of many of its current residents. Prior to the 1950s Inuit from the Cape Dorset area lived in a number of small camps scattered throughout the Hudson Strait region (Figure 4-1 and 4-2). During this time people grew up on the land, and their knowledge of the sea and sea ice was essential for survival. There were, however, dramatic changes in the 1950s and 1960s when the community of Cape Dorset was established in its current location by the federal government (Ragee, 2008a). The location was already occupied by the Hudson Bay traders and by the Royal Canadian Mounted Police (RCMP), but it was at this time that everyone from the nearby camps moved to this location in a more permanent fashion. The community began with the establishment

of the school for the purpose of educating the youth (Etungat, 2008; Oshutsiaq, 2008b; Oshutsiaq, 2008a; Ragee, 2008a). For the first few years students travelled from the camps to go to school, but it was in 1966 when "all the communities close by were [compelled] to move to Cape Dorset" by the government and the "kids were told to go to school" (Ragee, 2008a). Other reasons why families moved into the community from their traditional camps included access to medical services (Pootoogook, 2008), and working for the Hudson Bay Company (Oshutsiaq, 2008b). Many of the participants who contributed to this project have thus experienced both lifestyles. They also continue to maintain their connections with their territory and well-established practices, through ongoing use of the land, water, and ice (mainly for the purposes of hunting and fishing). This involves the current use of many of the traditional camps but for shorter time periods. Inuit in the community of Cape Dorset, therefore, possess a unique perspective and understanding of sea ice uses and environmental changes of their region.

4.2 Sea Ice

4.2.1 Policy descriptions of sea ice

In the majority of Acts and Agreements examined as part of this project, there is an acknowledgment of sea ice as an important feature of the Arctic marine environment (Table 4-1). At the international and federal levels sea ice is mentioned in Acts and Agreements in relation to shipping, and, in this context, is generally regarded as an obstacle to navigation. At the territorial (Nunavut) level sea ice is accepted as a common feature of the environment present throughout the year.

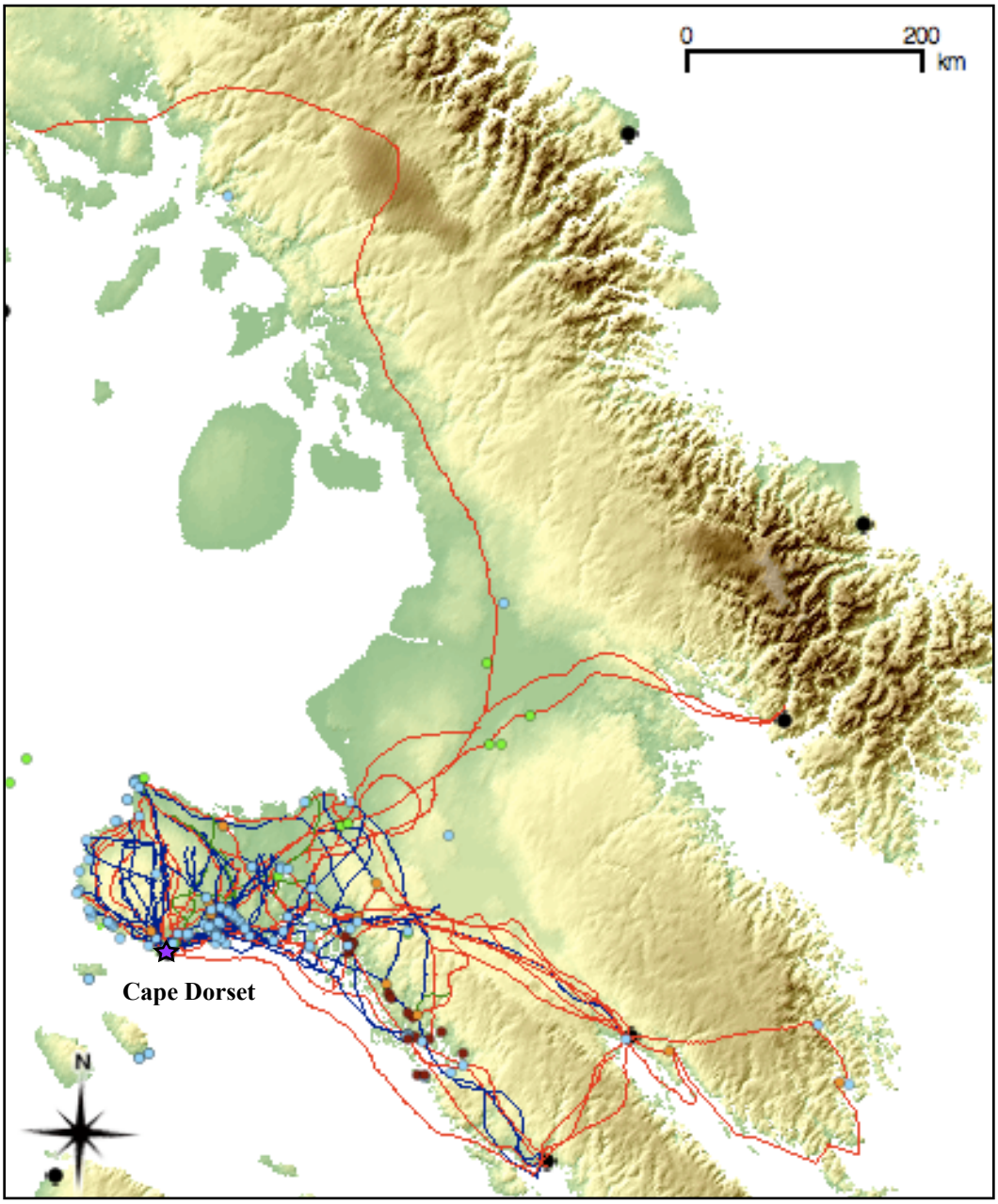


Figure 4-1: Map showing the compilation of knowledge shared in interviews in Cape Dorset, related to travel routes (sea ice and land) and important features/destinations for the entire Baffin Region.

Legend:
Travel Routes
- dog team
- snowmobile
- walking
- snowmobile trip June 08

Destinations
- hunting
- fishing
- camp
- mine
- community
- Cape Dprset

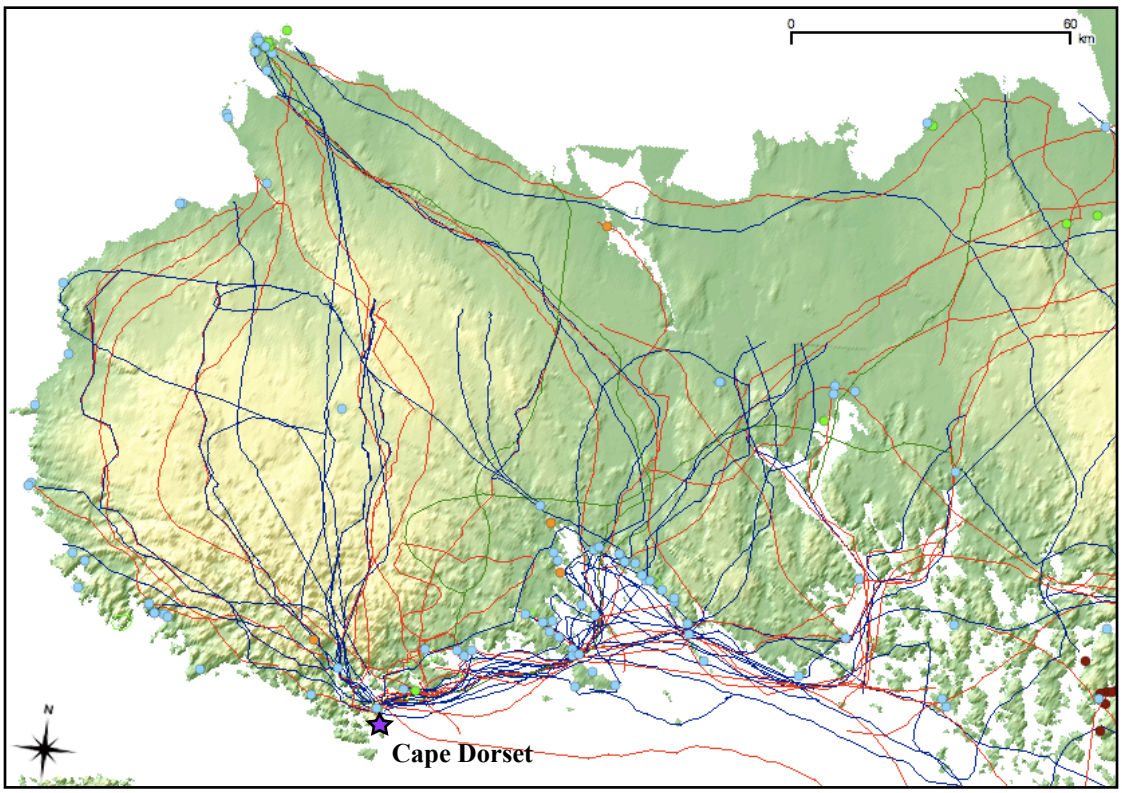


Figure 4-2: Map showing the compilation of knowledge shared in interviews in Cape Dorset, related to travel routes (sea ice and land) and important features/destinations around the community.

Legend:
Travel Routes
- dog team
- snowmobile
- walking
- snowmobile trip June 08

Destinations
- hunting
- fishing
- camp
- mine
- Cape Dprset

4.2.1.1 International Agreements

The United Nations Convention on the Law of the Sea (UNCLOS) states that sea ice creates obstructions and that "exceptional hazards to navigation, and pollution of the marine environment could cause major harm to or irreversible disturbance of the ecological balance" (UNCLOS, 1982: 111-112). This statement also recognizes the fragility of the Arctic ecosystem. The Arctic ecosystem is fragile because it is highly

impacted by changes (ranging from global climate changes to oil spills to localized mining) and because it requires a significantly longer time to recover from those changes than environments in more southerly latitudes.

4.2.1.2 National legislation

At the federal level, the Canadian Shipping Act (CSA) refers to ice solely when outlining information that the crew of ships should report to the Coast Guard regarding "dangers to navigation" (CSA, 2001: 38). The Canadian Oceans Act (1996) only refers to sea ice when delineating the responsibilities of the Canadian Coast Guard. On the other hand, throughout Canadian Acts and Agreements, specifically those dealing with arctic waters (marine and inland), it is recognized that throughout the year ice may be present. Within the Canadian Arctic Waters Pollution Prevention Act (AWPPA), any description of waters includes both "in a frozen or liquid state" (AWPPA, 1985: 4).

4.2.1.3 Territorial legislation

The Nunavut Act (1993) does not refer to sea ice, however, it was instrumental in the creation of the Nunavut territory. The Nunavut Waters and Nunavut Surface Rights Tribunal Act (NWNSRTA) recognizes marine areas to include "any waters, including those that are ice-covered, of the Nunavut Settlement Area, other than inland waters, and the seabed and subsoil below those waters" (NWNSRTA, 2002: 4). Similarly, The Nunavut Land Claims Agreement (NLCA) and Nunavut Land Claims Agreement Act (NLCAA) acknowledge the waters of the Nunavut region to include open and ice-covered conditions (NLCA, 1993; NLCAA, 1993).

Table 4-1 : Summary of the descriptions of sea ice made within the eight policies and agreements examined for this project

Year	Policy Document	Jurisdictional Level	Description of sea ice and context	Quote
1982	The United Nations Convention on the Law of the Sea	International	- one reference to ice-covered areas in Part XII. Protection and Preservation of the Marine Environment	Article 234 "Coastal States have the right to adopt and enforce non-discriminatory laws and regulations for the prevention, reduction and control of marine pollution from vessels in ***ice***-covered areas within the limits of the exclusive economic zone, where particularly severe climatic conditions and the presence of ice covering such areas for most of the year create obstructions or exceptional hazards to navigation, and pollution of the marine environment could cause major harm to or irreversible disturbance of the ecological balance. Such laws and regulations shall have due regard to navigation and the protection and preservation of the marine environment based on the best available scientific evidence." (1982: 115-116)
1985	The Arctic Waters Pollution Prevention Act	National	- the entire policy document acknowledges waters of the arctic can be in a frozen or liquid state	" the expression "arctic waters" includes ... all waters adjacent thereto lying north of the sixtieth parallel of north latitude, the natural resources of whose subjacent submarine areas Her Majesty in right of Canada has the right to dispose of or exploit, whether the waters so described or those adjacent waters are in a ***frozen*** or liquid state, but do not include inland waters (1985: 4)
1996	The Oceans Act	National	- one reference to ice in the section discussing Coast Guard services	"41. (1) As the Minister responsible for coast guard services, the powers, duties and functions of the Minister extend to and include all matters over which Parliament has jurisdiction, not assigned by law to any other department, board or agency of the Government of Canada, relating to... (iii) ***ice*** breaking and ***ice*** management services" (1996: 18)

Year	Policy Document	Jurisdictional Level	Description of sea ice and context	Quote
2001	The Canadian Shipping Act	National	- one reference to ice in the section discussing "Information to be sent respecting dangers to navigation"	"112. If the master of a Canadian vessel encounters dangerous ***ice***, a dangerous derelict or other direct danger to navigation, a tropical storm, winds or a force of 10 or more on the Beaufort scale for which no storm warning has been received or subfreezing air temperatures associated with gale force winds and causing severe ice accretion on the superstructure of the vessel, the master shall give notice to all vessels in the vicinity and the prescribed authorities on shore of the danger" (2001: 38)
1993	The Nunavut Land Claims Agreement	Territorial	- entire policy document recognizes that the Arctic ocean is often ice-covered and that ice is important to Inuit	"the Inuit represented by the Tungavik Federation of Nunavut assert an aboriginal title to the Nunavut Settlement Area... based on their traditional and current use and occupation of the lands, waters and land-fast ***ice*** therein in accordance with their own customs and usages" (1993: 1)
1993	The Nunavut Act	Territorial	- no reference of ice	
1993	The Nunavut Land Claims Agreement Act	Territorial	- entire policy document recognizes that the Arctic ocean is often ice-covered and that ice is important to Inuit	"The Inuit of the Nunavut Settlement Area have asserted an aboriginal title to the Area based on their traditional and current use and occupation of the lands, waters and land-fast ***ice*** therein in accordance with their own customs and usages" (1993: 1).
2002	The Nunavut Waters and Nunavut Surface Rights Tribunal Act	Territorial	- entire policy document recognizes oceans in the arctic, even though not under the jurisdiction of the policy, are often ice-covered	marine areas are defined as "any water, including those that are ***ice-*** covered, of the Nunavut Settlement Area, other than inland waters, and the seabed and subsoil below those waters" (2002: 4)

4.2.2 Community perspectives on sea ice

4.2.2.1 Importance of sea ice

Sea ice is an integral part of the marine environment upon which Inuit rely. As such, it was acknowledged that "no matter what you do if its winter or spring time there's ice involved all the time" (Etidlouie, 2008). Although the sea ice was utilized to a much greater degree in the past when people were living in camps, it is still regularly used today by many community members. Sea ice is thus an important part of daily life in Cape Dorset, and is generally viewed as useful, although it is also identified as being a dangerous environment (Ashoona, A., 2008; Ragee, 2008b; Shaa, 2008; Ezekiel, 2008; Ragee, 2008a; Oshutsiaq, 2008b). A few prominent uses of sea ice cited by community members include:

- a platform that enables people to travel to areas that would otherwise not be accessible, or would be more difficult to reach without alternate modes of transportation (seven references)
- a platform for hunting (four references)
- a platform to live on (one reference)

(Elee, 2008; Etungat, 2008; Ezekiel, 2008; Manumee, 2008; Oshutsiaq, 2008a; Ragee, 2008a; Saila, 2008; Shaa, 2008; Takiasuk, 2008)

In the past, some elders forecasted that there would be a time when there was no more ice in the Arctic (Manumee, 2008; Shaa, 2008). With the changes that are observed in relation to the sea ice today, people are realizing this prediction may be coming true (Manumee, 2008; Shaa, 2008). Some community members also expressed their belief that the world should take notice of the sea ice conditions, and changes, in the Arctic (Manumee, 2008).

4.2.2.2 Community observations of change

Inuit sea ice experts in Cape Dorset have intricate knowledge of sea ice. Their knowledge spans across many aspects of sea ice including: freezing and melting processes, influences of weather, winds, and currents, related dangers, and evaluations of long-term change. A great deal of work has already been done regarding the documentation of Cape Dorset community members' knowledge of sea ice processes, uses, and change (Laidler and Elee, 2006, 2008; Laidler, 2007). As a result, I have focused predominantly on aspects of sea ice change (see Section 4.4).

4.3 Travel and Use

4.3.1 Policy descriptions of travel and use

4.3.1.1 Community use of sea ice

The NLCA and NLCAA are the only Acts and Agreements, of those examined, that recognize the use of sea ice by Inuit. Both of these policy documents identify that Inuit use and have used the land-fast ice (Table 4-1) (NLCAA, 1993; NLCA, 1993). In addition, the NLCA states that "Inuit are traditional and current users of certain marine areas, especially the land-fast ice zones" where "legal rights of Inuit in marine areas [resulting] from the [Nunavut Land Claims] Agreement are based on traditional and current use" (NLCA, 1993: 135). This document recognizes Inuit use of sea ice as a travel and hunting platform (see Section 4.3.2.1) with specific emphasis on the land-fast ice zone (ice that is attached to the shore and most commonly used by Inuit for travel and hunting). In all other Acts and Agreements, sea ice is only referred to in relation to its potential hazard to/impact on shipping policies, and the uses of ice-filled waters are

limited to travel/navigation by shipping vessel. In order to delve further into the policy and community understandings of shipping and marine travel it is important to understand the descriptions of ship as outlined in the policies.

4.3.1.2 Definitions of s*hips*

Ships are not specifically defined in all of the Acts reviewed here. Internationally, the UNCLOS does not specifically define a ship in generic terms. It does, however, define specific classes of ships including: warships, a "ship belonging to the armed forces of a State" (UNCLOS, 1982: 34); and a pirate ship, "a ship... intended by the persons in dominant control to be used for the purpose of committing [an illegal act of violence]" (UNCLOS, 1982: 61). The three Canadian Acts examined specifically define what they mean by ship. The Arctic Waters Pollution Prevention Act recognizes a ship to include "any description of vessel or boat used or designed for use in navigation without regard to method or lack of propulsion" (AWPPA, 1985: 3). Similarly, in the Oceans Act a ship "includes any description of vessel, boat or craft designed, used or capable of being used solely or partly for marine navigation without regard to method or lack of propulsion" (Oceans Act, 1996: 2). The Canadian Shipping Act identifies a vessel to mean "a boat, ship or craft designed, used or capable of being used solely or partly for navigation in, on, through or immediately above water, without regard to method or lack of propulsion" (CSA, 2001: 3). In the territorial acts, similar to the UNCLOS, ships are referred to, and not defined because it is not under their jurisdiction.

4.3.1.3 Impacts of shipping

Acts and Agreements focused on arctic waters are concerned with the environmental impacts of shipping, but there is a significant jurisdictional difference. At the federal level, the Canadian government is concerned with marine areas and oceans, whereas at the territorial level, the Nunavut government is concerned with inland waters (i.e. rivers and lakes). The NWNSRTA and the NLCA explicitly state that the territorial jurisdiction ends once ships are involved. (NLCA, 1993: 61; NWNSRTA, 2002). As a result, the Nunavut government is not responsible for regulating or controlling shipping in the Arctic region.

The Acts and Agreements indicate that there is significant concern over pollutants and waste entering the ocean and inland waters of the Arctic as a result of shipping activities. Under the Federal AWPPA (1985: 4), ships and crew are prohibited from depositing "waste of any type in the arctic waters or in any place on the mainland or islands of the Canadian arctic under any conditions where the waste or any other waste that results from the deposit of the waste may enter the arctic waters." Similarly, under the NWNSRTA, no person shall deposit waste "under conditions in which the waste, or any other waste that results from the deposit of that waste, may enter waters in Nunavut" (NWNSRTA, 2002: 6). The territorial Acts discuss shipping impacts on the Arctic environment (land, marine, and inland waters). Protecting the arctic waters is a key concern for both the federal and territorial governments.

When entering Canadian arctic waters a ship may be required "to provide evidence of financial responsibility in the form of insurance" (AWPPA, 1985: 8). This is

in case an accident should occur. In addition, it is required that anyone who has deposited or may deposit waste due to an accident (i.e. unintentionally) must report the occurrence to the Canadian government (AWPPA, 1985). Those responsible for the depositing of waste (intentionally or unintentionally) are liable for the cost and expenses of the incident as well as actual loss or damages incurred by other people as a result of the deposit of waste (AWPPA, 1985). Based on these environmental concerns, there are important policy clauses relating to the monitoring of ships in arctic waters.

4.3.1.4 Monitoring shipping

The Canadian AWPPA, Oceans Act and CSA provide for the establishment of officers and/or inspectors to enforce the respective Acts and regulations through the monitoring of shipping practices (AWPPA, 1985; Oceans Act, 1996; CSA, 2001). These officers/inspectors are provided with:

- Adequate training and certification (AWPPA, 1985; CSA, 2001; Oceans Act, 1996; NWNSRTA, 2002)
- The rights to board ships and conduct inspections (AWPPA, 1985; CSA, 2001; Oceans Act, 1996)
- The ability to seize ships and cargo (AWPPA, 1985)
- The ability to respond to pollution (CSA, 2001)
- Responsibility over the conduct of vessels traveling through Canadian waters (CSA, 2001)

There are also regulations insisting on the monitoring and reporting of shipping conditions to be carried out by ships traveling through Canadian waters. Thus, it is the responsibility of individual ships to report conditions (e.g. ice, water, weather, traffic, etc.) for the safety of other ships in the area. As the CSA outlines:

> "if the master of a Canadian vessel encounters dangerous ice, a dangerous derelict or other direct dangers to navigation… winds of a force of 10 or more on the Beaufort scale for which no storm warning has been received or subfreezing air

> temperatures associated with gale force winds and causing severe ice accretion on the superstructure of the vessel, the master shall give notice to all vessels in the vicinity and the prescribed authorities on shore of the danger" (CSA, 2001: 38).

Both the Federal and Territorial governments are concerned with protecting the Arctic environment from the impacts of ships and related potential pollution. However, there is a significant lack of information regarding community uses of sea ice, particularly at national and international levels.

4.3.2 Community perspectives on travel and use

4.3.2.1 Community use of sea ice

Each of the interviewees in Cape Dorset describes times when they traveled on the sea ice. Using the sea ice for travel continues to be an important part of life in Cape Dorset. One hunter described traveling on the sea ice as "what I've been doing all my life" (Ashoona, 2008). Traveling on the sea ice is often easier than the land because the land can be rough, uneven, and hilly. The sea ice around Cape Dorset is often much smoother (Shaa, 2008). In general, travel on the sea ice is mainly undertaken to:

- Access the soap stone mine (twelve references)
- Travel between camps and to other communities such as Iqaluit and Kimmirut (six references)
- Access fishing and hunting areas (five references)
- Learn about the sea ice, its conditions and safety (two references)
- Travel for leisure or racing (one reference)

(Alasuaq, 2008; Ashoona, 2008; Elee, 2008; Etidlouie, 2008; Etungat, 2008; Ezekiel, 2008; Manumee, 2008; Oshutsiaq, 2008a; Oshutsiaq, 2008b; Ragee, 2008a; Ragee, 2008b; Shaa, 2008; Takiasuk, 2008; Tukiki, 2008)

There are three common modes of transportation described by interviewees for travel outside the community, including both land and sea ice, which are: on foot, by dog team, or by snowmobile (see Figure 4-1 and 4-2).

4.3.2.2 Travel on foot

Walking is a common mode of transportation carried out by all groups of people. Many community members describe the activity of walking along the sea ice (Alasuaq, 2008; Etidlouie, 2008; Etungat, 2008; Oshutsiaq, 2008a; Oshutsiaq, 2008b; Ragee, 2008a; Shaa, 2008; Takiasuk, 2008). Walking on the ice is viewed as the safest mode of travel during the earliest stages of freezing. Elders can remember people walking during the "first few trips [of the season] because the ice was too thin [for the dogs]" when they were children (Etidlouie, 2008). When traveling the sea ice on foot, a harpoon is always used to test the thickness and stability of the ice conditions (Etidlouie, 2008). This mode of travel requires the individual to be extremely careful and aware of the conditions. Walking on the sea ice is often undertaken in areas of danger or uncertainty, as well as when people are testing the ice to determine safety (i.e. newly formed ice, floe edge, at edge of polynyas, etc.) (Etidlouie, 2008).

4.3.2.3 Travel by dog team

Dog teams were a common mode of travel in the past (prior to the introduction of snowmobiles), and are still used today but to a lesser degree (Etidlouie, 2008; Pootoogook, 2008; Shaa, 2008; Takiasuk, 2008; Tukiki, 2008). When many of today's elders were children, they travelled mainly by dog team (Alasuaq, 2008; Elee, 2008; Etidlouie, 2008; Etungat, 2008; Ezekiel, 2008; Manumee, 2008; Mikigak, 2008; Oshutsiaq, 2008b; Pootoogook, 2008; Ragee, 2008a; Saila, 2008; Shaa, 2008; Takiasuk, 2008; Tukiki, 2008). At that time, dog teams were the main means of winter transportation, and were used because of their speed, as well as the dogs' ability to assist

with safe travel (Elee, 2008). Dogs had an awareness of the conditions of the sea ice, their instincts and senses would often know if the ice was safe to travel on, which enabled them to assist their owner in safely traveling great distances. Furthermore, the sled dogs would often learn common travel routes and in the case of bad weather the team would "know which way to turn" (Pootoogook, 2008).

4.3.2.4 Travel by snowmobile

Today, the most common mode of travel over snow-covered land and sea ice is by snowmobile (Alasuaq, 2008; Ashoona, 2008; Elee, 2008; Etidlouie, 2008; Ezekiel, 2008; Manumee, 2008; Mikigak, 2008; Oshutsiaq, 2008b; Pootoogook, 2008; Ragee, 2008a; Saila, 2008; Shaa, 2008; Takiasuk, 2008; Tukiki, 2008). Snowmobiles were introduced to the Cape Dorset area in the 1960s (Pootoogook, 2008). This was around the same time that people began moving into the newly established community (see Section 4.1). Snowmobiles quickly replaced dog teams as the primary mode of travel since the machines enabled higher travel speeds and did not require the same amount of effort to maintain (see Aporta and Higgs, 2005). However, unlike dogs, snowmobiles do not have the ability to detect sea ice conditions (Elee, 2008; Pootoogook, 2008). Compounding this, snowmobiles can be more dangerous since they are heavier (i.e. can more easily go through thin or unstable ice conditions), and with the increased speed of travel the drivers are unable to pay the same closer attention to the conditions of the ice they are traveling over (Pootoogook, 2008). As a result there have been numerous accidents on the sea ice with snowmobiles (Oshutsiaq, 2008b; Takiasuk, 2008). For example, in mid May 2008 while I was in Cape Dorset, a snowmobile fell through thin ice, although, fortunately, no

one was harmed (Takiasuk, 2008). In situations like this, people from the community attempt to retrieve the snowmobiles, with varying degrees of success. With snowmobiles there is less work involved because people do not have to hunt to feed the dogs, but they are more costly to maintain. They require substantial funds to purchase the machine, fill it with gas and oil as well as replace parts when they break down. In addition, the speed of travel makes wayfinding more difficult and some people are moving towards using Geographical Positioning Systems (GPS) (Ashoona, 2008). (For an in-depth study of use of snowmobiles and GPS see Aporta and Higgs, 2005).

4.3.2.5 Travel in ice filled/open waters

Cape Dorset is a unique community due to their access to open water year-round, due to the strong Hudson Strait currents maintaining the floe edge in close proximity to the community (Anonymous, 2008c; Mikigak, 2008). As a result, community members undertake activities using boats throughout the year (see Figure 4-3) (Alasuaq, 2008; Anonymous, 2008c; Ashoona, 2008; Elee, 2008; Etidlouie, 2008; Etungat, 2008; Ezekiel, 2008; Manumee, 2008; Mikigak, 2008; Oshutsiaq, 2008a; Oshutsiaq, 2008b;

Figure 4-3: The boat, used for my sea ice trip, being towed behind a snowmobile along the sea ice in order to reach the nearby open water (June, 2008) (Photo: Karen Kelley).

Pootoogook, 2008; Ragee, 2008a; Ragee, 2008b; Saila, 2008; Shaa, 2008; Takiasuk, 2008; Tukiki, 2008). Cape Dorset is thus famously "the only community that actually does boating all year round" (Mikigak, 2008). Boating is deemed beneficial as it allows people to travel to areas that they would not otherwise be able to reach as they are across bodies of water that do not freeze over (e.g. Salisbury Island and Nottingham Island, Nunavut and mainland Salluit and Kangiqsujuaq, Northern Québec) (see Figure 4-4 and 4-5) (Alasuaq, 2008; Ragee, 2008b; Takiasuk, 2008). In addition, several interviewees noted the importance of boating in order to gain access to wildlife, including:

- walrus
- seals
- narwhal
- beluga
- fish
- eggs (including mallard and eider duck eggs)
  (Alasuaq, 2008; Ashoona, 2008; Elee, 2008, Etidlouie, 2008; Ezekiel, 2008; Mikigak, 2008 Ragee, 2008a; Shaa, 2008; Takiasuk, 2008; Tukiki, 2008)

Boat safety

Safety is always a concern when traveling around the area by boat, as open water travel is highly influenced by strong currents and winds. Specifically, there are a number of areas near the community with strong currents (see figure 4-4 and 4-5) (Etidlouie, 2008; Ezekiel, 2008; Manumee, 2008; Ragee, 2008b). During "the full moon time or the new moon time [we] try to make sure that nobody is out by boat because those are the worst times to be traveling… because its very strong currents those times of the month" (Shaa, 2008). In the open water, it is also difficult to maneuver against the currents. Similarly, winds pose problems by making it difficult to control the boat and by creating large waves (Ezekiel, 2008).

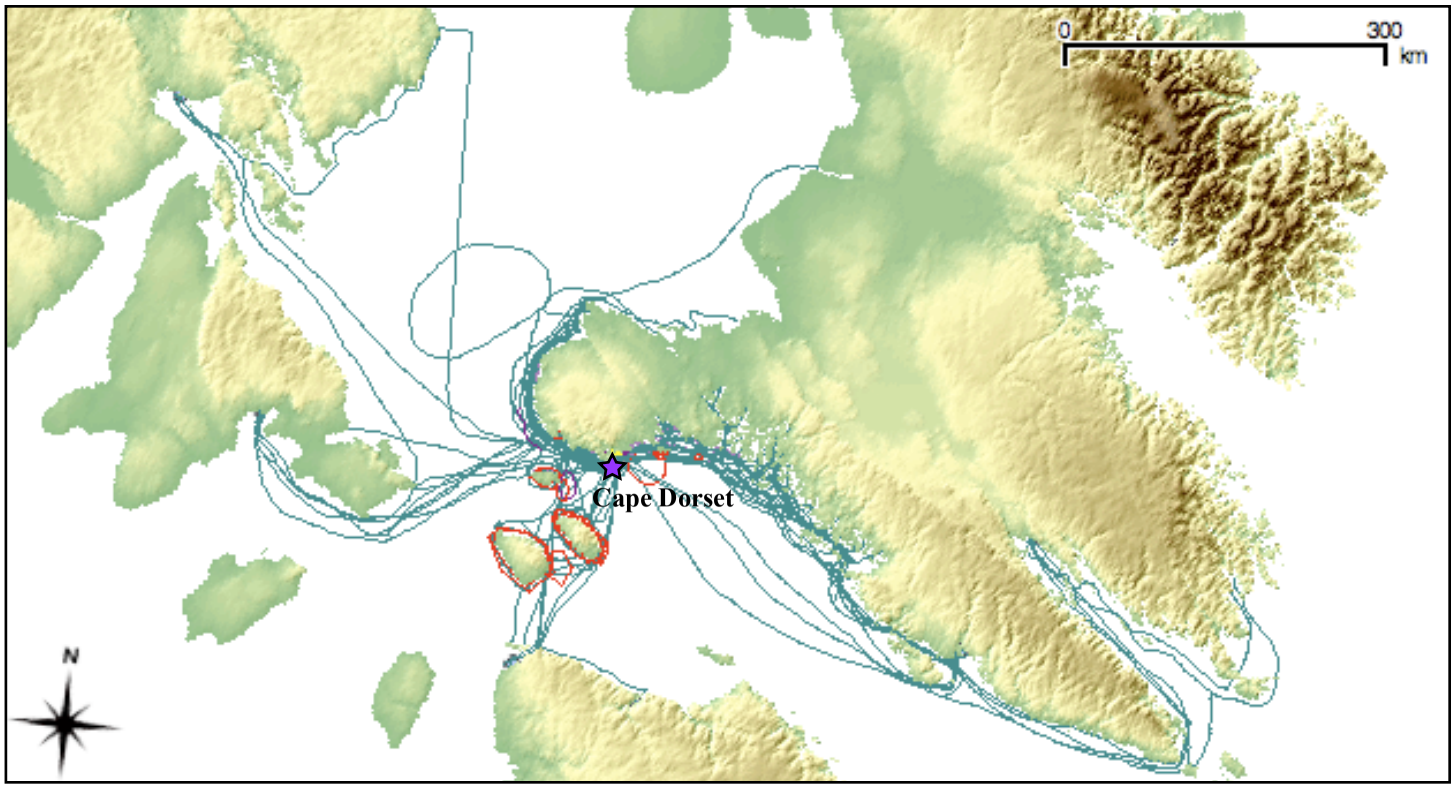


Figure 4-4: Map showing the compilation of knowledge shared in interviews in Cape Dorset, related to boat routes and related currents and hunting areas for the entire Baffin Region

Legend:
Travel Routes
boat
currents
boat trip
Features/destinations
hunting
Cape Dorset

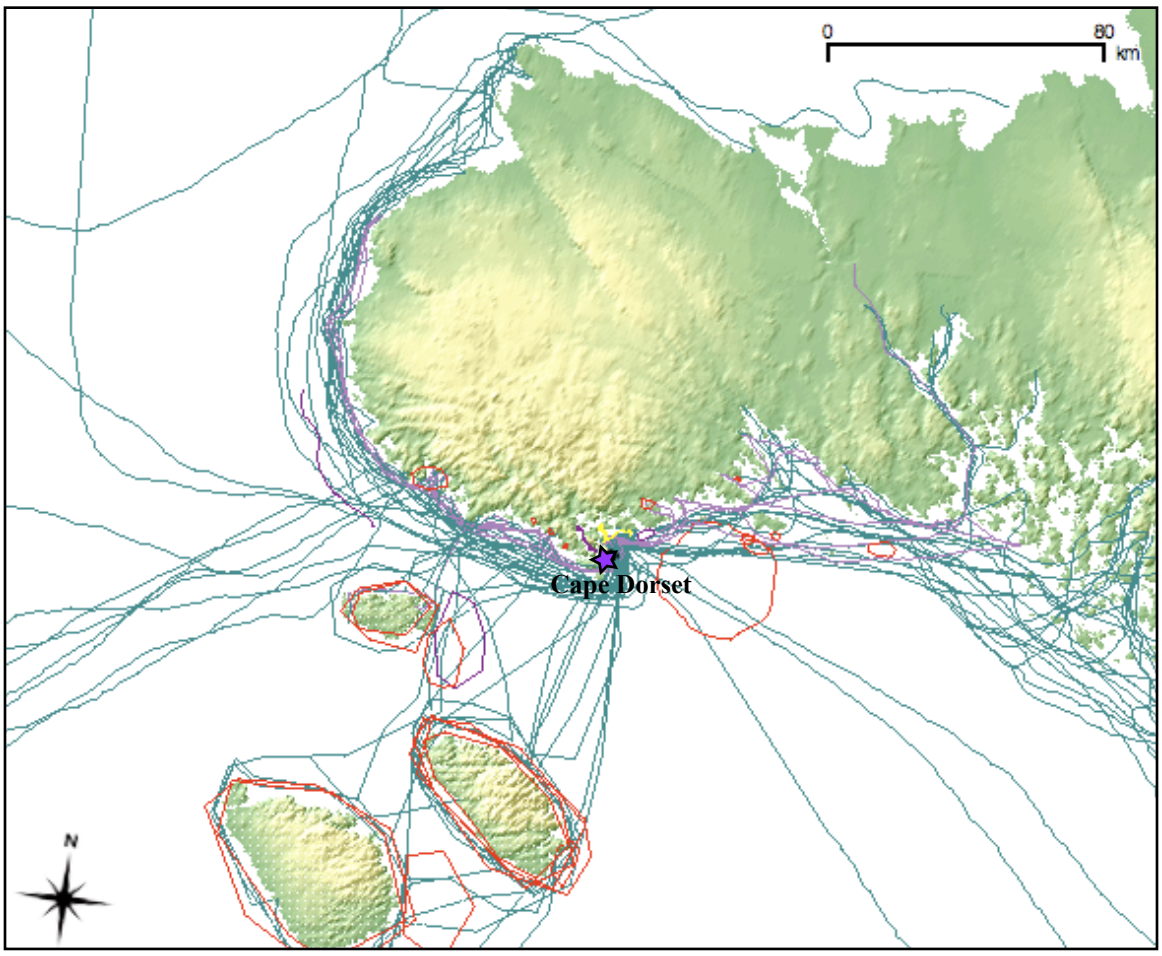


Figure 4-5: Map showing the compilation of knowledge shared in interviews in Cape Dorset, related to boat routes and related currents and hunting areas around the community

There have been incidences where people lost their way while traveling by boat (Etidlouie, 2008; Manumee, 2008; Shaa, 2008; Tukiki, 2008). In two particular instances described in interviews, the groups traveling by boat went in the wrong direction as a result of heavy fog, and strong currents (Etidlouie, 2008; Manumee, 2008; Shaa, 2008; Tukiki, 2008). Fortunately, in both instances the groups were rescued or were able to get

back to the camp/community on their own (Manumee, 2008; Shaa, 2008). In order to avoid getting lost during windy conditions, alternate routes are followed. For example, in order to travel to important destinations, such as a soapstone mine, there are alternative boat routes in case it is too windy and difficult to travel along the preferred route (Ashoona, 2008; Elee, 2008; Ragee, 2008b; Shaa, 2008). The nearby soap stone mines are destinations frequently traveled to by individuals in the community because of the soap stone carving industry in the community. People travel to and from the soap stone mines and bring back large amounts of soap stones. For longer distances, such as Coral Harbour, there are alternate routes depending on the weather (Oshutsiaq, 2008b). This emphasizes the familiarity elders and hunters have with the local marine environment, which enables them to travel safely and adapt to different circumstances. Boating is thus considered an alternative to sea ice travel (depending on the destination, or seasonal conditions that may prevent the use of other modes of travel) (Shaa, 2008). However, local boat use is considerably different than the kinds of shipping described in the Acts and Agreements mentioned above. It is, thus, important to describe the local perspectives on shipping.

4.3.3 Community perspectives on shipping

4.3.3.1 Historic shipping

In the past, community members would see, at most, three ships in a year (see Figure 4-6) (Etidlouie, 2008; Oshutsiaq, 2008a). Well-known ships that previously frequented the community, approximately around the 1950s and 1960s (Shaa, 2008; Oshutsiaq, 2008b), included:

- the Nascopie (ten references)
- the CD Howe (seven references)
- Baffin Trading Company (BTC) ships (one reference)
- the Avatak (one reference)
- whaling ships (one reference)
  (Alasuaq, 2008; Ezekiel, 2008; Manumee, 2008; Mikigak, 2008; Oshutsiaq, 2008a; Oshutsiaq, 2008b; Pootoogook, 2008; Ragee, 2008a; Ragee, 2008a; Saila, 2008; Shaa, 2008; Tukiki, 2008)

Historically, ships played an important role in the health of the community. Often ships that visited the community (usually traveling to a number of communities around the North) carried doctors on board to visit and treat people for illnesses (Saila, 2008), particularly to treat people with tuberculosis (Etungat, 2008; Oshutsiaq, 2008a; Ragee, 2008a). Treatment for this illness was provided at sanitariums located in southern cities such as: i) Fort Churchill, Manitoba; ii) Clear Water, Manitoba; iii) Moose Factory, Manitoba; and iv) Hamilton, Ontario (Elee, 2008; Etungat, 2008; Manumee, 2008; Oshutsiaq, 2008a; Ragee, 2008a). In order to reach these locations, people were transported via ships, such as the CD Howe (Alasuaq, 2008; Oshutsiaq, 2008a; Ragee, 2008a; Saila, 2008). Additional reasons for ships visiting the community in the past include:

- for assistance, such as food shortages, and/or to pick up a guide/crew (five references)
- collecting furs (two references)
- for a break/rest (one reference)
  (Alasuaq, 2008; Etungat, 2008; Oshutsiaq, 2008b; Saila, 2008; Shaa, 2008)

4.3.3.2 Current shipping

At present, the number and frequency of ships visiting the community has increased over the lifetime of many of today's residents (Anonymous, 2008b; Anonymous, 2008c; Ezekiel, 2008; Manumee, 2008; Takiasuk, 2008; Tukiki, 2008).

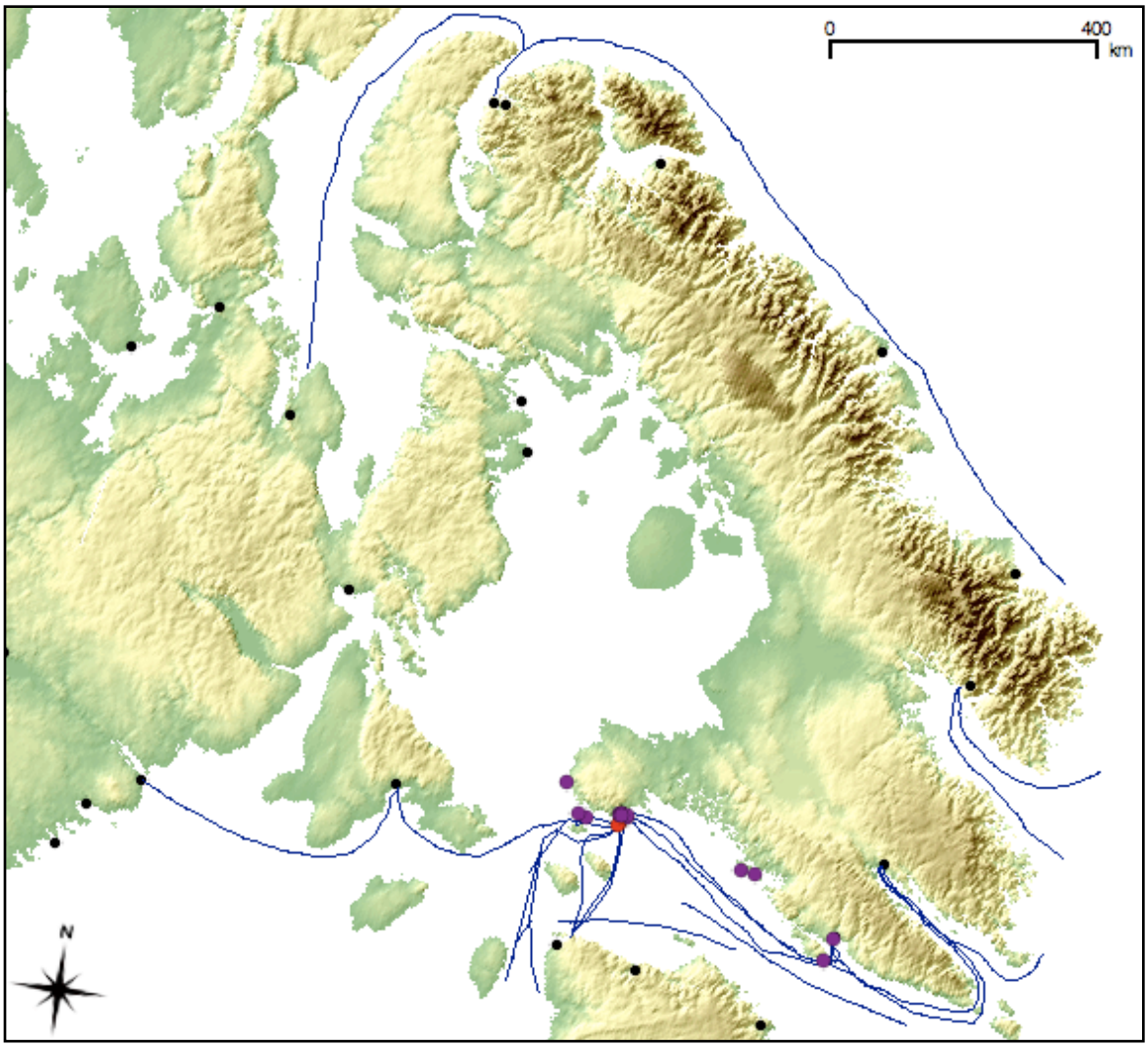


Figure 4-6: Map showing the compilation of knowledge shared in interviews in Cape Dorset, related to ship routes, sightings, and the location of the Nascopie sinking

"There's more [ships], usually every year there's a little bit more than the year before" (Ezekiel, 2008). Ships that used to only visit once a year are now being seen two or three times a year (Etidlouie, 2008). The ships most commonly noted by interviewees as being seen in the area - or visiting the community - include:

- cruise/tourist ships (fourteen references)
- supply ships carrying foods and building materials (fourteen references)
- fuel ships (twelve references)
- ice-breakers (three references)
- army ships (three references)
- Coast Guard (two references)
- government ships (one reference)
- a submarine (one references)
- a personal yacht (one reference)
- fishing/whaling boats (one reference)
  (Anonymous, 2008a; Anonymous, 2008c; Alasuaq, 2008; Elee, 2008; Etidlouie, 2008; Etungat, 2008; Ezekiel, 2008; Manumee, 2008; Mikigak, 2008; Oshutsiaq, 2008a; Oshutsiaq, 2008b; Pootoogook, 2008; Ragee, 2008a; Ragee, 2008b; Saila, 2008; Shaa, 2008; Takiasuk, 2008; Tukiki, 2008)

Community members have thus become familiar with the annual, seasonal timing of ship visits. With the exception of ice-breakers which can arrive any time of year (Ezekiel, 2008), ships tend to first arrive in the community in July, once the ice is gone, and continue to arrive through to the months of August and September, whereby the shipping season usually ends by October (Alasuaq, 2008; Anonymous, 2008a; Anonymous, 2008c; Elee, 2008; Etidlouie, 2008; Ezekiel, 2008; Manumee, 2008; Mikigak, 2008; Oshutsiaq, 2008a; Oshutsiaq, 2008b; Pootoogook, 2008; Ragee, 2008a; Ragee, 2008b; Saila, 2008; Takiasuk, 2008; Tukiki, 2008).

Generally, however, community members are unfamiliar with the routes taken by these ships, their origins, or their destinations once they leave Cape Dorset. Nevertheless, ship routes follow the northern shorelines (see Figure 4-4 and 4-5), possibly for the same reasons that community members navigate their boats close to the shore (i.e. to minimize influences of currents, winds etc.) (Etidlouie, 2008; Ezekiel, 2008). It is also generally understood that the ships are coming from “the south,” in particular Québec, Newfoundland and Ontario (Anonymous, 2008c; Ragee, 2008a; Ragee, 2008b). Ships are

also known to visit other nearby communities, but the order and specific routes are not known (Figure 4-4 and 4-5) (Anonymous, 2008c; Ashoona, 2008; Elee, 2008; Pootoogook, 2008; Shaa, 2008). Through contact with the visitors aboard cruise ships, my interviewees reported having seen tourists from Northern Québec, Europe, the United States, China, Australia, and Russia (Elee, 2008; Etungat, 2008; Oshutsiaq, 2008a; Oshutsiaq, 2008b). Despite not knowing much about the origins or routes of ships, community members are concerned with the impacts associated with shipping.

4.3.3.3 Impacts of shipping

There are a number of impacts that interviewees identified in relation to shipping routes into, or near, the community of Cape Dorset, both positive and negative (Table 4-2). It is predicted that as shipping increases, so will the potential frequency and intensity of these impacts, which will be felt in the community, on the land, and by the wildlife and environment upon which community members rely (Alasuaq, 2008; Ezekiel, 2008). It is strongly believed that "something would definitely be different after the ships or whatever are passing through anywhere" (Ezekiel, 2008). The impacts outlined in Table 4-2 are currently being witnessed in the Cape Dorset area, and are further elaborated in the following sections.

Ship sinking

The sinking of ships is identified by community members in Cape Dorset as a serious threat. This situation was experienced in the late 1940s when the Nascopie in fact sank very close to the community of Cape Dorset after hitting a reef (Figure 4-6) (Ezekiel, 2008, Mikigak, 2008; Shaa, 2008; Tukiki, 2008). Moreover, within the last few

Table 4-2: Impacts of shipping in the Arctic as identified by community members of Cape Dorset

Activity	Impact	Sources
Ships sinking	• ***Negative*** • Release of damaging substances such as oils and other types of contaminants • Pollutes the water	Alasuaq, 2008; Anonymous, 2008c; Elee, 2008; Etidlouie, 2008; Mikigak, 2008; Oshutsiaq, 2008a; Oshutsiaq, 2008b; Ragee, 2008b; Takiasuk, 2008; Tukiki, 2008
Dumping	• ***Negative*** • Intentional release of sewage, waste and/or garbage into the environment • Damages to wildlife and waters	Alasuaq, 2008; Anonymous, 2008c; Etidlouie, 2008; Oshutsiaq, 2008a; Pootoogook, 2008; Saila, 2008
Noise	• ***Negative*** • Sounds emitted from ships disturb wildlife in the area (especially sensitive animals such as walrus and whales)	Anonymous, 2008c
Traveling through wildlife areas	• ***Negative*** • Tourist ships would likely visit areas that wildlife frequented, which could disturb and change wildlife patterns	Anonymous, 2008c
Economics	• ***Positive*** • Visitors buy carvings and art from the community • Companies hire local guides • No longer hiring local guides creating negative impacts	Anonymous, 2008c; Elee, 2008; Etidlouie, 2008; Mikigak, 2008; Oshutsiaq, 2008b; Pootoogook, 2008; Ragee, 2008b
Access to goods	• ***Positive*** • Sealift allows people in the community to have personal supplies and products brought in	Anonymous, 2008c; Pootoogook, 2008

years there was an oil spill nearby Coral Harbour where people from Cape Dorset assisted in the clean up (Elee, 2008; Takiasuk, 2008). Similarly, people remember the tragic Exxon Valdez oil spill in Alaska (Anonymous, 2008c; Elee, 2008) and are worried about a potential similar occurrence near their community.

Dumping

Dumping has also been a problem around Cape Dorset in association with visiting ships. People have found "empty barrels, or barrels with a little bit of oil left in them" that seem to have been left by ships nearby (Alasuaq, 2008). Polar bears have been seen with oil marks all over their body, around the areas where barrels were found (Alasuaq, 2008). Hunters explain that such bears will have significant difficulties hunting seal because the strong odor the oil produces will allow their prey to know where they are (Alasuaq, 2008). In addition, ships have left garbage on islands near Cape Dorset, where mallard and eider ducks used to frequent and nest (Takiasuk, 2008). These ducks are no longer seen around the area (Takiasuk, 2008).

Noise

Ships and other human presence in the Arctic region brings with it unique and unfamiliar sounds. This has the potential to negatively impact animals such as walrus and whales that are sensitive to noise (Anonymous, 2008c). The loud and unfamiliar noises would disturb the animals, and potentially cause shifts in migration routes or feeding area that could adversely affect the animals, as well as the hunters who rely on them.

Traveling through wildlife areas

This leads to more general concerns for impacts on wildlife that could accompany ship travel in arctic waters (Anonymous, 2008c; Etungat, 2008; Elee, 2008; Manumee, 2008; Mikigak, 2008; Oshutsiaq, 2008a; Oshutsiaq, 2008b; Pootoogook, 2008; Ragee, 2008a; Takiasuk, 2008). Shipping will "definitely [have] some impacts on the wildlife that we have up here" (Ezekiel, 2008), including fish, marine mammals, birds as well as land mammals (Ezekiel, 2008; Ragee, 2008a). For example, migratory birds have adapted to unique patterns where they visit specific places or islands each year throughout the Arctic (Ezekiel, 2008). With increased northern shipping and human presence (e.g. mining), it is thus anticipated that disturbances will increase, adversely affecting the bird habitat (Ezekiel, 2008). Mining projects and shipping are directly linked because once the mining begins it will be necessary for ships to visit more frequently to transport goods (e.g. equipment, personnel, products). In addition, it is hypothesized that cruise ships in particular would likely travel to areas where wildlife can be found for the purposes of wildlife observation, which raises concerns about additional disruption to wildlife behaviour and habitat (Anonymous, 2008c).

Economics

Until very recently, cruise ships provided local benefits as tourists would frequently buy carvings and prints in Cape Dorset, as well as hire local guides to visit and explore the community or surrounding areas (Anonymous, 2008c; Elee, 2008; Mikigak, 2008; Oshutsiaq, 2008b; Pootoogook, 2008). Both of these interactions benefited the local economy, but recently it has been observed that tourists are buying less in the community, and local guides are not being hired as often (Anonymous, 2008; Elee, 2008;

Mikigak, 2008; Oshutsiaq, 2008b; Pootoogook, 2008). These are indications of a negative type of tourism, where there is minimal exchange of knowledge or culture, and thus little benefit to the community (Anonymous, 2008c). Interviewees expressed that there needs to be direct local benefits to the community from cruise ships, not necessarily monetary, but some sort of "positive exchange for developing community capacity and people having goods exchanged with other people… sharing of information, sharing of knowledge" (Anonymous, 2008c). Community members enjoy learning from tourists and sharing their own knowledge and expertise.

Access to goods

A ship frequenting the community also enables people to access certain goods that are otherwise too difficult or costly to obtain in remote Arctic communities. A common method of local re-supply of personal goods is the annual sealift shipment (Pootoogook, 2008). Sealifts bring people's bulk orders of non-perishable food supplies and large items into the community. There are usually one or two sealifts reaching the community each month during the shipping season, depending on what the local people and government have ordered (Anonymous, 2008a). When sealift arrives, small barges are sent out to retrieve the goods (Anonymous, 2008a). It is hypothesized that as shipping increases in the Arctic, the cost of goods will decrease because they would become more accessible over time, which is seen as a significant local benefit (Tukiki, 2008). Overall, there is a strong opinion within the community that any use of arctic waters should benefit the communities of Nunavut (Anonymous, 2008c; Etidlouie, 2008; Shaa, 2008). There is the fundamental belief that all of Nunavut is connected, including its lands, waters, wildlife

and people (see Aporta 2009). As a result, even if the majority of ships are not coming directly to or by Cape Dorset (e.g. if they are traveling further north through the Northwest Passage), it is believed that there will still be impacts that concern all northern communities (Etidlouie, 2008; Takiasuk, 2008). As a result, the impacts of shipping in the arctic region is of primary concern, and monitoring efforts thus also need to be investigated.

4.3.3.4 Monitoring shipping

With the above-mentioned impacts of shipping, there is a need for monitoring of this activity around the arctic region. The community members I interviewed do not believe that effective monitoring is taking place. Currently, community members are not aware of any initiatives to monitor shipping in the area (Alasuaq, 2008; Anonymous, 2008a; Manumee, 2008; Ragee, 2008a; Ragee, 2008b; Saila, 2008 ;Shaa, 2008; Tukiki, 2008). Within the community there exists some informal monitoring based on people's observations, however people are not aware of any community- or territory-run systems in place to monitor local shipping practices, and I was unable to find any information indicating that there is.

4.4 Changes to sea ice

Change is most relevant for this study because of several reasons: i) it is important to the community and they wished to share their observations; ii) sea ice changes have been observed since 2005, after the bulk of Laidler's intensive field research on sea ice was conducted; and, iii) changing sea ice conditions have recently sparked the resurgence of political interest in and concern for Arctic sovereignty. Therefore, becoming familiar

with recent local observations of sea ice change in Cape Dorset, provides important context for community perspectives on local travel and use, as well as on shipping and sovereignty.

4.4.1 Changes in sea ice freeze-up

It has been observed that sea ice formation around the community of Cape Dorset has changed over time. Community members compare the current conditions of today against the conditions they experienced when they were children living in camps in the 1950s or earlier. Generally, the sea ice today is "not frozen like it used to be" (Takiasuk, 2008). Changes to sea ice formation (i.e. fall freeze-up) that have been noted around the community include:

- the date in which sea ice begins to form (three references)
- the length of time it takes for sea ice to be strong enough to travel on (three references)
- the thickness of sea ice required for safe travel (e.g. when today's elders were children, people used harpoons to check ice thickness, and if the ice was a quarter of an inch thick, this was considered safe for walking; however, presently, if the ice is that same thickness, you cannot be sure that it is safe) (one reference) (Alasuaq, 2008; Ashoona, 2008; Mikigak, 2008; Pootoogook, 2008; Ragee, 2008a; Shaa, 2008; Takiasuk, 2008)

In addition, environmental factors that influence freezing are also changing. One key example is the direction of prevailing winds (Oshutsiaq, 2008b; Shaa, 2008; Tukiki, 2008). When today's elders were children, they recall that winds from the North during the fall would initiate the early stages of freeze-up (Shaa, 2008). This has changed over time and, presently, winds that assist with initial freezing are coming from the South, delaying freeze-up (Oshutsiaq, 2008b; Shaa, 2008).

4.4.2 Changing sea ice conditions

Overall, the conditions of sea ice are viewed to have changed over community members' lifetimes (Ashoona, 2008; Etungat, 2008). These changes are based on local observations, using indicators such as such as:

- thinner ice conditions (five references)
- a decrease in the duration of safe and useable ice conditions (three references)
- an increase in the occurrence of dangerous areas (one reference)
- the floe edge forming closer to the community (Figure 4-9) (five references)
- a decrease in the overall quality of sea ice (one reference)
  (Etidlouie, 2008; Mikigak, 2008; Oshutsiaq, 2008b; Pootoogook, 2008; Ragee, 2008b; Saila, P, 2008; Shaa, 2008; Takiasuk, 2008; Tukiki, 2008)

Correspondingly, it has been observed that the weather in and around the community is changing. This includes: i) warmer temperatures, ii) less snow cover, iii) more fog, iv) fewer blizzards, and v) changing wind directions (Etidlouie, 2008; Etungat, 2008; Saila, 2008). For example, while I was in Cape Dorset, a unique occurrence occurred when strong winds changed direction and brought in large amounts of ice blocking the floe edge, restricting people's access for travel and hunting (Figure 4-7 and Figure 4-8).

Figure 4-7: The floe edge nearby Cape Dorset, as visited by snowmobile (June 2008) shortly after the winds changed direction packing ice along the edge (Photo: Karen Kelley)

Figure 4-8: The floe edge near Cape Dorset, as visited by snowmobile (March 2009) where there is some floating ice nearby (Photo: Karen Kelley)

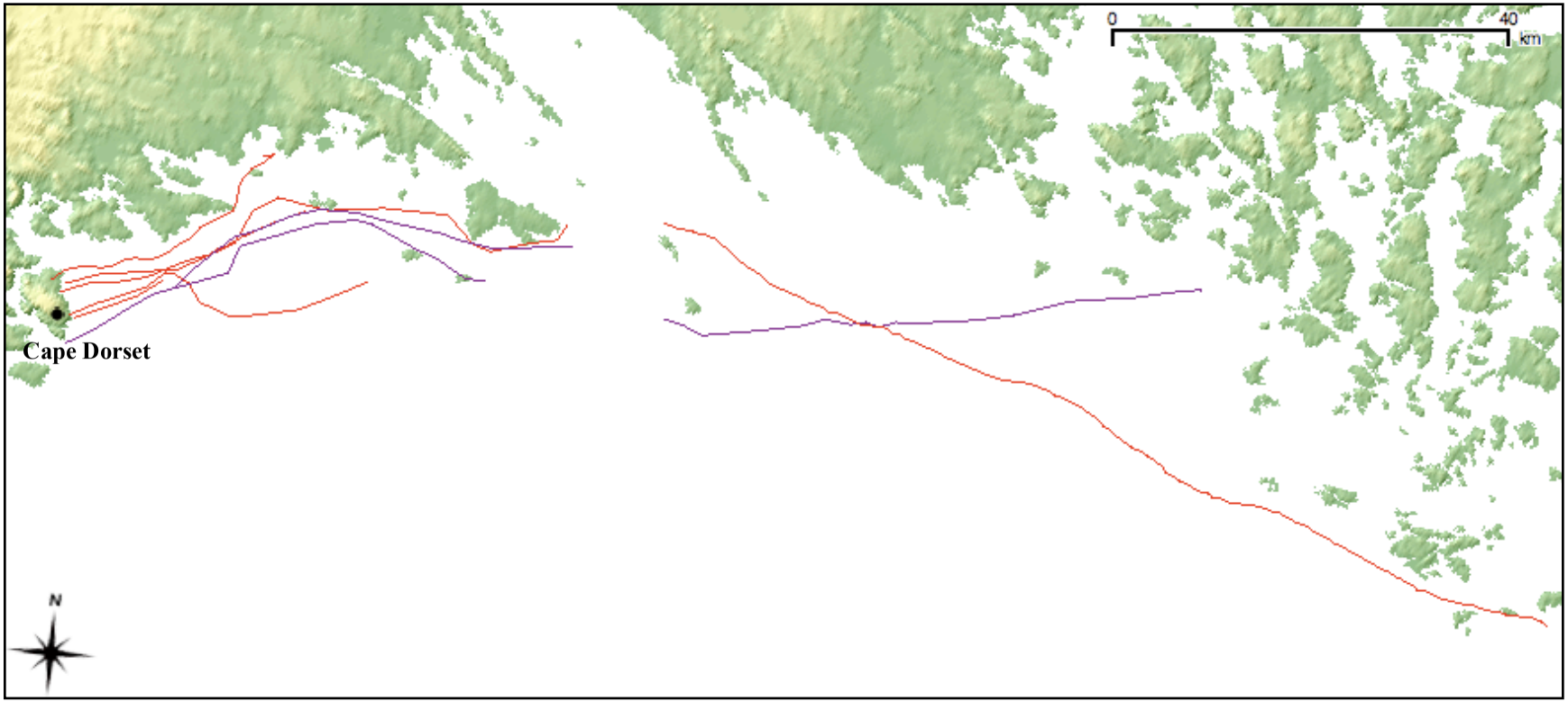


Figure 4-9: Map showing the compilation of knowledge shared in interviews in Cape Dorset, related to the locations of the floe edge

Legend:
present floe edge
past floe edge
Cape Dorset

4.4.3 Changes in sea ice break-up

Similar to freeze-up and general sea ice conditions, it is clear that break-up timing/processes is also changing. The changes witnessed around the community include:

- Break-up begins earlier in the season (three references)
- Where and when cracks or other early melting areas occur (two references) (see Figure 4-10)
- What causes break-up to occur, such as: i) more influx of freshwater (runoff), ii) stronger currents and iii) more winds coming from different directions (seven references)
- Sea ice disappears earlier in the season (three references)
(Ashoona, 2008; Etidlouie, 2008; Ezekiel, 2008; Manumee, 2008; Mikigak, 2008; Oshutsiaq, 2008b; Pootoogook, 2008; Ragee, 2008a; Ragee, 2008b; Shaa, 2008; Takiasuk, 2008; Tukiki, 2008)

Overall, it seems that sea ice conditions and processes around Cape Dorset have substantially changed over people's lifetimes. Over the radio, Cape Dorset community members have also heard that similar changes are being witnessed in other communities around Nunavut (Mikigak, 2008). With these significant changes the detailed sea ice knowledge held by local experts (Laidler and Elee, 2008, 2006; Laidler, 2007) is being undermined, and opportunities for youth to learn important traditional skills diminishing. This is of concern to local residents because such changes are affecting peoples' daily lives and activities, where the sea ice has continued to play an essential role in local travel and use. Compounding these changes, there are also changes in the available technology used for travel (GPS). This can be a useful tool for navigation, however, reliance on technology also undermines detailed knowledge of the conditions.

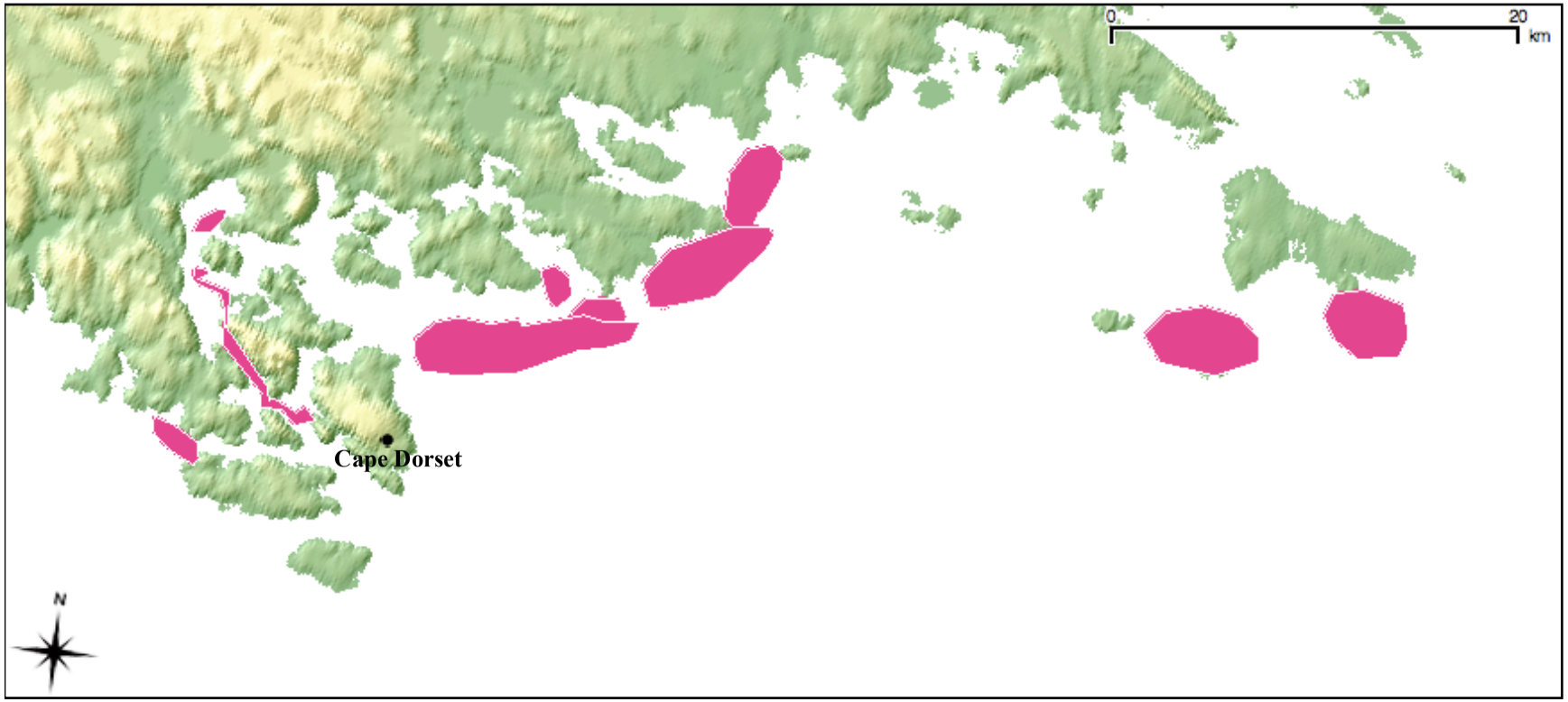


Figure 4-10: Map showing the compilation of knowledge shared in interviews in Cape Dorset, related to areas of sea ice that melt early in the spring

4.4.4 Implications of sea ice changes on boating

As a result of the earlier break-up, later freeze-up, and closer floe edge there is a longer ice-free season. This has affected the boating season in Cape Dorset. Within the last ten years, it was noted that the frequency and timing of boating in and around Cape Dorset has changed (Elee, 2008; Manumee, 2008; Shaa, 2008). It has been noted that "especially in the last couple of years there's been longer boating seasons" (Takiasuk, 2008). Similarly, it appears that there are more "people going out boating even during the winter" (Etungat, 2008).

With the changes in sea ice, increased potential for shipping and concerns over the impacts, discussions and debates around Arctic sovereignty are increasing. These discussions involve topics related to northern communities, although they may not necessarily be aware of them.

4.5 Sovereignty

4.5.1 Policy descriptions of sovereignty

4.5.1.1 Ownership and boundaries

According to UNCLOS, sovereignty of a state extends from the land to the internal waters, to the territorial sea, to the contiguous zone, and finally to the exclusive economic zone (UNCLOS, 1982). The baseline for Canadian waters is "the low-water line along the coast or on a low-tide elevation that is situated wholly or partly at a distance not exceeding the breadth of the territorial sea of Canada from the mainland or an island" (Oceans Act, 1996: 3). Canada's internal waters are thus the waters that are enclosed in this baseline (UNCLOS, 1982: 24; Oceans Act, 1996). The territorial sea

extends “up to a limit not exceeding 12 nautical miles” from the baseline (UNCLOS, 1982: 23; also see Oceans Act, 1996). The contiguous zone extends no more than 24 nautical miles from the baseline (Oceans Act, 1996; UNCLOS, 1982). The exclusive economic zone extends up to 200 nautical miles beyond the baseline (Oceans Act, 1996; UNCLOS, 1982). The exclusive economic zone exists for the “purpose of exploring and exploiting, conserving and managing the natural resources, whether living or non-living” (Oceans Act, 1996: 5; UNCLOS, 1982: 39). For the purposes of this project, sovereign Canadian territory, is the land and waters within the Canadian boundaries (Figure 4-11) that are owned by the Canadian state. Within these boundaries Canada is able to access, use and regulate the arctic waters.

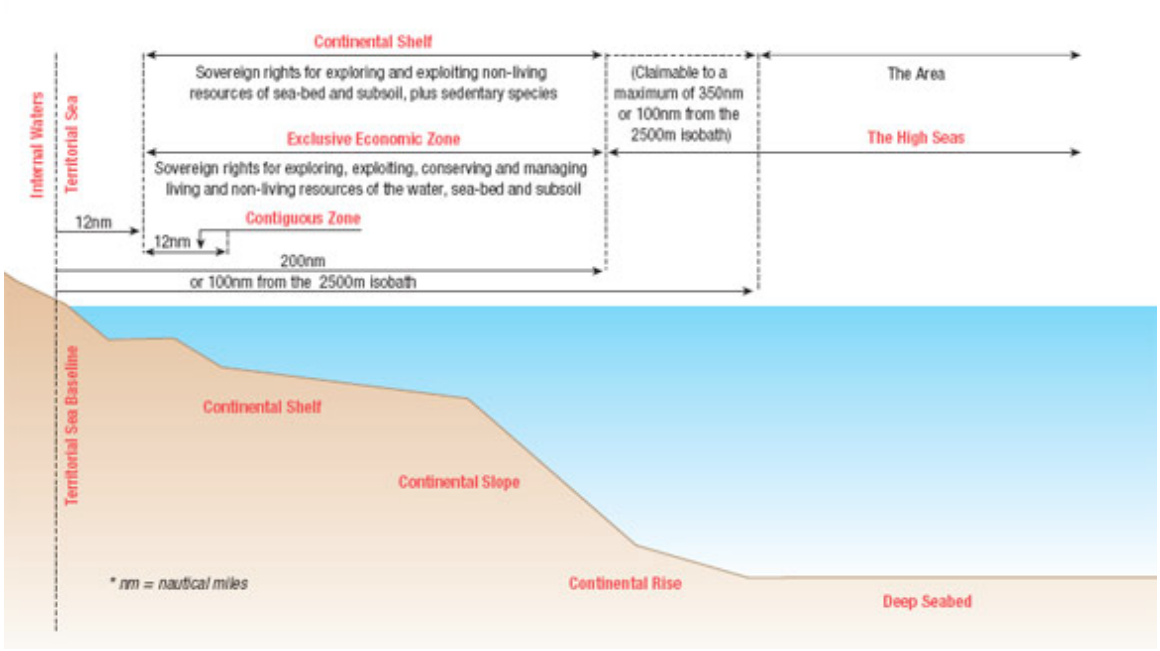


Figure 4-11: Canada’s Maritime Zones including the delineation of internal waters, baseline, exclusive economic zone, and the High Seas (Fisheries and Oceans Canada, 2008)

The Canadian government recognizes “the waters adjacent to the mainland and islands of the Canadian arctic within the area enclosed by the sixtieth parallel of north latitude, the one hundred and forty-first meridian of west longitude and a line measured seaward from the nearest Canadian land a distance of one hundred nautical miles” to be Canadian waters (AWPPA, 1985: 2).

The NLCA is composed of the Nunavut settlement area which includes lands, water and marine areas (open and ice-covered), and specific Inuit owned lands (Figure 4-12), broadly divided into Area A and Area B (Figure 2-3) (NLCA, 1993). However, it does not include “waters north of 61E latitude subject to Canada’s jurisdiction seaward of the Territorial Sea boundary” and “waters of James Bay, Hudson Bay and Hudson Strait” (NLCA, 1993: 9). With regard to the islands between Nunavut and Northern Québec, the Nunavut Land Claims Agreement identifies them as an “area of equal use and occupancy in the Hudson Strait” (NLCA, 1993: 270).

4.5.1.2 Regulations related to sovereignty

The previous definition of ownership and boundaries related to marine areas is thus the foundation for understanding the regulations surrounding jurisdictional levels and control over access and use of Canada’s arctic waters.

International

International standards and regulations regarding the use of marine areas are outlined in the UNCLOS. Within a state’s exclusive economic zone they have the right to board, inspect and arrest as necessary “to ensure compliance with the laws and regulations” within UNCLOS (1982: 48). In addition, UNCLOS outlines that it is the

responsibility of the state to "adopt laws and regulations to prevent, reduce and control pollution of the marine environment by dumping" and from vessels in general (UNCLOS, 1982: 101-102). In ice-covered areas states have the "right to adopt and enforce non-discriminatory laws and regulations for the prevention, reduction and control of marine pollution from vessels… based on the best available scientific evidence" (UNCLOS, 1982: 111).

Federal

The Canadian government has established that "the arctic waters adjacent to the mainland and islands of the Canadian arctic are navigated only in a manner that takes cognizance of Canada's responsibility for the welfare of the Inuit and other inhabitants of the Canadian arctic and the preservation of the peculiar ecological balance that now exists in the water, ice and land areas of the Canadian arctic" (AWPPA, 1985: 1). In order to accomplish this, the AWPPA (1985: 10) outlines that Canada may deem an area of the Canadian arctic waters as a shipping safety control zone, where ships may be prevented from entering if:

- The ship does not comply with regulations specifically based on their: i) hull and fuel tank construction; ii) navigational aids or lack of; iii) nature and construction of propelling power; iv) the number of personnel manning the ship; v) the type of cargo; vi) quantities of fuel, water and other supplies
- The ship is not aided by a pilot or ice navigator
- It is during certain periods of the year, or when there are specific ice conditions

Ship regulatory and inspection exemptions can be given if the government is satisfied that appropriate measures and reasonable precautions have been taken, to reduce the danger of depositing waste (AWPPA, 1985: 10).

Through the Oceans Act (1996) it is recognized that the Minister of Fisheries and Oceans should work in collaboration and consultation with a variety of different stakeholders when: i) implementing a national strategy; ii) developing and implementing plans for integrated management; iii) establishing advisory or management bodies; iv) establishing marine environmental quality guidelines, objectives and criteria; v) exercising powers assigned through the Oceans Act. These stakeholders include: other ministers, boards and agencies of the Government of Canada, provincial and territorial governments, affected aboriginal organizations, coastal communities and other persons and bodies, including those bodies established under land claims agreements (Oceans Act, 1996). In addition, the Oceans Act (1996) outlines the Minister of Fisheries and Oceans as being responsible for Coast Guard services related to:

- Services for the safe, economical and efficient movement of ships in Canadian waters through the provision of:
    - Aids to navigation systems and services
    - Marine communication and traffic management services
    - Ice breaking and ice management services
- The marine component of the federal search and rescue program
- Marine pollution response

Under the CSA the ministers in power include the Minister of Transport and the Minister of Fisheries and Oceans (CSA, 2001). Overall, this Act regulates Canadian ships, ships traveling through Canadian waters, and pleasure crafts. All Canadian vessels must be registered under the CSA (2001). However, the provisions and regulations found within the CSA do not apply to vessels belonging to the "Canadian Forces or a foreign military force" (CSA, 2001: 4). Regulations under the CSA (2001) include but are not limited to:

- Registration, listing and recording of vessels
- Issuance and renewal of certificates of registry

- Suspension and cancellation of the registration or listing of a Canadian vessel
- The naming and marking of vessels
- The port of registration
- The calculation of tonnage
- Personnel including births and deaths onboard

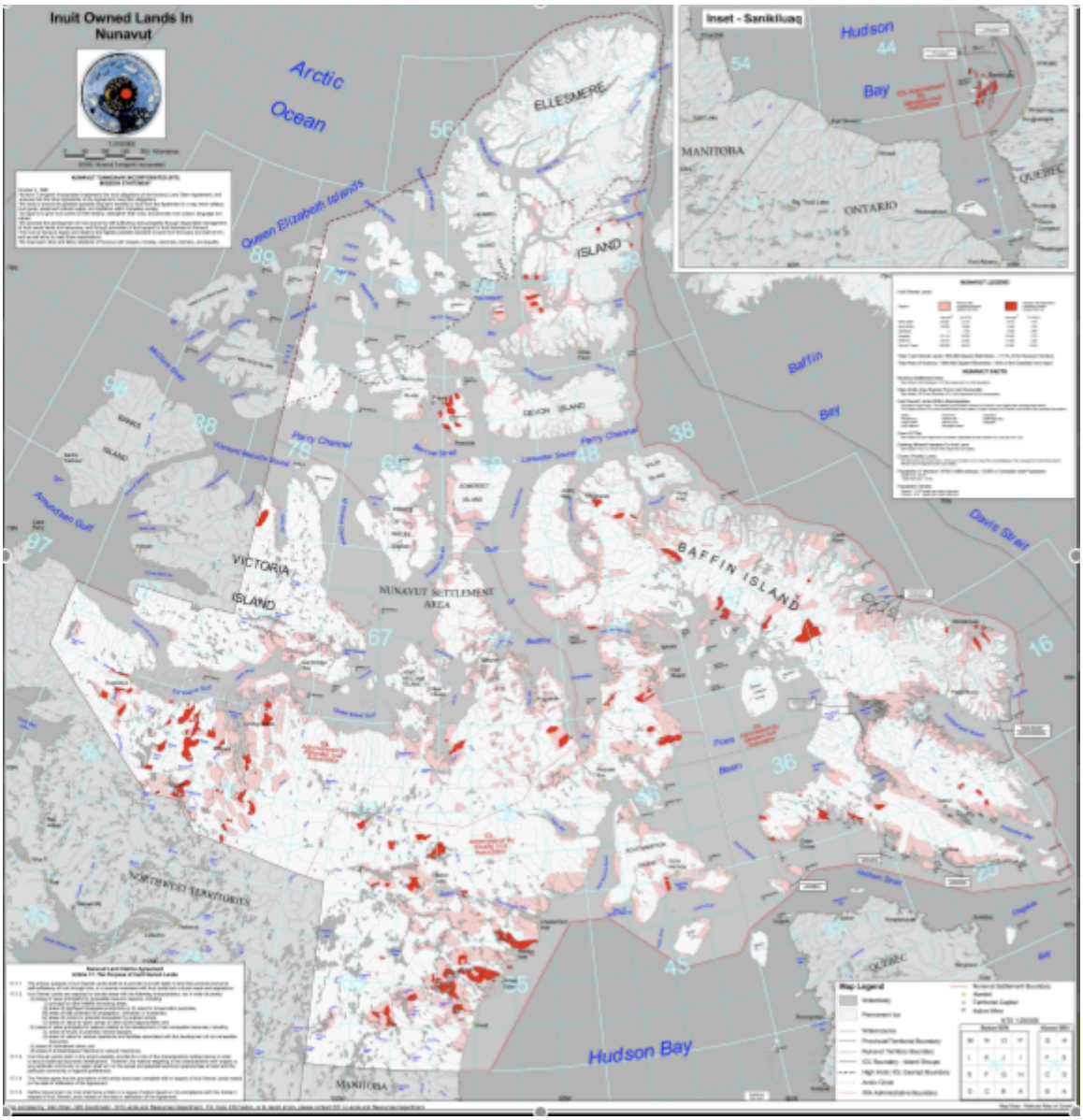


Figure 4-12: Map of Nunavut including Inuit Owned Lands (surface rights only in light pink; surface and subsurface rights in red; and Nunavut boundary outlined in red) (NTI, 2000) (Resolution reduced to fit page, for full resolution visit website: http://www.ntilands.com/maps.html)

The CSA also outlines procedures for search and rescue. It is the responsibility of the Minister of Transport to designate persons as rescue coordinators with the responsibility of organizing search and rescue operations (CSA, 2001). When a person, vessel or aircraft is in distress or missing in Canadian waters or in the high seas off the coast of Canada, the coordinator may:

- require all vessels within an area the report their position
- direct vessels to take part in the search, or provide assistance
- use nearby lands when necessary for saving lives (CSA, 2001: 44).

Nunavut

Marine areas as defined by the Nunavut Land Claims Agreement include areas that are part "of Canada's internal waters or territorial sea, whether open or ice-covered, lying within the Nunavut Settlement Area, but does not include inland waters. For greater certainty, the reference to internal waters or territorial sea includes the seabed and subsoil below those internal waters or territorial sea" (NLCA, 1993: 5). However, jurisdiction over navigation through these waters remains at the federal level.

At the territorial level, shipping and navigation are not specifically addressed, as is it under federal jurisdiction. In the NWNSRTA it clearly states that their jurisdiction of "use [relating to marine areas] … does not include navigation or any other use connected with shipping activities that are governed by the Canadian Shipping Act, 2001" (NWNSRTA, 2002: 4). However, through the creation of the Government of Nunavut (GN), control in relation to supplies entering the communities is territorially run. The NLCA has specific provisions within it regarding how the GN is to control resupply. It identifies "normal community resupply [to include] marine transportation whose

primary purpose is the delivery to communities in the Nunavut Settlement Area of foodstuffs, household goods, construction materials for housing and other community oriented facilities, and related goods and materials" (NLCA, 1993: 101). The GN thus has the legislative power to make laws regarding "the incorporation of companies with territorial objectives, excluding…steamship[s]" (Nunavut Act, 1993: 5). In effect, the GN can decide what ships are contracted to supply the communities, and whenever possible they must attempt to use companies designated as Inuit firms (NLCA, 1993). Inuit firms are defined as those that comply "with the legal requirements to carry on business in the Nunavut Settlement Area" including a company that is at least 51% owned by Inuit, a cooperative controlled by Inuit, or an Inuk proprietorship or partnership (NLCA, 1993: 197).

The GN through its Acts and the NLCA recognize Canada's obligations under International Law. In addition, they recognize that its lands and people play an important part in Canadian sovereignty, as sovereignty in the Arctic is important for Canada. In fact, many of the Articles of the NLCA, including *Article 16, Outer Land-Fast Ice Zone – East Baffin Island,* state that "Articles shall apply, in a manner consistent with Canada's sovereignty, sovereign rights and jurisdiction, and with Canada's international obligations" (NLCA, 1993: 137).

4.5.1.3 International waters and shipping

Depending on the classification of arctic waters there are different implications applicable to Canada under international law. If waters are deemed to be territorial (internal) seas, the Canadian government must be prepared for ships from all states to be

given the right of innocent passage under international law (UNCLOS, 1982). Innocent passage refers to passage that "is not prejudicial to the peace, good order or security of the coastal state (UNCLOS, 1984: 27). Actions by ships that would breach notions of peaceful passage, and would thus not classify as innocent passage, include but are not limited to: i) use of force; ii) carrying weapons; iii) fishing; iv) acts of pollution; v) carrying out research; vi) and interfering with systems of communication (UNCLOS, 1984: 27). On the other hand, if the waters are deemed to be an international strait, different standards apply. It is internationally recognized that states that border an international strait can make regulations based on: i) the safety of navigation; ii) control of pollution; iii) fishing; and iv) loading and unloading of objects (UNCLOS, 1982: 34-35). In international straits "all ships and aircrafts enjoy the right of transit passage" (UNCLOS, 1982: 33). This transit can only be for the purpose of continuous transit of the strait, or entering and leaving a state that borders the strait (UNCLOS, 1982). The previously mentioned right to innocent passage also exists for international straits (UNCLOS, 1982).

Despite being explicit on territorial boundaries and ownership in relation to marine waters, and associated regulations implicating shipping in different jurisdictions, the issue of sovereignty itself (or the role of sea ice in defining sovereign regions) is not explicitly dealt with within the Acts and Agreements examined. This is an important issue that will be addressed in greater depth in Section 5.4.

4.5.2 Community perspectives on sovereignty

4.5.2.1 Ownership and boundaries

In order to better understand community perspectives on notions of sovereignty, I began by asking interviewees to identify who they felt the arctic waters belonged to, or who had control over these waters. It is important to note that some individuals were hesitant to put a label such as ownership on the waters. One participant emphasized that there is no way to control/own the sea ice, as the government "can't tell the ice to stop growing or break up" (Pootoogook, 2008). Ownership is not a traditional Inuit concept (Anonymous, 2008c) (see Section 2.4.2.3). As a result, for some people, the meaning of ownership was in fact connected to having rights to the water and being able to have a say in what is happening to the waters. Overall the responses to 'who owns the arctic waters' included:

- The Canadian federal government (five references)
- The communities that are located by the waters (four references)
- The world (two references)
- Inuit, the people who use it (two references)
- Nunavut (one reference)
- God, and therefore the waters are for everyone (one reference)
- No one because it is constantly moving and circulating (one reference) (Anonymous, 2008c; Ashoona, 2008; Elee, 2008; Etidlouie, 2008; Etungat, 2008; Ezekiel, 2008; Manumee, 2008; Mikigak, 2008; Oshutsiaq, 2008a; Oshutsiaq, 2008b; Pootoogook, 2008; Ragee, 2008b; Ragee, 2008a; Saila, 2008; Shaa, 2008; Takiasuk, 2008)

Sea ice poses a unique challenge to the legal and relatively static identification of boundaries. In Cape Dorset, community members expressed their perspectives that boundaries change as a results of seasonally variable sea ice extents (Mikigak, 2008; Shaa, 2008). In the summer when there is no sea ice, the boundary rests along the

shoreline; however, when the winter ice has formed, the boundary extends to the edge of the ice (i.e. the floe edge) (Etidlouie, 2008; Shaa, 2008). While working on the mapping exercises, there was some discrepancy in whether or not tying boundaries to sea ice extent is a good thing. One community member believed that this was a representation of reality (i.e. sea ice being an extension of the land), while another felt that the boundary should be avoided to prevent complications and conflict (Mikigak, 2008; Shaa, 2008). While looking at the ocean, and at the sea ice, there is also the underlying emphasis on interconnection, whereby the sea ice enables all nearby lands and communities to become connected, no matter what government boundaries are drawn (Etidlouie, 2008).

4.5.2.2 Regulations

The majority of community members interviewed were not familiar with who regulates shipping in the arctic waters (Alasuaq, 2008; Etungat, 2008; Ezekiel, 2008; Mikigak, 2008; Pootoogook, 2008; Ragee, 2008a; Ragee, 2008b; Saila, 2008; Shaa, 2008; Tukiki, 2008). Responses to the question about who regulates arctic waters included:

- no one, ships do whatever they want (one reference)
- the Federal government (one reference)
- the Department of Oceans and Fisheries Canada (one reference)
- Customs Canada (one reference)
- Transport Canada (one reference)
  (Anonymous, 2008a; Anonymous, 2008b; Anonymous, 2008c; Elee, 2008; Mikigak, 2008;)

On the other hand, it was identified that both Nunavut and the federal government are actively involved in search and rescue in the Arctic, depending on the location involved (Anonymous, 2008a). If someone is lost while they are in the open waters (i.e. on the

ocean), it is the federal government's responsibility (Anonymous, 2008a). However, if someone is lost while on landfast ice it is the territorial government's responsibility (i.e. treated similarly to search and rescue on land) (Anonymous, 2008a).

4.5.2.3 International waters and shipping

Community members understand that there is a demand for ships to use arctic waters as a shortcut to save money and time (Etidlouie, 2008). However, reservations exist in Cape Dorset regarding the Arctic becoming an international waterway (Elee, 2008; Manumee, 2008; Ragee, 2008a; Shaa, 2008). There is concern that ships would be able to go in and out as they please, where "international waters [could be] used for anything" (Anonymous, 2008c; also see Mikigak, 2008; Oshutsiaq, 2008b; Shaa, 2008). There is also concern that whoever is traveling through - or using - Canadian arctic waters, may develop a sense of ownership and rights to use the waters to do as they please (i.e. leave garbage) (Alasuaq, 2008). As a result, there is strong local support for the Canadian Government to control and regulate arctic waters at the federal level (Oshutsiaq, 2008a; Ragee, 2008a). However, it is also believed that in the future arctic waters will inevitably become an international waterway as demand and accessibility increase (Etungat, 2008). Economics are seen locally as the "bottom line" when it comes to who can access the arctic waters (Saila, 2008). Where economic development and financial profit will dictate who is able to transit the waters, for what purpose, and under what restrictions. It is hypothesized that early on there will likely be few negative impacts associated with shipping in the Arctic; there is, however, consensus among community

members that problems will inevitably arise in the near future as shipping increases (Elee, 2008; Saila, 2008).

4.6 Summary

A great deal can be learned about the status of the sea ice and arctic waters in general from examining the policies and from asking individuals in the communities. Both provide important information and insights regarding sea ice, travel and use, change and sovereignty. For Inuit, the use of sea ice is an important part of community life. Whereas national and international policies often see sea ice as a hazard and a barrier, and the livelihoods and knowledge of the indigenous inhabitants of the Arctic (the Inuit) are barely acknowledge or completely ignored. With the changing environmental and weather conditions, sea ice is becoming increasingly important in public debates and discussions of sovereignty.

The following chapter will jointly analyze the findings outlined here, in combination with relevant literature to further evaluate the connections between policy and community perspectives on sea ice, use/travel of marine areas, change (climactic, environmental and situational) and sovereignty (how changing sea ice conditions are pushing political agendas and debates regarding control and use of arctic waters).

Chapter 5 - Analysis

For this research I have attempted to bring together distinct perspectives and bodies of knowledge regarding issues of arctic travel and use of sea ice (or ice-filled waters), specifically in relation to emerging sovereignty debates. Both policy and Inuit community perspectives are analyzed to identify the degree to which community input and northern involvement have been incorporated into current policy documents, and how they may contribute to developing cooperative approaches in assertions of northern Canadian sovereignty. Broadly, there is a disconnect between policy and community perspectives on these issues, so this chapter seeks to highlight the ways in which this disconnect manifests, and explore some of the factors contributing to these differences.

5.1 Sea Ice

5.1.1 Community and government understandings of sea ice

Inuit knowledge of ice conditions and associated terminology is extensive. This has become clear from working with the Inuit Sea Ice Use and Occupancy Project team, and reading Laidler's work (Laidler and Elee 2006, 2008; Laidler, 2007). Inuit sea ice experts are essentially able to read sea ice and weather conditions to understand different variables such as the age and dynamics of the sea ice, along with its stability and usability (see Section 2.3.3) (Alasuaq, 2008; Aporta, 2002; Ashoona, 2008; Barber *et al*., 2008; Berkes *et al*., 2001; Gearheard, *et al*., 2006; Henderson, 2007; Laidler, 2007; Laidler and Elee, 2006, 2008; Mikigak, 2008; Pootoogook, 2008; Ragee, 2008a; Shaa, 2008; Takiasuk, 2008). For example, Inuit in Cape Dorset and across the Arctic are able to interpret ice conditions during their travels by observing their surroundings and such

phenomena as cloud cover, texture of the ice, and sounds related to ice movement (Aporta, 2002; Nelson, 1969). Similarly, local sea ice experts have detailed knowledge about the seasonal conditions and evolution of the sea ice (Barber *et al*., 2008). Therefore, it is not surprising that elders and hunters describe sea ice by focusing on the areas they are familiar with, particularly in relation to their travel and hunting activities. Experienced Inuit have thus developed their knowledge and skills based on a lifetime of learning from their own experiences and repeated observations of sea ice, and cumulatively from the shared knowledge of other community members.

On the other hand, marine Acts and Agreements provide little detail regarding the specific descriptions and conditions of sea ice. Within these Acts and Agreements the sea ice is characterized as being distinct from marine open water conditions, with specific reference to ice-covered waters (see Table 4-1). For example, Section 8 Article 234 of the United Nations Convention on the Law of the Sea (UNCLOS) (1982) is titled Ice-Covered Areas (see Table 4-1). The Nunavut Land Claims Agreement (NLCA) (1993) defines marine areas as "that part of Canada's internal waters or territorial sea, whether open or ice-covered, lying within the Nunavut Settlement Area" (NLCA, 1993: 16). Both of these examples clarify that the marine environment can be open and ice-covered and that both conditions require different consideration when discussing access and shipping. However, at the territorial level, sea ice is given a great deal of consideration as most activities in the arctic region involve contact with sea ice. The territorial (Nunavut) Acts and Agreements are designed to protect the arctic environment and the activities of Inuit.

In general, within the federal and international Acts and Agreements, sea ice is regarded as an obstacle to transportation and a hazard to ships. These Acts and Agreements are in place to set standards for shipping activities, where regular shipping is only now becoming a real prospect. Accordingly, there is little information within the federal and international policies describing sea ice. In addition, these documents are designed to be guidelines and general policies, without the scope to cover the specifics of sea ice conditions in great detail. These policy documents cover national or regional scale guidelines, that need to be generally applicable in a broad range of circumstances. As a result, other forms of government administration deal with the specifics of sea ice through their operational mandates to monitor sea ice and support navigation through ice-filled waters (for instance the Canadian Ice Service and the Coast Guard).

The Canadian Ice Service (CIS) is "a branch of the Meteorological Service of Canada (MSC), [and] is the leading authority for information about ice in Canada's navigable waters" (Environment Canada, 2003a: 1). The CIS "provides reliable and timely information about ice conditions in Canadian waters… [and] promotes safe and efficient maritime operations" (Environment Canada, 2003b: 1). Key activities of the CIS include:

- Daily ice hazard bulletins and charts describing ice conditions in active navigable waters.
- Ice warning service for extreme ice events within ice-encumbered waters.
- Daily iceberg bulletins and charts for Canadian waters south of 60N.
- Weekly ice analyses of active ice areas for strategic planning purposes.
- Ice reconnaissance with a specially instrumented Dash-7 aircraft, as well as by helicopter.
- Maintain the Canadian Ice Service Archive for climatological purposes.
- Contribute Canadian ice data to the World Data Center for Glaciology. (Environment Canada, 2003b).

In order to obtain the relevant sea ice information, CIS employs highly trained Ice Service Specialists who conduct visual observations from shore, ship and aircraft in order to gather accurate and timely ice and iceberg information. In addition, CIS relies on analysts, forecasters and climatologists to interpret ice and iceberg data from satellites, reconnaissance aircrafts and ships (Environment Canada, 2003c), who share their current observations and other reference information in the form of: i) ice charts and maps; ii) descriptions of ice conditions and features; and, iii) standard scientific ice terminology. Although Inuit communities are not listed as being among the primary users of CIS products, the CIS supplies images and information to other users who in turn support the communities. One such example is the Polar View Floe Edge Service provided by Noetix Research Ltd., who are also collaborators with the Inuit Sea Ice Use and Occupancy Project (ISIUOP). The CIS acknowledges that ice affects "hunting and fishing patterns of aboriginal peoples" (Environment Canada, 2003a), but it does not currently include Inuit knowledge or community-based observations to inform the creation of ice products. Nevertheless, mutual interests in safety and communication regarding ice conditions present an opportunity for the development of a new working relationship that could be mutually beneficial.

There is remarkable contrast in the way the Canadian Government and Inuit hunters share information about the sea ice. Policies and government operations focus on ship communication and information provisions by CIS and Coast Guard (CG). For example, through policies such as the Canadian Shipping Act (2001), the government insists that ships notify other ships in the area about conditions and any possible hazards,

including sea ice. This regulation is beneficial to all ships in the area, as they help each other when conditions are dangerous. In contrast, hunters in the community emphasize the importance of sharing observations (e.g. over the radio) and want to teach youth about dangers as well as how to use technologies as support tools to minimize dangers and improve communications (Elee, P., 2008; Etidlouie, E., 2008; Tukiki, Q., 2008). With safety being the primary concern, both groups have the potential to expand their understandings through incorporating each other's knowledge and techniques related to sea ice conditions. This would result in a more intricate knowledge of sea ice conditions that could be made available to decision-makers. It would also allow community members to have access to new technologies and data. While governments and Inuit both employ useful tools and methods to understand the sea ice environment, there is a need for improved connections between government operations, decisions and policies, and Inuit expertise.

5.2 Travel and use

5.2.1 Community use of sea ice

There are significant differences between the Canadian government and Inuit approaches to arctic travel and use of the sea ice, particularly relating to its function. For the government, sea ice is characterized as an obstacle to navigation and a significant hazard to ships traveling in ice-filled waters (ACIA, 2004; Byers *et al*., 2005; Pharand, 2007). In contrast, for those who inhabit the Arctic, sea ice plays an important part of their daily lives for much of the year (Aporta, 2002; Berkes *et al*., 2001). Inuit frequently interact with the sea ice and marine environment by walking on newly formed ice,

running a dog team, driving their snowmobile, or using a boat in ice-filled waters (see Sections 4.3.2.1 to 4.3.2.3) (Aporta, 2002; Berkes *et al*., 2001; Elee, 2008; Etidlouie, 2008; Etungat, 2008; Ezekiel, 2008; Manumee, 2008; Oshutsiaq, 2008a; Saila, 2008; Takiasuk, 2008). In the past, when Inuit were living in small camps, sea ice was traversed and used by all members of the camp. Today, within northern communities it is most common for elders and active hunters to be the primary users of the sea ice. However, interested youth and aspiring hunters are also learning about the sea ice through their own experiences and travel with family members (often elders) or 'on-the-land' programs (e.g. school, Junior Rangers training, etc.) (Alasuaq, 2008; Tukiki, 2008). Furthermore, entire families still tend to travel on the ice together in the spring to access seal hunting grounds, cabins, and fishing lakes, amongst other spring activities. For example, while I was in Cape Dorset a number of people (mostly women, and some children) were traveling to and from the fishing lakes during the springtime across sections of the sea ice. Inuit have extensively utilized the arctic environment, including the sea ice, for many generations. Through this long-term use the sea ice environment is directly connected to human experiences (Aporta, 2002), and is thus an integral part of Inuit culture. To this day, travel on the sea ice, or in open water, is undertaken to learn about and evaluate the marine environment (open and ice-covered), to travel between camps or communities, to access fishing, hunting, or mining destinations, as well as for leisure activities (see Section 4.3.2) (Aporta, 2002, 2009; Barber *et al*., 2008; Laidler and Elee, 2006). However, within government policies there is little recognition of this extensive use of sea ice by Inuit.

Within the examined Acts and Agreements, the NLCA is the only one that explicitly recognizes the importance of sea ice to Inuit (see Table 4-1). This Agreement was negotiated by Inuit in the Nunavut settlement area to encompass and protect their way of life, which includes extensive use of the sea ice. By ratifying this Agreement the Canadian Government has made an enormous step forward in recognizing and defining the rights of Inuit in Canada based on "their own customs and usage" (NLCA, 1993: 1). Through the negotiations of the NLCA (1993), Inuit sought to ensure the maintenance of their rights to marine areas, based on their past and current uses of sea ice and ocean waters, and their importance in people's daily lives (NLCA, 1993). Currently, none of the Acts or Agreements designed for Canada's arctic marine areas or shipping policies acknowledge, regulate, and/or restrict the use of sea ice by Inuit. This is likely due to the fact that these Acts and Agreements were developed for broad jurisdictional scales (i.e. national or international), as well as for different purposes (i.e. regulating marine water usage as opposed to protecting Inuit rights). As a result, community usage of the sea ice, and ice-filled waters, may not be considered when developing shipping routes. For example, the use of an ice-breaker and resulting ship traffic could substantially destabilize the sea ice platform used by Inuit for travel and hunting, or could displace moving ice in areas where community members may use boats. This would enhance the risks involved with local sea ice or boat travel, and has the potential to directly threaten Inuit safety and knowledge of current conditions (by changing the expected ice dynamics). Therefore, implementing aspects of arctic marine-related Agreements and Acts other than the NLCA, without acknowledging Inuit use of the arctic environment,

seems to indicate little concern for the impacts of shipping on northern communities (both negative and positive) (see Table 4-2). As such, the main policy emphasis of the examined Acts and Agreements is on ice as a barrier/hazard to shipping in arctic marine waters, and thus further analysis into shipping policies, community perspectives on shipping, and implications for sea ice, is warranted.

5.2.2 Arctic shipping

Marine transit through the world's oceans is an international activity. While in transit, ships can travel through different states' jurisdictions as well as the High Seas, which are subject to international laws. Specifically in the Arctic Ocean, shipping is becoming an important topic for governments and arctic communities because the presence of sea ice presents a unique challenge to ships. Current sea ice conditions in the Arctic allow for a shipping season of approximately four months, from July until October (Alasuaq, 2008; Anonymous, 2008a; Anonymous, 2008c; Elee, 2008; Etidlouie, 2008; Ezekiel, 2008; Manumee, 2008; Mikigak, 2008; Oshutsiaq, 2008a; Oshutsiaq, 2008b; Pharand, 2007; Pootoogook, 2008; Ragee, 2008a; Ragee, 2008b; Saila, 2008; Takiasuk, 2008; Tukiki, 2008). Nevertheless, there are substantial differences with respect to perspectives on shipping between government policy and Inuit community contexts. For governments, ships represent a mode of transportation to access remote areas (i.e. arctic communities or resources), with potential to facilitate economic development (i.e. transport goods, equipment, or raw materials long distances) (Anonymous, 2008a). Ships can also potentially aid in the assertion of sovereignty over marine areas (i.e. Canadian Coast Guard ship presence in the arctic region), or present a threat to state sovereignty

(i.e. foreign ships traveling through arctic marine areas close to, or within, Canadian waters) (Huebert, 2001) (see Section 5.4). In contrast, for Inuit community members, ships have historically represented unsettling colonial encounters. For example, ships visiting the communities in the 1950s and 1960s were sent with good intentions, to deal with Inuit health concerns by transporting tuberculosis patients to southern hospitals where they could receive the necessary medical attention. However, for most Inuit, these ships incited feelings of fear and uncertainty, due to the lack of communication or information regarding where people were being taken, for what purpose, and for how long, if even to return (Elee, 2008; Etungat, 2008; Manumee, 2008; Oshutsiaq, 2008b; Ragee, 2008a). For northern communities today, ships represent annual resupply and potential financial benefits from tourism, alongside concerns over environmental (ice, water, and wildlife) implications (see Table 4-2) (Alasuaq, 2008; Anonymous, 2008c; Elee, 2008; Etidlouie, 2008; Mikigak, 2008; Oshutsiaq, 2008a; Oshutsiaq, 2008b; Pootoogook, 2008; Ragee, 2008b; Takiasuk, 2008; Tukiki, 2008).

5.2.3 Impacts of shipping

There are a number of potential impacts of shipping in arctic regions as highlighted through policy analysis and community perspectives. Those that will be discussed more specifically, include: environmental impacts, visiting communities, tourism, and community resupply.

5.2.3.1 Environmental impacts

The Acts and Agreements examined were designed to ensure safety in the marine environment, and to minimize any potential negative environmental impacts (i.e. oil

spills, dumping, noise etc.) (see Table 4-1). For example, the standards within the Canadian Arctic Waters Pollution Prevention Act (AWPPA) (1985) can require: i) ships to have their hull and fuel tank strengthened; ii) a certain number of crew navigating the ship; iii) limits to the amount of cargo being carried; iv) ships to be aided by a pilot or an ice navigator (ice-breaker) where necessary; and, v) restrictions on the period of time ships can enter certain waters. Within Canadian national boundaries, the Canadian Coast Guard (CG) "helps maritime traffic move safely and quickly through, or around, ice-covered Canadian waters" (DFO, 2008c: 1), and has established the Icebreaking Program in the Canadian Arctic. If an incident were to occur in the region the CG, along with its icebreakers, is responsible for ensuring the protection of the environment and safety of the crew. At present, from June to early November each year, six Canadian CG icebreakers are stationed across the Canadian arctic marine region (DFO, 2008c), but icebreakers are reaching the end of their operational life and will need to be replaced in the near future (at a great cost to the Canadian government) (Huebert, 2001). Based on Huebert (2001), it appears as though the current age of the fleet would make it more difficult for the CG to do its current job, especially with the changing environment and increased traffic, because their technology is out of date and their age increases the likelihood for malfunctions. In addition, given the vast area of the Arctic Ocean surrounding Canada's Arctic Archipelago, there is a need to increase the number of ice breakers and the duration of their operations (i.e. there are no ice breakers available for assistance from December to May).

Even with a number of the precautionary measures outlined in various policies (Section 4.3.1.3 and 4.3.1.4) - including the establishment of officers/inspectors and mandatory insurance coverage - shipping in the Arctic has the potential to cause harm to the arctic environment, wildlife, and people. Sea ice, whether as a solid sheet of ice, broken up and free-floating, or the presence of icebergs, poses significant threats to vessels (ACIA, 2004; Pharand, 2007). In relation to shipping accidents or negligence, the primary concern is the release of pollutants/contaminants into arctic waters (see Section 2.3.1) (Arctic Council, 2009). The federal government, being responsible for the Canadian arctic marine waters, is concerned with any pollution (AWPPA, 1985). Similarly, the primary concern over arctic shipping for researchers, and Cape Dorset community members, is the potential for oil spills or the dumping of sewage and other waste into arctic waters (see Table 4-2, and Section 4.3.3.3) (ACIA, 2004; Alasuaq, A., 2008; Anonymous, 2008b; Anonymous, 2008c; Bilder, 1970; Charron, 2005; Elee, 2008; Etidlouie, 2008; Oshutsiaq, 2008a; Oshutsiaq, 2008b; Pharand, 2007; Pootoogook, 2008; Saila, 2008; Takiasuk, 2008; Tukiki, 2008). This concern arises from peoples' understandings of potential damage related to spills, as well as hearing of the consequences of spills that have previously occurred (see Section 2.3.1 and 4.3.3.3). Enhanced concern for accidents in the arctic region results from the combination of global (atmospheric/oceanic) circulation patterns, extreme cold temperatures, seasonal ice cover and permanently frozen ground, which means that disturbances are long lasting (see Section 2.3.1) (ACIA, 2004; Bilder, 1970; VanderKlippe, 2006).

Canadian policies, including the AWPPA (1985), hold ships traveling through Canadian waters accountable for the cost and expenses of an incident, and any loss or damages incurred by others. This is done through the requirement of vessels to obtain insurance prior to transit. Securing insurance for ships carrying tones of cargo, and traveling through ice-filled waters in the Arctic, is quite costly. As a result, this is an acting as an effective way to limit the number of ships approved to transit the Arctic. Furthermore, it places a high level of responsibility on ship's crew to demonstrate the necessary standards and training to maintain and run their ships. For those companies who can afford the insurance, and are thus able to travel in the Arctic Ocean along Canadian shores, they are also responsible for covering the associated costs if their ship becomes in danger, pollutes, or becomes damaged "on a case-by-case basis... up to a certain amount" based on conventions and standards (i.e. oil tankers standards are set out in the 1992 Civil Liability Convention, 1992 Fund Convention and the 2003 Supplementary Fund Protocol) (Arctic Council, 2009: 65). Nevertheless, if actual damages to the environment result from an accident during a voyage, it would be difficult to fully evaluate the costs associated with the resulting pollution, in order to incorporate the extent of environmental damage beyond purely economic damage. Requiring ships to carry insurance in order to transit Canada's arctic waters is helpful in that it limits the number of ships traveling through these waters, and encourages responsible maintenance and navigation; however, it cannot eliminate the possibility of accidents or spills. However, there is a need for monitoring and enforcement to support this initiative and ensure save travel in the arctic region.

5.2.3.2 Visiting communities

There is local interest in having ships visit northern communities, in this case Cape Dorset, when a ship is traveling nearby (see Section 4.3.3.3) (Anonymous, 2008c; Etidlouie, 2008; Shaa, 2008). However, the current Acts and Agreements that regulate shipping in the Arctic provide no opportunity for the Canadian government to regulate, or encourage, international ships' visits to communities - regardless of whether the waters are deemed internal or international. The United Nations Convention on the Law of the Sea (UNCLOS) (1982) states that ships have the right to innocent passage through other state-regulated internal waters (i.e. the waters surrounding the communities of Nunavut). This requires all ships to travel directly through Canadian internal waters, without visiting the mainland, meaning there are little to no benefits to nearby communities. Similarly, where waters are deemed to be part of an international waterway, the UNCLOS (1982) allows ships to travel through for their own purposes without visiting the mainland or nearby countries. Although these are two separate provisions, the outcome is the same for the community: the current Acts and Agreements do not provide governing bodies the power to insist on ships in the area visiting the communities to enhance local benefit of their transits.

5.2.3.3 *Tourism*

Numerous cruise ships visit select communities throughout the Arctic each shipping season. Each cruise ship that visits a community has the opportunity to hire community members as guides, and for other local assistance, as well as to spend time and money in the community (e.g. local tours, meals, arts and crafts purchases, etc.) if

they so choose (see Section 4.3.3.3). This has great potential for local financial benefits, as well as valuable knowledge and cultural exchanges (Byers and Lalonde, 2005), and is strongly encouraged as a positive impact in Cape Dorset (Anonymous, 2008c; Elee, 2008; Mikigak, 2008; Pootoogook, 2008). Cape Dorset, in particular, is a popular destination for cruise ships because of its world-renowned artistry (print-making and soap stone carving) (Anonymous, 2008c; Elee, 2008; Mikigak, 2008; Pootoogook, 2008). There are, within Canadian or Nunavut operations, policies, and regulations relating to shipping, no mandates that require cruise ship companies to hire community members, or spend time and money in the community. A number of individuals interviewed have, at some time, worked directly with cruise ship companies to provide a number of different services during their stop-overs (Anonymous, 2008c; Elee, 2008; Pootoogook, 2008). In recent years a trend seems to be emerging where cruise ship companies, for whatever reasons, have decided not to hire local guides. Within Cape Dorset, there is the strong belief that there needs to be a direct benefit to the community from cruise ships, not necessarily monetary, but some sort of 'positive exchange for developing community capacity and people having goods exchanged with other people… sharing of information, sharing of knowledge' (Anonymous, 2008c).

5.2.3.4 Community resupply

Ships are an important mode of transport for goods in the Arctic (Arctic Council, 2009), as they are capable of transporting necessary supplies to remote communities that would otherwise be difficult to obtain (Alasuaq, 2008; Anonymous, 2008a; Anonymous, 2008b; Arctic Council, 2009; Etungat, 2008; Ezekiel, 2008; Ragee, 2008a; Manumee,

2008; Oshutsiaq, 2008a; Oshutsiaq, 2008b; Pootoogook, 2008; Saila, 2008; Shaa, 2008; Takiasuk, 2008; Tukiki, 2008). Therefore, community resupply is another way in which arctic shipping benefits northern communities (see Table 4-2 and Section 4.3.3.3). With the creation of the Government of Nunavut (GN), the responsibility of northern community resupply (i.e. issuing appropriate contracts) was passed on from the Canadian Government to the GN. Community resupply in most Nunavut communities comes in the form of the annual sealift, which is considered "the most economical way to transport bulk goods to the arctic" (GN, 2005: 1). The number of sealift ships visiting the communities of Nunavut during the shipping season depends on individual orders, and community location in relation to ice conditions (e.g. communities further south with less ice could have more visits than high arctic communities with a shorter open water season). Orders range "from construction materials, [to] vehicles, [to] heavy equipment, [to] house wares and [to] non-perishable items" (GN, 2005: 1). The GN itself is a primary user of the sealift, which generally enables the more cost-effective supply of goods from southern Canada in comparison to air freight (as there are no connecting road or rail lines to Nunavut).

The current challenge for the Canadian government and its operations is to find balance between the benefits and concerns related to the impacts of shipping in arctic waters. Ships that visit the communities and provide some sort of support or service are beneficial and desired by community members (Alasuaq, 2008; Etidlouie, 2008; Shaa, 2008). Benefits to the communities from ships do not necessarily have to be monetary (Anonymous, 2008c). Visiting the communities could thus be a valuable way for the

crews of vessels, foreign shipping companies, and other nations to show respect for the Inuit who live in the arctic region, as well as the environment they are traveling through. However, there are also potential downsides of increased community visits such as increased noise and environmental pollution of waters and animals. In addition, within the communities there is a lack of infrastructure and capacity to handle large numbers of visitors, which could mean that enhanced exchanges are not always positive. Any disturbance or accident in the arctic marine environment would be felt strongest by northern communities; therefore, additional consideration by the Canadian Government needs to be given to the costs and benefits of ships traveling through the arctic region - and how transits can best support social and economic prosperity in these remote communities.

5.2.4 Monitoring shipping

The monitoring of shipping in the arctic region is limited. The Arctic Council (2009: 5) identifies that there are "serious limitations to radio and satellite communications and few systems to monitor and control the movement of ships in ice-covered waters." This is a result of limited marine infrastructure, and the vastness of the arctic environment (Arctic Council, 2009). Within Canada, the operations of the CG "has the greatest responsibility for monitoring the Arctic region" (Huebert, 2001: 92); however, it does not require ships to report their entrance into arctic waters, such reporting remains voluntary (see Section 2.4.3.1 and 4.2.1.2). The examined Acts and Agreements do not explicitly identify how monitoring of ships is dealt with other than the AWPPA (1985), Oceans Act (1996), and the Canadian Shipping Act (CSA) (2001), which

establish officers/inspectors to enforce regulations and carry out inspections (see Section 4.3.1.4). Inuit from Cape Dorset are not aware of any formal government monitoring of ships currently taking place in the region (Alasuaq, 2008; Anonymous, 2008a; Manumee, 2008; Ragee, 2008a; Ragee, 2008b; Saila, 2008; Shaa, 2008; Tukiki, 2008). However, community members themselves are undertaking a form of monitoring based on their own observations. In the community it is recognized that extensive monitoring and tracking of ships is critical to ensuring that there are minimal to no detrimental impacts to the environment (land, water, animals) or people in the area. The Canadian Government, led by the Department of National Defense, is currently investigating the potential use of surveillance in the Arctic to monitor ships entering its waters (CanWest, 2007). The types of surveillance currently being tested include: underwater microphones, ground-based sensors (cameras), and space-based sensors (satellites) (CBC News, 2008a). Overall, it is suggested by the Arctic Council (2009: 7) that "a comprehensive Arctic marine traffic awareness system to improve monitoring and tracking of marine activity" should be developed and shared.

More extensive, systematic monitoring of Canada's arctic region (i.e. weather, sea ice, ocean currents, etc.), shipping, and consideration of the impacts of shipping is needed. This is especially highlighted by governments and communities in the context of diminishing ice extent and variable ice distribution, and the related implications for access to arctic waters. More ship traffic leads to a higher potential for accidents, increased interest in economic development, community interest in - and concern for - increased ship travel, etc. It would be valuable for research and government scientists,

and Inuit experts, to work more closely together, whereby community members suggest that scientists need to experience ice conditions more frequently themselves in order to better understand the changes that are taking place (Anonymous, 2008c; Manumee, 2008). This improved first-hand awareness that scientists could gain about ice conditions they study, might facilitate the development of more comprehensive, extensive, long-term community-based monitoring programs. Accordingly, enhanced establishment of partnerships between government operations (e.g. CIS, CG) and community needs could improve monitoring practices, and resulting products, thus becoming mutually beneficial. As a result, it is important to consider sea ice, and related travel and uses (including in ice-filled waters) in the context of changing climatic conditions.

5.3 Implications of sea ice change

Changing sea ice conditions have differing implications for Inuit and governments. For Inuit, reductions and changes to sea ice limit peoples' ability to travel on the sea ice, and to access hunting/harvesting grounds. These changes are posing significant challenges with regards to Inuit way of life and environmental knowledge (Gearheard *et al*., 2006; Ragee, 2008b; Takiasuk, 2008). "Across much of the Arctic, sea ice is receding, thinning, or both. This reduction poses a significant challenge for indigenous peoples who use sea ice for hunting and traveling or for communities whose sea ice acts as a barrier against wave driven erosion" (Gearheard *et al*., 2006: 203; also see Aporta, 2002; Barber *et al*., 2008; Berkes *et al*., 2001; Elee, 2008; Etungat, 2008; Ezekiel, 2008; Ford *et al*., 2006a; Ford *et al*., 2006b; Henderson, 2007; Laidler *et al*., 2009; Laidler and Elee, 2006; Manumee, 2008; Oshutsiaq, 2008a; Saila, 2008; Takiasuk,

2008). In Cape Dorset, for example, with reductions in sea ice extent and increased open water season, boat use has increased as the most efficient way to travel and hunt (Ashoona, 2008). Coincident with these changes, there have been more accidents in recent years because people do not understand (or cannot apply) traditional safety indicators, or they are not prepared for unpredictable changes in conditions (Shaa, 2008). For example, in Cape Dorset, as a result of these changes to sea ice, there have been numerous accidents with snowmobiles falling through the ice (Oshutsiaq, 2008b; Takiasuk, 2008).

While opportunities to use the sea ice as a travel platform have decreased, reductions in ice extent and stability have increased the potential for ships to transit arctic waters (see Section 2.3.1), and sparked renewed interest in arctic oil and gas and other non-renewable resource development (see Section 2.3.1) (ACIA, 2004; Alasuaq, 2008; Birchall, 2006; Charron, 2005; Ezekiel, 2008; Huebert, 2003; Mikigak, 2008; Pharand, 2007). This trend has already been observed (although not necessarily solely related to reduced ice extent), over the lifetime of many of Cape Dorset's current residents, as an increased number of ships have been visiting the community (Anonymous, 2008c; Manumee, 2008; Takiasuk, 2008; Tukiki, 2008). Statistics from across the Canadian Arctic support this observation using, for example, the number of recorded transits through the Northwest Passage (see Figure 2-2) as an indicator. Until the 2004/2005 shipping season there were a total of 99 transits of the Northwest Passage (using any of the seven possible routes through the Passage) (Brigham and Ellis, 2004). Of these 99 Northwest Passage transits, beginning with the *Gjøa* out of Norway in 1903, 67 different

vessels from 17 countries have been involved in travel through Canadian arctic waters (Brigham and Ellis, 2004). The countries of origin for those ships that have traveled through the Northwest Passage between 1903 and 2004 include (in alphabetical order): Bahamas; Barbados; Britain; Canada; Cayman Islands; Croatia; France; Germany; Ireland; Japan; Netherlands; New Zealand; Norway; Russia; Singapore; Sweden; United States (for a detailed study of the ships see Brigham and Ellis, 2004).

In the decades between 1903 and 2004, there is a clear increase in ship travel through the arctic region, specifically the Northwest Passage, with the most dramatic increases in the last 30 years (i.e. number in last decade, vs. two previous decades, vs. all previous decades) (Figure 5-1). Regarding cruise ships in particular, there were eight cruise ships in the Canadian Arctic (Figure 5-2), and 50 cruise ships arctic-wide (Brigham and Elis, 2004; Hansen, 2008) in 2004, but these totals escalated within the arctic region "from 50 ships in 2004 to 250 ships in 2007, with the most increases seen in Nunavut and Greenland" (Hansen, 2008: 1). Therefore, vessel transit in total in the Arctic rose by 25% from 2007-2008 (CBC News, 2009). These trends show a clear relationship between decreased sea ice extent and increased ship travel in the Arctic.

Given the recent changes in the arctic marine environment, there is a need for policies to be reviewed and updated to reflect the current context. Sea ice was originally given little consideration in policies directed at marine shipping because it was regarded as a barrier to navigation, and an aspect that did not directly affect shipping for most of the year (since ship captains would rarely attempt navigating through ice-filled waters). For example, the UNCLOS (1982) has only a small section (234) on ice-covered areas

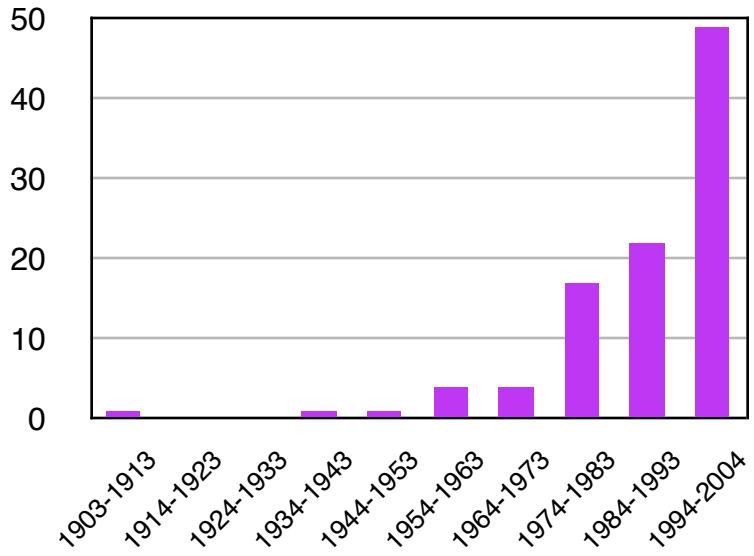
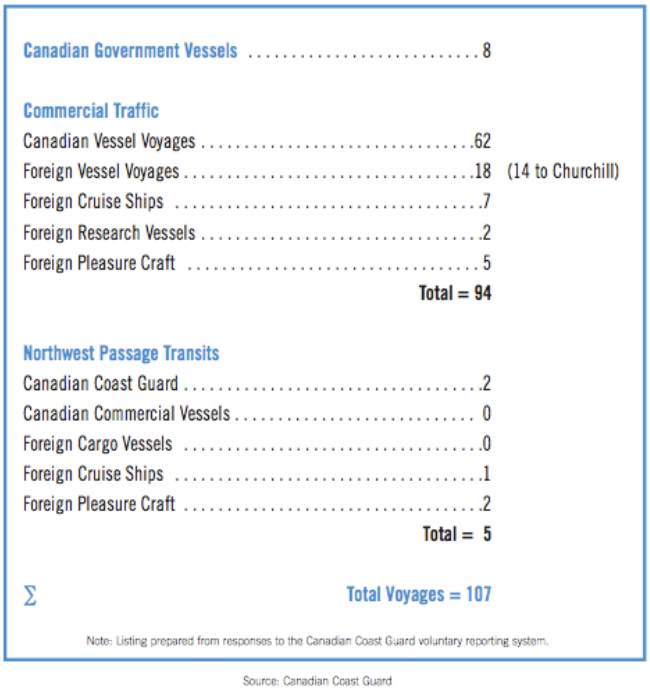


Figure 5-1: Transits of the Northwest Passage (1903-2004) (based on Brigham and Ellis, 2004: A-21 - A-25)



Canadian Government Vessels	8	
Commercial Traffic		
Canadian Vessel Voyages	62	
Foreign Vessel Voyages	18	(14 to Churchill)
Foreign Cruise Ships	7	
Foreign Research Vessels	2	
Foreign Pleasure Craft	5	
	Total = 94	
Northwest Passage Transits		
Canadian Coast Guard	2	
Canadian Commercial Vessels	0	
Foreign Cargo Vessels	0	
Foreign Cruise Ships	1	
Foreign Pleasure Craft	2	
	Total = 5	
Σ	**Total Voyages = 107**	

Note: Listing prepared from responses to the Canadian Coast Guard voluntary reporting system.

Source: Canadian Coast Guard

Figure 5-2: Marine Traffic in the Canadian Arctic of ships that voluntarily reported their presence (June - November 2004) (Brigham and Ellis, 2004: A-19)

(see Table 4-1). This small section is likely due to the fact that when creating the Agreement, people envisioned few ships traveling in ice-covered areas because of the

associated difficulties and risks, and thus relatively little concern was given to the issue. However, given current trends, policies will likely need to be adjusted to ensure that: i) they account for the increased possibility of ships traveling through ice-filled waters; ii) precautionary measures and emergency responses are in place for potential accidents in such areas; and, iii) changing and unpredictable sea ice conditions are effectively acknowledged in regards to their potential influence on how and when ships travel through the Arctic. Policies directed at the marine environment and shipping must thus account for a number of scenarios in the arctic region.

5.4 Sovereignty

With the combination of declining sea ice extent due to climate change, and increasing interest in use of the Northwest Passage as an international strait (tied to resource development interests), there has been a strong reemergence of sovereignty debates and concerns over Canadian arctic waters in recent years. It is difficult at times to read a newspaper, listen to the radio, or watch the news without being informed about some aspect of arctic sovereignty, including northern news reports. For example, the Canadian Broadcasting Corporation (CBC) and Nunatsiaq News broadcast and published a number of stories pertaining to increased access to arctic regions, which have recently included key topics such as: sovereignty, climate change and shipping. Meanwhile, newspapers across Canada have also been flooded with discussions of various related topics, with dramatic titles such as:

- *Friends in the north become foes on front line of a new Cold War* (Mortished, 2007);
- *The new cold war* (Struzik, 2007);

- *Cold rush for Arctic's energy riches: Global warming is melting the ice sheets of the Arctic- and nations are poised to exploit the hidden wealth* (Wilkenson, 2008);
- *Political crisis looms in Arctic, report says* (Boswell, 2008a);
- *The Arctic resource rush is on* (Struzik, 2008);
- *Canada ready to protect Arctic claim* (Boswell, 2009a);
- *Canada ready to defend Arctic sovereignty* (Boswell, 2009b);
- *Realizing our Arctic sovereignty* (Coates *et al*., 2008);
- *The true north strong and ours* (Editorial, 2008);
- *Canada flexes Arctic sovereignty muscle: The ice may not be the only enemy* (Mayeda, 2008a); and
- *As the ice melts, control ebbs in the Arctic: Canada is ill prepared for foreign ships that will challenge our sovereignty in an ice-free Northwest Passage* (Huebert, 2008);

This selection of titles emphasizes the rhetoric being used by the media when discussing topics related to Arctic sovereignty. The media has been sensationalizing the Arctic as a Canadian possession, with other countries posing threats to Canadian sovereignty, national identity, and citizens. It is hard to evaluate the broad public impact of such portrayals, but in Cape Dorset this sensational media coverage has raised concerns among community members regarding potential conflict over the Northwest Passage and arctic waters (Alasuaq, 2008; Oshutsiaq, 2008a; Ragee, 2008b; Shaa, 2008). The references to the 'Cold War' in the media have been taken literally by individuals in the community, raising past memories of the Cold War militarization of the Arctic (e.g. DEW line construction) (Lackenbauer and Farish, 2007), and future concern that a war may in fact break out over control of arctic resources and ownership (Alasuaq, 2008; Shaa, 2008). Fighting over Inuit homeland (including land, water and ice) is not acceptable to community members (Oshutsiaq, 2008a; Ragee, 2008b; Shaa, 2008), and they expressed having a hard time understanding why other countries, such as Russia and the United states, would fight over the land and waters Inuit have been using long before those states

were established. While the media is paying attention to Canada's arctic region through their frequent publicity of related developments, it is important to provide additional background on the current sovereignty debate prior to analyzing these issues in relation to policy and Inuit community perspectives.

5.4.1 Current sovereignty debate

Arctic sovereignty has attracted a great deal of interest over the last few years based on changes to the climate and sea ice extent in the Arctic, and the resulting potential for shipping and development access (Barber *et al*., 2008; Ford and Smit, 2004; Government of Yukon *et al*., 2005; Grumet *et al*., 2001; Michel *et al*., 2006; Pharand, 2007). Changes to the arctic environment have garnered increased interest by those who wish to use the Northwest Passage as a route connecting the Atlantic and the Pacific Oceans, placing Canada at the centre of this debate (see Section 2.3.1) (Birchall, 2006; Charron, 2005; Huebert, 2003; Pharand, 2007). Specifically with regards to the Canadian Arctic, Canada's sovereignty claims are being questioned by other states (Beauchamps *et al*., 2008; Bilder, 1970; Johnston, 2002; Pharand, 2007). In an effort to protect, and maintain control over, parts of the Arctic Ocean (including the Northwest Passage), the Canadian government is determined to have the waters deemed internal and thus subject to Canadian regulations (Beauchamps *et al*., 2008; Fenge, 2007/08; Pharand, 2007). Other countries, such as the United States, Denmark, Norway and Japan are disregarding Canada's claims and consider the waters, and specifically the Northwest Passage, to be an international strait - and thus subject to international laws (see Section 2.4.3.1)

(Beauchamps *et al*., 2008; Bilder, 1970; Carnaghan and Goody, 2006; Huebert, 2001; Johnston, 2002; Pharand, 2007; Westermeyer and Goyal, 1986).

There are a number of key stakeholders involved in these sovereignty discussions and debates. The international connections in these discussions have generated attention from such bodies as the United Nations, and the Inuit Circumpolar Council (Bankes, 1987; ICC, 2009). Arctic nations including the United States, Russia, Denmark, Norway, and Canada are all interested in the potential benefits that may result from the opening of the arctic region (Beauchamps *et al*., 2008; Bilder, 1970; Carnaghan and Goody, 2006; Johnston, 2002; Pharand, 2007). Within Canada, the GN, Canadian Inuit organizations (ie. Inuit Tapiriit Kanatami), and Canadian citizens of the north (primarily Inuit), are all directly affected by these debates and any resulting decisions. Therefore, all of these groups (and to some degree individuals) have found themselves involved in discussions and debates over sovereignty in the Canadian Arctic, in various combinations at different points in time.

5.4.2 History of the current sovereignty debate

5.4.2.1 Concepts of sovereignty

Underlying the current sovereignty debate, are distinct perspectives on notions of territory, ownership, and boundaries, that all influence how a nation - or a people - claim sovereignty over lands and waters. From a government perspective, both at national and international levels, the Arctic and its waters are regarded as a possession, a territory that can be controlled, regulated and developed. Sovereignty over portions of the arctic region is something states seek to obtain, and be recognized and respected for maintaining.

Specifically in Canada, sovereignty is a concept understood to represent the views of the Canadian federal government as seen through its actions and operations. Nevertheless, it is not explicitly dealt with or defined in the eight (8) policies relating to arctic or marine waters selected for this project. In contrast, the Arctic is a homeland to the Inuit where they consider themselves the 'keepers' (Simon, 2008: 68; also see Griffiths, 2009) and protectors of its intrinsic value (Anonymous, 2008c; Pootoogook, 2008). Inuit regard the arctic region as home, it is where they and their ancestors have lived and thrived for generations. The region is thus not viewed as a possession or something to be owned, but rather as something that exists to be shared, used and protected (Henderson, 2007; Nadasdy, 2002). For the Inuit, the land, waters and ice of the Arctic are not simply possessions to be controlled, they are connected to human (and animal) experiences and need to be protected. However, more recently, and in the context of land claims negotiations, Inuit have begun to recognize a need to view land and regions in similar ways to the government in order to protect their lands, waters, and way of life. Living in a state-run world has required Inuit to conform to such proprietary views of land and water, in order to continue to prosper and have a say in the way their homeland is used.

Control and ownership are relatively new concepts for Inuit. Since contact with Europeans Inuit have been forced to translate their beliefs and understandings into familiar western concepts such as "territory", "land" and "possession" (Nadasdy, 2002; Cassidy, 1990; Henderson, 2007). "Inuit never thought about ownership until they came into conflict with other people [only] then [did they have to] start to define [their] space" (Anonymous, 2008c). Even today, some Inuit do not automatically link the topic

of controlling waters to territory and access. For example, Cape Dorset community members cannot understand why any country would want to, or be able to, control the physical waters that are continually moving and circulating all over the world (Pootoogook, 2008). This overarching idea is related to the current Inuit translation of the word sovereignty. At present, the Inuit understanding of the word sovereignty remains in line with their traditional world-views, whereby sovereignty is translated in *Inuktitut* as *aulatsigunnarniq* which means, "to run things" and "being able to" (Griffiths, 2009: 25). For Inuit, the notion of sovereignty is "doubly embedded, in community and in nature" (Griffiths, 2009: 25). Therefore, this translation of sovereignty is more closely associated to the English concept of "steward" (see Section 2.4.2.1). Inuit regard leaders as individuals who are stewards of the environment, meaning that they take care of the land, waters, people, and animals who live within an ecosystem.

Related to long-term use and occupancy of lands (and water), the concept of natural law suggests that "title and sovereignty can arise from continuous use and possession of land 'from time immemorial"' (Mauro *et al*., 2000: 1264). This would lead one to believe that aboriginal groups, such as the Inuit, possess inherent sovereignty over their homeland. However, under international conventions (and specifically in Canada) natural law is not upheld for aboriginal groups to exercise their sovereignty if such actions are seen to interfere with state sovereignty (Mauro *et al*., 2000). State sovereignty, as dictated by the international community, holds supremacy over aboriginal sovereignty. However, within Canada there has been a move towards recognizing and incorporating Aboriginal claims over land and territory into the current governing regime. For example,

there are laws supporting aboriginal title and rights, as well as land claims agreements, which relate to traditional lands used for hunting and trapping that were never ceded or surrendered to the government (Blackburn, 2007; Bone, 2003; Swiderski, 1992). A key example of Inuit obtaining recognition from the Canadian federal government over their rights and claims to traditional lands is the Nunavut Land Claims Agreement (1993) and its associated establishment of the GN (see Section 2.4.2.7) (Marecic, 1999/2000: 282; also see Kaludjak, 2006; Nadasdy, 2002; Sparke, 2005).

5.4.2.2 Territorial definitions and boundaries

Canada's Inuit perception of territory is culturally unique and different from the Canadian Governments' legal definition. Nonetheless, within Canada, the concept of territory, as defined by the government is privileged. The federal government could benefit from examining the concepts of sovereignty and ownership in a similar way to the Inuit (Griffiths, 2009). Use of Inuit concepts and understandings would enable the government to take on the role of steward of the region, to more effectively protect (and use) the arctic environment (see Section 2.4.2.3). This in turn would provide the Canadian government with a unique perspective of the land, water and ice under its jurisdiction.

Ownership and sovereignty over marine areas is a difficult concept to address due to the challenges with fixing territorial boundaries over moving and dynamic waters. Therefore, ownership over lands and waters, as it relates to marine boundaries, generally refer to the subsurface (i.e. areas where mineral extraction can occur), or in relation to a country's coastline. Coastal states wish to protect and regulate the waters closest to their

lands, while shippers wish to be able to utilize the oceans, each for their own purposes. Currently, the UNCLOS (1982) designates the responsibilities of all party nations to protect ocean waters while utilizing resources. The Convention is said to be "an unprecedented attempt by the international community to regulate all aspects of the resources of the sea and uses of the ocean" (United Nations, 1998: 1). There are, however, skeptics of the Convention who claim that international laws of the sea most often favor "the shippers of the world" while neglecting states and coastal communities (Henkin, 1971: 132). International Agreements have in the past been viewed as leaning towards *laissez-faire* laws, requiring members to vote to pass regulations, diverting away from comprehensive regulations (Henkin, 1971). UNCLOS limits state's ability to protect their own coastlines, and coastal communities, by setting provisions that provide any ship with the rights of innocent passage. This provision seems to undermine the purpose of UNCLOS, as it leads to potentially significant threats to the protection of the marine environment as a consequence of arctic shipping.

From the community perspective, in Cape Dorset there is a divide among who is believed to own the arctic waters, including: i) no one, it is free for everyone to use, ii) Canada, and iii) the Inuit (see Section 4.5.2.1) (Anonymous, 2008c; Ashoona, 2008; Elee, 2008; Etidlouie, 2008; Etungat, 2008; Ezekiel, 2008; Manumee, 2008; Mikigak, 2008; Oshutsiaq, 2008a; Oshutsiaq, 2008b; Pootoogook, 2008; Ragee, 2008b; Ragee, 2008a; Saila, 2008; Shaa, 2008; Takiasuk, 2008). Such responses also reflect a range of policies developed over time to regulate ocean use. The first is similar to the historic way of looking at shipping and ocean use, referred to as the freedom of the seas doctrine.

Beginning in the seventeenth century, the freedom of the seas doctrine prevailed (United Nations, 1998). This "principle… essentially limit[ed] national rights and jurisdiction over the seas to a narrow belt of sea surrounding a nation's coastline. The remainder of the seas was proclaimed to be free to all and belonging to none" (United Nations, 1998: 1). This doctrine was "devised and developed at a particular period of history to serve the needs and interests of the rich and powerful industrial states" (Anand, 1973: 417). As a result, the mid twentieth century was plagued with conflict over the seas, and nations began to claim offshore rights to resources such as oil and fish. In order to relieve this conflict and protect various countries' interests, the UNCLOS (1982) was established. The convention outlines the responsibilities and limits of each state that is a party to it, essentially delegating ownership and control. This leads into the second response from the community, identifying Canada as owning the waters. This response replicates the current legal designation of the arctic waters, and the intended outcome of current efforts by the Canadian government to assert national sovereignty. Simply put, the Canadian government, as outlined in the UNCLOS (1982), controls the waters and owns anything below the surface for 200 nautical miles from the Canadian baseline (see Section 4.5.1.1) (Oceans Act, 1996; UNCLOS, 1982). With international pressures it is currently the Canadian government that is speaking (at international arenas) for the region in question and looking out for the best interest of Canada, its people (Inuit and non-Inuit), and the environment. The third and final response appears to be what is missing from the current regulations: Inuit participation and ownership. Community members of Cape Dorset feel as though they should be the ones who are in control of the arctic waters and how they

are used. They are the most closely connected with the waters and anything that takes place in them; however, this is not acknowledged in the Acts and Agreements.

Another key aspect of establishing control over territory, is the issue of defining boundaries (see Section 2.4.2.5). Boundaries are established limits (measured distances) that divide geographic areas for different purposes (i.e use, access, travel, living), based on agreed international (between states) and/or federal (i.e. within Canada) limits. A common theme that emerged from interviews in Cape Dorset was the effect changing sea ice conditions have on boundaries. “Inuit do not distinguish the water [or ice] from the land in terms of their hunting and culture” (Arctic Council, 2009: 113), and thus sea ice is commonly regarded as an extension of the land. Inuit use all aspects of the sea ice in the Canadian arctic region when it is present (Aporta, 2002; Riewe, 1991), and as such there is an associated belief that changes to sea ice extent would expand or retract arctic boundaries alongside sea ice variations (Etidlouie, 2008; Shaa, 2008). This is significantly different from the way governments define boundaries. Internationally, and within Canada, marine boundaries are established and fixed in absolute terms (see Figure 4-11), as changing boundaries could have significant implications. Flexible boundaries have the potential to lead to confusion and conflict as groups attempt to use the same area. Groups would be unsure of specific designations and may attempt to utilize the same area as another group. Whereas fixed boundaries ensure that people are aware of the rules and regulations that guide the use of particular geographic areas. Nevertheless, fixed boundaries are difficult to define and enforce in a sea ice and marine waters context, as these may not be obvious to - or respected by - the users of those environments.

However, through discussions in Cape Dorset, it was uncovered that in the context of search and rescue operations, there may be some element of flexibility in boundaries and jurisdiction relating to sea ice.

A local search and rescue volunteer explained that sea ice, when present, is treated as land and therefore falls under Nunavut jurisdiction, whereas open water is under federal jurisdiction in terms of mobilizing emergency response (Anonymous, 2008a). As described by the volunteer, if an individual goes missing or finds them self in danger while traveling on land-fast ice, it would be the Nunavut Emergency Service's responsibility to provide search and rescue support services for that individual. If that same individual were to go missing or get into danger in the same location, but on open water, it then would be the Canadian CG's responsibility to provide search and rescue support services. I was unable to confirm this within legislation or operational mandates; however, this description provides some recognition by both territorial and federal jurisdictions of sea ice being an extension of land (i.e. in accordance with Inuit perspectives). In this situation, the Nunavut Emergency Services has the ability to work closely with the local search and rescue based out of the communities, enabling them to provide fast responses on the land-fast ice (similar to operations on the land). For marine rescues, the CG fleet maintains advanced logistical and transportation capabilities such as aircrafts, ships and trained personnel; however, they are mostly based out of southern cities such as: Trenton, Ontario; Halifax, Nova Scotia; and Quebec City, Quebec (Transport Canada, 2009). Arguably, Nunavut Emergency Services would also be better equipped to deal with local marine mishaps (i.e. related to community boating, but not in

the case of commercial or military ships), as the distance of the CG fleet may have detrimental impacts on individuals in need of rescue in the arctic region. Specifically relating to search and rescue, the melting sea ice appears to decrease the GN's territorial control and area of responsibility. The specifics of arctic search and rescue are outside of the scope of this research, however this distinction was of note and would suggest that further investigation into the jurisdictional differences relating to marine search and rescue is warranted.

Ownership and boundaries are important concepts when discussing and debating sovereignty. Within the Canadian Arctic there are two distinct perceptions of territory and boundaries, the one belonging to the Inuit based on traditional life in the arctic region, and the Canadian government definition based on established and agreed upon international standards. Boundaries, and associated ownership conceptions, are important as they make up the foundation for better understanding Canada's claims in the arctic region.

5.4.2.3 Canada's claims in the Arctic region

Canada gained control over the Arctic islands from Great Britain and the Hudson Bay Company in 1880 (Pharand, 2007; Purich, 1992; Schledermann, 2003), whereby sections of the arctic region were allocated to Canada (along with the Inuit inhabitants), essentially a possession passed between states (see Section 2.4.3) (Bankes, 1987; Denhez, 1984; Pharand, 2007; Purich, 1992; Schledermann, 2003). Sovereignty in the arctic region has been at the centre of an international debate for over fifty years (Bilder, 1970; Birchall, 2006), implicating Canada in expressing and evaluating sovereignty in its own

arctic region. However, it has been only more recently (in the last ten to fifteen years) that Canada has acknowledged the importance of Inuit in the Canadian North in relation to maintaining Canadian sovereignty (Denhez, 1984). “Canada has relied heavily upon the Inuit to defend its North” (Riewe, 1991: 8), but has not always done so in a respectful or positive manner. One such example is the government relocation of Inuit communities from northern Québec and southern Baffin Island, to the High Arctic islands (see Section 2.4.3) (McElroy, 2008; Purich, 1992). This was an attempt to exert sovereignty over the northern-most islands of the Arctic Archipelago as claimed by Canada; but it was in direct conflict with Inuit cultural practices, not to mention ethical conduct by today’s standards. The moving of families dramatically changed all that the families knew, including their environment, food sources, social connections, and homelands. In contrast to such colonial policies and practices, it is asserted that Inuit have actually “permitted Canada to survive as an arctic nation” through their ability to flourish in the Arctic and “their intimate knowledge of their environment” (Riewe, 1991: 8). Therefore, Inuit, as first inhabitants of the region, and the majority of Canada’s citizens in the Arctic, need to be consulted and more involved in the development and implementation of new policies relating to the assertion of Canadian sovereignty in arctic latitudes.

5.4.2.4 Current levels of northern community involvement

Overall it was found that community members of Cape Dorset are not familiar with the specific details of the current discussions and debates related to arctic sovereignty. For example, when discussing the topics of arctic shipping during interviews, it was apparent that community members were not familiar with the

jurisdictions and regulations governing northern shipping (see Section 4.5.2.2) (Alasuaq, 2008; Etungat, 2008; Ezekiel, 2008; Mikigak, 2008; Pootoogook, 2008; Ragee, 2008a; Ragee, 2008b; Saila, 2008; Shaa, 2008; Tukiki, 2008). With specific regards to the Northwest Passage, it was felt that "somebody must like that area very much because there's been a lot of talk about it in the last little while" (Alasuaq, 2008). The Northwest Passage is reported on, in some way, over the radio and news almost every day (Pootoogook, 2008; Takiasuk, 2008). But even so, there is a wide range in people's familiarity and awareness of this area, and its potential importance (Alasuaq, 2008; Ashoona, 2008; Etidlouie, 2008; Ezekiel, 2008; Oshutsiaq, 2008a; Oshutsiaq, 2008b; Ragee, 2008b; Shaa, 2008; Takiasuk, 2008; Tukiki, 2008). In Cape Dorset, community members are aware that discussions surrounding control and sovereignty in the Arctic are taking place; however there is little familiarity regarding the specifics of the discussions (see Section 4.5.2.3) (Alasuaq, A., 2008; Elee, 2008; Etidlouie, 2008; Ezekiel, 2008; Pootoogook, 2008; Ragee, 2008a; Ragee, 2008b; Takiasuk, 2008). For example, community members had heard about the current debate surrounding control, access and shipping in the arctic region, but they did not know which parties are involved, who wishes to access these regions, and for what purposes, nor how much international demand there is to transit the waters. One exception to this was an individual who was aware that the Canadian government is putting emphasis on exerting sovereignty through increased presence (military and other) in the Arctic (Anonymous, 2008a). A specific example cited by Anonymous (2008a) was the proposed Naval base and deep-sea port in Nanisivik, Nunavut.

There are a number of reasons why community members in Cape Dorset may not be aware of the arctic sovereignty debates, or may have limited understanding of related aspects. First, it is possible that the information is being presented to the community and that the individuals interviewed simply were not aware of, or not interested in, the current discussions of sovereignty and arctic shipping. Second, Cape Dorset is geographically removed from the area of focus (i.e. far south of the Northwest Passage), so it is possible that people in Cape Dorset do not feel that they would be directly affected (which could translate into disinterest). Related to their geographic location, it is possible that journalists and politicians do not feel that individuals in Cape Dorset need to know details about the current debates, and are thus focusing their publications and attention on the communities that are closer to the area of interest. Finally, the sensational media coverage highlighting certain aspects of the debate may direct people's attention to only limited views of the debate.

5.4.3 Making claims in a changing context

Just as there is little description of sea ice or consideration for changing conditions within oceans policies, little information is provided regarding sovereignty in the Arctic or international debates over how to define and exert such sovereignty. This is likely because the Acts and Agreements are either used to avoid sovereignty debates by setting international standards (UNCLOS), or they are Canadian and therefore designed to exert Canadian control. In fact, the NLCA (1993) is the only modern day treaty to specifically mention arctic sovereignty (Fenge, 2007/08). Another potential concern is

that the majority of the policies designed to regulate shipping and arctic travel were developed over ten years ago.

5.4.3.1 Government jurisdiction and regulations

Specifically within Canada, the federal government has jurisdiction over the 200 nautical mile limit around its shores, under the UNCLOS (1982). Within the Canadian Arctic, the AWPPA (1985) outlines Canada's expectations and rules regarding shipping within its arctic jurisdiction. The regulations under this Act represent 'perhaps the highest standards for arctic shipping in the world today' (Johnston, 2002: 153). This seems promising for Canada's Arctic; however, it could be undermined by the fact that the regulatory system established through the AWPPA (1985) is completely voluntary (Johnston, 2002; Arctic Council, 2009). The regulation of ships and matters related to the Arctic Ocean are outside of the GN's jurisdiction (NLCA, 1993; NWNSRTA, 2002). Nevertheless, shipping in Canada's arctic region most directly affects the coastal communities of Nunavut. Therefore, the GN, along with Inuit organizations and northern communities, must place confidence in the federal government to protect and implement appropriate marine regulations in the Arctic.

With the current challenges to sovereignty in the Arctic, established guidelines found in the UNCLOS (1982) are being interpreted anew. Within the UNCLOS (1982) the purpose of Article 234 (see Table 4-1) is to allow states to adopt regulations for the protection of the marine environment from pollution (specifically in relation to ice-covered waters), it was not the intention that this section be used to allow states to reinforce and claim sovereignty over ice-covered areas (Johnson, 2002). This intention is

likely related to the time frame in which the convention was established. In 1982 there would have been little focus on anticipating the impacts of climate change, the melting of sea ice, and the debate over sovereignty in the Arctic. Today, this convention and specific Article are recognized as being critical in Canada's exertion of control, resource extraction, and protection of ice-covered areas in the Arctic (Bankes, 1987; Griffiths, 2009; Killaby, 2005-2006; Westermeyer and Goyal, 1986). The Canadian government is using this Article to support its claims over sovereignty in ice-filled waters, including the Northwest Passage. This convention, and particular Article, are also being used as the foundation for international discussions regarding sovereignty over ice-covered waters in the Arctic.

The current situation regarding arctic sovereignty can be regarded as an international debate, or dispute. Under international law there are guidelines that set out the standards for dealing with disputes. The UNCLOS states, "parties shall refrain from any threat or use of force against the territorial integrity or political independence of any state, or in any other manner inconsistent with the principles of international law" (UNCLOS, 1982: 134). As a result, when it comes to disputes, states are obligated to settle by peaceful means (UNCLOS, 1982). Similarly, warships in particular, must comply with the laws and regulations of the territorial state whose waters they are traveling within (UNCLOS, 1982). There are no guidelines within the Canadian Acts or Agreements on how to deal with threats to Canada's sovereignty, simply that the international standard should be upheld, and peaceful means are required. In relation to peacefully resolving this arctic dispute, there has been a change in the way the Canadian

government - based on recent media portrayal - is responding to threats to arctic sovereignty. During my time in Cape Dorset in 2008, arctic nations including Canada, the United States, Russia, Denmark and Norway met in Greenland for the *Arctic Ocean Conference* to discuss arctic sovereignty (Arctic Council, 2008; Boswell, 2008b). The outcome was the Iluslissat Declaration, where all countries vowed to "co-operate on environmental regulations, security, transportation, tourism, scientific research and search-and-rescue regimes throughout the north" (Boswell and Mayeda, 2008: 1). This outcome was presented as being peaceful and diplomatic. However, one year later, the Canadian Government's stance on the issue seems to have changed from peaceful to being prepared through enhanced military training and surveillance (reminiscent of World War II and Cold War periods where northern attention revolved around military strategy) (see Section 2.4.3). Foreign Affairs Minister Lawrence Cannon has been quoted as saying "the Conservative government will strive to 'work peacefully' with other polar nations but 'will not hesitate to defend Canadian Arctic sovereignty'" (Boswell, 2009a: 1). Cannon is also quoted as saying, "Canada is an Arctic power, and our government understands the potential of the North. Therefore, when and if necessary, this government will not hesitate to defend Canadian Arctic sovereignty, and all of our interests in the Arctic" (Boswell, 2009a: 1). However, the lack of monitoring and infrastructure in arctic regions has limited protection operations to date.

The main Canadian military presence in the Arctic is upheld by the Canadian Rangers, who "are part-time reservists [and]…are responsible for protecting Canada's sovereignty by reporting unusual activities or sightings, collecting local data of

significance to the Canadian Forces, and conducting surveillance or sovereignty patrols as required" (Canadian Army, 2009a: 1). Canadian Rangers have strong links to northern communities, as they work out of thirty-five (35) communities located throughout the three territories, and include many Inuit members (typically active and experienced hunters) (Boswell, 2009b; Canadian Army, 2009b; Mayeda, 2008b). In an attempt to exert sovereignty and increase government presence in the Arctic, the Canadian government has recently expanded the number of Canadian Rangers (Canadian Army, 2009a; Mayeda, 2008b).

5.4.3.2. Inuit occupancy

There has been a transition in the Canadian government's views and consideration of Inuit land use and occupancy through the NLCA negotiations process and final agreement. It was not until the settlement of the NLCA (1993), almost fifty years after the moving of families to the High Arctic, that the federal government recognized and acknowledged Inuit land use and occupancy patterns (see Section 2.4.2.7). Historically, Canada was said to have "ignored one of its strongest claims to sovereignty, the fact that much of the Arctic was occupied by its Inuit people" (Purich, 1992: 34). The Inuit Land Use and Occupancy study by Freeman (1976) was particularly influential, as the founding document outlining Inuit use, occupancy and rights to the lands of the Canadian Arctic (McElroy, 2008). However, during the negotiations the emphasis of the Canadian government was on land claims with little consideration given to Inuit use of sea ice and marine environments. Marine areas, although extensively used by Inuit, remain under the federal government's jurisdiction. At the time of the

negotiations, climate change and declining sea ice were not yet serious concerns, as a result, the focus was not on labeling and controlling the arctic waters. This position has changed with the renewed sovereignty debates over the arctic region.

The Canadian government has moved towards a position that uses Inuit occupancy and use of the land and sea to support its claims. Within the Acts and Agreements examined, the NLCA (1993) recognizes "the contribution of Inuit to Canada's history, identity and sovereignty in the Arctic" (NLCA, 1993: 1-2). Similarly, it states that "Canada's sovereignty over the waters of the arctic archipelago is supported by Inuit use and occupancy" (NLCA, 1993: 135). None of the other Acts or Agreements examined acknowledge Inuit use and occupancy or how it supports Canada's sovereignty. Nevertheless, the Canadian federal government is publicly using the Inuit population to support its claims because "Inuit live [in the Arctic] just as they have for thousands of years" (Shadian, 2007: 339). If it were not for the Inuit occupancy and use of the arctic region, Canada would have more difficulty maintaining its claims, and thus "framing the Arctic as a historically Inuit-inhabited region… strengthen[s] [Canada's] sovereignty in the North" (Shadian, 2007: 339). When it comes to the arctic waters surrounding Canada's arctic lands, Inuit use of the sea ice is highly valuable to Canada's claims to sovereignty over the arctic waters (Johnston, 2002; Kaludjak, 2006; Pharand, 2007; Riewe, 1991), and as a result the Canadian stance seems to be increasingly relying on Inuit occupancy of the arctic region for its sovereignty (Fenge, 2007/2008; Kaludjak, 2006; Simon, 2007). However, there has been little acknowledgment of the impact the loss of Canada's sovereign control over arctic waters would have on Inuit. If the Arctic

Ocean and areas surrounding Canada's arctic islands were deemed international waters (i.e. if the Northwest Passage was classified as an international strait), challenges would arise for Inuit use of these regions. For example, the waters might be transited with the assistance of icebreakers throughout the year, destabilizing the sea ice platform. Similarly, Inuit traveling throughout their traditional homeland (in the marine environment) would be hunting and traveling through different jurisdictions, regulated under different political institutions (i.e. the United Nations, Canada, possibly the United States, Denmark, Russia or another state that is successful in making a claim). Although the visible changes to the region are related to sea ice extent, there may also be political changes that result in an impact on Inuit hunting and traveling in the arctic region.

Among the Inuit of Cape Dorset there are mixed reactions to the Canadian government using their occupancy to support its claims to sovereignty. Some people find it acceptable as long as it is agreed upon and beneficial to both parties as equals (Elee, 2008; Etidlouie, 2008; Pootoogook, 2008). In addition, it is also seen in a positive light because "it acknowledges the people around [the Arctic]" (Ragee, 2008a). These positive responses seem to be contingent on the statements and actions of the government in some way benefitting the communities of the North. It is also viewed as a "smart" decision for the Canadian government to use the Inuit in this way (Anonymous, 2008c). People can understand why the Canadian government would be using Inuit to support its claims; however, they want to make sure that they have some form of participation in, and control over, the situation. Meanwhile, there are also strong local sentiments that "the government shouldn't even be interfering with our waters or our land… [that were]

already claimed by the people in the area" (Takiasuk, 2008). Some people feel that using Inuit occupancy to support national sovereignty claims will translate into northerners having no say about what goes on in arctic waters, effectively infringing upon the rights they negotiated within the land claim (Takiasuk, 2008). Despite the range of responses, it is clear that community members do not want to lose control over their lands and environment. They want to protect their way of life, within the context of the current federal government's actions on sovereignty. Community members want to be informed of what the government, and other organizations, are saying and doing - especially when it involves them and their homeland. Therefore, Inuit organizations such as Inuit Tapiriit Kanatami (ITK), Nunavut Tunngavik Inc. (NTI) and the Inuit Circumpolar Conference (ICC) have been working on their behalf, and have become increasingly vocal on the issues of arctic sovereignty and how Inuit occupancy is used to support Canada's claims. Organizational representatives are well versed in, and aware of, the specific situation unfolding in the international debate over arctic sovereignty and access. These organizations are positioned to represent Inuit collectively, at the territorial, national, and international levels. They work to lobby governments, write publications, and give presentations across the country to raise public awareness about this topic.

At the international level, the ICC has been active in rallying broad international support to ensure the protection of Inuit rights amongst various sovereignty claims. The ICC is an international organization that allies Canada's Inuit "with related indigenous populations in Alaska, Danish-controlled Greenland and northeast Russia's Chukotka region" (Boswell, 2009c). Collectively their homeland is called *Inuit Nunaat*. In 2009 the

ICC published a declaration titled *A Circumpolar Inuit Declaration on Sovereignty in the Arctic*. This declaration identifies the collective opinion and position of the Inuit of *Inuit Nunaat* with regards to all aspects of sovereignty in the Arctic. Within this declaration it explicitly acknowledges the importance of the NLCA (1993) in the evolving definition of sovereignty in the Arctic (ICC, 2009). Importantly, within this declaration it is affirmed that states are required "to accept the presence and role of Inuit as partners in the conduct of international relations in the Arctic" (ICC, 2009: 1).

At the national level, Mary Simon, president of ITK, acknowledges the importance of Inuit presence in the North. She states that, "the Arctic sovereignty issue will depend on people, not ports or training facilities or military exercises. If Canada is to secure a long-standing and unimpeachable claim to the Arctic, it must be grounded in the daily realities of the Inuit and other Canadians who make this region their home" (Simon, 2007: 2). She wants to ensure that the Inuit population of the north is healthy and that their culture is protected. She does not want to see a duplication of the government's use of Inuit as it had in the past to support sovereignty claims. The past use of Inuit to exert sovereignty is said to have been "mistreatment of the Inuit in using them as human flagpoles to assert sovereignty" (Simon, 2007: 2). Similarly, it would be beneficial to provide Inuit with training opportunities to help facilitate the staffing of northern institutions and to improve northern community health and sustainability to effectively maintain Canada's presence in the arctic region. Overall, Simon recognizes the political incentives behind Inuit use in the claims, and is attempting to ensure that decisions also benefits the Inuit.

At the territorial level, Paul Kaludjak, president of NTI speaks on behalf of the Inuit of the Nunavut settlement area. He has suggested to the Prime Minister of Canada that the federal government should "use the 1993 Nunavut land claims agreement -- a modern treaty between Inuit and the Crown -- as part of a full-blown sovereignty assertion strategy. The agreement is the law of the land and acknowledges the Inuit contribution to Canada's Arctic sovereignty" (Kaludjak, 2007: 1). He also states that "Inuit are here – use us or lose our support… an Arctic policy that attempts to airbrush the Inuit majority out of the picture won't cut it at home, and won't cut it abroad" (Kaludjak, 2007: 2). Therefore, Kaludjak supports the use of Inuit in aiding Canada's claims of sovereignty through the NLCA that is in place and empowers Inuit of the Nunavut region. He also acknowledges that provisions within the Nunavut Land Claims Agreement that would help assert sovereignty, such as monitoring by local Inuit, have not been implemented (Kaludjak, 2006). This reinforces the need for government legislations to be accompanied by corresponding actions.

At the community level, specifically in Cape Dorset, residents are not aware of any local consultations or meetings that have been held to discuss sovereignty issues, particularly the current publicized use of Inuit occupancy of the arctic region to support Canada's sovereignty claims in arctic waters (Alasuaq, A., 2008; Anonymous, 2008b; Anonymous, 2008c; Ashoona, 2008; Etidlouie, 2008; Oshutsiaq, 2008b; Ragee, 2008b; Shaa, 2008; Takiasuk, 2008). Similar to government actions, it appears that there is also a lack of communication of Inuit organizations' efforts to inform northern communities. For the most part people at the local level are not aware of what is taking place; however,

it is clear from Inuit organizations' publications, speeches and lobbying, that Inuit interests are central and broader consultations are taking place in order to effectively represent a collective Inuit voice while maintaining public support and political impact.

5.4.3.3 Working together

The Canadian federal government acknowledges that Inuit "are entitled to participate in the decision-making process in the North" (Johnston, 2002: 150). Specifically within the Canadian AWPPA (1985) there is mention of the responsibility of the federal government for the welfare of Inuit in Canada's arctic region (AWPPA, 1985). It states that:

> "Parliament ... recognizes and is determined to fulfill its obligations to see that the natural resources of the Canadian arctic are developed and exploited and the arctic waters adjacent to the mainland and islands of the Canadian arctic are navigated only in a manner that takes cognizance of Canada's responsibility for the welfare of the Inuit and other inhabitants of the Canadian arctic and the preservation of a peculiar ecological balance that now exists in the water, ice and land areas of the Canadian arctic" (AWPPA, 1985: 3).

In addition, the Nunavut Land Claims Agreement Act (NLCAA) states that the Agreement between Her Majesty the Queen and the Inuit of the Nunavut Settlement Area is 'to provide for certainty and clarity of rights to ownership and use of lands and resources and of rights for Inuit to participate in decision-making concerning the use, management and conservation of land, water and resources, including the offshore' (NLCAA, 1993: 1). The NLCA also emphasizes that 'there is a need for Inuit involvement in aspects of Arctic marine management, including research' (NLCA, 1993: 135). However, the co-management board titled the Nunavut Marine Council as proposed in the NLCA (1993) has yet to be established (CBC News, 2008b; Gillies, 1995;

Griffiths, 2009). Given Inuit occupancy and use of the sea ice, it is Canada's responsibility to protect the waters and regulate shipping so as not to adversely affect its citizens. As a result, there is a need to implement the NLCA to its fullest (establish the Nunavut Marine Council), and for the federal government to work closely with the GN (and NTI) given their explicit consideration of Inuit sea ice use and occupancy in the NLCA, as well as their interests to protect the Inuit way of life within their territory.

There appears to be a disconnect between what is taking place at the government level and what is seen, heard, and communicated in the communities directly affected. All of the communities of Nunavut are likely to be affected by shipping in the Arctic either directly or indirectly. However, the information obtained in Cape Dorset indicates that there is a lack of involvement and inclusion of Inuit in decisions regarding shipping regulations. Community members in Cape Dorset highlight the importance of local involvement in these processes, and emphasize their interest in being involved in the discussions regarding shipping in the Arctic - especially in their surrounding area (Alasuaq, A., 2008; Anonymous, 2008b; Anonymous, 2008c; Ashoona, 2008; Elee, 2008; Manumee, 2008; Mikigak, 2008; Oshutsiaq, 2008a; Ragee, 2008a; Saila, 2008; Shaa, 2008; Tukiki, 2008). Inuit sea ice experts have important and unique knowledge to add to the discussions and debates. They have intrinsic knowledge of the marine environment, and their opinions and knowledge could help improve the current situation. For example, with regards to the Northwest Passage, based on interviewees' knowledge of sea ice conditions and safe travel in the Arctic, the local opinion exists that:

> "[I'm] not quite sure why anyone would want to be traveling through there anyways because there's too much ice… a ship will definitely be damaged

> because there's so much broken ice in the area, there's more ice than what [is around Cape Dorset], there's more icebergs in that area, there's more chances of a boat sinking because there's too much ice through there" (Etidlouie, 2008).

This is valid and important information relating to the safety of ships, people and the environment of the Arctic. Combining community awareness with community participation in the process would allow for more informed decisions to be made in the end. Community members understand that Inuit in the Arctic will be the ones greatest affected if any accidents or issues arise in the arctic region regarding sovereignty, control, and access (Ezekiel, 2008; Takiasuk, 2008). As a result, it is felt that the communities should be involved in forums and discussions so that they can contribute as well (Anonymous, 2008c).

Cooperation and coordination in the arctic regions of Canada is essential. As Mary Simon and Duane Smith, presidents of ITK and ICC Canada respectively, state: "Inuit of the Arctic regions are permanent residents of the Arctic and we are proud Canadians" (Simon and Smith, 2009: 1). It is thus in the best interest of Inuit for Canada to maintain sovereignty over the arctic region, but to do so, there must be an effort to work in partnership with: i) the Inuit who reside in the region through Inuit organizations and the GN; and, ii) foreign shipping companies and countries who wish to use the arctic marine waters. It is important for all communities of Nunavut, and all Canadian citizens for that matter, to be well informed and involved in the issues directly affecting Canada. Arctic sovereignty and shipping are of National interest and are therefore of importance to all Canadians. Not everyone will be interested or want to be informed and involved; however, it is the responsibility of the Canadian government along with journalists,

researchers, and Inuit organizations, to provide an opportunity for the public to be informed of - and involved in - decisions impacting national sovereignty. The three Inuit organizations previously discussed (ITK, NTI and ICC) agree that there is a specific need to involve Inuit in the decisions taking place, and that Inuit views are crucial. This would demonstrate respect and understanding for the environment and people of the area. The president of NTI states that "Inuit who live in the Canadian Arctic are proud Canadians, and we invite the government of Canada to engage with us to protect the Canadian Arctic" (Kaludjak, 2006: 1). Therefore, it is important for there to be an "equal partnership between the federal government and the Inuit regarding a future northern strategy" (Charron, 2005: 843) which includes sovereignty, shipping, development, and use of the arctic marine environment.

Chapter 6 - Conclusion

The earth's climate is changing, and thus we are being faced with unique and unprecedented challenges. The Arctic region is already being affected by dramatic environmental changes resulting from global climate change. Of particular interest to this study, sea ice, as observed by scientists, researchers and Inuit sea ice experts is diminishing in extent and thickness (ACIA, 2004; Barber *et al*., 2008; Birchall, 2006; Bravo, 2008; Etidlouie, 2008; Ford *et al*., 2006a; Ford *et al*., 2006b; Grumet *et al*., 2001; IPCC, 2007; Laidler *et al*., 2009; Laidler and Elee, 2006; Mahoney *et al*., 2009; Michel *et al*., 2006; Mikigak, 2008; Nickels *et al*., 2006; Oshutsiaq, 2008b; Pootoogook, 2008; Ragee, 2008b; Saila, 2008; Shaa, 2008; Takiasuk, 2008; Tukiki, 2008). Sea ice is also forming later in the year and breaking up earlier, overall decreasing its presence in the Arctic region (Alasuaq, 2008; Ashoona, 2008; Barber *et al*., 2008; Etidlouie, 2008; Ezekiel, 2008; Ford *et al*., 2006a; Ford *et al*., 2006b; Laidler *et al*., 2009; Laidler and Elee, 2006; Manumee, 2008; Michel *et al*., 2006; Mikigak, 2008; Nickels *et al*., 2006; Oshutsiaq, 2008b; Pootoogook, 2008; Ragee, 2008a; Ragee, 2008b; Shaa, 2008; Takiasuk, 2008; Tukiki, 2008). These changes in sea ice cover are creating both opportunities and challenges for those who live in - and utilize - the arctic marine environment. As such, there are a number of international (United Nations, Inuit Circumpolar Conference (ICC), as well as countries such as the United States, Russia, Denmark and Norway), national (Government of Canada, Inuit Tapiriit Kanatami (ITK)), territorial (Government of Nunavut (GN), Nunavut Tunngavik Inc. (NTI)), and local (the Hamlet of Cape Dorset, Nunavut, as well as other Nunavut communities more generally)

stakeholders that have been considered in my investigations relating the politics of sea ice in the Canadian Arctic. Generally speaking, governing bodies in circumpolar nations view sea ice as a barrier to movement, and tend to focus on the beneficial aspects of changing sea ice conditions (i.e. enhancing transportation opportunities and access to remote resources for potential development). On the other hand, Inuit and their representative organizations, view the sea ice as a platform for travel and hunting, as well as a means to sustain local livelihoods, culture, and marine animals.

My research was inspired by these fundamental perspectives regarding the sea ice environment, and associated implications of change. Therefore, I sought to bring together the perspectives and expertise of Inuit in Cape Dorset, Nunavut with current government (international, federal and territorial) marine policies, to answer the following two questions:

i) How is sea ice in the Canadian Arctic understood and described in legal terms by international, federal and territorial governments, and Inuit land claims agreements?

ii) How is Inuit knowledge and use of sea ice incorporated into these understandings and descriptions?

In order to accomplish this I have investigated:

- how sea ice is described and understood politically;
- how Inuit of Cape Dorset use, and understand sea ice;
- how Inuit of Cape Dorset view shipping in the Arctic;
- how governments regulate and control shipping in the Arctic;
- how Inuit understand and view the political discussions of sovereignty in the Arctic;
- how Inuit are involved in the debates and discussions regarding the changing Arctic; and,
- how governments and land claims agreements integrate Inuit views and perceptions into related policy.

Therefore, I have examined Acts and Agreements related to uses of marine environments, from the UN, the Canadian Government, the GN, and the Nunavut Land Claims Agreement (NLCA). In addition, I have considered federal operational aspects such as the Canadian Ice Services (CIS) and the Canadian Coast Guard (CG), as well as previous research conducted by northern researchers and Inuit organizations. Furthermore, I have conducted interviews, participatory mapping and experiential trips in Cape Dorset, Nunavut, to gain an understanding of local perspectives and Inuit expertise. The combined analysis of these results leads to a number of important conclusions.

6.1 Summary of key conclusions

1. **Descriptions of sea ice and Inuit knowledge are not incorporated into government policy documents.** The examined Acts and Agreements did not present a detailed description of sea ice or recognize the importance of Inuit knowledge and use of the sea ice environment. Nor did these marine Acts and Agreements explicitly outline or describe definitions and claims of sovereignty. Governments are responsible for setting standards and guidelines that need to apply to their entire jurisdiction (i.e. Canadian policies regulate shipping in the Atlantic, Pacific and Arctic Oceans; whereas the United Nations Convention on the Law of the Sea establishes regulations for shipping in all marine areas around the world). The NLCA however, did acknowledge Inuit knowledge and use of sea ice and some linkages to Canadian sovereignty - as it is specifically designed to broadly represent Inuit interests in the eastern Arctic - but it does not maintain any jurisdiction over matters of marine shipping regulation.

2. **Inuit in Cape Dorset, Nunavut have a strong relationship with their environment, and have thus developed specialized knowledge of sea ice and marine systems over time**. Inuit expertise in Cape Dorset has developed from inhabiting and thriving in the arctic environment since time immemorial. This relationship is passed on and shared through generations of watching, listening and experiencing their environment. The results of this relationship are specialized and unique understandings of the environment in which they are situated. Inuit knowledge related to this research has been shown to cover sea ice conditions, wildlife habitat and behaviour, historic and current shipping, and the impacts of shipping on the environment and the community. However, they are less familiar with government policies and operations relating to marine areas and jurisdictional responsibilities.
3. **Inuit sea ice experts and the Canadian government possess fundamentally different understandings of sea ice conditions based on their experiences, methods, and goals in relating to - and learning about - sea ice and arctic marine environments.** Inuit knowledge comes from a lifetime of living, using, and observing the sea ice environment, while government departments tend to develop their knowledge based on scientific observations using satellite imagery, periodic scientific studies, and fly-over and ship-based observations. Both of these knowledge systems are tailored to their respective goals in using the sea ice (or ice-filled waters) safely, as well as better understanding the physical processes at play.
4. **Arctic shipping is an important issue for the community of Cape Dorset**. Cape

Dorset community members are quite familiar with arctic shipping. Ships have been visiting the community for over sixty years, and have resulted in both positive and negative impacts on local lifestyles. Ships can provide jobs, bring in supplies, and transport people, as well as disturb (or potentially harm) local wildlife and the marine environment. With reduced sea ice extent due to climate changes, shipping in the arctic region is increasing and has resulted in increased international interest in accessing remote northern locations (a trend that is likely to continue). People in the community will be the ones most directly affected in the event of an accident, and are thus concerned about the increase in the frequency of ship transits and visits to the community.

5. **With changing ice conditions, Canada's assertions of sovereignty over its arctic waters, including the Northwest Passage, are increasingly being challenged by other states**. Within Canadian marine areas it is the responsibility of the federal government to regulate and monitor shipping, but the arctic region, specifically, presents unique challenges for the Canadian government. The first challenge is that Canada's arctic region is expansive and remote. The Canadian government has difficulties monitoring the entire region, as well as being prepared for - and to respond to - accidents. More importantly, the second challenge is that Canada's claims over sections of the Arctic Ocean, including the Northwest Passage, have continually been challenged - and at times ignored - by other states. Historically this has not been a significant issue because the area was permanently ice-covered and very few ships attempted to travel through it. However, this has dramatically

changed with the trends of melting sea ice and longer open water seasons, increasing the ability to access resources and travel (by ship) throughout the region. Canada's claims are thus beginning to be threatened by other states who wish to utilize the Arctic Ocean for their own purposes and benefit.

6. **Community knowledge of the current political discussion regarding arctic sovereignty is limited.** The topic of arctic sovereignty is popular in the media across Southern Canada. This subject has appeared in news papers, radio broadcasts and television reports on nearly a weekly basis for the past few years. In Cape Dorset, people are only slightly familiar with the political discussions occurring around sovereignty issues. Although similar media reports are also available to community members, their knowledge of the specific discussions is quite limited. Nevertheless, community members have strong opinions on the issue, and important perspectives to contribute to these debates. However, it is primarily the Inuit organizations within Canada and internationally who are representing Inuit views, and asserting Inuit rights, in attempts to influence the political discussions currently taking place.

7. **Inuit from Cape Dorset are not being involved in the current debates and discussions over the changing arctic environment and sovereignty**. There have been no local consultations in the community of Cape Dorset regarding Canadian shipping policies or sovereignty assertion efforts. As a result, there is no inclusion of local Inuit voices, opinions and/or information from those who wish to participate and could add to the discussions. However, as mentioned in Key Finding

6, Inuit organizations are well versed in these political matters, and are working hard to represent Inuit in various forums. These organizations are thus more informed and engaged in related discussions and debates.

6.2 Recommendations

The above conclusions provide a springboard for a number of recommendations that I would suggest for the consideration of governments and northern communities as they continue to adapt to changing sea ice conditions, access to northern marine areas, and challenges to Canadian sovereignty in the Arctic. These recommendations are as follows:

6.2.1 Community consultations

It is imperative that Inuit communities are involved in the discussions and decisions taking place regarding the future of the arctic environment. Inuit have been thriving in the arctic environment long before there was desire to “discover” and profit from the Northwest Passage, or the establishment of Canada. The arctic region - land, water, and ice - is a homeland for Inuit, and they possess generations of in-depth knowledge of their regional conditions. Continuing to ignore or omit Inuit from discussions around marine policy and Canadian sovereignty would be a disservice to the environment, the Inuit, Canadian citizens, and international shippers seeking to transit the Arctic Ocean. Community members in Cape Dorset, Nunavut feel that they should be involved in forums and discussions so that they can contribute an important local perspective, and arguably similar sentiments would be found in other northern communities. However, there is also concern among community members that the Canadian government does not

recognize the value in involving northern communities, or that only Iqaluit (the capital of Nunavut) would be involved and smaller communities would be left out. Therefore, it is recommended that enhanced communication and consultation efforts are made, by federal and/or territorial governments, to connect with a broad sample of northern communities to effectively address these concerns (not to mention improve the comprehensive nature of marine policies or northern strategies).

From the federal government's perspectives it may not be feasible to visit each community in the Arctic to gather information. As a result, scaled levels of consultation are suggested. This would involve the Federal government consulting with the territorial governments as well as Inuit Organizations such as ITK. These organizations could then consult more directly with communities, and act as liaisons with the federal government (as they currently do). Information and local opinions could be gathered through community consultations or town hall meetings. For example the Arctic Council, for their Shipping Assessment (2009), conducted town hall meetings in select arctic communities of Canada, Iceland, Norway and the United States to gather observations, concerns, and questions, as well as to provide additional information back to the community. Community consultations can, and should, also involve providing information to communities about federal and territorial issues (regulations, jurisdictions and processes), enabling a more encompassing understanding. Such an approached would require a coordinated effort to gather relevant information from each community, as well as analyze and present the findings in the end. A single body could be designated to set the parameters and goals of the consultations and conduct the final analysis. In the

community, the meetings could be carried out in cooperation with the staff from a number of different facilities including the GN, Nunavut Arctic college, Canadian Rangers, community Hamlet offices, local Hunters and Trappers Organizations, and independent contractors, to name a few.

Another opportunity for enhanced local involvement would be to have community representation on larger bodies in place to deal with arctic shipping. Interested, knowledgeable and informed individuals could join these larger bodies or organizations to represent their community or region. This option is feasible and already taking place to some degree in Nunavut through co-management boards and land claim-related committees. However, to my knowledge, there are currently no specific boards dedicated to shipping or sovereignty issues at the territorial level.

These community consultation efforts would benefit both the communities and decision-makers by helping everyone be more informed. Inuit communities have a great deal of knowledge and a significant role to play in the current sovereignty and shipping debates, beyond simply bolstering Canada's claims due to their long-term occupancy of the region.

6.2.2 Establish Marine Council

There are provisions in the Nunavut Land Claims Agreement to establish a co-management board (i.e. the Marine Council), that would assist in arctic marine monitoring and regulations by involving Inuit throughout the territory. Although it was identified in the NCLA, it has not yet been established. Therefore, it is recommended that the Marine Council be established in order to reduce the power held by the federal

government in regulating and protecting arctic marine environments, as it would shift part of these responsibilities to the GN. As the GN and NTI work to implement the territorial government and land claim following the principles of Inuit culture, this Council would surely involve Inuit, and others living in the region, in decisions that would take place regarding the marine environment. It would be crucial that the Marine Council be established in a way that coordinates closely federal departments, including the Department of National Defense, Department of Transportation, as well as operations including the Canadian CG, CIS and Canadian Rangers to avoid gaps or overlaps in efforts or jurisdiction. The establishment of this council would thus benefit the people, waters, and governments involved. This board would help to empower the Inuit when regulating ships traveling in Canadian arctic waters. In addition, through involving Inuit, based on their land and sea ice use and occupancy in the region, this board could help to strengthen Canada's claims to the area.

6.2.3 Improve emergency response measures

Shipping in ice-filled waters is quite dangerous and there is the high potential for accidents and environmental contamination. Arctic marine waters present significant challenges when it comes to emergency response (for people and the environment) and search and rescue. Currently, some of these challenges faced by arctic nations include the vast area, remoteness, cold temperatures, amount of ice, as well as lack of infrastructure and communications in northern regions (Arctic Council, 2009). These limitations are recognized by the Canadian Government, and efforts are underway to increase government presence through its operations including the CG and Canadian Rangers,

which would in turn enhance environmental protection and search and rescue efforts. However, it is also recommended to consider making search and rescue assistance mandatory for any ships traveling in Canadian arctic waters, in order to improve the safety and response times in the region. Currently, through the Automated Mutual-Assistance Vessel Rescue System (Arctic Council, 2009), it is voluntary for nearby ships to provide assistance if requested. In 2007, approximately 450 lives were saved because of this voluntary system throughout the circumpolar Arctic (Arctic Council, 2009). Thus, it is thought that with increased ship traffic in the arctic region it would be important to move towards mandatory assistance as well as reporting of incidents. For the most efficient accident response and rescue of personnel, it is also advisable to develop a code of conduct that requires ships to provide assistance when requested, if it is safe and possible for them to do so. Such measures would benefit a number of groups in the region, specifically shippers, the CG, and northern communities. In order for this to be possible an investment in infrastructure, ships, personnel, bases as well as communities would need to be made; however there are financial limitations to these investments and balance would be essential.

6.2.4 Update existing Acts and Agreements

With the changing environmental and political conditions, Acts, Agreements and standards related to the Arctic Ocean and shipping need to be revised and updated to better protect northern environments and people. At their inception, these policies did not anticipate dramatic changes in sea ice conditions, the related increase in interest to access northern resources and destinations, or challenges to established sovereignty claims.

Incorporating these issues should be a priority as the number of ships entering the Arctic Ocean each year is increasing, and Canada's sovereignty claims are continually being called into question.

Recently, it has also been recommended that a comprehensive arctic shipping regime be established to make routes and resources safely available for ships (Wade, 2008). Specific routes throughout the Arctic could be designated based on what is best for ship navigation and to minimize environmental and social impacts through consideration of: water depth, concentration of ice cover, prevailing wind strength, proximity to northern communities, and impact on wildlife. Such coordinated efforts would also be recommended to collaborate with emergency response improvements to share information regarding weather updates, ice conditions, as well as responsive emergency tactical support. This could involve an international agreement and partnership among those nations who are involved in - or impacted by - arctic shipping to ensure the safety of transiting vessels, as well as the environment, wildlife and communities of the Arctic.

6.3 Moving Forward

While this study is based on a limited number of arctic policies, and information obtained from the community of Cape Dorset, findings presented here can be used to inform broader discussions relating to political considerations of sea ice in the Arctic. However, it must be noted that for a more comprehensive understanding of community perspectives, additional northern communities would need to be consulted and may thus lead to differing results. Each community in Nunavut is unique based on their history, culture, and environmental conditions, and would maintain varying levels of interest, and

depth of knowledge about shipping policies and sovereignty debates. This emphasizes the need for broader consultation to ensure that diverse perspectives, knowledge and expertise are recognized and incorporated into future policy creation and ongoing decision-making. The enhanced cooperation between Inuit organizations and all levels of government, and increased consideration for Inuit knowledge alongside scientific knowledge, would go a long way to protecting the arctic environment in these times of change - along with the people and wildlife who live in and rely on this environment.

Bibliography

ACIA. (2004). *Impacts of a Warming Arctic: Arctic Climate Impact Assessment*. Cambridge University Press.

Alasuaq, A. (2008). *Interview in Cape Dorset*. Translated by: Pootoogoo Elee. May 28.

Alia, V. (2007). *Names and Nunavut: Culture and Identity in the Inuit Homeland.* Berghahn Books.

Anand, R.P. (1973). "Tyranny" and the Freedom-Of-The-Seas Doctrine. *International Studies,* 12(3): 416-429.

Anonymous. (2008a). *Interview in Cape Dorset*. May 28.

Anonymous. (2008b). *Interview in Cape Dorset.* May 29.

Anonymous. (2008c). *Interview in Cape Dorset.* June 9.

Aporta, C. (2009). The Trail as Home: Inuit and Their Pan-Arctic Network of Routes. *Human Ecology,* 37: 131-146.

Aporta, C. (2002). Life on the ice: understanding the codes of a changing environment. *Polar Record,* 38: 341-354.

Aporta, C and Higgs, E. (2005). Satellite culture: Global positioning systems, Inuit wayfinding, and the need for a new account for technology. *Cultural Anthropology*, 29(1-2): 221-231.

Arctic Council. (2009). *Arctic Marine Shipping Assessment 2009 Report*.

Arctic Council. (2008). *Conference on the Arctic Ocean* [Web Page]. Last accessed: June 26, 2009. URL: http://arcticcouncil.org/article/2008/ 5/ conference_on_the_arctic_ocean.

Ashford, G. and Castledon, J. (2001). *Inuit Observations on Climate Change: Final Report.*

Ashoona, S. (2008). *Interview in Cape Dorset*. Translated by: Pootoogoo Elee. May 25.

Atlas of Canada. (2006). *Nunavut*. [Web Page]. Last accessed: August 8, 2009. URL: http://atlas.nrcan.gc.ca/site/english/maps/reference/provincesterritories/nunavut/referencemap_image_view.

Bankes, N.D. (1987). Forty Years of Canadian Sovereignty Assertion in the Arctic, 1947-1987. *Arctic,* 40(4): 285-291.

Barber, D. G., Lukovich, J.V., Keogak, J., Baryluk, S., Fortier, L., and Henry, G. H. R. (2008). The Changing Climate of the Arctic. *Arctic,* 61(1): 7-26.

Barsh, R. L. (1986). Nature and Spirit of North American Political System. *American Indian Quarterly,* 10(3): 181-198.

Beauchamps, B and Huebert, R. (2008). Canadian Sovereignty Linked to Energy Development in the Arctic. *Arctic,* 61(3): 341-343.

Bennett, J. and Rowley, S. (editors). (2004). *Uqalurait: An oral history of Nunavut.* McGill-Queen's University Press.

Berkes, F. (2008). *Sacred Ecology*. Second Edition. Routledge. New York.

Berkes, F. and Jolly, D. (2001). Adapting to Climate Change: Social-Ecological Resilience in the Canadian Western Arctic Community. *Ecology and Society,* 5(2): 18-30.

Bilder, R. B. (1970). The Canadian Arctic Waters Pollution Prevention Act: New Stresses on the Law of the Sea. *Michigan Law Review,* 69(1): 1-54.

Birchall, S. J. (2006). Canadian Sovereignty: Climate Change and Politics in the Arctic. *Arctic,* 59(2): ii-iii.

Blackburn, C. (2007). Producing legitimacy: reconciliation and the negotiation of aboriginal rights in Canada. *Journal of the Royal Anthropological Institute,* 13: 621-638.

Boas, F. (1901). *The Eskimo of Baffin Land and Hudson Bay*. AMS Press Inc. New York, NY.

Bone, R. M. (2009). *The Canadian North: Issues and Challenges*. Third Edition. Oxford University Press. Don Mills, Ontario.

Bone, R. M. (2003). *The Geography of the Canadian North: Issues and Challenges*. Second Edition. Oxford University Press. Don Mills, Ontario.

Boswell, Randy. (2009a). Canada ready to protect Arctic claim. *Ottawa Citizen.* May 15.

Boswell, R. (2009b). Canada ready to defend Arctic sovereignty. *Canwest News Services. Ottawa Citizen.* May 14.

Boswell, R. (2009c). Pan-Arctic Inuit council wants more say in sovereignty. *CanWest News Services*. April 28.

Boswell, R. (2008a). Political crisis looms in Arctic, report says. *National Post*. March 11.

Boswell, R. (2008b). Denmark seeks Arctic peace on eve of Greenland summit. *National Post*. May 22.

Boswell, R. and Mayeda, A. (2008). Mapping out Arctic sovereignty: Canada uses science to make claim to seabed riches. *Canwest News Services*. August 15.

Bravo, M. T. (2008). Sea Ice Mapping: Ontology, Mechanics and Human Rights at the Ice Floe Edge. *High Places: Cultural Geogrpahies of Mountains, Ice and Science*. Edited by: D. Cosgrove, and V. della Dora.

Brigham, L. and Ellis, B. (2004). *Arctic Marine Transport Workshop*. Cambridge University, United Kingdom. September 28-30.

Burrough, P.A. (1986). *Principles of Geographic Information Systems for Land Resources Assessment*. Clarendon Press. Oxford.

Byers, M. and Lalonde, S. (2005). Out Arctic sovereignty is on thin ice. *The Globe and Mail* A11. August 1.

Canadian Army. (2009a). *Canadian Rangers* [Web Page] Last accessed: June 26 2009. URL: http://www.army.forces.gc.ca/land-terre/cr-rc/index-eng.asp.

Canadian Army. (2009b). *1st Canadian Rangers Patrol Group Joint Task Force North (JTFN)* [Web Page] . Last accessed: June 26 2009. URL: http://www.army.forces.gc.ca/land-terre/cr-rc/na-an/crpg1-gprc1-eng.asp.

CanWest News Service. (2007). *Arctic sovereignty starts with Arctic surveillance expert says*. October 20 2007. [Web Page]. Last accessed: July 24 209. URL: http://www.canada.com/calgaryherald/story.html?id=7d2535f5-d24b-4c7d-ae65-0f495d143970&k=21793.

Carnaghan, M. and Goody, A. (2006). Canadian Arctic Sovereignty. *Library of Parliament*.

Cassidy, F. (1990). Aboriginal Governments in Canada: An Emerging Field of Study. *Canadian Journal of Political Science,* 23(1): 73-99.

CBC News. (2009). *Canada to boost efforts to chart Arctic waters* [Web Page]. Last accessed: July 24 2009. URL: http://www.cbc.ca/canada/north/story/2009/05/04/arctic-marine-charts.html.

CBC News. (2008a). *Military scientists prepare for Arctic surveillance study* [Web Page]. Last accessed: July 24 2009. URL: http://www.cbc.ca/canada/north/ story/2008/05/08/arctic-test.html.

CBC News. (2008b). *Marine council needed to protect Arctic waters: Nunavut official* [Web Page]. Last accessed: July 24 2009. URL: http://www.cbc.ca/canada/north/story/2008/08/14/nunavut-marine.html.

CBC. (2006). *In Depth Northwest Passage: The Arctic Grail* [Web Page]. Last accessed: July 24 2009. URL: http://www.cbc.ca/news/background/northwest-passage/.

Chambers, R. (2006). Participatory Mapping and Geographic Information Systems: Whose May? Who is empowered and Who Disempowered? Who Gains and Who Loses? *The Electronic Journal on Information Systems in Development Countries,* 25, 2: 1-11.

Chapin, M., Lamb, Z. and Threlkeld, B. (2005a). Mapping Indigenous Lands. *The Annual Review of Anthropology,* 34: 619-638.

Chapin, F.S., Sturm, M., Serreze, M. C., McFadden, J. P., Key, J.R., Lloyd, A. H., McGuire, A. S., Rupp, T. S., Lynch, A. H., Schimel, J. P., Beringer, J., Chapman, W. L., Epstien, H. E., Euskirchen, E. S., Hinzman, L. D., Jia, G., Pink, C. L., Tape, K. D., Thompson, C.D.C., Walker, D.A., Walker, J.M. (2005b). Role of Land-Surface Changes in Arctic Summer Warming. *Science,* 310: 657-660.

Charron, A. (2005). The Northwest Passage: Is Canada's sovereignty floating away? *International Journal,* 60(3): 831-848.

Coates, K.S., Lackenbauer, P.W., Morris, W.R., and Poelzer, G. (2008). Realizing our Arctic sovereignty. *National Post*. June 3.

Coyne, I. T. (1997). Sampling in qualitative research. Purposeful and theoretical sampling; merging or clear boundaries. *Journal of Advanced Nursing,* 26: 623-630.

Cruikshank, J. (2001). Glaciers and climate change: perspectives from oral tradition [of Athapaskan and Tlingit elders]. *Arctic,* 54(4): 377-394.

Denhez, M. (1984). Inuit rights and Canadian Arctic waters. In Cooke, A. and Van Alstine, E. (editors.). *Sikumuit: The People Who Use the Sea Ice*. Ottawa: Canadian Arctic Resources Committee: 123-153.

Doyle, A. (2009). Arctic nations say no Cold War; military stirs. *Reuters*. June 21 2009.

Duffy, Q. (1988). *The Road to Nunavut: The Progress of the Eastern Arctic Inuit since the Second World War*. McGill-Queen's University Press. Kingston and Montreal.

Editorial. (2008). The true north strong and ours. *Montreal Gazette*. January 7.

Elee, P. (2008). *Interview in Cape Dorset*. June 9.

Ellient-Meisel, E. B. (1999). Still unresolved after fifty years: the Northwest Passage in Canadian-American relations, 1946-1998. *The American Review of Canadian Studies,* 29(3) 407-421.

Environment Canada. (2003a). *About CIS*. [Web Page]. Last accessed: July 24 2009. URL: http://ice-glaces.ec.gc.ca/App/WsvPageDsp.cfm?Lang=eng&lnid=2&ScndLvl=no&ID=142.

Environment Canada. (2003b). *Our Business*. [Web Page]. Last accessed: July 24 2009. URL: http://ice-glaces.ec.gc.ca/App/WsvPageDsp.cfm?Lang=eng&lnid=2&ScndLvl=yes&ID=187>

Environment Canada. (2003c). *Our Resources.* [Web Page]. Last accessed: July 24 2009. URL: http://ice-glaces.ec.gc.ca/App/WsvPageDsp.cfm?Lang=eng&lnid=2&ScndLvl=yes&ID=190.

Etidlouie, E. (2008). *Interview in Cape Dorset*. Translated by: Pootoogoo Elee. May 22.

Etungat, P. (2008). *Interview in Cape Dorset*. Translated by: Pootoogoo Elee. June 1.

Ezekiel, A. (2008). *Interview in Cape Dorset*. Translated by: Pootoogoo Elee. May 22.

External Affairs Canada. (1985). *Statements and Speeches*. Policy on Canadian Sovereignty. As cited in: Huebert, R. (2001). Climate Change and Canadian Sovereignty in the Northwest Passage. *Isuma: Canadian Journal of Policy Research,* 2(4): 86-94

Faugler, J., and Sargeant, M. (1997). Sampling hard to reach populations. *Journal of Advanced Nursing,* 26: 790-797.

Fenge, T. (2007/08). Inuit and the Nunavut Land Claims Agreement: Supporting Canada's Arctic Sovereignty. *Policy Options*: 84-88.

Fisheries and Oceans Canada. (2008). *Canada's Ocean Estate: A description of Canada's maritime zones*. [Web Page]. Last accessed: June 29 2009. URL: http://www.dfo-mpo.gc.ca/oceans/canadasoceans-oceansducanada/marinezones-zonesmarines-eng.htm.

Fisheries and Oceans Canada. (2008b). *Icebreaking Program: Who we are and what we do*. [Web Page] Last accessed: June 29 2009. URL: http://www.ccg-gcc.gc.ca/eng/CCG/Ice_Who_We_Are.

Fisheries and Oceans Canada. (2008c). *Icebreaking*. [Web Page]. Last accessed: June 29 2009. URL: http://www.ccg-gcc.gc.ca/eng/CCG/Icebreaking.

Ford, J. and Smit, B. (2004). A Framework for Assessing the Vulnerability of Communities in the Canadian Arctic to Risks Associated with Climate Change. *Arctic,* 57(4): 389-400.

Ford, J. D., Smit, B. and Wandel, J. (2006). Vulnerability to climate change in the Arctic: A case study of Arctic bay, Canada. *Global Environmental Change,* 16: 145-160.

Freeman, M. (1976). *Inuit Land Use and Occupancy Project*. Thorne Press.

Gearheard, S., Matumak, W., Angutikjuaq, I., Maslanik, J., Huntington, H. P., Leavitt, J., Kagak, D. M., Tigullaraq, G. and Barry, R. G. (2006). "It's not that simple": A collaborative comparison of sea ice environments, their uses, observed changes, and adaptations in Barrow, Alaska, USA, and Clyde River, Nunavut, Canada. *Ambio,* 35(4): 203-211.

Gezon, L. L. and Susan, P. (2005). Place, Power, Difference: Mulioscale Research at the Dawn of the Twenty-first Century. *Political ecology across spaces, scales and social groups*. Rutgers University Press: 1-16.

Gibbs, M. (2001). Towards a Strategy for Undertaking Cross-Cultural Collaborative Research. *Society and Natural Resources,* 14: 673-687.

Gillies, Bruce. (1995). The Nunavut Final Agreement and Marine Management in the North. *Northern Perspectives,* 23(1). [Web Page]. Last accessed: June 29 2009. URL: http://www.carc.org/pubs/v23no1/marine4.htm.

Government of Canada. (1985). Arctic Waters Pollution Prevention Act. , c. A-12 [Act current to October 18th, 2008]

Government of Canada. (2001). Canada Shipping Act. C-10.15, c. 26. [Act current to October 23rd, 2008]

Government of Nunavut. (2005). *Sealift Services*. [Web Page]. Last accessed: June 29 2009. URL: http://www.gov.nu.ca/sealift/.

Government of Nunavut. (2006). *Department of Culture, Language, Elders and Youth - About the Department*. [Web Page]. Last Accessed: August 28 2009. URL: http://www.gov.nu.ca/cley/english/department.htm.

Government of Yukon, Northwest Territories and Nunavut. (2005). *Developing a New Framework for Sovereignty and Security in the North*. A Discussion Paper. April.

Griffiths, Franklyn. (2009). Canadian Arctic Sovereignty: Time to Take Yes for an Answer on the Northwest Passage. In Abele, F., Courchene, T. J., Seidle, F. L., and St-Hilaire, F, (editors). *The Art of the State IV Northern Exposure: Peoples, Powers and Perspects in Canada's North*. The Institute for Research on Public Policy. Montreal, Quebec.

Griffiths, F. (2004). Pathetic Fallacy: That Canada's Arctic Sovereignty is on Thinning Ice. *Canadian Foreign Policy,* 11(3): 1-16.

Grumet, N. S., Wake, C. P., Mayewski, P. A., Zielinski, G. A., Whitlow, S. T., Koerner, R. M., Fisher D. A., and Woollett. K. M. (2001). Variability of Sea-Ice Extent in Baffin Bay over the Last Millennium. *Climate Change,* 49(1-2): 129-145.

Hansell, R. I. C., Malcolm, J.R., Welch, H., Jefferies R. L., and Scott, P. A. (1998). Atmospheric Change and Biodiversity in the Arctic. *Environmental Monitoring and Assessment,* 49(2-3): 303-325.

Hansen, J. (2008). Arctic Waterways Need Protection. *Arctic Council*. [Web Page]. Last accessed: June 29 2009. URL: http://arctic-council.org/article/2008/8/arctic_waterways_need_protection.

Harley, J.B. (1988). Maps, knowledge, and Power. *The Iconography of Landscape*. Cambridge University Press. 277-312.

Henderson, A. (2007). *Nunavut: Rethinking Political Culture*. UBC Press. Vancouver, British Columbia.

Henkin, L. (1971). Arctic Anti-Pollution: Does Canada Make -- or Break – International Law? *The American Journal of International Law,* 65(1): 131-136.

Huebert, R. (1995) Polar vision or tunnel vision: the making of Canadian Arctic waters policy. *Marine Policy,* 19(4):343-363

Huebert, R. (2001). Climate Change and Canadian Sovereignty in the Northwest Passage. *Isuma: Canadian Journal of Policy Research,* 2(4): 86-94

Huebert, R. (2003). The shipping news part II: How Canada's Arctic sovereignty is on thinning ice. *International Journal,* 58: 3.

Huebert, R. (2008). As the ice melts, control ebbs in the Arctic: Canada is ill prepared for foreign ships that will challenge our sovereignty in an ice-free Northwest Passage. *The Globe and Mail*. August 16.

Huntington, H. P. (1998). Observations on the utility of the semi-directive interview for documenting traditional ecological knowledge. *Arctic,* 51(3): 237-244.

Inuit Circumpolar Council (ICC). (2009). *A Circumpolar Inuit Declaration on Sovereignty in the Arctic.* April 28. Tromsø, Norway.

International Council for Science. (2004). *A framework for the International Polar Year 2007-2008.* ICSU IPY 2007-2008 Planning Group.

IPCC. (2007). Summary for Policymakers. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

ISIUOP. (2008). *Inuit Sea Ice Use and Occupancy Project (ISIUOP*). Geomatics and Cartographic Research Centre, Carleton University. [Web Page]. Last accessed: June 9 2009. URL: http://gcrc.carleton.ca/ISIUOP.

Johnston, D. M. (2002). The Northwest Passage Revisited. *Ocean Development & International Law,* 33: 145-164.

Johnstone, R. J., Gregory, D., Pratt, G., and Watts M. (2000). *The Dictionary of Human Geography*. 4th Edition. Blackwell Publishers Ltd. Oxford, UK.

Kaludjak, P. (2007). Use the Inuit. *Ottawa Citizen*. July 18. [Web Page]. Last accessed: July 24 2009. URL: http://www2.canada.com/ottawacitizen/news/opinion/story.html?id=9443de5a-ec6-4ae7-8fea-3c8e3ed2cae0&p=2.

Kaludjak, P. (2006). Sovereignty and Inuit in the Canadian Arctic. *Arctic Athabaskan Council (AAC) Newsletter*. [Web Page]. Last accessed: July 24 2009. URL: http://www.arcticpeoples.org/2006/11/18/sovereignty-and-inuit-in-the-canadian-arctic/.

Killaby, G. (2005-2006). Great game in a cold climate: Canada's Arctic sovereignty in question. *Canadian Military Journal*, Winter: 31-40.

Kinsley, D. (1995). *Ecology and Religion: Ecological Spirituality in Cross-Cultural Perspectives*. Prentice-Hall Inc. Upper Saddle River, New Jersey.

Knight, D. B. (1985). Territory and People or People and Territory? Thoughts on Postcolonial Self-Determination. *International Political Science Review,* 6(2): 248-272.

Kubat, I., Collins, A., and Timco, G. (2007). Year-round shipping in the Canadian Arctic: Ice conditions and regulatory requirements. *Recent Development of Offshore Engineering in Cold Regions, POAC-07*: 446-456.

Kubat, I., Collins, A., Gorman, B., and Timco, G. (2006). Impact of Climate Change on Arctic Shipping: Vessel Damage and Regulations. *Technical Report, Canadian Hydraulics Centre*. National Research Council Canada.

Kubat, I., Collins, A., Gorman, B. and Timco, G. (2005). A methodology to evaluate Canada's Arctic shipping regulations. *Proceedings 18th International Conference on Port and Ocean Engineering under Arctic Conditions, POAC'05* (2): 693-703.

Kulchyski, P. (2005). *Like the Sound of a Drum: Aboriginal Cultural Politics in Denendeh and Nunavut*. University of Manitoba Press, Winnipeg.

Lackenbauer, P. W. and Farish, M. (2007). The cold war on Canadian soil: Militarizing a northern environment. *Environmental History*, 12 (4): 920-950.

Laidler, G. (2006). Inuit and Scientific Perspectives on the Relationship Between Sea Ice and Climate Change: the Ideal Complement. *Climate Change,* 78: 407-444.

Laidler, G., Dialla, A., and Joamie, E. (2008) Human Geographies of Sea Ice: Freeze/thaw processes around Pangnirtung, Nunavut, Canada. *Polar Record*. 44 (231): 335-361.

Laidler, G. and Elee, P. (2006). Sea Ice Processes and Change: Exposure and Risk in Cape Dorset, Nunavut. In Riewe, R., and Oakes, J. (editors) *Climate Change: Linking Traditional and Scientific Knowledge.* Aboriginal Issues Press, University of Manitoba. Winnipeg, Manitoba.

Laidler, G. (2007). *Ice, Through Inuit Eyes: Characterizing the importance of sea ice processes, use, and change around three Nunavut communities*. PhD dissertation. University of Toronto.

Laidler, G. and Elee, P. (2008). Human geographies of sea ice: freeze/thaw processes around Cape Dorset, Nunavut, Canada. *Polar Record,* 44(228): 51-76.

Laidler, G. and Ikummaq, T. (2008). Human Geographies of Sea Ice: Freeze/thaw processes around Igloolik, Nunavut, Canada. *Polar Record*. 44(229): 127-153.

Lietaer, O., Fichefet, T., and Legat, V. (2008). The effects of resolving the Canadian Arctic Archipelago in a finite element sea ice model. *Ocean Modelling,* 24: 140-152.

Litfin, K. T. (1997). Sovereignty and World Ecopolitics. *Mershon International Studies Review,* 41(2): 167-204.

Lo, C.P., and Yeung, A. K. W. (2007). *Concepts and Techniques in Geographic Information Systems*. Pearson Prentice Hall. Upper Saddle River, NJ.

Mackenzie, F. A. and Dalby, S. (2003). Moving Mountains: Community and Resistance in the Isle of Harris, Scotland, and Cape Breton, Canada. *Antipode,* 309-333.

Macklem, P. (1993). Distributing Sovereignty: Indian Nations and Equality of Peoples. *Stanford Law Review,* 45(5): 1311-1367.

Mahoney, A., Gearheard, S., Oshima, T., and Qillaq, T. (2009). Sea ice thickness measurements from a community-based observation network. *Bulletin of the American Meteorological Society*, 90(3): 370-377.

Manumee, T. (2008). *Interview in Cape Dorset*. Translated by: Pootoogoo Elee. May 31.

Marecic, C. J. (1999/2000). Nunavut Territory: Aboriginal Governing in the Canadian Regime of Governance. *American Indian Law Review,* 24(2): 275-295.

Mauro, F. and Hardison, P. D. 2000. Traditional knowledge of Indigenous and local communities: International debate and policy initiatives. *Ecological Applications,* 10(5): 1263-1269.

Mayeda, A. (2008a). Canada flexes Arctic sovereignty muscle: The ice may not be the only enemy. *Canwest News Services*. August 23.

Mayeda, A. (2008b). Rangers on foot patrols for Arctic sovereignty. *CanWest News*. August 24.

McDonald, M., Arragutainaq, L., and Novalinga, Z. (1997). *Voices from the Bay*. Canadian Arctic Resources Committee Ottawa, Ontario.

McElroy, A. (2008). *Nunavut Generations: Change and Continuity in Canadian Inuit Communities*. Waveland Press Inc.

McRae, D. (2007). Arctic Sovereignty? What is at Stake? *The Canadian Institute of International Affairs,* 64(1): 1-26.

Michel, C., Ingram, R.G., and Haris, L.R. (2006). Variability in Oceanographic and ecological processes in the Canadian Arctic Archipelago. *Process in Oceanography,* 71: 379-401

Mikigak, O. (2008). *Interview in Cape Dorset*. Translated by: Pootoogoo Elee. May 24.

Mortished, C. (2007). Friends in the north become foes on front line of a new Cold War. *The Times*. December 27.

Muller-Wille, L. (1989-90). Place Names, territoriality and Sovereitny: Inuit Perceptions of Space in Nunavik (Canadian Eastern Arctic). *Schweizerische Amerikanisten-Gesellschat,* 53-54: 17-21.

Mulvihill, P. R., Baker, D. C., and Morrison, W. R. (2001). A Conceptual Framework for Environmental History in Canada's North. *Environmental History,* 6(4): 611-626.

Municipality of Cape Dorset. (2008a). *Town history*. [Web Page]. Last accessed: June 9 2009. URL: http://www.capedorset.ca.

Municipality of Cape Dorset. (2008b). *Welcome*. [Web Page]. Last accessed: June 9 2009. URL: http://www.capedorset.ca.

Municipality of Cape Dorset. (2008c). *Community*. [Web Page]. Last accessed: June 9 2009. URL: http://www.capedorset.ca.

Nadasdy, P. (2002). "Property" and Aboriginal Land Claims in the Canadian Subarctic: Some Theoretical Considerations. *American Anthropologist,* 104(2): 247-261.

Natural Resources Canada. (2007). Coastlines, Boundaries and Names of Canada. *Atlas of Canada*. [Web Page]. Last accessed: June 29 2009. URL: http://atlas.nrcan.gc.ca/site/english/maps/reference/outlinecanada/canada02.

Nelson, R. (1969). Hunters of the northern ice. Chicago. University of Chicago Press.

Nichols, T., Berkes, F., Jolly, D., Snow, N. B., and the Community of Sachs Harbour. (2004). Climate Change and Sea Ice: Local Observations from the Canadian Western Arctic. *Arctic,* 57(1): 68-79.

Nunavut Tunngavik Inc. (2000). *Inuit owned lands in Nunavut*. Map created by Glen Kilian. [Web Page] . Last Accessed: September 18, 2009. URL: http://www.ntilands.com/maps.html

Nunavut Act. (1993). N-28.6, c. 28. [Act current to September 25th, 2008]

Nunavut Land Claims Agreement. (1993). Agreement Between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in Right of Canada.

Nunavut Land Claims Agreement Act. (1993). N-28.7, c. 29. [Act current to September 25th, 2008]

Nunavut Waters and Nunavut Surface Rights Tribunal Act. (2002). N-28.8, c. 10. [Act current to September 25th, 2008]

Nuttall, M. (1992). *Arctic Homeland Kinship, Community and Development in Northern Greenland*. Chapter 4: Landscape and Memoryscape. University of Toronto Press.

Oceans Act, (1996). O-2.4, c. 31. [Act current to September 25th, 2008]

Oshutsiaq, O. (2008a). *Interview in Cape Dorset*. Translated by: Pootoogoo Elee. May 31.

Oshutsiaq, S. (2008b). *Interview in Cape Dorset*. Translated by: Pootoogoo Elee. May 31.

Parrish, A. L. (2006/2007) Changing Territoriality, Fading Sovereignty, and the Development of Indigenous Rights. *Indian Law Review,* 31(2): 291-313.

Paulson, Susan, Lisa L. Gezon and Michael Watts. 2003. 'Locating the political in political ecology: An introduction.' *Society of Applied Anthropology* 62(3): 205-217.

Paulson, S., Gezon, L. L., and Watts, M. (2005). Politics, Ecologies, Genealogies. *Political ecology across spaces, scales and social groups*. Rutgers University Press: 17-40

Pharand, D. (2007). The Arctic Waters and the Northwest Passage: A Final Revisit. *Ocean Development & International Law,* 38:3-69.

Pootoogook, K. (2008). *Interview in Cape Dorset*. Translated by: Pootoogoo Elee. June 9.

Purich, D. (1992). *The Inuit and Their Land: The Story of Nunavut*. James Lorimer & Company, Publishers Toronto.

Ragee, K. (2008a). *Interview in Cape Dorset*. Translated by: Pootoogoo Elee. May 30.

Ragee, T. (2008b). *Interview in Cape Dorset*. Translated by: Pootoogoo Elee. May 30.

Reed, M. G. and Mitchell, B. (2003). Gendering environmental geography. *Canadian Geographer,* 47(3): 318-337).

Riewe, R. (1991). Inuit Use of the Sea Ice. *Arctic and Alpine Research,* 23(1): 3-10.

Robbins, P. (2004). *Political Ecology*. Blackwell Publishing Ltd.

Saila, P. (2008). *Interview in Cape Dorset*. Translated by: Pootoogoo Elee. May 26.

Sandelowski, M. (2000). Combining Qualitative and Quantitative Sampling, Data Collection, and Analysis Techniques in Mixed-Method Studies. *Research in Nursing & Health,* 23: 246-255.

Schiedermann, P. (2003). The Muskox Patrol: High Arctic Sovereignty Revisited. *Arctic,* 56(1): 101-109.

Shaa, A. (2008). *Interview in Cape Dorset*. Translated by: Pootoogoo Elee. May 23.

Shadian, J. (2007). In Search of an Identity Canada Looks North. *Review of Canadian Studies,* 37(3): 323-354.

Simon, M. (2008). Delivering an Inuit Message to Canadians. *Inuktitut,* 104:68-69.

Simon, M. (2009). Sovereignty Begins at Home: Inuit and the Canadian Arctic. *ITK President's Speech*. Speech given at the University of Waterloo.

Simon, M. (2007). Sovereignty from the North. *The Walrus*. November 2007.

Simon, M. and Smith, D. (2009). Inuit, Climate Change and Northern Development. *Inuit Tapiriit Kanatami*. [Web Page]. Last accessed: June 29 2009. URL: http://www.itk.ca/inuit-climate-change-and-northern-development.

Sparke, M. (1998). A Map that Roared and the Original Atlas: Canada, Cartography, and the Narration of Nation. *Annals of the Association of American Geographers*, 88(3): 463-495.

Sparke, M. (2005). *In the Space of Theory: Postfoundational Geographies of the Nation-State*. Chapter 1: Territories of Tradition. University of Minnesota Press.

Statistics Canada. 2006. Community highlights for Cape Dorset. [Web Page]. Last accessed: June 9 2009. URL: http://www12.statcan.gc.

Struzik, E. (2007). The new cold war. *Toronto Star.* November 17.

Struzik, E. (2008). The Arctic resource rush is on. *Alternet*. July 10.

Swiderski, A. L. (1992). Development Planning and Aboriginal Rights: The Case of Northern Canada. *Progress in Planning,* 37: 1-82.

Takiasuk, I (2008). *Interview in Cape Dorset*. Translated by: Pootoogoo Elee. May 30.

Transport Canada. (2009). *Search and Rescue*. [Web Page]. Last accessed: June 29 2009. URL: http://www.tc.gc.ca/marinesafety/debs/arctic/shipping-operations/search-rescue.htm.

Tukiki, Q. (2008). *Interview in Cape Dorset*. Translated by: Pootoogoo Elee. May 31.

United Nations. (1998). The United Nations Convention on the Law of the Sea (A historical perspective). *Division of Ocean Affairs and the Law of the Sea*. [Web Page]. Last accessed: June 24 2009. URL: http://www.un.org/Depts/los/convention_agreements/convention_historical_perspective.htm.

United Nations. (1982). United Nations Convention on the Law of the Sea. [Agreement current to September 25th 2008].

VanderKlippe, N. (2006). Northwest Passage gets political name change 'Internal Waters' hoped to bolster Canada's case. *CanWest News Services*. *Ottawa Citizen*. April 9.

Wade, R. (2008). Why a warmer Arctic needs new laws. *Financial Times*. January 15.

Walker, P. A. (2005). Political ecology: where is the ecology? *Progress in Human Geography,* 29(1): 73-82.

Watt-Cloutier, S. (2007). Time to follow a path of purpose. *Trail Times*. British Columbia. August 31.

Wenzel, G. W. (2004). From TEK to IQ: *Inuit Qaujimajatuqangit* and Inuit Cultural Ecology. *Arctic Anthropology,* 41(2): 238-250.

Westermeyer, W. E. and Goyal, V. (1986). Jurisdiction and Management of Arctic Marine Transportation. *Arctic,* 39(4): 338-349.

Wilkinson, M. (2008). Cold rush for Arctic's energy riches: Global warming is melting the ice sheets of the Arctic- and nations are poised to exploit the hidden wealth. *Sydney Morning Herald*. August 4.

Wong, Q. (2008). In Arctic 'cold war,' Russia plows ahead. *McClatchy Newspapers*. August 5. [Web Page]. Last accessed July 24 2009. URL: http://www.mcclatchydc.com/227/story/46477.html.

Woodsward, D. and Lewis, G. M. (1998). *The History of Cartography.* Volume 2 Book 3, Chapter 4: 135-170 and Chapter 8. Chicago.

Young, B. J. (1987). Geography and Politics. *Transactions / Institute of British Geographers,* 12: 391-397.

Appendix A - English and Inuktitut consent forms used for fieldwork in Cape Dorset

CONSENT FORM

I am aware of what this **Mapping Inuit Sea Ice Knowledge and Use** project is about. I have been informed of what it means to be involved in an interview, focus group, or sea ice trip as part of this project, and I am willing to participate under the following conditions.

Involvement *(check all that apply)*
I agree to take part in an:

- ☐ Interview
- ☐ Focus group
- ☐ Sea ice trip

Recording *(check all that apply)*
I agree to have my contributions to the project recorded using:

- ☐ Audio recording
- ☐ Audio and video recording
- ☐ Photographs
- ☐ Maps
- ☐ Transcripts
- ☐ GPS points or tracks

Identification
I remain the owner of the information I have contributed, but for the publication of project results and sharing this information with others I wish to be identified in the following way *(check one)*:

- ☐ I DO want my name to be used to provide due credit (this information will be attributed to me)
- ☐ I DO NOT want my name to be used, but general acknowledgement can be provided (example credit: "Anonymous resident of _____, Nunavut")

Sharing of information
I understand that information I share will be used to compile and communicate the results of this project in reports, publications, or related project outputs. In addition, I agree to make the original recordings available to the public under these conditions *(check all that apply)*:

- ☐ for use in an online interactive educational atlas about Nunavut
- ☐ for use in general public education and outreach activities
- ☐ for use in this community of _____
- ☐ for use in future research projects affiliated with project team members
- ☐ for unrestricted public, non-commercial use (covers all of the above)

Print name: _____ Verbal consent, check here: ☐

Sign name: _____ Witness: _____

Date(s): _____

(size reduced to fit page)

If I have any questions or concerns about this project, or the consent that I have provided, I will contact the researchers involved, the Nunavut Research Institute, or the Carleton Ethics Committee using the following information:

Karen Kelley (Researcher)
Geomatics and Cartographic Research Centre
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1125 Colonel By Drive
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Carleton University Research Ethics Committee
Carleton University
1125 Colonel By Drive
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Phone: (613) 520-2517
Email: ethics@carleton.ca

Notes:

ᐊᖏᕐᓂᕋᕈᑎᒃ

ᖃᐅᔨᒪᔪᖓ ᐅᓇ ᓱᓇᐅᒻᒪᖔᖅ **ᓄᓇᖑᐊᓕᐅᕐᓂᖅ ᓯᑯᓂᑦ ᐃᓄᐃᑦ ᖃᐅᔨᒪᔭᖏᓐᓂ ᐊᒻᒪ ᐊᑐᖅᑕᐅᓂᖓ** ᐱᓕᕆᐊᑉ ᐱᔾᔪᑎᖓ. ᖃᐅᔨᒃᑲᖅᑕᐅᓯᒪᔪᖓ ᖃᓄᖅ ᑐᑭᖃᕐᒪᖔᖅ ᐃᓇᐅᖃᑕᐅᕆᐊᒃᓴᖅ ᐊᐱᖅᓱᖅᑕᐅᓂᒃᑯᑦ, ᑲᑎᙵᔪᓂᑦ, ᐅᕝᕙᓘᓐᓃᑦ ᓯᑯᒧᑦ ᐊᐅᓪᓚᓂᕐᒧᑦ ᑖᒃᓱᒧᖓ ᐱᓕᕆᐊᒧᑦ, ᐊᒻᒪ ᐃᓚᐅᖃᑕᐅᔪᒪᓕᑦᑎᐊᖅᑐᖓ ᐅᑯᓂᖓ ᖃᓄᐃᓕᖓᓂᖅᑲᕐᓗᑎᒃ.

***ᐃᓚᐅᖃᑕᐅᓂᖅ** (ᓇᓗᓇᐃᖅᑕᐃᓐᓇᕆᒃᑭᑦ)*

ᐊᖏᖅᑐᖓ ᐅᑯᓂᖓ ᐱᖁᑕᐅᓗᖓ:

- ☐ ᐊᐱᖅᓱᖅᑕᐅᓂᖅ
- ☐ ᑲᑎᙵᔪᓂᑦ
- ☐ ᓯᑯᒧᑦ ᐊᐅᓪᓚᖅᑕᐅᓂᖅ

***ᓂᐱᓕᐅᕆᓂᖅ** (ᓇᓗᓇᐃᖅᑕᐃᓐᓇᕆᒃᑭᑦ)*

ᐊᖏᖅᑐᖓ ᑐᓂᔭᒃᑲ ᓂᐱᓕᐅᖅᑕᐅᓗᑎ ᐱᓕᕆᐊᒧ ᐅᑯᓂᖓ ᐊᑐᖅᑐᑦ:

- ☐ ᓂᐱᒥᑦ ᓂᐱᓕᐅᖅᑕᐅᓂᖅ
- ☐ ᓂᐱᓕᐅᖅᑕᐅᓂᖅ ᐊᔾᔨᓕᐅᖅᑕᐅᓂᕐᓗ
- ☐ ᐊᔾᔨᙳᐊᑦ
- ☐ ᓄᓇᙳᐊᑦ
- ☐ ᓇᕿᑦᑕᖅᑕᐅᓂᖏ ᓂᐱᓕᐅᖅᑕᐅᔪᑦ
- ☐ GPS ᓇᓗᓇᐃᒃᑯᑕᖏᑦ ᓇᒦᓐᓂᖓᓘᓐᓃᑦ

ᓇᓗᓇᐃᒃᑯᑕᖏᑦ

ᓇᒻᒥᓃᓐᓇᓃᓐᓇᓂᐊᖅᑕᒃ ᑐᑭᓯᐊᕐᕕᑦ ᑐᓂᔭᐅᒃᑲ, ᑭᓯᐊᓂ ᓴᖅᑭᖅᑎᑕᐅᓂᖏᓐᓄ ᐱᓕᕆᐊᑉ ᖃᓄᐃᓐᓂᖏᑦ ᐊᒻᒪ ᐊᓯᓐᓄᑦ ᐊᑐᖅᑕᐅᓗᑎ ᑖᒃᑯᐊ ᑐᑭᓯᐊᕐᕕᑦ ᐊᓯᖏᓐᓄ ᓇᓗᓇᐃᖅᑕᐅᓯᒪᓕᒪᔪᖓ ᐃᒪᐃᓕᖓᓗᑎ *(ᐊᑕᐅᓯᕐᒥᑦ ᑎᑎᖅᓯᕆᑦ)*:

☐ ᐊᑎᒐ ᐊᑐᖅᑕᐅᖁᔭᒐ ᖃᐅᔨᕆᐊᕝᕕᐅᔪᓐᓇᓂᐊᕐᒪ (ᑖᓐᓇ ᑐᑭᓯᐊᕐᕕᒃ ᐅᕙᓐᓄᑦ ᐊᖏᖅᑕᐅᓯᒪᓂᐊᖅᑐᖅ)

☐ ᐊᑎᒐ ᐊᑐᖅᑕᐅᖁᙱᑕᒐ, ᑭᓯᐊᓂ ᓇᑭᙶᕐᓂᒥᓂᖓ ᐱᑕᖃᖅᑎᑕᐅᔪᓐᓇᖅᑐᖅ (ᓲᕐᓗ: "ᐊᑎᖓ ᓇᓗᓇᐃᖅᑕᐅᓯᒪᖏᑦᑐᖅ ______________, ᓄᓇᕗᒻᒥᐅᖅ")

ᑕᐅᖅᓰᖃᑎᕆᓂᖅ ᑐᑭᓯᐊᕐᕕᓂᑦ

ᑐᑭᓯᔪᖓ ᑐᑭᓯᐊᕐᕕᑦ ᑕᐅᖅᓰᖃᑎᕆᔭᒃ ᐊᑐᖅᑕᐅᓂᐊᖅᑐᑦ ᓄᐊᑕᐅᓗᑎ ᐊᒻᒪ ᑐᓴᐅᒪᔾᔪᑎᐅᓗᑎ ᑖᒃᓱᒧᖓ ᐱᓕᕆᐊᒧᑦ ᐅᓂᒃᑳᒥᑦ, ᓴᖅᑭᖅᑎᑕᐅᔪᓂᑦ, ᐊᑦᑐᐊᓂᓖᑦᑐᓂᑦ ᐱᓕᕆᐊᒧᑦ. ᐃᓚᒋᐊᕐᓗᒍ, ᐊᖏᖅᑐᖓ ᓂᐱᓕᐅᖅᑕᐅᓯᒪᔪᑦ ᐊᑐᐃᓐᓇᐅᓂᐊᕐᓗᑎ ᐃᓄᓐᓄᑦ ᑖᒃᑯᓂᖓ ᖃᓄᐃᓐᓂᕆᔭᖏᓐᓂ ᒪᓕᓪᓗᑎ *(ᓇᓗᓇᐃᖅᑕᐃᓐᓇᕆᒃᑭᑦ ᐊᑐᕈᓐᓇᖅᑐᑦ)*:

☐ ᐊᑐᖅᑕᐅᓗᑎ ᖃᕋᓴᐅᔭᒃᑰᕈᓐᓇᐅᒻᒧᑦ ᐃᓕᓐᓂᐊᕈᑎᒃᓴᐅᓗᑎ ᑎᑎᖅᑐᒐᖅᑕᐅᓯᒪᔪ ᓄᓇᕗᒻᒥ ᐱᔾᔪᑎᖃᖅᑐᓂᑦ

☐ ᐊᑐᖅᑕᐅᓗᑎ ᑭᒃᑯᑐᐃᓐᓇᕐᓄᑦ ᐃᓕᓐᓂᐊᕈᑎᒃᓴᓄᑦ ᐊᒻᒪ ᑐᑭᓯᐊᕈᑎᒃᓴᓄᑦ ᖃᓄᐃᓘᖅᑕᐅᔪᓄᑦ

☐ ᐊᑐᖅᑕᐅᓗᑎ ᑕᕝᕙᓂ ᓄᓇᓕᒻᒥ ________________

☐ ᐊᑐᖅᑕᐅᓗᑎ ᓯᕗᓂᒃᓴᒥ ᖃᐅᔨᓴᓂᕐᒥᑦ ᐊᑦᑐᐊᓂᓖᑦ ᑖᒃᓱᒧᖓ ᐱᓕᕆᐊᒧ ᐃᓚᒋᔭᐅᔪᓄᑦ

☐ ᐊᑐᖅᑕᐅᓗᑎ ᑭᓪᓚᖃᖅᑎᑕᐅᖏᓪᓗᑎ, ᑮᓇᐅᔭᓕᐅᕋᓱᐊᖏᑦᑐᓄ ᐊᑐᖅᑕᐅᓗᑎ (ᖁᓛᓃᑦᑐᓕᒫᓂ ᐊᑕᖏᔪᖅ)

ᑎᑎᕋᕐᓗᒍ ᐊᑎᖓ: ____________________________ ᐅᖃᐅᓯᒃᑯᑦ ᐊᖏᖅᑐᖅ, ᐅᓇ ᑎᑎᕋᒃ: ☐

ᐊᑎᓕᐅᕈᓯᖓ: __________________________ ᑕᑯᓐᓇᖅᑐᖅ: ____________________________

ᐅᓪᓗᖓ (ᖏᑦ): ________________

ᐊᐱᖅᑯᑎᒃᓴᖃᕈᕕᑦ ᐃᓱᒫᓘᑎᖃᕈᕕᓪᓘᓐᓃᑦ ᑖᒃᓱᒥᙵ ᐱᓕᕆᐊᒥᑦ, ᐅᕝᕙᓘᓐᓃᑦ ᐊᖏᕐᓂᕋᕈᒥ ᐱᖃᓯᐅᑎᓯᒪᔭᕋ, ᖃᐅᔨᒋᐊᓂᐊᑕᒃᑲ ᖃᐅᔨᓴᖅᑎᐅᖃᑕᐅᔪᑦ, ᓄᓇᕗᒻᒥ ᖃᐅᔨᓴᕐᕕᒃ, ᐅᕝᕙᓘᓐᓃᑦ ᑲᐅᕈᑕᓐ ᐅᑉᐱᕆᔭᖏᓐᓂ ᑲᑎᒪᔨᕋᒫᑦ ᐊᑐᕐᓗᑎ ᐅᑯᓂᖓ ᑐᑭᓯᒋᐊᕐᕕᓂᑦ:

ᑲᓇᓐ ᑭᓕ (ᖃᐅᔨᓴᖅᑎ)
ᖃᐅᔨᓴᖅᑎ ᓄᓇᓂ ᐊᒻᒪ ᓄᓇᖑᐊᓕᐅᓂᕐᒥᑦ
ᐱᓕᕆᕕᖓ ᓄᓇᒥ ᖃᐅᔨᓴᕐᓂᖅ, ᑲᐅᕈᑕᓐ ᓯᓚᑦᑐᓴᕐᕕᒃᔪᐊᖅ
1125 Colonel By Drive
ᐋᑐᐙ, ᐋᓐᑎᐅᕆᔪ K1S 5B6
ᐅᖄᓚᐅᑎᖓ: (613) 520-2600 x8165
ᓱᑲᔪᒃᑯᑦ: (613) 520-2395
ᖃᕋᓴᐅᔭᒃᑯᑦ: kkelley@connect.carleton.ca

ᑳᓚᑎᐅ ᐊᐳᐊᕐᑕ (ISIUOP ᐱᓕᕆᐊᒍ ᑐᑭᒧᐊᖅᑎᑦᑎᔨ)
ᐱᓕᕆᕕᖓ ᖃᐅᔨᓴᓂᕐᒥᑦ ᐃᓄᓐᓂᑦ ᐃᓅᖃᑎᒋᓐᓂᒥᓪᓗ
ᑲᐅᕈᑕᓐ ᓯᓚᑦᑐᓴᕐᕕᒃᔪᐊᖅ
1125 Colonel By Drive
ᐊᑐᐙ, ᐋᓐᑎᐅᕆᔪ K1S 5B6
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ᖃᕋᓴᐅᔭᒃᑯᑦ: claudio_aporta@carleton.ca

ᓄᓇᕗᒻᒥ ᓯᓚᕐᔪᐊᒥ ᐅᕝᕕᐅᑕᖅᑐᒥ ᐊᕐᕋᒍᖓ ᐊᓪᓚᕕᖓ
ᓄᓇᕗᒻᒥ ᖃᐅᔨᓴᕐᕕ
ᑎᑎᖅᑲᒃᑯᕕᖓ 1720
ᐃᖃᓗᐃᑦ, ᓄᓇᕗᑦ X0A 0H0
ᐅᖄᓚᐅᑎᖓ: (867) 979-7290 or 979-7279

ᖃᐅᕈᑕᓐ ᓯᓚᑦᑐᓴᕐᕕᒃᔪᐊᖅ ᖃᐅᔨᓴᖅᑏᑦ
ᑲᑎᒪᔨᕋᖏᑦ ᑲᐅᕈᑕᓐ ᓯᓚᑦᑐᓴᕐᕕᒃᔪᐊᖅ
1125 Colonel By Drive
ᐊᑐᐙ, ᐋᓐᑎᐅᕆᔪ K1S 5B6
ᐅᖄᓚᐅᑎᖓ: (613) 520-2517
ᖃᕋᓴᐅᔭᒃᑯᑦ: ethics@carleton.ca

ᓇᓗᓇᐃᕈᑏᑦ:

Appendix B - Interview Guide used for the interviews and participatory mapping in Cape Dorset

-Briefly introduce self, how old, where from, what studying, where living now

***Past Participant**, new participant skip to 1*

i. Have you participated in ISIUOP before? (it wasn't called ISIUOP, you can ask if they were interviewed before by Gita Laidler, as part of the Ice through Inuit Eyes project)
ii. How did you contribute?
iii. Do you feel that there have been any benefits to yourself or the community from the results of that project? (if they say they haven't heard anything, please remind them that many updates, posters, summaries, etc. were sent in the mail, and also there are many things deposited at the Hamlet, High School, College, and HTA…if they never received anything in the mail mark down their address so I can send them stuff again).

Conversation/Ice breaking
1.(look at map) Where were you born? Could you point it out on the map?
2. What year were you born?
3. When did you move to Cape Dorset?

4. Do you remember the first time you went out on the ice, either for hunting or traveling? Was that here in Cape Dorset?
5. Do you remember when you first started traveling on the ice by yourself?
6. How did you learn about the sea ice? Who did you learn from?

*New to ISIUOP * questions, past participant skip to 12*
*7. Can you describe/explain how ice forms in the fall (and months of year)?
    -We are interested in the Inuktitut terms used to talk about different ice conditions, such as: when ice starts to freeze/ thickens/ becomes landfast?
    -Also, are there specific ice conditions or dynamic processes that happen at tidal cracks, the floe edge, polynyas, moving/multi-year ice?
*8. Can you describe the different stages of sea ice melting – what are the earliest signs of melting and how does melting progress from this earliest stage to break-up?
*9. When do these different melting stages happen (What months of the year)? How do ice conditions differ between freeze-up and break-up?
*10. How do winds from different directions, or of different strengths, affect the formation, movement, or melting of sea ice?
*11. How do currents/tides affect the formation, movement, or melting of sea ice?

*12. How would you describe the importance of sea ice to you and to community members?

13. Do people use sea ice today in the same ways that they did long ago?
14. How do you use the sea ice in different seasons?

15. Do you also travel on open water with the use of a boat?
16. Where would you travel to by boat? (draw on Map) Does it change over the seasons?
17. Have you noticed the sea ice conditions changing and boats being used more frequently by people in the community?

18. How often do you see ships in the Hudson Strait? When you were a child do you remember seeing ships? Do you see ships more often now? Is the number increasing? In what season would you see the most ships? (In month would you see 5 ships?)
19.Where were you when you have spotted ships? (draw on map)
20. What kinds of ships do you see?
21. Do you know where the ships are going? (draw routes on Map)
22. How often do the ships come into Cape Dorset? What times of year?
23. Why do they come to Cape Dorset?
24. Do ships impact your use of sea ice? If so how?
25. Are there any community initiatives in place to monitor shipping and sea ice conditions around the community?

In the south, there has been a lot of talk in the media about increased shipping in the Arctic, the impacts this will have on the communities, and debates by international, federal and territorial governments' regarding who controls the waters
26. Are you familiar with these discussions surrounding shipping in Arctic waters? What do you hear the Nunavut government saying about this topic? What do you hear the federal government saying?
27. (if flows from conversation) How do you feel about these discussions/ debates?
28. Do you feel that you or other community members have a say in these debates?
29. Have there been any community consultations about shipping practices through Hudson Strait?
30. Do you think local communities should be consulted on these issues? If so how?
31. What would be best way for communities to be involved?

23. Do you know who regulates shipping in these waters? (Transport Canada: Arctic Shipping Pollution Prevention Regulations) How is it done?
**The main component is the Zone-Date System. It divides the Canadian Arctic into 16 geographic zones from the Beaufort Sea in the West to the Davis Strait in the east. Each zone has an opening and closing date for shipping based on historical ice condition data up to the early 1970s.
In addition to the Zone-Date system, the Ice Regime System regulates shipping based on real-time rather than historical ice data. Shipping access is based on a combination of ship characteristics and ice conditions. Presently the Ice Regime System is used to regulate access to Arctic waters outside of the Zone-Date limits. Do you agree with these regulations? If so why? If not how should they be regulated?
32. How do you think of sea ice, in relation to the land or water, and in relation to territorial or federal boundaries?"
33. Do you see a difference in how sea ice and open water are regulated by the government? Should there be a difference?
34. How would you feel if the waters became an international waterway and therefore open for anyone to transit?

35. Are you familiar with the route called the Northwest Passage? (Let them describe it, if they are…and if not, then show on map and give a bit of background). What might you suggest to more northerly communities based on your experiences in Dorset with shipping?
36. What things do you think the government should consider in relation to sea ice changes and the NWP?
37. Within the context of the current International debate, how do you feel about the historic and current use of the Arctic waters and sea ice covered areas by Inuit being used to reinforce Canadian claims to sovereignty?
38. Who do you feel the Arctic waters belong to? Canada, Inuit, are they international, or do they belong to no one?

39. Before we conclude, what can you say is the importance of sea ice to yourself and the community of Cape Dorset?
40. Is there anything else that you would like to share with me at this time?

41. Are there any individuals in the community that you would recommend I speak with regarding what we have discussed?

Appendix C - Trip Report in English and Inuktitut mailed to participants in October, 2008

Mapping Inuit Sea Ice Knowledge and Use (SIKU)

Carleton UNIVERSITY

Cape Dorset Trip Report (May 19 – June 12, 2008)

INTERNATIONAL POLAR YEAR 2007-2008

Purpose of the trip:

- Gain first hand experience in the Arctic and on the sea ice
- Carry out interviews and mapping sessions with individuals from Cape Dorset
- Verify and finalize the community sea ice maps compiled by Gita Laidler
- Create a regional map of trails and important areas to the community that can be linked to other communities in the Baffin Region
- Identify Inuktitut descriptions for a bilingual sea ice dictionary
- Follow up on the utility of the Floe Edge Service

Activities during this trip:

- Conducted 20 interviews with mapping sessions focused on sea ice, boating, shipping and related political debates with: Etulu Etidlouie, Asheval Ezekiel, Aqjangayuk Shaa, Oqutaq Mikigak, Sappa Ashoona, Pauta Saila, Atsiaq Alasuq, Iqaluq Takiasuk, Turaqtaga Ragee, Kooyoo Ragee, Quppi Tukiki, Simeonie Oshutsiaq, Omalluk Oshutsiaq, Tukiki Manumee, Pookalook Etungat, Kananginak Pootoogook, Pootoogoo Elee and three anonymous members of the Cape Dorset Community.
- Held two workshops on sea ice terminology and definitions with Etulu Etidlouie, Mangitak Kellypallik, Udjualuk Etidloui, Aqjangayuk Shaa and Pootoogoo Elee Held two workshops on sea ice terminology and definitions with Etulu Etidlouie, Mangitak Kellypallik, Udjualuk Etidloui, Aqjangayuk Shaa and Pootoogoo Elee
- Went on a boat trip around Cape Dorset with Timmun Alariaq
- Went on a snow mobile trip to the floe edge with Mangitak Kellypallik and Pootoogoo Elee
- Met with the High school Principal and assisted with the Elders Appreciation Night.

Next steps:

- Summer 2008: transcribe interview and workshop audio, and digitize maps
- Fall 2008: analyze the transcripts and maps, compile the results, and begin to write reports and the draft of my dissertation on the Politics of Sea Ice

Thank you for welcoming me into your community!
I am very grateful to Pootoogoo Elee for guiding me along my journey in Cape Dorset, translating for me throughout my trip, and for helping to organize my interviews, workshops and sea ice trip. None of this would have been possible without him.
I am also thankful for everyone who participated in the interviews, workshops and ice/boat trips, as well as for all the assistance from the Hamlet Office. It was a pleasure to meet you and I have learned a great deal from each of you.
Finally, I would like to thank the entire community of Cape Dorset for supporting this ongoing sea ice project. Kinngarmiut are an important part of the Inuit Sea Ice Use and Occupancy Project and the project could not thrive without the assistance of the community.
I hope to be able to return to Cape Dorset to follow up on this work within a year or so.

Questions? Comments?

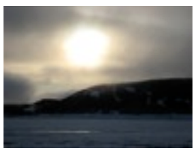
website: **http://gcrc.carleton.ca/isiuop**

phone: (613)520-2600 x8165 fax: (613)520-2395 email: kkelley@connect.carleton.ca

(size reduced to fit page)

ᓄᓇᓐᓂᒃᑐᐊᓕᐅᕐᑕᐅᓂᖏᑦ ᓯᑰᑉ (ᑐᑫᐅᑉ) ᑭᓪᓕᓐᓂᒃᑐᐊᖏᓐᓂᒃ ᐃᓄᐃᑦ ᖃᐅᔨᒪᔭᑐᖃᖏᓐᓄᑦ

ᑭᓐᖓᕐᓄᑦ ᐊᐅᓪᓚᕿᑎᒋᓚᐅᕐᑕᕗᑦ ᐅᓂᒃᑳᖏᑦ (ᒪᐃ 19ᒥᒃ ᔫᓂ 12ᒧᑦ, 2008)



ᓂᐅᕐᕿᔾᔪᑎᒋᓚᐅᖅᑕᕗᑦ:

- ᓂᐅᕐᕿᒋᐅᕐᑐᑕ ᖃᐅᔨᕆᐅᕐᓯᐊᒻᒪᕆᒃᑐᒍ ᐅᑭᐅᑕᖅᑐᖅ ᓯᑯᒃᑯᓪᓗ ᐊᐅᓪᓚᕿᔾᔭᐅᓗᑕ
- ᐊᐱᖅᓱᑲᑕᒃᑐᑕ ᖃᐅᔨᓴᕐᑕᑎᓐᓂᒃ ᓄᓇᓐᓂᒃᑐᐊᒃᑯᓪᓗ ᓇᓗᓇᐃᕐᑐᕐᑐᒋᑦ ᐃᓄᐃᑦ ᐃᒻᒥᒃᑯᑦ ᓇᓗᓇᐃᕐᓯᑎᑉᐸᕐᑐᒋᑦ ᑭᓐᖓᕐᓂ
- ᒌᑕ ᓚᐃᑦᓗᕐ ᑲᑎᖅᓱᓚᐅᕐᑕᖏᑦ ᓄᓇᓐᓂᒃᑐᐊᒃᑯᑦ ᓇᓗᓇᐃᕐᑐᓇᐊᓖᑦ ᓱᑯᓕᕆᔾᔪᑏᑦ ᐅᖃᐅᓯᖅᖓᐅᑎᖏᓐᓂᒃ ᐱᔮᕆᓇᐊᕐᑐᖅᑐᑎᒍ ᓄᓇᖕᒐᓐᓄᑦ
- ᐋᖅᑭᒃᓱᐃᓗᑕ ᓄᓇᓐᓂᒃᑐᐊᒃᑯᑦ ᐃᓪᓕᓂᕐᓂᑦ ᐊᖅᑯᑎᑐᕐᑲᕐᓂᑦ ᐊᒻᒪ ᐱᒻᒪᕆᐅᔪᓂᒃ ᓄᓇᖕᒐᓐᓄᑦ ᐊᑐᖅᑕᐅᓪᓗᐊᑦᕐᐸᒃᑐᓂᒃ ᐊᐅᓪᓚᕋᐃᒐᒥᒃ ᐊᓯᖏᓐᓄᑦ ᓄᓇᓕᓐᓄᑦ ᕿᑭᖅᑖᓗᖕᒥ
- ᐃᓄᒃᑎᑐᑦ ᓇᓗᓇᐃᕐᑐᕐᓗᒋᑦ ᐅᖃᐅᓯᖅᖓᐅᑏᑦ ᑐᑭᓯᑎᑦᓯᒋᐊᕈᑎᒃᓴᑦ ᒪᕈᐃᓕᖕᖓᔫᓂᒃ ᐅᖃᐅᓰᓐᓂᒃ ᑭᓪᓕᓯᓂᐊᕈᑎᖃᕐᓂᐊᕋᑦᑕ ᐅᖃᐅᓯᖅᖓᐅᑎᒃᑎᓐᓂᒃ
- ᖃᐅᔨᕆᐊᕐᓗᑕ ᓯᓈᖕᒐᓂᒃ ᕿᒥᕐᕈᐊᕈᑏᑦ ᖃᖕᒐᑦᑕᕐᑎᑕᐅᓯᒪᔪᑎᒍᑦ ᖃᓄᑎᕆ ᐊᑐᖅᑕᐅᑎᕆᓪᒪᖕᒫᑦ

ᓂᐅᕐᕿᓯᒪᓂᑦᑎᓐᓂ ᖃᓄᐃᓕᐅᓚᐅᕐᒪᖕᒫᑦᑕ:

- ᐊᐱᖅᓱᖅᑐᑕ ᐊᕙᑎᓂᒃ (20) ᓄᓇᓐᓂᒃᑐᐊᓕᓐᓗᑕ ᐅᖃᐅᓯᓐᓗᐊᑕᕐᑐᕆᑦ ᓱᑯᓕᕆᔾᔪᑦ, ᐅᒥᐊᕐᑐᕐᓂᖅ, ᐅᓯᕐᑕᕐᓂᐅᕙᒃᑐᖅ ᐊᒻᒪ ᐅᕙᒪᓕᓇᓂᕐᒧᑦ ᐊᑕᔪᑦ ᐋᔾᔨᑎᐅᕙᒃᑐᓂᑦ ᐅᖅᑲᖅᑎᓪᓗᕆᑦ ᐅᑯᐊ: ᐃᑦᑐᓗ ᐃᑎᓪᓗᐃ, ᐋᓯᕙᒃ ᐃᔾᔨᑭᐅᑦ, ᐋᖅᔭᖕᖓᔪᖅ ᓵ, ᐅᖅᑰᑕᖅ ᒥᑭᒐᖅ, ᓴᐸ ᐋᓯᓈ, ᐸᐅᑕ ᓴᐃᓚ, ᐊᑦᓯᐊᖅ ᐊᓚᓯᖅ, ᐃᖅᑲᓗᒃ ᑕᖅᑭᐊᑦᓯᒃ, ᑐᕿᑦᑕᒐᖅ ᕿᐃᕆ, ᖁᔫ ᕿᐃᕆ, ᖁᐱ ᑐᕐᑭᖅᑭ, ᓴᐃᒨᓂ ᐅᓯᐃᑦᑐᖅ, ᑐᕐᑭᖅᑭ ᒪᓄᒥ, ᐆᑲᓘᒃ ᐃᑦᑐᖕᒐᑦ, ᑲᓈᖏᓐᓈᖅ ᐸᑐᒍᖅ, ᐸᑐᒍᖅ ᐃᓖ ᐊᒻᒪ ᐱᖕᒐᓯᑦ ᐊᑎᖏᓐᓂᒃ ᐱᖅᑲᓯᐅᔾᔨᓯᒪᕐᑯᔨᓚᐅᓐᖏᑦᑐᑦ ᑭᓐᖓᕐᒥᐅᑦ.
- ᒪᕐᕈᐊᑎᕐᑐᑕ ᐃᓕᓐᓂᐊᕐᓯᓈᑦ ᑲᑎᒪᖅᑲᑎᖅᑲᓚᐅᕐᑐᒍᑦ ᓱᑯᓕᕆᔾᔪᑏᑦ ᐅᖃᐅᓯᖅᖓᐅᑎᖏᓐᓂᒃ ᐊᒻᒪᓗ ᑐᑭᖏᓐᓂᒃ ᑐᑭᓯᕝᕕᒋᓪᓗᑎᒍ ᐃᑦᑐᓗ ᐃᑎᓪᓗᐃ, ᒪᖏᑦᑕᖅ ᕿᓕᑉᐸᓕᒃ, ᐅᑦᔪᐊᓗᒃ ᐃᑎᓪᓗᐃ, ᐋᖅᔭᖕᖓᔪᖅ ᓵ ᐊᒻᒪ ᐸᑐᒍᖅ ᐃᓖ
- ᐅᒥᐊᖅᑐᖅᑲᑎᓪᓗᑎᒍ ᑎᒨᓐ ᐊᓚᓇᐊᖅ ᑭᓐᖓᐃᑦ ᓯᓚᑖᓄᑦ
- ᖃᒧᑕᐅᔭᒃᑯᑦ ᐊᐅᓪᓚᕈᔾᔭᐅᓚᐅᕐᒥᔪᑦ ᓯᓈᖕᖓᓄᑦ ᒪᖏᑦᑕᖅ ᕿᓕᑉᐸᓕᖕᒧᑦ ᐸᑐᒍᖅ ᐃᓖᒧᓪᓗ
- ᑲᑎᖅᑲᑎᓪᓗᑎᒍ ᐃᓕᓐᓂᐊᕐᕕᐅᑉ ᐊᖏᔪᖅᑳᖓ ᐃᑲᔪᕐᑐᑕᓗ ᐃᓇᑐᕐᑲᑦ ᖁᔭᒋᔭᐅᓂᖏᓐᓄᑦ ᐅᓄᖓᓂ ᐃᓕᓴᓇᔭᐅᓪᓗᑎᒃ.

ᑭᖑᓪᓕᕐᒥ ᖃᓄᐃᓕᐅᕐᓂᐊᓕᕐᒪᖔᑦᑕ:

- ᐊᐅᔭᖓᓂ 2008: ᓇᕿᑦᑕᖅᑕᐅᕆᐊᓖᑦ ᐊᐱᖅᓱᖅᑕᒥᓃᑦ ᐅᖃᐅᓯᖏᑦ ᐊᒻᒪ ᐃᓕᓐᓂᐊᓯᓈᑦ ᑲᑎᒪᓪᓗᑕ ᐊᔾᔨᓕᐅᕐᑕᒥᓃᑦ, ᓄᓇᓐᓂᒃᑐᐊᑦ ᖃᓇᓴᐅᔭᒃᑯᑦ ᓴᖅᑮᔭᕈᑎᖏᑦ ᐋᖅᑭᕆᐊᕐᑕᐅᓪᓗᑎᒃ ᓇᓗᓇᐃᕐᑐᖅᑕᐅᓂᖏᑎᒍᑦ
- ᐅᑭᐊᑦᓵᖓᓂ 2008: ᕿᒥᕐᕈᒃᑲᓐᓂᕐᓗᒋᑦ ᓇᕿᑦᑕᕐᑕᐅᓂᑯᑦ ᓂᐱᓕᐅᕐᑕᐅᓚᐅᕐᑐᓂᑦ ᓄᓇᓐᓂᒃᑐᐊᖏᓪᓗ, ᑲᑎᖅᓱᕐᓗᒋᑦ ᖃᐅᔮᔭᐅᓇᓯᓚᐅᕐᑐᑦ, ᐅᓂᒃᑳᓕᐊᓇᕙᓪᓕᐊᓗᒋᑦ ᑎᑎᕋᕐᓯᒪᓕᕐᓗᑎᒃ ᐊᒻᒪ ᓯᕗᓪᓕᕐᐹᑦ ᑎᑎᕋᓚᐅᕐᑕᒃᑲ ᐱᖅᓱᐅᑎᓗᒋᑦ ᐃᓕᓐᓂᐊᕈᑎᓄᑦ ᐅᕙᒪᓕᓇᓂᕐᑎᒍᑦ ᓱᑯᓕᓇᓂᐅᑉ ᐃᓗᐊᓄᑦ

ᖁᔭᓐᓇᒦᒃ ᑐᓐᖓᓱᒃᑎᑕᐅᓚᐅᕋᒪ ᓄᓇᕐᓯᓐᓄᑦ! ᖁᔭᓕᕐᓯᐊᕐᑐᖓ ᐸᑐᒍᖅ ᐃᓖᒧᑦ ᐃᑲᔪᕈᓐᓇᓚᐅᕐᒪᖔᖓ ᑭᓐᖓᕐᓄᑦ ᓂᐅᕐᕿᓯᒪᑎᓪᓗᖓ, ᑐᓵᕆᓪᓗᒍ ᐊᐅᓪᓚᑲᑕᓐᓂᓂ, ᐊᒻᒪ ᐋᖅᑭᒃᓱᐃᔪᓐᓇᓚᐅᕐᒪᖔᑦ ᐊᐱᖅᓱᕐᓂᐊᕐᑕᓐᓂᒃ ᐃᓂᒃᓴᓕᐅᕆᓪᓗᓂ, ᐃᓕᓐᓂᐊᕐᓯᓈᑦ ᑲᑎᒪᓂᐅᓂᐊᕐᑐᒥᒃ ᓱᑯᒃᑯᓪᓗ ᐊᐅᓪᓚᕿᔾᔨᐅᓂᕐᓄᑦ. ᑕᒪᓐᓇ ᑲᔪᓯᒍᓐᓇᓚᖓᓚᐅᓐᖏᓪᒪᑦ ᑕᐃᓐᓇᐅᓚᐅᓐᖏᑉᐸᑦ. ᖁᔭᓕᕆᓪᓗᖓ ᑕᒪᐃᓐᓄᓯᐊᖅ ᐊᐱᖅᓱᖅᑕᐅᓚᐅᕐᑐᓄᑦ, ᐃᓕᓐᓂᐊᕐᓯᓈᑦ ᑲᑎᒪᖅᑕᐅᓚᐅᕐᑐᓄᑦ ᐊᒻᒪ ᓯᑯᒃᑯᑦ/ᐅᒥᐊᒃᑯᓪᓗ ᐊᐅᓪᓚᕿᔾᔨᓚᐅᕐᑐᓄᑦ, ᐊᒻᒪᓗᒃᑕᐅᖅ Hᐋᒪᓚᒃᑯᑦ ᐊᓪᓚᕝᕕᖓᓐᓂᕐᒥᐅᑦ ᐃᑲᔪᕐᓇᓐᓂᒃᐊᕐᑕᕐᓯᓐᓇᓚᐅᕐᒪᑕ. ᖁᔭᓕᔪᖓ ᑲᑎᖅᑲᑎᒌᒋᐅᓚᐅᕐᓂᑎᓐᓂᒃ ᐃᓕᐸᐸᓪᓕᕐᓯᒪᓪᓚᕐᓇᒃᑐᖓᓗ ᐃᒥᒃᑯᑦ ᐃᓕᕐᓯᓂᒃ. ᑭᖑᓪᓕᕐᐸᐸᓪᓕ, ᖁᔭᓕᕝᕕᒋᔭᒪᓪᓗᒋᑦ ᑭᓐᖓᕐᒥᐅᓕᒫᑦ ᐃᑲᔪᕐᑐᐃᓂᖏᓐᓄᑦ ᓱᑯᓕᕆᔾᔪᑏᑦ ᐅᖃᐅᓯᖅᖓᐅᑎᖏᓐᓂᒃ ᐋᖅᑭᒃᓱᐃᑎᓪᓗᑕ. ᑭᓐᖓᕐᒥᐅᑦ ᐱᖅᑕᐅᓂᖏᑦ ᐱᓪᒪᓇᐅᓐᓂᒃᓯᒪᓚᑦ ᓱᑯᓕᕆᔾᔪᑏᑦ ᐊᖅᑯᑎᐅᕙᒃᑐᓪᓗ ᐅᖃᐅᓯᖅᖓᐅᑎᖏᓐᓂᒃ ᐋᖅᑭᒃᓱᐃᑎᓪᓗᑕ ᑐᑭᖏᓐᓂᒃ ᐊᒻᒪ ᑖᓐᓇ ᑲᒪᒋᔭᕗᑦ ᑲᔪᓯᒍᓐᓇᕋᔭᓚᐅᓐᖏᓪᒪᑦ ᐃᑲᔪᕐᑎᖃᓐᖏᒃᑯᑦᑕ ᓄᓇᕐᓯᓐᓂᒃ. ᓂᕆᐅᒃᑐᖓ ᐅᑎᕚᕆᐊᒃᓴᖅ ᑭᓐᖓᕐᓄᑦ ᑖᓐᓇ ᑲᒪᒋᒋᐊᕐᑐᑲᓐᓂᕐᓗᒍ ᐊᕐᕌᒍᓛᕐᑐᒥ ᐅᖓᑎᐊᒍᑦ ᔫᓐᓂᓐ.

ᐊᐱᖅᑯᑎᑦ? ᐅᖃᐅᓯᒃᓴᑦ?

ᖃᓇᓴᐅᔭᒃᑯᑦ ᑐᑭᓯᐊᕐᕕᒃ: http://gcrc.carleton.ca/isiuop

ᐅᖄᓚᐅᑦ: (613)520-2600 x8165 **ᓱᒃᑲᔪᒃᑯᑦ**: (613)520-2395 **ᖃᓇᓴᐅᔭᒃᑯᑦ ᑐᕌᑖ**: kkelley@connect.carleton.ca

Appendix D - Preliminary Research Results in English and Inuktitut as personally hand delivered in March, 2009

The Politics of Sea Ice in the Canadian Arctic

Karen Kelley
MA Candidate. Carleton University. Ottawa, ON

In May and June of 2008 I was in Cape Dorset seeking to learn your views on sea ice use, travel, shipping, sovereignty, as well as government actions and community involvement in the decision-making process regarding shipping. Your insights were incredibly valuable, and provided a strong foundation from which to address several important research questions.

Here are a few of the key messages drawn from the 20 interviews I conducted:

- Sea ice is an important and useful part of the Arctic environment.
- Shipping in the Arctic has increased over the last few years. Ships are viewed as beneficial to the community while also posing threats to the environment.
- There is some familiarity regarding the international debate over access to the Arctic waters, although there appears to be unfamiliarity in regards to the regulation of shipping in the Arctic.

These results have been considered in relation to reviews of key government Acts and Agreements.

The key findings from policy analysis include:

- Internationally, the United Nations sets standards for shipping practices all over the world, and defines the boundaries for State controlled waters.

- Within Canada, the Federal government is responsible for regulating shipping in the Arctic Ocean.
- In general, both the International and Federal Acts and Agreements regard sea ice as a barrier and hazard to transportation.

- Specifically in Nunavut, the territorial government, although it is not responsible for shipping, acknowledges and understands the importance sea ice plays in the lives of many Inuit throughout the territory.

Overall, it is clear that there is a disconnect between what is taking place in the communities and what is happening at the government level.

A key recommendation that has come out of my experience in Cape Dorset is that there should be community consultation and community involvement in decisions made regarding shipping in the Arctic waters, due to the potential effects on the community.

The information you have shared has also helped to raise awareness with others in the South, as I have presented preliminary analyses at Carleton University, the Ottawa-Carleton Student Northern Research Symposium, and I will be presenting at the Canadian Association of Geographers Annual conference this May. Overall your contributions are also part of the larger Inuit Sea Ice Use and Occupancy Project, that is an International Polar Year project.

I thank the entire community of Cape Dorset for enlightening me with so much information and I welcome your comments and questions on these preliminary results.

Karen Kelley

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(size reduced to fit page)

ᒐᕙᒪᓕᕆᓃᑦ ᓱᑯᓕᕆᓂᕐᒧᑦ ᑲᓇᑕᐅᑉ ᐅᑭᐅᖅᑕᖅᑐᖓᓂ

ᑭᐅᕋᓐ ᑮᓕ
ᓯᓚᕐᑐᓴᕐᕕᒻᒥ ᐃᓕᓐᓂᐊᖅᑎ. ᑲᐅᕋᑕᓐ ᓯᓚᕐᑐᓴᕐᕕᒃ. ᐋᑕᕚ, ᐋᓐᑎᐅᕆᔪ

ᐅᐱᓐᖒᕐᓴᖑᑎᓪᓗᒍ **2008−ᒥ** ᑭᖕᒐᕐᓃᓚᐅᕋᒪ ᑐᑭᓯᒍᒪᓂᕐᑲᖅᓱᖕᒐ ᐃᓱᒪᒋᔭᕐᓯᓐᓂ ᐱᔾᔪᑎᖃᖅᑐᓂ ᓱᑯᒥ, ᐊᓱᕗᕐᓂᕐᒥ, ᐅᒥᐊᕐᔪᐊᕐᑲᕐᓂᕐᒥ, ᓄᓇᕐᑲᕐᓂᕐᒥ, ᐃᓚᐅᒻᒥᑎᓪᓗᒋᑦ ᒐᕙᒪᒃᑯᑦ ᐊᐅᓚᓂᕆᔾᔪᑎᑦ, ᐊᒻᒪᓗ ᓄᓇᖁᑦ ᐃᓚᐅᕐᑲᑕᐅᓂᕆᕙᓐᓂᖕᒐᓄᑦ ᓇᓗᓇᐃᔭᐃᑎᓪᓗᒋᑦ ᓇᓗᓇᐃᔭᐃᔾᔫᑦ ᐅᒥᐊᕐᔪᐊᕐᑲᕐᑲᑦᑕᓂᕐᒧᑦ. ᐅᕐᑲᐅᓯᕆᓚᐅᖅᑕᓯ ᐊᑑᑎᓕᕉᓚᐅᖅᑐᑦ, ᐊᒻᒪᓗ ᑐᖖᒐᕙᓯᐊᕘᓚᐅᖅᓯᑎᒃ ᐊᐱᖅᑯᑎᖏᓄᑦ ᑐᑭᓯᒐᓱᐊᓯᐊᓂᕐᒧᑦ.

ᐅᑯᐊᑕᒡᒐ ᐊᒥᓲᖕᒋᑦᑐᑦ ᐱᒪᕆᐅᓂᖅᓴᐃᑦ ᐅᕐᑲᐅᓯᕆᔭᐅᓚᐅᖅᑐᑦ ᐊᐱᖅᓱᕐᓂᕐᑲᖅᑎᓪᓗᖓ ᐊᕕᑎᓂᑦ ᐃᓄᓐᓂᒃ:

- ᓱᑯ ᐱᒪᕆᐅᔪᖅ ᐊᒻᒪᓗ ᐊᑑᑎᕐᑲᓯᐊᖅᓱᓂ ᐅᑭᐅᖅᑕᖅᑑᑉ ᐊᕕᑎᖕᒐᓂ.
- ᐅᒥᐊᕐᔪᐊᕐᑲᕐᑲᑦᑕᕐᓂᖅ ᐅᑭᐅᖅᑕᖅᑐᒥ ᐊᒥᓲᖑᖅᐸᓪᓚᖅᓯᒪᔪᖅ ᐊᒥᓲᖕᒋᑦᑐᓂ ᖃᖕᒋᖅᑐᓂ ᐊᕐᕌᒍᓂ. ᐅᒥᐊᕐᔪᐊᑦ ᑕᐅᑐᑦᑕᐅᔪᑦ ᐊᑑᑎᕐᑲᓇᐊᖕᒋᑦ ᓄᓇᓕᓐᓄᑦ ᑭᓯᐊᓂᑦᑕᐅᖅ ᐊᕙᑎᓕᕆᓂᕐᒧᑦ ᓈᒻᒪᓯᐃᓐᓇᖕᒋᑦᑐᖅ.
- ᐊᔾᔨᒋᓐᓂᕐᑲᓪᓛᔪᑦ ᐋᔾᔨᕐᑲᑎᒋᓐᓂᐊᔪᑦ ᓄᓇᓕᖅᔪᐊᓄᑦ ᐅᑭᐅᖅᑕᖅᑑᑉ ᐃᒪᕐᑯᑎᖏᑦ ᐊᑐᖅᑕᐅᔪᓐᓇᕈᓐᓇᖅᓴᓂᐊᖏᑦ ᑭᒃᑯᑐᐃᓐᓇᕐᓄᑦ, ᑕᐃᒪᐃᑦᑎᓪᓗᒍ ᐊᔾᔨᒋᑎᖖᒋᑦᑐᑦ ᒪᓕᒐᐃᑦ ᐅᒥᐊᕐᔪᐊᓕᕆᓂᖅ ᐅᑭᐅᖅᑕᖅᑐᒥ.

ᑕᒪᒃᑯᐊ ᑐᑭᖔᕈᑕᐅᓯᒪᔪᑦ ᐊᓯᔾᔨᖅᑐᐃᒍᑕᐅᓯᒪᓕᖅᑐᑦ ᒐᕙᒪᒃᑯᑦ ᐊᑐᐊᒐᖏᓐᓂ ᐊᒻᒪᓗ ᐊᖏᕈᑕᐅᓯᒪᔪᓂ..

ᐅᑯᐊᑕᒡᒐ ᖃᐅᔨᓴᐅᓯᒪᓕᖅᑐᑦ ᐊᑐᐊᒐᓕᐅᖅᑎᓄᑦ:

- ᓄᓇᕐᔪᐊᓕᒫᖑᒐᔪᓄᑦ ᑲᑐᔾᔨᖃᑎᒌᖕᒋᑦ ᓄᓇᓕᕐᔪᐊᑦ ᐊᑐᐊᒐᓕᐅᖅᑲᑦᑕᖑᒐᓱᑦ ᐅᒥᐊᕐᔪᐊᕐᑲᕐᓂᕐᒥ ᐊᑐᖅᑕᐅᕙᑦᑐᓂ ᓄᓇᕐᔪᐊᑎᓐᓂ, ᓇᓗᓇᐃᔭᐃᑲᑦᑕᖑᒐᑦᓯᑎᓗ ᐊᑐᖅᑕᐅᒍᓐᓇᖅᑐᓂ ᓄᓇᓕᖅᔪᐊᑦ ᐃᒪᕐᑯᑎᖕᒋᓐᓂ.
- ᑲᓇᑕᐅᑉ ᐃᓗᐊᓂ, ᒐᕙᒪᑐᕐᑲᒃᑯᑦ ᒪᓕᒐᓕᐅᖅᑲᑦᑕᖑᒐᔪᑦ ᐅᒥᐊᕐᔪᐊᕐᑲᕐᓂᕐᒥ ᐅᑭᐅᖅᑕᖅᑑᑉ ᐃᒪᖕᒋᓐᓂ.
- ᑕᒻᒪᒃᑮᑦ ᒐᕙᒪᑐᕐᑲᒃᑯᑦᑐ ᑲᑐᔾᔨᕐᑲᑏᑦᑐ ᓄᓇᓕᕐᔪᐊᓄᑦ ᒪᓕᒐᐃᑦ ᐊᖏᕈᑕᐅᓯᒪᔪᑦᑐ ᐅᖅᑲᖅᓯᒪᔪᑦ ᐊᑦᑕᓇᑎᐊᖕᒐ ᓱᑯᐃᑦ ᐃᖏᕐᕋᔪᓕᕐᑎᕐᒧᑦ.
- ᓄᓇᕗᒻᒥ ᐱᓱᐊᖅᑐᖅ, ᓄᓇᕘᑦ ᒐᕙᒪᖏᑦ, ᐊᑐᐊᒐᓕᐅᖅᑎᐅᖏᖅᑲᓱᐊᕋᒦᑦ ᐅᒥᐊᕐᔪᐊᕐᑲᕐᓂᕐᒧᑦ, ᖃᐅᔨᒪᔪᑦ ᑐᑭᓯᒪᑦᓯᑎᓗ ᐱᒻᒪᕆᐅᒥᐊᖕᒐ ᐃᓄᐃᑦ ᐃᓅᓯᖏᓐᓄᑦ ᓄᓇᕗᓕᒫᕐᒥ.

ᐃᓅᓐᓇᓂ ᑕᑯᓗᒍ, ᐊᕙᓯᒪᔪᑦ ᓄᓇᓕᓐᓂ ᐱᓕᕆᐊᖑᔪᑦ ᒐᕙᒪᓕᕆᓃᑦᑐ.

ᐱᕐᑯᔭᐅᓯᒪᓪᓚᕆᑦᑐᖅ ᑭᖕᒐᕐᓃᑦᓯᒪᑎᓪᓗᖓ ᓄᓇᓖᑦ ᐅᕐᑲᕐᑎᐅᕐᑲᑦᑕᕆᐊᕐᑲᕆᐊᖏᑦ ᐊᒻᒪᓗ ᐃᓚᐅᕐᑲᑕᐅᕐᑲᑦᑕᕆᐊᖏᑦ ᑐᑭᒫᕈᑎᕐᑲᓕᖅᐸᑕ ᐅᒥᐊᖅᔪᐊᓕᕆᓂᕐᒥ ᐅᑭᐅᖅᑕᖅᑐᒥ, ᐊᑦᑐᖅᑕᐅᒍᓐᓇᕐᓂᖏᑦ ᐱᔾᔪᑎᒋᓗᒍ.

ᐅᕐᑲᐅᓯᕆᓯᒪᔾᔨ ᐅᔾᔨᖅᑐᐃᒍᑕᐅᓯᒪᓕᖅᑐᑦ ᖃᑦᑐᓅᑦ ᓄᓇᖕᒐᓂ, ᐅᕐᑲᐅᓯᕆᓯᒪᓕᖅᑕᕋᓂ ᑐᑭᓯᓯᒪᔭᒃ ᑲᐅᔾᔭᓐ ᓯᓚᕐᑐᓴᕐᕕᔾᔪᐊᖑᓂ, ᐋᑐᕚ-ᑲᐅᔾᔭᓐ ᐃᓕᓐᓂᐊᖅᑏᑦ ᐅᑭᐅᖅᑕᖅᑐᓕᕆᓂᕐᒧᑦ ᑐᑭᓯᒐᓱᐊᑎᖏᑦᑕ ᑲᑎᒪᔩᖏᑦᑐ ᐃᓚᐅᑎᓪᓗᒍ ᐅᕐᑲᐅᓯᕐᑲᓛᖅᑐᒍᑦ ᑲᓇᑕᒥ ᑲᑐᔾᔨᕐᑲᑏᖏᑦ ᓄᓇᓕᕆᓂᕐᒧᑦ ᐊᕐᕕᒍᑕᓖᖅᓯᐅᑎᒥᓂ ᑲᑎᒪᓕᖅᐸᑕ ᒪᐃᖑᓕᖅᐸᑦ. ᐊᓱᐊᒍᑦᑕᐅᖅ ᐅᕐᑲᐅᓯᕆᓯᒪᔭᓯ ᐃᓚᓕᐅᕈᑕᐅᓂᐊᕐᒥᔪᑦ ᐃᓄᐃᑦ ᓱᑯᒥ ᐊᑐᖅᐸᑦᑕᖅᑎᑦ ᐱᓕᕆᐊᖑᔪᖅ, ᓄᓇᕐᔪᐊᓕᒫᒧᖑᔪᒧᑦ ᐅᑭᐅᖅᑕᖅᑐᓕᕆᓂᕐᒧᑦ ᐊᕐᕌᒍᖑᑕ ᐱᓕᕆᐊᒧᑦ.

ᖁᔭᓕᒃᑕᒃᑲ ᐃᓄᓐᓇᑎᒃ ᑭᖕᒐᕐᒥᐅᑦ ᐅᕐᑲᐅᓯᕐᑲᐳᓇᓯᒪᓂᖏᓐᓄᑦ ᐊᒻᒪᓗ ᑐᖖᒐᓱᑦᑎᓯᔪᖕᒐ ᐅᕐᑲᐅᓯᓴᓯᓂᒃ ᐊᐱᖅᑯᑎᓴᓯᓂᓗ ᖃᐅᔨᓴᕐᑲᓇᓐᓇᖅᑎᓪᓗᑕ.

ᑭᐅᕋᓐ ᑮᓕ

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Appendix E - List of Codes and associated descriptions created in Atlas.ti from interview results (in alphabetical order)

Code	Description
Boats	This includes information describing travel by boat
Boundary	This includes information describing boundaries in the arctic regions including territorial, federal and international in addition to answer to the question "how do you think of sea ice in relation to territorial or federal boundaries"
Cape Dorset	This includes information describing the community of Cape Dorset, including when people moved to the community, its history, art production, and visitors (cruise ships) etc.
Community involvement	This includes any opinions on whether the community is being involved in decisions and discussions relating to Arctic shipping, and if/how they should be involved
Conflict	This includes reference to there being any form of conflict/war over the Arctic waters/resources
Cracks	This includes information describing cracks in the sea ice, including how they form, where they occur and the safety risks associated with them
Currents	This includes information describing currents around Cape Dorset, including how they affect sea ice and travel
Dog team	This includes information describing travel by dog team on the sea ice and land
Family	This includes information describing family members of the participant
Freezing	This includes information describing the freezing process of oceans creating sea ice
Gender Roles	This includes information discussing the different roles women and men play within the community

Code	Description
Government	This includes any information regarding government presence, regulations and actions.
Health	This includes information describing the health of Cape Dorset residents, most often references to TB in the past
Hunting	This includes information about hunting trips, locations and animals
Impact of shipping	This includes information regarding the impact of ships such as oil spills, disruptions to wildlife etc.
Importance of sea ice	This includes information given by the participants that described how sea ice is used, what role it plays for people's lives and why it is important to the community
Increased shipping	This includes information regarding how many ships are seen around Cape Dorset, how many visit the community and whether this represents an increase over the participants' lifetime
Infrastructure	This includes information describing infrastructure such as roads, docks/ports, motorized vehicles etc.
International waterway	This includes people's opinions on the Arctic waters being open for international shippers
Landmark	This includes descriptions of landmarks around Cape Dorset including high hills, whale bones, light houses, inukshuks, burrials etc.
Melting	This includes information describing the melting process of sea ice
Mine	This includes references to the nearby soap stone mines
Ownership waters	This includes information describing the ownership of the Arctic waters/ocean
Quotes	This includes important quotes that were said throughout the interviews that stood out to me, they describe a variety of different topics
Safety	This includes information related to safety on and around sea ice including descriptions of areas that are important for checking ice safety, dangerous areas etc.

Code	Description
Sea Ice	This was a large category that included any reference and description of sea ice
Sea Ice - Land - Water relationship	This includes information answer the question “how do you think of sea ice in relation to land or water”
Ship	This is a large category and includes any information describing ships
Snowmobile	This includes information describing travel by snowmobile on the sea ice and land
Story	This includes a story told by the participant. This could be about travel, sea ice, ships, hunting, Cape Dorset etc.
Teaching	This includes information describing the teaching of sea ice conditions, safety, use, travel as well as teaching in schools
Terminology	This includes mention of *Inuktitut* sea ice terminology
Tide	This includes information describing the tides
Travel	This is a large category that includes information describing all modes of travel
Trip	This includes information discussing a trip, one time travel occasion
Use of sea ice	This includes information describing the use of sea ice including for travel, hunting, or recreation, and if/how it has changed
Walking	This includes information describing travel by walking on the sea ice and land
Water	This includes information discussing waters such as Arctic waters, drinking water, and lakes
Weather	This includes information describing weather conditions around Cape Dorset, including how it affects sea ice and travel
Wind	This includes information describing wind conditions around Cape Dorset, including how it affects sea ice and travel

Appendix F - An example of the attribute table created in QGIS with descriptions of the fields

community	descriptio	event	event_name	event_type	f_id	f_sub_type	f_type	gid	interview_	notes	toponomy	researcher	src_srid	src_wkt	story
Cape Dorset	boating route, also as far as floe edge ever seen	false	NULL	NULL	0	boat	travel	0	AS	NULL	NULL	KEK	0	NULL	NULL
Cape Dorset	boating route	false	NULL	NULL	0	boat route	travel	0	IT	NULL	NULL	KEK	0	NULL	NULL
Cape Dorset	boating route	false	NULL	NULL	0	boat	travel	0	AS	NULL	NULL	KEK	0	NULL	NULL
Cape Dorset	boating route	false	NULL	NULL	0	boat	travel	0	AS	NULL	NULL	KEK	0	NULL	returning from mine with load
Cape Dorset	unintentional boat route, stranded on ice pack, landed on island, had to move to	true	caught in ice pack.	lost	0	boat	travel	0	QT	NULL	NULL	KEK	0	NULL	NULL
Cape Dorset	boat route	NULL	NULL	NULL	0	boat route	travel	0	SO	NULL	NULL	KEK	0	NULL	NULL
Cape Dorset	boat route	NULL	NULL	NULL	0	boat route	travel	0	SO	NULL	NULL	KEK	0	NULL	NULL
Cape Dorset	boat route	NULL	NULL	NULL	0	boat route	travel	0	SO	NULL	NULL	KEK	0	NULL	NULL
Cape Dorset	boat route	false	NULL	NULL	0	boat	travel	0	AS	NULL	NULL	KEK	0	NULL	seal pup hunting in the inlets
Cape Dorset	boating route	false	NULL	NULL	0	boat route	travel	0	KP	NULL	NULL	KEK	0	NULL	NULL
Cape Dorset	boat route to soap stone mine	false	NULL	NULL	0	boat route	travel	0	KP	NULL	NULL	KEK	0	NULL	NULL
Cape Dorset	boat route	NULL	NULL	NULL	0	boat route	travel	0	QT	NULL	NULL	KEK	0	NULL	NULL
Cape Dorset	boat route	NULL	NULL	NULL	0	boat route	travel	0	SO	NULL	NULL	KEK	0	NULL	NULL

Legend:
Community: Name of community
Description: brief description of the feature (point, line, polygon)
Event: if it was a one time occurrence (False/Null mean no/no information)
Event_name: name of the one time occurrence
Event_type: type of one time occurrence
f_id: number that will be associated with the feature
f_sub_type: subtype of the feature
f_type: type of feature
gid: information relevant to GCRC team (in PostGIS stages)
interview_: initials of interviewee
notes: any notes associated with the feature
typonomy: if there is an inuktitut name for the feature
researcher: initials of the reasearcher
src_srid: information relevant to GCRC team (in PostGIS stages)
src_wkd: information relevant to GCRC team (in PostGIS stages)
story: any story that goes along with the feature