

Community Perspectives on Environmental Assessment Scoping for
Shipping and Associated Activities around
Sirmilik National Park of Canada

David Michael Claxton Lane

A thesis submitted to the Faculty of Graduate Studies in partial
fulfillment of the requirements for the degree of:

MASTER OF NATURAL RESOURCES MANAGEMENT

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By

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Manitoba in partial fulfillment of the requirement of the degree
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ABSTRACT

This thesis considers the environmental, economic, social, and cultural effects of increasing shipping activities around Sirmilik National Park of Canada, in order to develop possible scoping questions for future environmental assessments. Using a qualitative approach, 25 semi-structured interviews, two focus groups, observation, and field notes were used to collect data which are then analyzed for linkages between valued environmental and social components and the potential effects from shipping and associated activities.

The most prominent concern that emerged regarded the potential impacts to migrating and breeding narwhal in the area. Many respondents also discussed economic and social issues because they perceive increasing shipping as a signal of economic growth. In total, 124 scoping questions were developed in 17 direct environmental impact areas identified by participants, as well as 53 scoping questions relating to cumulative effects and strategic issues. The thesis concludes with some broader management implications that flow from the analysis.

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DEDICATION

This thesis is dedicated in loving memory of

Doreen Marion Gauthier

For instilling in me the values that took me down this fruitful path.

TABLE OF CONTENTS

ABSTRACT	i
ACKNOWLEDGEMENTS	ii
DEDICATION	iii
LIST OF FIGURES	vii
LIST OF TABLES	vii
LIST OF PLATES	vii
ACRONYMS	viii
CHAPTER 1: INTRODUCTION	1
1.1 BACKGROUND.....	1
1.2 PURPOSE	7
1.3 OBJECTIVES.....	8
1.4 APPROACH AND METHODOLOGY.....	8
1.5 ORGANIZATION OF THESIS.....	9
CHAPTER 2: A REVIEW OF THE EFFECTS OF SHIPPING ACTIVITIES AND ENVIRONMENTAL ASSESSMENT SCOPING IN CANADA	10
2.1 OVERVIEW OF THE ENVIRONMENTAL EFFECTS OF SHIPPING.....	10
2.2 DETAILED REVIEW OF IMPACT ISSUES	11
2.2.1 <i>Impacts of Icebreaking Activities</i>	11
2.2.2 <i>Accidents</i>	13
2.2.3 <i>Effects of Discharges</i>	13
2.2.4 <i>Direct Mortality</i>	14
2.2.5 <i>Cruise Ships</i>	15
2.2.6 <i>Assessment of Shipping in the North</i>	16
2.3 SCOPING IN ENVIRONMENTAL ASSESSMENTS	16
2.3.1 <i>Overview</i>	16
2.3.2 <i>Context and Purpose of Scoping</i>	18
2.3.3 <i>Scoping Framework and CEAA</i>	20
2.3.4 <i>Environmental Assessments in Nunavut</i>	21
2.3.5 <i>Public Participation</i>	22
2.3.6 <i>Strategic Environmental Assessment (SEA)</i>	23
2.3.7 <i>Cumulative Effects</i>	23
2.4 CHAPTER SUMMARY.....	24
CHAPTER 3: METHODS	25
3.1 BLUEPRINT FOR THE INVESTIGATION	25
3.2 DETAILED EXPLANATION OF HOW THE OBJECTIVES WERE SATISFIED.....	26
3.2.1 <i>Literature Review</i>	26
3.2.2 <i>Interviews</i>	26
3.2.3 <i>Focus Groups</i>	29
3.2.4 <i>Observation</i>	29
3.2.5 <i>Data Recording and Transcription</i>	30
3.3 BIAS AND REFLEXIVITY	32
3.4 DATA ANALYSIS	32

CHAPTER 4: ENVIRONMENTAL SENSITIVITIES AND CONCERNS ABOUT SHIPPING AROUND SIRMILIK NATIONAL PARK OF CANADA	34
4.1 INTRODUCTION	34
4.2 ENVIRONMENTAL CONCERNS.....	35
4.2.1 Narwhal (<i>Monodon monoceros</i>).....	35
4.2.2 Bowhead Whales.....	39
4.2.3 Seals	40
4.2.4 Polar Bears (<i>Ursus maritimus</i>)	42
4.2.5 Fish and Fish Habitat	44
4.2.6 Birds.....	47
4.2.7 Plants.....	48
4.2.8 Invasive Species	51
4.2.9 Ice Regime	52
4.3 ECONOMIC CONCERNS	55
4.3.1 Cruise Ship and Tourism Industry Concerns	55
4.3.2 Resource Extraction Related Concerns	57
4.3.3 Access and Population	59
4.4 SOCIAL CONCERNS.....	62
4.4.1 Personal, Family and Community Life.....	64
4.4.2 Heritage Resources	67
4.4.3 Traditional Use Sites.....	69
4.4.4 Recreation	71
4.4.5 Health and Safety	71
4.4.6 Aesthetics.....	72
4.5 CUMULATIVE EFFECTS.....	74
4.5.1 Cruise Industry.....	75
4.5.2 Resource Extraction.....	77
4.6 PUBLIC INVOLVEMENT IN ENVIRONMENTAL ASSESSMENTS.....	80
4.6.1 Scoping.....	80
4.6.2 Assessment.....	81
4.6.3 Monitoring.....	82
4.7 CHAPTER SUMMARY.....	84
CHAPTER 5: SCOPING QUESTIONS FOR SHIPPING AROUND SIRMILIK NATIONAL PARK OF CANADA ..	85
5.1 INTRODUCTION	85
5.2 VALUED COMPONENTS, SHIPPING EFFECTS, AND SCOPING QUESTIONS.....	86
5.2.1 Summary of Biophysical Issues and Resulting Biophysical Scoping Questions	86
5.2.2 Summary of Economic Issues and Resulting Economic Scoping Questions	91
5.2.3 Summary of Social Issues and Resulting Social Scoping Questions	94
5.2.4 Summary of Cumulative Effects Issues and Resulting Scoping Questions	98
5.3 STRATEGIC ISSUES AND SCOPING QUESTIONS	101
5.3.1 Broader Policy Related Scoping Considerations	105
5.4 CHAPTER SUMMARY.....	105
CHAPTER 6: CONCLUSIONS & RECOMMENDATIONS.....	107
6.1 INTRODUCTION	107
6.2 CONCLUSIONS.....	109
6.2.1 Biophysical Sensitivities and Vulnerabilities of the Park.....	109
6.2.2 Economic Vulnerabilities.....	111
6.2.3 Social and Cultural Vulnerabilities.....	112
6.2.4 Cultural Heritage Sensitivities and Vulnerabilities.....	113
6.2.5 Scoping Questions.....	115
6.2.6 Strategic Environmental Assessment Issues	116

6.3 RECOMMENDATIONS.....	118
6.3.1 <i>Scientific Research</i>	118
6.3.2 <i>Communication and Relationship Building</i>	119
6.3.3 <i>Long-Term Sustainability</i>	121
6.3.4 <i>Scoping Process</i>	122
6.4 FINAL THOUGHTS.....	122
APPENDIX – 1: INTERVIEW SCHEDULE.....	137
APPENDIX – 2: POND INLET BUISNESSES AND STAKEHOLDERS.....	140
APPENDIX – 3: ENGLISH CONSENT FORM	141
APPENDIX – 4: INUKTITUT CONSENT FORM	1422
APPENDIX – 5: ETHICS APPROVAL.....	143
APPENDIX – 6: PARKS CANADA RESEARCH LICENCE.....	1444
APPENDIX – 7: NUNAVUT RESEARCH LICENCE	14949

LIST OF FIGURES

1.1: Location of Sirmilik National Park of Canada and and Pond Inlet	1
1.2: The four parcels of land that make up Sirmilik National Park of Canada and their proximity to: 1 - Navy Board Inlet, 2 – Eclipse Sound, 3 – Milne Inlet, 4 – Button Point, 5 – NW flow edge, 6 – SE flow edge, 7 – Baillaraige Bay Bird Cliffs, 8 – Oliver Sound, as well as Nanisivik, Arctic Bay, Pond Inlet, Lancaster Sound, and the Mary River Mine Site	2

LIST OF TABLES

4.1: Population Demographic Comparison of Pond Inlet, Nunavut, and Canada	61
5.1: Summary of Biophysical Issues as Identified by Participants	86
5.2: Summary of Economic Issues as Identified by Participants	91
5.3: Summary of Social Issues as Identified by Participants	94
5.4: Summary of Cumulative Effects Issues as Identified by Participants	98

LIST OF PLATES

1.1: Hapag-Lloyd operated German cruise ship the Hanseatic Anchored Outside Pond Inlet.....	5
4.4: Glistening Arctic Char from the Pristine Arctic Waters and Incredible Scenery	45
4.5: Four Fish Quota Filled Within an Hour.....	46
4.6: Arctic Vegetation from Shoreline to Mountain	49
4.7: Shoreline Tundra Vegetation and Arctic Cotton	50
4.8: Massive Greenland Iceberg in Navy Board Inlet.....	54
4.9: Sealift Delivering Semi-Annual Supplies to Pond Inlet	60
4.10: Pond Inlet with Bylot Island and Sirmilik Glacier in Background.....	64
4.11: Cultural Demonstration for Tourists at Pond Inlet Cultural Centre.....	66
4.12: Breathtaking Scenery of Bylot Island Near Navy Board Inlet	73
4.13: Hapag-Lloyd Hanseatic Cruise Ship Ferrying Passengers to Shore.....	76
4.14: Parks Canada Vessel Refueling in Navy Board Inlet	83

(All photos taken by the author)

ACRONYMS

AANDC – Aboriginal Affairs and Northern Development Canada
CEAA – Canadian Environmental Assessment Agency
DFO – Department of Fisheries and Oceans
DND – Department of National Defense
EA – Environmental Assessment
EIS – Environmental Impact Statement
HTO – Hunters and Trappers Organization
IIBA – Inuit Impact and Benefit Agreement
INAC – Indian and Northern Affairs Canada
NIRB – Nunavut Impact Review Board
NPC – Nunavut Planning Commission
NPPAA – Nunavut Planning and Project Assessment Act
NPMO – Northern Projects Management Office
NT – Northwest Territories
NTI – Nunavut Tunngavik Inc.
NU - Nunavut
NWB – Nunavut Water Board
NWMB – Nunavut Wildlife Management Board
SEA – Strategic Environmental Assessment

CHAPTER 1: INTRODUCTION

1.1 Background

Established in 2001, Sirmilik National Park of Canada is the most recent of the two Baffin Island parks and Canada's third largest national park, comprising 22,252km² (Parks 2009a). The Park is made up of four parcels on or around the northern tip of Baffin Island, and encompasses much of the Borden Peninsula, Bylot Island, Oliver Sound, and the Baillaraige Bay bird cliffs (see Figures 1.1 and 1.2). It also includes the Bylot Island Migratory Bird Sanctuary, which is jointly managed with the Canadian Wildlife Service. Sirmilik (meaning "place of glaciers") is 800km north of the Arctic Circle, and represents the Eastern Arctic Lowlands and Northern Davis Natural Regions of Canada, as well as parts of the Lancaster Sound Marine Region (Parks 2009a). The northern border of the park is formed by Lancaster Sound, which makes up the eastern entrance to the coveted Northwest Passage (see Figure 1.2).

Figure 1.1: Location of Sirmilik National Park of Canada and Pond Inlet



Figure 1.2: The four parcels of land that make up Sirmilik National Park of Canada and their proximity to: 1 - Navy Board Inlet, 2 – Eclipse Sound, 3 – Milne Inlet, 4 – Button Point, 5 – NW flow edge, 6 – SE flow edge, 7 – Baillaraige Bay Bird Cliffs, 8 – Oliver Sound, as well as Nanisivik, Arctic Bay, Pond Inlet, Lancaster Sound, and the Mary River Mine Site.



The park is internationally recognized as a summer home to the most diverse avian community in the High Arctic, including thick-billed murre, black-legged kittiwake, and the world's largest breeding colony of Greater Snow Geese (Parks 2009a). It is also home to populations of walrus, polar bear, caribou, arctic fox, wolf, arctic hare, and several species of seal and whale (Parks 2009a). As with most northern ecosystems, the area and its associated vital habitats are highly sensitive to disturbance. For example, The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) designates the Narwhal and Bowhead (two important local species) as species of Special Concern, and while the numbers of Bowhead appear to be increasing, they are highly sensitive to development and environmental change

(COSEWIC 2010). Thus, increasing development and associated shipping activity are critical concerns in relation to Parks Canada's mandate to protect ecological integrity and promote sustainability, in order for present and future generations to experience Canada's nationally significant areas (Parks 2011).

The cultural history of the park is equally as important, and dates back over 3000 years (Parks 2009b). It has included the Pre-Dorset, Dorset, Thule, and now the modern Inuit peoples (Parks 2009b). This heritage is valuable spiritually and historically; however, through improved access for cultural-tourism and eco-tourism, these communities are also witnessing economic benefits from sharing their culture with tourists (Arctic Council 2009; Dawson *et al* 2007; Stewart 2006). While Parks is committed to opening these areas for public discovery and learning, there are significant challenges in balancing the social and environmental effects with the economic benefits (Berkes *et al* 2003; Stewart 2006). Subsequently, local people play a vital role in the management of the park and the planning for any use of its resources (Huntington 2000; NIRB 2006; Stewart 2006).

Shipping in the area around Sirmilik National Park has been increasing rapidly in the last 15 years due to increasing population and development, improving northern accessibility for tourism, resource extraction, and scientific activities, and associated military and coast guard patrols (ACIA 2004; Arctic Council 2009). Key shipping routes for resource extraction, tourism, and sea lift supply ships follow the eastern coast of Baffin Island and western coast of Greenland to Lancaster Sound and the Northwest Passage (ACIA 2004). As such, many of these vessels are likely to pass the northern border of the Park, and with decreasing sea ice, their volumes are expected to increase (UNEP 2007). While the potential future impacts of these activities in the Arctic are difficult to quantify and predict due to the relative lack of prior local experience, there

is substantial literature on the general effects of shipping on marine and terrestrial environments elsewhere (see Chapter 2 for a detailed review of shipping effects).

From 2001 to 2006, the population of Pond Inlet, NU, increased by 7.8%, while the population of Nunavut as a whole increased by 10.2% (third in the country after the Northwest Territories and Alberta with 11% and 10.6% growth respectively; Canadian average was 5.4% (Statistics Canada 2010). With increasing population come associated requirements in infrastructure and services, much of which must be supplied by ship.

In 2006, the Nunavut Impact Review Board (NIRB) reviewed the preliminary environmental effects of the proposed Mary River Iron Ore development, located approximately 150 km south of Pond Inlet, which involved shipping activities for Baffinland's bulk sampling program and early infrastructure development through Milne Inlet (NIRB 2008). Parks Canada had formally expressed concern about the impacts to Sirmilik regarding Caribou migration, "wilderness" tourism, and possible cumulative effects from other development in the area (Mouland 2007). Interest in major projects like this has also been increasing dramatically recently due to improved technology and access to northern regions and their resources (e.g., High Lake Mine near Kugluktuk¹; Garry Lake Mine² and Kiggavik Mine³ near Baker Lake; Bathurst Inlet Port and Road Project⁴; Hackett River Project⁵ south of Bathurst Inlet; and the Doris North and Meadowbank Gold Mines).

At the same time, interest in the Arctic by foreign tourists has dramatically increased. Arctic cruises are a relatively recent occurrence, historically beginning in 1984 with the MS Explorer, but not making regular trips through the Northwest Passage until the early 1990's

¹ See: Wolfden Resources Inc. (2006)

² See: Uravan Minerals Inc. (2008)

³ See: Areva Resources Canada Inc. (2008)

⁴ See: Bathurst Inlet Port and Road Joint Venture Ltd. (2008)

⁵ See: Sabina Silver Corporation (2008)

(Stewart 2008). Canadian arctic cruises peaked prior to the recession in 2008 with 22 separate trips, nine of which stopping in Pond Inlet and three landing at Sirmilik National Park (Stewart 2008). Stewart (2008) argues that if the global economy can sustain it, the Arctic may experience an explosion of cruise tourism that must be undertaken safely and sustainably in these remote, pristine, and hazardous environments.



Plate 1.1: Hapag-Lloyd operated German cruise ship the Hanseatic anchored outside Pond Inlet

All of these changes are raising a broad array of issues ranging from environmental and cultural impacts, to significant political concerns relating to climate change in the North and Canadian sovereignty (Fourtier 2002; Huebert 2002; Hurtig 2002). In 2006, subsequent to these changing conditions and increasing shipping activities, the Department of National Defense (in concert with other federal and territorial departments including the Canadian Ice Service, RCMP, Parks Canada, DFO, CCG, Canadian Rangers) conducted “Operation Lancaster” involving over

425 military and civilian personnel conducting patrols along the Baffin Coast and in the Lancaster Sound region (DND 2006). With similar goals of training for disaster and sovereignty patrols, “Operation Nanook” has been conducted in August since 2010, with international collaboration from United States and Danish contingents (DND 2010). The federal government has also committed to building an arctic deep-water port in Nanisivik and an arctic training center in Resolute, both key areas at the entrance to the coveted Northwest Passage.

Compounding these challenges, the extreme remoteness of the park provides limited infrastructure and other required facilities and equipment nearby to deal with potential spills, emergencies, and other accidents (INAC 2004). For example, in August 2010, the MV Clipper Adventurer ran aground near Kugluktuk, and stranded 188 passengers for two days until the Canadian Coast Guard icebreaker Amundsen could evacuate the tourists (CBC 2010). Fortunately in this instance, favorable weather conditions and minimal damage to the ship resulted in zero injuries or fatalities (CBC 2010). Similarly challenging, would be rapidly responding to a large scale fuel spill, such as what could have happened to the tanker MV Nanny on September 1, 2010 when she ran aground in Nunavut while loaded with 2,378,000 gallons of diesel fuel (CBC 2010). The nearest Coast Guard Station to Sirmilik National Park is over 1000 km away in Iqaluit, which is further supported by bases in eastern Canada. Careful planning and preparation for these unique accidents is required in order to protect the environment of Sirmilik National Park and the people who use it.

Environmental Assessment (EA) in Canada provides one of the strongest mechanisms for planning for and managing the above issues; however, the scoping phase has been identified as a weakness of the EA process in many countries (Abaza *et al* 2004). In Nunavut, the Nunavut Impact Review Board (NIRB) coordinates the EA process and assesses the potential impacts of

proposed development prior to approval of other required licenses. Since the required EA approval and planning process for these projects should be forward looking and anticipatory, carefully determining the appropriate scope of projects and project assessments in the early stages is critical for focusing the assessment and for identifying and mitigating potential adverse effects, prior to decisions that would allow projects to proceed or that would influence future projects (CEAA 2010a). Additionally, since EAs must consider cumulative effects, scoping of current projects that involve shipping now, can set precedents for future assessments.

The precautionary principle stipulates that we should avoid decisions that are irreversible in the future when there is significant present uncertainty. Therefore, it is important to identify the issues and determine the required scoping questions for potential future projects and EAs as early as possible, prior to making irreversible decisions. Ultimately, in order to uphold the tenets of sustainable development and Parks Canada's goal of preserving the long-term environmental, social, and economic attributes of the Park, diligent scoping for projects that involve shipping and associated activities around Sirmilik National Park is critical.

1.2 Purpose

Due to less ice cover and improved technology, more ship traffic is moving through the area around Sirmilik National Park, often as part of industrial and tourism development and requiring an official EA. The purpose of this research was to identify essential scoping questions for future EAs involving shipping and associated activities (landing, mooring, icebreaking, cruise ship related access and activities, ballast release, waste management, fuel storage and distribution, etc.) that may impact Sirmilik National Park and the people who use it. The key goal was to identify environmental, social, and economic components of Sirmilik National Park that may be

impacted by increasing ship traffic, and to suggest appropriate questions related to scope of project and scope of assessment, for future EAs.

1.3 Objectives

In order to satisfy the purpose of this research project, the specific objectives included:

- To identify environmental sensitivities of Sirmilik National Park of Canada.
- To identify potential impacts from shipping and shipping associated activities on Sirmilik National Park of Canada.
- To make recommendations regarding the appropriate scoping questions for project assessments involving shipping in the North.
- To differentiate between questions that are strategic in nature versus those that are more suited to inclusion in project assessments.

1.4 Approach and Methodology

The study area is Sirmilik National Park because being geographically located at the eastern entrance to the coveted Northwest Passage, it is one of Canada's northern national parks with a particularly high potential for impacts from increasing shipping. Furthermore, the area is rich with natural and cultural capital and very sensitive to disturbance. The first step involved learning from experiences elsewhere what impacts arctic shipping can have on coastal areas. Ecological, social, and cultural aspects of the park are considered with respect to potential vulnerabilities from increasing ship traffic and associated development. Scoping questions are then developed based on the linkages between shipping effects and valued components, and the associated risks and benefits. Through interviews, focus groups, observation and other methods

as outlined in chapter three, the process involved identifying local ecological, social and economic components of the park that are considered to be valuable and then describing the likely effects of shipping on these components, thereby determining what should be scoped into future EA decision making and ensuring that the potential impacts from shipping are accurately captured and evaluated.

1.5 Organization of Thesis

This chapter has introduced the context, background, purpose, and need for the research. Chapter 2 provides a discussion of the literature surrounding shipping and related impacts in northern waters, reviews the history of EA scoping in Canada, and raises the key concepts and issues surrounding the process of scoping. Chapter 3 provides a detailed framework for the research and explains how data collection for the objectives set was undertaken. Chapter 4 provides direct insights into living around Sirmilik based on the results of the data collection, including what issues emerged during the interviews and other methods relating to Objectives One and Two. Chapter 5 is focused on Objectives Three and Four, presenting the required scoping questions and distinguishing between issues that are project related or more strategic in nature. Chapter 6 presents final conclusions and recommendations based on the findings related to the stated objectives.

CHAPTER 2: A REVIEW OF THE EFFECTS OF SHIPPING ACTIVITIES AND ENVIRONMENTAL ASSESSMENT SCOPING IN CANADA

2.1 Overview of the Environmental Effects of Shipping

The literature reviewed has focused on information from prior EAs and scientific reports in areas most geographically and ecologically similar to the study area, primarily Lancaster Sound, the Northwest Passage, and the north eastern Canadian Arctic. Historically, most concerns around shipping in the North have focused strictly on biological impacts of oil and gas development and the associated transport to southern markets, including specific concerns about impacts to marine mammals such as collisions, fuel spills, and noise pollution (CCG 1990; Cosens 1993; Milne 1979). More recently, with the emergence of sustainability theory over the last twenty years and the subsequent understanding of the importance of considering social and economic impacts in EAs, practitioners are being required to consider the effects from shipping on such things as, quality of life, education, demographics, traditional knowledge, employment and economy (CEAA 2008).

The review of government documents, articles, and published reports concerning shipping in the North (such as the Canadian Coast Guard's 1990 Initial Evaluation of the Polar 8 Icebreaker; the 1982 Beaufort Sea Environmental Impact Statement; and the 1986 INAC Final Report on Impacts of Ship Traffic in Lancaster Sound and Northern Baffin Bay) revealed the following direct environmental impacts:

- Disturbance or collision with marine mammals and fish;

- Discharge of ballast;
- Accidental or chronic spill;
- Expansion of shipping season resulting from ice breaking activities;
- Wave action from wake and/or propeller wash and resulting impacts on shoreline erosion, and movements of plankton and larval fish;
- Accidental loss of material off barges etc; and
- Long term mooring of vessels

In general, concerns of the local people identified in the literature consist of inadequate environmental safety measures for year-round shipping, the effects of ships' leads through the ice on hunting patterns, and the potential for oil spills from tanker traffic (INAC 1986; Tahera 2003; Cumberland Resources 2005).

2.2 Detailed Review of Impact Issues

2.2.1 Impacts of Icebreaking Activities

Information on the impacts of icebreaking activities in the North was first gathered in response to the Arctic Pilot Project, which explored the feasibility of producing natural gas in the eastern portion of the Canadian Arctic Archipelago, liquefying it, and sending it to market (Milne 1979). The report identifies potential biological impacts including collisions with marine mammals, impacts on inter-island migration of terrestrial animals, entrapment of whales in leads left behind ships, the effects of noise on marine mammals, accidental spills, and the impacts of discharged ballast water.

During icebreaking, the nature of the disruption to the ice left by a ship is influenced by many factors including the type of ice and thickness, time of the year, and type and size of the

ship (CCG 1990). Furthermore, often icebreaking ships will have to repeatedly back-up and ram difficult sections of ice, causing increased disturbance (CCG 1990). These factors will impact the stability and structure of the reforming ice, which will have consequences for marine life and also for the safety of people crossing the ice. While reconsolidation of the lead left by the ship may occur within an hour of disturbance to the degree that it is safe for foot traffic, rifts and undulations may pose safety concerns for unsuspecting travelers or larger vehicles (CCG 1990).

Icebreakers will likely also affect the natural breakup of single-year ice. Cosens and Dueck (1986) documented the effects of icebreaking on the break-up of ice in Lancaster Sound, and concluded that premature large flows could be observed. In the Beaufort Sea Environmental Assessment Review, concern was expressed for continual transits delaying the formation of ice edges and the natural development of the fast ice cover (Dome Petroleum 1982). It has been noted that these ice edges have an important influence on the ice regime of the Lancaster Sound region (CCG 1990). These unusual conditions affect all species in the area in one way or another, including humans; however, accurately predicting and modeling them is confounded by other natural processes such as temporal variations and differing ice regimes (CCG 1990).

Lower trophic levels and fish are impacted by the disruptions to the ice because of the increased availability of sunlight, even though on a larger scale these effects are likely to be more greatly influenced by seasonal variation (CCG 1990). Since most arctic fish are bottom dwelling, they are unlikely to be affected by icebreaking, although a few individuals of arctic cod are known to inhabit the under surface of the ice in the spring.

Ice-edge communities of crustaceans and other biota are widespread in the Arctic and are an important food source for birds and mammals in the spring. A study conducted by LGL Limited around Pond Inlet investigated the dynamics of these communities and their effects on

predators, concluding that the effects of icebreaking is likely to be minimal for mammals and potentially beneficial to avian predators (CCG 1990).

From the literature it appears that the disturbance to the ice regime from icebreaking will have negligible effects on the biota of the area, while the cumulative effects and the effects on the local people using the ice is less well documented. The local Inuit have developed detailed mental maps in order to safely navigate this harsh and unforgiving terrain. Any unusual changes to the landscape or ice regime may pose significant threats to their safety and their ability to access their traditional hunting areas. This would also potentially affect their ability to safely assist non-locals and tourists in the event of an emergency.

2.2.2 Accidents

Shipping activities pose greater risk for accidents in the Arctic than further south because of the remoteness and extreme conditions with ice, darkness, and fog. These climatic conditions also complicate the rescue and cleanup work and thus increase risks of environmental impacts as a consequence of shipping accidents. With extensive knowledge of the geography, ice conditions, and weather, local people are the most knowledgeable and capable of responding to these incidents. However, there is also a lot of technical knowledge associated with cleanup that local people may or may not have.

2.2.3 Effects of Discharges

Discharges from ships include exhaust fumes, purified grey water, black water (garbage), and ballast water. The *Arctic Waters Pollution Protection Act* and associated regulations must be complied with, and any discharges must meet the necessary purity requirements.

Water that is used for cooking, cleaning and personal use, and released as grey water, will increase the nutrient loading in the immediate vicinity of the ship. As arctic waters are typically low in nutrients, these nutrients could initially improve primary productivity (CCG 1990). However, wind and wave action would likely disperse these inputs fairly rapidly, and the cumulative effects of multiple vessels on this fragile ecosystem are likely much more adverse.

Depending on the specific propulsion technology being used by a ship, the volume of exhaust fumes will be variable. Exhaust gasses may also be produced through incineration of wastes. Typically, exhaust gasses contain a mixture of nitrogen, oxygen, carbon dioxide, and water vapor, as well as negligible amounts of ash, soot, and carbon monoxide (CCG 1990). While the impacts from these emissions are likely to be minimal from individual ships, the cumulative effects of multiple vessels must also be considered.

One of the most common concerns about ships is the release of contaminated ballast water. If this water contains oil or exotic species, even relatively small amounts may have significant impacts on the local ecology (CCG 1990). The release of ballast water can be significantly influenced by the method and technology used in the process. The *Arctic Waters Pollution Prevention Act* contains regulations that pertain to acceptable locations and procedures for discharging ballast water.

2.2.4 Direct Mortality

The greatest concern for collisions with marine mammals is for the ringed seal (CCG 1990). In late March and early April mothers give birth to a single pup (Muir *et al.* 2000). They inhabit the fast ice and maintain breathing holes throughout the winter. For the first four weeks of their life, the pups cannot withstand the cold temperatures when wet, and therefore are unable to dive for

safety in the event of an oncoming icebreaker (CCG 1990). It is possible to determine the extent of mortality during these four months by comparing the area of the habitat affected relative to the size of the lead created by a ship (based on the ship's breadth) (CCG 1990).

While other species are less affected directly by a single icebreaker, the cumulative effects of multiple ships will have greater consequences for the ecosystem in general. For example, polar bears and arctic fox have no trouble avoiding a slow moving icebreaker, but the consequences of reduced numbers of seals will certainly have direct effects on the food chain. Similarly, marine mammals have less trouble avoiding ships in open water, but may be affected by a reduction in the seal or fish populations.

2.2.5 Cruise Ships

The effect of increased traffic from cruise ships raises a unique set of questions for EA scoping. Polar cruises require that passengers accept special rules and possible inconveniences for their own good as well as for protecting this sensitive and hazardous environment (Luck 2010).

Subsequently, these visitors require appropriate education and knowledgeable guides in order to control their behavior while on the ships and during any visits to the park. Parks Canada provides a required orientation for all visitors to the Park that includes safety concerns as well as information intended to preserve the natural and cultural heritage of the Park. Transport Canada includes cruise ship safety guidelines under its Marine Transportation Security Regulations (Cruise Ships and Cruise Ship Facilities), and other safety regulations are inherent in the *International Management Code for the Safe Operation of Ships and for Pollution Prevention*. Furthermore, a permit from Environment Canada is required for any visits to Bylot Island, which then triggers an EA (typically a screening) through the Nunavut Impact Review Board (NIRB).

Conversely, since the typical clientele visiting remote arctic regions have an interest in unique ecology, adequate financial resources, and are well educated and politically engaged, they are in a good position to provide direct aid in conservation efforts (Luck 2010). Once they have seen the tremendous beauty and deep cultural aspects of the Arctic they often take an active role in promoting this area and encouraging legislators to take appropriate action (Luck 2010).

2.2.6 Assessment of Shipping in the North

Projects like mining that involve shipping usually have a number of federal authorities associated with their required EAs: DFO, Transport Canada, Environment Canada, Indian and Northern Affairs Canada. There are also regional actors involved such as NIRB, Northern Projects Management Office (NPMO), Nunavut Planning Commission (NPC), Nunavut Tunngavik Incorporated (NTI), and The Nunavut Wildlife Management Board (NWMB). Cooperation between these potentially diverse interests is a primary challenge of Northern EAs (NPMO 2011; Graben 2011).

2.3 Scoping in Environmental Assessments

2.3.1 Overview

Scoping can be broadly defined as “a process of determining the important issues and parameters that should be addressed in an EA” (Storey 2005: <http://www.ucs.mun.ca>). It can be carried out in the initial stage of an assessment by the federal government, provincial or territorial governments, companies, or other groups that wish to understand the potential environmental effects of a project or policy. This thesis explores EA scoping in Nunavut, which is the responsibility of NIRB. However, since this authority was only completely transferred in 2010

under bill C-25 and the introduction of *The Nunavut Planning and Project Assessment Act* (NPPAA), a brief discussion of the prior scoping context under CEAA will lay out the theoretical foundation. This is followed by a discussion on the specific application of scoping under NIRB.

In formal federal and provincial EAs, scoping has typically been carried out on a case-by-case basis, through the establishment of a committee that screens the project and offers advice to the responsible authority or the Minister regarding the appropriate scope of the assessment (Storey 2005). Some of the Canadian Environmental Assessment Agency's guidance documents indirectly address scoping within the broader context of such issues as cultural heritage, climate change, and biodiversity. In 2005, the Agency released the *Cabinet Directive on Implementing the Canadian Environmental Assessment Act*, which includes a more authoritative statement on scope of assessment (CEAA 2005). The Agency has also issued an Operational Policy Statement on scoping which includes a list of key questions to be considered (CEAA 2010a).

In Nunavut the process of scoping and the associated public participation and awareness program, is managed by NIRB as the first step in their review process. After reviewing the project proposal, NIRB will consult with federal and territorial government departments, regional Inuit associations (in this case the NTI), and members of the public in order to identify valued ecosystem components (VECs) that the proponent must consider in their draft EIS. At this point, the NIRB evaluates which components of the project to include, the temporal and spatial boundaries of the project, the issues and concerns to be considered in the review, and any other requirements for the assessment of the project proposal (NIRB 2008). NIRB also facilitates a direct meeting between the proponent and interested parties as part of scoping (NIRB 2008).

2.3.2 Context and Purpose of Scoping

Noble (2006), Sadar (1996), Marriott (1997) and others discuss the importance of scoping in EAs for determining the appropriate depth and breadth of assessment, for identifying the important issues of concern, and for providing the first opportunity for public involvement in the assessment process. Specifically, they highlight the following purposes of scoping:

- Identify scientific and public areas of concern
- Identify the agencies involved
- Identify other potential stakeholders
- Help to define projects accurately
- Reduce the burden of unnecessary information
- Define the spatial and temporal boundaries of the assessment
- Identify other regulatory requirements or permits.

Scoping may apply to a specific project or policy, or to the scope of the assessment itself. In relation to the project, scoping links the definition of the project to the potential triggers and Section 15 of the Act (Kwasniak 2004). Under Section 16, the scope of the assessment is evaluated by determining the appropriate scope of factors or triggers that are identified in Section 15. Some of these factors are mandatory and others are discretionary, depending on the scale of the project and the type of assessment (screening, comprehensive study, panel review, or mediation).

According to Storey (2005), three types of methods can be used in the scoping process: standard desktop methods (check lists, matrices, mapping, etc.); public participation (workshops, surveys, interviews, etc.); and, group processes (focus groups, brainstorming, etc.)

In most situations, a combination of these methods will provide the most successful and complete recommendations for appropriate scoping (Mulvihill 2001; Storey 2005).

As it is the initial phase of an assessment, scoping is extremely important for defining the project and identifying responsible authorities, as well as for determining which factors are to be included in the assessment. It plays a critical role in the production of an efficient and focused assessment, and should result in key issues being identified and addressed early on in the assessment process. The 2005 Cabinet Directive addresses this need as follows (CEAA 2005):

“The Government of Canada is committed to ensuring that the administration of the *Canadian Environmental Assessment Act* (the Act) results in a timely and predictable EA process that produces high quality EAs so that federal decisions about projects safeguard the environment and promote sustainability.”

In the context of Northern EAs, Mulvihill (2001) discuss the concepts of ambitious and restrictive EA scoping, and the associated innovations and deficiencies. They highlight the difficulties involved in arriving at a consensus on the issues to be included in an assessment, especially when northern and southern values are in conflict, noting that a foreign proponent would likely prefer a more restrictive scoping phase, while other stakeholders and especially local residents would prefer a more ambitious phase (Mulvihill 2001). They also point out the incompatibility of applying southern methods for EA in northern regions, and express concern for the effectiveness of the current paradigm. Through a review of the Berger inquiry and the Beaufort Sea Environmental Assessment and Review Process (BEARP), as well as two more recent cases, the Great Whale Hydroelectric Project and the Ekati Diamond Mine Project, the authors conclude that the process of scoping in northern regions is inconsistent, and that deliberative experimentation needs to occur in order improve its effectiveness (Mulvihill 2001). Furthermore, they argue that for scoping to improve future EA outcomes and processes, more innovative and ambitious scoping is necessary (Mulvihill 2001).

2.3.3 Scoping Framework and CEAA

Section 15 of the Act describes the responsibilities for determining the scope of project assessments “the scope of the project in relation to which an EA is to be conducted shall be determined by: (a) the responsible authority; or (b) where the project is referred to a mediator or a review panel, the Minister, after consulting with the responsible authority” (Justice Canada 1992: <http://laws.justice.gc.ca>). Furthermore, pertaining to Section 15 of the Act, the CEAA 2005 Cabinet Directive (2005: <http://www.ceaa.gc.ca>) suggests that:

There will be a **timely and coordinated** determination of the scope of the project, the factors to be considered and the scope of the factors. To support coordination and the administration of a timely, predictable and efficient process, responsible authorities will apply the Policy set out in Part II of the Directive to determine the scope of a project.

Part II of the Directive provides a policy for determining the appropriate scope of projects in order to ensure that they are carried out in a manner that is “careful and precautionary” before action is taken (CEAA 2005: <http://www.ceaa.gc.ca>). Since there is typically more than one governmental department involved in EAs, this policy describes four scenarios in relation to federal powers and duties, and the associated determination of appropriate scope of assessment. These scenarios include situations where (i) the power or duty is in relation to the entire proposal; (ii) there is more than one power or duty in respect to the proposal; (iii) additional components that are external to the power or duty and will likely have adverse effects; and (iv), components of a proposal that occur under separate jurisdictions (CEAA 2005). The recommendations in this section of the 2005 Cabinet Directive suggest that the Minister should require interdepartmental coordination, and the inclusion into the scoping process of any components of the proponent’s proposal that will likely have adverse effects (CEAA 2005).

Non-trigger components of a project that are likely to have adverse environmental effects, or areas where there is a federal interest (as opposed to specific federal jurisdiction), should refer to activities that are connected to a specific federal jurisdiction (Doelle 2006). For example, impacts from air pollution or noise from ships may be connected to their subsequent effects on migratory birds and their associated habitat. Doelle (2006: 3) further explains that these non-trigger effects should be assessed based on three criteria: “the nature of the federal interest in question and the potential environmental risk to them; the operational inter-connectedness between the non-trigger components in question and the trigger components; and the extent to which the potential adverse environmental effects relate to matters within federal jurisdiction to be caused by the component will be considered and mitigated through other regulatory and EA processes”.

2.3.4 Environmental Assessments in Nunavut

As described in Article 12 of the *Nunavut Land Claims Agreement* (NLCA), the Nunavut Impact Review Board (NIRB) was established in 1996 with responsibilities for the EA of projects in the Nunavut Settlement Area. The NIRB mandate is "to use both traditional knowledge and recognized methods in an ecosystem analysis to assess and monitor on a site specific and regional basis the environmental, cultural and socio-economic impacts of those proposals for which it has responsibility" (NIRB 2007: <http://ftp.nunavut.ca>). Article 12 of the NLCA describes two types of review processes for the EA of proposed projects: one under Part 5 and the other under Part 6. A Part 5 review is one conducted by NIRB for projects within the “designated area” (made up of the Nunavut Settlement Area and the Outer Land Fast Ice Zone), whereas a Part 6 review is one conducted by a federal EA panel for inter-jurisdictional projects.

Since the signing of the NLCA and the creation of the NIRB, Surface Rights Tribunal, Water Board, and the NPC, the responsibility for EAs in Nunavut had been gradually shifting away from the federal government and more toward the territory and NIRB. This culminated in 2010 with the signing of bill C-25 and the introduction of *The Nunavut Planning and Project Assessment Act* (NPPAA). The NPPAA realizes the government's 1993 NLCA obligations by formalizing the NIRB and NPC in statute (Clauses 10 and 18) and by designating the area where CEAA no longer applies (Clause 7) (Parliament of Canada 2010).

In an effort to improve timeliness, transparency and predictability of EAs in Yukon, the Northwest Territories, and Nunavut, the Government of Canada, through the Canadian Northern Economic Development Agency (CanNor), established the Northern Projects Management Office (NPMO) in September 2009 (NPMO 2011). The NPMO is tasked with simplifying the regulatory process for proponents while coordinating the variety of federal departments and other stakeholders. The NPMO establishes timelines and keeps record of scoping consultations and other major components of the EA process (NPMO 2011).

2.3.5 Public Participation

The Canadian Environmental Assessment Agency (2007: <http://www.ceaa.gc.ca>) recognizes the importance of public participation in EAs for “ensuring an open and balanced process, and for strengthening the quality and credibility of EAs”. Furthermore, they state that local and traditional knowledge about a project's location can help to identify and address potential environmental effects at an early stage of the EA process (CEAA 2008). Due to the Crown's duty to consult with aboriginal people, this responsibility is particularly significant in northern jurisdictions.

For the Inuit, the assessment process itself and creating meaningful dialogue are equally as important as the outcomes of an EA (Reinfort *et al.* 2009). Additionally, in the last few years, understanding the socio-economic and cultural effects of projects has received more attention in EAs, particularly in Nunavut as a requirement under the NLCA.

2.3.6 Strategic Environmental Assessment (SEA)

A mix of project issues and other issues that are more strategic in nature can significantly confound scoping. While project EAs focus on design, construction, operation, and decommissioning issues, strategic environmental assessments (SEA) address broad policy issues, long term planning, and regional environmental concerns (Transport Canada 2002). By addressing the broader social, economic, and environmental concerns, SEA are an important tool for planning that considers regional sustainable development. Strategic EAs can also streamline project assessments by eliminating the need to address some issues at the project stage.

2.3.7 Cumulative Effects

Since the *Friends of the West Country v. Minister of Fisheries and Oceans (Sunpine Case)*, the courts have ruled that some consideration of cumulative effects must occur, but that the scope of cumulative impact assessment is discretionary. In Northern regions, the need for assessing cumulative effects becomes even more critical in respect to precedent setting cases and the relative lack of development, as well as due to the heightened sensitivity of Arctic ecosystems. However, a significant challenge arises due to the relative lack of prior development effects in the north and the difficulty of predicting theoretical future effects before they occur.

Storey (2005), Peterson *et al.* (1987) and Sonntag *et al.* (1987) identify four types of cumulative effects: linear additive effects, exponential effects, discontinuous effects that are not apparent until a threshold is crossed, and synergistic effects that occur due to underlying biophysical and socio-political mechanisms. Obviously, cumulative effects assessment exponentially complicates the EA process, especially in respect to synergistic effects and socio-economic effects. Therefore, since potential cumulative effects must be identified as early on in the assessment process as possible so that they can be properly considered, CEAA has developed a guidance document in response to this challenge (CEAA 2007).

2.4 Chapter Summary

This chapter has discussed the literature surrounding the effects of shipping and EA scoping in Northern Canada. The specific issues associated with shipping in northern regions identified include the effects of icebreaking, accidents, direct mortality, discharges, ballast release, pollution, safety, and socio-cultural concerns around cruise ships and tourism. A discussion of EA scoping introduced the general purpose and need for scoping, the federal and territorial processes, public participation, strategic environmental assessment and finally cumulative effects. The literature reviewed focused as much as possible on the context of EAs and shipping activities in Northern Canada, specifically Nunavut and the area around Sirmilik National Park of Canada.

CHAPTER 3: METHODS

3.1 Blueprint for the Investigation

As outlined in Chapter 1, this research is comprised of a literature review that was validated and enhanced through observation, formal and informal group discussions, and interviews. The results of the data collection helped to develop a table of valued components with their associated effects from shipping activities and the scope of these effects, as well as the other conclusions and recommendations responding to the specific objectives.

A qualitative approach (Creswell 2003) was used to gather and verify information about sensitive environmental areas, potential impacts from shipping, and important aspects of EA scoping in the North. A key focus was to embrace an interdisciplinary appreciation of various interests: including scientists, other local actors, First Nations, and government. Feedback to the actors involved was an important factor for establishing trust and positive working relationships. The role of the researcher was primarily as interviewer or facilitator, but also included participation and observation depending on the specific method being utilized.

A case study approach focusing on Sirmilik National Park was used following Yin (2003). The case-study approach presented by Yin (2003) that applies to my research is the *revelatory case*. Yin (2003) further discusses the important broad components of research design that have fundamentally guided this qualitative research: the study's questions; its propositions; its units of analysis; the logic linking the data to the propositions; and the criteria for analyzing the findings.

3.2 Detailed Explanation of How the Objectives Were Satisfied

3.2.1 Literature Review

The literature review examined prior impacts of shipping on northern coastal areas, investigated historical data on Sirmilik for natural and cultural significance, identified key stakeholders, a review of the progress and evolution of scoping and strategic planning and EA, and determined the practical implications of decision making and EA in Nunavut. The goal of the literature review was to identify Arctic shipping related issues that should be scoped into future project or strategic EAs. The literature is comprised of government documents, articles, and published reports concerning shipping in the North, and is a result of a search of the Department of Fisheries and Oceans Waves catalogue, the University of Manitoba's Bison and Netdoc systems, the Arctic Institute of North America online catalogue, the journal of Environmental Impact Assessment Review, the journal of Environmental Monitoring and Assessment, the NIRB public registry, INAC Northern Contaminants Program registry, and other online sources. Various authors and government bodies (e.g., DFO, Canadian Coast Guard, and Transport Canada) have developed a considerable body of work regarding the issues and concerns surrounding shipping activities, and numerous government acts pertain to these concerns (e.g., *The Oceans Act*, *Arctic Waters Pollution Prevention Act*, and *the Canada Shipping Act*). A preliminary list of stakeholders was developed (see Appendix II) through this review, and was used to identify potential interview participants.

3.2.2 Interviews

Interviews were used to verify and expand on information from the literature review, check to see that the data was consistent on the land, and discuss specific threats and opportunities facing

stakeholders. Furthermore, interviews allowed me to identify other scoping issues that were not explored in the current literature. Twenty-five interviews were conducted with a variety of individuals, including municipal employees and leadership, HTO members, outfitters, Inuit elders, Parks Canada staff, researchers, federal and territorial regulators, and others who were interested in discussing the issues around shipping in their area.

Survey materials were designed to specifically address the objectives and purpose of the research. In order to better understand impact issues, field activities were scheduled on an opportunistic basis, whereby I accompanied other people whenever and wherever they happen to go within the study area. Most interviews lasted approximately one hour and while semi-structured and informal, they all followed the topics as outlined in the interview guide (see Appendix I) in order to satisfy the research objectives. In particular, participants were probed (Bernard 1988) about their knowledge of the park and shipping, in order to help with the identification of valuable ecosystem and social components that have the potential to be impacted by shipping activities, and therefore should have scoping questions associated with them. Interviews were also used to help determine what information is already available and what information gaps exist. Participants were also asked about their views on the potential increase in development and tourism and the potential cumulative impacts of shipping around Sirmilik National Park.

Interviewees were selected in a non-random opportunistic manner, and covered a variety of interest groups (e.g., hunters and outfitters, residents, elders, regulators, hamlet employees). Based on their traditional knowledge and experience, local people were asked about how they use the Park, and their concerns around the impacts of shipping activities. Non-local people (including Parks Canada representatives, DFO researchers, Transport Canada employees, and

other private companies or consultants involved in EAs or shipping) were asked about shipping in a more general sense, as well as about specific concerns for Sirmilik and EA scoping in Canada. Interviews were primarily carried out while in the field, but preparatory interviews with non-local experts were also undertaken before entering the field. While most interviews were face-to-face, some confirmatory questioning and follow-up was accomplished by means of telephone and email. Some interviews (mostly with community elders) were conducted in Inuktitut and translated by a local interpreter.

Since the initial encounter between the interviewee and the researcher is critical for explaining the need for the research, the credentials of the researcher, and for identifying any potential underlying motives of the interviewee (Hammersley 2005), I was diligent about clearly explaining the objectives of the research, my background and motivation, and also the unaffiliated nature of the research, prior to engaging in the specific interview questions. The research methods, including interviews and focus groups, received ethics approval (approval certificate attached in Appendix 5) that ensures the confidentiality of participants.

Ethical dilemmas with respect to my responsibility for how the data is used and the informant's emotional burden within the community after the interview were also considered. Thus, participants were informed about the confidentiality of their responses and the ethical constraints on the research. Wenzel (1999) raises the issues of intellectual property rights and cultural and economic interests of Inuit peoples, and suggests that possible solutions will require traditional knowledge to be fundamentally incorporated into the process of undertaking any scientific research in Inuit communities. While in the field, I continuously received positive comments around providing the interviewees with "a local voice" on issues to take back to decision makers.

3.2.3 Focus Groups

Focus Groups were used to efficiently gather data from local parties in a less formal situation, in order to assist in further refining understanding of the park and the potential impact of shipping on it. Two focus groups were conducted, one with three participants from the municipal government, and another with six participants from the community that were chosen based on their keen interest in the topic. Three participants from each group were also interviewed individually prior to the focus groups. This method was quite valuable for the purposes of this project and for environmental management in general, since it allowed me to explore how people interacted and collaborated in interdisciplinary situations, as well as their underlying feelings and interests regarding the park and shipping. Therefore, the focus groups were designed to be very flexible and open-ended, not-recorded or transcribed, with the researcher acting primarily as a moderator. Field notes were taken by the researcher in order to capture the key issues.

One key advantage of the focus groups is their effect of reducing the power struggles between group members (Berg 1995). As a moderator, I aimed to identify and mitigate the more or less dominant participants, while still encouraging free and open discussion. Furthermore, I was conscientious of the underlying motives and potential biases of individual members, and tried to select participants that were likely to cooperate on the issues at hand.

3.2.4 Observation

Observation with documentation in a field journal was utilized continuously while in the field in order to identify possible safety concerns, the extent of marine activity, potential areas and appropriate measures for reducing the adverse effects of tourism, the involvement of local actors

in shipping activities, and the process of decision making relating to shipping activities around Sirmilik. The opportunity to travel around in the Parks Canada patrol boat allowed me to gain a deep appreciation of the vastness of the area as well as the logistical requirements of travelling on the ocean in this remote area. It also allowed me to observe the otherwise inaccessible areas of the Park such as Navy Board Inlet, Northern Bylot Island, the Hoodoos and the Bird Cliffs.

While engaged in participant observation in the community, I had to be very conscientious of how I was being perceived (Hammersley 2005). In order to reduce suspicion of ulterior motivation, I was open and honest about my intentions and avoided any deception. This was achieved by clearly defining the purpose of the research and explaining my presence in the community, and was the first step toward gaining the rapport that was so vital to conducting meaningful interviews. In fact, most community members were very positive about my presence and appreciated my genuine interest in their concerns and had a keen interest in the topic of my research. As an observer, I continuously aimed to deepen my understanding and appreciation for all the social and cultural aspects of the local residents, including those not specifically captured in the research objectives through participating in community activities, helping to repair their bicycles (of which I have extensive knowledge) and getting out on the land. This in turn has fostered relationships which are critical for working in Nunavut and with small Inuit communities.

3.2.5 Data Recording and Transcription

For data gathering, cheaper and more widespread use of recording devices has made their use more familiar and acceptable to participants, however, issues of interpretation, impact, and validity must be considered (Gibbs *et al.* 2002). Where possible and acceptable to participants,

the data was recorded digitally using the Olympus DS40 recorder. This model was chosen for its relatively low cost, small and relatively unobtrusive nature, large storage, and for the following characteristics which were critical for accurate transcription and clear recording in often noisy environments: high-sensitivity, detachable microphone; numerous noise filtering features; and easy to manipulate WMA file storage.

While it is recognized that a key advantage of recording data over simply taking notes is that it reduces the interpretive filtering effect that is inevitable when the researcher is engaged in writing down, critics argue that there are distinct disadvantages of tape-recording interactions (Speer 2003). Speer (2003) points out that “contextual effects” and “reactive effects” may occur from the presence of recording devices, ultimately making the social interaction less “natural”, though he argues for an alternative perspective to dealing with this effect. First, “being recorded comes to be treated as a participants’ issue in the course of ongoing talk”; second, “the fact of being recorded can be used as an interactional resource for the management of potentially problematic conversational situations”; and finally, “the presence of the recording device itself can be seen as a facilitator of talk” (Speer 2003: <http://soc.sagepub.com>). Speer (2003: <http://soc.sagepub.com>) concludes that “viewed from the participants perspective, the recording device becomes part of the context, whereby the researcher can creatively take advantage of its presence, and gather information about its effects on participant’s behaviour”. Following this perspective, I observed participants reaction to the device, and ensured that they were comfortable with its use before turning it on. If they were not I kept notes in my journal. I also gave them an opportunity for additional comments after turning the device off.

3.3 Bias and Reflexivity

When undertaking the process of qualitative research, not unlike any research, one has to be concerned with issues of bias. Therefore, I accepted that the data collected was contextual, and that interpretation involved my particular biases. This was partially alleviated through the review of the research by the multi-disciplinary research committee, as well as through triangulation of data from the variety of method. Consideration was also given to the perspectives and biases of the potential audience for the final document (local community members, academics, and Park's Canada). A short, non-technical summary of the fieldwork was provided to all involved parties, and Parks Canada will receive the final thesis upon completion.

3.4 Data Analysis

Data were analyzed for linkages between the literature and field data, with threats and opportunities for Sirmilik being identified. Areas that are sensitive to increased shipping provide an avenue for input into environmental planning and decision making for Parks Canada. The results are iterative and will contribute to further management of Sirmilik, and to any EA process undertaken.

This process was aided by the open source qualitative data analysis software TAMS (Text Analysis and Mark-up Software). This software was chosen over others because it is useful for handling large amounts of very rich information, is compatible with Mac OSX, and because it is easily downloaded for no charge online. The software aided considerably in the coding and organization of the data, as well as in building themes and linkages.

Authors generally agree that software such as TAMS can potentially make the process of analysis more efficient, but there is disagreement over whether some of the conceptual aspects,

related to interpretation and determining meaning, can be captured by a computer (Gibbs *et al.* 2002). Critics suggest that the limitations of computer assisted qualitative data analysis software include disconnection from the data, being too influenced by grounded theory, and aspects of the analysis that are a product of the software (Gibbs *et al.* 2002). For the purpose of this project, these concerns were addressed through triangulation with the other methods (literature, group discussions, and observation), and by the fact that I was the sole person developing and analyzing the data, and thus have an intimate knowledge of the context of the information.

CHAPTER 4: ENVIRONMENTAL SENSITIVITIES AND CONCERNS ABOUT SHIPPING AROUND SIRMILIK NATIONAL PARK OF CANADA

4.1 Introduction

This chapter recounts my experiences while in Pond Inlet and on the ocean around Sirmilik National Park and presents the data from the interviews and focus groups conducted. By relaying the words of the people of Pond Inlet, it provides a glimpse into the worlds of those whom I interviewed, lived with, interacted with, and became friends with.

The results of the interviews, field observations, and the focus group activities discussed in this chapter directly address Objectives One and Two, as stated in Chapter One. These results are based on data that reflects the perceptions and concerns of the people in Pond Inlet and personal observations made while in the field, and are not intended to be inclusive of all potential impacts from shipping around Sirmilik.

Concerns that were raised most frequently focused on noise from ships affecting whales and birds, safety issues from leads created by icebreakers, and appropriate involvement of local people in decision-making and EAs. Some issues raised in this section may not appear to relate directly to Sirmilik National Park, but are emergent themes that are more regional in nature and more suited to inclusion in SEAs (Objective 4). Following these results, Chapter Five links these concerns to appropriate scoping questions for shipping activities around Sirmilik National Park.

4.2 Environmental Concerns

“I think that people in the rest of the world have to understand how much the people up here, as small in numbers we are, we have great value in the pristine environment we have.” (Respondent 12)

4.2.1 Narwhal (*Monodon monoceros*)

Between late April and the end of September the area around Sirmilik National Park is home to the largest component of Canada’s population of narwhal (DFO 2011). It is estimated that within this period 60,000 to 80,000 individuals migrate along the coastal margins through Admiralty Inlet, Navy Board Inlet and Eclipse Sound to their calving grounds in Tay Sound and Milne Inlet (DFO 2011).

For the people of Pond Inlet, the narwhal hold tremendous cultural, spiritual and economic value. They are regularly hunted from a number of areas within Sirmilik for subsistence and the sharing of *maqtaaq*, as well as for the sale of carvings, crafts and other products. During the time spent in Pond Inlet, every person I spoke to formally and informally expressed their concerns for the narwhal and conveyed their high reverence for them spiritually and economically.

“The local residents and the HTO do understand that this is one of the largest narwhal sanctuaries in the world, if not the largest, so one of the biggest potential concerns I have is definitely on the Narwhal” (Respondent 2).

“The narwhal generate considerable public interest and economic benefits, specifically from tourism based on its unique tusk and the remoteness of its habitat.” (Respondent 8)

While perusing the crafts in the local co-op, I noted the disproportionate number of carvings of narwhal as a testament to this cultural value, as well as the associated interest by tourists and visitors to Pond Inlet.

Ecologically, the narwhal is critically important as the only species in its genus and as a top predator in the Arctic food chain (COSEWIC 2011). Lancaster Sound is an important migration route in the spring and fall for Baffin Bay narwhals moving to and from summering grounds in Barrow Strait, Peel Sound, Prince Regent Inlet, Admiralty Inlet and the Eclipse Sound area (Richard et al. 1994). It is suggested that narwhal prefer the coastal areas around Bylot Island, Milne Inlet and Navy Board Inlet because of the security of deep water (1000 – 1500 meters), shelter from the wind, and nutrient rich upwellings (COSEWIC 2011). These areas (Bylot Island, Milne Inlet and Navy Board Inlet), were identified by local hunters as their traditional narwhal hunting grounds; specifically, the areas within Sirmilik on Bylot Island and near Navy Board Inlet have semi-permanent family hunting camps established.

IMPACTS ON NARWHAL FROM SHIPPING

It is evident from interviews and other communications that people in Pond Inlet are already very aware of the effects of shipping on the narwhal.

“Usually, if you have a lot of narwhal coming by the community a few hours later you will see a ship come by or you will see killer whales out in the distance. That’s one way that we have been identifying if a ship is coming by, if the narwhal are coming by fast and furious.” (Respondent 8)

The key concerns identified by the interview participants during this study included the potential for impacts from noise, direct mortality, ice conditions, and system effects related to the changing availability and composition of predators and prey. Even with the minimal increases in ship traffic that have been experienced in the last 5 years, some participants stated that they have already noticed observable effects. One person who had recently been out hunting for Narwhal near the eastern entrance to Eclipse Sound commented on the changes that they were observing.

“We were all surprised that there weren’t any narwhal, and, at our camp we were talking about it, and the two, I guess you can call them elders, I was listening to them talk about the narwhal and their opinions on why there weren’t very many was because of all of the activity that’s been going on under the water in that area.” (Respondant 1)

The activities that they were referring to related to the increased ship traffic associated with the Mary River mine and to a lesser degree cruise ships. These sorts of concerns, regarding the development of the Mary River mine and the associated effects on narwhal in the area, were expressed by all participants in the study.

Increasing evidence suggests that noise may be one of the most detrimental effects from ships on whales. This is something that Inuit hunting whales have always known.

“When they used to use kayak they used to try very hard to not make any noise. If they did accidentally, the narwhal hear that noise.” (Respondent 4)

A local outfitter who was helping other researchers commented on his direct observations of underwater noise.

“I was out on the land positioning a hydrophone underwater with by kayak and they were setting up to record the narwhals. In the hydrophone I hear this very low resonating, thump, thump, thump, and I didn’t know what it was. I thought it may have been the hydrophone so I pulled it up and it was still making the noise. The current pulled my kayak and there was a ship just visible to the naked eye coming steaming towards me, and I could hear it through the hydrophone. So, I thought well if I was a narwhal, I’d perceive it. The next day the narwhals came back.” (Respondent 3)

Interviewees remarked that since the 1960s, narwhals have become less common near Pond Inlet and tend to travel down the middle of the inlet as opposed to near the shore. Local hunters attribute this change to an increase in the number of people hunting and traveling with motorboats and snowmobiles near the community.

“There’s been a lot of activity in this area that may have affected the narwhal. There were 3 different camps with over 25 people all together, and we only saw two groups of narwhal, when usually there’s lots.” (Respondent 1)

A secondary effect of the disturbance from shipping relates to the timing of activities coinciding with the hunting of whales for subsistence.

“As for times of the year, we usually only get ships in August – September, and that is when a lot of the Narwhal are coming by the community.” (Respondent 12)

Therefore, the timing, location and behavior of ships and their operators are all factors that determine the effects on noise on narwhal.

ENTRAPMENT IN ICE

Reports of narwhals being entrapped by ice come from a number of areas, and the quality of the ice habitat, particularly the presence of leads in fast ice and the density of broken pack ice, is considered to be a key factor in their habitat selection (Koski 1994, in COSEWIC 2011).

The effects on narwhal from icebreaking can compound other effects. In winter, narwhal are known to live in leads and polynyas in Baffin Bay (Finley *et al* 1980; Richard *et al.* 1998). Specifically, whales from the Baffin Bay population have been trapped by ice in Eclipse Sound and near Pond Inlet (Mitchell 1981). During the winter of 2008/09, over 500 narwhal were trapped in the ice near Sirmilik Nation Park, resulting in a daunting and controversial cull for the local hunters (CBC 2008).

MIGRATION PATTERNS

While narwhal typically travel in small groups of less than ten, during migration periods in spring and fall they are often found in herds of up to several hundred (COSEWIC 2011). In the area around Sirmilik, particularly high densities of migrating narwhal have been recorded at the

mouth of Navy Board Inlet (McCormick, 1983). These important migration patterns have been notably affected by shipping activities.

“Even with just a couple sealift ships coming in to Milne Inlet, people have noticed that there are different patterns with the narwhal migration.” (Respondent 5)

CONTAMINATION FROM POLLUTION

As noted above, many residents in Pond Inlet hunt the Narwhal from the Park for subsistence use. The scientific literature also points out that whales taken from the Repulse Bay, Pond Inlet, Grise Fiord, and Broughton Island areas have different organochlorine contaminant profiles (de March *et al* 2003). This may be due to ambient levels pollution in the north or operations in near proximity to their critical habitat. One respondent was concerned about contamination in narwhal but was unable to link it directly to shipping.

“I know that contaminants can accumulate in the narwhal that we eat but will not stop people from eating their maqtaq. We need to find out where this pollution is coming from to help people understand the problem.” (Respondent 8)

The wide array of potential impacts to narwhal from shipping (noise, pollution, disturbance of migration patterns and breeding areas, and entrapment in ice) and the possible link to human health, place the narwhal at the top of people’s priorities when considering the impacts of increasing shipping around Sirmilik.

4.2.2 Bowhead Whales

While not receiving as much local attention as the narwhal but still a critical component of the ecosystem and highly valued culturally, the bowhead whales around Sirmilik Park are the one species most likely to be affected by direct mortality from ship traffic.

“The Bowheads aren’t that fast moving. I guess [a coworker] has mentioned that they’re curious and will come up next to boats. Having seen the whales you can assume that they would be hit by ships – large or small vessels.” (Respondent 12)

While on the water in Eclipse Sound I enjoyed the good fortune of seeing a Bowhead Whale exhibiting the above mentioned curiosity of our presence by repeatedly surfacing and appearing to look in our direction. A local Inuk that I was with miraculously spotted the large whale far off in the distance, when it resurfaced again it was quite close to our boat, appearing to be investigating our presence. It was a magical and humbling experience as our eyes met.

4.2.3 Seals

There are four species of seals that have been found within the study area and all were noted during the interviews.

“Up here, we have harp seals, bearded seals, ringed seals, and the occasional elephant seal; of these, the ringed seal is by far the most common.” (Respondent 3)

While there are few accurate accounts of the abundance of ringed seals in the area, it is estimated that between 30,000 and 100,000, and possibly upward to 250,000 individuals may inhabit the region (McCormick 1983). Interviewees stated that seals are regularly found throughout the whole study area; however, particularly large concentrations of ringed seals have been recorded near the north-shore of Bylot Island and at the northern entrance to Navy Board Inlet near the north-western flow edge (McCormick 1983). During a survey in 1976, 2,800 harp seals were hauled out on ice pans at the entrance to Navy Board Inlet (McCormick 1983). Additionally, one interviewee noted that bearded seals are known to breed around Milne Inlet.

The local people around Pond Inlet rely heavily on the seals for subsistence and regularly hunt for them year-round at the ice flow edges (see Figure 1.1).

“We have two flow-edges up here, the north-western flow-edge and the eastern flow-edge. The NW flow edge is a good spot for walrus too. If there were ships when the ocean is still frozen over, these are the prime seal hunting grounds, and that would be past where the icebreaker’s lead would be, and there is no other way of getting to these seal hunting grounds. In fact these seal hunting grounds are used all season long, right up until break-up.” (Respondent 3)

Whether or not these species are migratory or year-round residents, small-scale movements and other behaviours are heavily influenced by changes in ice conditions (McCormick 1983).

Subsequently, the effects from icebreaking on the behaviour of seals is likely significant and was a major concern raised by interview participants.

“We had an icebreaker come in the middle of winter, coast guard, and there was concern on behalf of the community members that how it would affect the seal hunting because you have an open leeway behind the ship. Well that spring, a lot of seals that had holes around the area, began building seal holes just along this route because it was opened up.” (Respondent 1)

It is also well documented that seals can be affected by underwater noise from ships, even causing temporary hearing loss within 100 m of a vessel traveling through ice (Inco 1997). They are also known to detect noise and exhibit avoidance behaviour from up to 700 meters (Inco 1997). One interviewee noticed this behaviour while hunting at the eastern flow edge.

“All the animals were up shore because of the noise. In Inuktitut we call it Alingmut, it’s when something is scaring them to the very shallow area. All the seals were all right by the beach.” (Respondent 1)

Furthermore, the Voisey’s Bay Environmental Impact Assessment (Inco 1997) also considered the effects of auditory “masking” on seal communication. While there is little published scientific data on these effects, it is conceivable that an overlap in the underwater frequencies being produced by the ship and the frequencies used for communication by seals (or other marine animals) would affect their behaviour, communication, and possible even their hearing (InvestCan 2010). The Voisey’s Bay Environmental Impact Statement (Inco 1997) finally

concludes that “temporary displacement behaviour and diminished reception of signals are the resulting effects from vessel traffic”.

4.2.4 Polar Bears (*Ursus maritimus*)

“The word "Arctic" comes from the ancient Greek Arktikos, or "country of the great bear." Though the Greeks had no knowledge of the polar bear, they named the region after the constellation Ursus Major, the Great Bear, found in the Northern Sky.” (Polar Bears International 2008)

Respondents’ concerns around the effects of shipping on bears come in three forms: safety of tourists, cultural significance, and ice breaking. The polar bear is the quintessential icon of the north, embodying tremendous spiritual and cultural significance as well as ecological importance, and highlighting the interconnectedness of these three components. For northerners and non-northerners alike, the great bear symbolizes purity, strength, solitude, patience and wisdom. However, ongoing disagreement between politicians and local hunters and outfitters over the management of this highly valued species is detrimental to both the bears and to humans. Effective conservation and protection of this species requires careful consideration of different perspectives and values and a clear understanding of its intrinsic link with Inuit culture and society. Thus, *ursus maritimus* epitomizes the need to integrate and balance local traditional knowledge and western scientific knowledge.

Polar Bears in Sirmilik National Park are part of the sub-population that inhabits Barrow Strait, Wellington Channel, Prince Regent Inlet, Byam Martin Channel, and Jones Sound (McCormick 1983). In the spring and summer, densities of polar bears in the western third of the area occupied by the Lancaster Sound population are low but, as break-up progresses from the east, polar bears move west to summer on the multi-year pack ice (COSEWIC 2002). Similar to

the other marine mammals in this study, polar bears are highly reliant on suitable ice conditions for determining appropriate habitat (COSEWIC 2002).

The northern coast of Bylot Island is a popular wintering and denning area for polar bears (McCormick 1983). Female bears start to arrive in this area during October and November and stay there until the spring ice break-up (McCormick 1983). At this time the polar bears begin to move to deep fiords and bays where land-fast ice persists and seals congregate (McCormick 1983). When all the ice is finally gone, the bears return to the land around the perimeter of the Park (except the southeast corner of Bylot Island), occupying it as their main summer retreat on Lancaster Sound (McCormick 1983).

In discussions with local people in Pond Inlet it quickly became evident that the Polar Bear hunt is extremely important culturally as a hunter's "rite of passage".

"I remember when I got my first one. I was out with my family on the northern part of Bylot. We saw the bear off in the distance and followed it for a while and then I took the shot because it was supposed to be my bear. My family said I was ready to be a man." (Respondent 15)

Since polar bears have very acute auditory and olfactory senses, they are very susceptible to disturbance, either from noise from ships or from tourists on the land. Thus, there is the potential for impacts to this cultural activity if ships or tourists come in close proximity of the bears.

"I think definitely that the ships or visitors could bother the bears since they have good hearing and sense of smell." (Respondent 15)

Furthermore, this tradition is challenged by international pressure for more restrictions on the harvesting of polar bears, highlighting the different perspectives held by local hunters versus international conservation organizations and politicians.

Obviously there is also the human safety issue for tourists who visit the Park.

“There’s areas where we wouldn’t want people going ashore. Like the North Shore of Bylot Island where there are lots of polar bears. It’s not likely that we’ll allow lots of visitors to go ashore where there are high concentrations of polar bears. For the protection of people and the bears.” (Respondent 18)

The comments above illustrate that polar bears are usually found in areas of the Park where access is predominantly by ship, firearms are prohibited, bears have acute senses, and that large numbers of visitors may be difficult to monitor, the respondents ultimately suggest that tourism should be restricted to areas where bears will not be disturbed and the safety of bears and people will be preserved.

4.2.5 Fish and Fish Habitat

Fishing for arctic char in the crystal waters of Tay Sound produced vivid memories that I have returned to the South with to share numerous times. This was undoubtedly the best fishing experience I have ever had and eating raw char sushi on a beach in the Arctic is something that cannot be given justice through words.



Plate 4.1: Glistening Arctic Char from the Pristine Arctic Waters and Incredible Scenery

Two individuals I spoke to remarked on the potential for tourists to come by ship for this incomparable fishing experience.

“If you look at Koluktoo Bay, the char up there is fantastic. We have some of the best and quietest fishing spots in the world up here.” (Respondent 18)

“And char are good fighting fish too. I remember a friend of mine caught a fifteen pounder a while ago and it took him half an hour to reel it in [...] In Koluktoo Bay they can get up to thirty-five pounds.” (Respondent 19)

Of course, the threat of over fishing or tourists monopolizing traditional fishing spots must be managed appropriately. However, if done right and in a mutually beneficial manner, eco-tourists can not only contribute to the local economy by hiring local guides and using local amenities, but can also bring their amazing stories of respect and astonishment of the arctic experience back to others, improving global awareness for this rich ecological resource.



Plate 4.2: Four Fish Quota Filled Within an Hour

Toonoonik Sagoonik Outfitters offers fishing excursions to Koluktoo Bay, one of the top fishing sites in the world for catching arctic char. The most popular time for fishing is from just after the ice breaks up, right through to early September when they head back to the lakes. Because of their movement, they are sometimes hard to find. Subsequently, local people and outfitters are the best guides as to which areas contain the most char.

While these waters are considered pristine, contamination is reaching them and accumulating in the char. While I was in Pond Inlet I met a DFO researcher who was sampling arctic char for mercury contamination in their tissues and organs. At the same time I observed huge numbers of fish being traditionally dried by the sun on racks. Local education on contaminants is necessary to inform local people about acceptable quantities of fish to eat as well

as which parts of the fish to avoid. Increased ambient levels of pollution from ship exhaust is a concern raised by participants which could contribute to contamination in char.

Arctic char are found in all arctic regions and are the most northerly distributed freshwater fish species (Sawatzky 2010). They are important components of northern aquatic ecosystems and are economically (subsistence, commercial, and sport fisheries) and culturally significant to northern communities (CAFF 2001). For example, arctic char made up approximately 45% of fish species harvested in Nunavut between 1996 and 2001 (Priest 2004).

4.2.6 Birds

The concerns raised by participants for these rich breeding areas focused on noise from ships, helicopters, and aircraft, pollution from the burning of diesel fuel, and from the increased potential for oil spills. The most common concern recorded during the interviews related to harassment of the birds by tourists intentionally trying to make them leave their nests and fly around so that they could be observed more closely.

“They were not affected until there were people who made a large noise like a bang, purposely disturbing the birds at their nesting sites. Hundreds of thousands of birds would fly off their nests and dwelling sites – like a stream of birds, just based on one bang.” (Respondent 2)

In fact, an employee at Parks Canada had already heard complaints from local residents about people disturbing birds and is concerned about the number of cruise ships and the inability to adequately monitor their activities.

“We’ve already had complaints from local outfitters about aircraft going all over the place from the researchers and mining people, and you will get the same thing with shipping from tourism operators [...] There are three major areas – on Bylot island on the southeast corner there’s a bird sanctuary/bird banding area, and there’s one on the northwest corner of Bylot where cruise ships could access – sometimes they get close and get into zodiacs and patrol near the bird cliffs. Another area is the

north side of Borden peninsula, the Baillridge Bay colony would be sensitive to that type of activity.” (Respondent 15)

An oil spill in this fragile environment would have catastrophic effects on birds. I was informed that there was a gas spill near Pond Inlet a few years prior to my visit. It had occurred while refilling the municipal tanks and when members of Parks Canada went to investigate they could not find any of the leaked fuel. The conclusion that they came to was that it had all been dispersed within a matter of hours because of the fast currents. Had this occurred near the bird colonies, the fast currents would have made containing the fuel very difficult.

“I have more concerns about the oil and fuel tankers coming in. In late 1990s, when the family was coming home from Bylot Island, there was an oil or fuel spill between here and Bylot, and they could smell the fuel. But the animals or birds were not bothered. It was probably just a small spill. One tablespoon of oil in the ocean will stay on the top, and it’s not going to go down, and it can spread, even one tablespoon.” (Respondent 18)

In addition, many spills could go unnoticed due to the remoteness of the Park if local monitors are not on board. In general, the southwest Bylot Island breeding bird community has been well studied; however, the local effects on birds from shipping and associated activities are less well researched.

4.2.7 Plants

From low arctic tundra to polar desert, the vegetation of Sirmilik National Park is heavily influenced by the diverse topography of the area, ranging from low arctic tundra to polar desert and mountainous terrain (McCormick 1983).



Plate 4.3: Arctic Vegetation from Shoreline to Mountain

Consequently, local concerns regarding increased erosion caused by wakes from ships indicate that effects are likely to vary between locations.

“For example, Sirmilik glacier is mostly glacial till and moraine so there won’t be much of environmental impacts from erosion on vegetation and there’s hardly any animals there. You’d have to have a site-specific concern. That’s also something that would be addressed in the Park Management Plan – zoning.” (Respondent 18)

Site specific erosion from ship traffic would also potentially increase in narrow channels like Navy Board Inlet (see Figure 1.1), whereby shipping routes are more constrained and could be more active.



Plate 4.4: Shoreline Tundra Vegetation and Arctic Cotton

The plant species diversity of Bylot Island has been well documented since Lyngé (1947) and Hale (1954) and more recently it has been supplemented by field studies undertaken as part of the University of Laval Ecological Studies and Environmental Monitoring program (Drury (1962), Duclos (2002), McCormick *et al.* (1983)). In total more than 360 species of plants have been recorded for this area (Parks 2009a).

Comments about large numbers of tourists causing damage to vegetation are similarly location specific.

“People going ashore would have to be restricted to areas where there is less chance of damage to the vegetation. For example, areas where there is a lot of lichen should be avoided. Tourists also have to stay on specific routes identified by guides and not be allowed to wander all over the place.” (Respondent 15)

These concerns are similar to those expressed about heritage resources (which are also location specific) and rely on guides to educate and monitor visitors as well as suitable location for ships to be travelling near the shore.

4.2.8 Invasive Species

Many people view the Arctic as a pristine and untouched environment. Indeed, there has been little direct impact from invasive species in the area relative to other more southerly latitudes. However, the local people in Pond Inlet are aware of the potential for ships to bring in foreign species based on reports from elsewhere, and are concerned about the effects on this unique environment. Sensitive ecosystems with low diversity, such as those of the study region, mean that the effects from invasive species could be catastrophic.

“All the area around here is very pristine you know. You can see the ocean floor at thirty feet of water – it is crystal clear. With ballast water, you could be bringing foreign predators in to a feeding frenzy. That would cause quite the headache for the people. With such a pristine area if you do introduce a foreign predator, because it is so sensitive it could have a huge impact.” (Respondent 3)

In order to mitigate the potential introduction from ballast water, it was suggested that appropriate locations for ballast discharge and exchange need to be identified.

“Another concern is ballast water, especially for large ships. When you are coming in to drop off ore over in Rotterdam, you have to ballast the ship, and when you are coming back to this area, one of the only identified sites where you can release and exchange ballast is on the other side of Bylot Island because the ocean is deep enough.” (Respondent 3)

Ultimately, this participant hopes that more research into the potential damage that could be caused by the introduction of foreign species will be conducted prior to further increases in the number of ships in the area.

“One of my main concerns would be ballast water. Like the Zebra Mussels in Ontario, how much effect would invasive species have on the area? This is something that needs to be looked into now, before it’s too late.” (Respondent 13)

The effects of invasive species are somewhat unpredictable and could potentially affect not only the biophysical components of the Park, but also the economic and social components that rely on the local species (e.g., resource harvest, cultural practices).

4.2.9 Ice Regime

Sea ice is the key ecosystem feature in the Arctic and the people of Pond Inlet are witnessing rapid changes in this fundamental force.

“Ice thickness since 1983 has changed significantly. I can remember going out as a kid to go hunting in early spring with my family and you could see the ice was like twelve feet thick. Sometimes now in the springtime it is six feet thick. When you consider that drastic a change over the last twenty-five years, there should be some concern. Especially in break-up in the spring time.” (Respondent 5)

“The currents are not as fast as before, so maybe this is causing less mixing and the salt water is staying on the bottom longer. The fresh water coming off the rivers and the ice may be causing the ice to be softer in the springtime because it is less salty than before.” (Respondent 12)

“Some elders are saying that from when they were children to now winter is coming two weeks later and spring is coming two weeks earlier. So there is almost like a four week time period where there should be ice and we do not have it. That impacts polar bears and everything else out there because polar bears need the ice to hunt. To substantiate that is that they are noticing that the changing currents are affecting how fast Greenland is melting itself. I have read articles that say that the fresh water that comes off Greenland is going to the bottom of the ocean and possibly changing ocean flow patterns just because Greenland is melting.” (Respondent 18)

Furthermore, people stated that they were concerned about icebreaking activities increasing the speed of breakup in the spring.

“Definitely, icebreakers coming in the spring and breaking the ice would affect the natural breakup cycles. I don’t think that this should be allowed, especially considering that this is when people like to go out hunting.” (Respondent 5)

This rapid change is causing unpredictability in ice conditions for those who travel on the ice to hunt for seals and whales.

“Just because the current up there is so fast it does not freeze over, but depending on the temperature, the flow-edge may be further out or closer. This year when we went out for seals it was weird because the flow-edge was right at Button Point.”
(Respondent 2)

Ultimately, local people are concerned that icebreaking would change the natural cycles of ice formation and deterioration, causing safety concerns for people who are accessing the Park for hunting and recreation and also impacting whales and seals as noted earlier.

“Anything breaking up the ice unnaturally is going to have effects. If somebody came through here in an icebreaker, say, from Baffin Bay to Milne Inlet, and broke up the ice, as a tourism operator or hunter how are you going to cross the ice. It creates a barrier.” (Respondent 19)

“If icebreakers come through here, hunters will not be expecting the broken ice left behind them or may be coming back from hunting and get trapped because they cannot cross the water. This causes big safety problems for the people hunting and also for some people who go to help them [...] I don’t think icebreakers should be coming through Eclipse Sound.” (Respondent 14)

In general, there is less multi-year ice in the area; however, this does not mean that shipping and navigation is safer or simpler. One interviewee pointed out that “annual ice is now less predictable and some areas are now ice-free in the summer, while other areas are experiencing ice growth that is unusual” (Respondent 8).

While I traveled by boat from Pond Inlet to Arctic Bay I gained an appreciation for the unpredictability of ice conditions. We were traveling through fog in a boat that was dwarfed by the icebergs all around us. An Inuk who was driving the boat seemed to have an innate sense of where to go in order to find a safe path through the icy maze that was constantly shifting due to the currents and wind.



Plate 4.5: Massive Greenland Iceberg in Navy Board Inlet

I quickly realized that if an accident were to happen that we would be waiting for many hours for someone to reach us in such a remote location. The local joke is that the bright orange survival suits that we wore were not to keep you alive but instead so that rescuers would be able to spot your body. It is paramount that local people who are familiar with the currents and conditions are on board to help guide ships and prevent accidents. An elder commented on the fast currents around Bylot Island and how they would cause an oil spill to rapidly spread.

“The current is going that way, toward Lancaster Sound, and the ice goes out that way. If the wind is going that way, the ice will too. If the wind is coming from Lancaster Sound area the ice will go out that way. It’s kind of circling around counterclockwise. You’ll notice there’s a lot of icebergs around Clyde River and Broughton Bay and Tungnituk. Probably coming from Greenland and going over to that area because of the current. There will be effects if there is a spill. It will affect the ocean around Milne Inlet, Bylot Island, and Pond area, or the whole ocean.”
(Respondent 19)

When I inquired about what the response would be to an oil spill I was informed that Pond Inlet does not have an adequate spill kit.

While considerable research is being conducted on the changing ice patterns in the Arctic, much is still unknown about the potential effects on local animals and people.

4.3 Economic Concerns

Local concerns associated with the economic opportunities from shipping, either from cruise ships or due to resource extraction, are mixed. The major employers in Pond Inlet are the local Toonoonik Sahoonek Co-op, the Hamlet, the Housing Association, the Northern Store, and the Government of Nunavut. At the same time, people are aware that there are many other opportunities on the horizon with the prospects of increasing resource development and eco-tourism. Many people are concerned about the associated increases in substance abuse and crime, increasing immigrant population, the costs of resource harvesting, and family coherence; however, at the same time they realize the need to improve the quality of life for local residents. Therefore, it is important to make careful decisions about which business opportunities will be sustainable in the long run and which will also benefit the community as a whole.

4.3.1 Cruise Ship and Tourism Industry Concerns

The economic benefits of the cruise industry are generally seen as minimal for the residents of Pond Inlet and many feel they are not well dispersed throughout the population. While local artists receive some economic benefits, most benefits of cruise tourism are enjoyed by the Co-op store in the form of sales of crafts, carvings, souvenirs, food, and supplies.

“Typically the cruise ships will anchor off and the tourists will wander around town for 3-4 hours, buy a patch at the co-op store, mail a post card to their friend, and maybe buy a little carving and then they disappear. I don’t think there’s a big economic benefit particularly for Pond.” (Respondent 2)

However, it was remarked by one individual during a casual conversation that these, typically wealthy and educated tourists are keen to experience the unique Inuit culture. Therefore, if businesses and government promote cultural experiences to a greater extent than this interest could be capitalized upon in a sustainable manner. Kulchiski (2005) discusses how “cultural capital” may likely become the most valuable commodity in the future for many of these communities. This is something I experienced in Pond Inlet as a group of European tourists from a cruise ship who were very interested in the local art and traditions, enjoyed a cultural demonstration at the interpretive centre. Currently though, the federal government and the local governments do not quite know how to deal with the idea of cultural tourism.

“The Nunavut Government, I don’t think they really understand tourism, so I think they just turn away. Perhaps they don’t understand the significance of it or the policies that are needed to grow a sustainable and worthwhile industry.” (Respondent 2)

Furthermore, one interviewee discussed how in the Community of Cape Dorset, which is well known for its art and carvings, the economic benefits are considerably greater than in Pond Inlet.

“Adventure Canada recently went into Cape Dorset and the result was that they dropped 26 thousand dollars in the community in one day on art. But that’s Cape Dorset [...] Tourism is a sustainable industry, I think it is important, and in terms of sustainable development, in terms of visitations to the communities, and stores, and lodging, and everything else, because when people from overseas come to Canada, they think of National Parks. When there is a park there, they say “oh there must be something there, there’s a reason why that National Park exists.” (Respondent 2)

If these sorts of benefits are invested in the community as a whole, they can improve some of the much needed basic services and infrastructure, while also improving the community’s autonomy and promoting its unique identity.

4.3.2 Resource Extraction Related Concerns

The Baffinland iron ore mine, located about 160 km south of the community of Pond Inlet at Mary River, has stimulated the local dialogue around business and employment opportunities for Pond Inlet and the associated potential adverse effects. While in Pond Inlet, I observed two large ships traveling near the community to Baffinland's seasonal construction and supply port at Milne Inlet. Due to the sensitivity of Milne Inlet and vehement opposition by local residents to shipping through this pristine whale breeding habitat, it was decided that the year-round operational phase shipping and associated port would be located at Steensby Inlet, thus not requiring icebreaking through Eclipse Sound. In order to help address any additional and ongoing concerns by the community, the company has located a community liaison staff member in an office in the Co-op building.

"I think one tangible result is Baffinland opening up an office here in town. It's long overdue in terms of putting a community face on the development. Otherwise it's just some company that wants something. Now, there's somebody sitting in an office in their own community, so if you have a problem, you can go knock on the door and talk to somebody, instead of some guy from Toronto flying in once in a while for a few days and then disappearing." (Respondent 14)

This comment illustrates one of the most important aspects of doing business in the North. People in small communities place the relationships formed with the communities high on their list of priorities and are more likely to allow development on their land when there is a "face" rather than just some random emails or phone calls. This was repeated to me many times about my own work there. However, while this initiative has somewhat improved the relationship between Baffinland and the residents of Pond Inlet, some people view it as a form of tokenism and are still sceptical of the company's true actions.

The benefits to the community of such large industrial operations can be transformative. During interviews, people commented on the immense value of resources in their land, stating that this could be used as a bargaining chip for other political matters.

“This is our land. We know how valuable our land is and others know that too, so if another country gives a better offer we could just go with them instead.”
(Respondent 22)

Furthermore, if a company (or country) makes genuine and visible investments in the community this can be mutually beneficial.

“We have been trying to deal with the federal government and the GN [Government of Nunavut] for getting infrastructure for the community, and we haven’t gotten anywhere with that. We see Baffinland as being able to provide direct benefits like this for the community – before any IIBA will be signed.” (Respondent 13)

People in Pond Inlet are also aware of the relatively short time frame for the employment during mine operations, and many have directly experienced the effects from the closing of the lead-zinc mine in the now abandoned community of Nanisivik. One interviewee suggested that for mining to be sustainable and beneficial for the community, there must be long-term thinking and investment.

“Some kind of sustainable industry should have been built during the lifespan of the mine, because the mine is going to close. That’s the whole nature of a mine, they extract and then they leave town. Maybe incorporate some kind of locally owned store or locally owned something that would generate income, so that when the mine closes there’s continuity and perhaps the people that have been working in the mine they can open up a small B&B or small lodge or local outfitting business.”
(Respondent 2)

Again, these investments would not only promote local economic benefits but could also improve the autonomy of the community.

“Yes. I can see people who were on income support who started working so that they can do something for themselves instead of relying on the government.” (Respondent 16)

Short-term economic gains from resource extraction and industrial development need to be reinvested in infrastructure geared towards sustainable choices like cultural tourism.

“It’s a bit of a compromise, because I have a business to run, and I probably lose thousands and thousands of dollars of business because of it. March, April, May, and June are the busiest months. Dog sledding, skiing expeditions, flow edge film-work, documentaries, photographers... May and June is my bread and butter. An icebreaker during that time would ruin my livelihood.” (Respondent 2)

When I arrived in Pond Inlet, I was surprised at the amount of MP3 players, computers and other technological devices that are now commonplace in this remote area.

“The North has no tax base, and low employment. So the job creation right there, simply monitoring. Train those monitors and have them on every ship that comes up. When a ship comes up, they pick up the monitor, and then they go and do their thing. “A” it creates employment and “B” having that safeguard on board the ship knows that they better not dump their bilge today. There’s no downside to that.” (Respondent 17)

For the people of Pond Inlet, they see shipping as the signal of development and resource extraction, bringing to mind the above concerns. While they are interested in job opportunities and economic benefits, they are cautious about trading these benefits for cultural or social values that cannot be replaced.

4.3.3 Access and Population

Similar to many other economic issues, there are two differing perspectives regarding access and population that were raised by participants. On the one hand, the people in Pond Inlet experience some of the highest costs to acquire their necessary goods and the benefit of increasing shipping (versus air freight) would be reducing some of the heavy burden of acquiring these necessary goods.

“Regarding socio-economic concerns, we live in one of the highest places for cost of living in the world. Back before Nanisivik and Arctic Bay lost their jet service we

were one of the most expensive places to fly in the world. On paper, Pond Inlet we are looking at cargo rates from Montreal of thirteen dollars per kilogram. I shipped up a laptop computer and it was \$180. And that is reflected in everything.” (Respondent 5)

However, as access to goods improves with more shipping and development, along with it comes more people who rely on the local infrastructure, underscoring a need for further access through shipping.

“If our population increases to two thousand in one year we do not have the housing to accommodate that. We do not have the recreational facilities to deal with that. We have an arena and we are building a new community center but there are going to be a lot of things that people are going to want like a swimming pool or a bowling alley. It will happen in time but it has been a hard fight with the feds and the GN to try to get infrastructure.” (Respondent 12)



Plate 4.6: Sealift Delivering Semi-Annual Supplies to Pond Inlet

In the 1996 census, while still part of the Northwest Territories, Pond Inlet had a population of approximately 1,150 people. By 2006, this population had grown by about 11% to just over 1300 people, making up almost 5% of the population of Nunavut. Inuit comprise about 95% of this population. The median age of the population in Nunavut is 23 years old, compared to almost 40 years old for Canada as a whole (see Table 4.1).

Table 4.1: Population Demographic Comparison of Pond Inlet, Nunavut, and Canada (2008)

	Pond Inlet	Nunavut	Canada
Median Age of the Population	20.8	23	39.5
% of the Population Over the Age of 15	64%	66%	82%

People mentioned that with large scale development such as mining and the volume of workers needed, the proportion of local Inuit residents to foreign non-Inuit in small communities like Pond Inlet could be dramatically altered. If non-native workers are not provided with appropriate education prior to coming to the community and do not respect the local culture this could lead to violence and segregation as the following respondent suggests.

“We will likely also see a big increase in the population of Pond Inlet from Baffinland. This would probably be mostly non-native persuasion and you could see a lot of cultural clashes because of that.” (Respondent 21)

On one occasion in the Co-op hotel restaurant, I observed a construction worker who was in Pond Inlet for a couple months working on improvements to the local recreation centre. There were a couple of elders sitting and trading stories of the recent blue-berry picking they had been engaged in when, this foreigner intrudes and rudely acts as though the maqtaq they are eating is revolting him, verbalizing his disgust and disapproval. For me, being able to speak a few words

of Inuktitut proved immensely helpful and set me apart from some of the other southerners who visit with no understanding of the local culture and no desire to embrace it. Many people mentioned that they were impressed that I was actually interested in what they thought and not just there to make money and leave.

Another comment was made regarding the population of the territory and how large-scale developments in the area could heavily influence population, demographics and politics.

“Since the population of Nunavut is only 30,000 people, if a couple new mines were to open up and hire southern workers they could quickly outnumber the local Inuit of the area and create a new majority”. (Respondent 13)

This could potentially erode the abundant wealth of cultural capital, increase crime, and cause other forms of social unbalance as seen in places like Iqaluit and Whitehorse. Additionally, while not mentioned by participants, a dramatic increase in population would likely have biophysical effects on the land and available resources as seen in other parts of the north.

The assessment of socio-economic impacts of shipping and its ability to spur additional change around Pond Inlet, Sirmilik National Park, and Nunavut in general, requires careful consideration of the recent economic, social, and political transformations that the territory has undergone, and then must be based on a clear vision of where the community as a whole would like to go in the future.

4.4 Social Concerns

The pace of life in Pond Inlet is quite different than in the south. If one wants to meet with the local leadership, they can be found having coffee at the QuickStop in the Co-op every weekday at 10 am. If a pod of whales is spotted near the community, every hunter in town drops what he is doing and rushes to the shore with his/her gun. And, in the summer when the sun never

completely disappears, the kids play all night and sleep all day (if they sleep at all). I engaged in many discussions around the differences between perceptions of the North and the reality of living there, concluding that to truly understand the reality of living in the North (and to develop policies that apply appropriately) one needs to experience it directly.

While there are vast differences between the cultures of northerners and southerners and this was my greatest fear prior to entering Pond Inlet, I quickly became more amazed by and focussed on the fundamental similarities. People are people wherever one is, as Abraham Maslow states in *A Theory of Human Motivation*, we fundamentally strive for the same things: love, family, happiness, enlightenment, etc. Understanding our similarities and connection to each other will help us become more cooperative and more successful as a species.

4.4.1 Personal, Family and Community Life



Plate 4.7: Pond Inlet with Bylot Island and Sirmilik Glacier in Background

Many respondents are wary of the trade-off of socio-cultural capital for economic development and are witnessing a shift in their culture. They suggested that we have to be careful when trading economic benefits (e.g., jobs, compensation, infrastructure) at the expense of the environment or traditional culture. While they are interested in improvements to quality of life, it is challenging to know if financial compensation for environmental or social degradation is fair, equitable, comparable, or equivalent.

“Pond Inlet is a traditional community and we have to look at a lot of things that could potentially happen to keep people at ease and let them know that there is a safety net in place should some of these things happen. I think that that is one of the biggest challenges – getting direct benefits while protecting the people.”
(Respondent 14)

This is a challenging dilemma and there are differing opinions about what is the right path for the community when the question of economic growth versus maintaining traditional culture arises.

“It’s changing our traditional ways. Nobody is stopping. I’m still unclear whether the community wants it. As the culture changes, you need money. To go hunting you need snowmobiles, gas, bullets, Naptha, camping gear, stuff like that. These things happen, so the hunters are mad because the ship breaks up the ice, but you’ve also got the people who are working directly in the mine and rely on that ship coming in for their livelihood.” (Respondent 2)

If the two are not thought to be mutually exclusive and investments are made in culture as well as the economy then the resulting decisions are likely to be the most sustainable in the long term.

“When somebody has been working in the mine for 20 years, they lose their land-skills. When that mine closes, they go home and watch daytime T.V. or something, because they can’t afford to go out on the land anymore. What does that do to your culture? However, for adventure tourism, if I’m hiring a group of guys to go out on the ice or by boat, they’re retaining those land-skills, they’re talking about their culture to people who are interested in that culture, they’re also learning about the outside world. And then when they come back to town they’re paid a wage and that money stays in the community.” (Respondent 2)

During casual conversation a couple of people remarked about the cultural sensitivity required for tourism to be successful. Unfortunately some tourists who visit Pond Inlet on their way to the Park treat it as an excursion in Disney Land by walking through people’s yards and taking pictures without permission, as though everything is there for their entertainment. This has led to some residents actually staying in their houses when the cruise ships arrive.

“A big part of it is respect for these people who have been living here for thousands of years. People are not living here because it is a tourist place, they’re living here because they’ve been here for a long time. They’re not asking for tourists. I think people would be just as happy if cruise ships were not coming up here.” (Respondent 14)

In order to mitigate these effects, respondents suggested that tourists need to be properly educated on local culture and provided with a cultural orientation prior to arriving. This will allow for the culture to be displayed in a positive manner rather than like a sideshow.



Plate 4.8: Cultural Demonstration for Tourists at Pond Inlet Cultural Centre

By far, the greatest benefit of cruise ship tourism for the community is through showcasing and promoting the local culture.

“Some of the benefits of that though are that the cruise ships actually promote and maintain Inuit culture. People are coming here to see that and we have some of the best shows going. People learn from their elders who teach them songs and traditional games, and keep it going. There’s a little financial reward, but I think the biggest reward is maintenance of their Inuit culture.” (Respondent 7)

If done appropriately and with true respect for the local people, most residents in Pond Inlet seem to be accepting of tourism and recognize that there can be important cultural benefits.

4.4.2 Heritage Resources

According to respondents, heritage resources within the Park are most vulnerable to effects from increasing tourist presence, unauthorized visitors who have easy access to shoreline areas, and erosion. In particular, heritage sites around Button Point and Navy Board Inlet (see Figure 1.1) are areas that could be affected by erosion from shipping. These areas have tremendous spiritual significance and cannot be replaced. As noted, most of the historical sites in the Park are on the shorelines and easily accessed by tourists and others that are entering the park.

“There are sites “loaded” along the coastline that are full of archaeological artifacts that cruise ship tourists would have access to. One would be Keksut, I guess along the, near Button Point. Another, on the north side of Bylot there’s an old ship wreck. But, there are numerous along the shorelines.” (Respondent 12)

According to the data, this issue is directly related to the increasing volumes of people travelling ashore to visit the Park.

“We’ve seen cruise ships land and put hundreds of people ashore. That’s likely when cultural sites would be threatened. Especially along Navy Board Inlet there’s a couple like Nungavik, along the west shore of Navy Board Inlet – within the Inuit owned areas that are still used. That could be a disturbance to current users and to the sites. It would be easy for the people to pick up things.” (Respondent 12)

Furthermore, even with adequate education and rules, due to the remoteness and vastness of the Park, it is difficult for Parks Canada to monitor the activities of visitors.

“For example, we had the military up here last year and we had many concerns with their shipping and camping activities. They assured me that they would abide by these conditions, but as soon as you get into the Park, those conditions have been thrown out the window. The people on the ground don’t even have a clue what they are. Communication from the top down has to be recognized as a problem and be dealt with.” (Respondent 12)

As suggested by a couple of interviewees, a possible recourse for this problem is to have monitors on board each ship to monitor their activities and compliance with the park rules.

“Having an observer/compliance officer on board cruise ships to make sure that they are not going where they’re not supposed to be and their clients are obeying the rules – especially for the protection of cultural sites and so on.” (Respondent 12)

Local people, guiding operators, and other tourism related business owners are well aware of the possible effects of this increased traffic on the heritage resources of the Park.

“If there’s a Thule site inside the Park or outside I don’t care, you can take picture of it, but you can’t touch it or pick anything up. That’s the way I do it, I can’t speak for anyone else. If a cruise ship comes in and goes over to Bylot, and you get 80 “red coats” running around all over the place, and you find an arrow head, I don’t know.” (Respondent 1)

If these resources are not protected effectively then the cultural resources will be lost forever, impacting the local tourism industry and any potential future visitors.

“You don’t have anything to show people on the next trip. Their experience would be lessened just because somebody was stupid enough to take something from a site. What that means is if you’re taking people to an important site, if you find something like a bowhead skull, or something like that it’s great to take pictures or tell a story or something like that. But if someone takes it you’re only left with a divot.” (Respondent 1)

While there are many options for the mitigation of this problem, it is made difficult by the vastness of the Park and expense for adequate resources to control people’s behavior in such a large area. As identified by interviewees, there could be local “observers” on board all ships in the area. There also could be closer GPS monitoring and tracking of the location of ships in the area and an increased presence of coast guard or Parks Canada employees patrolling the area. Ultimately, a multi-faceted approach that involves different groups of people using the Park may be the most feasible. For example, there are routine flights into the Park during the summer months that provide supplies and transport people to research camps. When possible, pilots could “fly-over” ships in the area to ensure that they are following their declared routes and intentions. Additionally, researchers and others who are in the Park, such as hunters or outfitters, could be

encouraged (or paid) to travel to potentially vulnerable sites when in the area and then report by radio to the Parks Canada field office. Ultimately, if visitors and tourism operators feel that they are more closely monitored in this vast landscape, they are more likely to abide by the rules of the Park.

4.4.3 Traditional Use Sites

Many participants raised concern for the effects of shipping activities on traditional use sites that are frequented by many in the community year-round. The primary concern is related to physical barriers from ice breaking activities on the ability to access their hunting and camping areas.

“Definitely the effects of leads on hunters. When you look at a map and you see one of the proposed routes is through Navy Board Inlet and between Bylot Island and Pond Inlet. Now, if you are shipping through there in springtime, sea ice starts to breakup. When it is minus ten degrees Celsius outside the water will stay open. It does not start freezing until about minus fifteen or minus twenty air temperature. So when you are going out in spring time, say April, May and June, which is the best time to go out, and you have open leads that go from Milne Inlet to Pond Inlet and Bylot Island, you’re cutting off all this land that local residents use for hunting, camping, and doing their traditional activities.” (Respondent 6)

One respondent, remembering when the mine was operating at Nanisivik and icebreaking activities were occurring, discussed the effects this had on hunters during an optimal hunting season in early spring.

“I recall because my brother worked at Nanisivik and I have friends in Arctic Bay, they said that there was one time when that lead did not freeze over because they came so late in the season. Now, the hunters from Arctic Bay who wanted to hunting to some of their traditional hunting grounds had to go an extra 100 Km just to get around that lead, just to go hunting, just to go to that traditional spot.” (Respondent 17)

As identified by another respondent, this would also affect eco-tourism and the ability of non-local visitors to enjoy the Park if travelling by snowmobile, ski, or dog-sled.

“That could have an impact on visitation and visitors in the Park too. Not just in Lancaster Sound, but also in Eclipse Sound and Navy Board Inlet, if there are ice breakers traveling through there, there would be significant impact on travel corridors and barriers created. That would be a major issue. Probably more than the other ones.” (Respondent 15)

An interesting perspective that was raised by an interviewee who had recently returned from a family hunting trip related to the perception of their “home” being invaded by outsiders.

“Where we were camped was a place where 3 families lived and there were about 4 or 5 sod houses and maybe only 3 or so people survived from a sickness that killed 27 people. In the next camp the people who used to live there are still here. Some of them grew up there as teenagers and to get that feeling of I’m home, but to have other things disturb it or look back and compare times maybe it’s not so “homey” now.” (Respondent 1)

Not only would this have an effect of the perception of local people using the sites, it could also directly affect their activities and ability to hunt for Narwhal.

“There was actually one hunter who went to one of his traditional spots. And the time of the year that he went there he was the usual time he always goes there for Narwhal, and last year he did not see any Narwhal. Last year we had two cargo ships go to Mary River bringing in equipment for their drilling. You know their tents and their vehicles [...] There’s been a lot of activity in this traditional area that may have affected the Narwhal. Because we usually line up in the spring for Narwhal hunting, and they are traveling this way [into Eclipse Sound], then in late or middle September we line up over here [Navy Board Inlet] because they are heading out. There were 3 different camps with over 25 people all together, and we only saw two groups of Narwhal, when usually there’s lots.” (Respondent 1)

In order to mitigate this problem, respondents indicated that shipping operators need to work closely with the local HTO and other residents to determine the most appropriate locations, routes, and timing of their activities, in order to avoid any adverse effects. In general, most people suggested that icebreaking activities should not be allowed within Eclipse Sound. This is one of the main strategic recommendations elaborated on more fully in Chapter 5.

4.4.4 Recreation

Recreation opportunities play an important role in individual and community wellbeing and health, and may be affected by increasing ship traffic. While today, residents enjoy volleyball, basketball, badminton, ice hockey, curling, and even golf, and many children have video games and DVD players, the Inuit are historically well known for their games, storytelling, singing, and community gatherings. Physical and cultural recreation activities provide a healthy way of stimulating the mind and body and an alternative to other negative social problems that are plaguing northern communities.

As outlined above, by impeding access to traditional areas, shipping can have a potential detrimental effect on the ability to engage in recreational activities that are carried out on the land. However, there is considerable interest by visitors in the traditional games played by the Inuit (such as the high-kick, feats of strength, arm-pulling, and throat singing). Many interviewees commented on the positive aspect of tourism for promoting more Inuit youth to engage in and be proud of these activities.

“When the tourist come to the cultural demonstrations it gives the performers a lot of pride in their history and culture. They get a positive sense of their self.”
(Respondent 3)

The empowerment created by this increased self-worth could provide benefits to the individual, community, and even the broader perspectives of Inuit by southerners.

4.4.5 Health and Safety

Issues relating to health and safety that were identified by participants focused primarily on dangerous leads and unpredictable ice left behind by icebreaking, safety of visitors to remote areas of the Park, and the broader socio-economic effects of development that is made possible

by increased shipping. Since these concerns have been indirectly addressed in other sections of this thesis (ice regime, traditional use areas, resource harvest) I will provide only two clear examples of the concerns in this section.

“The ice is a travel corridor, there could be public safety concerns and also transportation. If someone is out there hunting and an icebreaker goes through, they could be stranded. A lot of people may go over there for a day and not have the gear and equipment to stay longer.” (Respondent 2)

“My biggest concern is illegal access to the Park. Impacts on marine mammals. Impacts on use and enjoyment. Illegal deposit of waste and fuel spills. The safety concerns for people on and off the boat.” (Respondent 18)

“There are always socio-economic effects from shipping on the communities. Like increased drugs and alcohol.” (Respondent 12)

Mitigating these effects will require clear communication between shipping operators about their intentions, as well as careful strategic planning around the types of activities that are promoted in the area.

4.4.6 Aesthetics

To say that the scenery around Sirmilik National Park is breathtaking is a gross understatement. From soaring mountains and massive glaciers to hoodoos, icebergs and impressive wildlife, it truly is a magical place that makes a person feel very small and opens one’s mind to their place within the environment. For the local people, concerns relating to aesthetics focused on the remote “wilderness” experience and the spiritual connection to their “home”.



Plate 4.9: Bylot Island Near Navy Board Inlet

Many people who travel to Sirmilik National Park and the area around Pond Inlet do so at great expense in order to have a pristine “wilderness” experience. Many interviewees remarked upon the effect of shipping activities on this experience.

“If you go somewhere and there are a lot of boats or airplanes going by that could affect the balance and what they’re looking for with respect to “wilderness” experience. For example, there’s an area we passed where people are paying a lot of money for a this “wilderness” experience. And with all due respect to Parks Canada, they have these awful, yellow, plastic signs saying “Park Boundary”. Absolute eye sore. Most people think it’s a joke. There’s enough signs in Las Vegas for the whole planet ten times over. We don’t need plastic tacky yellow signs on Bylot Island. People are coming up here to get away from signs and boardwalks and infrastructure and things like that. They’re paying for a “wilderness” experience. They don’t want to see reminders like ships, planes or signs.” (Respondent 2)

When decisions are made favoring the development of large-scale resource extraction operations there will always be trade-offs that may affect other sources of economic development such as eco-tourism. The areas surrounding mining operations such as the Alberta Tar Sands or large Hydro developments such as those found in Northern Quebec typically are not areas that tourists are interested in visiting for their aesthetic beauty. Local residents in Pond Inlet are well aware of the value of the environmental aesthetics.

“Tourism was going to be our main focus in the community, trying to push for economic development when we came up with our ec-out plan, but now that Baffinland is up and running, who is going to see ore carriers going by when you want to see a pristine Arctic that everybody is advertising.” (Respondent 18)

There is also a spiritual connection to the land and ocean that may be impacted for some local people using the Park.

“When I put myself in the “elders” position, because I’ve never lived on the land, I grew up in the community and only go out on the land for short amounts of time, but for elders especially when they go to their home, where they consider home, where they used to live before they moved into the community when they used to live in sod houses, I think I would be disturbed. I don’t know but, if I were them and I saw ships, like Mary River shipping through whichever area, and then to see more than the one ship go by, and our shipping season is really short so they are going to ship as much as they can then, maybe that is going to affect the scenery or the way they enjoy things or what animals they can hunt, or maybe they’ll want to move to a different camp where the ships aren’t going by.” (Respondent 1)

As with any situation where there is a tradeoff or differing values and perspectives, careful strategic planning involving considerable meaningful debate and communication will be required in order to maximize the benefits to all people that will be potentially affected.

4.5 Cumulative Effects

The issues surrounding cumulative effects were hard for participants to speculate about. As such, most questions that were asked centered around limits to the volumes of ship or visitor traffic, or

particular areas where shipping should not be allowed. However, on this topic, people were clear to distinguish between cruise ship traffic and resource extraction and icebreaking traffic.

“There are always people who like cruise ships and people who do not like cruise ships, because you get people coming into the community spending money. I can see how that can be viewed as economic development and for culture. People come and observe, learn and enjoy, but when there are workers coming up here for mining it could be a different story.” (Respondent 18)

As such, comments in this section are separated into two categories: shipping associated with the cruise industry and shipping that is associated with resource extraction.

4.5.1 Cruise Industry

There were two themes that emerged during the interviews with respect to the potential cumulative effects of the cruise industry. In the first case, it became evident that limits on the numbers of visitors to sensitive areas must be monitored and regulated since visitors often want to see the same areas, such as the bird cliffs, hoodoos, or other cultural sites. Most, if not all, of the values components listed above should have some consideration of cumulative effects. With shipping, it is important to consider the effects of many ships in the area, as opposed to a single vessel. For example, one interviewee discussed the heightened concern if there were many ships travelling through the area.

“There was one individual who used some sort of tool to smack it on his Kamatiq, and the birds would go flying. There were many birds that would land on the ice and they couldn’t get up. If there was enough of this sort of thing there would be a big concern.” (Respondent 18)



Plate 4.10: Hapag-Lloyd Hanseatic Cruise Ship Ferrying Passengers to Shore

Furthermore, if these areas are overwhelmed by increased visitation, the value and authenticity of the experience will diminish due to physical disturbance. One interviewee explained this as follows:

“If you compare that to Sirmilik, and there’s a few amazing spots, that’s obviously where people want to go. They all want to go to the same place. The issue is that all those people are going to the same area. So when you’re there, almost every other day there’s a cruise ship, you get the sense that it’s kind of busy.” (Respondent 2)

These tourists are paying top dollar to visit the North and will expect to have their expectations of a pristine and remote wilderness met. They do not want to feel as though they are at a southern “tourist-trap”. Secondly, there are some areas that interview participants would prefer to restrict visitors from completely.

“I don’t think people mind the cruise ships as long as they don’t go down Milne Inlet or Tay Sound, maybe if they stay in the Pond Inlet area or Bylot Island.”
(Respondent 6)

These areas were specifically identified by the respondent because of their importance as critical whale breeding areas. It may make sense to distinguish between which types of visitors can visit a particular area. For example, large vessels and could be more tightly restricted than people who choose to explore the area by kayak.

While it seems unlikely that the area around Sirmilik could ever become a mecca for tourism, interviewees recognize the potential for possible future scenarios where the impacts are unmanageable due to the remoteness and vastness of the Park.

“In Lancaster Sound it’s hard to monitor when you have a hundred people coming ashore. Especially on the north side, it’s almost impossible to physically monitor or have any control over their activity there. People may say they’re not going ashore there but they may anyway – it’s hard to monitor there, and if there were an incident, it would take a lot of time to get out there, weather permitting. So the north shore of Bylot, we would need to be able to find a way to get out there more often and check them out.” (Respondent 6)

Ultimately, visitors need to understand that there are different risks and different rules that apply in the north. Decision makers also need to realize that the rules and regulations that apply to southern parks may not be appropriate in northern locations. These issues will be explored further in the following two chapters.

4.5.2 Resource Extraction

As resource extraction that requires shipping of supplies in and products out lures more companies to the north there comes an increased probability of running aground or other accidents.

“Like anywhere else, with increased traffic, there’s an increased possibility of something happening. Obviously global warming and the issue of more traffic going through Lancaster Sound in the long term is a huge issue and concern for the Park. Boats could be going through Navy Board Inlet, and the oil exploration etc. There could be another Exxon Valdez. Up here it’s much more complicated to clean up oil spills because of the ice.” (Respondent 6)

The first step is to identify any possible risks that these operations may face with respect to the shipping component of their activities. However, with much of the ocean uncharted around the Park this will require much time and effort, if not direct experience from local people familiar with the area. The only area that was identified during interviews as particularly risky was the south end of Borden Peninsula.

“I know there’s some rock out towards the South end of Borden peninsula.”
(Respondent 6)

If the nature of the impact is related to contaminants that could disperse in the water and affect the local ecosystem, an ecological risk assessment is required and the results need to be shared with community members.

“There is still acid rock drainage and metal leeching. We have asked for numbers on acid rain and metal leeching but they are not saying anything. For the most part I think that the mine has looked at those issues. They have tried to mitigate them. Ultimately, most of these things can be somewhat mitigated, and communities are interested in the development, but that could be really a small thing, short-term.”
(Respondent 6)

Complicating this problem is the fact that many effects from contaminants may not be known for years after the damage was done.

“My father used to work at the mine in Nanisivik for years and years and he said that when he was seal hunting he saw hairless seals, seals with diseases and tumors.”
(Respondent 18)

While identifying local site-specific risks may provide a feasible option in some locations, others view the issue differently when considering the effects of pollution from ships.

“We seem to be drawing lines on maps and we’re supposed to be behaving differently on this side of the line than that side of the line, and I just don’t subscribe to that. I think to start dividing bits of land up and to say we have to behave differently on this side or the other is just not true. It’s all very sensitive, and very susceptible to any kind of pollution.” (Respondent 2)

Comments regarding the potential cumulative effects from resource extraction indicate that the local people perceive the volume of traffic from these activities to be much higher than that associated with the tourism industry.

“With shipping, to say that cruise ships have caused an impact, I would say that there is a potential but that if for Mary River if they have what they want, two ships per week all year, that would definitely have an impact. Maybe now is the time to discuss ideal limits on shipping activity. How many ships they want to have come through Milne Inlet? It’s hard to determine the limits, but these things should be discussed and in most cases we would want to take a precautionary approach to addressing these issues until research can be conducted on these issues.” (Respondent 6)

This comment addresses one of the key aspects for EA and strategic planning: the need to raise these questions early on in the decision making process and in a precautionary manner, involving meaningful discussions with all parties.

One specific area where a multi-stakeholder discussion on the limits or locations of shipping activities was revealed pertains to icebreaking and the resulting leads left behind ships. These discussions could reveal the maximum number of ships that would be acceptable to disturb the ice in a particular area or times when it is unacceptable.

“When you look at a map and you see one of the proposed routes is through Navy Board Inlet and between Bylot Island and Pond Inlet. April, May and June, which is the best time to go out hunting, and you have open leads that go from Milne Inlet to Pond Inlet and Bylot Island, you’re cutting off all this land that local residents use for hunting, camping, and doing their cultural activities. Improved communication with the communities about their routes and plans would be good. As well as a limit on timing and the numbers, that would likely be important.” (Respondent 14)

Most people who were interviewed suggested that in order to address these cumulative effect and possible limits on activities, much more research is needed as well as open and meaningful dialogue between regulators, industry, and local people, in order to properly address the regional plan and strategic considerations.

4.6 Public Involvement in Environmental Assessments

Many of the people interviewed indicated to me that they were highly concerned about their inclusion in decision making, land-use planning, and EAs. Therefore, although not planned as part of the data collection, the following section has been included separately to properly highlight these concerns. Furthermore, involving local people and local knowledge in EAs is receiving increasing attention from CEAA and regulators.

4.6.1 Scoping

It is critical to include local people at the initial stages of EAs in order to properly identify valued local components. Without local perspectives it is impossible to make decisions that will lead to equitable and fair decisions for the parties most likely to experience potential direct impacts from projects. This becomes even more important when shipping activities are likely to occur in close proximity to residents. In the north, it is not possible to fully appreciate the value of certain environmental and social components without firsthand knowledge.

“I don’t think that we’re being taken seriously really, kind of glossed over. The political considerations are challenging, people are struggling for jobs etc. We have to make it known that we’re a party that has an interest in these issues for sure. Contacted and discussed with before decisions are made down south.” (Respondent 19)

Many people who I spoke to in Pond Inlet were pleased that I was asking questions about what is important to them, prior to any specific project and regardless of any corporate motivation.

Just given the size of this area, one of the things that concerns me are these operators that come up from the South, they have no vested interest in the North. They see dollar signs, and commit illegal acts. I'll leave it at that.” (Respondent 9)

They also stressed that maintaining relationships and building trust between local people and southern institutions would be mutually beneficial.

“I would like to see more effort by the federal departments to provide us with more information. Not decisions that are made behind closed doors and transferred up here.” (Respondent 19)

The scoping stage of assessments, or even prior, at the strategic planning level, is the first opportunity to show true commitment to understanding and working with local stakeholders, leading to successful relationships that are necessary for efficient progress down the road.

4.6.2 Assessment

At the assessment stage, local people can play a vital role in considering and investigating the possible risks of a project. Their intrinsic knowledge of the land and local culture provides an invaluable opportunity to understand how the impacts will actually play out on the ground, while simultaneously helping to inform the local residents about the project.

“This year we were lucky to have two researchers from a university in Quebec who were doing unbiased research on the Narwhal in that area. There would be potential issues if there were an entity hired by the mine to provide an environmental impact review or a study on potential impacts. There could potentially be some bias towards that entity because they provide the cheques and give out the money. I think that the GN or the Wildlife Board could step in and start doing some studies in the area so that some local residents will be more informed on what is going on out there. As well, that information could be utilized in an IIBA discussion. (Respondent 18)

The fundamental challenge arises in determining how to use or “blend” the local knowledge with that that is deemed to be more scientific based on a western perspective.

4.6.3 Monitoring

The benefits of including local residents in monitoring activities are wide ranging. They include those mentioned in the previous two sections as well addressing issues such as safety, access, employment, and even Canadian sovereignty.

Local residents are able to provide a detailed account of how things may be changing over the whole year or over decades.

“You don’t just send in someone to do a few inspections once and a while, that’s no use. You work with people who live here year-round and see the effects, and can provide a baseline of information based on 12 months a year. [...] To create a tangible benefit, you hire monitors in the community that are able to monitor 12 months of the year, and therefore give you more comprehensive information.” (Respondent 14)

Additionally, as one interviewee noted, many impacts may occur in such a short time frame that it would not be possible for a company to send someone from the south to investigate in adequate time.

“Something like 10,000 L were missing from the log. We were asked to assist in the investigation for that, to go out and look for evidence, but we didn’t find any evidence of a gas spill. I don’t know if it just disappeared, the currents move fast through here, it was gone by the time we heard about it. We traveled around quite a bit, so if there were impacts, they were not known.” (Respondent 6)

Conversely, some impacts may be felt over decades or longer and require generations of knowledge to be passed down for it to be properly appreciated.

“We did do the permit for the bulk sample there but there were a lot of stipulations, including monitoring what the impact will be. They are going to be storing that ore in Milne Inlet and should it rain, while it is in storage it will dissolve a little bit of the

Phosphorus and Sulfur. Now, if it only sits there for one year there might be a little bit of runoff, but over a hundred years, that is a big issue.” (Respondent 13)

The final area where participants see local monitoring as being very beneficial (as also identified in previous sections) is for monitoring the activities of tourists and other visitors while they are in the Park.

“One of the main concerns of cruise ships is them going ashore where nobody can monitor them disturbing archaeological sites. That is definitely a major concern. Probably more so than the environmental concerns from cruise ships.” (Respondent 6)

Having the presence of monitors in the Arctic can provide some additional benefits that were not directly identified in interviews but came up in casual conversation: the mere presence of more local people would help to reduce the number of violations of the Park rules; local residents are a critical way to support Canada’s claim for sovereignty based on occupation of the North; more local residents on ships can help to provide education to visitors about interesting natural areas or cultural attributes.



Plate 4.11: Parks Canada Patrol Vessel Refueling in Navy Board Inlet

4.7 Chapter Summary

This chapter presented the data from interviews in Pond Inlet, Nunavut with residents, leadership, HTO members, government employees, and Inuit elders, as well as from interviews with government employees in Iqaluit, Nunavut. It has followed the topics as outlined in the interview guide (biophysical concerns, economic concerns, and social concerns), and also presents additional topics that were raised concerning public involvement and cumulative effects. The data provided by respondents are generally supported by the literature and provide the results I was able to obtain in relation to objectives one and two.

In relation to the sensitivities of the Park (objective one), the key findings indicate that the protection of narwhal is the greatest concern of local residents. Residents are deeply connected to this unique species and understand how it migrates and breeds, as well as the effects of underwater noise on the whales. Economically, people in Pond Inlet who use the Park are interested in economic opportunities and improving their quality of life; however, perspectives about the most appropriate approach for economic development and the associated risks (potentially from associated shipping) are mixed and vary between demographics. Most people favor economic development from tourism and resource extraction as long as it is done in a respectful, sustainable, and relatively non-intrusive manner. The key concerns regarding general impacts from shipping activities (objective two) are those relating to icebreaking activities in Eclipse Sound, underwater noise, and oil spills. These findings provide the foundation for satisfying objectives three and four and are discussed further in Chapter 5.

CHAPTER 5: SCOPING QUESTIONS FOR SHIPPING AROUND SIRMILIK NATIONAL PARK OF CANADA

5.1 Introduction

As the first step in a project review, scoping lays the foundation for the assessment and approval of a project, and ultimately determines if the environmental assessment (EA) will be adequately rigorous and inclusive. As part of determining the appropriate scoping questions, the EA process should initiate public involvement at an early stage, in order to identify those components of the biophysical, economic and social environment that may be impacted by the project or are a cause of public concern. This process also establishes a relationship between the proponent, regulators and the public that must be fostered in order for the project to move forward.

The field work that I was engaged in around Sirmilik can be considered as an even earlier form of public involvement, since it was undertaken prior to a specific project submission to regulators. In fact, this is something that was viewed very positively by those that I interacted with when I was asked about the purpose of my research and is supported extensively in the literature (e.g., Doelle and Sinclair 2006). People were impressed that I was interested about their concerns without being motivated by a project deadline or company's mandate. As such, they were more open to discussing their personal issues and feelings about shipping.

This chapter takes those personal concerns and issues that were revealed while in the field (as presented in Chapter 4) and links them to specific scoping questions that ought to be asked in future EAs. First, for each topic, the results as outlined in the previous chapter are summarized in table form, in order to clearly establish the link between how those VECs,

sensitivities, and shipping effects from the analysis, are addressed by the scoping questions. Then, the scoping questions are expanded upon and refined based on the literature (including current EAs) and presented under the same headings as the data was presented in Chapter 4.

The final section in this chapter discusses valued components that were revealed by participants as being more regional or strategic in nature, and provides possible questions that are better suited for inclusion in strategic environmental assessments (SEAs).

5.2 Valued Components, Shipping Effects, and Scoping Questions

5.2.1 Summary of Biophysical Issues and Resulting Biophysical Scoping Questions

The following Table 5.1 summarizes the biophysical issues based on the data from participants and the literature. It links the possible effects from shipping and associated activities to the sensitivity of that particular component. The scoping questions following the table are drawn directly from these linkages.

Table 5.1: Summary of Biophysical Issues as Identified by Participants

Component	Shipping Effect	Sensitivity
<i>Biophysical Issues</i>		
Narwhal	Underwater Noise Disturbance Ice Conditions Pollution	Breeding Areas Migration Patterns Entrapment in Ice Habitat Water Quality Air Quality
Bowhead	Direct Mortality Pollution	Migration Habitat Water Quality Air Quality

Component	Shipping Effect	Sensitivity
<i>Biophysical Issues</i>		
Seals	Ice Conditions Disturbance Pollution System effects	Migration Breeding Areas Habitat Water Quality Air Quality Ecosystem Stability
Polar Bears	Pollution Noise Icebreaking	Habitat Air Quality Ice Conditions
Fish	Pollution	Water Quality Habitat
Birds	Noise Disturbance Pollution Oil Spill	Breeding Areas Habitat Air Quality SE Corner of Bylot Island NE Corner of Bylot Island North Side of Borden Peninsula Baillaraige Bay
Plants	Erosion Pollution	Habitat Loss Water Quality Air Quality
Invasive Species	Bilge Water	Ecosystem Vulnerability Ecosystem Quality Species Diversity Species at Risk
Ice Regime	Ice Breaking Oil Spill	Early Breakup Ice Thickness System Effects Salinity / Turbidity Water Quality

The following section takes the data analysis as summarized above, and presents the results as possible scoping questions for future EAs that may involve shipping (Objective 3). The questions should be considered within the scope of any EA on shipping in the North and result from the interview data as presented by the interview participants.

Narwhal

1. What effects will underwater noise have on Narwhal communication?
 - a) Where and when are Narwhal located, breeding, migrating?
 - b) How frequently and over how far are they communicating
2. What effects will underwater noise from ships have on Narwhal breeding areas?
 - a) How can the timing and location of shipping activities affect breeding behavior?
3. What effects will underwater noise from ships have on Narwhal migration (by affecting pod dynamics, direct disturbance, or influencing navigation)?
 - a) How can the timing and location of shipping activities affect migration?
4. What is the importance of water quality to Narwhal habitat?
 - a) What effects will discharges and pollution from ships have on the water quality of Narwhal habitat?
5. What is the importance of air quality to Narwhal habitat?
 - a) What effects will emissions from ships have on the air quality of Narwhal habitat?
6. What effects will shipping activities have on diet and the availability of Narwhal prey (small cod, flatfish, squid, and other small fish and invertebrates)?
7. What effects will icebreaking activities have on Narwhal entrapment in ice?
8. What effects will icebreaking have on whale/ship interactions?
9. What effects will icebreaking and changing ice conditions have on Narwhal locations and migration?

Bowhead Whales

1. What effects will direct mortality from ships have on Bowhead migration patterns?

2. How can the timing and location of shipping activities affect migration patterns?
3. What effects will ship traffic have on direct mortality of Bowhead whale populations?
4. What effects will direct mortality from ships have on Bowhead breeding areas?
 - a) How can the timing and location of shipping activities affect breeding behavior?
5. What effects will underwater noise have on Bowhead communication?
6. What effects will discharges and pollution from ships have on water quality of Bowhead habitat?
7. What effects will exhaust emissions from ships have on air quality of Bowhead habitat?
8. What effects will shipping activities have on the Bowhead's food source (crustaceans and invertebrates)?

Seals

1. What effects will underwater noise from ships have on Seal breeding areas?
 - a) How can the timing and location of shipping activities affect breeding behavior?
2. What effects will underwater noise from ships have on Seal migration?
 - a) How can the timing and location of shipping activities affect migration?
3. What effects will discharges and pollution from ships have on water quality and seal habitat?
4. What effects will emissions from ships have on air quality and seal habitat?
5. What effects will shipping activities have on seal food supply (fish and invertebrates)?
6. Will icebreaking activities have an effect on ice conditions and seal habitat (breathing holes and snow lairs)?
7. What system effects will ships have on seals and related ecosystem health?

Polar Bears

1. Will icebreaking activities have an effect on ice conditions and Polar Bear habitat?
2. Will icebreaking in Eclipse Sound affect the Polar Bears?
3. Will icebreaking activities affect Polar Bear access to food?
4. Will icebreaking activities affect Polar Bear access to suitable dens and breeding areas (particularly Bylot Island)?
5. Will noise from ships affect Polar Bears?
6. What effects will emissions from ships have on air quality of Polar Bear habitat?
7. Will people accessing the Park from ships affect Polar Bear habitat?
8. Will people accessing the Park from ships affect Polar Bears?

Fish

1. What effects will discharges and pollution from ships have on water quality and fish habitat?
 - a. What is the importance of water quality to fish habitat?
2. What effects will recreational fishing have on fish abundance?
3. What effects will commercial fishing have on fish abundance?

Birds

1. What effects will noise from ships have on bird breeding areas?
2. Will noise or disturbance from people on board ships affect birds?
3. What effects will disturbances from visitors have on birds?
4. What effects will air pollution have on birds?
5. What effects will water pollution and possible oil spills have on birds?

Invasive Species

1. What effects will bilge water releases have on native species?
2. What effects will bilge water releases have on species diversity?
3. What effects will bilge water releases have on overall ecosystem health?
4. What effects will invasive species have on particularly vulnerable species or those at risk?

5.2.2 Summary of Economic Issues and Resulting Economic Scoping Questions

The following Table 5.2 summarizes the economic issues based on the data from participants and the literature. It links the possible effects from shipping and associated activities to the sensitivity of that particular component. The scoping questions following the table are drawn directly from these linkages.

Table 5.2: Summary of Economic Issues as Identified by Participants

Component	Shipping Effect	Sensitivity
<i>Economic Issues</i>		
Cruise Ships and Tourism	Crafts Services Management Policies	Equality Sustainability
Resource Extraction	Skills Employment Community Relations Economic Development	Sustainability Infrastructure Political Cost/Benefit Community Financial Equity Tourism Industry
Resource Harvest	Icebreaking Disturbance	Narwhal Hunting Seal Hunting Commercial Fishing Navy Board Inlet NW and SE Flow Edges
Access and Population	Demographics Industrial Development	Political Cost/Benefit Cost of Living Resources Infrastructure Services

The following section takes the economic issues that are summarized above, and presents them as possible questions to be included within the scope of any future EAs that involving shipping. The questions reflect the data on concerns and perspectives of development associated with shipping activities as raised by interview participants.

Cruise Ships and Tourism

1. What effects will tourists have on local businesses?
2. What effects will tourists have on the overall local economy?
3. How will the benefits from craft sales be distributed throughout the community?
4. What effects will cruise ship tourism have on the long-term economic sustainability of the community?

Resource Extraction

1. What effects will icebreaking activities have on Narwhal hunting?
2. What effects will skill development have on the local businesses?
3. What effects will skill development have on the local economy?
4. What effects will employment opportunities have on the local businesses?
5. What effects will employment opportunities have on the local economy?
6. What effects will economic development have on community infrastructure?
7. What effects will economic development have on community services?
8. What effects will economic development have on local or regional politics?
9. What effects will economic development have on the “wilderness” or cultural tourism industry?

10. What effects will economic development have on community sustainability?

Commercial Resource Harvest

1. What effects will icebreaking activities have on hunting and fishing activities?
2. What effects will general disturbance have on hunting and fishing activities?
3. What effects will icebreaking have on access to Navy Board Inlet?
4. What effects will icebreaking have on access to the NW and SE flow edges?

Access and Population

1. What effects will development that requires shipping have on access to resources?
2. What effects will foreign workers working on projects that require shipping have on local demographics?
3. What effects will foreign workers working on projects that require shipping have on regional demographics?
4. What effects will foreign workers working on projects that require shipping have on local infrastructure and services?
5. What effects will permanent foreign workers working on projects that require shipping have on political demographics?
6. What effects will improved access to goods have on cost of living?

5.2.3 Summary of Social Issues and Resulting Social Scoping Questions

The following Table 5.3 summarizes the social and cultural issues based on the data from participants and the literature. It links the possible effects from shipping and associated activities to the sensitivity of that particular component. The scoping questions following the table are drawn directly from these linkages.

Table 5.3 Summary of Social Issues as Identified by Participants

Component	Shipping Effect	Sensitivity
<i>Social Issues</i>		
Personal, Family and Community Life	Intrusion of Foreigners Way of Life	Respect for Local History Demographics Cultural Capital Traditional Activities and Skills Spiritual Activities
Heritage Resources	Tourists Disturbance Erosion Abiding by Park Rules Unauthorized Access	Direct Removal Unintentional Destruction Shoreline Areas
Traditional Use Areas	Icebreaking Disturbance Underwater Noise	Access Narwhal Hunting Seal Hunting Recreational Fishing Sense of “Home” Navy Board Inlet
Recreation	Cultural Demonstrations	Cultural Capital Empowerment
Health and Safety	Icebreaking Access to Substances Changes in Lifestyle Employment Access to Polar Bear Habitat	Hunter Safety Drug and Alcohol Use Domestic Abuse Safety of Tourists
Aesthetics	Volume of Ship Traffic Volume of Visitors	“Wilderness” Experience Tourism Opportunities Spiritual Connection to Land

The following section takes the social issues and effects as summarized above, and presents them as possible questions that should be considered within the scope of any future EAs for shipping.

The socio-cultural scoping questions resulting from the interview data as presented by the participants are quite straightforward; however, their actual effects may be very complicated and difficult to address due to personal motivations and bias. These sorts of questions have been increasingly recognized for their importance as the EA practice has evolved.

Personal, Family and Community Life

1. What impacts will an influx of foreign workers and visitors have on political demographics?
 - a. Will this affect local values and political representation?
 - b. Will this affect current territorial goals and plans?
2. What impacts will an influx of foreign workers and visitors have on cultural capital?
 - a. Will this affect community cohesion?
 - b. Will this compete with traditional values?
3. What impacts will an influx of foreign workers and visitors have on social capital?
 - a. How will this affect community health and crime?
4. What impacts will tourism have on the respect for local culture and history?
 - a. How can the potential benefits be promoted?
 - b. Will educating tourists prior to arrival improve local perception of visitors?
5. What effects will employment and training opportunities have on community dynamics?
 - a. Will there be competition between individuals for scarce jobs?
 - b. Will opportunities be fairly distributed?
6. What effects will engaging in wage employment have on traditional activities and skills?

7. What effects will industrial development and tourism have on spiritual activities?
 - a. Will people have the time to practice these activities?
 - b. Will people continue to practice?
 - c. How will this affect community social and cultural capital?
8. What measures must be taken to optimize the potential positive socio-cultural impacts and minimize the potential negative socio-cultural impacts on the individuals and communities?

Heritage Resources

1. What effects will tourists have on the removal of heritage resources within the Park?
 - a. How can this be appropriately managed in a remote and expansive Park?
2. What effects will unintentional destruction by tourists (e.g., stepping on) have on heritage resources?
 - a. Are boardwalks and other man-made measures appropriate in this location?
3. What effects will shoreline erosion from ships have on heritage resources (Button Point and Navy Board Inlet were specifically identified by participants)?
4. What effects will unauthorized visitors to the Park have on heritage resources, either through removal, unintentional destruction, vandalism, or general disturbance?
 - a. How can this be efficiently monitored and prevented?

Traditional Use Areas

1. What effects will icebreaking have on the ability of people to access their traditional use areas?
2. What effects will icebreaking have on the ability of hunters to access narwhal hunting areas?

3. What effects will icebreaking have on the ability of hunters to access seal hunting areas?
4. What effects will icebreaking have on the ability of hunters to access recreational fishing areas?
5. What effects will underwater noise have on narwhal hunting areas?
6. What effects will underwater noise have on seal hunting areas?
7. What effects will underwater noise have on fishing areas?
8. What effects from general disturbance will ships have on the sense of “home” at traditional areas?
9. What effects will general disturbance and noise have on narrow channels such as Navy Board Inlet?

Recreation

1. What effects will cultural demonstrations for tourists have on traditional recreation activities?
2. What effects will cultural demonstrations for tourists have on individual empowerment?

Health and Safety

1. What effects will icebreaking activities have on the safety of hunters and others accessing traditional use areas?
2. What effects will easier access to drugs and alcohol have on community health?
3. What effects will changes in lifestyle or diet have on community health?
4. What effects will changing employment opportunities (i.e. office jobs) have on community health?
5. What effect will changes in employment opportunities have on domestic abuse?

6. How will the safety of people accessing the Park from ships be affected by Polar Bears, wildlife or other conditions of the area?

Aesthetics

1. What effects will increasing ship traffic have on the “wilderness” experience?
2. What effects will increasing numbers of tourists have on key tourism areas and opportunities?
3. What effects will increasing volumes of ships and tourists have on the local spiritual connection to the land?

5.2.4 Summary of Cumulative Effects Issues and Resulting Scoping Questions

The following Table 5.4 summarizes the economic issues based on the data from participants and the literature. It links the possible effects from shipping and associated activities to the sensitivity of that particular component. The scoping questions following the table are drawn directly from these linkages.

5.4 Summary of Cumulative Effects Issues as Identified by Participants

Component	Shipping Effect	Sensitivity
<i>Cumulative Effects</i>		
Biophysical	Volume of Ship Traffic Icebreaking	Ecosystem Milne Inlet Traditional Use Areas Sensitive Ecological Areas
Socio-economic	Volume of Visitors Volume of Ship Traffic Unauthorized Access	Specific Heritage Sites North Shore of Bylot Island Traditional Use Areas

This was a topic that for many participants, the issues were considered too vague and hard to discuss with any certainty. Most respondents were only prepared to discuss issues that they had

personally experienced or that they could directly relate to. Therefore, the data relating to cumulative effects is based on questions that were raised during interviews pertaining to limits or volumes of ship traffic, or to areas where it is perceived that shipping should not be allowed at all. As such, many issues fall in to the category of strategic environmental assessment and are dealt with in more detail in the next section.

Some of the following questions are based on data from respondents combined with knowledge from the literature that pertains to cumulative effects related to shipping in the Arctic. The key issue is that for any of the impacts noted above, and particularly the biophysical impacts (e.g., noise from ships), there needs to be some consideration of cumulative effects and a determination of the potential impacts of noise from many ships, not just the one being added.

Biophysical Cumulative Effects

1. What is the likelihood of past, present, or future impacts in the area interacting with current potential impacts?
 - a. What is the temporal or geographical proximity of these other impacts and how will they interact?
2. What is the total duration of the shipping activities/project and how is this likely to overlap with other projects in the area?
 - a. How will this affect the area around the Park in the long-term.
 - b. What residual effects will occur after the project is completed? How will these interact with potential future projects?
3. What will be the cumulative effects on marine mammals (migration, breeding, lifespan) of multiple ships travelling through Milne Inlet, Eclipse Sound, or Navy Board Inlet?

- a. What synergistic effects are possible (e.g., toxicological, mutations, ice regime/habitat, trophic interaction)?
4. If a port is developed, will other potential parties utilize it and how will this affect shipping routes near the Park?
5. Are there any times or seasons where these effects would be considered acceptable or unacceptable?
 - a. What is the duration of potential impacts?
6. What would be the cumulative effects on species habitat and abundance of multiple icebreakers coming through Milne Inlet?
 - a. What synergistic effects will a change in ice regime have on ecosystem interactions (trophic interactions, habitat alterations, chemical or biological interactions, light availability)?
7. What would be the cumulative effects of multiple icebreakers on the ability of local users to access their traditional use areas?
8. What cumulative impacts will resource extraction activities have on the availability of land for traditional land use purposes?
9. What cumulative impacts will shipping have on aesthetics and visual quality of the Park for its users?
10. What cumulative impacts will operation of ships have on levels of environmental noise?
11. How will uncertainty regarding the long-term effects of shipping and associated activities on the local environment be managed?
 - a. How can unknown synergistic effects be predicted and managed?

Socio-economic Cumulative Effects

1. What will be the effects of multiple groups of visitors to a particular heritage site (per day/week/month/year)?
2. What will be the cumulative effects of multiple ships near traditional use areas?
 - a. How will this affect people's sense of "home"?
3. How will long-term local food security be impacted by potential restricted access to hunting areas?
 - a. How could hunting quotas be affected?
4. What will be the effects on safety of unauthorized visitors to the North Shore of Bylot Island or other areas that are difficult to respond to in the case of emergency?
 - a. What requirements will this place on local rescue infrastructure and services?

5.3 Strategic Issues and Scoping Questions

Parks Canada, like all government departments, is encouraged by CEAA to systematically consider the environmental effects of any proposed policy, plan, or program that may be enacted in the future. In fact, strategic EAs (SEAs) are specifically required when a particular policy, plan or program requires Cabinet or Ministerial approval and when it may result in significant environmental effects, either positive or negative (CEAA 2010b). For example, some of Parks Canada's plans, policies, and programs that may require strategic environmental assessment and are related to this research include: Park/Historic Site/National Marine Conservation Area Establishments; Park/Historic Site/National Marine Conservation Area Management Plans; Species at Risk Recovery Strategies and Plans; or other proposals for specific parks, historic sites, and marine conservation areas (Parks 2009c).

In addition to federal requirements, the Nunavut Impact Review Board (NIRB) requires that land use plans are assessed in accordance with the provisions include within the Nunavut Land Claims Agreement (NLCA) under the following broad categories: management procedures, development and operations requirements, visitor use, social and cultural considerations, and resource management decisions (Nunavut Parks 2006). The Nunavut Planning Commission is also involved in ensuring that policy decisions that may affect Sirmilik are in accordance with the Northern Baffin Land Use Plan (Nunavut Planning Commission 2000). In preparing the Northern Baffin Land Use Plan, the Nunavut Planning Commission was required under Article 11 of the NLCA to consult intensively with local residents, communities, and Inuit leaders (Nunavut Planning Commission 2000). Therefore, concerns that arose during interviews that are more regional in nature or are related to general land or marine area planning are included in this section. These concerns fall under several broad categories that can be considered system wide: regional air and water quality; wildlife habitat; species diversity and abundance; ice regime; infrastructure and services; regional economic development; demographics; impacts to traditional use and occupancy of the land, water, and sea ice; human health; community health; and cultural practices and traditions.

Possible Biophysical Strategic Scoping Questions

1. What effects will ship traffic and associated exhaust emissions have on ambient air quality?
2. What effects will pollution and discharges from increasing ship traffic and associated activities have on ambient water quality?
3. What effects will economic development associated with shipping have on the ability to preserve or rehabilitate intact ecosystems and establish new protected areas?

4. What effects will more shipping and the increased risk of potential accidents have on the availability of species habitat (marine and terrestrial)?
5. What effects will shipping volumes and the potential increase in introduction of invasive species, pollution, and disturbance have on native species diversity and abundance?
6. What effects will shipping volumes and the potential increase in ambient levels of contaminants have on native species diversity and abundance?
7. What long-term effects will shipping and associated activities have on affected species (marine and terrestrial) populations?
8. What effects will increasing icebreaking activities have on ice regime?
9. How will long-term uncertainty regarding the biophysical effects of shipping and associated activities be addressed?
10. How will uncertain synergistic effects and potential ecological changes be addressed?

Possible Economic Strategic Scoping Questions

1. What effects will partnerships between proponents, regulators, and the community have on economic opportunities for the Park?
2. What effects will increasing shipping activities have on international perception of the Park?
3. What effects will cruise ship tourism have on economic development?
4. What effects will resource extraction have on economic development?
5. What effect will increasing shipping activities have on the access to goods and cost of living?
6. What effect will icebreaking activities have on the access to goods and cost of living?
7. What effects will icebreaking have on economic development associated with improved access to new resource harvest and tourism opportunities?

8. What effects will cruise ship tourism have on community infrastructure and services?
9. What effects will resource extraction have on community infrastructure and services?
10. What effects will an increase in foreign workers have on community infrastructure and services?
11. What effects will development associated with shipping have on skill development employment opportunities?

Possible Socio-cultural Strategic Scoping Questions

1. What effects will partnerships between proponents, regulators, and the community, have on community dynamics?
2. What effects will cruise ship tourism have on cultural capital?
3. What effects will foreign workers or visitors have on political demographics?
4. What effects will economic development associated with shipping have on community health and crime?
5. What effects will shipping and icebreaking activities have on the ability of people to undertake their traditional activities?
6. What is the future scenario involving shipping activities (locations, types of ships, types of other activities, purposes of shipping, volumes, timing) that best suits the community?
7. What effects will industrial development and tourism have on community and regional cohesion?

5.3.1 Broader Policy Related Scoping Considerations

In addition to the above specific concerns, interviewees also made comments and strategic recommendations that apply under a broader context of climate change and its associated uncertainty, as well to the broader issue of Canadian sovereignty. As for climate change, respondents indicated that further scientific studies need to be conducted and any policies, plans, or programs need to be precautionary in nature and include for additional adaptability and resilience. With respect to sovereignty, all respondents indicated that there needs to be more involvement with local residents, realizing that working with the people on the ground, living in these remote northern communities, is the best way to establish successful relationships and ultimately assert sovereignty based on occupation and use of the area.

5.4 Chapter Summary

In order to address Objective 3 of this thesis, this chapter has summarized the data presented in Chapter 4 in table format, clearly linking the environmental sensitivities of Sirmilik National Park and area surrounding it to the possible effects of shipping and associated activities. Based on the respondents' comments and issues raised, it has presented possible scoping questions for future EAs that may involve shipping. Aside from the strategic concerns, the questions presented coincide with the data as recorded during interviews and is organized under the same categories: biophysical concerns, economic concerns, social concerns, and cumulative concerns.

The final section of this chapter addresses Objective 4 of this thesis by presenting broader strategic concerns that follow from the data analysis and are based on respondents' concerns that were more regional in nature. These issues also reflect comments that were made regarding broader land use planning and economic development, and touch on issues raised that relate to

climate change, public involvement, and Canadian sovereignty. In the next chapter I will draw conclusions and provide recommendations based on these analyses.

CHAPTER 6: CONCLUSIONS & RECOMMENDATIONS

6.1 Introduction

In a rapidly changing Canadian Arctic that is experiencing increasing levels of shipping and associated activities, making careful decisions around environmental, land-use, and development planning will determine how the future of this region is shaped. The EA legislation in Nunavut provides one of the most useful tools for assessing the full scale of impacts that a project or policy may have on the environment, economy, and people that may be affected. However, in order to adequately address the possible outcomes of a project or policy, the right scoping questions must be asked at the forefront of any planning or EA discussions (Noble 2006; Marriott 1997; Sadar 1996). An integral part of this process is to involve those people who will be affected by future decisions in the determination of what are deemed to be the valued components that deserve attention (Noble 2006). Therefore, the purpose of this research was to identify essential questions related to scope of project and scope of assessment, for shipping and associated activities that might impact Sirmilik National Park. In order to satisfy this purpose, the specific objectives set included: (1) to identify environmental sensitivities of Sirmilik National Park of Canada; (2) to identify potential impacts from shipping and shipping associated activities on Sirmilik National Park of Canada; (3) to make recommendations regarding the appropriate scoping questions for project assessments involving shipping in the North; and (4) to differentiate between questions that are strategic in nature versus those that are more suited to inclusion in project assessments.

Sirmilik National Park of Canada is an area rich with natural capital and cultural history, and represents the Eastern Arctic Lowlands and Northern Davis Natural Regions of Canada, as

well as parts of the Lancaster Sound Marine Region (Parks Canada 2010). It is home to narwhal, walrus, four species of seal, polar bear, caribou, many species of migratory birds, and the world's largest breeding colony of snow geese (Parks Canada 2010). It has also been home to generations of pre-Dorset, Dorset, Thule, and modern Inuit for over 2000 years (Parks Canada 2010). The associated heritage resources and spiritual reverence for the area is equally as valuable as the natural and cultural heritage of the Park.

With a decreasing amount of multi-year ice in the area and improving technology, the ability to exploit the resources in the north through increasing shipping becomes a critical concern when Parks Canada is involved in EA decision-making (Arctic Council 2009). In addition, increasing cruise ship tourism is raising an array of concerns around how to best manage such a unique and remote Park, while still allowing visitors to experience its vast natural and cultural heritage (Marquez 2006). As such, careful and appropriate scoping of projects, policies, and programs that involve shipping is crucial, in order to accurately understand all the potential issues that may impact the Park and people who use it.

The conclusions that follow are based on the data collected from twenty-five semi-structured interviews that were conducted with Inuit leaders, HTO members, Parks Canada employees, federal and territorial regulators, shipping experts, and other stakeholders and members of the public concerned about shipping in the area. The last section of this chapter will elaborate on some themes that arose during this research and discuss some final recommendations for possible improvements to the EA processes in the north, planning for moving beyond sustainability, true public involvement and corporate responsibility, and Inuit perspectives on climate change and Canadian sovereignty.

6.2 Conclusions

This section presents conclusions for each of the stated objectives of this research. In order to add rigor and accuracy to these conclusions, some triangulation with the literature was utilized. Conclusions stem from the key findings in the data and are presented for each objective.

6.2.1 *Biophysical Sensitivities and Vulnerabilities of the Park*

As presented in Chapter 4, respondents identified nine biophysical components of the Park and surrounding area that they regard as particularly sensitive to the impacts from shipping activities: narwhal and bowhead whales, seals, fish, polar bears, birds, plants, invasive species, and ice conditions. According to the data, respondents are concerned about the following specific effects to these components from shipping: noise and general disturbance, icebreaking activities, ambient air and water pollution, direct mortality, invasive species, and oil spills. The need to understand and address these effects more completely will require a great deal of scientific study as well as increased involvement from local people.

By far the most common concern raised by participants was the potential impact to the narwhal. Every participant in this study recognized the importance of this species for its subsistence use as well as for the spiritual and cultural connection that they have with it. The most common specific concern was for the possibility of underwater noise from ships to affect the narwhal breeding areas and migration patterns. Their second concern related to icebreaking activities affecting the ability of hunters to access their traditional narwhal hunting grounds.

It is well documented that underwater noise affects whale communication and behavior (e.g., Cosens 1993; Lesage *et al.* 1999). While I was in Pond Inlet a University of Laval researcher was conducting a study of the effects of underwater noise from ships on narwhal

communication. In her study, Marcoux (2008) concludes that underwater noise not only affects communication by narwhal, but that this also leads to secondary effects on their group dynamics and overall population health. Additionally, a local outfitter that I spoke to had personally witnessed, through the use of a hydrophone, the effects of underwater propeller noise from a ship on narwhal location and abundance (see Chapter 4, section 4.2.1).

The second most common biophysical concern raised by respondents during the interviews is regarding effects on seals. Since seals are hunted year round and provide food for other animals in the area, their connection to other components of the ecosystem (including humans) is important. Respondents were aware of these potential ecosystem effects, but were more directly aware of possible effects from icebreaking activities on their ability to hunt for seals at the NW and SE flow edges. In addition, there was concern that icebreakers opening up leads in the ice could leave seals more vulnerable to predation by polar bears and killer whales. Conversely, these leads, and an associated accumulation of seals in a particular area could make them also an easier target for human predation. Finally, since seals also rely on underwater communications, they are vulnerable to noise produced by ships.

Concerns related to Narwhal and seals were likely the most common due to their direct importance to the diet and culture of local people, and therefore deserve special attention in any scoping discussion. Effects of shipping activities on their quantity and abundance must be assessed, but equally important are the effects of pollution and other contaminants on the quality of the meat these species provide locally. Since they are relatively high trophic species and feed on lower trophic levels, they are susceptible to high rates of bioaccumulation of toxins (PCBs, dioxins, mercury, and other carcinogens) in their fatty tissues (also a concern for arctic char which is consumed regularly) (Muir *et al.* 2003; Kucklick *et al.* 2002; Atwell *et al.* 1998). As

part of INAC's Northern Contaminants Program, research has been undertaken to determine the concentrations of toxins in narwhal around Pond Inlet (Stern *et al.* 2010). While the scientific community is aware of these concerns, participants did not specifically identify them. This indicates that more dissemination of information to local people regarding the risks to human health and appropriate consumption limits is required.

The above discussion on biophysical concerns and effects from shipping, as well as conclusions suggested by a number of respondents, highlights the need for further research into the direct effects of underwater noise, icebreaking activities, and pollution on the health and abundance of narwhal and seals, as well as on the people who rely on them.. Additionally, local people need to be engaged directly in this research in order for the information to be communicated effectively and for the indispensable addition of their perspective (i.e., local knowledge).

6.2.2 Economic Vulnerabilities

During the interviews, many people stated that they are aware that mining operations are intrinsically finite and unsustainable and that even tourism can be fickle. They suggested that the economic benefits from these sorts of projects that require shipping must be directed towards long-term improvements in the community and other sustainable industries such as eco-tourism. For many individuals in Pond Inlet, meeting their basic needs must come first; then they will be free to pursue education, entrepreneurship, and other goals. For communities, investment in basic services such as waste disposal, providing clean water and energy, and health care is necessary, along with planning for educational opportunities, business opportunities, and recreational activities.

6.2.3 Social and Cultural Vulnerabilities

The complex social issues that were revealed in the data suggest that effects of increased shipping are likely to be mixed and will be experienced differently by each individual or group. Some people view the effects of shipping around Sirmilik as a positive sign of growth, development, and potential job opportunities, while others (typically older generations) view this growth as a threat to their culture and traditional activities.

There is no doubt that an increase in shipping activities will improve the availability and cost of goods, as more frequent transportation is a much needed factor for cheaper healthy food and necessary tools and supplies. However, this benefit will only be helpful if it is accompanied by prudent decisions about what types of goods to bring in. Typically, the local grocery store brings in goods that will generate the most profits. I observed many people purchasing \$5 cans of coke and \$40 buckets of frozen fried chicken, while the minimal supplies of “fresh” fruits and vegetables rotted on the shelf. Since perishables must be flown in more frequently, their cost is considerably higher. While improved access to goods through increased shipping is a benefit to the community, this must be weighed against the potential ecological costs associated with shipping in a proper pre-approval assessment.

Potential impacts from shipping on community health are intimately associated with effects on traditional ways of life as discussed previously. Further, decisions on the effects of wage based employment, migration, public health and safety, spiritual and physical disturbance, and support for community initiatives to must be taken into consideration within project related scoping.

6.2.4 Cultural Heritage Sensitivities and Vulnerabilities

The rich cultural legacy of Sirmilik National Park is considered valuable by respondents both for historical reasons as well as spiritual. It is also seen as important for future visitors wishing to experience the unique lifestyle of previous inhabitants of the areas as well as modern Inuit culture. Most cultural sites in the Park are situated along the shorelines and are thus vulnerable from erosion from shipping as well as from the easy access of visitors from ships who are often prone to pick things up. In order to preserve this irreplaceable resource, effective monitoring of visitors to the Park to ensure that they abide by the rules governing disturbing historical artifacts, as well as limiting volumes of visitors is required. Additionally, some areas of the Park where local people still perform subsistence or spiritual activities may be deemed inappropriate for visitation at all.

Cultural sites such as the remains of sod houses around Button Point are already experiencing natural erosion from waves and wind, threatening to physically remove them from the Park altogether. Areas such as these should be protected with physical barriers from erosion or by relocation if no other means are available. In order to prevent erosion from ships compounding this problem, ship traffic should be restricted from coming too close to the shore or by reducing the speed and associated wake being produced.

A majority of respondents were concerned about an increased presence of ships or tourists affecting their sense of “home” or spiritual connection to their traditional areas. This perception must be considered in scoping for projects that involve shipping and can potentially be mitigated by restricting the areas where visitors can spend time and potentially through restricting the volumes of ship traffic around these cultural sites. Furthermore, working with local people in order to allow visitors to experience the local culture through demonstrations or

education was deemed as crucial and can improve the relationship with outsiders and satisfy the visitors' curiosities.

Many respondents see the benefit of tourism in promoting the preservation of their local culture. Since most tourists that come to the area are well educated and interested in culture, they provide a great empowering ability to those who perform cultural activities. This can benefit the individuals who are engaged in the cultural demonstrations as well as the whole community if the benefits are distributed more equitably. As respondents indicated, the current benefits from tourism are only received by the few who create crafts, provide services, or sell souvenirs. If the cultural benefits are distributed more broadly and embraced by the community as a whole in the form of cultural tourism this would provide long-term sustainable benefits. This would likely require visitors to spend more time actually in the communities, rather than coming ashore for a few hours to visit what the locals call "Pondland". While I was in Pond Inlet, the most enlightening and memorable experiences came from interactions and experiences while in people's houses, interacting and observing how they actually live. Therefore, scoping questions must consider the equality and fairness of the distribution of these benefits.

Some people in Pond Inlet recognized that cultural tourism is a new phenomenon for the community and region as a whole and stated that they do not believe that planners and decision makers know how to properly manage it or promote it. Furthermore, many community leaders were virtually unaware of cruise ship origins or their plans in the area. To overcome this, community leaders need to work with international tourism operators and local residents to improve the experiences of visitors and the people that they are interested in visiting. This sort of relationship building must be considered in the scoping phase of project assessments in order to

promote positive working relationships and to ensure that the concerns of local residents are respected.

6.2.5 Scoping Questions

Whether the scoping process is led by the proponent, regulator, or stakeholders, will likely determine how restrictive or ambitious in nature it becomes as well as whether the regulator defines a narrow scope from the outset. Ambitious scoping, involving meaningful public involvement, is likely to involve the broadest range of issues and possible effects from a project, though it may be less efficient at the outset. Restrictive scoping, on the other hand, is likely to be more efficient at the beginning, but may cause significant deficiencies and delays for the proponent and regulator down the road as serious issues come to the fore. Since this thesis is based on a critical perspective, I intended to be as inclusive as possible based on the data from participants, within the confines of master's research. Thus, some scoping questions outlined in Chapter 5 are quite broad in nature in order to capture a range of possible effects to that particular VEC (e.g., What effects will increasing ship traffic have on the "wilderness" experience?). In this case the noted "wilderness experience" may be related to a tourist, a local hunter, or to the general aesthetics of the Park. It is intended to raise the issue for further consideration in the future when determining the scope of a specific project (or policy).

Simultaneously, I have been as specific as possible about making the link between shipping effect and the environmental sensitivity (e.g., What effects will underwater noise from ships have on Seal breeding areas?). This was much more straightforward for the biophysical scoping questions than for the social or cultural questions. However, the scientific studies to

determine the effects of such biophysical impacts may be more laborious and time consuming in the end.

Ultimately, the key issues that that are outlined above require strong scoping questions. Prior to this however, more local research in the following areas needs to be completed as soon as possible: effects of underwater noise on species of concern, whale behavior and breeding areas, cumulative effects on ecosystem integrity and thresholds, synergistic effects, effects of icebreaking on the local ice regime, and baseline biophysical conditions and fluctuations. Additionally, community members and leadership need to mutually agree on their future goals for the community. Following this research and dialogue, the information needs to be effectively communicated to stakeholders and community members in order for them to clearly understand the potential effects from shipping.

6.2.6 Strategic Environmental Assessment Issues

TOURISM

While most people's views are mixed regarding increasing cruise ship tourism, if managed correctly, this industry holds great promise for long-term economic, social, environmental, and cultural benefits. According to the data, for this to be accomplished, tourism operators need to show greater interest in the community, provide better communication as to where and when they will be travelling, and improve education for their patrons on the cultural sensitivities and appropriate etiquette for the communities that they visit.

RESOURCE EXTRACTION

The greatest concerns for shipping related to resource extraction center around icebreaking activities, and oil spills. There are areas that respondents deemed too sensitive for these activities to occur (e.g., narwhal breeding areas). Most respondents also feel as though icebreaking should not be allowed within Eclipse Sound, because of the concerns around access and safety of hunters.

Significant political wrangling and media attention has been recently paid to lure of arctic resources and the potential for oil spills^{6,7}. Conclusions are generally that we are unprepared scientifically for an accident in ice-covered waters, have few resources available in the area for emergency response, and that arctic ecosystems are extremely sensitive and vulnerable (Arctic Council 2009; U.S. Arctic Program 2010). Many respondents from the sample group suggested that no further arctic oil and gas development should be allowed until these factors can be completely understood and addressed.

MARINE PROTECTED AREAS

A number of people I spoke to while in Pond Inlet discussed their desire and efforts over the last 20 years for creating an official marine protected area around the Park. Coincidentally, in December 2010, environment Minister John Baird announced that the federal government had begun the formal process of designating Lancaster Sound a national marine conservation area (CBC 2010). While shipping would still be allowed, this involved halting seismic testing for oil

⁶ See: Mostyn, R. 2010. *Canada is not prepared for Arctic oil-spill*. In Yukon New, Friday May 7, 2010
Online: <http://www.yukon-news.com/opinions/editorial/17959/>

⁷ See also: U.S. Arctic Program. 2010. *Oil Spill Prevention and Response in the U.S. Arctic Ocean: Unexamined Risks, Unacceptable Consequences*. Online:
http://www.pewtrusts.org/uploadedFiles/wwwpewtrustsorg/Reports/Protecting_ocean_life/PEW-1010_ARTIC_Report.pdf

and gas. A year prior, the Nunavut government and the Qikiqtani Inuit Association formally began a feasibility study on creating a national marine conservation area (CBC 2010).

6.3 Recommendations

The following section presents recommendations that follow from the conclusions in relation to the central purpose – scoping. Since I have listed the relevant scoping questions in Chapter 5, I will provide some next steps regarding work that should be done to identify more issues and possible scoping questions.

6.3.1 Scientific Research

There are many gaps in our scientific knowledge of the Arctic. For example, as was suggested by respondents and concluded by Marcoux (2008), in order to mitigate the effects of underwater noise on narwhal, further research is required to understand the complex effects that noise from ships will have on breeding, migration, and population abundance. Local research needs to be conducted on these effects, including documentation of local knowledge surrounding changes to species abundance, location, and migration patterns. When combined with western scientific knowledge, local knowledge in the area will help to contribute to arriving at an accurate baseline with which to judge any changes to these environmental factors. This may be particularly beneficial for impacts that are difficult to quantify due to lack of prior arctic/local experience, whereby local knowledge can highlight long-term baseline changes or other experiential observations of interactions in the environment.

Numerous respondents who are concerned about climate change and icebreaking effects commented that they would like to see local studies into the effects of icebreaking in the spring

on the natural breakup cycles. They are concerned that leads left behind the ships in the spring will not refreeze, causing premature breakup and subsequent effects on animals and their ability to hunt during this time. Furthermore, the synergistic effects of these changes to ice regime could alter trophic interactions, habitat conditions, and ultimately species' distribution and populations.

A key theme that emerged during this research is that policies and decisions made in southern Canada are not necessarily applicable to parks in the North. Respondents suggested that more research needs to be conducted locally for it to be relevant to their situation. This sort of research needs to be conducted prior to project related EAs in order for the information to be objective and provided to local people early enough so that they can make informed decisions about the scoping of valued components. Furthermore, companies that engage northern communities in education and research can begin to develop the relationships, understanding, and trust that are needed for future developments.

6.3.2 Communication and Relationship Building

Since communication between ship operators and local residents was a major concern for hunters on the spiritual level as well as for safety of travel while on the land, improving communication and developing relationships will ensure that the local people's values are respected and they are able to safely engage in subsistence activities. Shipping operators could also help to provide transportation for hunters to traditional use areas, where they can undertake subsistence activities to provide for the community. Providing monitoring jobs to local people will benefit those who do business in the north by providing detailed information that would be otherwise unavailable. They can also provide education and technical skills for residents in areas such as science,

resource management, contaminant remediation, and others that are not typically available in these remote communities.

In the tourism sector, this would be mutually beneficial, as the tourists on board would be directly educated about what is involved with this way of life. Since the desire for this authentic cultural experience for tourists was a main reason that they come to the remote and unique area, this was a key finding during interviews and observations in the field.

“For adventure tourism, if a group of guys goes out on the ice or by boat, they’re retaining those land-skills, they’re talking about their culture to people who are interested in that culture, they’re also learning about the outside world.”
(Respondent 2)

Establishing mutually beneficial relationships between shipping operators and the local people is the key to mitigating the negative impacts and promoting the positive. Cross-cultural issues between foreign workers and local people can be improved in time with trust and understanding. Genuine efforts need to be made on behalf of the shipping operators to give back to the community and to work with local businesses and organizations. This goes far beyond spending a few hours in the community to visit the gift shop and make a few phone calls. If the benefits are more equally distributed within the community the polarizing views of tourism and shipping activity can be improved.

The diminishing sense of “home” can be also be mitigated through relationship building and communication by restricting the areas where visitors can spend time and potentially through restricting the volumes of ship traffic around these cultural sites. Furthermore, if local residents recognize a shipping company as “friendly” they are less likely to view it as an intrusion into their space.

If there are to be regular ships coming in to the area for tourism or resource extraction, partnerships should be developed with the local grocery store in order to bring some of the more

perishable goods on a more frequent basis. While this may not financially benefit the shipping companies, the relationships that would be fostered would be a guarantee of future business in the region.

Some research has been recently conducted using new participatory techniques in an effort to improve the communication between scientists, regulators, and local residents in Sachs Harbour, NT (Reinfort *et al.* 2009). They conclude that the process of communication is as important as the message itself and that local people and Inuit leaders need to be engaged in the process as opposed to simply being provided with the information from southern researchers and policy makers (Reinfort *et al.* 2009). Including local people in the initial considerations surrounding whether or not a project will proceed also helps to build the relationships that are necessary for efficient progress down the road.

6.3.3 Long-Term Sustainability

Over the past twenty to thirty years these once isolated communities have experienced extremely rapid changes to their way of life, and considerable controversy has subsequently arisen around the costs and benefits of these changes. When negotiating IIBAs or development/land-use planning a community needs to ensure that benefits from development and shipping activities are equitably distributed among all members in the community. Carefully designing the future community that all of its members wish to live in, will reduce much of the burden that prevents long-term sustainable growth and improvements to quality-of-life (Fresco 2009). Consequently, if a community has a strong social foundation, then it will also prosper economically.

The key question to ask regarding economic development is: how can we make this most sustainable in the long-term? Usually, profits are to be maximized in the shortest amount of time

and then transferred to another sector, region, or company, with transaction fees being added on along the way. Often in environmental assessments a cost/benefit or input/output model is used to calculate economic feasibility. However, for true sustainability, economic needs must be balanced with the environmental and social costs that they incur.

While improved access to goods through increased shipping is a benefit to the community, it also increases access for industry and brings in additional foreign workers who will rely on the facilities and services in the community. To mitigate this, scoping questions should consider how a company can contribute to the local facilities and services, beyond their individual footprint, in order to allow for fair and sustainable growth.

6.3.4 Scoping Process

When determining the appropriate scope of a project or policy, the efficiency of the process must be considered in order to alleviate the potential administrative burden to the system. It is therefore, even more critical to determine what issues are most relevant to all possible stakeholders and to foster cooperation among all parties. An appropriate framework for scoping that involves shipping in the north can also improve the rigor and efficiency of this process. This thesis has aided in this process by raising the initial questions; however, it must be further developed through discussions and cooperation with northern people, based on their perspectives and the reality of living in the North.

6.4 Final Thoughts

While conducting this research, many events occurred in the north and elsewhere regarding shipping and resource extraction. Politicians are being forced to consider broader questions

around climate change, aboriginal relations, sustainability, energy, and the economy. At this point, the arctic is not prepared for oil spill similar to what we have witnessed in other regions. Now is the time to invest in research, initiate further dialogue, strengthen our EA and approval process, and enact strong policies that will protect this unique environment. For EAs and major development projects we must eliminate short term thinking, and actually go beyond sustainability toward rehabilitating or improving our valuable social, cultural, environmental, and then ultimately our economic capital.

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APPENDIX – 1: INTERVIEW SCHEDULE

The following questions will form the basis for interviews with local people. There will be an effort to make questioning consistent throughout the course of the interviews, although, a specific participant's train of thought or area of specialization may cause some questions to be modified or removed.

Name.....
Organization.....
Position.....
Date.....
Time.....
Place.....

I. Opening

- A. (**Establish Rapport**) [shake hands] Thank-you for meeting with me. As part of my work as a Masters student at the University of Manitoba, this interview will help me to understand your interests and concerns for increasing shipping activities around Sirmilik National Park.
- B. (**Purpose**) I would like to ask you some questions about you (and your family's) experiences and uses of the park, as well as some of the issues surrounding increasing shipping that you feel are important, in order to identify and understand the potential for future impacts on Sirmilik.
- C. (**Motivation**) I hope to use this information to help ensure that the right questions are asked in future assessments that involve related shipping activities.
- D. (**Time Line**) This interview should take about one hour.

(**Transition:** Let me begin by asking you some questions about where you live and how you use the park)

II Body

A. Topic: General demographic information

1. How long have you lived in this area?
2. How many people are in your family?
 - a) Do you use the park with your family?
3. What type of things do you do in the park?
4. Describe your current use of the water/ice around the park?

(**Transition:** Now that I have a general idea of your experiences and uses of the park, I would like to ask you some more specific questions about environmental issues that you see facing Sirmilik)

B. Topic: Natural Environment

1. What key/main concerns do you have from increasing shipping in the area?
2. Have you seen any negative effects from ships in this area?
3. What areas of Sirmilik are most sensitive to disturbances from ships?
4. What time of year is of most concern?
5. What questions need to be asked in future EAs in order to capture your concerns for the environmental sensitivities of Sirmilik?
6. How will increasing ship traffic in the NW passage affect the natural heritage in the park?
7. How might increasing icebreaking activities affect the park?
 - a. How will this affect the seals?
 - b. How will this affect other animals that feed on the seals?
 - c. What time of year is most critical for seal pups?
 - d. How sensitive is the whole ecosystem to icebreaking activities?
 - e. Will this affect the shoreline of Sirmilik?
 - f. Will this have long term effects on the ice regime?
8. Do you feel that noise (above or below water) from ships is a significant concern for the park?
 - a. If so, where?
 - b. To whom/what?
 - c. What times of the year would this be most significant?
9. What particular concerns do you have about cruise ships that bring tourists to the park?
 - a. Are there areas where tourists should not be allowed?
10. Are the current regulations stringent enough to capture potential adverse environmental effects?

(Transition: Now I would like to move on to the social and cultural concerns that you see facing Sirmilik)

C. Topic: Social/Culture

1. Will increasing ship traffic affect the cultural heritage of the park?
2. How might reduced sea ice change your use of the park?
3. Are there benefits of increasing tourism in Sirmilik?
 - a. Are there culturally significant areas of the park where you feel tourists should not be allowed?
 - b. Should tourists be required to travel with a local guide?
 - c. Can tourists promote the cultural heritage of the park?
4. Will noise from ships affect any ceremonial/spiritual activities in the park?
 - a. What time of the year is this most critical?
5. How will ship traffic affect hunting patterns and access to hunting areas?
6. How is your society and cultural life affected by marine activities? (Please provide both positive and negative examples, if possible.)
7. What kind of opportunities would you like to see as part of EAs for shipping?

(Transition: Now I will ask you a few questions about economic aspects of increasing ship traffic)

D. Topic: Economic

1. What are the key economic impacts (positive and negative) of shipping on the park?

2. Are you a ship owner/operator?
 - a. Would you be involved in emergency rescue or clean-up operations?
 - b. Would you be involved in support services for the park?
3. Does marine shipping affect your economic interests?
 - a. If so, how?
4. Should Sirmilik install structures and infrastructure to accommodate increasing tourism, and to prevent environmental damage?
5. Will increasing tourism in the park provide economic opportunities that may substitute for traditional subsistence activities?
 - a. In the context of climate change, should the park promote this shift?
6. What questions need to be asked in future EAs in order to capture your economic concerns around of Sirmilik?

(**Transition:** I now have a few final questions about the EA process in Nunavut)

E. Politics

1. In recent cases, has the EA process adequately captured the issues and concerns around increasing shipping?
2. How can public participation in the EA process be improved?
3. What is the most effective way to get input from communities?
4. Do you have any general issues or concerns about increasing shipping in the area that you have not already told me?
 - a. If so, how should these be included in future EAs?

(**Transition:** Well, it has been a pleasure finding out more about you and your concerns for Sirmilik. I will send you a summary of the information collected during this and other interviews when it is completed.) Do you have any comments on the survey/interview?

III Closing

A. I appreciate the time you took for this interview. Is there anything else you think would be helpful for me to know? (turn off recorder)

B. I should have all the information I need. Would it be alright to contact you in the future if I have any more questions? Thanks again.

APPENDIX – 2: POND INLET BUISNESSES AND STAKEHOLDERS

Baffinland Mining Corporation
Canadian Coast Guard
Canadian Environmental Assessment Agency
Department of Fisheries and Oceans
Department of National Defense
Environment Canada
Hamlet of Pond Inlet
Government of Nunavut
Indian and Northern Affairs Canada
Mittimatalik Hunters and Trappers
Nunavut Impact Review Board
Nunavut Research Institute
Nunavut Wildlife Management Board
Parks Canada
Pond Inlet Hunters and Trappers Association
Qikiqtani Inuit Association
Tagak Outfitting Services
Toonoonik Outfitters
Wolfden Resource

APPENDIX – 3: ENGLISH CONSENT FORM

CONSENT FORM - Scoping and Shipping Around Sirmilik National Park of Canada

This consent form, a copy of which will be left with you for your records and reference, is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

The purpose of the project is to identify areas in Sirmilik National Park that are sensitive to change and that may be affected by increasing ship traffic. This study is being funded by Parks Canada, and will help them to identify the appropriate questions that should be asked as part of any future EA with related shipping activity.

I would like to find out more about how you and your family use the Park and the areas around to it, and also what potential issues you feel may arise from increasing ship traffic. I am also interested in hearing about past use and development in the area. The interview will take about one hour and you can withdraw at any time. If you agree, I will record the interview, in order to improve the accuracy and rigor of the research. The recording will be solely used by the researcher and will not be provided to any outside parties.

You can choose whether to discuss any of the topics, and the information you give me will be kept confidential. I hope that by talking with you and other people in the community, we can ensure that the process of EAs relating to associated ship traffic in the area includes all relevant issues and concerns. Hopefully this work will also help to build a meaningful dialogue for these important questions.

I will send you a summary of the results after I have brought together all of the information, and a copy of the thesis will be available through the University of Manitoba.

Your signature on this form indicates that you have understood to your satisfaction the information regarding participation in the research project and agree to participate as a subject. In no way does this waive your legal rights nor release the researchers, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from the study at any time, and /or refrain from answering any questions you prefer to omit, without prejudice or consequence. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation.

This research has been approved by the Joint-Faculty Research Ethics Board. If you have any concerns or complaints about this project you may Dr. John Sinclair by phone at (204) 474-8374, or the Human Ethics Secretariat at 474-7122, or e-mail margaret_bowman@umanitoba.ca. A copy of this consent form has been given to you to keep for your records and reference.

Consent: I agree to participate in this interview. I understand that this is voluntary, and that I can refuse to answer any questions or stop the interview at any time.

Signature of Participant:

Thank-you.

David Lane - Natural Resources Institute

APPENDIX – 5: ETHICS APPROVAL



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APPROVAL CERTIFICATE

02 August 2007

Parks Canada

TO: David Michael Claxton Lane (Advisor J. Sinclair)
Principal Investigator

FROM: Wayne Taylor, Chair 
Joint-Faculty Research Ethics Board (JFREB)

Re: Protocol #J2007:085
"Asking the Right Scoping Questions for Shipping Around Sirmilik
National Park of Canada"

Please be advised that your above-referenced protocol has received human ethics approval by the **Joint-Faculty Research Ethics Board**, which is organized and operates according to the Tri-Council Policy Statement. This approval is valid for one year only.

Any significant changes of the protocol and/or informed consent form should be reported to the Human Ethics Secretariat in advance of implementation of such changes.

Please note:

- if you have funds pending human ethics approval, the auditor requires that you submit a copy of this Approval Certificate to Kathryn Bartmanovich, Research Grants & Contract Services (fax 261-0325), including the Sponsor name, before your account can be opened.
- if you have received multi-year funding for this research, responsibility lies with you to apply for and obtain Renewal Approval at the expiry of the initial one-year approval; otherwise the account will be locked.

The Research Ethics Board requests a final report for your study (available at: http://umanitoba.ca/research/ors/ethics/ors_ethics_human_REB_forms_guidelines.html) in order to be in compliance with Tri-Council Guidelines.

Bringing Research to Life

APPENDIX – 6: PARKS CANADA RESEARCH LICENCE

PARKS CANADA AGENCY RESEARCH AND COLLECTION PERMIT (NOT TRANSFERABLE)

PERMIT No.: SIR-2007-1280

START DATE: 2007/08/01 **EXPIRY DATE** 2008/12/31

Project Title: Shipping in the North: Case Study on Sirmilik National Park of Canada

Principal Investigator Name: David Lane

Address: University of Manitoba The Natural Resources Institute 303-70 Dysart Road
Winnipeg, Manitoba Canada R3T 2N2

Telephone: (204) 474-8373

Email: umlanedm@cc.umanitoba.ca

Affiliation: Natural Resources Institute University of Manitoba

Is hereby authorized to conduct the research project entitled "Shipping in the North: Case Study on Sirmilik National Park of Canada", Research and Collection Permit Application Number 1320, In Sirmilik National Park of Canada, subject to the terms and conditions set out below and/or attached to and forming part of this Research and Collection Permit.

Members of Research Team:

Dr. John Sinclair, Professor and Associate Head Natural Resources Institute University of Manitoba Winnipeg, Manitoba Canada R3T 2N2 Tel.: (204) 474-8374 Fax: (204) 261-0038 E-mail: jsincla@cc.umanitoba.ca

Issuing Authorities and Terms and Conditions:

Permit issued pursuant to:

National Parks General Regulations: Section(s) 7(5).

National General Conditions:

Failure to comply with applicable Heritage Area regulations or the conditions of the permit may constitute grounds to cancel or suspend the permit, refuse to issue future permits, and may be considered as grounds for prosecution under the applicable Act(s) or Regulation(s).

All permit holders must be in possession of a valid permit before the fieldwork commences and at other periods as stated on the permit.

Permits are not transferable and each member of the fieldwork team must have a copy of the valid permit in their possession.

The permit is valid only for the geographic location, the time period, the activities, and under the terms and conditions described on the permit, unless amended and revalidated by the Superintendent.

Restrictions:

The Superintendent may suspend, cancel, or restrict the scope of the permit.

The permit shall cease to be valid if the fieldwork is not started within six months of the date of issue.

Other Acts and Regulations:

The Principal Investigator must abide by applicable regulations and all other federal, provincial, territorial or municipal regulations applying to the Heritage Area.

If requested by the Superintendent, an authorized Heritage Area staff member, or police constable, the Principal Investigator or any team member will identify themselves and show the permit.

Principal Investigator Responsibilities:

A site, or site component(s) that has been excavated or disturbed shall be restored or conserved by the Principal Investigator to the satisfaction of the Superintendent.

The Principal Investigator must advise the Research Coordinator of any adjustments in work location, research plan and methodology, implementation schedule, or main personnel, etc., during the course of the research.

Unless otherwise negotiated, Researchers working in a Heritage Area are required, as a condition of their permit, to submit:

- a) A report of progress sixty (60) days following the completion of the field season, unless otherwise agreed with the Research Coordinator;
- b) A final report, one (1) electronic copy and three (3) hard copies, no later than eight (8) months following the completion of the field season, unless otherwise agreed with the Research Coordinator;
- c) Submission of an online Investigator's Annual Report (IAR) within one year of signing the permit. In the case of a multi-year permits, the principal investigator will submit an IAR for each year of the research.

The reporting requirements above do not replace any reporting requirements set out in any contract between Parks Canada and the Principal Investigator.

The Principal Investigator will be responsible for all members of their party. All field assistants must observe any general or specific conditions of the permit.

The Principal Investigator shall at all times indemnify and save harmless the Crown from and against all claims, demands, loss, costs, damages, actions, suits, or other proceedings, by whosoever made, sustained, brought or prosecuted, in any manner based upon, occasioned by, or attributable to, anything done or omitted by the Principal Investigator or the project personnel in the fulfillment or purported fulfillment of any of the conditions of the Permit.

General Conditions Governing Natural Science Research:

Any natural objects collected under authority of this permit remain the property of the Crown (Canada) and are considered on loan to the permit holder. Final disposition of natural objects must be as shown in the project proposal unless amended by the Superintendent. Export of objects or specimens require approval by the Superintendent and is subject to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Cultural Property Export and Import Act and the Export and Import Permits Act. Intention to export specimens must be indicated in the project proposal.

Only the natural objects or categories of natural objects indicated on the permit may be collected.

A detailed inventory of material collected will be provided to the Heritage Area prior to its removal by the researcher.

When fossils or evidence of previous human occupation are found, they should be reported to the Superintendent and must be left undisturbed until inspected by a Parks Canada palaeontologist or archaeologist.

SPECIAL CONDITIONS FOR SIRMILIK NATIONAL PARK

The following conditions apply to Research & Collection Permits issued for Sirmilik National Park and are in addition to those outlined above.

Permit holder(s) that have not participated in the University of Laval orientation to Sirmilik National Park are required to check in at the Pond Inlet Parks Office prior to the commencement of their field activities. Permit Holder(s) will contact the Park office (867-899-8092) at least one week prior to their arrival to schedule orientation.

Radio confirmation of arrival and departure from field research camp to the Pond Inlet Parks Office

The Research & Collection Permit will also serve as an Aircraft Landing Permit authorized by the Superintendent as per Section 15(6) of the National Parks General Regulations subject to the following provisions:

- A list of all aircraft use is provided to the Superintendent and Park Manager prior to commencement of fieldwork. This list must include: date, time, location, and type of aircraft for all landings and take offs
- Conflict with wildlife, wildlife habitat and park visitor use is minimized
- Minimum flying height of 300 meters is adhered to except during landing, takeoff or as part of the approved research methods

All garbage is to be removed from the park in accordance with the National Park Regulations.

The project leader will ensure that all party members understand and comply with the National Park Act and Regulations.

Solid Human waste: in base camp situations, solid human waste is to be collected in sealable metal or plastic containers. The project leader is responsible for ensuring that all containers of solid human waste must be removed to the sewage lagoon of Pond Inlet, Nunavut. The cost of this disposal is the project leader's responsibility. In mobile camp situations, solid human waste may stay on land but toilet paper, feminine napkins and tampons must be removed to sewage lagoon of Pond Inlet, Nunavut. The cost of this disposal is the project leader's responsibility.

Nunavut Land Claim beneficiaries employed by the research project are not permitted to use research or Parks Canada chartered aircraft and vessels to transport any materials gathered, fished or hunted while working under the supervision of the project leader.

The project leader is responsible to ensure that all party members read available polar bear safety information

All polar bear observations and encounters must be reported to the Park Manager as soon as

possible

Possession of a firearm has been deemed unnecessary for this research project.

The permittee shall not remove, disturb or displace any archaeological artifact or site.

Should an archaeological site or specimen to be encountered or disturbed by any land use activity. The permittee shall immediately contact Parks Canada – Lori Dueck, Cultural Resources Manager (867) 975-4676 or Margaret Bertulli, Archaeologist, (204) 984-0309.

The permittee shall immediately cease any activity that disturbs an archaeological site encountered during the course of a land use operation, until permitted to proceed with the authorization of Parks Canada.

A field season summary report must be submitted to Parks Canada by 30th October each year that the permit is valid (email: NunavutParks.Research@pc.gc.ca) and to the following community groups: Hamlet Councils of Pond Inlet and Arctic Bay, Mittimatalik HTO, & Ikajurtit HTO.

The project leader or designate must present the research project and results to Parks Canada staff in Iqaluit or at the Pond Inlet Park office at mutually agreed upon time.

The project leader or designate must present the research project and results to the communities of Pond Inlet or Arctic Bay at a mutually agreed upon time.

Copies of all reports, scientific papers, and posters must be provided to the Parks Canada offices in Iqaluit and Pond Inlet.

Data files will be provided to Parks Canada upon request.

The Joint Park Management Committee (JPMC) for Sirmilik National Park will review annually the terms and conditions of this permit. The permit may be revoked if terms and conditions are not adhered to.

The following are the approved collections & procedures that can be made in Sirmilik National Park (for details on methodology refer to Application #1320):

1. Access to park will be on a opportunistic basis, where other people happen to be going. Any overnight stays will be at field camps established by Parks Canada and/or other researchers.
2. Conduct visual surveys of locations within Sirmilik National Park of Canada for issues such as public safety and visitor experience values.
3. Ground truthing of data on shipping on the north. No samples will be collected.
4. Conduct informal interviews with researchers, Parks Canada staff

Principal Investigator Signature

I, David Lane, the Project Principal Investigator, accept all the stated Research and Collection Permit terms and conditions.

Signature

Date (yyyy/mm/dd)

Approval:

Permit issued/approved by:

Superintendent Name (Please Print)
Nunavut Field Unit

Canadian Wildlife Service (Please Print)
Nunavut

Superintendent Signature

Canadian Wildlife Service Signature

Date (yyyy/mm/dd)

Date (yyyy/mm/dd)

Parks Canada Contact
Jane Chisholm
PO Box 278, Iqaluit, NU
(867) 975-4762
Jane.Chisholm@pc.gc.ca

APPENDIX – 7: NUNAVUT RESEARCH LICENCE

Nunavummi Qaujisaqtulirijikkut / Nunavut Research Institute

Box 1720, Iqaluit, NU X0A 0H0 phone:(867) 979-7277 fax: (867) 979-7109 e-mail: adunford@nac.nu.ca

SCIENTIFIC RESEARCH LICENCE

LICENCE # 0204507N-A

ISSUED TO: David Lane
University of Manitoba
78 Bergman Crescent
Winnipeg, Manitoba
R3R 1Z7 CA
204 229-4014

TEAM MEMBERS: J. Sinclair, K. Cumming, C. Elverum

AFFILIATION: University of Manitoba

TITLE: Environmental Assessment Scoping for Shipping in the North: Case Study of Sirmilik National Park of Canada

OBJECTIVES OF RESEARCH:

The primary aim of the project is to identify environmental areas in Sirmilik National Park of Canada that are sensitive to change and thereby vulnerable to increasing ship traffic. The goal is to identify essential questions related to scope of project and scope of assessment, for shipping and related activities that might impact Sirmilik National Park.

DATA COLLECTION IN NU:

DATES: August 01, 2007-September 31, 2007

LOCATION: Similik National Park of Canada

Scientific Research Licence 0204507N-A expires on December 31, 2007.

Issued at Iqaluit, NU on August 27, 2007.



Mary Ellen Thomas
Science Advisor

