Evaluating Marine Protection Mechanisms for Beluga Management in the Inuvialuit Settlement Region (ISR)

By

Fleur A. Storace

A practicum submitted to the Faculty of Graduate Studies
of the University of Manitoba in partial fulfillment of the requirements
of the degree of Master of Natural Resources Management.

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"The real voyage of discovery consists
not in seeking new landscapes
but in having new eyes."
Jonathan Swift

ABSTRACT

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This practicum presents the results of research initiated in February 1997 to assess the effectiveness of alternative marine protection mechanisms for beluga management, through community consultations, in the Inuvialuit Settlement Region (ISR). Fieldwork was conducted in the ISR from June 20 to July 24, 1997. The researcher visited the communities of Aklavik, Inuvik, and Tuktoyaktuk as well as the whaling camps of East Whitefish Station, Shingle Point, Running River, and Hendrickson Island. The researcher spoke with members affiliated with different groups such as federal and local governments, and hunters, and identified issues related to enforcement of the Beaufort Sea Beluga Management Plan (BSBMP). While the BSBMP is currently a relatively effective plan, there is concern that its guidelines will not be observed should industrial activity resume in the region. As a result, it was concluded that a legislative mechanism should be implemented in the ISR for beluga management.

Of the three federal departments identified as having the authority to establish marine protection mechanisms, namely the Department of Canadian Heritage, the Department of the Environment, and the Department of Fisheries and Oceans, marine protected areas, under the Department of Fisheries and Oceans' *Oceans Act* (1996) were deemed to be the most appropriate mechanism for beluga management.

The specific recommendations made include the need to reassess the beluga management zones under the BSBMP, the importance of establishing shipping corridors and air routes for travel, and the implementation of education programs. Beluga

management zones should be reassessed as new information has been published in the 1990s regarding beluga and their movements through satellite tagging, and existing beluga management zones may not protect such movements. It is also important to establish shipping corridors prior to the anticipated increase of industrial activity in the region as noise generated from icebreakers may cause panic reactions in beluga. Air routes and minimum altitude enforcement are also necessary to prevent harassment of the beluga. Finally, programs are needed in the region to educate tourists about beluga, their life history, harvesting and management, and the tourism companies about flight guidelines. Local education programs are also necessary in the form of classroom instruction targeted at school aged children, and practical training targeted at potential harvesters.

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LIST OF ACRONYMS

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BSBMP	Beaufort Sea Beluga Management Plan
CEPA	Canadian Environmental Protection Act
CWS	Canadian Wildlife Service
DCH	Department of Canadian Heritage
DEW	Distant Early Warning
DIAND	Department of Indian Affairs and Northern Development
DFO	Department of Fisheries and Oceans
DOE	Department of the Environment
EEZ	Exclusive Economic Zone
EIRB	Environmental Impact Review Board
EISC	Environmental Impact Screening Committee
EWS	East Whitefish Station
FJMC	Fisheries Joint Management Committee
GBRMP	Great Barrier Reef Marine Park
HTC	Hunters and Trappers Committee
IFA	Inuvialuit Final Agreement
IGC	Inuvialuit Game Council
ISR	Inuvialuit Settlement Region
IUCN	International Union for Conservation of Nature and Natural Resources
MBS	Migratory Bird Sanctuary

MCA	Marine Conservation Area
MPA	Marine Protected Area
MWA	Marine Wildlife Area
NMS	National Marine Sanctuaries
NOAA	National Oceanic and Atmospheric Administration
NWA	National Wildlife Area
PA	Protected Area
RWED	Resources, Wildlife and Economic Development
TAC	Total Allowable Catch
WCED	World Commission on the Environment and Development
WMAC	Wildlife Management Advisory Council

CHAPTER 1: INTRODUCTION

* * * * *

1.1 Background

Canada's motto, "a mari ursque ad mare" or "from sea to sea", emphasizes the importance of the sea to the coastal nation (Department of Canadian Heritage (DCH) 1995). Canada has eight provinces and two territories bordering the Atlantic, Pacific or Arctic Oceans. The Arctic coastline is the longest of the three, totaling 68% or 165,000 km of Canada's 244,000 km oceanic coastline (Hildebrand 1993; DCH 1995; Welch 1995).

Canada's Arctic region (Figure 1.1) encompasses 24% of Canada's land mass (DOE 1994), including the "Beaufort Sea east of the Alaska/Yukon border, all of the Arctic Archipelago, Foxe Basin, Hudson Bay, Hudson Strait, Ungava Bay, and James Bay" (Welch 1995:5; Beckmann 1996:14). The Arctic region is important for many reasons including aesthetic, cultural, and social values, renewable resource harvesting, and tourism (Snider 1987; Parks and Tourism 1997).

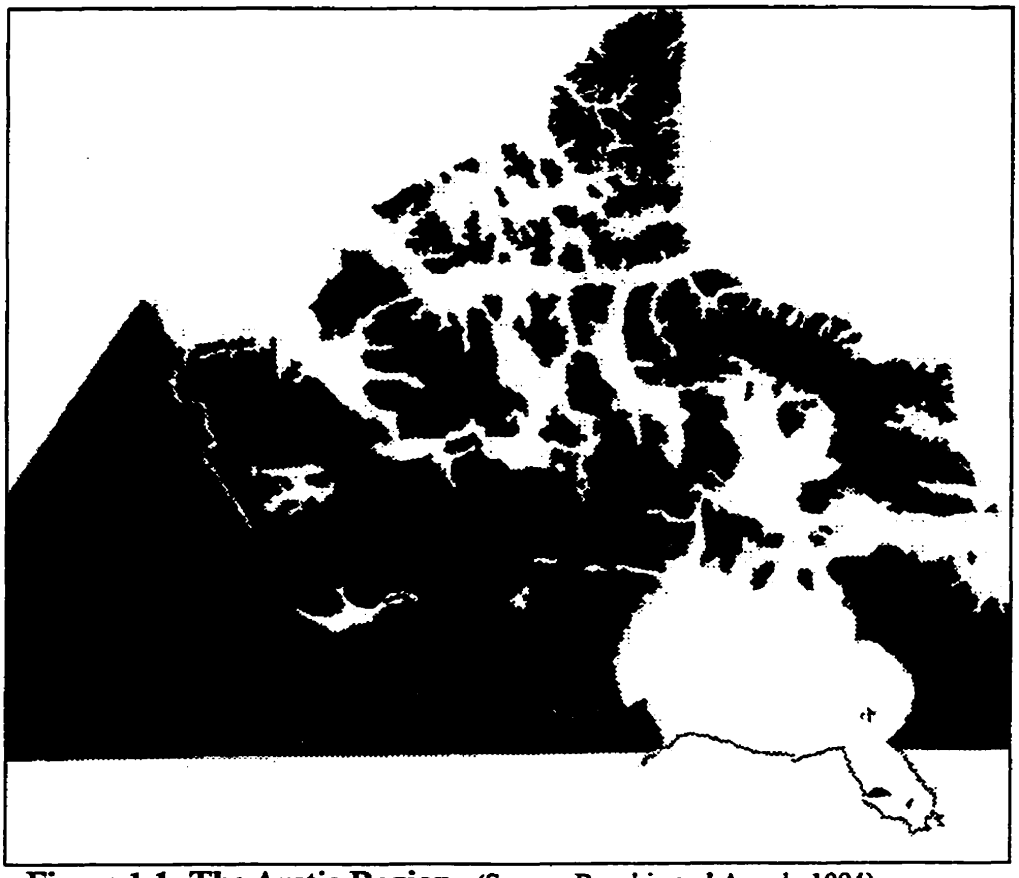

Figure 1.1 The Arctic Region. (Source: Recchia and Agardy 1994).

DCH (1995) has classified Canada's Arctic marine region into nine areas (Figure 1.2). Only one of the nine regions (the Arctic Basin) is covered with year-round ice, while the other eight are ice-free for one to four months per year. The Beaufort Sea marine region, which is one of the nine marine regions, has a large population of polar bears, ringed and bearded seals, as well as the largest summer feeding population of bowhead whales in the world (DCH 1995). This region is also known to have a healthy summering population of beluga whales (Harwood *et al.* 1996; Richard *et al.* 1996; Richard *et al.* 1997). The Beaufort Sea, which includes the Arctic Basin and the Beaufort Sea marine regions, can be classified into three categories: a permanently ice-covered

region, a seasonally ice-covered region that is open water in the summer months (July to September), and the coastal area which is influenced by the mixing of the freshwater (Mackenzie River) and salt water (Beaufort Sea).

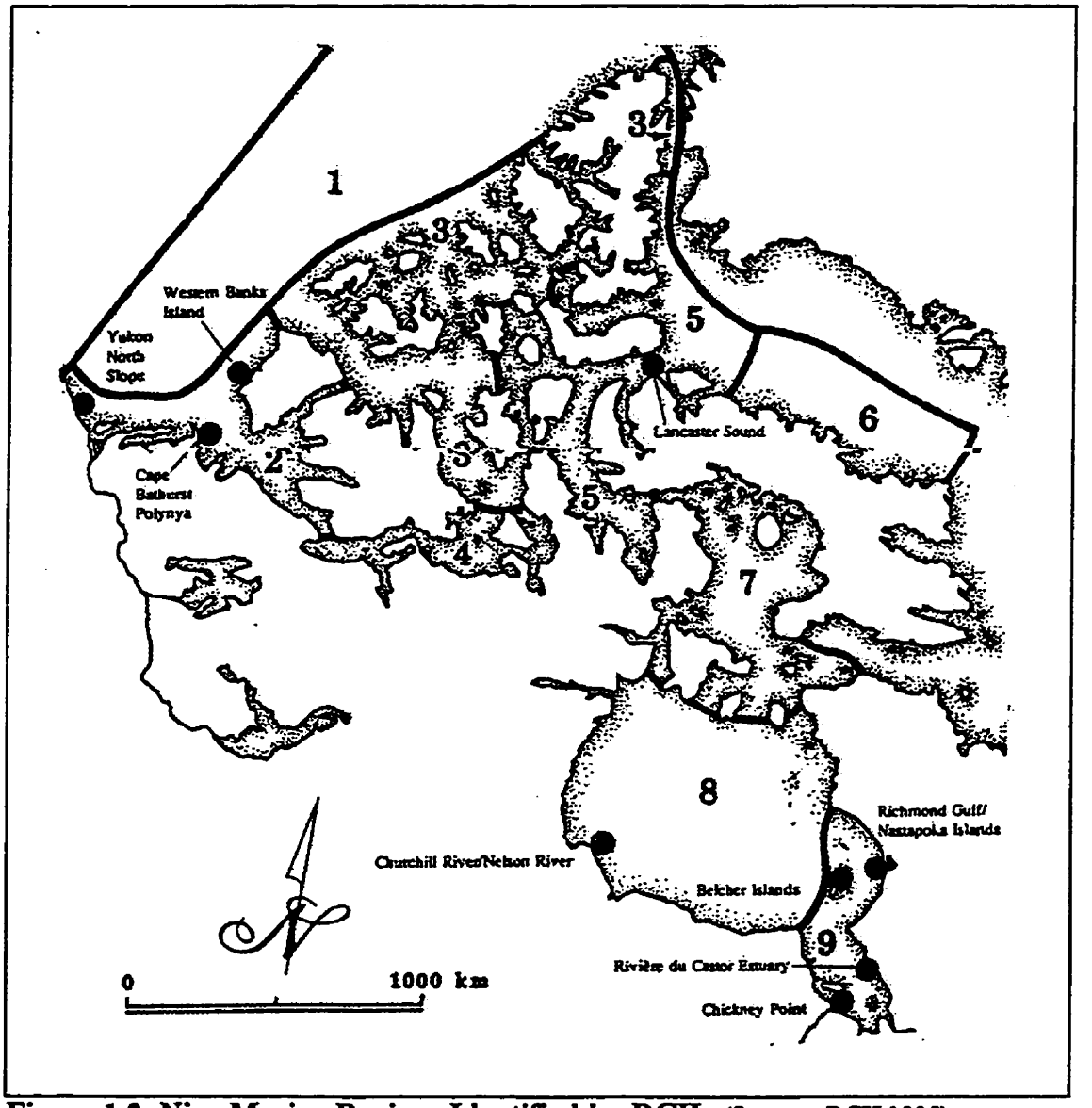

Figure 1.2 Nine Marine Regions Identified by DCH. (Source: DCH 1995).

The Beaufort Sea marine region represents the southern portion of the Inuvialuit Settlement Region (ISR) including the coastal waters around the communities of Aklavik,

Inuvik, Tuktoyaktuk, Paulatuk, Holman, and Sachs Harbour. While the Mackenzie Delta waters are shallow (less than 10 m), the depths increase to over 600 m around the Amundsen Gulf, M'Clure Strait and Viscount Melville Sound (DCH 1995; Richard *et al.* 1997). The six communities within the Beaufort Sea marine region signed a land agreement titled *The Western Arctic Claim: The Inuvialuit Final Agreement* (IFA) in 1984. The Inuvialuit Settlement Region (ISR) is illustrated in Figure 1.3.

One of the goals of the IFA was "to protect and preserve the Arctic wildlife, environment and biological productivity" (DIAND 1984:1). In order to guide the efforts to properly manage resources, several community-based documents have been produced. These include the *Inuvialuit Renewable Resource Conservation and Management Plan* (WMAC-NWT and FJMC 1988), *A Community-Based Regional Land Use Plan for the Mackenzie Delta-Beaufort Sea Region* (Mackenzie Delta Beaufort Sea Regional Land Use Planning Commission 1991), Community Land Use Conservation Plans (Community of Paulatuk 1990; Community of Sachs Harbour 1992; Community of Aklavik 1993; Community of Inuvik 1993; Community of Tuktoyaktuk *et al.* 1993; Community of Olokhaktokmiut 1994), *Inuvialuit Community Conservation Plan Implementation Workshop on Protected Areas in the ISR* (Hanbidge 1994), and the *Beaufort Sea Beluga Management Plan* (BSBMP) (FJMC 1997). In the BSBMP, the Beaufort Sea region is classified into four zones to reflect the intensity of management that is required (FJMC 1993; FJMC 1997). The guidelines for each BSBMP zone recommend varying levels of protection by limiting the type of industrial activity.

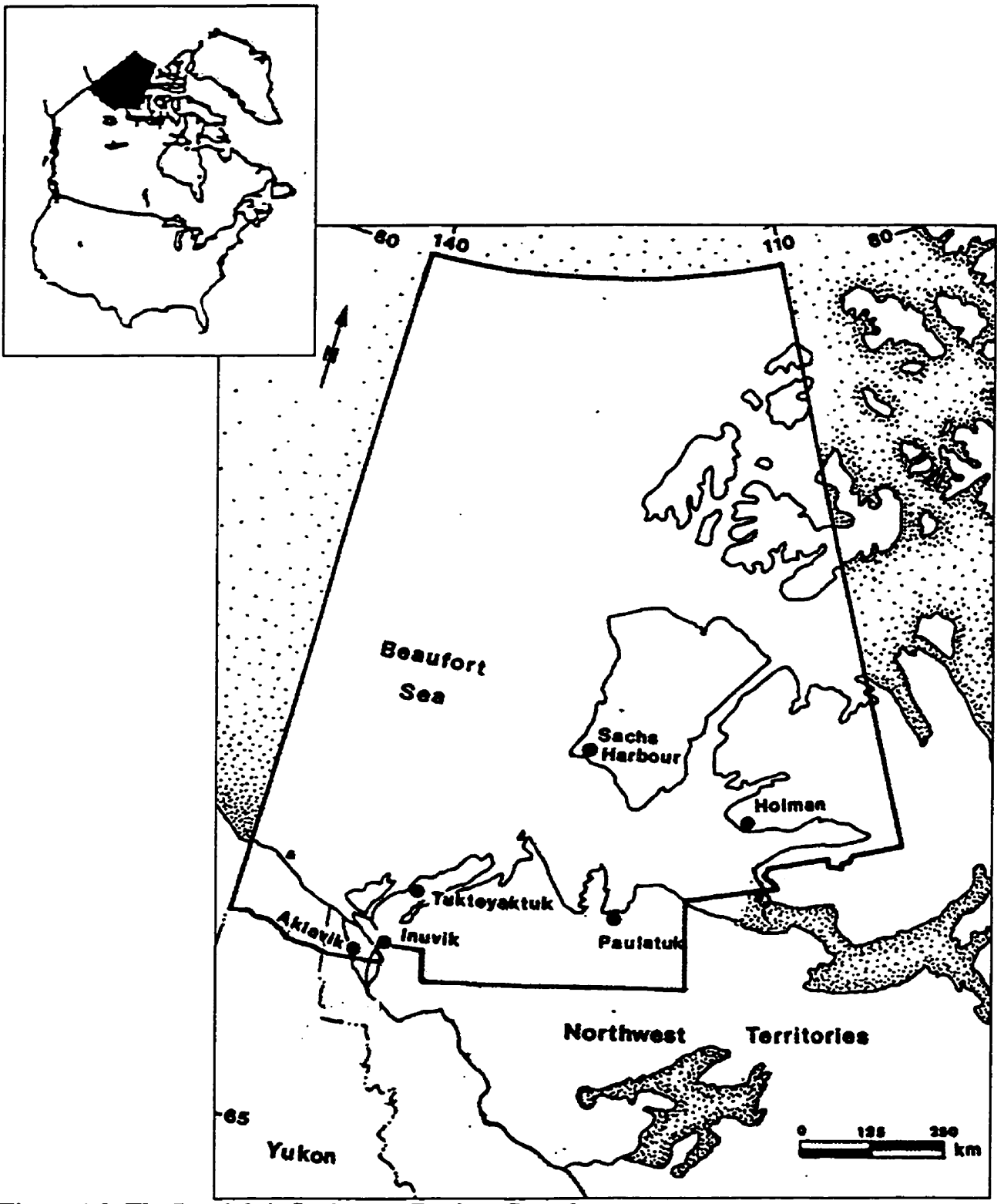

Figure 1.3 The Inuvialuit Settlement Region, Canada. (After: Mackenzie Delta Beaufort Sea Regional Land Use Planning Commission 1988).

A framework for the BSBMP was established in June 1987 by the Beaufort Sea Beluga Technical Working Group. It was suggested then that beluga management zones be created by either amending the *Marine Mammal Regulations* (1993) or through other existing regulations (Beaufort Sea Beluga Technical Working Group 1987). The BSBMP was developed in cooperation with the Department of Fisheries and Oceans (DFO), the Fisheries Joint Management Committee (FJMC), industry representatives, the Hunters and Trappers Committees (HTCs) of Inuvik, Aklavik, and Tuktoyaktuk, and ratified by the Inuvialuit Game Council (IGC) in 1991 (FJMC 1993; FJMC 1997).

The goal of the BSBMP was to maintain a thriving beluga population while ensuring maximum harvesting levels for Inuvialuit hunters (Duval 1993; FJMC 1993; FJMC 1997). In order to accomplish this goal, conservation and protection guidelines for development activities were established. These guidelines are important within the Beaufort Sea-Mackenzie Delta, as 48 significant oil and gas discoveries have been made since exploration activity began in the region in 1962 (Mackenzie Delta Beaufort Sea Regional Land Use Planning Commission 1991; Dixon *et al.* 1994). Since the late 1980s, industrial activity has declined in the region. However, it is difficult to anticipate whether beluga populations and other marine species and habitats will be protected from any potential negative impacts of future development. This is because the BSBMP "enjoys no specific legal designation" (Mackenzie Delta Beaufort Sea Regional Land Use Planning Commission 1991:12). Muir (1997) also stated that "it is a matter of interpretation as to which aspects of the BSBMP are likely to be constitutionally protected under the IFA, and which matters are only binding due to the agreement of the parties" (p.25). In addition, DIAND never signed the BSBMP. As a result, DIAND is not

bound by the established guidelines (Muir 1997). It should be emphasized that while it may not be clear which parts of the BSBMP may enjoy legal designation, the subsistence harvest is protected under the *Inuvialuit Final Agreement* which supercedes all other legislation in the ISR (DIAND 1984).

An issue that was not dealt with in detail in the original BSBMP was tourism. It was not until 1994 that Tourism Guidelines were approved by the IGC. Once again, the guidelines do not appear to be enforceable. Only those sections within the tourism guidelines that also appear under the *Marine Mammal Regulations* (1993) can be enforced through legal measures. Other issues, such as tourism filming and photography of beluga as well as the infringement upon the Inuvialuit's privacy, cannot be controlled under the *Marine Mammal Regulations* (1993).

Establishing a marine protection mechanism may be one avenue to ensure that beluga are adequately protected. There are three federal departments in Canada which have programs designed "to further conservation and protection of living marine resources and their habitats" (DFO 1998:1). The three departments -- Department of the Environment (DOE), DCH, and DFO -- all have legislative mechanisms for protecting marine areas in Canada. Their marine programs are: National Wildlife Areas (NWAs), Marine Wildlife Areas (MWAs), Migratory Bird Sanctuaries (MBS); Marine Conservation Areas (MCAs); and Marine Protected Areas (MPAs), respectively.

1.1.1 Marine Protection Mechanisms

While marine protection mechanisms are a relatively new concept in Canada, they are not new internationally. The first marine protection mechanism, Alaska's Glacier Bay National Monument, was proclaimed in 1925. By 1970, 118 marine areas had been

established in 27 nations. By 1985, 69 nations had proclaimed 430 marine protection mechanisms and another 298 were proposed (Kelleher and Kenchington 1992). Currently, there are approximately 1,300 marine protection mechanisms in many different countries including Australia, which at 303 has the most in the world (DFO 1997; Thurston 1997). While it may appear that there are many marine protection mechanisms, less than 1% of marine areas are protected (Kelleher and Kenchington 1992).

One of the goals of agencies such as the International Union for the Conservation of Nature (IUCN) and the World Wide Fund for Nature is to establish a network of global marine protection mechanisms (WCED 1987; Kelleher and Kenchington 1992; Hummel and Hackman 1995; Welch 1995). The IUCN (IUCN Res., GA 17.38) defines marine protection mechanisms as "any area of intertidal or subtidal terrain, together with its overlying water and associated flora, fauna, historical and cultural features, which has been reserved by law or other effective means to protect part or all of the enclosed environment" (IUCN 1988).

The IUCN conceptualizes such areas as falling into one of six categories from greatest to least degree of protection. These are:

1a. Strict Nature Reserves - strictly protected and managed mainly for scientific research;

1b. Wilderness Areas - strictly protected and managed mainly for wilderness protection;

2. National Parks - managed for ecosystem conservation and recreation;

3. Natural Monuments - managed for conservation of specific natural or cultural features;

4. Habitat/Species Management Areas - protect wildlife species and habitats through active management;

5. Protected Landscapes/Seascapes - protect traditional human interactions with land, water and recreation; and

6. Managed Resource Protected Areas - managed for sustainable resource use (IUCN 1994; Parks and Tourism 1997).

The Great Barrier Reef Marine Park Authority, The World Bank and the IUCN published a four volume series titled *A Global Representative System of Marine Protected Areas* (Kelleher *et al.* 1995). These volumes document the many international examples of marine protection mechanisms. The following sections outline the American and Australian marine conservation strategies.

1.1.1.1 The United States – National Marine Sanctuaries

National Marine Sanctuaries (NMS) in the United States were first established in 1972 following the passage of the *National Marine Sanctuaries Act* (NOAA 1997b). The mission of the NMS Program as identified in s. 922.2, is to "identify, designate and manage areas of the marine environment of special national, and in some cases international, significance due to their conservation, recreational, ecological, historical, research, educational, or aesthetic qualities."

Potential sites for designation are placed on a site evaluation list (s.922.10). Such sites can then be made "active" and considered for designation. A notice of intent to prepare a draft environmental impact statement is published in the Federal Register and the local newspaper (s.922.21b). All jurisdictions affected by a potential NMS have to be notified and involved in the process. Prior to designating a site, all the documentation regarding the proposed NMS has to be made available to the affected state officials (s.

922.23a).

Ten NMS are cited in the 1995 legislation. All include the same basic information: a description of the boundary, prohibited or otherwise regulated activities, and permit procedures and criteria. Activities that are listed under the prohibited category may be allowed with proper permits, such as for scientific research. Specific issues that are detailed in individual NMS include minimum altitude for aircrafts, and distance from sites where hydrocarbon activity is permitted. Incorporating such issues into a NMS is pertinent in that these issues are also of concern in the ISR.

Another approach used in NMS that could be applied to the ISR is the method of enforcement. The particular type of enforcement used is known as interpretative enforcement. That is, rather than levying fines, enforcement officers distribute educational brochures because they feel that most illegal acts are not carried out deliberately (NOAA 1997a). It is thought that once educated, the public will act appropriately. Fines are still issued, for as much as $100,000 per fine per day for serious offenses (s. 922.45a). Interpretative enforcement is already in use in the ISR because of the vast areas that are involved making strict enforcement difficult (Alan Fehr, *pers. comm.*, June 24, 1998).

1.1.1.2 Australia - The Great Barrier Reef Marine Park

At 34.4 million hectares, the Great Barrier Reef Marine Park (GBRMP) is the largest of existing marine protection mechanisms in the world (Kelleher *et al.* 1995). The establishment of the GBRMP, a multi-use park, was reactive rather than proactive. Its establishment was legislated in 1975 through the *Great Barrier Reef Marine Park Act* due to concerns with mineral and oil exploration in the region (Meltzer 1997a).

Extensive consultation in the GBRMP occurs between different governmental and non-governmental agencies. However, at the GBRMP, management is through an independent, lead agency (Meltzer 1997a). While enforcement of the rules within the GBRMP is difficult because of its size, water and air patrols are conducted by various agencies such as the Queensland Department of the Environment and Heritage, Queensland Boating and Fisheries Patrol, and Coastwatch (Meltzer 1997a). Just as under the American NMS, enforcement at the GBRMP is through "the encouragement of responsible behaviour, through education and awareness programs" (Meltzer 1997a).

1.1.2 The Beluga Whale

The beluga, also known as the white whale, belongs to the family of toothed whales. Beluga are brown when born, grey as juveniles, and white in adulthood (DNR 1993). The average length of the Beaufort Sea beluga is 3.6 m for females and 4.1 m for males (Duval 1993). While females reach sexual maturity at 4-7 years, males mature at 7-9 years of age (Community of Inuvik 1993; Duval 1993). Mating begins in mid-winter and extends to June. The gestation period is usually between 14.5 to 16 months (Duval 1993). Although beluga give birth between March and August, most are born in June or July. Females generally give birth to a single calf once every two to three years and nursing is thought to last for approximately two years (Duval 1993; Byers and Roberts 1995). While beluga may live over 30 years (Community of Inuvik 1993), their life expectancy is generally between 10 and 15 years (Pierre Richard, *pers. comm.*, May 1998).

The stock of beluga whales summering in the Canadian waters of the eastern Beaufort Sea, Mackenzie Delta and Amundsen Gulf is considered to be healthy (Duval

1993; Harwood *et al.* 1996; Lois Harwood, *pers. comm.*, July 22, 1997; Richard *et al.* 1997). The Beaufort Sea stock is believed to be one of four stocks wintering in the Bering Sea. The other three stocks summer in Norton Sound, Bristol Bay, and in the eastern Chukchi Sea near Kotzebue Sound and Point Lay (Duval 1993). These three stocks are not thought to migrate further east than the Beaufort Sea (Strong 1990; Duval 1993; Norton 1997). The Beaufort Sea stock is shared between Canada and Alaska. The stock is hunted by the Inuvialuit in the summer months when the beluga are in the Mackenzie Delta; by the communities of Point Hope, Kivalina and Barrow, Alaska in the spring; and by the residents of Barter Island, Alaska in the fall (Norton 1997). It has recently been suggested through satellite tagging that some of the stock also travel through the East Siberian Sea. In this case, Beaufort Sea beluga may also be hunted by the residents of Chukotka, Russia (Richard *et al.* 1997).

Based on a late July survey in 1992 that covered 4.5-6.3% of the southeast Beaufort Sea, 15-29% of the Mackenzie estuary and 2.9% of the west Amundsen Gulf, the visible Beaufort Sea stock is estimated at 19,629 (a 95% CI of 15,134 - 24,125) (Harwood *et al.* 1996). This estimate, which is from a 55-hour survey, is considered conservative for three reasons. First, beluga are difficult to spot in the muddy waters of the Mackenzie. In addition, beluga also spend much of their time under water. As a result, only those beluga that surfaced while the survey was being conducted were counted. Second, based on satellite tagging studies, beluga are now known to inhabit a greater range than was considered in the survey (Richard *et al.* 1996; Richard *et al.* 1997). Finally, it was found that beluga, primarily the males, were outside the range of

the survey by late July when it was conducted (Harwood *et al.* 1996; Lois Harwood, *pers. comm.*, July 22, 1997).

1.2 Issue Statement

Although a framework to manage beluga, their habitat and the subsistence harvest was ratified in 1991, the legal strength of this plan has never been challenged or tested. The purpose of this research was to assess the effectiveness of alternative marine protection mechanisms relative to community preferences for beluga management in the Inuvialuit Settlement Region.

1.3 Objectives

The objectives of this research were:

- To document community preferences with regard to beluga management in the ISR;
- To assess the effectiveness of the BSBMP for beluga management;
- To identify, review, and evaluate the various alternative legislative mechanisms for beluga management;
- To evaluate the appropriateness of the different protection mechanisms for beluga management issues in the ISR relative to community wishes; and
- To draw conclusions and make recommendations concerning the various protection mechanisms reviewed relative to the protection of the beluga, their habitat, and the harvest in the ISR.

1.4 Methods

A University of Manitoba Research Grant provided funds to develop a research proposal for this work in early 1997. This proposal was completed in February 1997 and submitted to the FJMC. The FJMC held a meeting in Winnipeg during the week of March 10, 1997 to discuss its annual budget and set research priorities. The researcher

and her advisor met with the FJMC on March 12, 1997 to discuss the project proposal. On March 19, 1997, the researcher was notified that the project and travel funding had been approved by the FJMC. Further funding was subsequently secured through a research grant under DFO's *Oceans Act Implementation Fund.*

The methods used to conduct this study included a literature review, field work in the ISR, and analysis. A review of relevant literature was necessary to identify, review, and evaluate the various alternatives for establishing marine protection mechanisms in the ISR. Information was obtained in Manitoba at the University of Manitoba libraries and through staff and libraries at the Freshwater Institute, DFO. The researcher also gathered information while in Inuvik at the Inuvik Research Centre and at the Joint Secretariat library. While secondary information was drawn from published and unpublished literature that was available at various libraries, primary sources of information were collected through informal meetings while the researcher was in the ISR.

Fieldwork was conducted from June 20 to July 24, 1997 in order to assess the effectiveness of the BSBMP from the perspective of the Inuvialuit. Ms. Cockney formerly resource biologist with the FJMC at the Joint Secretariat Office, and Mr. Fehr formerly manager of the Inuvik Research Centre in Inuvik approved the research methods being proposed. The researcher made a presentation at a meeting held by the FJMC on June 20, 1997 to review the final workplan, and was asked to present the purpose of the research to those in attendance at the Inuvik Hunters and Trappers meeting on June 22, 1997, and at the Aklavik Hunters and Trappers meeting held at Shingle Point on July 19, 1997.

While in the ISR, the researcher worked under the guidance and with the help of Mr. Joey Amos former resource biologist with the FJMC, and Mr. Alan Fehr. Beluga management issues were discussed with many different people in the ISR including: faculty from the Inuvik Research Centre, members of co-management committees such as the FJMC, Inuvialuit representatives such as representatives of the Inuvialuit Game Council (IGC), representatives of the federal government at DFO, local hunters and trappers, and elders. Since many Inuvialuit were at their whaling camps when the researcher was conducting fieldwork in the ISR, she obtained permission to visit various whaling camps. These camps included East Whitefish Station, Hendrickson Island, Shingle Point, and Running River (Figure 1.4). It should be noted that the opinions expressed in this document are those of the researcher unless specifically attributed to a participant referred to in the "personal communication" section. The opinions cited are based on an integration of informal discussions, as opposed to formal interviews or questionnaires.

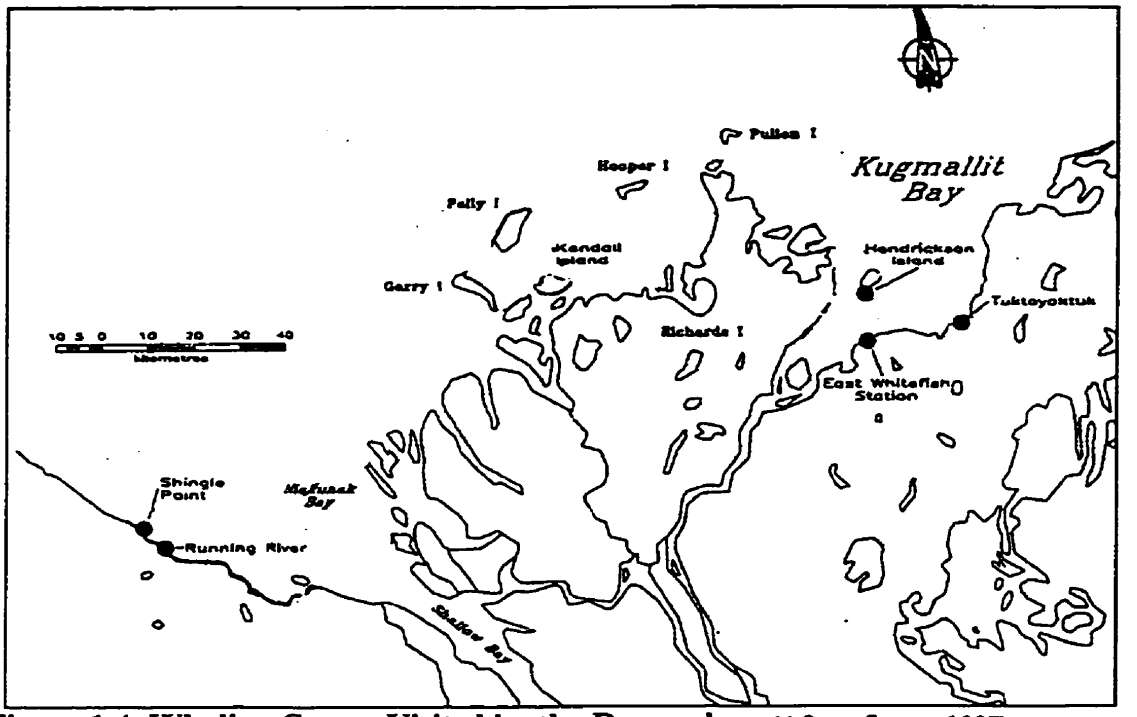

Figure 1.4 Whaling Camps Visited by the Researcher. (After: Strong 1987).

Once the fieldwork component in the ISR had been completed, the researcher returned to Winnipeg to continue analysis and contribute to the preparation of a report on marine conservation and beluga management. In January 1998, a report titled *Marine Conservation and Beluga Management in the Inuvialuit Settlement Region: Can Marine Protected Areas Play a Role?* (Fast *et al.* 1998) was distributed to the FJMC and made available in the ISR. The final phase of this work was drafting this practicum to fulfill the academic requirements of the Master of Natural Resources Management at the University of Manitoba's Natural Resources Institute. A copy of this practicum will also be provided to the FJMC.

1.5 Organization of the Study

In this chapter, the study purpose and the workplan were described and explained. Canada's marine protection mechanisms are discussed in chapter 2, followed by existing

protection mechanisms for beluga in the ISR in chapter 3. In chapter 4, the community perspective on beluga management is provided based on the summer 1997 fieldwork. In the final chapter, conclusions are reached and recommendations are made to optimize beluga management in the ISR. An appendix with a glossary of terms and a copy of the research licence is also attached.

CHAPTER 2: CANADA'S MARINE PROTECTION MECHANISMS

* * * * *

2.1 Introduction

There are three federal programs in Canada to protect marine areas. The first and oldest is the National Marine Conservation Areas Program under DCH. Establishing Marine Conservation Areas (MCAs) is authorized under the *National Parks Act* (1985). The Marine Wildlife Areas (MWAs) Program is the responsibility of DOE. It is based on two pieces of legislation: the *Canada Wildlife Act* (1994) and the *Migratory Birds Convention Act* (1994). Finally, DFO has the authority to establish Marine Protected Areas (MPAs) through the *Oceans Act* (1996). Similar to the GBRMP in Australia, a lead agency (DFO) has been designated in Canada to coordinate all federal marine protection programs to ensure that they are complementary (DFO 1997). All of the above mentioned programs are outlined in the following sections.

2.2 Department of Canadian Heritage – Marine Conservation Areas

In 1986 Parks Canada, now called the Department of Canadian Heritage, initiated the National Marine Park Program (DCH 1995; Kelleher and Kenchington 1992; DFO 1997). The name of this program has since been changed to Marine Conservation Areas (MCAs). The MCAs Program was originally set up in response to the Brundtland Commission which recommended that at least 12% of land surface and an unspecified percentage of marine habitat be set up as protected areas (WCED 1987; Hummel and Hackman 1995; Welch 1995). In 1988, changes were made to the *National Parks Act* which permitted the Minister to establish MCAs on an interim basis while legislation was

being developed to establish and manage MCAs (DCH 1994; Robinson-Lewis and Associates 1997). Bill C-48, an act respecting MCAs, passed the first reading in the House of Commons on June 11, 1998.

MCAs are defined by DCH as: "marine areas managed for sustainable use and containing smaller zones of high protection. They include the seabed, its subsoil and overlying water column and may encompass wetlands, river estuaries, islands and other coastal land" (DCH 1994:48, DCH 1995:8). The Department of Canadian Heritage identified 29 natural marine regions across Canada, including the Great Lakes region, based upon biological and oceanographical features (Kelleher and Kenchington 1992; DCH 1994; DCH 1995; DCH 1997). These 29 regions were selected through extensive consultation and workshops with scientists familiar with Canada's oceans and Great Lakes (Kelleher and Kenchington 1992; DCH 1995). Nine of these regions are within the arctic marine region (Figure 1.2). The policy objective of MCAs is "to protect and conserve for all time national marine areas (seabed and water above) of Canadian significance that are representative of the country's ocean environments and the Great Lakes, and to encourage public understanding, appreciation and enjoyment of this marine heritage" (Robinson-Lewis and Associates 1997:39). To date approximately 447,000 ha of marine water representing five marine regions are protected through two MCAs (Fathom Five in Georgian Bay, Ontario, and Gwaii Haanas in the Queen Charlotte Islands in BC), one National Park marine component (Pacific Rim), and one joint Canada/Quebec Marine Park (Sanguenay Fjord and the St. Lawrence Estuary in Quebec) (DCH 1994; Parks and Tourism 1996).

One of the 29 marine regions identified by DCH (1995) is the Beaufort Sea Region. Representative marine areas have been identified for this region: Cape Bathurst Polynya, Yukon North Slope, and Western Banks Island (DCH 1995). Once the specific region is chosen for protection through consultation with government and non-government agencies, aboriginals and other local people, boundaries will be determined (DCH 1997). In order to ensure the protection of a particular area important for various life stages such as breeding, zones are established on the basis of the purpose for the MCA. Activities that are permitted and prohibited within each MCA zone are then defined. In general, commercial resource extractive activities and sport hunting are prohibited (Parks and Tourism 1997; Robinson-Lewis and Associates 1997). An exception is sustainable commercial fishing activities. Traditional harvesting activities are also allowed through agreements and land claims (Parks and Tourism 1997).

Three zones describing allowed activities have been identified with respect to MCAs. They are:

1. Preservation Zone I - a highly protected core area with very limited activity permitted;

2. Natural Environment Zone II - a buffer zone for the first zone in which more activities are permitted but in which restrictions still apply;

3. Multiple-Use Conservation Zone III - a zone in which more activities are permitted than in either of the other two zones. The only activities banned in NMCAs are ocean disposal, seabed mining and oil and gas extraction (DCH 1994).

2.3 Department of the Environment -- National Wildlife Areas, Marine Wildlife Areas, and Migratory Bird Sanctuaries

The Department of the Environment (DOE) has three programs to protect ocean and terrestrial areas for the purpose of conserving wildlife and their habitats: National

Wildlife Areas (NWAs), Marine Wildlife Areas (MWAs), and Migratory Bird Sanctuaries (MBS) (DFO 1997). Combined, these programs protect 2.9 million hectares of habitat in coastal, estuary and marine areas (DFO 1997).

There are 46 NWAs in Canada protecting approximately 287,000 hectares. Two of these are in the Northwest Territories (Robinson-Lewis and Associates 1997). NWAs and MWAs are set aside for the purpose of wildlife research, conservation, and public education. Since both NWAs and MWAs are tailored to meet local needs, they have the potential to be quite flexible (Parks and Tourism 1997). However, they are created primarily to protect significant habitats for wildlife, especially for migratory birds (DFO 1997; Robinson-Lewis and Associates 1997). The primary difference between the two is that NWAs do not extend beyond the territorial sea to the Exclusive Economic Zone. While no marine protection mechanisms have been established (Robinson-Lewis and Associates 1997), the Minister, under section 12(i) of the *Canada Wildlife Act* (1994), has the authority to prescribe measures for the conservation of wildlife in any protected marine area. The Minister may also make regulations regarding facilities or constructing, maintaining, and operating works for wildlife research, conservation and interpretation. While most human activities are prohibited in these areas, permits may be issued that are compatible with wildlife conservation. Such permits are generally issued for research, land use and access (Robinson-Lewis and Associates 1997). Traditional harvesting activities are permitted in such areas as well as in MBS through land claims and negotiations.

The *Migratory Birds Convention Act* (1994) protects terrestrial, coastal, and marine habitats used by birds for breeding, feeding, migrating, and overwintering

(Robinson-Lewis and Associates 1997). Human activities that would cause harm to the above are prohibited. Although this convention does not specifically relate to marine areas, it does have provisions that may indirectly be used to protect marine environments. Section 12(1)(i) states:

> The Governor in Council may make any regulations that the Governor in Council considers necessary to carry out the purposes and provisions of this Act and the Convention, including regulations prescribing protection areas for migratory birds and nests, and for the control and management of those areas" (*Migratory Birds Convention Act* 1994:6).

Five Migratory Bird Sanctuaries were established in the ISR in 1961, including Kendall Island (606 km^2), Banks Island #1 (20,517 km^2), Banks Island #2 (142 km^2), Anderson River Delta (1083 km^2) and Cape Parry (2.3 km^2). These sanctuaries (Figure 2.1) were originally established to protect the areas from the expanding oil industry in the western Arctic. As a result, industrial activities were not allowed in these sanctuaries. However, such activities can now be permitted with seasonal restrictions if they do not harm the birds, their nests or eggs (Anonymous 1994 and Zurbrigg 1996 as referred to in Robinson-Lewis and Associates 1997).

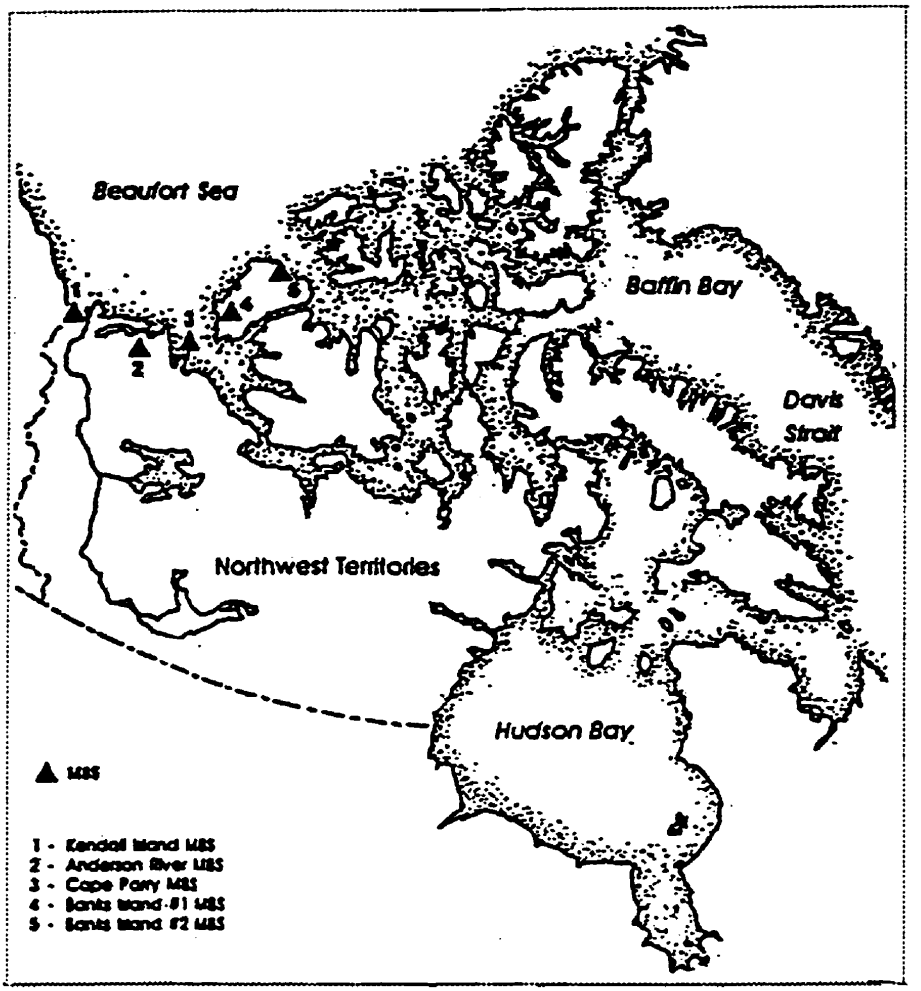

Figure 2.1 Location of Migratory Bird Sanctuaries in the Inuvialuit Settlement Region. (After: Robinson-Lewis and Associates 1997).

2.4 Department of Fisheries and Oceans – Marine Protected Areas

With the passage of the *Oceans Act* (1996) Canada declared a contiguous and exclusive economic zone (EEZ). Canada also reaffirmed its commitment to marine resource management through the principles of sustainable development, the precautionary approach and integrated management (s.30). Three initiatives have been identified under the Oceans Management Strategy (Part II of the *Oceans Act*). These are integrated management of activities in estuaries, coastal and marine waters; the establishment of marine environmental quality guidelines; and the creation of MPAs (DFO 1997). Section 35(1) of the *Oceans Act* (1996) defines an MPA as "an area of the sea that forms part of the internal waters of Canada, the territorial sea of Canada or the exclusive economic zone of Canada; and has been designated under this section for special protection" for one or more of the following purposes:

1. "the conservation and protection of commercial and non-commercial fishery resources, including marine mammals, and their habitats;
2. the conservation and protection of endangered or threatened marine species, and their habitats;
3. the conservation and protection of unique habitats;
4. the conservation and protection of marine areas of high biodiversity or biological productivity; and
5. the conservation and protection of any other marine resource or habitat as is necessary to fulfill the mandate of the Minister" (DFO 1997).

DFO will be the federal department leading the implementation of the strategy for marine protected areas (DFO 1997). Section 35(3) of the *Oceans Act* (1996) authorizes the Governor General in Council, based on the recommendations of DFO, to either designate an MPA or to create zoning areas (s. 25(3)) that may include the prohibition of

certain activities and make regulations establishing MPAs. As of 1998, there is ongoing extensive multi-stakeholder consultation to determine how MPAs will be established and managed. Currently, two processes have been identified for selecting sites: through nomination from interested parties, and through regional overviews in which sites are selected which represent their region (DFO 1998).

DFO's position with respect to nonrenewable resource development is that development is unacceptable where there are either year-round or seasonal populations of fish or marine mammals in a habitat that is critical to their well being. Development activities should demonstrate safety, reliability, and environmental acceptability subject to an environmental impact assessment and other regulatory measures. Such assessments should be made regarding the sensitivity of the species, their habitat, and harvesting. At times it may be necessary to protect beluga through spatial and temporal measures (DFO 1997).

DFO categorized four priority zones that are consistent with its three goals: firstly, the protection and conservation of species and their habitats; secondly, subject to conservation, the subsistence harvest of fish and marine mammals by aboriginal people; thirdly, the development of non-renewable resources subject to the ability of the first and second goals of being fulfilled (Wright 1994). The four priority zones are outlined in Table 2.1 and illustrated in Figure 2.2.

Table 2.1 Priority Areas Identified by DFO for Protection of Marine Species and their Habitats. (Source: Wright 1994).

DFO Zone	Importance	Location	Level of Protection Required
Priority 1	• Area of greatest importance • Freshwater and coastal spawning, overwintering and nursery areas of harvested, rare, endangered or ecologically important freshwater, anadromous and marine fish species • Estuarine and coastal areas used by high concentrations of whales • Harvesting regularly occurs in this zone • Species utilization, stock identification and habitat importance of these areas are known	• Shallow Bay/Niakunak Bay • Central Mackenzie Estuary including Kendall Island, Mallik Bay, and embayments of N.E. Richards Island including Mason Bay • Kugmallit Bay • Whitefish Bay • Tuktoyaktuk Harbour • "Fingers" area of Liverpool Bay	• Maximum protection • DFO recommends that no non-renewable resource or shipping development be permitted in or near these areas unless there are no adverse effects on fish or marine mammals or their habitats
Priority 2	• Area of high importance • Coastal and freshwater feeding areas and migration routes of harvested, rare, endangered or ecologically important anadromous, freshwater and marine fish • Offshore nursery, spawning and overwintering areas of harvested, rare, endangered or ecologically important marine fish • Coastal feeding areas and migration routes of whales • Areas used by concentrations of harvested seals • Harvesting may occur regularly • Species and stock importance of these areas is known or suspected	• North Slope Yukon coastal (0-10 km) zone • Tuktoyaktuk Peninsula coastal zone • Liverpool Bay coastal zone • Wood Bay/Ballie Islands coastal zone • Parry Peninsula/Franklin Bay/Darnley Bay coastal zone • Southwest Victoria Island coastal zone including Prince Albert Sound and Minto Inlet • Sachs Harbour coastal zone • Mercy Bay/Castel Bay coastal zone • Bar Harbour coastal zone • Banks Island coastal zone in northern Prince of Wales Strait	• Stringent protection • DFO recommends that some non-renewable resource development, facilities and shipping could be permitted if there are no long-term adverse effects

DFO Zone	Importance	Location	Level of Protection Required
Priority 3	• Moderately important areas • Offshore feeding areas and migration routes used regularly by harvested, rare, endangered or ecologically important species of anadromous or marine fish • Offshore areas used regularly by whales • Areas used by harvested seals • Harvesting may occur regularly • Species and stock information for these areas is known or suspected	• Beaufort Sea transition zone • Amundsen Gulf • Southern Prince of Wales Strait	• May require enhanced protection • DFO recommends most non-renewable resource development activities, construction and operation of facilities and shipping be permitted, but that spatial, temporal and other specific restrictions be considered
Priority 4	• Limited importance to fish and marine mammals • Freshwater, coastal and offshore marine areas used occasionally by harvested, rare, endangered or ecologically important fish or used by other fish species • Areas used occasionally by whales • Areas used by non-harvested stocks of seals • Harvesting may occur • Species or stock information within these areas is known or suspected	• Beaufort Sea permanent polar pack • M'Clure Strait • Northern Prince of Wales Strait	• DFO recommends basic protection to protect and conserve fish and marine mammals and to protect the overall quality of marine and freshwater habitats

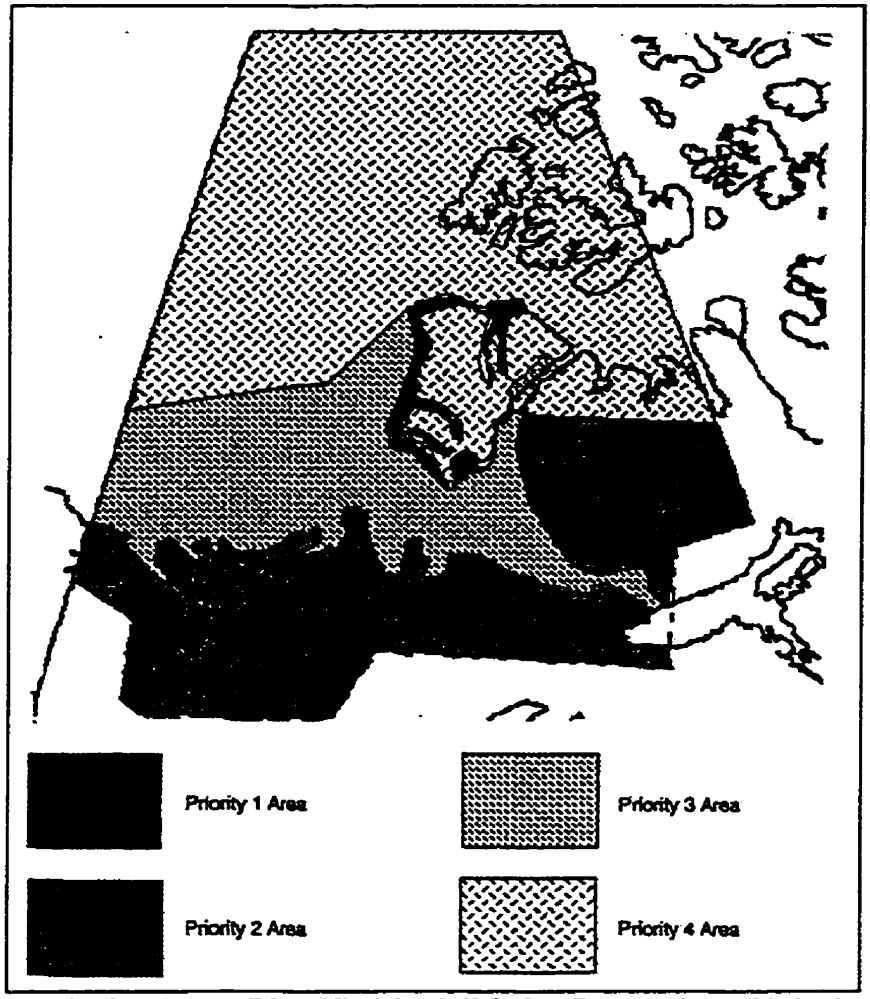

Figure 2.2 Four Priority Areas Identified by DFO for Protection of Marine Species and their Habitats. (Source: Wright 1994).

2.5 Other Federal Legislation with Relevance to Beluga Management

The researcher examined federal legislation that is relevant to beluga management. The legislation included the *Fisheries Act* (1985), the *Canadian Environmental Protection Act* (1985), the *Arctic Waters Pollution and Prevention Act* (1985), the *Aeronautics Act* (1976) and *Canada's Oil and Gas Operations Act* (1985). The relevant sections within the legislation are described below.

The relevant section of the *Fisheries Act* (1985) is titled Fish Habitat and Pollution Prevention and appears under sections 34-43. Fishery waters are protected from contamination in sections 34 and 36. Habitat is protected in s. 35 from activities that result in the "harmful alteration, disruption or destruction of fish habitat." In addition, s. 36(1b) specifies that no one shall "leave or deposit...on the shore, beach or bank of any water or on the beach between high and low water mark, remains or offal of fish or of marine animals." Thus for example, the Inuvialuit must ensure that the whale remains are properly disposed following a hunt. Section 43 outlines all of the regulations that the Governor in Council may make in order to conserve and protect fish; respecting the obstruction and pollution of any waters frequented by fish; and respecting the conservation and protection of spawning grounds (subs. b, h, i).

The relevant section of the *Canadian Environmental Protection Act* (CEPA) for beluga protection is part VI and is titled Ocean Dumping (s.66-77). Ocean dumping is defined as "deliberate disposal" and does not include incidental discharges from normal operations. The Act covers many waters including the internal waters, EEZ and the Arctic waters defined within the *Arctic Waters Pollution Prevention Act* (1985). Section 4 of the *Arctic Waters Pollution Prevention Act* (1985) and section 67 of CEPA (1985) prohibit dumping in Canadian waters, in foreign waters by Canadian crafts, and in foreign waters from a craft which may not be Canadian but where the material was loaded in Canada. Material may be legally dumped from ships when a permit is held s. 67(2) and when it is necessary to avert danger to a human life or craft s. 68(1). Care must be taken when dumping such products in order to minimize damage to human life or to crafts. If the situation that led to the dumping was due to negligence, then liability will

be assessed. Dumping in order to avoid danger must be reported in order to ensure that proper action is taken. As part of the condition of granting a permit to dump, the Minister must ensure that notice of such measures is advertised in local newspapers. Such substances that are dumped cannot have deleterious effects on marine life or human health s. 71(3). The Minister has power to state the conditions under which dumping will take place s. 72(1). Seismic activity guidelines are also created under this Act.

Under the *Aeronautics Act* (1976), the Minister may establish aerial routes s.4(2f). The Governor in Council may also make regulations regarding the classification and use of airspace, the control and use of aerial routes s.4(9k), and the prohibition of the use of airspace or aerodromes s.4(9l). Such regulations may help to strengthen the section of the tourism guidelines that pertains to minimum altitude above zones 1 and 2 of the BSBMP. If such guidelines were legislated, the Minister of Transport would be responsible for enforcement.

Oil and gas industries also have to follow regulations established through legislation such as *Canada's Oil and Gas Operations Act* (1985). The purpose of this act is the protection of the environment. Issues dealt with in this act include waste and spills. The petroleum industry also established environmental protection measures that are compatible with the land management categories defined by the Mackenzie Delta Beaufort Sea Regional Land Use Planning Commission (1991). These guidelines appear in Table 2.2.

Table 2.2 Examples of Environmental Protection Measures Identified by the Canadian Petroleum Association Compatible with the Land Management Categories. (Source: Delta Environmental Management Group 1991).

Commission Land Management Categories	Environmental Protection Measures used by the Petroleum Industry
Category A Lands	Offshore Exploration • operators impose strict guidelines for the treatment, handling and disposal of routine wastes, handling and transportation of hazardous wastes, and on-ice activity of personnel • precautions are undertaken to minimize the risk of accidental spills and blowouts and to maximize human and environmental safety • non-toxic gel muds are used during exploration drilling Proposed Gas Pipelines • compressor stations will incorporate state-of-the-art air emission technology and noise suppression equipment Operational Bases • employ strict standards for treatment, handling and disposal of routine and hazardous wastes, and follow spill containment procedures for all fuel transfers
Category B Lands	• a professional archaeologist retained to investigate potential finds and recommend on-site guidelines for preservation • 50-100 meter buffer between facility sites and watercourses • containment of drill wastes in on-lease sumps, and treatment and dilution of drill cuttings and mud before discharge • use of materials and structures which minimize terrain disturbance and promote faster revegetation • use of specific air flight corridors and minimum flight altitudes to minimize waterfowl and wildlife disturbance • spaces in pipeline construction strings minimize blockage of wildlife movements
Category C Lands	• construction windows are imposed on seismic and construction activities involving watercourse to avoid sensitive time periods for fish • pipeline construction to occur during winter to minimize disturbance to terrain and birds • aircraft movement and activity restricted during May to September in the vicinity of nests for birds of prey • movement of equipment or personnel in the Kendall Island Bird Sanctuary is not permitted during July and August to avoid disturbance to nesting snow geese • beluga whale protection plans specify operational procedures from June to August to minimize disturbances to beluga whale
Category D Lands	• compressor stations along the pipeline will not be constructed within audible range of human settlements, important harvesting sites or cultural areas, or critical wildlife habitats

	• no construction will be permitted upstream of important fish habitats. Where pipelines cross watercourses, directional drilling for installation of the pipe, and bridge crossings to avoid vehicle traffic, will minimize disturbance of the watercourse • fuel storage and equipment maintenance activities are not permitted within specified distances of watercourses • pipeline routings avoid important cultural and historical sites and locally critical wildlife habitat area • camps and facilities will be located away from existing human settlements. The local communities will determine access of southern staff to community facilities.
Category E Lands	• no facilities will be constructed on or near important cultural sites such as graveyards or significant archaeological sites • no facilities will be permitted in the vicinity of unique geological features such as pingos

2.6 Linkages

It was previously stated that three federal departments are authorized to establish marine protection mechanisms. All three departments have varying levels of expertise with respect to their contributions to marine protection mechanisms. What is lacking in one department can either be attained through experience developing marine protection mechanisms or through partnerships with other departments (Table 2.3).

Table 2.3 Potential Contributions to Marine Protection Mechanism Partnerships. (Source: Wolfe and Hartley 1995).

Resources	DFO	DCH	DOE
Knowledge and experience with marine species and environments	x	x	x
Experience in public consultation/conflict resolution	x	x	x
Experience defining selection criteria and identifying possible site locations		x	x
Experience managing parks with broad multiple objectives		x	
Experience managing parks/reserves with marine components		x	x
Experience managing resource use and extraction in parks, reserves	x	x	
Experience working with fishers and the shipping industry	x		x
Research and management experience with migratory species	x	x	x
Research staff and/or equipment (marine-oriented)	x	x	x
Research staff and/or equipment (land-oriented)	x	x	x
Strong legislation	x	x	x
Funds and equipment for training locals for monitoring	x	x	
Public education	x	x	x
Hydrographic charts	x		
Enforcement legislation and resources (marine)	x	x	x
Enforcement legislation and resources (land based)		x	x

All three departments incorporate zoning as it is recognized that a large protected area comprised of multiple zones will provide better protection than one that is small and highly protective (i.e. a "no-use" zone). By having multiple zones, the habitat or resource

that is most in need of protection can have a buffer zone around it, thereby minimizing the impacts of outside activities. This approach is incorporated into marine protection mechanisms with multiple use areas that allow subsistence use, education and research activities. Although the Department of the Environment's NWAs do not refer specifically to zoning, they do have a permitting system that prohibits harmful activities to wildlife and the environment. Under this system, activities that do not detrimentally affect species or their habitats are permitted (DFO 1997).

Each federal program (MWA, MCA, MPA) has a distinct but complementary purpose. Table 2.4 compares the management objectives for protected areas while Table 2.5 compares marine protection legislation in Canada. The primary objective for MWAs is non-commercial species, particularly migratory birds. Since this project is concerned with issues pertaining to beluga management, a protection mechanism whose primary objective is migratory birds may not be appropriate. Both MPAs and MCAs appear to provide appropriate protection for beluga. The primary objectives for MPAs are ecological processes and life support systems, and protecting commercially or recreationally valuable species. In addition, any marine resource can be conserved or protected as is necessary to fulfill the Minister's mandate. This clause appears to increase the flexibility associated with reasons for establishing MPAs. Since the primary objective of MCAs is to protect representative ecological areas, Beaufort Sea beluga and their habitat may not be protected if the ecological area is already represented.

Table 2.4 Comparison of Management Objectives for Protection Mechanisms
(Source: Wolfe and Hartley 1995).

Objectives/Roles for Protected Areas	MPAs (DFO)	MCA (DCH)	MWA (DOE)
Ecological processes and life support systems	1	2	2
Commercially or recreationally valuable species	1	3	2
Representative ecological areas		1	2
Non-commercial species, i.e. migratory birds	2	3	1
Genetic diversity including endangered species/spaces	2	2	2
Implementing agency's national/provincial strategies	2	2	2
Awareness and education		2	2
Tourism and recreation		2	3
Cultural and/or aesthetic resources		2	3
Restoring depleted populations/degraded habitats	2	3	2
Scientific research and monitoring/benchmarks	3	2	2
Integrated planning for marine areas or regions	2	2	3
Unique natural areas or phenomena	3	2	2
International conventions, i.e. migratory birds, biodiversity	3	3	2
Coordinated management systems for regions	2	3	3
Multiple uses of areas subject to conservation restrictions	3	3	3
Primary objective	1	1	1
Secondary objective	2	2	2
Tertiary objective	3	3	3

Table 2.5 Comparison of Marine Protection Legislation in Canada[1].

Legislation	*National Parks Act* (1985)	*Canada Wildlife Act (1994)*	*Oceans Act (1996) – Part II (Oceans Management Strategy)*	*Bill C-48 (proposed MCA Act)*
Primary focus	- For the use and enjoyment, benefit and educational use in a manner so as to leave them unimpaired for future generations (s.4)	- Wildlife research, conservation, interpretation	- "To lead and facilitate the development and implementation of a national strategy for the management of estuarine, coastal and marine ecosystems in waters that form part of Canada or in which Canada has sovereign rights under international law" (s.29) - Strategy based on principles of SD, integrated management, and the precautionary approach - To establish marine environmental quality guidelines, objectives and criteria (s.32) - To establish marine protected areas (s.35)	- "To protect and conserve representative marine areas for the benefit, education and enjoyment of the people of Canada and the world" (s.4.1) - "Managed and used in a manner that meets the needs of the present and future generations without compromising the structure and function of the ecosystems with which they are associated (s.4.3)
Application	- Representativeness of Canada's marine regions	- To wild animals, plants, or organisms and their habitat (s.4)	- Commercial and non-commercial fishery resources; endangered or threatened marine species	- Representativeness of Canada's marine regions

[1] Although the Inuvialuit own the beds of rivers, lakes and water bodies within the ISR, s. 7(3) of the IFA states that the federal government owns all waters in the ISR. In addition, s. 7(85a) states "Canada shall retain the right to manage and control waters, waterways, beds of rivers, lakes and water bodies for the purpose of the management of fish, migratory game, non-game and insectivorous birds and their habitat, and the Inuvialuit shall not impede or interfere with that right" (DIAND 1984).

Legislation	*National Parks Act* (1985)	*Canada Wildlife Act (1994)*	*Oceans Act (1996) – Part II (Oceans Management Strategy)*	*Bill C-48 (proposed MCA Act)*
			and their habitats; unique habitats; marine areas of high biodiversity or biological productivity; conservation or protection of any other marine resource or habitat as is necessary to fulfill the Minister's mandate (s.35.1)	
Governor in Council may make regulations regarding	- Preserving, controlling and managing parks (s.7.1a) - Protecting flora, soil, waters, fossils, natural features, air quality and cultural, historical and archaeological resources (s.7.1b) - Protecting fauna (s.7.1c) - Managing and regulating of fishing (s.7.1d) - Granting permits and licenses for activities within parks (s.7.1i) - Controlling of aircraft access to national parks (s.7.1oo)	- "Prohibiting entry on lands under the Minister's administration" (s.12a) - "The preservation, control, and management of lands purchased, acquired or leased and specify their use" (s.12d) - "Can suspend permits or leases for operations that are not consistent with goals of the act" (s.12g) - "Prescribing the measures for conservation of wildlife in protected areas" (s.12i)	- Designating MPAs (s.35.3a) - Prescribing measures for zoning, prohibiting classes of activities within MPAs, and any other matter consistent with the purpose of an MPA (s.35.3b)	- "Protection of ecosystems and their elements; - Protection of cultural, historical, and archaeological resources; - Management and control of renewable resource harvesting activities; - Respecting the delimitation of zones within MCAs; - Restricting or prohibiting activities or regulating the use of facilities in MCAs or in any zones; - Respecting the issuance, amendment, suspension and revocation of permits and other authorizing instruments; - For the control of the flight of aircraft to prevent danger or disturbances to wildlife, and respecting the takeoff, landing and taxiing of aircraft (only on the recommendation of the Minister of Transport s.16.4); - For the control of scientific research activities; - Authorizing the dumping of substances."

Legislation	*National Parks Act* (1985)	*Canada Wildlife Act (1994)*	*Oceans Act (1996) – Part II (Oceans Management Strategy)*	*Bill C-48 (proposed MCA Act)*
Offences – summary conviction	- Up to $2000 (s.8.1) - If poaching a threatened species, up to $150,000 (s.8.1.1a) - If poaching a protected species, up to $10,000 (s.8.1.2a)	- Up to $50,000-$100,000 and/or up to 6 months (s.13.1a)	- Up to $100,000 (s.37a) and (s.39.6a)	- Up to $100,000 (s.24.1a)
Offences – indictable offence	- If poaching a threatened species, up to $150,000 and/or 6 months (s.8.1.1b) - If poaching a protected species, up to $10,000 and/or 6 months (s.8.1.2b)	- up to $100,000-$250,000 and/or up to 5 years (s.13.1b)	- up to $500,000 (s.37b) and (s.39.6b)	- Up to $500,000 (s.24.1b)
Subsequent offence	n/a	- Notwithstanding previous may double (s.13.2)	- Notwithstanding previous may double (s.39.6.2)	n/a
Continuing offence – on more than one day	n/a	- Separate conviction/day (s.13.3)	- Separate conviction/day (s.39.6.3)	- Separate conviction/day (s.24.2)
Fines Cumulative	n/a	- Per animal, plant or organism (s.13.4)	- Per animal, plant or organism (s.39.6.4)	n/a
Additional fine	n/a	- If person made money therefore court can increase fine (s.13.5)	- If person made money therefore court can increase fine (s.39.6.5)	n/a
Statute of limitations	n/a	- Within 2 years of when Minister was aware of the summary conviction (s.18.1)	- Within 2 years when Minister was aware of the summary conviction (s.39.11)	- Within 2 years when Minister was aware of the summary conviction (s.28.1)
Research	n/a	- The Minister may "undertake	- The minister may collect data, conduct marine	- The minister may conduct research pertaining to marine conservation areas

Legislation	*National Parks Act* (1985)	*Canada Wildlife Act (1994)*	*Oceans Act (1996) – Part II (Oceans Management Strategy)*	*Bill C-48 (proposed MCA Act)*
		programs for wildlife research and investigation, and establish and maintain laboratories and other necessary facilities for that purpose" (s.3c)	scientific surveys, conduct basic and applied research, prepare and publish data, conduct studies to obtain traditional ecological knowledge (s.42a-j)	(s.8.3)
Mgmt. Plan	- A management plan must be created within 5 years of establishment (s.5.1.1) and reviewed every 5 years (s.5.1.3)	n/a	- To be developed and implemented (s.31) - "Minister will lead and coordinate the development and implementation of a national system of MPAs" (s.35.2)	- A management plan must be created within 5 years of establishment (s.9.1) and reviewed every 5 years (s.9.2)

It was previously stated in this chapter that MCAs are formed through the *National Parks Act* (1985). Since the *National Parks Act* (1985) was created to establish terrestrial and not marine parks, it is not entirely appropriate for protecting marine areas. As a result, DCH is trying to legislate an MCA Act. Bill C-48 appears to be an effective bill. In some aspects, this bill is similar to the *Oceans Act* (1996). For example, enforcement for summary convictions and for indictable offences is the same. Research will be carried out through both acts although the *Oceans Act* (1996) is more detailed as to the type of research it will undertake. Management plans are also mandated in both acts although the proposed MCA Act lays out specific time lines. The proposed MCA Act is also more specific with respect to the procedure for forming or amending boundaries, which the *Oceans Act* (1996) fails to mention. While it was noted in table 2.3 that protecting cultural resources was a secondary objective for establishing MCAs, cultural resources were not associated with MPAs. This was also evident in table 2.4 as the Governor General may make regulations for the "protection of cultural resources" under MCAs (Bill C-48 1998).

While Bill C-48 appears to be a well written document, it is not an Act. As a result, the researcher cannot base this research on a document that may not even become legislated. In addition, if it is legislated, there is no guarantee that it will contain of the same detailed information. As a result, the *National Parks Act* (1985) is considered to be the existing piece of legislation designed to protect marine areas through DCH.

CHAPTER 3: CURRENT PROTECTION MECHANISMS FOR BELUGA IN THE INUVIALUIT SETTLEMENT REGION

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3.1 Introduction

The authors of the *Report of the Task Force on Northern Conservation* recognized that a balance had to be found between the "major economic and employment generating role of the non-renewable resource sector, and the critical long-term economic, social and cultural importance of the land, water, and renewable resources" (Task Force on Northern Conservation 1984:9). It was noted in the report that marine areas were needed to protect special regions and species of importance. The protection of resources was also noted in s.14 (60b) of the *Inuvialuit Final Agreement* (1984) which stated that wildlife conservation and management plans have to be drafted by WMAC to ensure that resources are conserved for future generations. The *Inuvialuit Renewable Resources Conservation Plan* (WMAC-NWT and FJMC 1988) was also drafted based upon the principles and goals of the Task Force. One of the recommendations outlined in the *Inuvialuit Renewable Resources Conservation Plan* was that each community creates its own conservation plan.

Between 1988 and 1993, *A Community-Based Regional Land Use Plan for the Mackenzie Delta-Beaufort Sea Region* was compiled (Mackenzie Delta Beaufort Sea Regional Land Use Planning Commission 1991), as were six individual community conservation plans (Community of Paulatuk 1990; Community of Sachs Harbour 1992; Community of Aklavik 1993; Community of Inuvik 1993; Community of Tuktoyaktuk *et*

al. 1993; and Community of Olokhaktokmiut 1994). In 1994, the *Inuvialuit Community Conservation Plan Implementation Workshop on Protected Areas in the Inuvialuit Settlement Region* (Hanbidge 1994) was held to develop an implementation plan for all recommendations outlined in the six community conservation plans and in the Mackenzie Delta Beaufort Sea Regional Land Use Plan. Since the plans dealt with many different issues associated with land use, the scope of the workshop was restricted to those recommendations in the seven documents that dealt with protected areas in the Western Arctic. Species specific management plans have since been created. The *Beaufort Sea Beluga Management Plan* (FJMC 1997) is one such plan. Due to their importance to marine protection, the above-mentioned documents will be examined particularly as they relate to beluga in the ISR.

3.2 Protection Mechanisms for Beluga in the Inuvialuit Settlement Region

Prior to the settlement of the Inuvialuit Final Agreement (IFA) in 1984, management of renewable resources was the responsibility of the federal and territorial governments (Bailey *et al.* 1995). The IFA, which was under negotiation for over 14 years, represents six communities of the Western Arctic. These include Aklavik, Holman, Inuvik, Paulatuk, Sachs Harbour, and Tuktoyaktuk. In addition to a monetary settlement of $152 million over 14 years granted under the Agreement, the Inuvialuit also claimed an area encompassing 1.092 million square kilometers of land and water/ice, of which 72,000 square kilometers include surface rights, and 18,000 square kilometers of which include surface and subsurface rights (IFA 1984; Bailey *et al.* 1995). As part of the settlement, the Inuvialuit were given special rights to harvest all species of fish and wildlife throughout the ISR, as well as the exclusive right to harvest all species of fish

and wildlife on their private lands (IFA 1984; WMAC-NWT & FJMC 1988; Bailey *et al.* 1995; Muir 1997).

Five co-management bodies made up of an equal representation of government and Inuvialuit members were established with the signing of the IFA. These were the Wildlife Management Advisory Council - Northwest Territories (WMAC-NWT), the Wildlife Management Advisory Council - North Slope (WMAC-NS), the Fisheries Joint Management Committee (FJMC), the Environmental Impact Screening Committee (EISC), and the Environmental Impact Review Board (EIRB). Each co-management body is described in Table 4.1. The bodies exist in part to ensure that wildlife and fisheries and their respective habitats are protected. While WMAC is more concerned with wildlife, the FJMC deals with "fisheries" including marine mammals. This includes harvest and habitat considerations. The EISC and EIRB screen and review development proposals in the ISR. Such committees can advise that development not take place due to its potential impacts. The members sitting on such bodies therefore have the ability to protect beluga, their habitat, and the harvest.

Table 3.1 The Five Co-Management Bodies Created Under the Inuvialuit Final Agreement.

Body	Mandate/Responsibilities	#(members)	#(fed govt.)	#(NWT)	#(Yukon)	#(Inuvialuit)	Chair selected by
EISC	Screens all development proposals for the ISR. If proposals are deemed harmful to the environment or affect wildlife harvesting, then they are forwarded to the EIRB for review.	7	1	1	1	3	Fed. Govt.
EIRB	Reviews development applications & determines potential environmental impacts. Recommends wildlife compensation regimes.	7	1	1	1	3	Fed. Govt.
WMAC-NWT	Advises on wildlife policy & the administration of wildlife, harvesting, & habitat; prepares conservation plans; determines & records harvesting quotas.	7	1	2	0	3	NWT Govt.
WMAC-NS	Has the same responsibilities as WMAC-NWT but also oversees the development of national & territorial parks.	5	1	0	1	2	Yukon Govt.
FJMC	Provides advice to the Inuvialuit and DFO on fishery management and related issues within the ISR.	5	2	0	0	2	FJMC

The Inuvialuit Renewable Resource Conservation and Management Plan (WMAC-NWT and FJMC 1988) notes the importance of both terrestrial and aquatic renewable resources. A long-term strategy for the conservation and management of Inuvialuit renewable resources is developed in the *Inuvialuit Renewable Resource Conservation and Management Plan*, without specifying individual resources. Goals, principles, and objectives are outlined, using the principles and goals of the *Report of the Task Force on Northern Conservation.* The *Inuvialuit Renewable Resource Conservation and Management Plan* "provides resource users and managers with reason and direction for their actions, in order that the Inuvialuit gain maximum benefit from the resource base within the Settlement Region" (Task Force on Northern Conservation 1984:4).

The goals, objectives, and recommendations of the Inuvialuit Plan are outlined in ten principles. These principles involve (i) maintaining diversity, (ii) culture, (iii) communication and co-operation, (iv) future options, (v) protection, (vi) population management, (vii) habitat, (viii) resource use, (ix) participation and, (x) indigenous knowledge. It is important to point out that with the fifth principle of protection, there is the possibility of having to enact new legislation in order to protect the renewable resource base.

The goals of the Inuvialuit Plan as they pertain to beluga are to:

1. "Conserve arctic animals and plants and their associated ecosystems within the ISR;
2. Provide for integrated renewable resource and land management; and
3. Co-operatively manage shared renewable resources" (WMAC-NWT and FJMC 1988:8).

Specific objectives are to:

1. "Produce and implement community conservation plans." These plans have already been produced.

2. "Determine allowable harvests and quotas." Where species are migratory the FJMC, WMAC and IGC will represent the Inuvialuit in the negotiation of plans. While quotas are not necessary for beluga due to their large population, harvest data is collected on an annual basis to monitor the harvest.

3. "Assess local potential for renewable resource based economics." This has the potential to generate a lot of revenue in the coming years. Whale watching tours already exist in the ISR. It is thus important to ensure that this activity does not negatively impact beluga, their habitat or the harvest.

4. "Protect important natural resources from the negative impacts of development." This can be accomplished through the EISC and EIRB. Development will only be allowed to proceed in protected areas when it is shown that "the benefits from development outweigh long term renewable resource concerns and community values" (p.12). This is where zoning may be used to identify areas of importance.

5. "Support renewable resource research." This is especially important with respect to beluga as new information has been discovered through satellite tagging.

6. "Develop appropriate legislation and conservation agreements." The BSBMP has been created since this 1988 recommendation. Guidelines were developed within the BSBMP restricting development activities within certain regions. In addition, the *National Parks Act* (1985) was amended in 1988 to include marine areas and the *Oceans Act* (1996) has been legislated. Bill C-48, an act concerning marine conservation areas, is currently in the House of Commons.

7. "Prepare annual reports on renewable resource conservation, research, and management activities" (WMAC-NWT and FJMC 1988:10-14). Such reports are important, as they will note general trends such as development activities in the region and their respective location relative to beluga habitat and the subsistence harvest.

Excerpts from the *IFA* (DIAND 1984) and the *Task Force on Northern Conservation* (1984) regarding wildlife harvesting and management principles, and criteria and guidelines for protected areas are listed in the Appendices of the Inuvialuit Plan (WMAC-NWT and FJMC 1988). The protected area sites for beluga should contain:

1. "Significant cultural, archaeological, historical or traditional resource-gathering value." Zones 1a and 1b cited within the Beaufort Sea Beluga Management Plan contain at least one of the four values.

2. "Habitat essential for the survival of a significant portion of a migratory bird, terrestrial or marine mammal, or marine or freshwater fish population." This condition is also satisfied within the four management zones as summering habitat for beluga is protected. By protecting the area for beluga, other species such as fish, also benefit in that they too can use the protected habitat.

3. "Sites necessary for the preservation of genetic diversity."

4. "Outstanding areas for public recreation and tourism" (WMAC-NWT and FJMC 1988:16). The regions outlined in the BSBMP do have the potential to be prime tourism locations.

Guidelines relevant to beluga management include:

1. "Protected areas should be established to protect values that will be adversely affected by human activity—the degree of protection should be consistent with the associated risk and may be permanent, seasonal or temporary; and activities that have proven to be compatible may be permitted." Zones were created in the BSBMP which do have various guidelines for development activities that include spatial and temporal restrictions.

2. "Areas should be sufficiently large to ensure protection of those elements that are at risk, plus - where appropriate - a reasonable buffer zone." Buffer zones are provided through the four zone system.

3. "Several classes of protected areas should be incorporated within a single designated area where feasible." The BSBMP incorporates this class notion by permitting varying levels of activities within each zone.

4. "Sufficient resource inventory on potential sites should be conducted to justify the need for, and importance of, a protected area prior to the final establishment of its boundaries."

5. "Specific traditional resource use areas should be considered for protection so as to contribute to the greatest extent possible to the continuation of traditional lifestyles consistent with the maintenance of renewable resources." One of the zones outlined in the BSBMP protects traditional harvesting areas.

6. "Evidence should be presented to demonstrate that protected area proposals take into account local knowledge and sensitivities respecting resource uses of the area." The BSBMP was established with the knowledge and contribution of local people, specifically the HTCs.

7. "The network should be managed to promote a better understanding of conservation and, where appropriate, encourage research." Monitoring and research as well as education and awareness are emphasized in the BSBMP.

8. "The designation of certain private lands as protected areas should not be precluded and they may become part of the protected area network under private management."

9. "Provisions should be made for periodic review of protected areas related to their creation, modification, and management in order to ensure that the original objectives are being met" (WMAC-NWT and FJMC 1988:16). The BSBMP is supposed to be revised every few years.

3.2.1 A Community-Based Regional Land Use Plan for the Mackenzie

There were two main objectives of *A Community-Based Regional Land Use Plan for the Mackenzie Delta-Beaufort Sea Region* (Mackenzie Delta Beaufort Sea Regional Land Use Planning Commission 1991). These were:

- to identify community areas of concern and interest and;
- to recommend a land classification system to conserve important resource areas without the purpose of stopping economic development (Mackenzie Delta Beaufort Sea Regional Land Use Planning Commission 1991).

These objectives relate to beluga management in that regions of the Mackenzie Delta have long been suggested as important habitat for whales. For example, in 1977, Justice Berger recommended part of the Niakunak Bay - Shallow Bay area should be designated a whale sanctuary where industrial activity would be banned (Berger 1977).

While economic development is important to the region, the Inuvialuit communities "emphasized to the Commission that they were unwilling to accept the risk of industrial development, and most other activities, in their most significant areas" (Mackenzie Delta Beaufort Sea Regional Land Use Planning Commission 1991). Thus, the Inuvialuit designated specific areas to be protected. Protection is based upon any one of three criteria; critical habitat and species areas, critical community harvesting areas,

and culturally important sites (Mackenzie Delta Beaufort Sea Regional Land Use Planning Commission 1991). Table 3.1 (following section 3.2.2) summarizes such data that specifically concern beluga whales. Note that under "times of protection" are lands designated as category a, b, c, d, or e lands. Category a lands are lands that could be managed according to current regulatory practices because there are no known significant or sensitive cultural or renewable resources in the region. Category b lands require that leases or permits are used to ensure those cultural or renewable resources of some significance and sensitivity are protected. Category c lands are areas that need protection during certain times of the year as the cultural and renewable resources are of particular significance. Category d lands have resources that are just as significant as Category c lands but that should be protected throughout the year. Category e lands have resources of extreme importance and thus no development should be permitted on these lands. Category e provides the highest degree of non-legal protection. Areas identified within this land management plan include legally designated lands such as parks (Mackenzie Delta Beaufort Sea Regional Land Use Planning Commission 1991).

3.2.2 Inuvialuit Community Conservation Plan Implementation Workshop

The *Community Based Regional Land Use Plan for the Mackenzie Delta-Beaufort Sea Region* (Mackenzie Delta Beaufort Sea Regional Land Use Planning Commission 1991) and the Aklavik, Inuvik, and Tuktoyaktuk community conservation plans were developed over a period of a decade from 1984-1994, "to identify concerns of the Inuvialuit and Canada relating to land, wildlife management and environmental protection in the Western Canadian Arctic" (Hanbidge 1994:4). The Hanbidge (1994) report is a compilation of the proceedings of a workshop held in Inuvik by the

WMAC(NWT) to review implementation of the various community plans and of the *Community Based Regional Land Use Plan for the Mackenzie Delta-Beaufort Sea Region*. The workshop dealt only with issues in the community conservation plans pertaining to protected areas in the Western Arctic region. The goals of the workshop were to try to determine the best methods for protection, to determine the appropriate legislation that would enable protection, and to assign responsibilities of protection to the corresponding agency. The recommendations made by the communities of Aklavik, Inuvik, and Tuktoyaktuk, as they pertain to protection, are listed in Table 3.1.

The Tuktoyaktuk Working Community Group recommended the sites (#84-86, 88, 91-92 – Table 3.1), which are all in the BSBMP, as a high priority for beluga protection. "However, since the BSBMP has no enforcement capability, further designation of these areas, as National Wildlife Areas or specific fisheries protected areas, is recommended to provide a legal enforcement mechanism" (Hanbidge 1994:28-9). Aklavik, Inuvik and Tuktoyaktuk all noted the lack of protection currently existing.

Table 3.2 Areas of Significance for Beluga Management According to the Communities and their Recommendations. (Source: Community of Aklavik 1993; Community of Inuvik 1993; Community of Tuktoyaktuk *et al.* 1993; Hanbidge 1994)

Location	What is being protected	Times of protection	Concerns	Recommendations
• Coastal zones of Tuktoyaktuk Peninsula, Liverpool Bay (site #80)(DFO)[1]	• McKinley and Liverpool Bays – may be a spawning area for Pacific herring which may be food for beluga	• C lands	• If areas are not protected, this could decrease the food source available to beluga	• Maintain status quo
• BSBMP zone 2 (site #83) - All Mackenzie Shelf Waters shallower than 20 m (FJMC)	• Beluga travel corridor	• C lands	• Industrial activity may affect beluga, their habitat and the harvest.	• Evaluate activities based upon direct and indirect effects on beluga, their habitat and hunting

[1] Note the agency appearing in brackets in this column is the agency that suggested the location be protected.

Location	What is being protected	Times of protection	Concerns	Recommendations
• Kugmallit Bay (site#84) includes Kugmallit Bay, Pullen Island, Hendrickson Island, the shorelines from Hansen Harbour south to the mouth of the Mackenzie River, west to the community of Tuktoyaktuk and northeast to Toker Point (Tuktoyaktuk, Inuvik and Aklavik) • BSBMP zone 1a (FJMC) • Priority 1 habitat – Kugmallit, Whitefish, Tuktoyaktuk harbour (DFO)	• Beluga whale concentrate in shallow waters perhaps to rear calves, moult and/or socialize • Beluga harvest	• Mid June-Sept. 30 • July-Aug • C lands	• Several oil and gas discoveries exist nearby • Possible pipeline route crosses the end of Kugmallit • Oil and gas activity, shipping, tourism, and animal rights groups may interfere with species habitats and the subsistence harvest. • May affect beluga calving grounds and nursing	• Recommendation to protect whales from development through the *Fisheries Act* or proposed *Oceans Act* • Recommend a shipping channel through the Bay and possibly through zone 1a • HTCs to consider establishing bylaws to complement BSBMP tourism guidelines • Issue: BSBMP has no enforcement capability therefore legislation is recommended

Location	What is being protected	Times of protection	Concerns	Recommendations
• Kendall Island (site #85) located within Mackenzie Bay at the northern edge of the Mackenzie Delta and includes Kendall, Pelly, and Garry islands (site #88), BSBMP Zone 1a waters, the Kendall Island Bird Sanctuary boundaries, nearby waters and onshore areas (Tuktoyaktuk, Aklavik, Inuvik) • Priority 1 lands (DFO) • BSBMP zone 1a (FJMC)	• Beluga whale harvesting • Habitat • Migratory birds and habitat	• June – July • May-Oct • C lands	• Many oil and gas discoveries around Kendall Island • Possible pipeline connections • Potential of increased shipping activity and the need for access roads and air access points • Low flying aircraft • Above can all affect beluga and migratory birds	• Air traffic restrictions from May 1 to Oct 7 within 10 mile radius of sanctuary and no lower than 3000ft • CWS, EISC, DIAND should ensure that no non-renewable development permits be issued within the sanctuary • HTCs to consider bylaws to complement the BSBMP tourism guidelines • Recommendation that EISC refer all non renewable activities within the Bird Sanctuary to EIRB • FJMC should inform DFO of the possibility of incorporating the BSBMP zones into the *Fisheries Act* or proposed *Oceans Act* in order to afford further protection.

Location	What is being protected	Times of protection	Concerns	Recommendations
• Mackenzie and Shallow Bays (site #86) from Blow River in the Yukon along the edge of Shallow Bay and up to Mackenzie Bay including the ocean and river water and adjoining shoreline (1/2 km) (includes Herschel island) – (Inuvik, Aklavik and Tuktoyaktuk) • BSBMP zone 1a (FJMC) • Priority 1 habitat Shallow Bay (DFO)	• Beluga calving • Beluga nursing • Beluga hunting	• Late March to July • June-Aug • June 1 – Sept 25 • C lands	• Onshore oil and gas discoveries nearby • Potential for a harbour and communication sites in support of hydrocarbon exploration, drilling and transportation at Herschel Island, Stokes and King Point • Shipping activity • Tourism outfitters • Animal rights groups • All of the above may interfere with beluga calving, and subsistence harvest • There are conflicts in the Community Conservation Plan with two other overlapping sites (#92 and BSBMP zone 1a). Separating them would eliminate the contradictions	• FJMC through BSBMP should recommend a shipping channel through zone 1a (sites #86 and 92) if necessary • Tourism and HTCs should regulate tourism boats • DIAND should enforce BSBMP (no oil & gas activities within 1a) from break-up to Aug 15 • Restrict public access to community harvesting areas in the month of July • FJMC should inform DFO of Inuvialuit desire to incorporate BSBMP into the proposed *Oceans Act* or *Fisheries Act* and DFO should act (same for #84, 85, 86, 88, 92) • HTCs should consider establishing bylaws to compliment the BSBMP Tourism Guidelines • Recommendation to regulate whale watching tourism through RWED and HTC bylaws which are enforceable through the *NWT Wildlife Act* • New recommendation: redefine boundaries excluding BSBMP 1A and site 92 (Shallow Bay) • DIAND should continue to restrict oil and gas related activities and respect restrictions within BSBMP zone 1a with respect to no oil and gas activities from break-up to August 15.

Location	What is being protected	Times of protection	Concerns	Recommendations
• Central Mackenzie estuary (DFO) (#91)	• Concentration area for beluga between Shallow and Kugmallit Bays • Overwintering areas for fish	• E lands	• See #86	• Recommendation to redesignate from class E to class D – believe that a class of D better defines the sensitivity of the area and permitted activities • EISC to continue following BSBMP zones for development
• Shallow Bay (DFO) • BSBMP zone 1a (FJMC) • Site # 92	• Concentration area for many beluga	• E lands	• See # 86	• Recommendation to redesignate lands from class E to D • BSBMP zoning should be enforceable through HTC Wildlife Management Bylaws enforceable under *NWT Wildlife Act* • FJMC should inform DFO of the possibility of incorporating the BSBMP zones into the *Fisheries Act* or the proposed *Oceans Act* in order to afford further protection

3.2.3 The Beaufort Sea Beluga Management Plan

In 1991 the first BSBMP was produced. The BSBMP was drafted by the FJMC in cooperation with the Aklavik, Inuvik, and Tuktoyaktuk HTCs, and DFO. It was created because resource users and managers agreed that a management plan was needed to "ensure that the beluga resource continues to thrive, and that it is utilized efficiently" (FJMC 1993:1-2). FJMC took the lead in this initiative, due to their role as outlined in section 14(61) of the *Inuvialuit Final Agreement* (1984). Section 14(61) mandated DFO to establish the FJMC, which would be responsible for assisting, and advising DFO on fisheries-related issues that affected the Inuvialuit and the ISR. The main groups that assist with the implementation of the BSBMP are the HTCs, the IGC, the FJMC and DFO. The IGC is responsible for allocating the harvest levels of beluga resources among the communities that participate in the harvest studies (FJMC 1997). Currently the FJMC, one of five co-management boards within the ISR, and the HTCs are monitoring whale populations. A beluga monitoring program takes place every year with individual beluga harvesters being assigned the role of recording the number of whales that are landed and struck. In 1997, there were seven beluga monitors stationed at East Whitefish, Kendall/Baby Island, Tuktoyaktuk, Hendrickson Island, Shingle Point, West Whitefish, and Paulatuk.

Four communities hunt beluga in the Mackenzie estuary: Aklavik, Inuvik, Paulatuk, and Tuktoyaktuk (Duval 1993). The traditional beluga harvesting areas within Shallow Bay, Kugmallit Bay, and near Kendall Island are shown in Figure 3.1 (FJMC 1993).

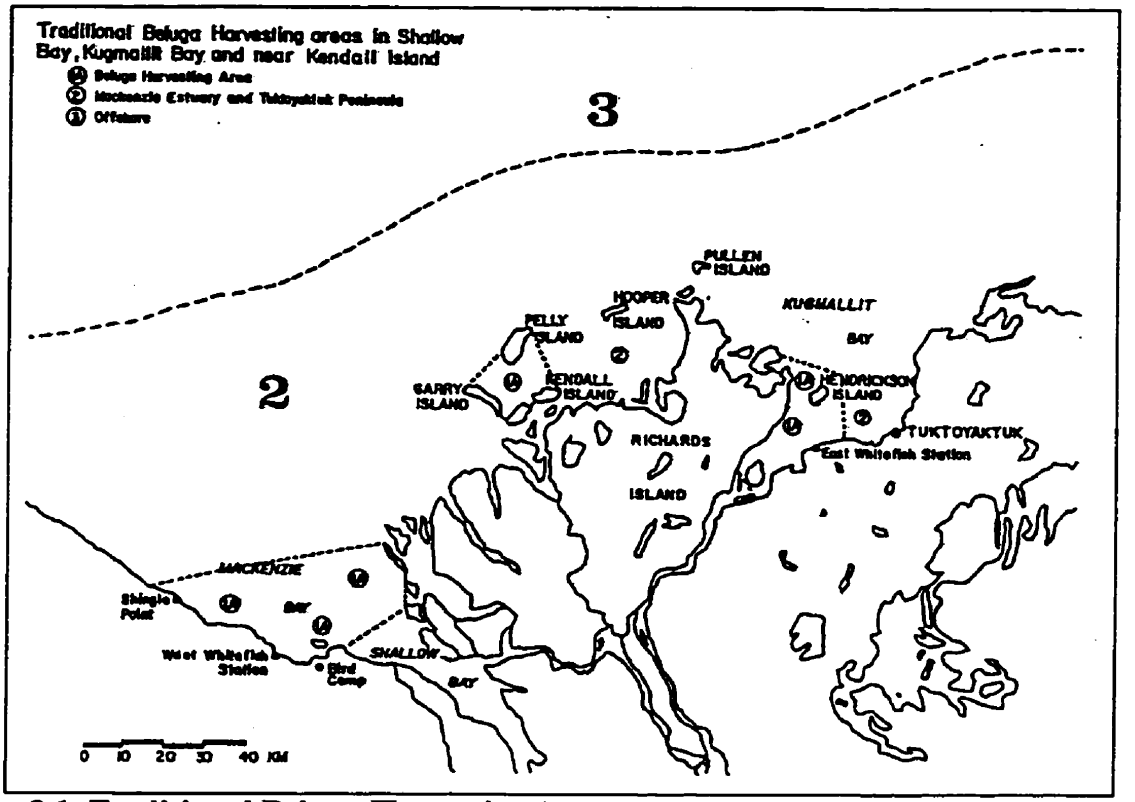


Figure 3.1 Traditional Beluga Harvesting Areas. (Source: FJMC 1993).

Two goals are set out in the BSBMP. These are:

- "To maintain a thriving population of beluga in the Beaufort Sea; and
- To provide for optimum sustainable harvest of beluga by Inuvialuit" (FJMC 1997:3).

These goals are consistent with the two goals of the IFA (DIAND 1984) and the *Inuvialuit Renewable Resource Conservation and Management Plan* (WMAC-NWT and FJMC 1988). That is, "to protect and preserve Arctic wildlife, the environment, and its biological productivity" and "to ensure for optimum sustainable harvest for Inuvialuit." The BSBMP is divided into three sections: sustainable harvests; conservation and protection of beluga, beluga habitat and beluga harvesting; and supporting programs.

3.2.3.1 Sustainable Harvests

There are two objectives associated with sustainable harvests. These are:

- "To provide for a level of harvest that generates the greatest net benefit to the Inuvialuit while ensuring the long-term sustainability of beluga in the Canadian Beaufort Sea; and
- To ensure an efficient harvest and low loss rates" (FJMC 1997:5).

The beluga hunt is self-regulated by the Inuvialuit communities and is based on subsistence need. Between 1984 and 1996, the average catch rate was 124 beluga per year (FJMC 1997). Alaskans also harvest approximately 46 beluga from the same stock. In comparison to current struck and loss rates, many more beluga were struck and lost in previous years. With the implementation of community beluga hunting bylaws and guidelines, the loss rate declined from 18% prior to 1992 to below 10% between 1992 and 1996 (FJMC 1997).

Total allowable catch (TAC) was given considerable attention in the first BSBMP of 1991, when it was thought that the beluga population totaled approximately 7500. However with recent studies estimating the visible population to be at least 20,000 (Harwood *et al.* 1996), a TAC was not required at this time and was thus not mentioned in the third printing of the BSBMP (FJMC 1997).

3.2.3.2 Conservation and Protection of Beluga

There are four "conservation and protection" objectives outlined in the BSBMP:

- "To protect beluga, beluga habitat and beluga harvesting;
- To provide guidelines and information to assist the Government, the Environment Impact Screening and Review Process and the Inuvialuit Lands Administration in their evaluation of development proposals which may affect beluga, beluga habitat or beluga harvesting;

- To provide information in a format that will assist the former Mackenzie Delta - Beaufort Sea Regional Land Use Planning Commission in developing its comprehensive land use plan; and

- To provide guidelines to assist industry in preparing developmental proposals" (FJMC 1997:8-9).

Since beluga migrate through an area where there has been, and could potentially be, oil and gas development, guidelines for development activities were cited in the BSBMP. Such an industry may affect beluga through indirect and direct ways, although it is not known with certainty how beluga would be impacted by development.

Tourism is not considered to be a development activity even though tourism activities do have the potential to negatively impact beluga, their habitat and the harvest. The BSBMP objective associated with tourism is to "facilitate tourism opportunities associated with beluga while minimizing the impacts of such activities on beluga and beluga harvesting" (FJMC 1997:15). With increasing tourism interests in the area and increasing concerns that tourists may interfere purposely or inadvertently with the beluga harvest, tourism guidelines have been developed and approved by the IGC for beluga management zones. These are:

- Water based tourism is not allowed in beluga management (1a) zones.

- Inuvialuit shall have priority access for establishing guiding and outfitting activities.

- Subsistence harvesting will take priority over tourism activities.

- The local HTCs will designate whale watching and tourism areas. HTCs have a right to limit the number of designated areas, outfitters and the number of tourists.

- Prior to visiting hunting camps, tourists must have written permission from both camp owners and the local HTCs. Tour operators must attach

agreements that are made with respect to the length of stay, compensation, etc. to their operator's license.

- Tour length at individual camps will be left to the owner's discretion while tours outside of whaling camps will be at the discretion of the HTCs.

- Photographs/videos cannot be taken without the written consent of the HTCs, the camp owners or the IGC. The three groups must all sign a form, which must be carried at all times throughout the tour.

- Media involvement with any aspect of whale harvesting must be approved by the HTCs and/or the IGC and have written consent by the camp owner or hunter. Again, this consent must be carried at all times. The ILA approves such involvement first but the ultimate decision rests with the above mentioned groups. Footage required by other groups will also have to be approved.

- Tour operators must ensure that they do not harass the whales.

- It is advised that aircraft maintain a minimum altitude of 2500 feet over zone 1a and 1b lands and 2000 ft over zone 2 lands unless landing or taking off. This will be incorporated into the individual HTC/Operator Agreements.

- Tour operators must remove all garbage generated by the tourism activity. Burial and burning on site is not permitted. It is also necessary to deal with local garbage that is generated at the whaling camps. The issue was raised when the researcher was at the Aklavik HTC meeting held at Shingle Point. Apparently a complaint was filed regarding the messy conditions of some camps. Camps need to be kept neat and tidy and garbage properly disposed both for the health and safety of the Inuvialuit and also to set a standard that tourists could follow when they visit the camps. Self-regulation is thus important.

- Artifacts are to be left where found. They cannot be removed under the *Heritage Act*, DIAND Land Use Regulations, and NWT Archaeological Site Regulations.

- The tourism guidelines will be monitored by the HTCs and adjusted every 2 years if necessary.

- The HTCs can recommend to the GNWT RWED that an operator's operating license be revoked.

- The guidelines will be published and distributed to all airlines, tourism associations, HTCs, major network media, and relevant Federal and Territorial governments.

- The Inuvik and Tuktoyaktuk HTCs have designated Hendrickson Island as an "off limits" area to any tourism activity (FJMC 1997).

The guidelines are a good start to protecting beluga and the harvest in the region. However, many are simply guidelines that are not enforceable. In addition, it is the researcher's belief that many Inuvialuit are not aware of such guidelines.

Four Beluga Management Zones were created under the BSBMP with each zone representing varying degrees of importance to the Beaufort Sea beluga and allocating the necessary levels of protection. The conditions outlined for activities within the zones are guidelines only. Such guidelines though, are used by decision-makers to ensure that the activities undertaken in each of the zones do not affect the beluga, the habitat or the harvest. The BSBMP zones are shown in Figure 3.2 and described in Table 3.3.

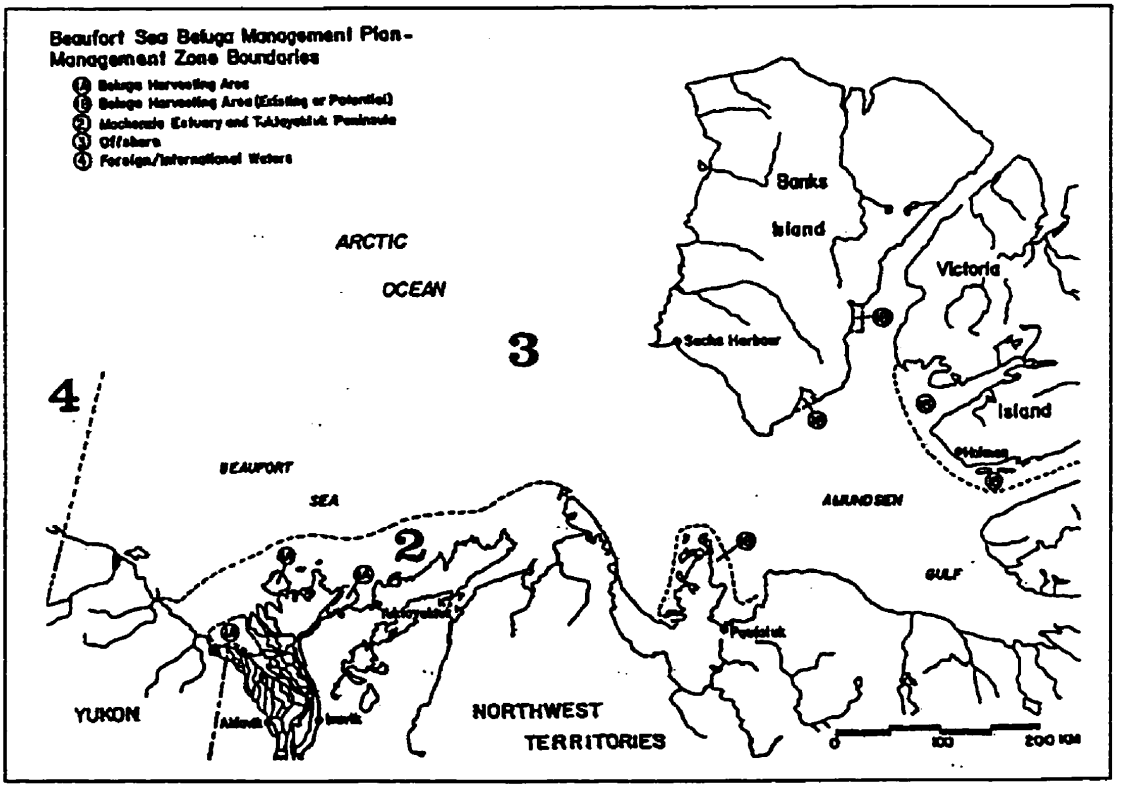


Figure 3.2 Beluga Management Zones. (Source: FJMC 1993).

Table 3.3 Beluga Management Zones. (Source: FJMC 1997).

BSBMP Zone	Description	Guidelines for Activities
1a 1b	• Encompasses 1800 km^2 of shallow (<2m deep) water. • Located from the mouth of the Mackenzie River and includes Shallow Bay, east Mackenzie Bay and Kugmallit Bay where beluga concentrate and are harvested in summer. • Beluga are occasionally harvested in this region by the residents of Paulatuk and occasionally by the residents of Holman. It is also where Sachs Harbour residents may harvest in the future.	• The zone is considered a protected area as per the *Inuvialuit Renewable Resource Conservation and Management Plan* (1988). • Oil and gas companies should not be allowed to explore, produce, construct or operate a facility in this zone. • Mining should not be permitted from break-up until August 15. • Projects outside zone 1 should be evaluated for potential effects on the zone. • All shipping activities should be confined to designated routes especially between break-up and August 15. • Port development should not be allowed within or on zone 1 shores. • Potential commercial fishing proposals should be evaluated with respect to beluga food species. • HTCs should be advised and consulted regarding proposed activities within this zone. • There shall be no water-based tourism activities in zone 1(a).
2	• A migratory route and likely a feeding area that includes Mackenzie shelf waters shallower than 20 m. • Located from Kay Point on the Yukon coast to Ballie Islands (Cape Bathurst). • Zone is a major travel corridor used by beluga.	• Controlled development activities are permitted if they do not impact beluga, their habitat and the harvest. Such activities must be evaluated to consider both direct and indirect effects on beluga as well as cumulative and long-term effects. • As in zone 1, commercial fishing proposals should be evaluated with respect to beluga food species. • HTCs should be advised and consulted of potential development activities.
3	• A migratory route that includes remaining waters within the Canadian Beaufort Sea that is deeper than 20 m. • Located as far north as the permanent ice pack, east to Victoria Island and west to the American/ Canadian border.	• Same as zone 2.
4	• Includes the beluga wintering range outside of Canadian waters including the Alaskan Beaufort Sea, Chukchi Sea, and the Bering Sea.	• An international agreement is needed to ensure that beluga are not only managed in Canadian waters but also within their entire range (summer and winter). • All knowledge regarding industrial activity that could impact beluga should be shared with the other relevant countries.

3.2.3.2.1 Regulations and Bylaws

Within the "Conservation and Protection" section of the BSBMP is a subsection regarding bylaws and regulations. The objectives of this subsection are:

- "To protect the Beaufort Sea beluga resource and the harvest of that resource; and
- To formulate, amend and implement guidelines, bylaws, and regulations necessary to protect the beluga, beluga habitat, and the beluga harvest" (FJMC 1997:7).

DFO's Marine Mammal Regulations

In order to protect beluga, beluga protection regulations were established under the *Marine Mammal Regulations* (1993). These regulations were amended after the IFA (DIAND 1984) was signed. Many of the beluga hunting bylaws and guidelines are also stated in the *Marine Mammal Regulations* (1993) affording the necessary protection to beluga. The relevant regulations appear below.

- "s. 3 -- The regulations apply to the management and control of fishing for marine mammals and related activities in Canada or in Canadian fisheries waters.
- s. 4(1) -- There is no charge for a beluga fishing license.
- s. 6 -- A beneficiary may hunt beluga for food, ceremonial or social purposes without a license."

Regarding disturbance

- "s. 7 -- One is not allowed to disturb beluga unless fishing for marine mammals. * [2]
- s. 8 -- The kill shall be quick.
- s. 9 -- Hunters can only kill beluga if they have the equipment necessary to retrieve it. *

[2] Note that those sections of the *Marine Mammal Regulations* that are asterisked also appear in the hunting bylaws and community guidelines.

- s. 10 (1) -- If one wounds or kills a marine mammal, every effort must be made to retrieve it. In addition, the mammal cannot be abandoned or discarded. *

- s. 10(2) -- Edible parts of captured mammals shall not be wasted. * It is not clear what is meant by edible. For example, one camp may consider both muktuk and mipku to be edible whereas another camp may only take the muktuk.

- s. 17 -- Records must be kept dating back 2 years of the cetaceans that were taken as well as the time, place, species, sex, colour. This appears to be fulfilled through the monitoring program.*

- s. 18 -- Cows shall not be harvested if accompanied by calves, nor can calves be hunted themselves. * This will ensure that the beluga population continues to thrive.

HTC Hunting Bylaws

Community specific bylaws outline efficient and safe hunting practices, and have contributed to the increased efficiency of the hunt by reducing both loss rates and wastage (FJMC 1997). Each community has created its own bylaws and guidelines as summarized below.

Bylaws

- Specify the equipment that shall be present in each boat including a rifle, harpoons, grappling hook, float marker and towing line.

- A conservation guideline specifying the amount of whales taken must be such that the whales can be taken care of not only with respect to towing but also dependent upon the weather, the type of boat and the towing distance.

- No one shall knowingly waste, abandon or discard edible parts of a harvested whale.*[3]

- Hunters are not permitted to hunt cows known to be accompanied by calves.*

[3] The asterisked bylaws and guidelines also appear under the *Marine Mammal Regulations* and are enforceable under that regulation.

- If a whale is wounded or sinks, every effort must be made to capture it first prior to hunting others.*
- Harvesters must provide the beluga monitors with the necessary information.*
- There shall be no hunting in the "no hunting zones" if applicable.*
- Those not involved in the hunt including tourists shall not interfere with the hunt. This is primarily to ensure that no one is injured and also to minimize stress placed on beluga.

Guidelines

- The boat cannot contain too many people because they will interfere with proper hunting techniques.*
- No person shall hunt alone.
- Each boat must carry at least one experienced hunter. It is recommended that hunters first harpoon whales and then shoot them.*
- A hunting leader shall be appointed at each camp to make decisions regarding hunting safety and efficiency.
- Hunters should follow the directions of the hunting leader.*
- The harpoon and float attached to the whale should not be removed from the whale until at shore.
- Whale carcasses must be towed to deep water or burned unless used for other purposes such as bait.
- All areas around whale kills should be cleaned up after processing.*
- Each boat shall be equipped with enough life jackets for all passengers.*
- Rules may be changed from time to time by the respective HTC. Such rules will ensure that the hunt is carried out in a safe and efficient manner.

The *Marine Mammal Regulations* (1993) ensure that beluga are protected and that the hunt is efficient. That is, if a whale is struck, every effort will be made to have it retrieved. In addition, the regulations emphasize that wastage should not occur. The HTC bylaws that do not appear in the *Marine Mammal Regulations* (1993) concern

human safety, such as no person shall hunt alone. The above bylaws and guidelines demonstrate that the beluga hunt is carefully managed.

3.2.3.3 Supporting Programs

In the last section of the BSBMP, the importance of monitoring and research are emphasized in order to determine whether beluga are healthy, and also to determine if management programs are working.

Objectives

- "To provide the necessary biological information for the conservation, management, protection and optimal utilization of Beaufort Sea beluga.
- To provide the new biological information about the Beaufort Sea beluga required for the implementation of this management plan" (FJMC 1997:19).

Education and public awareness objectives

- "To initiate school and hunter education programs" (FJMC 1997:20).

There are three streams/levels of education programs targeted at different people. These are:

- Classroom instruction—targeted at school aged children;
- Practical training—targeted at potential harvesters; and
- Teaching aids—targeted at a general audience.

Monitoring and research programs are very important to ensure that if beluga are being negatively affected by development activities, this will be detected early while the effects are reversible. Education programs are also very important to ensure that the knowledge gained through monitoring and research is passed on to the community.

3.2.3.4 The Beluga Habitat

It is important to note that the original BSBMP zones were based upon information that was known about beluga in the late 1970s and early 1980s. This section introduces research conducted in the 1990s that may result in the redefinition of the original zones defined in the BSBMP.

Depending upon ice conditions, beluga generally arrive in the Beaufort Sea in spring. Travel from the Bering Sea to the Beaufort Sea is either along the landfast ice (Zone 2 of the BSBMP), or through leads in the pack ice far offshore (Zone 3 of BSBMP) (Community of Inuvik 1993). In the summer months of late June to early August, beluga can be found in both the offshore and inshore waters of the Beaufort Sea. It was previously hypothesized that beluga concentrated in the warm and shallow waters (2 m isobar) of the Mackenzie estuary (Norton and Harwood 1985; Finley *et al.* 1987) to feed (Norton and Harwood 1985), moult (Byers and Roberts 1995), or calve. With new studies conducted by Richard *et al.* (1997), beluga are known to concentrate and feed in deeper waters.

During a survey conducted in late July 1992, Harwood *et al.* (1996) found that beluga concentrated in certain offshore regions. These offshore regions were:

- 10-30 km to the northwest of west Mackenzie Bay;
- within 5-10 km off shore of the Tuktoyaktuk Peninsula, Ballie Islands, and the mouth of the Horton River;
- 50-80 km off Cape Bathurst in the approximate area where the Bathurst polynya often recurs in winter; and
- in central Amundsen Gulf, approximately 50 km north of Pearce Point (p.2271).

Richard *et al.* (1997) found that beluga tend to spend little time in the shallow and deep waters, which they defined as less than 15 m and greater than 600 m. Rather, beluga spend most of their time in waters ranging from 15-600 m, presumably in order to feed

on species located on the seabed. One male dove to a depth of 1160 m in July 1995 (Richard *et al.* 1996; Richard *et al.* 1997), demonstrating that beluga may not prefer open water nor avoid thick ice packs as was previously thought. Such depths are reached when beluga migrate to Viscount Melville Sound, presumably because it provides a rich food source (Richard *et al.* 1996, Richard *et al.* 1997). Males dive to the bottom of the seabed and are able to stay there for a few minutes due to their aerobic capacity. If the female aerobic capacity were as great as the male's, it is assumed that they too would feed on the rich seabed. However it is postulated that because female's capacity is smaller, they are unable to stay at the seabed long enough to make their trip to Viscount Melville Sound worth the energy expended to get there (Norton 1997).

Richard *et al.* (1996) conducted studies in 1993 to track the movements of four beluga using satellite tags (Figure 3.3). Two males traveled from Garry Island through M'Clure Strait and into Viscount Melville Sound, with one eventually returning to Point Barrow in Alaska. The other tag stopped transmitting after ten days while heading north. Another male traveled northwest to the 78th parallel from Kidluit Bay, and then southwest to Russian waters. The female moved from the delta to the Amundsen Gulf, back to the delta and again into the Amundsen Gulf. The two males travelled over 2000 km while the female travelled 1200 km (Richard *et al.* 1997).

In 1995 (Figure 3.4), 16 beluga were tagged. Ten males again followed the pattern of the 1993 males into M'Clure Strait and Viscount Melville Sound in late July. Another male also made his way to the Sound, but via the Amundsen Gulf and Prince of Wales Strait. Four females and one male tended to move between the delta and the Amundsen Gulf, as the tagged female did in 1993. One female in 1995 though, began to follow the

males' path by traveling north but stopped short of 74°N and turned back. This study appears to show that there is a spatial separation between the males and the females. The males travelled north to M'Clure Strait and Viscount Sound, and the females remained in the Amundsen Gulf in the southern part of the eastern Beaufort Sea (Richard *et al.* 1996; Richard *et al.* 1997).

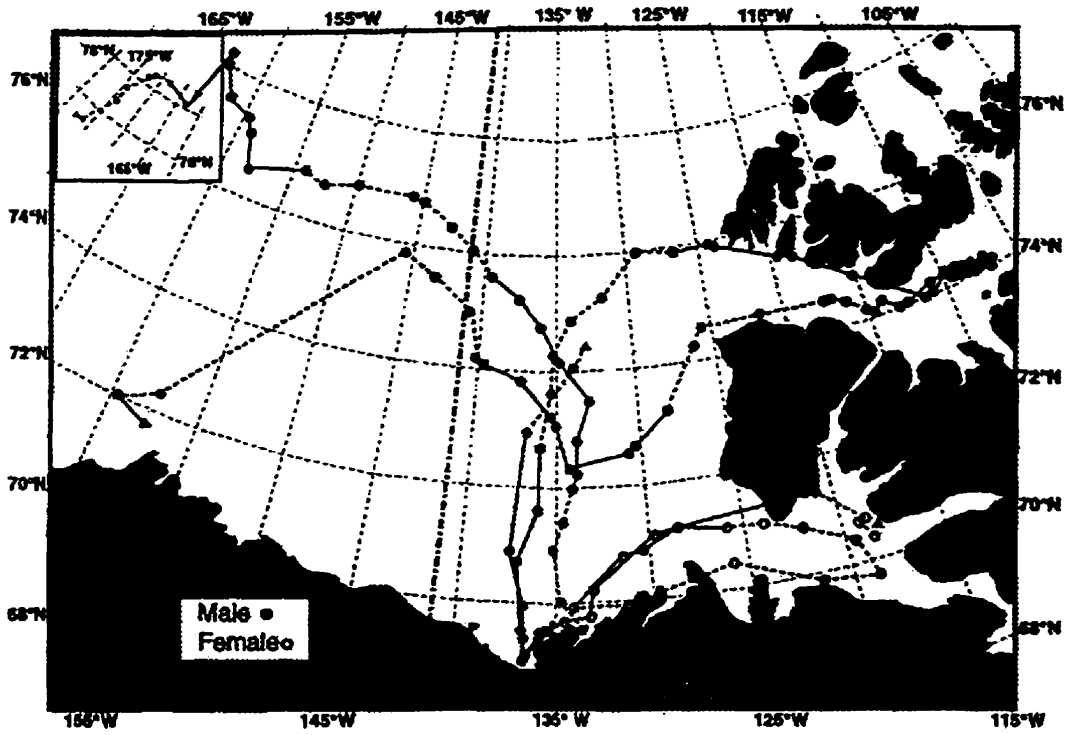


Figure 3.3 Movements of 4 Beluga Tagged in 1993. (Source: Richard *et al.* 1997).

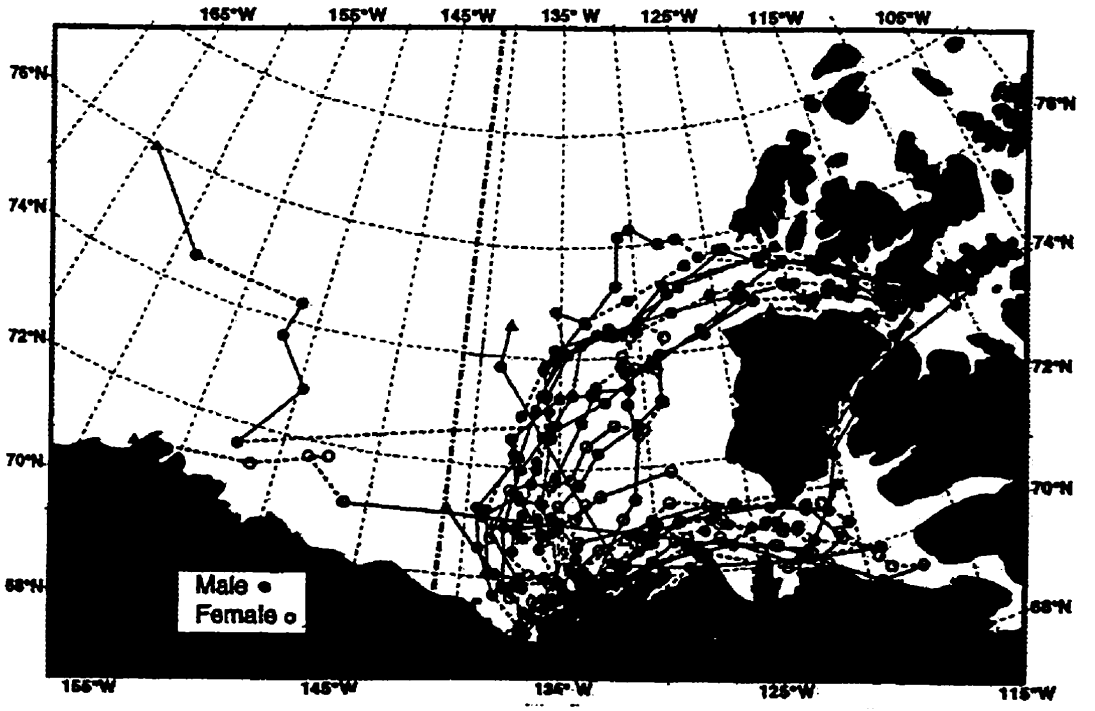


Figure 3.4 Movements of 20 Beluga Tagged in 1995. (Source: Richard *et al.* 1997).

During fall migration, the whales do not re-enter Kugmallit Bay and are generally in the Shingle Point area by the end of August. Traveling back to their wintering habitat usually takes place through the offshore waters. By November and December, the beluga have returned to their wintering habitat in the Bering Sea and do not leave until the month of April (Finley *et al.* 1987). By the time the beluga finish their round trip from the Bering to the Beaufort Sea, they have traveled 5000 km (Finley *et al.* 1987).

3.3 Summary

Many "protection" documents have been produced through the years culminating in the BSBMP. The BSBMP was developed by the community for the community. In addition, protecting the beluga harvest, which is very important to the Inuvialuit, is a central theme throughout the BSBMP (FJMC 1997). The primary weakness that the research supported is that neither the BSBMP nor the community conservation plans are legislated. As a result, beluga management could be compromised, just as caribou grounds could be compromised in Paulatuk, for example (Alan Fehr, *pers. comm.* June 24, 1998). The importance of caribou grounds was noted in the Paulatuk community conservation plan (Community of Paulatuk 1990) and a national park was considered the best option for protecting calving grounds. A national park was subsequently formed that includes the calving grounds. When mining activities were proposed next to the calving grounds, industry, the community of Paulatuk, and the Inuvialuit Regional Corporation were in favour of changing the park boundary, to exclude the area with mineral potential. This was contrary to the Paulatuk conservation plan. This example demonstrates the power and influence that industry possesses, and supports the need for a stronger, legislated mechanism in the ISR for beluga management.

CHAPTER 4: COMMUNITY PERSPECTIVE ON BELUGA MANAGEMENT

* * * * *

4.1 Introduction

This section is based on fieldwork conducted in the ISR between June 20 and July 23, 1997. The researcher visited the communities of Aklavik, Inuvik and Tuktoyaktuk as well as hunting camps located at East Whitefish Station, Hendrickson Island, Running River and Shingle Point (Figure 1.4). The concerns addressed in conversations between the researcher and the local people appear in this chapter. These concerns included contaminants, economic development, harassment of beluga and of Inuvialuit, and the importance of the beluga hunt to the Inuvialuit.

4.2 Contaminants

One of the predominant concerns discussed by numerous people was the issue of contaminants, such as PCBs. Contaminants in beluga are a particular concern in the ISR as the Inuvialuit consider beluga to be an important staple in their diet (FJMC meeting, June 20, 1997; Harry Elias, *pers. comm.*, June 30, 1997; Frank Pokiak, *pers. comm.*, July 11, 1997; Joe Panaktalok, *pers. comm.*, July 14, 1997; Danny A. Gordon, *pers. comm.*, July 19, 1997). The rates of cancer in the ISR have been increasing and many are questioning whether or not this increase is linked to their diet. Jean Gruben (*pers. comm.*, July 11, 1997) believes that some people are eating less beluga due to such concerns with contaminants.

In 1996, the second Beaufort Sea Beluga Workshop was held in Inuvik. Presentations were made regarding the health of the Beaufort Sea beluga. David St. Aubin of the Mystic Marinelife Aquarium in Mystic, Connecticut compared the red and white blood cell counts with other stocks. The Beaufort Sea beluga had lower white blood cell counts and high red blood cell counts. Thus the stock did not have serious infections and had a great capacity for carrying oxygen (Norton 1997). Don Metner of DFO, Winnipeg, also discussed contaminant levels of the Beaufort Sea beluga. Although PCB levels were found to be 10-20 times lower than in St. Lawrence River beluga, they are still a concern for long-term human consumption. Heavy metal concentrations in the kidney and liver were also found to be elevated (Government of Canada 1996). Mercury levels though were lowest in the muktuk.

Abandoned distant early warning (DEW) line sites were also mentioned on a couple of occasions (William Day, *pers. comm.*, June 30, 1997; Danny A. Gordon, *pers. comm.*, July 19, 1997) as having the potential to impact the beluga and ultimately the harvest. When the DEW line sites were completed in 1957, their impact on the environment was not known (Government of Canada 1996). By 1963, every other DEW line site was abandoned. By 1985, several contaminants were found at the decommissioned sites with PCBs being of most concern. DIAND is now responsible for cleaning up 21 of the sites. The other sites were cleaned up when they were converted from DEW line sites to North Warning System sites (Government of Canada 1996).

While the source of Arctic contamination can be local, such as from DEW line sites, mines and garbage dumps, the majority of inputs are from other parts of the world (Government of Canada 1996; DIAND 1997). Three groups of contaminants are of

greatest concern. These are persistent organic pollutants such as organochlorines, heavy metals such as mercury, cadmium, and lead, and radionuclides (Government of Canada 1996; DIAND 1997). The main sources of transport are atmospheric. The contaminant load that has been found thus far does not pose a direct threat to humans (DIAND 1997). There have been "no recorded changes in the physiology, behaviour, or community structure of Arctic fish or wildlife associated with current contaminant levels. In humans, no significant clinical health effects have been found" (Government of Canada 1996:9-1). However, there is slight concern with long-term consumption of marine mammals especially by women in their childbearing years. This is because the contaminant load can be passed on to their fetus affecting their child's development (Government of Canada 1996).

Legislation currently exists to protect areas from contamination under sections 34 and 36 of the *Fisheries Act* (1985) and under sections 66-77 of CEPA (1985). While Canadian legislation exists to safeguard against dumping of deleterious material into the water, most sources of contaminants are global. As a result, a proposed MPA or MCA will likely not increase the level of protection afforded to the Inuvialuit from contaminants.

4.3 Economic Development

When speaking with the Inuvialuit, it was evident that they wanted to find a balance between development activities and the pursuit of their traditional lifestyle. William Day (*pers. comm.*, June 30, 1997) commented that the primary issue about which people are concerned is the tourism industry. Many Inuvialuit believe that tourists should be permitted to visit camps, as long as a local person leads the tour. It is

anticipated that if the tour guide is a local person, he/she will be better able to ascertain whether or not they are interrupting a hunt and can thus stay out of the way (Leonard Harry, *pers. comm.*, June 28, 1997).

There was a lot of interest in oil and gas exploration in the Beaufort Sea – Mackenzie Delta Region in the past with 48 significant oil and gas discoveries having been made since exploration began in the region in the early 1960s (Mackenzie Delta Beaufort Sea Regional Land Use Planning Commission 1991; Dixon *et al.* 1994). Over 2,600 individual trips were made by at least 60 vessels around the Mackenzie estuary and between offshore sites and shore bases during a six-month period in 1985 (Norton and McDonald 1986 as reported by Smiley 1990).

Year-round traffic can affect marine mammals in three ways: contamination, collisions, and interference (Smiley 1990). One of the major concerns is the potential of oil spills. Oil spills could affect marine species in many ways. Direct effects could range from irritated eyes to mortality, and indirect effects could include reduced food availability and reduced reproductive success (Smiley 1990).

Ice breakers may cause panic reactions in beluga (Norton 1997). It was presumed in the past that beluga would be protected from ice breakers because it was postulated that beluga were coastal species. However with recent studies (Richard *et al.* 1996; Richard *et al.* 1997) documenting that beluga spend a lot of time in offshore areas, the effects of interference with icebreakers may be realized. When barge traffic passes through an area frequented by beluga, the whales tend to leave the area and return when the traffic has passed (Finley *et al.* 1990; Byers and Roberts 1995). Finley *et al.* (1990) studied the reactions of beluga to ice-breaking ships in the Canadian High Arctic and

found that beluga were aware of approaching ships when they were over 80 km away. In addition, beluga showed strong avoidance when the ship was 35-50 km away. Finley *et al.* (1990) found that when beluga were stressed by the noise, they tended to take "long dives close to or beneath the ice edge, pod integrity broke down, and diving appeared asynchronous" (p. 97). Since beluga use acoustics for navigation, communication, and feeding, the effects of approaching ice-breakers could "lead to physiological stress and reduced fitness of populations" (Finley *et al.* 1990:116). However, it was postulated that beluga will not be as sensitive to noise as they eventually become accustomed to the sounds (Finley *et al.* 1990).

The potential of oil and gas development has greatly declined in recent years due to the low price of oil on the world market resulting in production not being economically viable (Harry Elias, *pers. comm.*, June 30, 1997). There are differing opinions as to when activity will resume. One perception is that the only potential for oil development in the ISR would occur if there were an oil crisis in the Middle East, resulting in drastic increases in the price of each barrel (Norm Snow, *pers. comm.*, July 14, 1997). If oil and gas activities were to increase in the region, this would result in increased use of the waterways. Thus, the traffic flow through beluga habitat may increase, perhaps affecting beluga and the harvest (Norm Snow, *pers. comm.*, July 14, 1997). When local people were asked whether they had concerns with development activities in the past, they did not cite any cases. Oil and gas companies in the region were apparently quite willing to communicate with the Inuvialuit to address their concerns (Bruce Hanbidge, *pers. comm.*, June 30, 1997).

The EISC and the EIRB use the BSBMP when developments are proposed in the region. The EISC is responsible for examining environmental impacts. The EIRB not only examines the environmental, but also the economic and social aspects, of the development. The EIRB considers the worst case scenario, and asks the proponent what will happen if such a scenario were to occur. More importantly though, the EIRB determines whether or not payment can be made under such a worst case scenario to repair the damage (Linda Graf, *pers. comm.*, June 25, 1997). Although the BSBMP has been in effect since 1991, its strength has not been rigorously tested as there has been a decline in development (Ron Allen, *pers. comm.*, June 23, 1997; Norm Snow, *pers. comm.*, July 14, 1997). Billy Day (*pers. comm.*, July 9, 1997) believes that even though the BSBMP is not set in law, it is nevertheless effective. Lois Harwood (*pers. comm.*, July 22, 1997) stated that the creators of the BSBMP knew that there were no "legal teeth" with respect to protecting the development activities within the beluga management zones. However, there was always the presumption that the *Oceans Act* (1996) would be passed and that it would afford the necessary protection.

More protection can be established for beluga and their habitat in the ISR through a legislative mechanism such as through MPAs or MCAs. Both MPAs and MCAs allow regions to be zoned with varying levels of permitted activity. The beluga management zones established under the BSBMP may be used as a guideline.

4.4 Harassment of Beluga and of Inuvialuit

There have not been any serious issues with individuals trying to prevent the Inuvialuit from hunting in recent years (Ron Allen, *pers. comm.*, June 23, 1997). Rather, harassment has been associated with low-level flights, which are generally tourism

companies. Such flights are reported to cover areas frequented by beluga as well as over the traditional hunting camps. Issues of harassment, such as tourist boats following whales too closely, can be dealt with by citing s. 7 of the *Marine Mammal Regulations* (1993) to the offender. In order to stop low level flights, the Inuvialuit have to record the date, time and the plane number. In addition, the accuser will have to be willing to go to court regarding the matter. Many though do not want to afford the time (Judith Venaas, *pers. comm.*, July 23, 1997). Some individuals also complained of tourists visiting the camps wishing to take pictures. The camp owners consider this behaviour to be very intrusive (Bobby Gruben, *pers. comm.*, July 11, 1997). Others find that taking pictures would not be a problem as long as the pictures are not used against the Inuvialuit (Jean Gruben, *pers. comm.*, July 11, 1997). It appears that finding a happy medium for this particular situation will be very difficult. A possible solution to this problem is education. If tourists are made aware of the reasons why the local people do not want pictures to be taken, they may be more willing to comply with the request. After all, one of the primary reasons for visiting a new place is to learn culture and customs.

With the picture-taking issue under control through education, and with the boats following too closely covered under the *Marine Mammal Regulations* (1993), disturbance caused by low level flights is the concern that remains. It was previously stated in section 2.5 that the *Aeronautics Act* (1976) can be used to establish aerial routes (s.4.2.f), to classify the use of airspace and the control and use of the aerial route (s.4.9.k), and to prohibit the use of airspace (s.4.9.l). There is no mention whether MPAs legislated through the *Oceans Act* (1996) include airspace. However, if Bill C-48 (1998) becomes an Act to establish MCAs, then s.16.4 states that regulations can be made to "control the

flight of aircraft to prevent danger or disturbances to wildlife, and respecting the takeoff, landing and taxiing of aircraft."

4.5 Importance of the Beluga Hunt to the Inuvialuit

Prior to the arrival of the Europeans in the 19th century, the Inuvialuit were self-sufficient people who were highly dependent upon the land and the sea for survival (Task Force on Northern Conservation 1984; Mackenzie Delta Beaufort Sea Regional Land Use Planning Commission 1991). Since whales entered the Mackenzie Delta every year, the Inuvialuit became quite reliant on the beluga harvest (Friesen and Arnold 1995). Men learned to hunt beluga from their male relatives, while women learned to process whales from their female relatives (Byers and Roberts 1995). By continuing to harvest whales, values, traditions, and knowledge have been retained and passed down through the generations. The relationship that the Inuvialuit have with the "land" and with the animals thus continues.

The beluga is the most important marine mammal for the Inuvialuit of Inuvik, Aklavik, Tuktoyaktuk, and perhaps Paulatuk (FJMC N.D.). Consequently, the FJMC's aim is to gather as much information as possible about beluga in order to properly manage the stock in the long term (FJMC N.D.; FJMC 1987; FJMC 1992; FJMC 1995). Projects such as aerial surveys (Harwood *et al.* 1996) and satellite tagging (Richard *et al.* 1996; Richard *et al.* 1997) to trace beluga movements have greatly contributed to this knowledge base. Throughout the years, there have also been harvest studies conducted in order to determine the number of beluga harvested each year.

Hunting practices have changed throughout the years. In the past, community cooperation was necessary for capturing whales, as several small boats were used to drive

the whales into shallow waters where they were beached and speared (Byers and Roberts 1995; Friesen and Arnold 1995). Many whales could be caught in this manner. The whales were then processed and shared among members of the community. With different technologies used today, including speedboats and rifles, there is a decreased need to work together as a community to ensure a successful harvest. This has led to a more independent nature of the hunt (Byers and Roberts 1995; Leonard Harry, *pers. comm.* June 28, 1997). However, many continue to whale today. Byers and Roberts (1995) reported that there is a high rate of participation in beluga hunting in the communities of Inuvik, Aklavik and Tuktoyaktuk. Seventy five percent of Inuvialuit hunters interviewed in 1993 said that they hunted beluga that year, and all hunters interviewed planned to hunt beluga the following year (Byers and Roberts 1995).

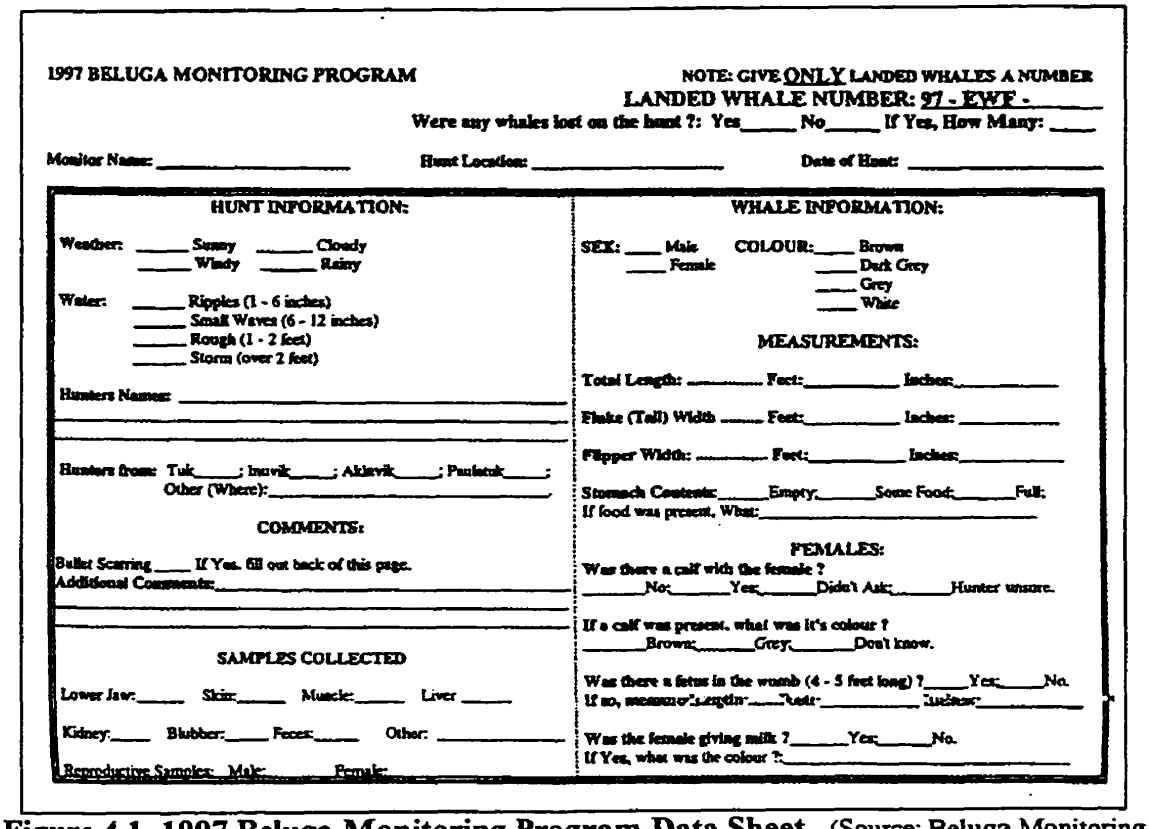
In the summer of 1997, when the researcher was in the ISR, most families left for the hunting camps around the first of July. The normal mode of transportation was by boat. All of the necessary supplies that were required for the stay were packed up on the boat. The length of stay at the camp varied by family and community. The duration was usually shortest for those from Tuktoyaktuk because the community is located very close to the whales, allowing the hunters to hunt their whales and return to the community sooner. This may be beneficial to those who are working during the week, allowing them the opportunity to continue the traditional harvest. The hunting camps of those who live in Aklavik or Inuvik are located further from the communities. The trip from Inuvik or Aklavik to their whaling camps generally lasted three to five hours depending upon the weather and the load on the boat. As a result, the stay at the camp was for a longer duration.

When a whale is located, it is harpooned. A whale should be harpooned prior to being shot, according to hunting bylaws, in order to prevent sinking. When a whale is shot it is generally tied, by the tail, to the boat. It is then brought to shore. Those at the camp are usually equipped with binoculars and can see when the boat is returning. Once the boat is at the camp, those at the camp come to the beach to pull the whale to shore. The whale is quite heavy. Thus the more people that are present, the quicker the whale can be towed to shore.

Before the whale can be cut up, the beluga monitor has to be contacted and the necessary measurements taken. Such measurements include the length of the whale, its gender, whether or not it is pregnant, and the lower jawbone for testing (Figure 4.1).

The beluga skin and a layer of blubber are cut off first (Figure 4.2). They are cut into small, manageable pieces. The pieces are rinsed in the water and taken to shore. The muktuk and meat are placed either on rocks or on driftwood for a few days. The meat (mipku) is then cut in sections and also placed on driftwood (Figure 4.3). After a few days (or less, depending upon weather conditions), a layer of blubber is removed from the muktuk and placed in containers. The blubber is later used for cooking purposes and also for storing the muktuk throughout the winter. The muktuk is cut into zigzagged pieces, rinsed of the blood, and hung on driftwood to drain fluids and dry the muktuk (Figure 4.4). The mipku is also cut into very thin slices and hung on the driftwood. The mipku is generally smoked while the muktuk is boiled in large containers. The muktuk was then placed on driftwood again to drain water (Figure 4.5). To store muktuk, it is placed in containers with alternating rows of blubber and muktuk. The containers must

be kept out of the sun and stored in a cool place. If properly stored, the community may enjoy muktuk and mipku throughout the winter months.



1997 BELUGA MONITORING PROGRAM

NOTE: GIVE ONLY LANDED WHALES A NUMBER

LANDED WHALE NUMBER: 97 - EWF - _____

Were any whales lost on the hunt ?: Yes_____ No_____ If Yes, How Many: ____

Monitor Name: _____ Hunt Location: _____ Date of Hunt: _____

HUNT INFORMATION:

Weather: _____ Sunny _____ Cloudy
_____ Windy _____ Rainy

Water: _____ Ripples (1 - 6 inches)
_____ Small Waves (6 - 12 inches)
_____ Rough (1 - 2 feet)
_____ Storm (over 2 feet)

Hunters Names: _____

Hunters from: Tuk_____; Inuvik_____; Aklavik_____; Paulatuk_____;
Other (Where):_____

COMMENTS:

Bullet Scarring ____ If Yes, fill out back of this page.
Additional Comments:_____

SAMPLES COLLECTED

Lower Jaw:_____ Skin:_____ Muscle:_____ Liver _____

Kidney:____ Blubber:_____ Feces:_____ Other: _____

Reproductive Samples: Male:_____ Female:_____

WHALE INFORMATION:

SEX: ____ Male ____ Female

COLOUR:____ Brown
____ Dark Grey
____ Grey
____ White

MEASUREMENTS:

Total Length: _____ Feet:_____ Inches:_____

Fluke (Tail) Width _____ Feet:_____ Inches: _____

Flipper Width: _____ Feet:_____ Inches:_____

Stomach Contents:_____Empty;_____Some Food;_____Full;
If food was present, What:_____

FEMALES:

Was there a calf with the female ?
_____No;_____Yes;_____Didn't Ask;_____Hunter unsure.

If a calf was present, what was it's colour ?
_____Brown;_____Grey;_____Don't know.

Was there a fetus in the womb (4 - 5 feet long) ?_____Yes;_____No.
If so, measure Length:_____Teeth:_____Sex:_____

Was the female giving milk ?_____Yes;_____No.
If Yes, what was the colour ?:_____

Figure 4.1 1997 Beluga Monitoring Program Data Sheet. (Source: Beluga Monitoring Program 1997).

Figure 4.2 Removing Muktuk from the Beluga.

Figure 4.3 Drying Muktuk and Meat on the Driftwood.

Figure 4.4 Hanging Muktuk.

Figure 4.5 Drying Cooked Muktuk on Driftwood.

Leonard Harry (*pers. comm.*, June 28, 1997) and William Day (*pers. comm.*, June 30, 1997) described both the beluga and the harvest as very important. The importance of whale hunting first became evident to the researcher when she stayed at the Binder camp, located next to East Whitefish station, for a few days. The weather was not cooperating in early July, being quite windy and thus not suitable for hunting. Just before midnight on July 7th, 1997, the hunters at the Binder camp decided that the wind had calmed down enough to go hunting. The preparation of the necessary gear and food for the hunt was an effort carried out by everyone at the camp. Food and warm drinks were placed on the boat in case the hunters were out for a long time. One never knows whether the hunt will be completed in an hour or in several hours. On this particular occasion though, Richard Binder could not hunt with his partner of 10 years (Harem Oscar) as he was not feeling well. He was visibly saddened by this fact. While the men were off hunting, Richard spoke about the importance of whaling, describing the moment when a young boy captures his first whale as a type of passage into manhood (*pers. comm.*, July 7, 1997). Although Richard likes to hunt, he does not want to force his children into hunting. His first son, Richard Jr., captured his first whale at the age of 11. His youngest son, Ryan, asked to take a shot at a whale this past season and his father said that he would let him take one shot.

While the men were out in pursuit of a whale, the women (Ellen Binder, Olive Binder, and Ruth Pulk, *pers. comm.*, July 7 1997) began to talk about their favourite beluga family recipes. They were also discussing processing of the whale once it was brought to shore. Although the whale was traditionally hunted by men and processed by women, this has changed. Men are becoming more involved in the processing of the

whale too. This was first observed at the Binder camp and was also observed at the other camps that the researcher visited.

The children that remained back at the camp were quite excited as they wanted to see the first whale capture of the season. They were all running around and playing in the middle of the night waiting for hours until the men returned. Unfortunately this time, they returned empty handed.

4.5.1 Nutritional Importance

A study was conducted in 1991 in Aklavik, NWT on Inuvialuit food use and food preferences (Wein and Freeman 1992). Eighty-nine percent of the households surveyed had a hunter or trapper, and 20% of the households reported hunting and trapping as a primary occupation. This alone illustrates the importance of hunting and trapping to the community. Of all of the traditional foods listed, beluga was second in choice after caribou, with 90% of Inuvialuit families reporting eating beluga (Wein and Freeman 1992).

The harvest provides a valuable source of nutrients for the Inuvialuit. The parts of the beluga that are predominantly eaten are the blubber, the skin and the meat, all of which are high in protein. Beluga meat is also an "excellent source of iron, and blubber is a good source of omega-3 fatty acids, which help prevent heart disease and may also help prevent cancer" (Norton 1997:41). Native populations that have lived off marine mammals and fish in the past did not have incidences of heart disease. In western societies though, heart disease is a leading cause of death. With the introduction of western diets into native populations, the incidence of heart disease has increased. Diabetes and obesity have also increased (Egede 1995). "For us to be healthy, we must

have our foods, recognizing the benefits they bring. Contaminants do not affect our souls. Avoiding our foods from fear does. We must be careful to protect our spiritual legacy that has been passed down to us, and to continue to respect the benefits that our foods give to us" (Egede 1995).

The subsistence harvest not only provides an excellent source of nutrients but also increases community cohesiveness and family relations, sharing, and social, physical, spiritual and cultural well-being (Freeman 1993; Government of Canada 1996; DIAND 1997). As elders become too old to hunt for themselves, friends and family ensure that they bring back muktuk and mipku so that they can survive through the winter eating traditional foods. All of these traits are lost when purchasing store-bought foods. "In subsistence societies it is the relations among people that wildlife harvesting generates and sustains, and not the relations between people and resources, that are of paramount importance" (Freeman 1993:245-6).

4.6 Loss of Traditional Values and Practices

The importance of passing on the traditional knowledge associated with whaling to future generations was noted on several occasions. In an effort to prevent the loss of this important information, many local people are trying to create a written history before the elders who have accumulated an oral history pass on. Leonard Harry (*pers. comm.*, June 28, 1997), for example, commented that he is currently working on transcribing information that has been written in his native tongue. Such a task is particularly important in the Western Arctic where the native language is rapidly being lost (Ismael Alunik, *pers. comm.*, June 30, 1997).

There are also concerns that the traditional culture is being lost in that younger generations are no longer eating country foods such as beluga. Many local people spoke of the younger generation's desire to eat junk food rather than the traditional diets that their parents and grandparents consume. However, others stated that their children and grandchildren continue to eat traditional foods as that is all they keep in the house (Frank Pokiak, *pers. comm.*, July 11, 1997).

With the arrival of a wage economy, full time hunters began to seek employment. This affected the connection that the people had with the land in that now many are part-time hunters. However, to be effective hunters takes a lot of training and practice. One cannot read a "how to" manual and expect to be a good hunter. Good hunting practices come from observing others in the field and asking questions from experienced people. One cannot learn from a book or classroom setting how to follow whales in muddy waters by the shape of the wave that is created when beluga swim in the water. This skill comes from years of observation (Leonard Harry, *pers. comm.*, June 28, 1997).

The hunt was also observed as being less efficient than in the past. This is because hunters used to hunt in large groups driving whales into shallow waters. Today, with improved technology, people no longer depend upon one another to hunt whales. The loss of community cohesiveness that existed in the past has created a feeling of isolation among some hunters.

4.7 Are There Enough Rules?

One of the issues that the researcher raised was whether there were enough rules currently existing to protect beluga, the habitat and the harvest. Leonard Harry (*pers. comm.*, June 28, 1997) thought that further rules were needed in order to ensure the

beluga's continued existence, thus enabling future generations to partake in the hunting experience. Leonard felt that rules were needed because there has been a loss of respect for the whales. For example, when he was a child, he was not allowed to throw rocks into the water when the whales were in the area. Once the hunt was completed though, this was permitted. Leonard strongly believes in order for the established rules to be effective, they need to be created by the Inuvialuit themselves. It is futile for those who are not directly involved in a particular situation to be given the responsibility of establishing rules when they are not aware of the consequences that such rules may have.

Joe Panaktalok (*pers. comm.*, July 14, 1997) believes that more rules are needed to deal with low flying planes and with the tourists who try to visit Hendrickson Island (a no-tourist zone). Joe is not an enforcement officer and would thus like to see more enforcement, referring to DFO. However, DFO funds have declined in recent years. Ruth Pulk (*pers. comm.*, July 8, 1997) spoke of the increasing rules in recent years but understands that they are needed in part because hunters have had problems with environmental activists. Ruth said that the livelihood of Inuvialuit is linked with the hunt and summers would not be the same if her family had to go to the camps without the presence of whales. Norm Snow (*pers. comm.*, July 14, 1997) believes that there are enough rules existing in the region. Those aspects that are not controlled are the ones that are difficult to control such as mischief (for example, environmental activists and low-level flying).

William Day (*pers. comm.*, June 30, 1997), Ester McLeod (*pers. comm.*, July 2, 1997), Herbert Felix and Paul Voudrack (*pers. comm.*, July 11, 1997) all stated that there appeared to be enough existing rules to provide the necessary protection for the whales.

In fact, Paul Voudrack was adamant that there were no problems in his community of Tuktoyaktuk and that a marine protection mechanism was not required. Frank Pokiak (*pers. comm.*, July 11, 1997) believes that there are enough rules as the BSBMP covers all Inuvialuit concerns. His only concern was to ensure that tourism remain under control.

John Roland (*pers. comm.*, July 15, 1997) thinks that there are too many rules and cannot understand why a local person is not permitted to take a tourist out while hunting. John did not foresee any problems with tourism or with low flying planes. Jimmy Gordon (*pers. comm.*, July 22, 1997) also believes that local tour operators should be able to take tourists to see the whales. His suggestion was to allow tourists in the region after mid-July when most hunters would have already captured their whales.

4.8 Lack of Enforcement Capabilities

One issue that predominated many conversations was the lack of enforcement capabilities associated with existing protection mechanisms such as the BSBMP. Enforcement capabilities in such a large area are quite limited though, because many officers would be required to monitor the situation at a great cost. Billy Day (*pers. comm.*, July 15, 1997) noted a few years ago, that DFO officers made their presence known at the hunting camps. This was to ensure that beluga were not being wasted and also to ensure that there were no external influences such as tourists and environmental activists. Although further enforcement is needed according to the Inuvialuit, there is fear that the excess regulations will somehow translate into the elimination of their right to harvest beluga. This right though is guaranteed through the *Inuvialuit Final Agreement* (1984), subject to conservation.

William Day (*pers. comm.*, June 30, 1997) believes that a marine protection mechanism would be beneficial in the area. This is in order to ensure that the beluga, their habitat and the harvest are protected prior to the increase of development once again in the region. Larry Gordon (*pers. comm.*, June 30, 1997) also believes that a marine protection mechanism would be beneficial. This is because the environment is fragile in the Arctic and is less resilient to anthropogenic influences. He stated this referring to the diesel spill in Tuktoyaktuk that same month. Larry Gordon believes that if a marine protection mechanism is to work in the region, then the marine protection mechanism must be accompanied with education programs.

Norm Snow (*pers. comm.*, July 14, 1997) mentioned a very interesting and valid point in our discussions. He noted that people's perspectives of marine protection mechanism vary in that one may assume that they are created to protect the beluga or their habitat, while others will want to protect the harvest. Thus, the reason for designating the marine protection mechanism will have to be clearly stated from the onset.

Billy Archie (*pers. comm.*, July 22, 1997) stated that there is a lot of management in the ISR. The issue however is that the species upon which the Inuvialuit depend are transboundary. Thus a marine protection mechanism within the ISR will only protect beluga while in the region. What is required is continued negotiation with all of the countries where beluga migrates.

Any mechanism that will be implemented in the ISR will have to be accepted by the Inuvialuit. Since many stakeholders including HTCs, EIRB, EISC, the petroleum industry and DFO created the BSBMP, the plan that should be the basis for the marine

protection mechanism. However, since the BSBMP zones were created over a decade ago, new information that has been discovered will likely result in altered zones.

The protection mechanisms identified in chapter 3, including the BSBMP, all noted the importance of the renewable harvest. For example, one of the two goals of the BSBMP was "to provide for optimum sustainable harvest of beluga by Inuvialuit" (FJMC 1997:3). While the subsistence harvest is protected through the IFA (1984) and the *Constitution Act* (1982), current marine legislation for establishing marine protection mechanisms do not recognize the importance of the hunt. Only the *Parks Act* (1985) and the proposed MCA Act consider establishing marine protection mechanisms for cultural reasons. Perhaps such recognition though is not necessary considering that the subsistence harvest is protected through existing federal legislation. Protecting beluga and the habitat may be all that is necessary. By protecting the resource, the cultural heritage will be allowed to continue.

4.9 Summary

Contaminants, such as PCBs, were a concern mentioned on numerous occasions while the researcher was in the ISR (section 4.2). Contaminants are quite difficult to control, as they tend to originate from local and global sources (Government of Canada 1996; DIAND 1997). Issues concerning contaminants are covered under several pieces of legislation including the *Fisheries Act* (1985), the *Arctic Waters Pollution Prevention Act* (1985) and CEPA (1985). Establishing a marine protection mechanism in the ISR will not necessarily increase the level of protection, particularly against contaminants that do not originate locally. It is thus the researcher's opinion that further legislation may not

necessarily decrease the contaminant load into ISR waters. However, this is not to imply the contaminant load should not be monitored.

The beluga hunt is very important to the Inuvialuit and is anticipated all year. The right to harvest is protected, subject to conservation, through the IFA (DIAND 1984). The communities of Inuvik, Aklavik, and Tuktoyaktuk support the beluga management zones, which were established to control development activities (section 3.2). These communities assigned most of the BSBMP zones as category "c" lands requiring seasonal protection (Table 3.2). This includes BSBMP zone 1a (Kugmallit Bay site #84; Mackenzie and Shallow Bays site #86; Kendall Island site #85 and #88), and BSBMP zone 2 (Mackenzie shelf waters shallower than 20 m). One of the suggestions was to protect whales from development through legal enforcement offered through the *Fisheries Act* (1985) or *Oceans Act* (1996), especially for zone 1a areas identified by FJMC (sites 84, 85, 86, 88, 92). A shipping channel through the region (sites #86 and #92) was also recommended as was restricting oil and gas activities from break-up to August 15. Currently the Central Mackenzie estuary (site #91) and Shallow Bay (site #92) are classified as "e" lands. "E" lands provide the highest degree of non-legal protection (Mackenzie Delta Beaufort Sea Regional Land Use Planning Commission 1991). The communities wish to reclassify these sites to "d" lands. Such a change will thus permit development to take place on lands where resources need protection throughout the year.

It is stated in the BSBMP that oil and gas companies should not be allowed to explore, produce, construct, or operate a facility in zone 1a. If such a zone is classified as 'd' land, then precautions are taken by the Canadian Petroleum Association by avoiding

important areas such as, harvesting areas, cultural areas, and critical wildlife habitat (Table 2.2). The extent though to which such areas would be avoided is not clear. On class 'c' lands, the Canadian Petroleum Association identifies seasonal restrictions that adhere to the BSBMP. Although guidelines for industrial activity were highlighted in the BSBMP, (Table 3.3) it was stated in sections 1.1, 3.2, and 5.3 that the BSBMP is not legislated. This may lead to the same situation as occurred in Paulatuk when development activities increase. That is, rules may change to accommodate industrial activities. This emphasizes the need for a legislative mechanism, which would be more rigorous in protecting the resource.

Industrial activities can include oil and gas exploration, which may necessitate icebreakers. With increasing industrial activity will come increasing shipping activity. It was noted in section 4.3 that beluga tend to avoid areas of high activity and noise. Negative impacts of industrial activity are controlled through the roles of the EISC and EIRB. Thus, "alteration of protected areas will not be supported except where in depth review and analysis shall convince the WMAC, FJMC, IGC and local HTCs that benefits from development outweigh long term renewable resource concerns and community values" (WMAC-NWT and FJMC 1988:12).

Since the Inuvialuit favour development, a MCA would not be suitable as industrial activities are prohibited from such areas (section 2.2). However, development activities are permitted within MPAs as long as they do not have any detrimental effects on beluga or their habitat (section 2.4).

Some residents do not believe that tourists should be permitted near the camps for fear that the information or pictures gathered would be used against them, impacting their

livelihood (section 4.4). However, many local people are not against tourism as it brings a source of much needed revenue to the area. Most residents of the ISR agree that public access should be restricted to the harvesting areas during the month of July, as this is prime beluga harvesting season. Tourism guidelines have been composed to try to "alert the tourism sector about the desired levels and types of tourist activity" (FJMC 1993:16). The guidelines can be enforced through a marine protection mechanism. Since all Canadian marine protection mechanisms incorporate zoning or require permits to conduct activities, undesirable tourist activity should be controlled (section 2.6).

Related to tourism is the issue of low-flying aircraft. Many local residents were particularly annoyed with small charter aircraft flying above the hunting camps (section 4.4). Although tourism guidelines (section 3.2) were drafted in part to deal with this issue, the guidelines are not being followed by all because they are not being enforced. Based on the field research in the summer of 1997, enforcement is currently an issue of contention among the Inuvialuit (section 4.6). In particular, the Inuvialuit felt that there was not enough enforcement of the tourism guidelines. Pilots are requested to maintain their aircraft at a minimum altitude of 2500 ft over zone's 1a and 1b. They are also requested to maintain a minimum altitude of 2000 ft over zone 2 lands unless taking off or landing. The guidelines may be enforceable if air routes are established under the *Aeronautics Act* (1976). Current marine protection mechanisms do not include air space. However, if Bill C-48 is legislated, the Minister may establish air routes (Table 2.5).

The tourism guidelines also contain rules regarding harassment of marine species, such as beluga. Since such guidelines also appear in the *Marine Mammal Regulations* (1993), beluga can be protected from harassment. Enforcing such regulations is likely to

be difficult, especially with increased cutbacks to federal programs. A better approach is likely to involve educating the public and tour operators as to what is proper procedure.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

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5.1 Introduction

This study was initiated in cooperation with DFO and the FJMC in February 1997. Throughout the last four chapters, various protection mechanisms for beluga have been evaluated. In this chapter, the researcher returns to the primary purpose of the research as well as the objectives. Recall that the primary purpose of the research was to assess the effectiveness of alternative marine protection mechanisms relative to community preferences for beluga management in the ISR. The first objective was to document community preferences with regard to beluga management in the ISR. The second objective was to assess the effectiveness of the BSBMP for beluga management. The third objective was to identify, review and evaluate the various alternative legislative mechanisms for beluga management. The fourth objective was to evaluate the appropriateness of the different protection mechanisms for beluga management issues in the ISR. The final objective was to draw conclusions and make recommendations concerning the various protection mechanisms reviewed relative to protection of the beluga, their habitat, and the subsistence harvest in the ISR.

5.2 Conclusions

The Beaufort Sea beluga are very important to the Inuvialuit in the ISR as they continue to harvest beluga each summer. Even with the forces of the whaling and oil industries in the past, and with the introduction of a wage economy, the subsistence harvest continues to be an important tradition. Although the wage economy has changed

the way in which whales are harvested (i.e. guns, motorized boats), the harvest itself is the important factor that has not changed.

There are many different approaches, both legally enforceable (chapter 2) and not legally enforceable (chapter 3), to ensuring that beluga are protected from detrimental effects. The BSBMP is one such approach. The BSBMP though, is not legislated and its efficacy in protecting beluga, their habitat and the harvest has not been tested since its implementation, due to a decline in development activities in the North. Currently, development projects are screened through the EISC. If the EISC deems that there may be negative effects associated with the project, then it is passed on to the EIRB for further investigation. Such co-management committees do tend to use the BSBMP.

Three federal departments were cited as having programs to establish marine protection mechanisms. Since this project is specifically considering beluga within the ISR, the approach used by DOE was deemed inappropriate in this situation. While MWAs can be established to the exclusive economic zone, emphasis and specialty of DOE is on migratory birds. Five MBSs were established in the ISR in 1961. One of these sites, Kendall Island, is a popular beluga harvesting region. The areas protected by these migratory bird sanctuaries can be controlled to ensure that permits are not issued for activities occurring on these lands that may affect beluga habitat.

Two more appropriate measures to marine protection exist under DCH and DFO. The *National Parks Act* (1985) under DCH was amended in 1988 to include marine regions. The intention though was to create a separate piece of legislation for marine conservation areas. On June 11, 1998, Bill C-48 – an act concerning marine conservation areas - passed the first reading in the House of Commons. The proposed act has many

advantages (Table 2.5) including the ability to control flight of aircraft to prevent danger or disturbance to wildlife; protection of cultural resources; management of renewable resource harvesting activities and; restricting or prohibiting activities within any zone. One of the disadvantages is that seabed mining and oil and gas extraction are prohibited. Another disadvantage of either the existing or proposed act under DCH is that the Act focuses on representativeness of Canada's marine regions. Three marine regions within the nine arctic marine regions identified by DCH are within the study area (Figure 1.2). These are the Arctic Basin, the Beaufort Sea, and the Arctic Archipelago. Three representative marine areas have already been identified for the Beaufort Sea Marine Region (Section 2.2). Site selection will most likely occur from these three regions. However, none of these regions will protect commonly used beluga habitat.

Regarding enforcement issues, Bill C-48 under DCH is similar to the *Oceans Act* (1996). However, the *National Parks Act* (1985) is not as strong with respect to enforcement. Fines are only up to $2000 unless one is poaching a threatened or protected species under government regulations. However, beluga are neither classified as threatened nor protected within the ISR. In addition, there is no mention of fines for subsequent, continuing, or additional fines under the *National Parks Act* (1985). Since the proposed MCA Act is not yet law, the researcher cannot evaluate it as being in place. Changes may still be made to the Bill or it may not pass to become law, therefore any discussion about the MCA Act is hypothetical.

One of the advantages of the *Oceans Act* (1996) is that it was created in part to provide a mechanism for establishing marine areas. This is unlike the *National Parks Act* (1985) and the *Canada Wildlife Act* (1994) which were created for terrestrial protection

and amended to include marine areas. Fines are also quite stringent under the *Oceans Act* (1996) and more comprehensive compared with other Acts. While the issue of conducting research was noted in the *Canada Wildlife Act* (1994), the *Oceans Act* (1996) and Bill C-48, the *Oceans Act* (1996) was more specific. An advantage of the *Oceans Act* (1996) is that the conditions for establishing MPAs are more general. Thus, MPAs may be created to protect commercial and non-commercial fishery resources, unique habitats, etc. Beluga and their habitat may be protected under an MPA. Though protecting the traditional harvest is not viewed as a reason for establishing MPAs under the *Oceans Act* (1996), subsistence harvesting is protected through other pieces of legislation such as the IFA (DIAND 1984) and the *Constitution Act* (1982).

It was stated in sections 1.1 and 4.3 that industrial activities have declined in the ISR in recent years. As a result, "a unique opportunity exists now, because of decreased industrial development pressures, to encourage an informed proactive approach to the sustained use of arctic marine resources and to strike a balance between industrial activities, community development, and the pursuit of hunting and fishing" (Snider 1987:11). While several protection mechanisms do currently exist in the region, including the BSBMP, most are not legislated. The BSBMP is currently considered to be effective as the guidelines developed for industry are being used voluntarily. However, one must ask what would occur if industry decided to stop using the guidelines? To ensure that the beluga and their habitat are protected, the researcher recommends a legislated mechanism. As of July 1998, based on current information, the researcher recommends the protection mechanism under the *Oceans Act* (1996).

5.3 Recommendations

This research has resulted in the following five recommendations.

1. Establish shipping corridors for ships that are acceptable to the Inuvialuit. The necessity of such corridors was noted in the Community Conservation Plans and in the BSBMP. It is important to establish such routes prior to the anticipated increase in development activities. Such corridors will help to ensure that there will be minimum physical interference with beluga during the summer months when beluga are in the ISR.

2. Develop air routes for tourism companies and enforce minimum flying altitudes as outlined in the Tourism Guidelines. Some tour companies are currently flying above whaling camps at altitudes that are below those recommended, in order to please their customers.

3. Implement education programs directed at different audiences.
   (a) For example, tour companies have to be informed of the impacts that their activities have on the Inuvialuit as well as potential panic reactions by beluga due to low-level flights. Agreements need to be made to determine when tourism companies are permitted to take tourists whale watching and also to harvesting camps. Currently, tourism activities are not permitted within 1a lands as per the Tourism Guidelines. Such guidelines, which are included in the Tourism Guidelines but not in the *Marine Mammal Regulations* (1993), should be included in MPA regulations.

(b) Create an educational video regarding the beluga, including life history, harvesting and management and distribute it to the tourist information centre and to local libraries and schools. Many people are not familiar with the specifics of the BSBMP, as it has been almost 10 years since it was first developed.

4. Reassess the Beluga Management Zones based on new research such as that conducted by Harwood *et al.* (1996) and Richard *et al.* (1997). Such evidence seems to suggest that the arbitrary zone of 20 m depth that separates zones 1 and 2 should be reviewed because the original zones were based on information that was known in the late 70s and early 1980s.

5. Establish an MPA under the *Oceans Act* (1996) because of its flexibility and DFO's expertise in dealing with marine mammals. Establishing an MPA will fulfill the objectives of the BSBMP while allowing economic development. Development activities will be permitted as long as they do not affect beluga or their habitat. The MPA should incorporate the first four recommendations.

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PERSONAL COMMUNICATION

* * * * *

Contact Name	Date	Location	Position
Ron Allen	June 23, 1997	Inuvik	Manager, DFO Inuvik
Ishmael Alunik	June 30, 1997	Inuvik	Inuvik elder, hunter and trapper
Billy Archie	July 22, 1997	Inuvik	Member, WMAC(North Slope)
Ellen Binder	July 6-8, 1997	East Whitefish Station (EWS)	Mother of Richard and Lloyd
Olive Binder	July 6-8, 1997	EWS	Richard's wife
Richard Binder	July 6-8, 1997	Inuvik, EWS	Resource person, IGC
Billy Day	few occasions	Inuvik, EWS	Inuvik hunter and trapper; FJMC member, East Whitefish Station beluga monitor
William Day	June 30, 1997	Inuvik	Inuvik hunter and trapper
Harry Elias	June 30, 1997	Inuvik	Resource person, Inuvik HTC
Alan Fehr	June 24, 1998	Conference call from Winnipeg	Department of Canadian Heritage
Herbert Felix	July 11, 1997	Tuktoyaktuk	Vice-chair, Tuktoyaktuk HTC; IGC member, EIRB member
Danny A. Gordon	July 19, 1997	Shingle Point	Shingle Point beluga monitor
Jimmy Gordon	July 22, 1997	Inuvik	Inuvik elder
Larry Gordon	June 30, 1997	Inuvik	Vice chair, Inuvialuit Community Corporation, educator
Linda Graf	June 25, 1997	Inuvik	Resource person, EISC and EIRB
Bobby & Jean Gruben	July 11, 1997	Tuktoyaktuk	Tuktoyaktuk elder, hunter and trapper
Bruce Hanbidge	few occasions	Inuvik	Resource person, WMAC (NWT)
Leonard Harry	June 28, 1997	Inuvik	Inuvik elder, hunter
Lois Harwood	July 22, 1997	Inuvik	Stock Assessment Biologist,

Contact Name	Date	Location	Position
			DFO, Inuvik
Esther McLeod	July 2, 1997	Inuvik	Inuvik elder, hunter and trapper
Harem Oscar	July 6-8, 1997	EWS	Inuvik hunter and trapper at Binder Camp
Joe Panaktalok	July 14, 1997	Hendrickson Island	Hendrickson Island beluga monitor
Frank Pokiak	July 11, 1997	Tuktoyaktuk	Tuktoyaktuk hunter and trapper, WMAC(NWT) member
Ruth Pulk	July 6-8, 1997	EWS	Friend of the Binder family
Pierre Richard	May 1997	Winnipeg	Research scientist, DFO
John Roland	July 15, 1997	EWS	Inuvik hunter and trapper
Dr. Norman Snow	July 14, 1997	Inuvik	Executive Director, Joint Secretariat
Judith Venaas	July 23, 1997	Inuvik	Manager, Renewable Resources and Economic Development
Paul Voudrack	July 11, 1997	Tuktoyaktuk	Administrator, ILA

APPENDICES

APPENDIX A: GLOSSARY OF TERMS

* * * * *

Aerodrome - "Any area of land, water (including the frozen surface thereof) or other supporting surface used, designed, prepared, equipped or set apart for use either in whole or in part for the arrival, departure, movement or servicing of aircraft and includes any buildings, installations and equipment situated thereon or associated therewith" (*Aeronautics Act* 1976 s. 3(1)).

Beaufort Sea – Mackenzie Delta Region – The region studied by the researcher. This includes the communities of Aklavik, Inuvik, and Tuktoyaktuk, the traditional hunting camps, and the waters used by the beluga.

Beaufort Sea – The sea is made up of two marine regions (Arctic Basin and Beaufort Sea) identified by DCH (1995).

Beaufort Sea Marine Region - One of the nine Arctic marine regions identified by Canadian Heritage (1995). This is also the region that is being researched.

Beluga (*Delphinapterus leucas*) - The beluga is a toothed whale belonging to the *Monodontidae* family. In the Canadian Arctic, the beluga is medium-sized at 4-5m in length and weighing between 540-765 kg (Spencer 1983). Beluga summering in the Beaufort Sea – Mackenzie Delta Region are considered to be part of a larger population that winters in the Bering Sea (FJMC 1993).

Co-management - "A situation in which some or all of the relevant stakeholders in a protected area (PA) are involved in a substantial way in management activities. Specifically, in a collaborative management process, the agency with the jurisdiction over the PA (usually a state agency) develops a partnership with other relevant stakeholders (primarily including local residents and resource users) which specifies and guarantees

their respective functions, rights and responsibilities with regard to the PA" (Borrini-Feyerabend 1996:12).

Co-management Boards - "Set up under the authority of various land-claims agreements, these boards will have enormous influence on day-to-day decisions regarding arctic marine conservation" (Welch 1995:11)

Committee for Original Peoples Entitlement - "A society incorporated under the Societies Ordinance of the Northwest Territories" (DIAND 1984:1).

Conservation - "The management of wildlife populations and habitat to ensure the maintenance of the quality, including the long term optimum productivity, of these resources and to ensure the efficient utilization of the available harvest" (DIAND 1984:1; WMAC-NWT and FJMC 1988:2; FJMC 1993:23). The *Report of the Task Force on Northern Conservation* (Task Force on Northern Conservation 1984) defined conservation as "the management of human use of the biosphere so that it may yield the greatest sustainable benefit to present generations, while maintaining its potential to meet the needs and aspirations of future generations; it emphasizes the maintenance of cultural resources and representative or unique ecosystems, their ecological processes, and genetic diversity" (p. 13).

Contiguous Zone – Section 10 of the *Oceans Act* (1996) defines the contiguous zone of Canada as "an area of the sea that has as its inner limit the outer limit of the territorial sea of Canada and as its outer limit the line of every point of which is a distance of 24 nautical miles from the nearest point of the baselines of the territorial sea of Canada, but does not include an area of the sea that forms part of the territorial sea of another state or in which another state has sovereign rights."

Department of Canadian Heritage (DCH) – The Department was created through the *Department of Canadian Heritage Act.* The Minister of Canadian Heritage has powers, duties and functions of issues relating to "Canadian identity and values, cultural

development, heritage and areas of national or historical significance to the nation" (s.4.1).

Department of the Environment (DOE) - The Department was created through the *Department of the Environment Act.* The Minister of the Environment has powers, duties and functions concerning issues relating to:

(a) "the preservation and enhancement of the quality of the natural environment, including water, air and soil quality;
(b) renewable resources, including migratory birds and other non-domestic flora and fauna;
(c) water;
(d) meteorology" (s.4.1).

Department of Fisheries and Oceans (DFO) – The Department of Fisheries and Oceans was created through the *Department of Fisheries and Oceans Act.* The Minister of Fisheries and Oceans has powers, duties and functions concerning issues relating to:

(a) "sea coast and inland fisheries;
(b) fishing and recreational harbours;
(c) hydrography and marine sciences; and
(d) the coordination of the policies and programs of the Government of Canada respecting oceans" (s.4.1).

Department of Indian and Northern Affairs (DIAND) – DIAND was created through the *Department of Indian Affairs and Northern Development Act.* The Minister of Indian Affairs and Northern Development has powers, duties and functions concerning issues relating to:

(a) "Indian affairs;
(b) the Yukon Territory and the Northwest Territories and their resources and affairs; and
(c) Inuit affairs" (s.4.1).

Development - "(a) Any commercial or industrial undertaking or venture, including support and transportation facilities relating to the extraction of non-renewable resources from the Beaufort Sea, other than commercial wildlife harvesting; or
(b) Any government project, undertaking or construction whether federal, territorial, provincial, municipal, local or by any Crown agency or corporation, except government projects within the limits of communities not directly affecting wildlife resources outside those limits and except government wildlife enhancement projects" (Community of Tuktoyaktuk *et al.* 1993:iv).

Environmental Impact Review Board (EIRB) - This is one of the 5 co-management committees that were created through the IFA. The EIRB is responsible for reviewing development applications, determining potential environmental impacts, and recommending wildlife compensation regimes (Bailey *et al.* 1995; DIAND 1984; DIAND 1995).

Environmental Impact Screening Committee (EISC) - This is one of the 5 co-management committees that were created through the IFA. The EISC, in operation since 1986, screens all development proposals within the ISR to determine whether or not they have the potential to cause a significant impact to either the environment or to wildlife harvesting (DFO 1995). If the potential to cause damage exists, then the proposal is passed on to the EIRB (Bailey *et al.* 1995; DIAND 1984; DIAND 1995).

Exclusive Economic Zone - Section 13 of the *Oceans Act* defines the Exclusive Economic Zone (EEZ) as "the area of the sea that has as its inner limit the outer limit of the territorial sea (12 nautical miles) of Canada and as its outer limit the line every point of which is at a distance of 200 nautical miles from the nearest point to the baselines of the territorial seas of Canada." Within the EEZ, Canada has sovereign rights, jurisdiction and other rights and duties provided for under international law (Section 14).

Fisheries Joint Management Committee (FJMC) - This is one of the co-management committees that was created through the IFA. The FJMC, established in 1986, is an

advisory board for fishery and related management issues. In addition to its advisory role for both the government and the Inuvialuit, the FJMC has the power to recommend legislation and regulations. Further responsibilities include: recommending quotas for marine mammals and fish, allocating subsistence fishing quotas, advising the Minister on regulations, policy, administration and research regarding the fishery within the region (Bailey *et al.* 1995; DIAND 1984; DIAND 1995).

Hunters and Trappers Committee (HTC) - Six HTCs were created through the IFA, each one representing an Inuvialuit community. All members on this committee are Inuvialuit. Each HTC advises the IGC in harvesting quotas and on all renewable resource quotas for their respective community. In addition to writing by-laws for the community, the HTC also provides harvest data (Bailey *et al.* 1995; DIAND 1984; DIAND 1995).

Integrated Management Principle - Section 30 of the *Oceans Act* emphasizes the importance of integrated management. It can be defined as "a decision-making process used to coordinate the management of human activities that affect marine resources" (DFO 1997:41). This process brings all affected parties together to agree on goals that incorporate environmental, social and economic values.

Internal Waters – "The internal waters of Canada include any areas of the sea that are on the landward side of the baselines of the territorial sea of Canada" (*Territorial Sea and Fishing Zones Act* N.D., s.3(2)).

International Union for the Conservation of Nature (IUCN) - World Conservation Union - "The IUCN brings together States, government agencies and a diverse range of non-governmental organizations in a unique world partnership: some 650 members in all, spread across 120 countries. It exists to serve its members - to represent their views on the world stage and to provide them with the concepts, strategies and technical support they need to achieve their goals" (Kelleher and Kenchington 1992:80).

Inuvialuit - "Those people known as Inuvialuit, Inuit, or Eskimo who are beneficiaries under the IFA by reason of their settlement of their claim to traditional use and occupancy of the land in the ISR and who are represented by the Committee for Original Peoples Entitlement" (DIAND 1984:2).

Inuvialuit Final Agreement (IFA) - This "settlement between the Committee for Original Peoples Entitlement representing the Inuvialuit, and the Government of Canada representing the citizens of Canada, among them Inuvialuit" was signed in 1984 (FJMC 1993).

Inuvialuit Game Council (IGC) - This council was created through the IFA. It is composed of Inuvialuit members and represents the interests of the whole community regarding renewable resources management. The IGC advises government agencies on renewable resource policy, administration and legislation. In addition to assigning quotas, the Council is also responsible for appointing Inuvialuit to joint management boards (Bailey *et al.* 1995; DIAND 1984; DIAND 1995).

Inuvialuit Settlement Region (ISR) - "The portion of the NWT, Yukon Territory and adjacent offshore area shown in Annex A of the IFA" (DIAND 1984).

Land - "The surface and sub-surface of the earth, including fresh water and the offshore" (Community of Tuktoyaktuk *et al.* 1993:iv).

Management - "Deliberate action to maintain wildlife populations and habitats to ensure the maintenance of quality, including the long term optimum productivity of these resources, and to ensure the efficient utilization of the available harvest" (WMAC-NWT and FJMC 1988:2).

Marine Environment - The definition of marine environment is more encompassing than that of "ocean". Marine environment "includes the biological, physical, and chemical resources of estuarine and saline areas including sediments, intertidal zones, salt

marshes, and the atmosphere above the ocean; in addition, human activities are part of the marine environment. For many, the definition also encompasses land and activities thereon that are directly influenced by the ocean and that have a direct effect on the coastal zone" (Côtè 1989:9).

Marine Protected Areas (MPAs) – MPAs are established by DFO. An MPA is "an area of the sea that forms part of the internal waters of Canada, the territorial sea of Canada or the exclusive economic zone of Canada and has been designated under this section s.35 for special protection" (*Oceans Act* 1996).

Marine Protection Mechanisms - A marine protection mechanism is a legally or non legally enforceable mechanism that protects "any area of intertidal or subtidal terrain, together with its overlying water and associated flora, fauna, historical and cultural features" (Kelleher and Kenchington 1992:7).

Marine Wildlife Area (MWA) - MWAs are established by DOE. They are similar to National Wildlife Areas except MWAs extend out to the EEZ. NWAs which were "established under the *Canada Wildlife Act*, protect nationally significant habitats -- especially for migratory birds but also for all wildlife -- for the purpose of wildlife research, conservation and interpretation" (DFO 1997:44).

National Marine Conservation Areas (NMCAs) – NMCAs are established by the Department of Canadian Heritage. "Marine areas managed for sustainable use and containing smaller zones of high protection. They include seabed, its subsoil and overlying water column and may encompass wetlands, river estuaries, islands and other coastal land" (DCH 1994:48; DCH 1995:8).

National Marine Sanctuary (NMS) – NMSs are American marine protection mechanisms. NMSs are "areas of the marine environment of special national significance due to their resource or human-use values, which are designated as such to ensure its conservation and management" (*National Marine Sanctuaries Act* 1995).

Ocean - "The salt water up to the freshwater limit including its physical and chemical characteristics and the organisms therein" (Côtè 1989:9).

***Oceans Act* (1996)** - This is an Act respecting the Oceans of Canada. This Act is divided into three parts. Part I recognizes Canada's jurisdiction over its oceans. Part II lays out the Oceans Management Strategy and Part III outlines the powers, duties and functions of the Minister.

Oceans Management Strategy - This strategy is based on three principles; sustainable development, integrated management, and the precautionary approach (*Oceans Act* s.30). The Strategy has three components that the Minister may carry out. The first component is the integration of all activities that relate to or affect estuaries, coastal waters, and marine waters that are within Canada's jurisdiction (EEZ). The second is the establishment of marine environmental quality guidelines (s. 32). The final component is "the development and implementation of a national system of MPAs on behalf of the government of Canada" (s. 35). It is noted in s. 28 of the *Oceans Act* that the strategy does not apply to rivers and lakes.

Precautionary Principle - This is defined in the *Oceans Act* as "erring on the side of caution." This principle reverses the "burden of proof" in that activities are not permitted to occur until it is proven that these activities are harming the environment. Rather, individuals and government must prove that their activities do not harm the environment. With respect to MPAs, lack of scientific certainty regarding the exact details should not deter the establishment of MPAs (DFO 1997:40).

Protected Areas - "The purpose of protected areas is to help conserve the plants and animals that live within them. Human activities within protected areas must be conducted in a way that is consistent with achieving this purpose ... core protected areas must be off-limits to the kinds of human activities that can threaten marine biodiversity" (Thurston 1997:13).

Stakeholders - "The various institutions, social groups and individuals who possess a direct, significant and specific stake in the protected area" (Borrini-Feyerabend 1996:8).

Subsistence usage - "With respect to wildlife other than migratory game birds, migratory non-game birds and migratory insectivorous birds, subject to international conventions, the taking of wildlife by Inuvialuit for their personal use for food, clothing and includes the taking of wildlife for the purpose of trade, barter, and, subject to section 12 (of the IFA), sale among Inuvialuit and trade, barter and sale to any person the non-edible by-products of wildlife that are incidental to the taking of Wildlife by Inuvialuit for their personal use" (Community of Tuktoyaktuk *et al.* 1993:iv).

Sustainability Principle - This principle is derived from the World Commission on the Environment and Development (1987) where the term "sustainable development" was first defined as "development that meets the needs of the present without compromising the ability of future generations to meet their needs" (p.8). Thus the sustainability principle, incorporates the theme of sustainable development into resource management decisions. MPAs emphasize the importance of the ecological functions as well as the economic and social values (DFO 1997).

Territorial Sea – "Those areas of the sea having, as their outer limits, lines measures seaward and equidistant from those baselines so that each point of the outer limit line of the territorial sea is twelve nautical miles from the nearest point of the baseline" (Territorial Sea and Fishing Zones Act ND, s. 3(1)).

Wildlife - "All fauna in a wild state other than reindeer. Wildlife includes fish and marine mammals" (Community of Tuktoyaktuk *et al.* 1993:v).

Wildlife Management Advisory Council (WMAC) - Two such co-management councils were formed through the IFA; one in the Northwest Territories, and the other in Yukon's North Slope. Both advise on wildlife policies and administration of wildlife, harvesting and habitat within their respective regions. Each have to prepare a

conservation plan for the region, and determine and recommend harvesting quotas (Bailey *et al.* 1995; DIAND 1984; DIAND 1995).

Zoning - "Zoning can help protect sensitive parts of an MPA, while still allowing for certain human activities" (Thurston 1997:10).

APPENDIX B: RESEARCH LICENCE

* * * * *

SCIENTIFIC RESEARCH LICENCE

Licence # 12923N

File # 12 410 533

ISSUED BY: **Aurora Research Institute - Aurora College**
Inuvik, Northwest Territories

ISSUED TO: Ms. Fleur Storace
Natural Resources Institute
University of Manitoba
Winnipeg, MB R3T 2N2
204-474-8373

ON: June 19, 1997

TEAM MEMBERS: Mae Cockney, Joey Amos, Alan Fehr, Dr. Jack Mathias

AFFILIATION: Natural Resources Institute, University of Manitoba

FUNDING: Fisheries Joint Management Committee, Department of Fisheries and Oceans, University of Manitoba

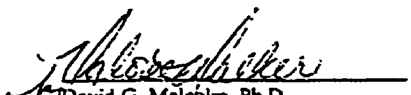
TITLE: Developing a Management Framework for Establishing Marine Protected Areas in the Inuvialuit Settlement Region: A Case Study of Beluga

OBJECTIVES OF RESEARCH:

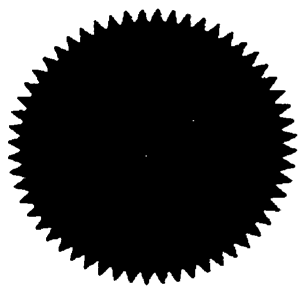
The primary purpose of the project is to develop a management framework for establishing marine protected areas (MPAs) in the Inuvialuit Settlement Region (ISR) using beluga as a case study. The specific objectives are: (i) to identify and review various alternative legislative mechanisms for the protection of marine areas; (ii) to assess potential management costs associated with the development of MPA's, and to consider options for sustainable financing of these areas; (iii) to assess whether the framework is culturally acceptable to the Inuvialuit using beluga as a case study; and (iv) to recommend a management process for the establishment of MPAs in the ISR. This work involving MPAs is important in the ISR because the settlement area includes an extensive coastline bordering the Beaufort Sea. This region has been the focus of industrial development in the past and interest in the area may resurface. Beluga, which inhabit the region, are important to the Inuvialuit as are rights to subsistence harvesting without interference. Through observation and discussion, the researcher will learn if an MPA will meet the needs of residents.

DATA COLLECTION IN THE WESTERN NWT:
DATE(S): June 18 - July 18, 1997
LOCATION: Inuvik, Tuktoyaktuk and Aklavik

Licence# 12923 expires on December 31, 1997.
Issued at the Town of Inuvik on June 19, 1997



David G. Malcolm, Ph.D.
Science Advisor



Aurora Research Institute - Aurora College
P.O. Box 1450 Inuvik NT X0E 0T0
Phone: 403-979-4628 Fax: 403-979-4264 E-mail valw@gov.nt.ca

12 410 533
June 19, 1997

NOTIFICATION OF RESEARCH
Scientific Research Licence No. 12923N

I would like to inform you that Scientific Research Licence No. 12923 has been issued to:

Ms. Fleur Storace
Natural Resources Institute
University of Manitoba
Winnipeg, MB R3T 2N2
204-474-8373

to conduct the following study:
"Developing a Management Framework for Establishing Marine Protected Areas in the Inuvialuit Settlement Region: A Case Study of Beluga".

Please contact the researcher if you would like more information.

SUMMARY OF RESEARCH:

The researcher will be in the ISR for a period of 4 weeks. The primary activity that the researcher will be undertaking will be to observe and talk to residents of the ISR. The researcher will begin her visit in the ISR by presenting her methods to the FJMC at their scheduled meeting on June 19 and 20th. If permitted, the researcher will accompany Ms. Cockney and Mr. Amos on monitoring rounds and also visit the hunting camps. She will use the same mode of transportation as the people she is accompanying. No samples will be taken and nothing will be removed from the site. If the monitoring rounds do not take place this year, the researcher may hire a guide for next year. Consultations with the Inuvik Research Centre and the FJMC will be necessary to determine an appropriate schedule.

The study will be conducted in Inuvik, Tuktoyaktuk and Aklavik between June 18 - July 18, 1997.

Sincerely,

Valoree Walker
Research Liaison

DISTRIBUTION:

Manager, Inuvik Research Centre, Box 1430, Inuvik NT X0E 0T0
Chief Councillor, Aklavik Community Corporation, Box 119, Aklavik NT X0E 0A0
President, Aklavik Hunters & Trappers Committee, Box 113, Aklavik, NT X0E 0A0
Chief Councillor, Inuvik Community Corporation, Box 1365, Inuvik NT X0E 0T0
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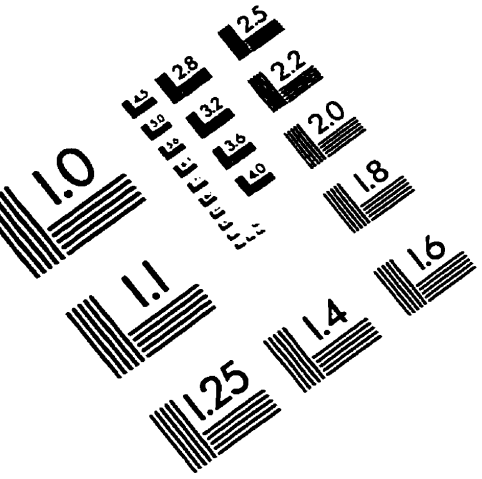
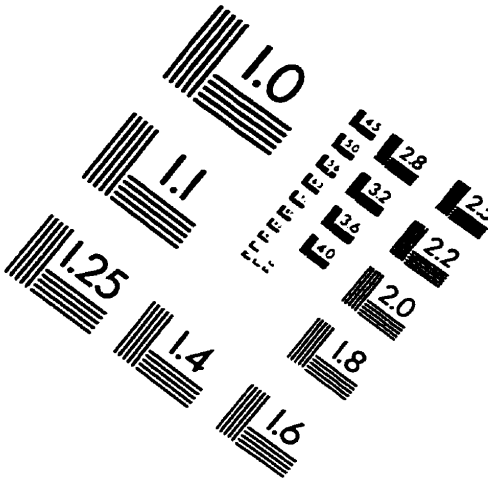
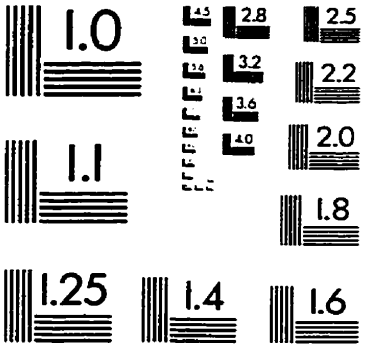
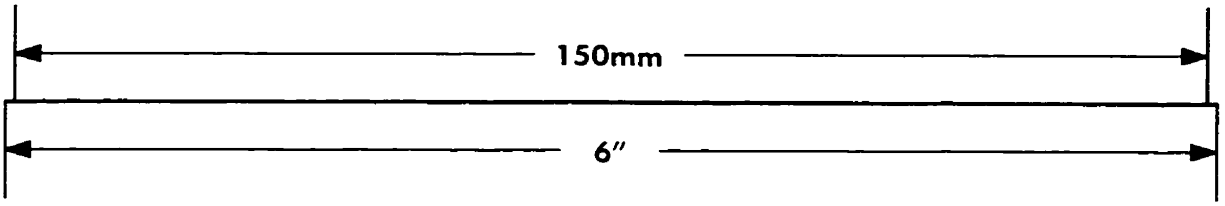
President, Tuktoyaktuk Hunters & Trappers Committee, Box 286, Tuktoyaktuk NT X0E 1C0
Mae Cockney, Fisheries Joint Management Committee, Box 2120, Inuvik NT X0E 0T0

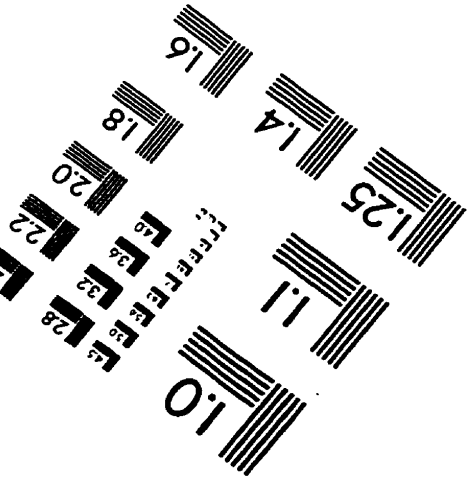
IMAGE EVALUATION TEST TARGET (QA-3)

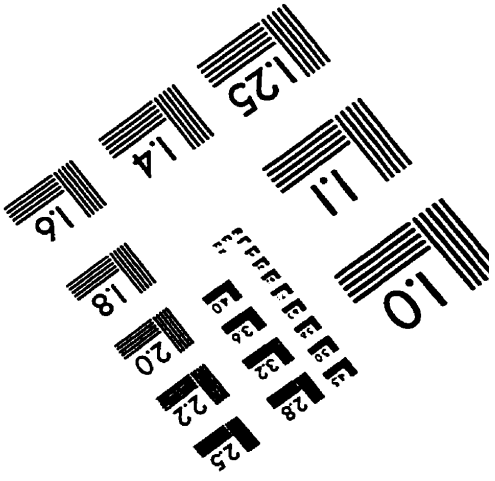












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