



**Plain  
Language  
Version**

Prepared by  
**Monica Schuegraf**

**Breaking Ice  
Renewable Resource and Ocean  
Management in the Canadian North**

**Edited by**

**Fikret Berkes  
Rob Huebert  
Helen Fast  
Micheline Manseau  
Alan Diduck**



# Breaking Ice: Renewable Resource and Ocean Management in the Canadian North

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Cover photo: Beluga muqtuk about to be prepared,  
Inuvialuit Settlement Region.  
P. Cott, Fisheries and Oceans Canada  
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# Preface and Acknowledgements

This book is different from other books. It has been “translated” into plain language from a text that was originally written for academics, resource managers and university students. It is hoped this plain language version of the book will be used in schools and colleges, by communities – Hunter and Trapper Committees, Community Development Corporations and community learning centres. Perhaps resource managers, co-management groups and government people will choose to read it simply because it is shorter.

While the original book is about integrated resource management experiences and looks at some theories, this book does not. What is important in here are the stories of peoples’ experiences. The pages that follow share the stories of different aboriginal groups and their experiences with different types of resource management. Ultimately, we hope that by sharing the stories from groups all over the Canadian North, people will be able to share the experiences and lessons of other groups.

## *How to use this book*

The book is arranged so that it is easy to use. The first page of each chapter is a summary of the chapter in a “Quick Look” format. The Quick Look includes a summary in a few sentences. After this, the Quick Look answers the questions:

- Who* were the people and groups involved in the stories,
- Where* the story took place,
- Why* the chapter was researched and written in the first place and
- What* are the main findings of the chapter.

This approach helps people find what they are interested in quickly – without having to read the whole chapter. At the bottom of each page is the reference to the original book chapter, in case anyone is interested in reading more.

This version of the book was created while I was working as a Research Associate for the Natural Resources Institute at the University of Manitoba. I wrote most of this plain language version while travelling around sharing the stories from the book in the Beaufort-Delta area of the Northwest Territories.



## *Thank yous*

While I was in Inuvik over the fall and winter months of 2004-05 the Aurora Research Institute in Inuvik graciously provided me with a place to live, an office to work from and companionship. The Inuvialuit Joint Secretariat and the Fisheries Joint Management Committee provided me with free travel to a number of different communities. Aklak Air very generously provided me with a free flight to Holman and back so that I might meet with the school and Hunter and Trapper Committee in that community.

I thank the staff and volunteers at the Research Institute for all the laughs, discussions and assistance. I would like to thank the students at Aurora College, NRTP class for their input and insight into my information sharing. I also want to thank the students in the classes I worked with at the high schools – your interest and enthusiasm were inspiring. To the members of the Hunter and Trapper Committees whose meetings I did manage to get to – thank you for listening and sharing your thoughts, comments and ideas with me.

To the staff of the Joint Secretariat and Fisheries Joint Management Committee and Fisheries and Oceans Canada in Inuvik – thank you for all your ideas, input and assistance. I want to thank Peter Dowd for his volunteer assistance in writing this book, designing and editing posters and helping out with presentations. To Andrew Applejohn at the ARI and Alan Fehr at Parks Canada, thanks for the stimulating conversations.

### *In Winnipeg*

Thank you to everybody who made writing this book possible. Thanks to Fikret, Jackie, Micheline, Steve and all my friends at the Natural Resources Institute. Thank you also to the people at Fisheries and Oceans: Central and Arctic region in Winnipeg: Helen Fast - for all her support and encouragement, Alan Kristofferson, Don Cobb and Pierre Richard for assistance - especially finding photos. Finally, thanks to all the authors and editors for their cooperation and comments on various versions of this book.

### *To all the friends I made*

I made many friends while I was in Inuvik and it hurts me to have to leave newly made friends again. I hope

I will see you all soon. I would like to thank all the people who came out to volleyball and made me feel welcome. And especially I would like to thank the girls volleyball team from Samuel Hearne which I helped to coach and who made themselves, their coaches and especially me, very proud, when they came back from the tournament in Yellowknife with a 3<sup>rd</sup> place finish. You guys are amazing. You see what happens when you believe in yourselves. To my friends, my neighbours, my housemates and so many people who helped me – thank you very much.

*Monica Schuegraf*

### *From the editors . . .*

The idea for the popular dissemination of our findings in *Breaking Ice* came from the three-year review of the Ocean Management Research Network, Integrated Management Node. The reviewers from the funding agencies challenged us to take the results of the book to Northern communities and agencies. The Integrated Management Node responded to the challenge by hiring Monica to relocate for a few months to Inuvik and work with local people. This book is one of the outputs from that work. On behalf of the editors and authors of the book, *Breaking Ice*, I thank Monica for the considerable time and effort she spent making sense of the dense prose of my colleagues! As well, I thank all the people up North who helped Monica figure out how to get our message across. Of course, we thank University of Calgary Press which published the original book, and Fisheries and Oceans Canada which provided the extra funding to make the dissemination project possible.

*Fikret Berkes*  
for the editors of *Breaking Ice*



Giant inuksuk in Rankin Inlet, Nunavut.  
Photo: Steve Newton



# 1: Introduction

## Where did this book come from?

### *Oceans Act and Canada's Oceans Strategy*

In 1997, the Canadian government made the *Oceans Act* into law. The *Oceans Act* was an important law because the government was putting emphasis on more collaboration and consensus among ocean stakeholders, more partnerships between communities and government, developing integrated resource management plans and linking scientific and traditional knowledge. It was the first law like this in any country in the world. *Canada's Oceans Strategy* of 2002 is a document that provides direction on how to manage coastal zones in Canada according to the *Oceans Act*. The *Strategy* provides a framework and direction for using integrated resource management for Canadian oceans. The goal of the *Strategy* is to “ensure healthy, safe and prosperous oceans for the benefit of current and future generations of Canadians.”

### *The Ocean Management Research Network*

The Ocean Management Research Network (OMRN – [www.omrn.ca](http://www.omrn.ca)) is a network of university and government researchers, policy makers, and representatives from aboriginal groups, industries and non-governmental agencies that are working together to find out how to achieve the goals of *Canada's Oceans Strategy*. One of the goals of the Network was to research and learn from people's experiences in the area of integrated management. Also, to think about change and how societies respond

and adapt to change. Another goal was to understand how change is happening and how laws can be made to account for that change. The Ocean Management Research Network did research in three particular areas, each one called a node. The three nodes were:

- 1) Linking Science and Local Knowledge;
- 2) Integrated Management; and
- 3) Sustainability.

Each node investigated ways to reach the goal of their node. The book “Breaking Ice” is a collection of stories and information that the Integrated Management Node put together about the successes and ways of doing integrated resource management.

### *What is Integrated Management?*

Integrated management, or integrated *resource* management, is a way of planning how resources will be used. To do integrated resource management, community members and the government work together. They take into account all the different stakeholders who want to use the resource, and find the best way for the resource to be used without damaging it.

### *The Integrated Management Node*

It was important for the Integrated Management Node to involve northern partners in deciding what they were going to research. They wanted to know how their research could benefit northern communities, people doing integrated oceans management, and people making laws and policy. The research node looked at some important questions, including:

- How can ocean and marine resources in the North be used in ways that benefit people now *and* in the future?

- How does resource development affect societies and cultures that have strong connections with ocean and marine resources?
- How can First Nations and the Inuit participate in local, national and the international decision-making process that will make sure that the interests of northerners are taken into account?

### ***Northern Partners of the Integrated Management Node***

Northern partners of the Integrated Management Node are: Aurora College (Inuvik), Canadian Arctic Resources Committee (Ottawa and Yellowknife), Fisheries Joint Management Committee (Inuvik), Kivalliq Inuit Association (Rankin Inlet), Nunavut Arctic College (Iqaluit), and the Tuktu and Nogak Project (Iqaluktuuttiaq). Federal government agency partners are: Fisheries and Oceans Canada - Central and Arctic Region, Environment Canada, and Parks Canada.

### ***Breaking Ice: Renewable Resource and Ocean Management in the Canadian North***

This book was written to take a closer look at integrated resource management in the Canadian North. The book includes stories from the Beaufort Sea, the Arctic Ocean coast and islands, Hudson Bay and the Hudson Strait. By thinking about integrated resource management, people try to take into account the perspectives of all stakeholders in planning resource use. The book also looks at the complex interactions between people and the environment as well as the many different ways the resources are used. Change in the Arctic is occurring at

faster and faster rates. Not only is the environment changing due to climate effects, but also social and cultural change is occurring as people spend more time in towns and communities. There are economic changes occurring with big, non-renewable resource projects being developed, and technological changes like TV and internet access. Much of this book is about the way people respond and adapt to change. The glossary includes some technical terms and concepts used in the book.

### ***Objectives of the Book***

There were three main objectives for this book:

- 1) To learn from integrated resource management experience.
- 2) To show new ways that people are thinking about change and how societies are responding and adapting to change.
- 3) To try and understand how ways of life are changing and to look at linkages and partnerships that help deal with change.

### ***Original Version***

This version of the book is adapted from the original of the same title which was written primarily for an academic audience. The plain language version of Breaking Ice was produced in order to share the research results with communities in the North. Students, adults, and teachers will be able to use this book to learn about other people's experiences in resource management across the Canadian North. Learning about the experiences of other communities will bring communities closer to each other and make them stronger.

# Northern Regions and Land Claim Agreements

## *Aboriginal Land Ownership*

A number of treaties were signed between governments and First Nations in the late 1800s and during the early 1900s. They covered parts of the Canadian North. But much of the Northwest Territories, Yukon, Quebec, Labrador and British Columbia were not included in these treaties. In the 1970s, the Supreme Court of Canada recognized that aboriginal people still owned most of this land. Canada's ownership of nearly half of the country came under question. Because the court recognized aboriginal ownership of this land, the Canadian government was eventually forced to sign land claim agreements giving the right of ownership to the different Inuit and First Nations groups. These agreements became known as land claim agreements and gave powers such as self-government, control over social services, education, health, compensation payments, environmental assessment, land use regulation and the management of land and resources to the aboriginal groups and First Nations.



## *Land Claim Agreements*

In 1975, the *James Bay and Northern Quebec Agreement* was the first land claim agreement to be signed. A number of agreements have been signed since, including the *Inuvialuit Final Agreement* of 1984, the *Gwich'in Comprehensive Land Claim Agreement* of 1992, the *Sahtu Dene and Metis Comprehensive Land Claim Agreement* of 1993, the *Yukon First Nations Umbrella Final Agreement* of 1993, and the *Nunavut Land Claims Agreement* of 1993. The *Nunavut Land Claims Agreement* lays claim to the largest amount of land and resulted in the creation of the new Territory of Nunavut.

## *Co-management*

For this book it is particularly interesting to note that the land claim agreements gave aboriginal groups control over the management of their land and resources. This control has so far resulted in joint management of natural resources. Aboriginal people work together with government people to decide how to manage resources. In fact, most land claim agreements created official co-management bodies when they were put into place. For example, the Fisheries Joint Management Committee was created as a result of the *Inuvialuit Final Agreement* and the Nunavut Wildlife Management Board was created as a result of the *Nunavut Land Claims Agreement*. In general, co-management bodies consist of equal numbers of government and aboriginal members and only make decisions by consensus.

## *Where do the stories come from?*

This book has stories and information from a number of different regions. Some of the chapters are about the entire Canadian North, or the northern circumpolar region, as in the case of Arctic contaminants. Some are

applicable to all coastal areas, as in marine protected areas and co-management. A number of chapters refer specifically to the Inuvialuit Settlement Region and the Territory of Nunavut. There is also one chapter on Churchill, Manitoba, and one from an inland area in the Northwest Territories – that of the Lutsel K'e Dene. The Inuvialuit and Nunavut regions are looked at briefly below.

### *Inuvialuit Settlement Region*

The Inuvialuit Settlement Region is in the Canadian Western Arctic region and part of the Northwest Territories. It was created when the Inuvialuit Final Agreement was signed in 1984.

The region covers 906,430 km<sup>2</sup>. It includes four distinct geographic regions: the Beaufort Sea, the Mackenzie River Delta, the Yukon North Slope and the Arctic islands. The Mackenzie Delta includes lake, swamp and river channels covering 35,000 km<sup>2</sup>. The marine environment of the Inuvialuit Settlement Region includes a permanently ice-covered region, a seasonally ice-covered region, and a coastal area where salt and freshwater mix. The Beaufort Sea marine region has a large population of polar bears, ringed and bearded seals, the largest summer feeding population of bowhead whales, and perhaps the world's largest summering stock of beluga whales.



### *The people*

The population of the region in 2003 was about 5,600 people, 3,300 of whom are Inuvialuit. Over half of the Inuvialuit population is under 29 years of age. In all of the communities people still harvest food to eat. These activities happen more in the small communities where there are not many paying jobs.

There are six communities in the Inuvialuit Settlement Region. The communities of Aklavik and Inuvik are inland and the others, Paulatuk, Sachs Harbour, Holman and Tuktoyaktuk are coastal. The community of Aklavik is located in the Mackenzie Delta itself.



### ***Territory of Nunavut***

Nunavut is one-fifth of the size of Canada. In fact, it takes up most of the Canadian Eastern Arctic. It was created as Canada's third territory when the Nunavut Land Claims Agreement was signed in 1993. Nunavut covers more than two million square kilometres. The land varies from muskeg to mountains and fjords, with many lakes and rivers.

### ***The people***

The population of the region is about 29,500 people and is increasing quickly. The people are primarily Inuit and are scattered about the region in 26 main communities. The smallest community of Bathurst Inlet has a population of only 25 people. The capital, Iqaluit, has a much larger population of

almost 6,000 people. Eighty percent (80%) of Nunavut's population rely on hunting, fishing and gathering to get some food for their families.

There is not much paid employment. In fact, Inuit communities take a very different approach to economic development than does industry and governments in Canada. The Inuit people focus on community. Almost every Inuit community has a marketing co-operative for Inuit carving and print-making. One in seven people considers themselves to be an artist. As well, to support traditional lifestyles and sustainable development, a hunter support program was set up in Nunavut. This program makes it possible for people who want to continue hunting on the land to do so, by recognizing their contribution.



# Important Co-management Bodies

## *Beaufort Sea Integrated Management Planning Initiative*

The Beaufort Sea Integrated Management Planning Initiative is often referred to by its acronym, BSIMPI. It is not an official co-management body created by a land claim agreement. But, it is a cooperative body with community, industry and government members. It was created in 1999 in response to the Oceans Act. The Senior Management Committee of the Beaufort Sea Integrated Management Planning Initiative was created to develop ocean management strategies for the Beaufort Sea. One of its first actions was to form a Working Group.

### *Who is part of it?*

BSIMPI is made up of members of the Inuvialuit Regional Corporation, the Inuvialuit Game Council, the Fisheries Joint Management Committee, the Department of Fisheries and Oceans, and industry represented by the Canadian Association of Petroleum Producers. Its mandate is to find a process that will balance development and community interests in the months and years to come.

The Senior Management Committee and Working Group are not formal co-management bodies, but the representatives on these committees are balanced between Inuvialuit, government and industry as outlined in the Inuvialuit Final Agreement. This ensures that the Inuvialuit have a strong voice in the decision-making process. Administrative, technical and communication support for the Senior Management Committee and Working Group is provided through the BSIMPI Secretariat. The

Secretariat ensures that other interested organizations, governments and communities are brought into the BSIMPI process by inviting them to participate in selective Working Group meetings when appropriate.

## *Fisheries Joint Management Committee*

In 1984, the Inuvialuit in the Canadian Western Arctic signed the Inuvialuit Final Agreement. This agreement put in place a number of different co-management boards. The board responsible for managing the use of fish and marine mammals (for example, whales, seals, walrus) is officially termed the Canada/Inuvialuit Fisheries Joint Management Committee ([www.fjmc.ca](http://www.fjmc.ca)), but is more commonly referred to by the above title, or its acronym, FJMC. It considers topics from local fishing problems to regional gas and oil policies.

### *Vision statement*

The vision of the Fisheries Joint Management Committee is

*“that all fish and marine mammals of the Inuvialuit Settlement Region will be managed and conserved for the wise use and benefit of present and future generations.”*

This goal will be reached by using scientific and traditional knowledge of the renewable resources of the Region and their ecosystems.

### *Who is part of it?*

The committee is made up of two Inuvialuit members, two government representatives and a board-appointed chairperson. The two Inuvialuit members are active hunters, fishers or elders. The two government members are able to provide information from scientific and government resource management ideas. All members of the committee must agree

in order for a decision to be made. The Fisheries Joint Management Committee communicates with the Hunter and Trapper Committees in each community of the Inuvialuit Settlement Region. The Joint Management Committee advises the Minister of Fisheries and Oceans on all matters that relate to fisheries in the region.

### ***Who else works with them?***

The board is supported by a resource biologist and a shared secretariat that also provides support to other Inuvialuit boards. In order to have good relations with the Department of Fisheries and Oceans, a representative of the department attends all the board meetings. The committee meets five times a year to solve problems and make decisions. They also communicate through conference calls, special projects and workshops.

### ***What do they do?***

At present the Fisheries Joint Management Committee:

- supports monitoring programs for fish and marine mammal harvests;
- establishes management and fishing plans for Beluga whales, Inconnu and Arctic char;
- supports population and stock assessments for Arctic char and other species;
- initiates genetic studies to figure out where the fish are coming from;
- funds studies about contaminants;
- sets up traditional knowledge studies.

## ***Nunavut Wildlife Management Board***

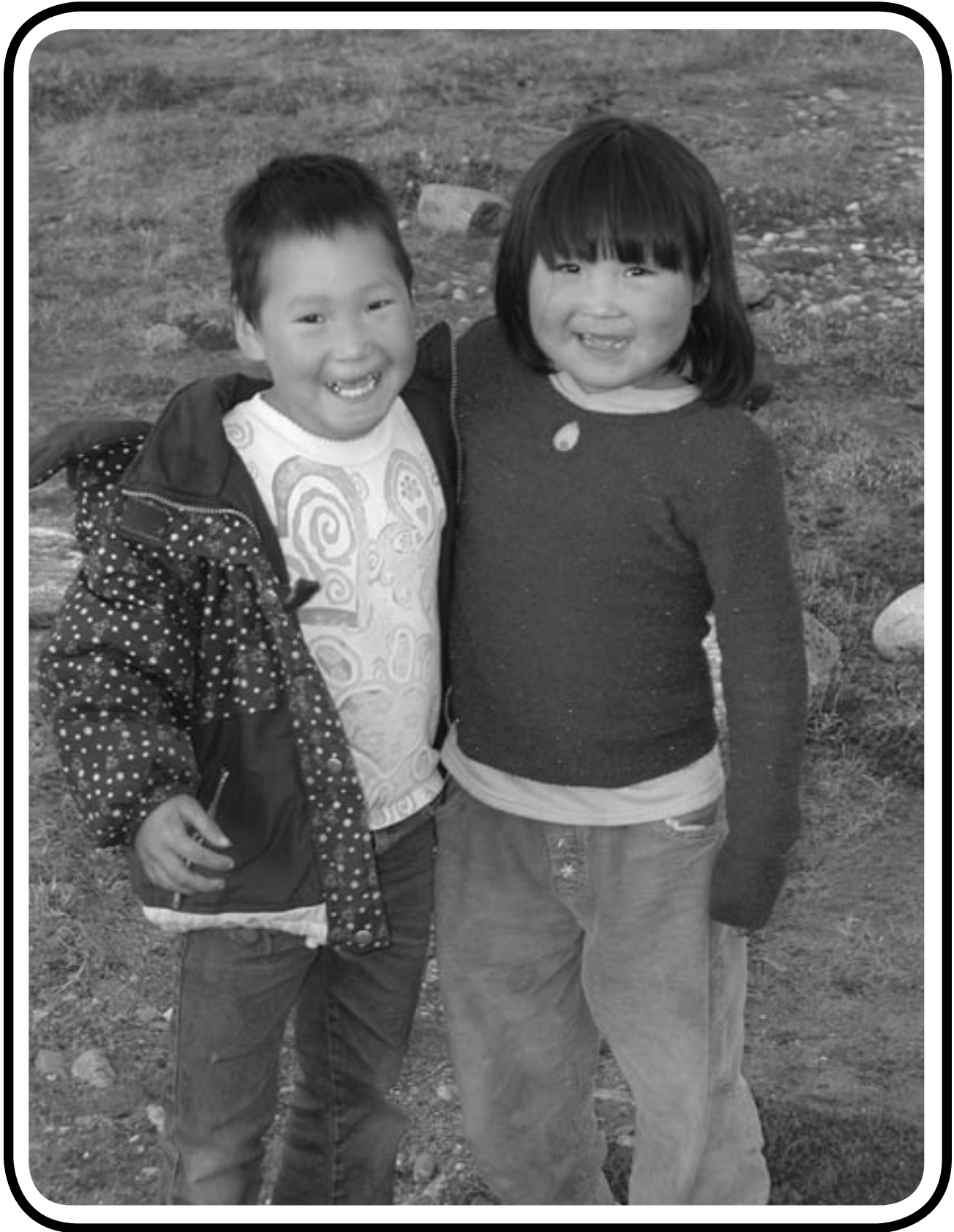
In 1993, the *Nunavut Land Claims Agreement* created the Nunavut Wildlife Management Board. The Board is the main group in charge of wildlife management in Nunavut. It is responsible for marine mammals and fish, as well as all terrestrial wildlife and plants. It brings together federal fisheries biologists, bird biologists, polar bear and large mammal biologists. The managers interact with community members who are the holders of traditional knowledge (Inuit Qaujimagatuqangit) in efforts to manage the resources.

### ***Who is part of it?***

The Board has nine members. There are four Inuit representatives and four government representatives (federal and territorial) and a Chair chosen by the members. The Nunavut Wildlife Management Board has the power to put in place important management rules, like harvest quotas. Ideally, community-based Hunter and Trapper organizations, and regional wildlife organizations should play important roles in wildlife and fisheries management and work with the Board.

### ***What do they do?***

The Board identifies and funds research priorities, promotes employment of Inuit people and organizations in research, conducts the Nunavut Wildlife Harvest Study, sets and makes any necessary changes to total allowable harvest levels, and sets trophy fees. It also performs other functions as required by the land claim agreement.



Rankin Inlet youth at the Meliadine Territorial Park, Rankin Inlet, Nunavut.  
The two young girls are Beatrice Pissuk (on the left) and Roseanne Shimout.

Photo: Steve Newton

# 2:

## Feeding the Family in Times of Change

### QUICK LOOK

*Eating country food is a good choice. People get benefits from country food: good taste, nutrition, and continuing cultural and spiritual traditions.*

#### Who?

- Northern communities and the choices they make about what to eat

#### Where?

- The analysis covers the area of the Canadian North

#### Why?

- To try and learn more about what may affect the future of food production and consumption in Arctic communities
- To be able to make suggestions about future laws and policies to govern Canada's Arctic Ocean as they apply to food choices

#### What?

- At the moment the nutritional, cultural, spiritual and traditional benefits seem to be outweighing the health risks from eating contaminated food
- There should be more public discussion on the risks and benefits of eating country food
- More support is needed from Fisheries and Oceans Canada to develop commercial and economic opportunities for northern people

This chapter is summarized from:

Myers, H., H. Fast, M. Kislalioglu Berkes and F. Berkes 2005. Feeding the Family in Times of Change. In: *Breaking Ice: Renewable resource and ocean management in the Canadian North*. (F. Berkes, R. Huebert, H. Fast, M. Manseau and A. Diduck, eds.) University of Calgary Press, Calgary, pp. 23-46.

## The Story

### *Living off the land, sharing food is part of northern culture*

The Arctic is a very complex and interesting region. Northern people continue to hunt, fish and gather food today. The interaction of these people with their land is an important part of understanding the Arctic. The gathering, processing, sharing and eating of country food is very important to the social, cultural and economic life in the North. Part of northern aboriginal identity is connected to living off the land. People have gathered and shared their food for thousands of years. Even today, with the introduction of imported food, the traditions associated with country food still continue.

### *Hunting, fishing and gathering saves money for families*

Hunting and fishing puts food on the table so people don't have to buy it. By sharing the food, other people also benefit. Because there is usually little or no cash exchanged for country foods, the activities of hunters are not noticed in government statistics. In fact, hunters are often defined by the government as "unemployed."

### *Facts*

- The average Arctic hunter takes about 1,000 to 1,500 kg (2000-3000 lbs) of meat and fish.
- This amount would cost about \$10,000 - \$15,000 if a *person* had to *buy* food instead.
- Anywhere from 60% - 80 % of Inuit and Inuvialuit households take part in hunting and fishing.



Traditional community feast. Rankin Inlet, Nunavut. Photo: Steve Newton



- The average value of the subsistence harvest for a *household* in the Arctic is \$15,000 – \$17,000.
- Across Canada the worth of the subsistence harvest ranged from 11% of the total economy to a high of 58% of the total economy in Sanikiluaq in Hudson Bay.
- Overall, the traditional harvest is worth *one-third* of the entire cash economy.

In northern communities, it appears the traditional economy is still active and earns people a good income – in food or cash or other products.

### ***Country food harvest has declined***

A comparison of Inuvialuit country food harvest shows that the amount harvested has actually declined. In fact, it decreased from 677,000 kg per year in the 1960s to 333,000 kilograms per year in the 1990s. During this period of time the Inuvialuit population almost doubled in size. The changes are probably due to more use of snowmobiles and less use of dog teams. The amount of “people food” that was harvested has remained the same or increased. Harvest of caribou has increased. But the amount of “dog food” harvested has decreased. The quantity of marine fish caught is a quarter of what it was and the marine mammal catch is about half.

### ***Country foods are more nutritious than store foods***

Country foods are an important part of the diet of northern indigenous peoples. One-third of the food energy northern people get is from country food. But more importantly *one-half* of their protein (meat/fish) is from country foods. This is good because country foods

are the most nutritious foods. Country food has many good vitamins, good fats and protein. Imported foods are much more expensive and are not as good for people. The cheaper imported foods are not very nutritious. They have high amount of sugars, salt, and bad fats and very low levels of vitamins, protein or fibre. On days when people eat country foods, they also take in high amounts of vitamins, minerals and proteins. On days when they eat imported foods, they eat too many sugars, carbohydrates and bad fats. If people switch from eating country foods to imported foods, they might be more likely to have heart disease, diabetes or become overweight.

*When one eats meat, it warms your body very quickly. But when one eats fruit or other imported food, it doesn't help keep you very warm. With imported food... you're warm just a short time period. But our meat is different; it keeps you warm. It doesn't matter if it is raw meat or frozen meat...it has the same effect.*

*~Ussarqak Quajaukitsoz, 1995*

### ***Environmental change***

Northern indigenous people have faced enormous amounts of change in the last 200 years. Changes like those listed below have all affected the way people live and get their food today:

- people living in communities instead of on the land;
- the decline of the fur trade;
- increased use of snowmobiles, and decreased use of dog sleds;
- individual harvesting instead of cooperative groups ;
- increase in industrial development – oil/gas, mining, hydroelectric;
- employment in non-traditional jobs;
- availability of imported southern foods;
- contaminants in wildlife.



Family fishing in the spring. Photo: Heather Myers

### ***Contaminants in wildlife and food***

Northern people have had to deal with contaminants in their food for many years. In the 1950s and 60s, radioactive fallout from nuclear tests built up in animals. In the 1960s and 70s, some waterways were contaminated by mercury. The mercury built up in fish. Both mercury and radiation can make people very sick. In the 1980s, scientists began to realize that pollutants (called POPs) were building up in the wildlife. These pollutants were travelling in the air currents from the South. The contaminants come out of the atmosphere onto the cold lands and waters of the Arctic.

### ***Contaminants in people***

The longer an animal has lived and the more smaller animals it has eaten, the more contaminants it will have. But this doesn't happen only in animals. The contaminants build up in people, too. Studies done in the late 1980s showed many people in the North had high levels

of contaminants in their bodies. The amounts were often higher than Health and Welfare Canada said was safe.

### ***What to do about it?***

A committee was formed by the government to research contaminants and the effect they might be having on northern people. The committee included five aboriginal groups: the Council of Yukon First Nations, the Dene Nation, the Métis Nation-NWT, the Inuit Tapirisat of Canada, and the Inuit Circumpolar Conference. They helped to address aboriginal health concerns and to identify research priorities.

### ***Burbot livers***

The livers of burbot fish are traditionally eaten by Dene people. In the 1980s, Dene fishers reported the livers were not edible and were small and dark in colour. After some years, the livers were found to have very high concentrations of pollutants that were transported in the air from the South.

## ***Northern Contaminants Program***

The committee developed a program to measure the amount of contaminants, how widespread they were and where they were coming from. This program was called the Northern Contaminants Program. After its first five years, the program was continued. In the second five-year term, they researched how contaminants affect human health and whether the amount of contaminants had changed over time. The program put great effort into sharing this information in northern communities. They:

- 1) developed school curricula;
- 2) hired Regional Contaminants Coordinators (RCCs);
- 3) trained people working in the communities;
- 4) used health experts, scientists and an aboriginal partner to do community tours and information;
- 5) held elder-scientist retreats.

## ***Confusion about country food safety***

There was much confusion about the safety of country foods. This is because the results of early contaminant studies were communicated poorly and carelessly. Some “experts” caused a big scare in the communities and people stopped eating country foods because they thought they were dangerous. This change actually resulted in people having many health problems right away because they were eating poor quality store foods. Since then communication methods have improved, and people have recognized that country foods have nutritional benefits as well as traditional and cultural benefits. Country foods make people healthier. While on the land people learn traditional skills and save money. If foods were not harvested, the people’s connection to the land would weaken.

## ***More confusion***

Another reason people are confused is because in international meetings scientists, government and aboriginal organizations often say that the Arctic and its people are being contaminated. When these same people are in the Arctic they say that eating country foods is “still the best” for northern people. It is a confusing issue because contaminants are not the same in all animals. For example:

- 1) a species of animal in one area may have higher contaminant levels than the same species in a different place;
- 2) two different species in *one place* may have different levels of contaminants.

Better information is available now about which people (like women and children) are most sensitive, and which foods they should eat or should avoid.

## ***What do people think about contaminants in the wildlife and food?***

A survey done in Nunavut and Labrador found that not many people really understood what contaminants are. The hunters seemed to know the most; elders knew some. Women with children didn’t know very much at all. People associate the word “contaminants” with garbage, rusted metals and development on the land. Many people thought that if an animal was contaminated, they would be able to see it. Even if they could not see it, they thought cooking the meat well enough would get rid of contaminants. People still have faith in what they can see. The concept of an invisible danger is hard to understand.



Jigging for lake trout. Photo: courtesy of Inuvialuit Joint Secretariat

### ***Problems that might result from contaminated food***

Many problems might happen to northern indigenous people if they stop hunting and eating country foods. If people truly believe that culturally important species like polar bears and whales are “contaminated,” it might threaten their very identity as well as the physical and spiritual health of the people. The confidence, pride and identity related to country food production and consumption will be lost to communities. The role of hunters in communities might be viewed differently. They would no longer be providing good food, but would be providing “contaminated” food. The traditional sharing of food which is culturally important might happen less often. Country food stores might go out of business. In addition, it would be very expensive for people to buy nutritious food to replace country food.

## **Conclusions**

### ***The future of country food?***

Many people that live in small communities in Nunavut get a large part of their food from traditional harvesting. The government of Nunavut and Nunavut Tunngavik Incorporated are encouraging people to produce some of their own food. By hunting their own food, people have more security because they are self-reliant. There is some concern though, that if all young Inuit get involved in subsistence harvesting the marine environment will not be able to provide for all of them.

### ***More opportunities are needed***

Many people have told the Department of Fisheries and Oceans that they want more opportunities to use marine resources for economic development. There are thoughts that the economic future of Arctic areas may

depend on the environment and wildlife through commercial sales of country food, fish, arts and crafts, sport fishing or tourism. If contaminant levels are high it will make it harder to sell country food commercially outside of the local area.



Subsistence harvest on Hudson Bay:  
A day's catch of assorted fish and ptarmigan  
Photo: Fikret Berkes

### ***Country food will continue to be eaten***

Northern people have depended on country foods for thousands of years. The values that country foods provide nutritionally, culturally and spiritually are very important to northern peoples. The changing environment and concerns about contaminant levels may affect this relationship. But people have not stopped eating country food yet, and very likely country food will continue to be important for a long time to come.

### ***Research recommendations***

Some issues which need more exploration and more research include:

- 1) There should be more public discussions on what the risks and benefits are of eating contaminated country food.
- 2) Indicators should be chosen to make sure that communities, people, and the land are staying healthy.
- 3) A better understanding of why and how country food consumption is changing.
- 4) Finding good, healthy, long-term ways of using the land and country food.
- 5) Making more commercial opportunities available for northern people.





Beluga muqtuk drying.  
Photo: courtesy of the Inuvialuit Joint Secretariat

# 3. How Can People in the Canadian North Get Affordable and Healthy Food?

## QUICK LOOK

*It is hard for people in the Canadian North to get affordable and healthy food. Nutritious food from grocery stores is expensive. Country food is more nutritious, but some may have contaminants in it. The Canadian Government must make changes to make it easier for people to get healthy food.*

### Who?

- Northern communities that have difficulty getting affordable and healthy food

### Where?

- The research is applicable to all of the Canadian North but is focused on Nunavut

### Why?

- To discover what makes it difficult to get safe and healthy food in Arctic Canada
- To argue that the federal government should provide more funding to the Inuit to meet basic needs -- adequate housing, water, sewage, jobs and the means to provide country and other healthy food

### What?

- The government should support sustainable community economic projects such as carving and printmaking cooperatives, and hunter support programs instead of non-renewable resource mega-projects (like mining or drilling) which can cause damage
- The federal government should give control over non-renewable resources to Nunavut, along with enough money to support the new authority
- The Government of Canada should set aside a block of funding large enough to provide basic needs and infrastructure to northern communities
- The education system in the North should place more value on traditional knowledge. This knowledge should be included in the school curricula, in field trips to harvest food, in textbooks and in government decision making
- Efforts should be made to get persistent toxic chemicals banned

This chapter is summarized from:

Thompson, S 2005. Sustainability and vulnerability: Aboriginal Arctic food security in a toxic world. In: *Breaking Ice: Renewable resource and ocean management in the Canadian North*. (F. Berkes, R. Huebert, H. Fast, M. Manseau and A. Diduck, eds.) University of Calgary Press, Calgary, pp. 47-70.

## Background

### *Environmental and social change can make it harder to get healthy food*

The environment and society are changing in the Arctic now. Changes like pollutants, restrictions on hunting and fishing, development, and lower water levels can get in the way of people getting food from the land. Such changes make it harder for people to get safe and healthy food for three main reasons:

- 1) People often don't have the money or resources to buy healthy food from grocery stores.
- 2) Some country food is being contaminated by pollutants like PCBs.
- 3) Government laws and regulations may stop people from using some land and resources.

### *Country food is good for the environment*

The traditional way of life of the Inuit, even with snowmobiles, does not have a big impact on the global environment. The lifestyle of Inuit people is closely adapted to their traditional climate, plants and wildlife. They are able to live sustainably without large impacts on the environment. This is partly because they eat country foods which come from nearby and because they know how to treat the wildlife.

*If you're a good trapper, you know which animals to trap at certain times of the year, and you know which animals not to trap in a given year, because they're at the bottom of their cycle. Most animals are in a seven-year cycle...so if you know that, as a trapper, you can sustain your living. That's what sustainable means.*

*~Elmer Ghostkeeper, 1995*



Caribou harvesting facilities in Coral Harbour, Nunavut. Photo: Steve Newton

## ***Country food is important to people***

On days that people eat country food their diet is healthier. They eat more vitamin E, iron and zinc and less bad fats, less carbohydrates and less sugars. They also eat a greater variety of foods. People eat many different kinds of country food including caribou, moose, salmon, whitefish, grayling, trout, coney, scoter duck, cisco, walleye, spruce hen, pike, ptarmigan, Arctic char, Canada goose, muskox, eider duck, crowberry, beluga muqtuk, ringed seal, narwhal muqtuk, partridge and cloudberry.

*Inuit foods give us health, well-being and identity. Inuit foods are our way of life.... Total health include spiritual well-being. For us to be fully healthy, we must have our foods, recognizing the benefits they bring. Contaminants do not affect our souls. Avoiding our food from fear does.*  
~Egede, 1995

Country food is also important to the social life of Inuit. Sharing food among families helps each family have enough to eat. Country food is also very important to cultural and spiritual life. To have a healthy body and soul a person must capture, share and eat country foods. Much food energy still comes from country foods: 40% in remote Inuit communities and 6% near cities. Eating less country food and doing less physical activity is associated with being overweight, having dental problems, anemia, lowered resistance to infection, and diabetes.

## ***Better federal government funding is needed to solve problems in rural, northern communities***

- Remote rural communities in the North are more at risk from environmental

change. In these communities few people have good jobs. Sometimes drinking water is hard to get.

Wastewater has to be safely disposed. Traveling to other communities is difficult. Not many teachers or doctors live in the community. There are not enough houses for the number of people so the houses are crowded and they are also run-down.

- In Nunavut three times as many kids get sick because of bad water than in the rest of Canada. Sometimes the water is bad because of microscopic parasites like giardia, salmonella and E. coli, or it may be bad because of metals, or other toxic chemicals.
- The suicide rate in Nunavut is more than five times higher than it is in the rest of the Canada.

The improvement of water treatment facilities and increasing training are required to protect Inuit communities from water-borne health problems and other hazards. But the North does not get much money from the Canadian government for this relative to more populated areas because the government gives out funding based on how many people live in an area.

## ***Education is also a problem***

Not many Inuit have a high school diploma (2.9%), and even fewer have a university degree (1.4%). Many schools in Nunavut don't even offer grade 12 to their students. In general, schools don't teach traditional knowledge. The elders still hold much traditional knowledge, but it is hard for that knowledge to be transmitted to younger generations. Western schools don't teach students the values, beliefs and principles which are important in order to appreciate and understand traditional knowledge. Time spent in school means that young people cannot spend that time out on the

land learning traditional knowledge. If traditional knowledge is lost, people may no longer know how to live sustainably off the land.

## The Story

### ***Poverty makes it harder to get good food: Not enough money***

Many Inuit cannot get nutritional, culturally acceptable food every day. In fact, in the Aboriginal People's Survey half said they were not able to get food once or twice a month. As many as three-quarters of Inuit peoples cannot afford to feed their families on store-bought food alone. More than half the women reported running out of money to buy food two to four times a month. In some communities even more women had problems. The cost of food in the North is more than twice as much as in Southern Canada. Nutritious "store-bought" food, like fruit and vegetables, is very expensive. Without enough money you can't buy gas, guns, and snowmobiles to hunt and trap for country food, as well as buy food from the store.

### ***Country food***

Country food provides needed food and is nutritious. Country foods are healthier than "store-bought" food. But some organs and fatty parts of fish and marine mammals can store toxic chemicals. 80% of Nunavut's population hunts, fishes, or gathers food. The value of all the country food eaten in Nunavut is 55 million dollars. This is more than \$10,000 for each household each year.

### ***Contamination – Bad chemicals***

Pollutants, like PCBs for example, are produced mainly in the industrial South and transported to the North. Some industrial projects release toxic

chemicals, like mercury. Some animals that people eat, especially seals, walrus and whales, have high levels of these chemicals – particularly in their organs, such as the liver and kidney. These chemicals build up in the animals the longer they live. They eat other animals or fish that have pollutants in them too. If these animals are eaten they can make people sick.

### ***Chemicals in animals***

Mercury levels in fish and wildlife in the Canadian Arctic have increased. They are increasing in some animals and in places that are used by and are important to people.



Arctic Char

Photo: Inuvialuit Joint Secretariat

**Whales** – Mercury levels in Beaufort Sea whales are four times higher than ten years ago; in Hudson Bay mercury levels in whales are 2.5 times higher than ten years ago.

**Seals** – The highest mercury levels are in seals that are from Qausuittuq (Resolute) in Nunavut. Seal mercury levels have also risen three-fold in Mittimatalik (Pond Inlet) during the last 25 years.

**Fish** – Fish that eat other fish, like burbot, trout, inconnu, lake trout, northern pike, walleye, and Arctic char, have the highest levels of mercury. Fish that are to be eaten for subsistence should not have more than 0.2 micrograms of mercury for each gram of fish eaten. Fish that are for commercial sales should not have more than 0.5 micrograms of mercury for each gram of fish eaten.



**Ducks** – High levels of mercury and cadmium are found in the liver and kidney of eider ducks in Arctic areas. The population of eider ducks has dropped drastically in the last 30 years or so. This decline may be because of increasing levels of toxic chemicals.

**Caribou** – Caribou *used to be* contaminated by radioactive fallout from Chernobyl and from testing nuclear weapons. It may have caused cancer in some people. Radiation has decreased over time and is mostly gone now.

### ***Chemicals in people***

Around 70% of Inuit mothers from Nunavik and Nunavut have more mercury in their blood than the government says is safe. More than 25% of the population in the Kivalliq and Baffin communities eat higher levels of mercury than is considered safe. In the Labrador, Kitikmeot and Inuvialuit regions it is much lower – only 5%. Dene, Metis and non-aboriginal mothers

have acceptable *blood* levels of mercury, possibly because they eat fewer organs and fatty tissue of seal, whales and walrus. But 10% of Baffin mothers and 16% of Nunavik mothers are at increased risk from high mercury levels. PCBs, and toxaphene and chlordane have also been reported in people. Levels in the Canadian Inuit population are 5 to 8 times higher than in women in southern Canada. Baffin Inuit have the highest levels.

Children with high mercury levels did not do as well on attention tests, language tests or word memory tests. Babies that were born with high levels of PCBs were born early, weighed less and had smaller heads. The reflexes of these babies were not as good as other babies.

### ***Government policies***

Many government policies are not suited to the Inuit. Often these policies contradict the values that are essential to the Inuit way of life.



Making dry fish. Photo: courtesy of Inuvialuit Joint Secretariat

## ***Relocating families***

For a long time the Canadian government tried to control all the decisions that affected the Inuit. They moved families from one part of the Arctic to the other, to show that Canada was using that part of the Arctic. The people were not given a choice. In many places the weather was too cold and there was not enough wildlife. People found it difficult to survive because they did not know the land and the wildlife. Some managed to adapt to the new ways and learn a new lifestyle. By 1975, the Inuit people were saying that they wanted to control their own lives, but the government didn't listen to them.

## ***Non-renewable resource projects***

The government viewed the North as being resource rich. Inuit communities were thought to be "special interest groups" and development of resources would be for the "common good" of the rest of the country. Physical and social problems that resulted from these projects were viewed as "the cost of development."

## ***Resource management***

Governments did not recognize the importance of hunting and fishing to the northern economy. They used hunting quotas and "managed" animal populations, which are very different views from traditional Inuit concepts about the land. Government creation of protected areas like parks can separate indigenous people from their lands and resources that they need for survival.

Relations between the government and the Inuit have improved in recent decades. With the Nunavik, Nunavut and Inuvialuit land claim settlements the Inuit have much more control over their own lives.

## ***Nunavut***

The Nunavut Final Agreement created the territory of Nunavut on April 1, 1999. Nunavut is over 2 million square kilometres in size. Still, a large part of this territory is owned by the Government of Canada. In those areas, development companies can mine resources as long as they have government approval and permission. The Inuit have ownership rights for 355, 842 square kilometres.

## ***Inuit economic development***

Inuit communities are different from industry and governments in Canada. Inuit development focuses on community and local levels. Almost every Inuit community has a co-operative for Inuit carving and printmaking – one in seven people considers themselves an artist. This brings in a fair amount of money and has very little impact on the environment. Also, to make communities more sustainable and to provide food security, Nunavut has started a hunter support program. This program makes it possible for people who want to hunt to do so. Their hunting helps the family and community to be healthy and well-fed.

## **Conclusion**

### ***Recommendations***

After looking at the difficulties Inuit people have when getting food, the author came up with five recommendations:

- 1) Efforts should be made by the Canadian government to get toxic chemicals and pollutants banned that cause problems in the Arctic.
- 2) The Government of Canada should support Inuit economic

development, such as hunter support programs and carving and printmaking co-operatives, instead of supporting mega-projects that hurt the land and use up non-renewable resources.

3) The Federal Government should give control over non-renewable resources to Nunavut, along with enough money to help Nunavut control it.

4) The Government of Canada should set aside enough funding to provide basic human rights, such as food, shelter and safe drinking water, and infrastructure to northern communities.

5) The education system in the North should place more value on traditional knowledge. This knowledge should be included in the school curricula, in field trips to harvest and trap, in textbooks, and in government decision-making.

*Whales and sea mammals are considered to be the best food to feed the body. Without these types of foods, we, the Inuit, would have been gone a long time ago. Therefore, in order to live a full and healthy life and to keep the generations going, we, the Inuit, need the food that has brought us to where we are today.*

*~Angela Gibbons, Coral Harbour 1995*



Caribou. Photo: courtesy of the Inuvialuit Joint Secretariat



Driftwood used to make smokehouses for fish.  
Beaufort Sea Coast, Inuvialuit Settlement Region.  
Photo: B. Spek

# 4. Using Two Ways of Knowing to Measure the Health of the Oceans

## QUICK LOOK

*Are the oceans healthy? Signs of change can be called “indicators.” Community members and scientists are sharing information about changes in the ocean. Traditional signs, like the amount of fat around organs, and scientific indicators, like the amount of mercury in a fish, are being used together to measure the health of the oceans.*

### Who?

- Community members, the Department of Fisheries and Oceans, and scientists

### Where?

- The Canadian North and the rest of the country

### Why?

- To learn if northern peoples and scientists have different and/or similar views about how healthy the oceans are
- To find out if there is traditional knowledge that is important to understanding the health of oceans
- To find ways to conduct community-based monitoring of oceans

### What?

- Signs and signals based on traditional knowledge are valuable for showing changes in the health of the oceans or “Marine Environmental Quality”
- Traditional signs and scientific signs complement one another, giving a fuller picture of the situation, both are needed to manage for healthy oceans

This chapter is summarized from:

Cobb, D., M. Kislalioglu Berkes and F. Berkes 2005. Ecosystem-based management and marine environmental quality indicators in northern Canada. In: *Breaking Ice: Renewable resource and ocean management in the Canadian North*. (F. Berkes, R. Huebert, H. Fast, M. Manseau and A. Diduck, eds.) University of Calgary Press, Calgary, pp. 71-94.



## Background

Marine Environmental Quality programs aim to learn how healthy the oceans are. These programs set goals and objectives for monitoring ocean health using indicators of sustainable development to be included in “Marine Environmental Quality.”

The Department of Fisheries and Oceans will define indicators that show how healthy the oceans are, and how healthy the communities that use the oceans are. It will use traditional knowledge to identify signs that show changes in the marine environment.

These indicators and signs will together show how well the goals and objectives of integrated resource management and ecosystem-based management are being met. So far the Department of Fisheries and Oceans has developed signs of environmental change.

Work on the development of social, cultural and economic characteristics of Marine Environmental Quality programs will follow.

## The Story

### *A national workshop*

The Department of Fisheries and Oceans held a national workshop in 2001 to discuss how to develop Marine Environmental Quality objectives for local coastal management. The two goals of the workshop were to develop indicators for conservation of species and their habitat (environmental) and to develop indicators to show sustainable use by humans (social, cultural and economic). Discussions to date have been mainly among scientists. A number of workshops in the Arctic have used contributions from local people in Arctic communities to create specific monitoring programs.



Beaufort Sea, Arctic Ocean at Sachs Harbour, Banks Island, NWT. Photo: Fikret Berkes



## Discussion

### *What does Marine Environmental Quality mean?*

Marine Environmental Quality is a measure of the health of the oceans. Marine Environmental Quality programs help to ensure that oceans remain healthy. They do this partly by checking that the ecosystem is functioning normally. To check that the ocean is healthy, people measure qualities such as:

- 1) the health of a population of animals;
- 2) contaminant and nutrient levels in the water;
- 3) the number of different species living in the water;
- 4) whether or not there are any diseases; and
- 5) whether the area has been disturbed by, for example, dredging.

Setting Marine Environmental Quality objectives is choosing what is a good level for each area that you want to monitor. Marine Environmental Quality indicators or, signs of change, are used to assess how close the levels are to desired levels.

### *Marine Environmental Quality indicators for sustainable use*

The Department of Fisheries and Oceans wants to use indicators not only for the environment, but also to get a picture of the social and economic conditions of communities. They want to know how healthy communities are. Northern indigenous people measure change in different ways than scientists do. The Department of Fisheries and Oceans hopes its program will be made stronger by working together with aboriginal people. Ideally, monitoring indicators will include community-based monitoring programs.

### *Land and identity*

The land is very important to traditional northern indigenous people. In their languages the word for “land” actually means more than just the physical landscape and includes everything living, even human beings. The environment is the provider of life; everything – food, clothes, shelter – comes from the land. The land provides them with an identity and cultural values – such as sharing of food. Any loss of resources, or harm to the environment, could hurt indigenous cultures. The people might lose a way of life.

### *Importance of traditional knowledge*

Traditional knowledge is built up over many generations by being in close contact with nature and by spending time on the land. Though the traditional knowledge of indigenous people has not always been accepted by scientists, it is becoming more and more accepted. The Government of the Northwest Territories has even acknowledged in law that, “aboriginal traditional knowledge is a valid and essential source of information about the natural environment and its resources, the use of natural resources and the relationship of people to the land and each other.” The contribution of traditional knowledge to creating local Marine Environmental Quality indicators and monitoring programs could be important.

### *Ways to use science and traditional knowledge together to develop indicators*

Indicators are signs that are easy to notice or measure when they change, yet they signal a more complex change that is not easy to notice. They are almost always used to show the ways in which something is changing.



Preparing char. Photo: courtesy of Fisheries and Oceans Canada

### ***Scientific indicators***

For animals there are two kinds of indicators. One of them measures changes inside the animal's cells. It is very specific. The other notices visible changes in the whole animal – the way it looks or the way it behaves. This kind tells you something is wrong – but does not tell you what it is. A third type of indicator informs you that something is different on a larger scale, perhaps a whole ecosystem.

### ***Traditional indicators***

The concept of “indicator” has no direct translation in northern indigenous languages. Yet many indigenous people who are familiar with the land recognize and monitor different signs of change: for example, changing seasons, the timing of harvests, the number of animals, the health of animals, and unusual behaviours or appearances. These signs tell them how changes are happening.

### ***Using scientific and traditional indicators together***

Traditional indicators and scientific indicators sometimes show the same information and sometimes show different information. At a chemical or cellular level, scientific indicators are often the only ones that can be measured.

When looking at a single animal, each way of knowing shows changes that the other does not. At the population level or over a large area, traditional indicators are the most effective. Indigenous hunters have the ability to observe and weigh many different signs to come up with a big picture of what may be happening with an animal or herd. This latter method of using many different indicators and giving them differing degrees of importance is what science is trying to do today. This method is holistic and capable of taking into account the complexity of the land and waters.

## ***Marine Environmental Quality and community-based monitoring***

Community-based monitoring projects often use traditional knowledge to choose indicators of environmental quality. Traditional knowledge provides local information and understanding of the impact of changes that external researchers cannot see. The following are four examples of community-based monitoring projects that have environmental quality aspects.

### ***1) Tariuq Community-Based Monitoring***

The Tariuq community-based monitoring program in Aklavik and Tuktoyaktuk in the Western Arctic has been running since 2000. The strength of the program comes from the working group which is made up of elders, youth and experienced hunters and trappers. The Department of Fisheries and Oceans also sits on the working group. The marine environmental quality objectives of this program were chosen through workshops. Their scientific objectives were to conserve animal populations and different species, and to make sure the water quality is good. The social and cultural objectives were chosen using traditional knowledge.

### ***2) Lutsel K'e Traditional Knowledge Study***

The traditional knowledge project of the Lutsel K'e (see chap 8) describes their signs of healthy fish.

- a. Size and shape – do they have any deformities?
- b. Are the species where they are supposed to be?
- c. Are the fish fat enough – fat

around the internal organs means that fish are healthy and water quality is good.

- d. Are their organs clean and healthy – infections, deformities and parasites mean poor health.
- e. What is the colour and texture of the flesh – firm texture and the right colour mean fish are healthy.

For the Lutsel K'e, a healthy way of life means a healthy environment.

### ***3) Inuit Bowhead Knowledge Study***

The Inuit Bowhead Knowledge Study in Nunavut clearly states the Inuit idea of healthy ecosystem. Animals “remain healthy and abundant only if they were harvested and treated with respect.” They used three main signs to measure the health of the bowhead populations:

- a. the frequency of bowhead sighting;
- b. changes in the size of bowhead groups; and
- c. observations of mothers with young whales.

### ***4) Voices from the Bay***

*Voices from the Bay* is a report on the traditional environmental knowledge of Inuit and Cree in the Hudson and James Bay Regions. This study was done in response to plans to develop the James Bay II hydroelectric project. The Cree and Inuit used their own knowledge of sea-ice, currents and animal migration routes to document changes that are occurring across the region. They used signs and signals (such as changes in sea ice) to produce a comprehensive assessment of change as observed by hunters and fishers.

## Conclusions

### *Traditional knowledge best for MEQ indicators in the North*

Indigenous people have useful indicators of environmental change. Traditional knowledge holders have expertise to share with scientists in many areas related to environmental quality indicators. These areas are:

- 1) detailed knowledge about the local area;
- 2) knowledge about climate change over time, and baseline information;
- 3) the ability to come up with relevant research questions;

- 4) insights into change and adaptation in Arctic communities; and
- 5) long-term, community-based monitoring.

The best way to set objectives and indicators in the North is for scientists and indigenous people to work together. More research is needed to find the best way to choose indicators and set up monitoring programs. But the question still remains: Is it possible to come up with indicators that can be used in all different regions of the Arctic, or will indicators have to be designed to suit each individual region?



Community of Cambridge Bay on Pease Strait, Arctic Ocean.  
Photo: D.K.McGowan

Here are some examples of signs and indicators based on scientific knowledge and traditional knowledge. Both sets of indicators show changes in environmental conditions and animal health in their own ways. Used together they can provide a fuller picture. The plus (+) shows that that form of knowledge does have an indicator for that change. A minus (-) shows there is probably not an indicator for that change. A question mark (?) means that it is not known yet if an indicator exists.

	Scientific Knowledge	Traditional Knowledge
<u>Chemical/biochemical level</u>		
Metallothionein levels (e.g., Cd, Pb, Hg)	+	-
Slowing of protein production in liver, kidney, brain (e.g., Hg)	+	-
Contaminants in tissues, sediments, water	+	-?
<u>Cellular level</u>		
Lumps, nuclear, mitochondrial, cytological changes	+	-
Structural changes in cells	+	-
<u>Whole animal level</u>		
Structural alteration in fish epidermal mucous	+	+
Tumours	+	+
Spots related to parasites	+	+
Parasitic infestation	+	+
Reduction in sperm viability	+	-
Changes in survival of larvae and fry	+	-
Growth rate by size (from catch data)	+	+
Growth rate by age (e.g., otolith data)	+	-
Body condition	+	+
Muscle firmness, mesentery fat	-	+
Physiological changes (e.g., osmoregulation)	+	-
Visible neurophysiological changes (e.g., swimming)	+	+
Other behavioural changes	-	+
<u>Population and community level</u>		
Abundance (numbers, biomass)	+	+
Number of young; sex ratio in catches	+	+
Reproductive life span	+	-?
Age at maturity	+	-?
Genetic diversity	+	-
Community change	+	+



Church in Tuktoyaktuk, Inuvialuit Settlement Region, NWT.  
Photo: Monica Schuegraf



# 5. Integrated Resource Management Planning in Canada's Western Arctic

## QUICK LOOK

*Planning for a Marine Protected Area in the Beaufort Sea has taken much effort. Many meetings were held to see if people were interested in and supported creating a Marine Protected Area. No decision has been made yet, but groups working together have learned to trust each other more.*

### Who?

- The Beaufort Sea Integrated Management Planning Initiative (BSIMPI), the Inuvialuit communities, government and industry groups

### Where?

- The Zone 1(a) beluga protection areas in the Beaufort Sea

### Why?

- Consultation was done to determine the level of support and interest among communities, Inuvialuit management bodies, government and industry for the creation of a Marine Protected Area in the Beaufort Sea
- The Beaufort Sea Integrated Management Planning Initiative aims to create better working relationships among different interest groups in the Inuvialuit Settlement Region

### What?

- There was a reasonably high level of support for the marine protected area, and plans have moved onto the next level
- The consultations resulted in a greater level of trust, respect and understanding among the different groups

This chapter is summarized from :

Fast, H., D. Chipczak, K.J. Cott and G.M. Elliot 2005. Integrated management planning in Canada's Western Arctic: An adaptive consultation process. In: *Breaking Ice: Renewable resource and ocean management in the Canadian North*. (F. Berkes, H. Fast, M. Manseau and A. Diduck, eds.) University of Calgary Press, Calgary, pp. 95-118.

# The Story

## *The consultation process for a Marine Protected Area*

The Beaufort Sea Integrated Management Planning Initiative (BSIMPI) Working Group followed the guidelines in Canada's *Oceans Act* to develop a Marine Protected Area. They completed studies to see if the Zone 1(a) areas qualified to be Marine Protected Areas. They had people study the impact on the environment, and on people's lives (jobs, hunting, etc.) and their culture. The studies concluded that the Zone 1(a) beluga protection areas met the requirements to be a Marine Protected Area.

Canada's definition of a Marine Protected Area is:

*"an area of the sea that deserves special protection for some of the following reasons:*

- a) to protect commercial and/or subsistence fishery resources, including marine mammals and their habitats;*
- b) to protect endangered or threatened marine animals or plants, and their habitats;*
- c) to protect special habitats;*
- d) to protect marine areas where many different species live; and*
- e) to protect any other marine resource or habitat that the Minister of Fisheries and Oceans thinks is important"*

After it was determined that the Zone 1(a) areas would meet the requirements, the consultation process began.

## *Purpose of the consultations*

The consultations were done to figure out if the Inuvialuit, the government, and industry were interested in and supported a Marine Protected Area. The consultations were based on a few principles:

- to recognize the rights of the

Inuvialuit given by the Inuvialuit Final Agreement;

- to respect the views of all the different groups;
- to come up with arrangements that everybody agreed on;
- to keep using traditional and scientific knowledge to help make the decision;
- to allow everyone to see how the talks were going, to do so quickly and in an organized way.

## *How did it work?*

The first step of the consultations was to make sure that all participants had a common basic level of understanding about how to make a Marine Protected Area. The meetings were to inform everybody about:

- 1) the Beaufort Sea Integrated Planning Initiative, their role, and how to meet with them;
- 2) what Canada's *Oceans Act* is;
- 3) integrated resource management;



Beluga muqtuk about to be prepared.

Photo: P. Cott

- 4) the concept of Marine Protected Areas.

While consultations were taking place the concerns, views and desires expressed by participants were recorded. This information was used to guide the planning for the marine protected area. In addition, to consultations the Working Group members also went to the Zone 1(a) areas.

### ***Community consultations***

Community consultations were held in all Inuvialuit communities – Paulatuk, Holman and Sachs Harbour decided to let the other three communities (Aklavik, Tuktoyaktuk and Inuvik) that used the Zone 1(a) areas make the decisions. All organizations involved in the Initiative encouraged their members to participate in the community consultations. This allowed the communities to hear input from all parties and have their questions answered immediately. This was especially important with industry.

Consultations happened in each of the three communities with:

- 1) Hunter and Trapper Committees – that manage fish and wildlife issues;
- 2) Community Corporations – that represent economic interests;
- 3) Elders’ Committees – that protect culture and ensure the traditional knowledge and history of the area is taken into account;
- 4) Public Meetings – everybody.

After consultations in individual communities, the committees (for example, the Hunter and Trapper committee) from each of the communities were brought together so they could meet and share their opinions with each other.

### ***Industry consultations***

There are three main industries that work in and around the Zone 1(a) areas. These are oil and gas,

transportation (air and water), and tourism. Of these industries, only oil and gas were interested in being involved in the negotiations to create the marine protected area. Companies were contacted by phone and provided with written information about the Beaufort Sea Integrated Planning Initiative activities. If companies were interested, they were invited to make a presentation to the Working Group. The results of these meetings were shared with other interested groups.

### ***Government consultations***

The government was consulted at both federal and territorial levels. These consultations took place through previously scheduled organizations and meetings. The level of consultation for federal departments was directly related to their level of responsibility for the marine environment. Most discussions with territorial governments took place during previously scheduled meetings and were usually updates on the process. This is because territorial governments have little responsibility for marine environments.

### ***Did the consultations work?***

The purpose of the consultations was to discover the level of support for a Marine Protected Area among communities, government, and industry. It is difficult to measure if understanding and knowledge about Marine Protected Areas increased. Instead, the Initiative measured success by the reactions of the different groups. They noticed a shift from uncertainty and lack of trust among groups to a willingness to participate and contribute to the process. The consultation process resulted in a decision to continue planning for a Marine Protected Area.

### ***A bigger purpose***

The Beaufort Sea Integrated Management Planning Initiative had a larger purpose in mind when they started consultations. They wanted to create better working relationships among the members of the Initiative. They wanted to build a shared sense of trust which will be important for future integrated management planning in marine waters. A better working relationship can be noticed in three ways:

- 1) a willingness of communities and others to participate constructively in the consultation process
- 2) a willingness to contribute cash or in-kind resources
- 3) a willingness to accept that the information shared was fair and accurate

### **Participation**

In the beginning groups were sometimes angry and brought up different issues which were unrelated to the Beaufort Sea Integrated Management Planning Initiative. But, as the process continued, the meetings were more focused and the Beaufort Sea Integrated Management Planning Initiative learned which issues were important to the stakeholders. The different organizations were also more interested in participating. They increased their level of contribution



Inuvialuk woman harpooning a beluga whale near East Whitefish Station in the Mackenzie Delta.  
Photo: Fisheries Joint Management Committee

to the process, and other organizations that had not been involved wanted to participate. Most groups realized that the consultations helped them to express their interests.

### **Resources**

Both in-kind support and cash resources increased as organizations became more open to the process. Communities assisted in organizing community meetings. Government and industry dedicated staff for two or three-day periods and covered costs for some Beaufort Sea Integrated Management Planning Initiative workshops.

### **Trust**

Government-initiated projects do not have a good reputation with the Inuvialuit because of the history of the area and some recent bad experiences (the gun registry, and attempts to change the boundary of a national park). Many people think that the “*government will do what it wants despite what the communities say.*” This makes it difficult to gain trust and cooperation.

In the beginning, it looked like the Beaufort Sea Integrated Management Planning Initiative might just have been DFO by a different name. It is not surprising that people thought this, as:

- 1) the Beaufort Sea Integrated Management Planning Initiative Secretariat is made up of Fisheries and Oceans staff;
- 2) the funding for the Beaufort Sea Integrated Management Planning Initiative is primarily from Fisheries and Oceans;
- 3) the Marine Protected Area was being created under legislation that is the responsibility of Fisheries and Oceans Canada.

The Beaufort Sea Integrated Management Planning Initiative did

its best to show that it was not just Fisheries and Oceans, partly, by having representatives from all the organizations at community consultations. Fisheries and Oceans respected and worked with co-management arrangements. It was agreed that, if a Marine Protected Area were created, it would be managed by a co-management body. This guarantee was provided to the communities in a letter from the Minister of Fisheries and Oceans. Eventually, Inuvialuit partners made it known the roles they wanted to play in the Beaufort Sea Integrated Management Planning Initiative and described it as a *partnership*.

## Conclusion

New legislation, *Canada's Oceans Act*, provided the legislative framework to allow the Beaufort Sea Integrated Management Planning Initiative to be formed. The Beaufort Sea Integrated Management Planning Initiative began a consultation process that brought together Inuvialuit communities, management bodies, industry and government. These meetings allowed the groups to contribute directly to the management of resources. As of January 2005, all organizations are working towards a consensus decision about the creation of a Marine Protected Area.

## Keys to success

Very important to the success of the Beaufort Sea Integrated Management Planning Initiative was that key individuals and organizations were able to participate regularly in the discussions and at important points. Their staff also contributed by:

- 1) reviewing the basic understandings and agreements of all the previous

- meetings at each meeting;
- 2) knowing if groups or individuals wanted to raise unrelated or personal items at the discussion – and making sure the discussion stayed on track;
- 3) having well-organized and well-managed meetings, and combining them with other scheduled consultations.

## Difficulties in working together

There were a number of difficulties such as misunderstandings and delays. These difficulties were in part caused by:

- 1) different expectations;
- 2) different interests;
- 3) different cultural backgrounds;
- 4) different levels of education;
- 5) varying levels of technical knowledge;
- 6) different methods of communicating and interpreting information;
- 7) differing values.

It was always important to make sure that people's expectations were not exaggerated or underestimated.

The objective of integrated resource management is to influence human behaviour for good resource use. The Beaufort Sea Integrated Management Planning Initiative has succeeded in doing this. Bringing together development interests, traditional land uses, and government allowed each to hear the opinions of the others. Through these consultations, Canada's Oceans Strategy is being used in the Inuvialuit Settlement Region. A way to coordinate decision making has been tried and tested and much has been learned.





Children painting t-shirts for Oceans Day in Tuktoyaktuk;  
Inuvialuit Settlement Region, NWT.  
Photo: courtesy of the Inuvialuit Joint Secretariat



# 6: Involving Inuvialuit Youth in Ocean Resource Management

## QUICK LOOK

*Do Inuvialuit youth feel they are capable of taking over the management of their natural resources? What can be done to give the youth more opportunity to be involved in resource management?*

### Who?

- Michelle Schlag, a Masters student at the University of Manitoba, worked with youth of the Inuvialuit Settlement Region. She also talked to elders, parents, teachers and local resource managers in Sachs Harbour

### Where?

- In the five high schools of the Inuvialuit Settlement Region in the Northwest Territories: Holman, Paulatuk, Tuktoyaktuk, Aklavik and Inuvik

### Why?

- The elders of the Inuvialuit Settlement Region and the Beaufort Sea Integrated Management Planning Initiative (BSIMPI) Working Group thought that it was very important to involve Inuvialuit youth in the process of co-management
- To create a plan that would interest young Inuvialuit to participate in resource management activities and to take care of their oceans

### What?

- Michelle worked with students in high schools to discover what they thought about their future role of managing their natural resources. The research had four main findings:
  - 1) There are not many opportunities available to the 1, 700 youth in the region
  - 2) Both young people and their communities feel that they are not well prepared to take over resource management responsibilities from their elders
  - 3) Youth feel they are not getting high-quality education and are not getting out on the land enough to gain the skills and knowledge of their elders
  - 4) Youth of the Inuvialuit Settlement Region want to play meaningful roles in their society

This chapter is summarized from:

Schlag, M.P. and H. Fast 2005. Marine stewardship and Canada's Oceans Agenda in the Western Canadian Arctic: A role for youth. In: *Breaking Ice: Renewable resource and ocean management in the Canadian North*. (F. Berkes, R.Huebert, H. Fast, M. Manseau and A. Diduck, eds.). University of Calgary Press, Calgary, pp 119-138.

# The Story

Elders in the Inuvialuit Settlement Region were worried that their youth did not have the knowledge and skills they needed to take over resource management responsibilities. The connection between young people and the land is not as strong as it used to be. The Beaufort Sea Integrated Management Planning Initiative Working Group is the co-management group working on integrated resource management in the Inuvialuit Settlement Region. After their first year, the Working Group decided that it was important to involve young people from the region in their work.

Michelle Schlag was a graduate student working on her Masters degree at the University of Manitoba in Winnipeg. She was interested in what was happening with the youth. Michelle wanted to:

- 1) find out how much people thought Inuvialuit youth were participating in ocean resource management activities.
- 2) find out what will make Inuvialuit youth want to participate.
- 3) create a plan that would describe how to increase youth participation in the future.

## ***How was the research done?***

From November 2002 until the end of January 2003, Michelle talked with groups of students in the five high schools in the Inuvialuit Settlement Region – in Holman, Paulatuk, Tuktoyaktuk, Aklavik and Inuvik. While she was in the region she was helped by a young Inuvialuit research assistant who introduced her to the communities, to the people, to the culture and to other young people. During her research period, Michelle lived with families and learned about Inuvialuit culture through everyday

activities – washing dishes, preparing food, watching television, snowmobiling and many others. Ninety-one people either youth, elders, parents, teachers and local resource managers (government and Hunter and Trapper committee members) participated in this research through taking part in group discussions and interviews.

## ***What do the youth think?***

Most Inuvialuit youth were interested to talk with Michelle about taking care of ocean resources. Most importantly, she found that Inuvialuit youth:

- *strongly want to learn and want to have meaningful roles in their communities;*
- *feel that they do not have the knowledge and skills to take over resource management responsibilities from their elders.*

Youth often don't get involved in activities because they are not confident in their own abilities to do resource management. This is partly because:

- 1) they haven't had many opportunities to learn the traditional values and customs of their grandparents' generation;
- 2) people don't seem to expect that they will be productive citizens;
- 3) they don't have very many role models to inspire them; and
- 4) they feel their school education is not as good as in other parts of Canada.

## ***Opportunities for youth involvement: Traditional activities***

There are not many opportunities for youth to be involved in traditional activities. Community corporations and/or Brighter Futures in the six

Inuvialuit communities run cultural camps for 10 to 25 young people from each community each summer (and sometimes in the winter). But this is not very many compared to how many youth there are. Being on the land helps young people develop a connection to the land and to pass on traditional ecological knowledge.

### ***Difficulties***

There are many situations that make it harder for youth to get out on the land. It is expensive to go out on the land, especially if you have a large family. There may not be enough room for everybody. It is also difficult because youth that go out on the land often miss classes in school. There are more chances for youth in smaller communities to go out on the land. But there are more chances for youth in larger communities to participate in scientific activities.

### ***Scientific activities***

There are only a few opportunities for youth to be involved in scientific activities. Sometimes youth get hired as research assistants for projects. But, most opportunities come through different programs run by different organizations.

- **The Fisheries Joint Management Committee (FJMC) Student Mentoring Program**  
Youth are given the chance to work with resource managers and scientists for the summer. It is hoped these chances will make them want to finish school and become resource managers and scientists in the future. This program is in partnership with Fisheries and Oceans Canada
- **The Tariuq Monitoring Program**  
This is a community-based monitoring project in Tuktoyaktuk and Aklavik

funded by Fisheries and Oceans Canada. Students participate with elders, members of Hunter and Trapper Committees and Fisheries and Oceans representatives. Youth learn how to monitor the number of fish and water temperature. The information collected is used by Fisheries and Oceans to understand what is happening to coastal fish.

- **Oceans 11 – Arctic Marine Science Curriculum**

Oceans 11 is part of the school curriculum and is taught in Grade 11 in schools in the Territories. It has information on ocean arctic science and traditional ecological knowledge.



FJMC student participating in beluga whale tagging.  
Photo: courtesy of the Inuvialuit Joint Secretariat

- **Oceans Day**

Oceans Day is hosted by Fisheries and Oceans Canada. During Oceans Day youth have a chance to learn about ocean ecosystems and careers involving oceans. Oceans Day is in a different community in Canada each year. When Oceans Day was in Tuktoyaktuk, there was also a youth retreat where three youth from each community in the Inuvialuit Settlement Region were invited.

### ***Difficulties***

Out of the 1700 youth in the Inuvialuit Settlement Region, very few of them actually get the opportunity to participate in any of the scientific and resource management activities. It is difficult for youth to even find out about the programs offered by the different organizations. If they do hear of some, they don't usually know who they should contact to get involved. Researchers from outside are not very involved in the community and most youth do not know what they are studying or why it might be important to them. Also, the groups that run these programs do not coordinate with each other or with the schools.

### ***Roles for education, traditional knowledge and resource managers***

Many youth living in the communities feel abandoned and forgotten by their own people and by other Canadians. It is the job of teachers, elders, parents and resource managers to take an interest in youth. They must encourage youth interest in resource management and show them what opportunities are available.

### ***Education***

Inuvialuit youth feel they are getting a low-quality education in schools.

This disappointment may be for a number of reasons.

- 1) People think more students in schools in the Inuvialuit region should be passing and so students are passed even if they have not met the requirements of the grade.
- 2) Some youth don't get much support to continue from their families and communities.
- 3) It is not viewed as necessary by some elders for students to graduate from high school if they are going to spend all their time on the land.

These problems must be looked at and fixed by the communities and the teachers. Youth have suggested that having positive role models is important. Seeing people close to their own age succeed will inspire other young people. Having mentors in oceans-related careers is also very important.

### ***Traditional knowledge***

The Inuvialuit have taken care of their coastal and marine resources for centuries. They have a personal relationship with the land. The traditional knowledge of the land is passed from one generation to the next. Right now the traditional knowledge is held mainly by the elders. Elders, community leaders, parents, teachers and the youth agree that the knowledge is not being passed down to today's youth.

Spending time on the land gives youth a sense of connection and belonging to the land, the ocean, to animals and to each other. By being on the land youth care more for the community, work together better, and become self-reliant and confident in their own abilities. Elders, parents, and communities are responsible for giving the youth the chance to gain traditional knowledge, skills and the self-reliance that goes along with them.



Oceans Day parade in Tuktoyaktuk, Inuvialuit Settlement Region, NWT.  
Photo: Michelle Schlag

### ***Local resource managers***

Many local resource management professionals in the Inuvialuit Settlement Region have a negative attitude towards youth. This feeling developed because when they try to involve them it is usually disappointing and they give up. Youth are aware of what these people think of them and do not want to work with people who think badly about them.

## **Conclusion**

### ***A plan for helping youth take charge of their resources***

This plan has six parts and focuses on how to get more youth involved, the need to make new and larger programs, the need for better communication, the need for better quality education and the urgent need to take youth out on the land for long periods of time. The plan also explains how different organizations, such as teachers, elders, Hunter and Trapper Committees, the Inuvialuit Regional Corporation, local resource managers,

the Beaufort Sea Integrated Management Planning Initiative and industry can help. The plan means people must have a new way of thinking about youth.

### ***Six parts to the plan***

#### **1) Youth should continue to participate in available opportunities**

Existing opportunities should be expanded so that more youth will get a chance to participate

#### **2) Develop new opportunities**

Youth and resource managers together should develop new opportunities for youth involvement. The position of “Marine Stewardship Youth Coordinator” should be created. It should be filled by a local youth who has participated in some of the programs. The Fisheries Joint Management Committee agreed that this is a good idea and would support it. Youth should help design the program, and incentives should be provided for participants.

### **3) Make it easier for youth to find out about opportunities**

Put all information for all programs in one location. This will make it much easier for youth to find out what is available. The information could be available in schools, youth centres, or libraries and in different types of media (newspapers, television, radio, newsletters, or websites). The Youth Coordinator should also have all the information available. Again, getting youth to help design promotional materials will make them more noticeable to other young people.

### **4) Improve communication between groups**

Better communication will mean that groups can talk about what they can offer best to youth. If groups communicate, they should be able to design opportunities so that they will cover all aspects of ocean management. Also, opportunities may not be at the same time as school and other opportunities. The Marine Stewardship Youth Coordinator would help with communication among groups.

### **5) Offer youth a high-quality education**

Schools need to improve their standards. Watering down and changing programs result in a school system that does not prepare youth for life in the North or the South. Inuvialuit youth should be encouraged to finish school, and they may go on to get a post-secondary education.

The schools should teach students about ocean ecology, governance, and the importance of the ocean to the Inuvialuit culture using a number of different ways. This could be done through marine related projects and science fairs, guest speakers, attending marine conferences, and marine extra-curricular activities.

### **6) Increase the traditional knowledge and skills of youth**

Youth should get the chance to learn about the land from their family and elders. More on-the-land and ocean programs should be offered. On-land programs could begin to compensate for the loss of traditional methods of handing down traditional knowledge.

### *Who is responsible for the plan?*

**Beaufort Sea Integrated Management Planning Initiative** – is responsible for sharing the knowledge gathered from this study. They should do so in ways that encourage community leaders, elders, educators, resource managers and others in finding ways to make the plan work.

**Teachers/educators** – they are responsible for teaching Oceans 11 and should make information about opportunities available to students.

**Hunter and Trapper Committees** – the members of Hunter and Trapper Committees can ask youth to attend their meetings, host workshops and give school presentations. They should be able to teach youth about the importance of the marine environment to their people and culture.

**Elders** – Elders have a responsibility to pass on the traditional knowledge to younger generations. Elders Committees could host field trips to take youth out on the land and teach them traditional skills and knowledge. They could also host workshops about marine issues and teach traditional skills.

**Local Resource Managers** – This group includes Fisheries and Oceans Canada, Parks Canada, the Department of Resources, Wildlife and Economic



Development and the Fisheries Joint Management Committee. These groups should make regular school presentations and host more community events like Oceans Day. They should also provide summer jobs and involve youth in scientific research and marine-related conferences. The Fisheries Joint Management Committee Student Mentoring Program is a good example of what can be done.

**Inuvialuit Regional Corporation** – The Inuvialuit Regional Corporation should continue and expand its Brighter Futures program, make sure youth get a high-quality education, and encourage youth to get a post-secondary education.

**Industry** – Industry should start programs that will make youth want to stay in school. The low-skill requirements and high pay in many industry jobs make

young people think it is not important to finish school. Industry can change hiring policies, provide scholarships and give presentations in schools on marine topics and staying in school.

### *What happens in the future?*

Now is the time to involve the youth in marine resource management. Youth want to be involved and to learn more. Youth have to be given a high-quality education and chances to be out on the land and learn traditional knowledge and skills. If they do not receive these chances, their quality of life may suffer.

This research is about Inuvialuit youth, but the way the youth feel in their region is similar to what aboriginal youth feel all over Canada. The ideas and findings are applicable across the country and probably worldwide.



FJMC students participating in beluga whale tagging. Inuvialuit Settlement Region, NWT  
Photo: courtesy of Inuvialuit Joint Secretariat



West Side Working Group members discussing Yukon North Slope fishing locations.  
From left to right: J. Archie, D. Gordon, B. Ayles and C. Arey  
Photo: Ed McLean

# 7. Using Traditional Ecological Knowledge in Resource Management

## QUICK LOOK

*Traditional knowledge of northern people is being used in managing natural resources. The chapter points out key elements necessary for the success of using traditional knowledge and some of the challenges.*

### Who?

- the Canada/Inuvialuit Fisheries Joint Management Committee
- the Lutsel K'e Wildlife, Lands and Environment Office
- Quttinirpaaq National Park – Joint Park Management Committee
- the Alaska Beluga Whale Commission, the Wet'suwet'en First Nation and the Innu Nation, Labrador

### Where?

- Northern Canada (Northwest Territories, Nunavut and Labrador), Alaska and British Columbia

### Why?

- To document the strong commitment to traditional ecological knowledge made by aboriginal groups, academics, government and non-government organizations in natural resource management
- Also to show how this support has led to an increased use of traditional ecological knowledge in decision making

### What?

- Co-management institutions are important because they create a space where traditional knowledge can be shared, discussed and used in resource management
- The effective use of traditional ecological knowledge in resource management takes a long time because people coming from different perspectives have to learn to trust each other and explain their own way of knowing
- There must be investment in building capacity in communities so they can commit to expanding the role of traditional ecological knowledge in decision making

This chapter is summarized from:

Manseau, M., B. Parlee and B. Ayles 2005. A place for traditional ecological knowledge in decision making. In: *Breaking Ice: Renewable resource and ocean management in the Canadian North*. (F. Berkes, R. Huebert, H. Fast, M. Manseau and A. Diduck, eds.) University of Calgary Press, Calgary, pp. 141-164.

## Background

The importance of traditional ecological knowledge is being recognized in many parts of Canada. In fact, it is part of Canadian law that traditional ecological knowledge be used in resource management. Northern land claim agreements are helping to respect, preserve, and promote the use of this knowledge in resource management. Co-management boards have played a significant role in making easier exchanges between different knowledge holders.

## The Stories

### 1) *The Canada/Inuvialuit Fisheries Joint Management Committee*

The Fisheries Joint Management Committee is the co-management board responsible for fish and marine mammals in the Inuvialuit Settlement Region. It has two Inuvialuit members, two government representatives and a chairperson

appointed by the board. The Fisheries Joint Management Committee has been quite successful in using traditional ecological knowledge to assist in making decisions.

Some procedures that make the committee work well are:

- 1) discussion of an issue until everybody can agree – reach a consensus;
- 2) everybody respects each person's opinion;
- 3) a strong sense of friendship and a feeling of working together;
- 4) everybody works to achieve *long-term* goals.

### *Beaufort Sea Beluga Management Plan*

The beluga whale is very important to Inuvialuit culture and traditions. People want to be able to harvest beluga for many generations to come. The Beaufort Sea Beluga Management Plan discusses many issues, like:

- 1) how to keep harvest sustainable;
- 2) how to conserve and protect beluga



Beluga monitoring camp. Photo: courtesy of Inuvialuit Joint Secretariat

- (beluga management zones);
- 3) what to do about the oil and gas industry;
- 4) how tourism relates to the belugas;
- 5) how by-laws of Hunter and Trapper Committees affect beluga harvesting.

### ***Beluga monitoring***

Monitoring of beluga whales is a part of the management plan. The purpose of the monitoring is to know how many whales are being harvested and whether this amount is more or less than before. Inuvialuit hunters have been monitoring belugas for 500 years. The monitoring program has been in place 30 years. Right now monitoring happens at seven locations along the coast of the Beaufort Sea. The program includes all traditional hunting areas and involves four communities. The results of the monitoring are given to the Hunter and Trapper Committees, to schools and to community members. This sharing is done through meetings, workshops and posters. The results are also published in scientific papers. The monitoring is very important because it lets people know how healthy the belugas are. It also provides useful information for deciding on how many to hunt.

### ***The conflict***

Although the committee works well together, there are sometimes problems. In the 1980s, an aerial survey was done to find out how many whales there were in the Canadian Beaufort Sea. The scientists estimated the number of whales was around 7,000. The hunters were sure the population was much bigger based on their personal observations. The scientists agreed that their numbers were low and that the count was based on animals seen *above* the water and in the waters near the

Mackenzie River estuary – not the ones further out. But despite the problems with the survey and what the hunters said, the number 7,000 was published and used by the government. As a result, quotas for hunting were proposed – with the thought of stopping harvest altogether. Only the rights given to the Inuvialuit in their Final Agreement stopped these quotas from being put in place.

### ***Who was right?***

In 1992, another aerial survey was done. This time they observed 19,629 whales and they still hadn't counted animals under water or whales outside the survey area. This time they added in more to make up for that and came up with a population estimate of 39,000 animals. The hunters had been correct. This story shows the importance of using traditional ecological knowledge in the planning of the Fisheries Joint Management Committee.

## ***2) The Lutsel K'e Wildlife, Lands and Environment Office***





## ***Problems with mining and hydroelectric projects***

Since the beginning of the 1900s, the Canadian government has encouraged development of non-renewable resources, such as mining for gold and diamonds, in northern communities like that of the Lutsel K'e Dene First Nation. Many of these projects, including hydroelectric projects, can have impacts on the social and environmental well-being of communities.

## ***A new beginning***

In 1989 and 1995, people were excited to find out they could mine diamonds they were excited. They thought that this time they could do it right and the aboriginal people would be treated well and have their rights respected. A mine could provide many opportunities. One of these opportunities was the chance to use traditional knowledge to plan, monitor and manage the projects.

## ***What happened in Lutsel K'e?***

The people in Lutsel K'e wanted to track changes in the community's environment and overall health. In order to do this they built additional skills and capacity to do long-term monitoring and research activities. They got funding and support from universities, foundations, government, non-governmental organizations and industry.

The Wildlife, Lands and Environment Committee and the Elders Committee took charge. They trained their youth in basic research methods, geographic information systems (GIS), database management and their native language, Denesoline (Chipewyan). The youth worked with elders on the land. They learned and practised Dene traditions and knowledge. They also documented the knowledge and applied

it to the impacts of mining in their region. Over eight years they made good progress towards the vision, described below by Florence Catholique:

*"We are trying to relay the traditional knowledge so that the Elders will be used, and maintain the youth in the school system. It's all very complex. We've got to monitor, we've got to record traditional knowledge so the younger people can see it, so it's impressive to the young. The Wildlife committee has more people employed than I have ever seen, it's an area where young people want to be, they're still interested in the land. But the next generation, if we don't keep our people out on the land, they're not going to be. The community has to look at getting the people out on the land, to understand development. These things are being done with the Wildlife, that is their purpose . . ."*

- Florence Catholique, Lutsel K'e, 2001

## ***How did their project work?***

The increased ability of the community made it easier for them to work with government and industry. They defined their own indicators and baselines for two projects. The first project was about community health (it was called the Traditional Knowledge Study on Community Health) and it looked at self-government, healing and preserving culture. The second project was about the health of the environment (it was called Community-Based Monitoring Pilot Project) and it looked at birds, fish, caribou and fur-bearing animals.

Between 1995 and 2003, the Wildlife, Lands and Environment Committee had a number of different indicators for community health and the health of the environment. Some indicators were the quality of housing,

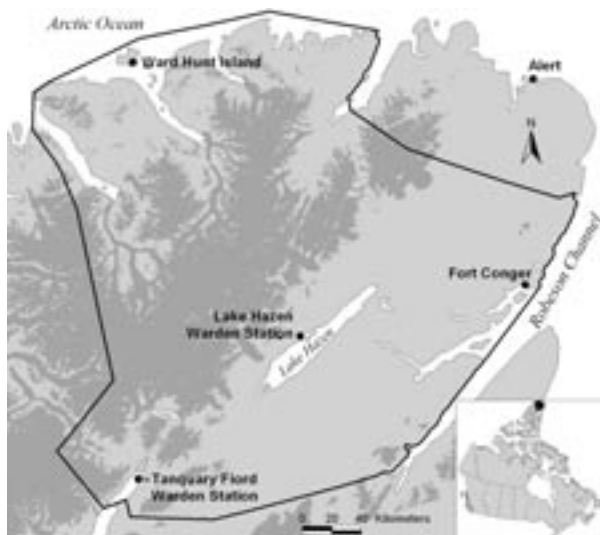


health and social service programs. For the environment, they monitored changes such as caribou health and movement.

### **Successful?**

So far it seems like Lutsel K'e has been successful in building community capacity and community-based monitoring programs. They use the information they gather to plan and manage their health and social service programs. Their traditional knowledge is helping them manage their resources, even mining.

### **3) Co-Management of Quttinirpaaq National Park of Canada**



### **About the park . . .**

“Quttinirpaaq” means ‘top of the world’ in Inuktitut, the Inuit language. Quttinirpaaq National Park became a park reserve in 1986 to protect a part of the Arctic ecosystem. It is at the northern end of Ellesmere Island in the Canadian Arctic. It is the second largest national park in Canada with a surface area of 37,775 square kilometers. The nearest communities to the park are Grise Fjord, which is 640 km south and Resolute Bay, 900 km to the south. Every year the

Park has discussed management issues with these two communities. But, with the signing of the Nunavut Land Claim Agreement in 1993, a joint Inuit/federal government co-management body was made. In 1999, an Inuit Impact and Benefit Agreement was completed. It provided detailed guidelines for the co-management of all the parks in Nunavut: Quttinirpaaq, Auyuittuq and Sirmilik.

### **The Joint Park Management Committee**

The Joint Park Management Committee helps manage the park. It is made up of three members appointed by the Qikitani Inuit Association and three members appointed by the Government of Canada. The job of the Park Management Committee is to advise the Minister of Parliament who is responsible for national parks. The Committee has input on all matters related to planning and operation of the park. The Committee also has input into development of park management plans, yearly work plans, budgets and research and monitoring projects. The Committee also helps Grise Fjord and Resolute Bay take advantage of the economic benefits associated with the park.

### **Park Management Plan Communication challenges and solutions**

Communication is a challenge because the people in this area are spread out over great distances. The development of the park management plan, despite the distance, shows some ways in which the Committee works. The Joint Park Management Committee communicates with its members and communities in a variety of ways:

- 1) organizing one or two meetings every year, as well as many teleconferences;



Visiting a Palaeo-Eskimo cache at Kettle Lake near Tanquary Fiord, Quttinirpaaq National Park.  
 From left to right: Liza Ningiuk, Minnie Nungaq, and Nancy Anilniliak  
 Photo: Elizabeth Seale

- 2) organizing workshops to:
  - a. better understand the requirements of the Inuit Impact and Benefit Agreement;
  - b. to learn more about management planning;
  - c. to understand terms and ideas used by Parks Canada;
- 3) spending time on the land in the park to exchange views and observations, and to come up with long and short term conservation objectives;
- 4) providing English and Inuktitut translation for written material and during meetings.

The time the members spend together on the land helps to build trust between members of the Committee, staff and advisors. The issues are repeatedly discussed and Inuit representatives make their decisions only after understanding and learning from knowledgeable community members.

### **Ways of communication**

Inuit representatives consult with community elders and Park staff consult with scientists. Summaries of the information are shared at meetings. Both the traditional knowledge or “Inuit Qaujimagatunqangit” and scientific knowledge are shared mostly through speaking. Along with park rules and regulations, Inuit values and perspectives are communicated through oral histories, songs and prayers.

### **3) *The Alaska Beluga Whale Committee***

The Alaska Beluga Whale Committee was created in 1988 by Alaskan Native American beluga whale hunters, government biologists and managers. They wanted to make sure that the beluga population would be healthy and that they would be able to continue hunting them. The Committee

- 1) identified what information they needed to have;

- 2) chose research priorities and methods;
- 3) and made management decisions.

The Committee meets every year. Research and monitoring happen throughout the year and communities interact with Committee members during these times. At the meetings researchers and hunters share information. Everybody discusses the information, asking questions in order to understand and generate new ideas.

#### **4) *The Wet'suwet'en First Nation of British Columbia***

The Wet'suwet'en First Nation in British Columbia uses geographic information systems to map traditional land use, wildlife habitat and food sources. The area is divided into territories usually based on watershed lines. The territories are the basis for mapping and managing resources. Traditional ecological knowledge has been used to identify areas of interest for management purposes. Black huckleberries are the first product they will manage and market.

#### **5) *The Innu Nation of Labrador***

The Innu Nation of Labrador and the Government of Newfoundland and Labrador recently completed an ecosystem-based management plan for 7.1 million hectares of boreal forest. A key part of the plan combines conservation science, Innu traditional knowledge and cultural land use data. An Innu forestry office was established in the community for this project. The office trains and hires Innu foresters and technicians. They collect field data, use Innu perspective in forest management and communicate with community members.

## **Conclusions**

### ***How co-management uses traditional knowledge***

Co-management groups play a role in making traditional knowledge easier to use for resource management. They create a space where cross cultural learning occurs. On these boards people make an effort to learn about, communicate and understand the worldview of the others. A common understanding of the management goals and the gathering of further information create a sense of shared community. For traditional ecological knowledge to be used successfully in decision making, there is a need to respect different ways of knowing. All parties participating in the management group must respect each other's knowledge and way of knowing. This respect is not always present at first and may take time to develop.

### ***Traditional and scientific knowledge working together effectively*** **Challenges**

Western-based scientific knowledge and traditional knowledge systems are based upon two different ways of knowing. In order for the two to work together people must listen and learn, define terminology and discuss and communicate their different worldviews.

### ***Ways to make it work***

The voice of hunters has more weight with researchers when it is reviewed and published. The voice of biologists is more accepted by communities when community members are involved in choosing research questions and methods, in collecting data and in interpreting research results. People who work in this type of situation must be able to function in

both knowledge systems. They must be able to listen and communicate well, be objective and be sensitive to issues. They must be able to commit large amounts of time to the community and develop long-term relationships with the elders. They should travel on the land and develop a sense of local identity. Over time networks of people develop that can successfully work in both knowledge systems.

*It is tied to the aspirations of the community, self governance; it is part of the fabric of the community. It is bigger than we think. It is not a single issue. Any initiative here or at the political level matters the most in the community. There is so much dependence on a system that is foreign to us in aboriginal communities. We are so cut off from our traditional resources.*

### **Community support is essential for effective use of traditional knowledge**

The role of communities for collecting information and making resource management decisions is very important. The documentation of traditional knowledge enables communities to build on their own capacities while learning new skills at the same time. Communities are becoming key players in designing and starting resource management projects. They control what data are collected, how they are analyzed and interpreted, where they are stored and how they are shared. Because they have more control they trust the process more and have more confidence in the decisions that are made.

### **Key elements for success:**

#### **Time**

To ensure that traditional ecological knowledge will be used in resource management means there must be long-term commitment and funding.

Time is needed in order to:

- 1) document the knowledge base;
- 2) put in place laws to protect aboriginal and intellectual property rights;
- 3) clearly plan how information will be collected, analyzed, interpreted, stored and used;
- 4) spend time on the land gathering and sharing knowledge and skill;
- 5) spend time meeting with elders, seeking guidance and wisdom.

Over time new capacity develops and people come to know and respect each other.

#### **Space**

There needs to be a place, a mindset, where people feel comfortable sharing their worldviews in order to help make decisions. This space can be achieved by spending time together on the land and while working together on common goals and visions.

By working together in this manner people come to understand and work in both knowledge systems. They gain respect for different knowledge and management systems and can act as translators.

#### **Capacity**

Long-term commitment must be made available for communities to increase local capacity to record, share, and use their knowledge of the environment. They must be given the opportunities to use or find new ways to use traditional ecological knowledge in resource management.

**Inuit Qaujimajatuqangit refers to:**

*The knowledge and understanding of all things that affect the daily lives of the Inuit and the application of that knowledge for the survival of a people and the culture. A knowledge which has sustained the past, to be used today to ensure an enduring future.*

(Government of Nunavut, Community Government & Transportation)

**The six guiding principles of Inuit Qaujimajatuqangit are:**

*Pijitsirniq: The concept of serving and providing for.*

*Aajiqatigiingni: The Inuit way of decision-making by comparing views or taking counsel.*

*Pilnimmaksarniq: The passing on of knowledge and skills through observation, doing and practice.*

*Piliriqatigiingniq: The concept of collaborative working relationships or working together for a common purpose.*

*Avatittinnik Kamattiarniq: The concept of environmental stewardship.*

*Qanuqtuurniq: The concept of being resourceful to solve problems.*



Classifying fish from Stark Lake, near Lutsel K'e, NWT  
Photo: Jeanette Lockhart



# 8. Using Indicators to Communicate Changes in the Environment

## QUICK LOOK

*The Denesoline from Lutsel K'e have developed a community-based monitoring program to see how changes from big industrial projects are affecting their land.*

### Who?

- The Lutsel K'e Dene First Nation

### Where?

- The community of Lutsel K'e is on the east arm of Great Slave Lake in the Northwest Territories

### Why?

- To understand and be able to communicate changes in the health of their land

### What?

- The indicators are cultural symbols that show how the *Denesoline* see, hear and feel changes in their environment
- People who are dependent on natural resources for survival are sensitive to changes that affect those resources
- People have effectively used indicators for thousands of years to survive in their environments
- Industrial developments often cause unnatural changes which people notice This can cause the people great problems, worries, and disease
- Aboriginal peoples have a good understanding of complex changes in their ecosystems. They should play a fundamental role in making decisions about their resources

This chapter is summarized from:

Parlee, B., M. Manseau and the Lutsel K'e Dene First Nation 2005. Understanding and communicating about ecological change: *Denesoline* indicators of ecosystem health. In: *Breaking Ice: Renewable resource and ocean management in the Canadian North*. (F. Berkes, R. Huebert, H. Fast, M. Manseau and A. Diduck, eds.) University of Calgary Press, Calgary, pp. 165-182.

## Background

For many aboriginal people, physical and spiritual signs and signals that the land is healthy are important. Regarding health and well-being, people point out, “*If the land is not healthy, how can we be?*” In fact, information on First Nations health in Canada shows that in areas where the environment is not healthy, the people and communities are also experiencing health problems. The Denesoline have developed indicators to help them understand and communicate changes in the health of their environment.

## The Story



### *Where is Lutsel K'e?*

Lutsel K'e is a community of around 400 Chipewyan Dene (*Denesoline*) people. The community is on the east arm of Great Slave Lake in the Northwest Territories. Traditionally these people were always moving and travelling to where the animals were. Today they live in a more permanent settlement, but they still travel over a large area when they are harvesting. One of the most interesting and important areas they use is near the Lockhart River and Artillery Lake. Here the plant life changes from forest

to tundra. This makes it a special kind of land that has many kinds of wildlife, plants and different types of landscape. The Lutsel K'e Dene First Nation are negotiating with the government to protect this area as a national park.

### *The two studies*

The Lutsel K'e Dene First Nation Chief and Council, the Wildlife, Lands and Environment Committee and an Elders Committee were responsible for starting two projects which documented:

- 1) *Denesoline* knowledge of their ecosystem and
- 2) *Denesoline* indicators of change.

These studies were the *Preliminary Traditional Knowledge Study in the Gahcho Kue' Study Region* in 1996 and *The Traditional Ecological Knowledge in the Kache' Kue' Study Region* in 1999.

Community members identified signs that indicated when changes were happening in the ecosystem. The signs were chosen in line with the harvest calendar. The barren ground caribou is the most important source of traditional food for the Lutsel K'e Dene. Their use of the land and social organization is based around caribou migrations. In the spring and fall, they also harvest ducks and geese. During the summer many fish are eaten, as are many berries and plants. During the winter, wolverine, wolf and fox are taken.

### *How was information collected?*

The information for the studies was collected by community researchers using several different methods:

- video or audio recording of interviews with elders and harvesters
- on-the-land workshops with elders and caribou harvesters
- collecting information on maps
- stories shared during group interviews or meetings

## ***Documenting traditional knowledge and choosing indicators***

The *Denesoline* have learned a lot about the ecosystem through generations of traditional hunting practices like hunting, trapping and the gathering of berries and plants for food and medicine. They identify and name over 112 species of birds, wildlife, fish and habitats. Indicators were documented for most of the species that are usually harvested. There are four main ways that the *Denesoline* use to notice change in the health of the species they use.

These are:

- 1) body condition;
- 2) number and distribution of the animals;
- 3) land and water quality;
- 4) cultural landscapes and features of the land.

Indicators for each of the above ways are found in the following sections. They are in question form. These indicators are more than just signs of environmental change. They become tools for ongoing learning and communication with elders and harvesters.

### ***1) Body Condition***

The people can tell if animals are healthy by seeing how much fat is on their bodies. If the animal is fat, then the hunter is happy. There are many different signs, both in the way animals look and the way they behave. For example:

- A fat caribou – has a wide chest, its tail is hidden in its rump, has a good coat;
- A young caribou – is jittery like a human teenager;
- Fat birds – fly lower above the water, are slow and clumsy during takeoff or landing;
- Fat fish – must have the right weight for their length;
- Healthy fish – have flesh with good texture and the right colour.

Any animal that has a good coat, feathers or scales are usually healthy. If there are any injuries or diseases, parasites, bad colours or smells it means the animal is unhealthy. Unhealthy animals can also mean the ecosystem is unhealthy. If many caribou have broken legs, it is a sign that development activities, such as roads and other structures, are causing them to have accidents.

### ***Indicator questions for body condition***

<b><i>Size / shape</i></b>	Is the animal of normal size and shape? Is the weight right for the length of the fish? Is it the right shape, or is it a weird shape?
<b><i>Fat</i></b>	Is the animal fat? Is it skinny? Is there some fat around their organs?
<b><i>Clean Organs</i></b>	Are there cuts, marks or parasites (white spots, dark spots) in their stomach, on their liver or other organs?
<b><i>Colour /Texture and Taste of Fish Flesh</i></b>	Is the flesh firm or soft? Is the flesh tasty? Does it taste like stagnant water? Is the trout flesh red? Is the whitefish flesh a good white or is it brownish / greyish?

## 2) Number, type and location of animals

If there are many of each animal, especially caribou, this means the ecosystem is healthy. If there are few caribou, it means that something may be wrong and the people will be hungry. This is also true of wolves, foxes and birds. If many birds use the same feeding areas, it means that everything is good. If they do not, it means that something has changed. The number of animals and their return to the same location is connected to how hunters treat them. If hunters treat animals with respect, for example, by not chasing caribou, then they will return. If the animals are treated badly, they will not return. The increasing number of bears and moose around the community of Lutsel K'e means something has changed. Some elders think it means their habitat further south has been disturbed or destroyed.

### *Indicator questions for animal number, type and location*

<b><i>Animal Population</i></b>	<p>Are there lots of fish and wildlife of all kinds?          Are there lots of fish and wildlife valued as traditional food?          Have the numbers of these species changed from the past?          Have people seen some types of fish or wildlife that are uncommon or they have never been seen before?          Are there some fish that you don't see anymore?</p>
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## 3) Land and water quality

People can tell if the habitat is good by knowing how clean the land and water are. It is good if no garbage or waste is visible. But many people are concerned about poisons that they can't see, like pollutants (chap 2,3, 11), bacteria, diseases leaks and spills from vehicles. People are worried about the quality of the water.

### *Indicators questions for land and water quality*

<b><i>Land</i></b>	<p>Does the land (in this place) look and smell clean?          Has there been garbage left?          Is the ground or vegetation disturbed?          Have there been any machines or vehicles there? Were there any spills or leaks of fuel or other dangerous material?</p>
<b><i>Water Levels</i></b>	<p>Does the water look higher or lower than normal?          Are there any small streams or creeks that have dried up?          Is travel more difficult in some areas as a result of lower water levels?          Has there been damage to boats and motors as a result of hitting the bottom?          Are there portages that were very good in the past but are now too wide or long?</p>
<b><i>Water Quality</i></b>	<p>Are there some areas where the water is no longer good to drink and the fish are not good to eat?          Is your drinking water tasty? Does it turn black in tea?          Are you worried about contaminants in the water?          Are you worried about the chlorine in the water?</p>

#### 4) Cultural landscape and features of the land

There are many places, like lakes or river crossings that are important to animals and have spiritual importance. If the caribou use one crossing instead of another, it means they will spend the winter in a different area. Places like the waterfall, *tsankui theda* or “old lady of the falls, on Lockhart river are important to people who seek spiritual guidance.” If any of the important places are lost or destroyed, this means something is very wrong with the land.

#### *Indicator questions about cultural landscapes and features of the land*

<p><i>Dechen Nene</i> forested areas south of the treeline dry flatland / wet Marshy Land</p>	<p>How many <i>Denesoline</i> camps are now, or used to be, in this area? Is there dry wood available for fuel? Is there green wood available for tent poles and logs for cabins and other structures (e.g. cache)? Is there clean water available in this area? Are there lots of blueberries, cranberries or other berries growing in this area? Are there other plants growing that could be used for traditional medicines?</p>
<p><i>Hazu Kampa</i> at the treeline</p>	<p>How many <i>Denesoline</i> campsites are there now, or how many used to be, in this place? Is there clean water available in this area? Is there dry wood available for fuel? Is there green wood available for tent poles?</p>
<p><i>Hazu Nene</i> Barrenlands</p>	<p>How many <i>Denesoline</i> camps are there now or how many used to be in this area? Is there dry wood available for fuel? Is there green wood available for tent poles and logs for cabins and other structures (e.g. cache)? Is there clean water available in this area? Are there lots of blueberries, cranberries or other berries growing in this area? Are there other plants growing that could be used for traditional medicines?</p>
<p><i>Eda</i> Caribou Crossing</p>	<p>Are the caribou crossing in these places? Did the <i>Denesoline</i> use this crossing for hunting in the past? Do they still use it today?</p>
<p><i>Ts'u dzaii / Ts'u dza aze</i> Small Stands of Trees at the Treeline and in the Barrenlands</p>	<p>Were there ever, or are there now, hunting or trapping camps in this place? Was this place ever used for shelter? Is there dry wood available for fuel? Is there clean water nearby? Is there green wood available for tent poles?</p>

<i>K'a</i> Heights of Land with Erratics	Was this area ever used as a hunting blind for caribou?
<i>Thai t'ath</i> Eskers	Were there ever, or are there now, hunting or trapping camps in this place? Was this area ever used for shelter? Are there any wolf, fox or bear dens?
<i>Nikele</i> Dry Flatland	Are there cranberries growing in this area? Are there other berries or plants growing here that might be used for traditional medicines?
<i>Ni horelghas nene</i> Wet Hummocky Land	Are there blueberries, cloudberry or cranberries growing in this area? Are there other berries or plants growing here that might be used for traditional medicines?

### ***Importance of the indicators***

The indicators of the *Denesoline* show changes in the environment. They also show how closely the people are connected to the land. The indicators show how the people see, hear and feel change in their ecosystem. People are sensitive to the change in their environment because they are dependent on it for survival. For example, clean water means healthy whitefish and sustainable harvesting of healthy whitefish means a sustainable and healthy community.

### ***Change over thousands of years***

*Denesoline* legends contain stories of how the world used to be. The legends show that people have been using signs and signals to monitor their worlds for thousands of years. These people have been able to use their observations day after year after decade. They have used this knowledge to survive.

*After the world was created, things were not always the same. There were ups and downs. One time, the sun disappeared. After the sun was gone, it was only winter and there was lots of snow falling. There was no sun and that is how people stayed.*

### ***Aboriginal peoples notice unnatural changes***

The *Denesoline* have lived in this area and hunted these animals for thousands of years. They have monitored their indicators for thousands of years. They have much knowledge about how different conditions make animals look and act in different ways.

Today there are many developments that are happening in their environment that have never happened before. Because of their traditional knowledge, the *Denesoline* have an advantage in knowing whether or not changes could be natural or not. For example, female caribou that arrive at the treeline early in the year are much skinnier and rougher in appearance than later in the fall. This difference is seen because they have been nursing their young. Hunters do not think these caribou are unhealthy. Fish in some barren land lakes are softer and skinnier than in lakes along the treeline. This difference, too, is normal. Yet there used to be many more ducks and geese than there are today. That has never happened before. Neither has decreasing water levels in lakes, streams and creeks. Lightning never used to cause forest fires – it does now.



*The climate is changing. The wind blows harder than it did in the past. It's different – the wind picks up suddenly and changes quickly. Now I don't know what has happened . . . . A long time ago my sister and I traveled on the Snowdrift River to Siltaza Lake. We never saw any rocks along that river. But today you can see lots of rocks.*

### ***Unnatural changes caused by industrial developments***

Many of the unnatural changes that people notice are caused by industrial developments. The fish became different after a hydroelectric dam was built on the Talston river. Now people can no longer eat the fish. A uranium mine has

caused water and fish to become bad and maybe caused cancer. Because the people notice the signs, they are very aware that something is wrong. This knowledge causes them to worry, as a mother worries about a sick child.

### **Conclusion**

The ability of the *Denesoline* to adapt and change their actions according to what the signs and signals tell them is not unique. The use of different kinds of indicators shows how aboriginal people can use an integrated approach to managing their resources. They have a good understanding of complex changes in the ecosystem. This study demonstrates that land users should play a fundamental role in making decisions about their land.

*The report that has been put together is about our culture and our way of life. The documents show how we see things.... It tells what we understand about the animals and how they behave and how we live on the land.... We are not playing around. It is not a game. What we are talking about is very serious.*



Jonas Catholique and J.B. Rabesca share their knowledge on the shore of Great Slave Lake, NWT.  
Photo: Jeanette Lockhart



Polar bear rolling in the snow.  
Photo: Harvey Lemelin

# 9. What Affects Polar Bear Viewing in Churchill, Manitoba?

## QUICK LOOK

*What can happen when developing wildlife tourism? Churchill, Manitoba, has developed a world-famous polar bear tour. But there are many little things that can work in unpredictable ways to affect the success of tourism.*

### Who?

- Management agencies (provincial and federal), people working in the tourism industry and long-term members of the community of Churchill

### Where?

- Churchill, Manitoba, where most polar bear viewing happens in two protected areas.
  - 1) The Churchill Wildlife Management Area created in 1978
  - 2) Wapusk National Park created in 1997

### Why?

- To illustrate how tourism planning should be linked to both environmental and social factors
- To show that wildlife management is 80% about people and 20% about wildlife

### What?

- Rules that control tourist attractions have to change fast and adapt to new happenings to be good. This hasn't occurred in Churchill, Manitoba
- Some events are impossible to plan and can have serious effects on visitor numbers. High fuel prices, or airline disasters cause people to change travel plans. People dependent on tourism for income must be adaptable and ready to change quickly

This chapter is summarized from:

Lemelin, R.H. 2005. Wildlife tourism at the edge of chaos: Complex interactions between humans and polar bears in Churchill, Manitoba. In: *Breaking Ice: Renewable resource and ocean management in the Canadian North*. (F. Berkes, R. Huebert, H. Fast, M. Manseau and A. Diduck, eds.) University of Calgary Press, Calgary, pp. 183-202.

# Background

## *Tourism and change*

There are many different factors that affect tourism. In fact, tourism is an industry where a small change somewhere in the world can have a big effect on how successful the industry is.

Polar bears come together along the shores of Hudson Bay to wait for the sea ice to form in mid-November. Thousands of tourists go out in tundra vehicles to watch and be entertained by the polar bears. The history of polar bear viewing in Churchill, Manitoba, took some interesting turns as a result of certain happenings.



## *Collection of information*

Information was collected for this study in a number of different ways. The author looked at old documents and research papers. He used his field notes and journaling from conversations that happened in the community. He attended public meetings about the tourism industry in Churchill. The author also did seven in-depth phone interviews with management agencies such as Manitoba Conservation, the Canadian

Wildlife Service, and Parks Canada and with industry representatives – tour operators and helicopter companies. Also interviewed were other people, such as long-term members of the community, hotel owners, the Town of Churchill, and the Chamber of Commerce. The study focused on Manitoba Conservation, the Canadian Wildlife Service, the owners of the tundra vehicles and the role of nature photographers, film crews and media in popularizing polar bear viewing.

## The Story

### *Importance of tourism in Churchill*

Churchill has been a tourist destination for decades. The town is surrounded by small lakes, rivers, forests and tundra. There are many wilderness outfitters, lodges and leisure facilities. By 1960, Churchill was already a popular place for birdwatchers to go. In the 1970s, the first small-scale polar bear outings were offered. Other attractions like hunting, fishing, whale watching, and northern lights viewing made Churchill a *very* popular destination for tourists today. In fact, today nature tourism in Churchill is worth well over 3 million dollars.

### *History of polar bear management in Churchill*

The York Factory fur trade post closed and the Canadian military left the Churchill area in the late 1970s. This departure meant that there was little human disturbance on the coast of Hudson Bay. Left to itself, the polar bear population increased. At that time, the military was responsible for bear management. Supposedly, the military had a dreadful impact on the bear population. When the military left, the bears were not managed until polar bear



management was taken over by Manitoba Conservation and the Canadian Wildlife Service. Shortly after these organizations took over, the animal rights groups started to get upset at the way bears were treated.

### ***Polar bear viewing begins***

The first 'organized' outing was by a photographer named Dan Guravich. Guravich, together with Len Smith, his original guide – started the idea of having bear viewing as a managed tourist attraction. The idea was made possible by the invention of the Tundra Buggy. The Tundra Buggy was bigger, safer, faster and more comfortable than the tracked machines that were used by others. Many photographers and film crews came to see the bears. Their photographs and documentaries created the interest in polar bears that we know today.

### ***Cape Churchill Wildlife Management Area***

In the mid 1980s, the use of tundra vehicles for getting groups out to view

polar bears became more popular. Soon this activity required some management rules. As a result, the Cape Churchill Wildlife Management Area was created. There was even a semi-permanent lodge in the Management Area so that people could watch the bears 24 hours a day. Specific rules, such as a limit of only 18 licensed tundra vehicles and a requirement that they use designated trails, were put in place.

### ***Changing bear management to meet tourist needs***

Management agencies traditionally painted large numbers on polar bears in order to identify them. This was not popular with visitors who wanted to get photographs of the bears in their natural habitat. In order to keep tourists and photographers happy, managers decided to change their methods. Today they use a cream-coloured ear tag that is hard for people to notice. Photographers wanted better access to polar bears to get good pictures. Researchers wanted to limit public access so there was less disturbance



Polar bear examining tundra buggy.  
Photo: Harvey Lemelin

to the bears. Today this problem has been partially dealt with as some researchers now allow photographers and film crews to go out on the land with them. This is done in part to help fund research. But it is only a part of the solution and some people believe that it actually creates new problems.

### ***Today's tourist markets***

The polar bear viewing packages sell well and Churchill gets approximately 6,000 polar bear viewers each year. There are now two tundra vehicle camps (operated by Tundra Buggies and Great White Bear), and also two helicopter companies that are allowed into the Wildlife Management Area. Other companies are also starting up that have viewing opportunities outside the Wildlife Management Area.

### ***The role of photographers***

#### ***The good side...***

The rapid growth of the polar bear viewing industry is certainly thanks to the photographers and the film crews. Footage of the bears has been shown to millions of people around the world. It has helped to educate hundreds of thousands of people about the importance of polar bears in this environment.

#### ***The bad side...***

Although photographers are responsible for popularizing polar bear watching, they are also capable of ruining the industry. After seeing close-up pictures of "cute little teddy bears" that seem to play naturally with sled dogs, people expect they will see the same. Many of these photos were taken in artificial conditions or by violating guidelines. In addition, today journalists and reporters are beginning to blame declining weight and falling birth rates of polar bears on the tourism viewing

industry. They are not taking into account global issues like climate change and contaminant load in food and living animals. What is said on the news or shown on TV is what can make or break the tourism industry.

### ***Other factors affecting polar bear viewing***

Many occurrences that don't seem to be related to polar bears can have a big effect on the viewing industry. The biggest effect on the industry in the last few years has been from the terrorist attacks in New York on September 11, 2001, and from the outbreak of SARS (Severe Acute Respiratory Syndrome) in Toronto in 2003. People were probably afraid to fly or travel to Canada. So Churchill did not get as many visitors.

## **Conclusions**

### ***Protect the main attraction***

It takes community effort and co-operation among partners to be able to offer all that is necessary for the modern tourist package. Management for the protection of animals and the environment is important to keep tourists interested in an area. If the business is dependent on one attraction – like polar bear viewing – a lot of effort must go into ensuring that it is always protected.

### ***Flexible rules are essential***

Tourism can be a tricky business. The success of the business is dependent on many different factors, including events people can't even imagine. Even very small happenings far away can change tourism drastically. The rules that control tourist attractions must be able to change quickly and adapt to new happenings. This flexibility is not yet present in Churchill.



# 10: Commercial Harvesting of Caribou on Southampton Island

## QUICK LOOK

*A commercial caribou harvest was started to reduce the number of caribou so they would not destroy their habitat. Attempts were made to turn the commercial harvest into a long-term economic opportunity for Coral Harbour. In some ways the harvest reached its goals, and in other ways it did not.*

### Who?

- The Government of Nunavut and
  1. Tunniq Harvest, a corporation owned by the local Aiviit Hunter and Trapper Committee
  2. Southampton Meat Company, an Inuit owned company
  3. The community development corporation of Coral Harbour

### Where?

- The community of Coral Harbour on Southampton Island in Nunavut and nearby caribou hunting grounds

### Why?

- The caribou herd on Southampton was getting too big. People were worried they would eat all the lichen and then all die off because there was no food left
- A commercial harvest would also provide jobs for some people

### What?

- The harvest allowed people to use traditional skills
- Overall, the harvest was most successful when it was run by the community development corporation. They harvested the most caribou and shared profits with the community
- Of the three companies that ran this harvest none of them were able to make a profit. It is expensive to transport the meat to markets

This chapter is summarized from:

Junkin, B 2005. Economic development based on local resources: Commercial harvesting of caribou on Southampton Island. In: *Breaking Ice: Renewable resource and ocean management in the Canadian North*. (F. Berkes, R. Huebert, H. Fast, M. Manseau and A. Diduck, eds.) University of Calgary Press, Calgary, pp. 203-221.

## Background

### *The size of the herd*

Southampton Island had a healthy caribou herd. In the late 1900s, the fox trapping industry was doing very well and hunters and trappers were increasing the number of dog teams they were using. Because they were feeding the dogs caribou meat, too many caribou were hunted. The caribou herd eventually disappeared. In 1967, the government of the Northwest Territories introduced 40 caribou to Southampton Island from nearby Coates Island. Without predators such as wolves, and with no human hunting, the population did very well. By 1978, hunting was allowed again – a subsistence harvest of 25 caribou. In 1993, both the size of the herd and the quota had increased. The quota was now 1,000 animals for commercial use and an unlimited subsistence harvest. The herd kept growing and hunters began to worry that many of the caribou would eventually die because they would eat all the lichen.

## The Story

### *How to stop the population from crashing?*

The Hunter and Trapper Organization asked the government to work with them to find a way to stop the caribou population from getting too big. The request of the Hunter and Trapper Organization went through the Nunavut Wildlife Management board to the Kivalliq Wildlife Board, and finally to the Nunavut Wildlife Management Board which decided that the hunters could start controlling the caribou herd. In 1995, they decided to try using a commercial harvest to kill 6,000 caribou and decrease the size of the herd. In order to slow down the

speed at which the herd grew, the hunters were encouraged to kill females – since they were the ones that had calves. The hunters did not think this was a good idea since males are worth more because they are bulkier than females.

### *How to set up a commercial harvest*

Setting up a commercial harvest is not a simple thing to do. There were many problems that had not really been thought about before. The first problem was how to set up a company. Some other more difficult problems were that:

1) The Canadian Food Inspection Agency (CFIA) and the European Union (EU) say that the temperature when handling meat must not be above -18°C. This rule means that early spring is already too warm to harvest and that the harvest must be done during winter.

2) With the winter daylight on Southampton being so short, the harvest would have to start as late as February. In addition, there are some bad weather days. The amount of time that is really available is only about six weeks out of the whole year.

3) Once the carcasses are prepared they are shipped to Kivalliq Arctic Foods in Rankin Inlet. They run a meat packing plant that is certified by the European Union and the Canadian Food Inspection Agency. This certification means that the sellers can export meat to Europe. The plant is not very big right now and can only handle about 3,000 to 5,000 of the animals that are being harvested.

### *The companies*

From 1995 to 2002, three different companies controlled the commercial harvest. The first was owned by the Aiviit Hunter and Trapper Organization and was called Tunniq Harvest. The second was sub-contracted to a private Inuit company, the Southampton Meat



Portable caribou harvest camp. Photo: Richard Connelly

Company. The third was owned by the community development corporation of Coral Harbour. The success of the companies was measured in three ways.

- 1) Did they kill enough caribou to keep the size of the herd down?
- 2) How many jobs were created?
- 3) Did less people have to be on social support?

Commercial harvest over the years.

Year	# of Caribou
1995	2,356
1996	1,839
1997	3,365
1998	2,956
1999	1,094
2000	2,166
2001	3,696
2002	3,834

### 1) *Tunniq Harvest: 1995-1998*

Tunniq Harvest was owned by the Aiviit Hunters and Trapper Organization. During this time period there was no call for proposals from other interested companies.

#### *How did they do?*

After four years of operating Tunniq Harvest the non-profit board running it was concerned because it was making very little profit. Some jobs were created (35 part-time for six weeks). But what the government saved in social support it paid out in subsidies, so it did not save the government any money. The harvest was not working to manage the caribou herd either. Not enough caribou were being killed and the population was still getting bigger. Something had to change.

## **2) Southampton Island Meat Company: 1999-2002**

In the spring of 1998, a new private company became in charge of running the caribou harvest. This was the Southampton Island Meat Company, which was owned equally by five Inuit from Coral Harbour.

### ***How did they do?***

This company was more successful financially. They made enough profit that they could even have managed without a government subsidy in their final year. The same number of people had jobs in Coral Harbour. The government subsidy was less so it did better with this company. In addition, 14 jobs were created in Rankin Inlet in a processing plant. The Southampton Meat Company harvested more caribou than the first company – but still not enough to make the herd smaller. It was only a matter of time before the caribou population would crash.

## **3) Community Development Corporation: 2003 - present**

The Aiviit Hunter and Trapper Organization is in charge of deciding who gets the contract for the caribou herd harvest. In 2002, the Organization decided that it was important that the company in charge took better care of the environment and cleaned up the killing site. The Southampton Meat Company did not even apply this time. The Coral Harbour Community Development Corporation did apply and got a two-year contract. Anyone who is of age and is a resident of the Hamlet of Coral Harbour can be part of the Corporation. The decisions are made by the Board of Directors. The Board of Directors is made up of representatives from the District Education Authority, the Hamlet Council, the Tourism Association, the Hunter and Trapper Organization and three elected members-at-large.



Caribou products ready for shipping.

Photo: courtesy of Department of Economic Development and Transportation, Government of Nunavut

### *How did they do?*

The community corporation was very successful at increasing the size of the harvest. Not only did they harvest over 5,000 animals, but they also killed more females (60%) than males (40%) – which was one of the original goals. The corporation also employed more people, reaching a high of 59. Also, the corporation made better use of the caribou. They saved antlers, tails, cartilage and penises to sell to the Far East, and they started a project to make use of the caribou fur. Delicacies like the tongues and tunniq were brought back to the community for general distribution and no useable food was left on the land. The land was treated better. The waste was taken to the dump each day, and when summer came, what was left on the land was buried.

However, economically the corporation did not do so well. In fact, in the first year they lost money because of many different reasons. One big reason was the first-time costs to build and fly in infrastructure which they will not need to do for the second year. Hopefully, they will make more money the second year.

## Conclusions

### *Reducing the size of the herd*

The original purpose of the commercial caribou harvest was not to make a profit – but to reduce the size of the herd. This had to be done so the population would not crash and would continue to exist. This way people would always have lots of caribou to use. The herd provides valuable country food to Coral Harbour residents.

### *Which was the most successful group?*

All things considered, the most successful harvest was run by the Community Development Corporation. They were the most effective in reducing the size of the herd. Although they did not make as much money as the Southampton Meat Company, the profits they received were distributed more equally around the community, and they took better care of the environment. Also, the corporation's philosophy of sharing and learning traditional skills and working together is more in keeping with traditional Inuit ways.



Caribou hides on a rail in Arviat, Nunavut. Photo: Anne Kendrick





Drum dancing at the Meliadine Territorial Park, Rankin Inlet, Nunavut.  
Photo: Steve Newton



# 11: What Makes Resource Management Flexible and Adaptable?

## QUICK LOOK

*This chapter is about partnerships and how communities interact with different levels of government. How do links and connections help decisions and actions to be effective?*

### Who?

- The Fisheries Joint Management Committee, Inuvialuit Settlement Region
- The West Side Working Group in Aklavik, Northwest Territories
- Community-based narwhal management groups in Nunavut
- Polar bear management groups at all levels across the Arctic
- Groups involved in the effort to ban contaminants in the Arctic - aboriginal, government and non-government organizations

### Where?

- This analysis was done for many different locations and on many scales and includes information from the Inuvialuit Settlement Region, Nunavut, the Canadian Arctic and Arctic nations worldwide

### Why?

- To explore if having links between groups in different areas and between different levels of government allows for more flexible decision making

### What?

- It is the ability of groups, government and management boards to *learn-by-doing* that is very important for these groups to respond effectively to changes
- When conditions change quickly, it is important to be able to learn, because when change happens quickly we must be flexible and adaptable

This chapter is summarized from:

Berkes, F., N. Bankes, M. Marschke, D. Armitage, D. Clark. 2005. Cross-scale institutions and building resilience in the Canadian North. In: *Breaking Ice: Renewable resource and ocean management in the Canadian North*. (F. Berkes, R. Huebert, H. Fast, M. Manseau and A. Diduck, eds.) University of Calgary Press, Calgary, pp. 225-248.

## Background

Changes in both Arctic society and the environment are occurring very fast. Arctic lifestyles can survive only if people and governments are able to respond and adapt successfully. People adapt to change better when change is noticed quickly and when they learn from their experiences dealing with change. For governments to adapt well they must have flexible and adaptable rules and laws to account for the change. In the Canadian Arctic, land claim agreements have created a number of co-management groups. These groups add flexibility to management because:

- 1) co-management groups use both scientific knowledge and traditional knowledge;
- 2) they communicate directly with high-level government representatives so that information gets shared quickly and the government can respond quickly.

Co-management boards are effective because they link different levels of government together.

### *Links and Flexibility*

Links are important for effective communication, actions and learning. There are two types of links. The first type, *horizontal* links, are connections between similar organizations in different places. The second type, *vertical* links, are connections among different levels of government or any other bureaucracy. The ability to adapt by learning and changing means that a society is flexible.

There are five different stories in this chapter. Each story explores how links to groups in different areas and to different levels of government make people and groups able to deal with large changes.

## The Stories

### *1) The Fisheries Joint Management Committee*

In 1984, the Inuvialuit in the Canadian Western Arctic signed the Inuvialuit Final Agreement. The land claim agreement put in place a number of different co-management boards. The board responsible for managing the use of fish and marine mammals is the Fisheries Joint Management Committee. The committee of two Inuvialuit members, two government representatives and a chairperson solve problems and make decisions together. All members of the committee must agree in order for a decision to be made. The Fisheries Joint Management Committee communicates with the Hunter and Trapper Committees in each community. The Management Committee also advises the Minister of Fisheries and Oceans.

### *Beaufort Sea Beluga Management Plan*

The Fisheries Joint Management Committee, local Hunter and Trapper Committees and the Department of Fisheries and Oceans developed the Beaufort Sea Beluga Management Plan to protect beluga whales. Most people follow the plan, even though there are no laws enforcing it. Today, oil and gas industries are interested in the protected



Beluga whales.

Photo: courtesy of Inuvialuit Joint Secretariat

beluga areas. The group that created the management plan is looking for ways to keep the belugas protected by making the plan into law. They are doing this by trying to make the protected areas into Marine Protected Areas. (see chapter 5)

### ***Links and flexibility***

This challenge shows how flexible the Fisheries Joint Management Committee can be. When development pressure increased, they began to try to change the informal agreement into a formal law.

### ***2) The West Side Working Group***

The West Side Working Group is responsible for developing a management plan for the rivers west of the Mackenzie to the Alaska border. The West Side Working Group is a project of the Fisheries Joint Management Committee. It includes members of the Aklavik Hunter and Trapper Committee, the Aklavik Elders Committee, the Fisheries Joint Management Committee, Fisheries and Oceans Canada, and Parks Canada. It is chaired by a member of the Aklavik Hunter and Trapper Committee. This group brings people from local, regional, and national levels together to work on one project.

### ***Traditional Ecological Knowledge Fishing Study***

The West Side Working Group did a traditional ecological knowledge fishing study during February and March 2003. The study documented:

- 1) Inuvialuit traditional knowledge from oral histories; and
- 2) traditional ecological knowledge about fish biology and habitat.

Through this study, elders and others shared their knowledge of fish species, fishing methods, and changes in species over time.

### ***How has fishing changed?***

A history of fishing was written as a result of the project. Fishing has been affected by many happenings, such as:

- muskrat trapping causing people to move inland towards Aklavik and the Mackenzie River Delta and away from coastal areas;
- the introduction of snowmobiles meant less fish was needed to feed dog teams.

And, more recently, people have noted changes from traditional ways such as:

- the closing of Big Fish River for conservation, so people fish more at Shingle Point and Running River;
- less char and herring caught on the coast – but more freshwater fish;
- erosion due to thawing permafrost;
- water being less salty than before.

### ***Workshop - Putting it all together***

After the first part of the fishing study the West Side Working Group held a synthesis workshop. At this workshop elders from different communities were able to share stories and information about trips on the land. Elders suggested ways to manage the fisheries so that their children and future generations will still be able to fish. These ways were to:

- 1) protect “fish holes” (stop development in heavily fished areas);
- 2) leave spawning fish alone;
- 3) take out fish that have disease to stop other fish from getting disease;
- 4) *use common sense*

This study showed scientists and others how important local knowledge is for resource management. Local people know history and baseline information about many resources. Fisheries and Oceans will add scientific data to the baseline that was provided by this study.

## ***Links and flexibility***

The West Side Working Group provided the chance for different people doing different jobs (community members, fisheries scientists and Parks Canada staff) to link with and learn from each other. Understanding the worldviews of others makes resource management planning easier.

### ***3) Narwhal management in Nunavut***

Quotas for narwhal in Nunavut were set by the Department of Fisheries and Oceans and changed little since 1977. The Inuit people insisted that narwhal populations were increasing and requested higher quotas but were repeatedly ignored – until recently. Because of the Nunavut Land Claims Agreement of 1993, four communities – Repulse Bay, Arctic Bay, Qikiqtarjuaq and Pond Inlet were allowed to take control of narwhal harvesting through community-based narwhal management.

In 1998, when the experiment started, the Department of Fisheries and Oceans lifted their quotas. The Hunter and Trapper Organizations chose the number of narwhal allowed to be taken. The communities were responsible for regulating and monitoring the harvest.

### ***Too many dead narwhal***

The old government quota in Qikiqtarjuaq was 50 narwhal. In the first year Qikiqtarjuaq landed 127 narwhal, struck and sunk 40, and 179 managed to escape. Fisheries and Oceans temporarily closed this community's narwhal hunt for the following year. They were concerned about the high number of narwhal killed and the wastage from the year before.

### ***Problems with community-based management***

There are a number of problems which can stop community-based

management from working properly. Some of these are:

1) Is the management body, in this case the Hunter and Trapper Organization, representing the interests of the entire community?

2) How much of the harvest is for subsistence needs, and how much of it is to be used for commercial needs (for example, profiting from the sale of narwhal tusks)? Some populations are easily able to withstand harvest to provide subsistence needs but are overused when sold for cash.

3) The many groups – Hunter and Trapper Organizations, the Nunavut Wildlife Management Board, the Department of Fisheries and Oceans – involved in the management process have overlapping responsibilities and don't communicate well together.

4) Management methods are still old-fashioned. The community makes management by-laws and must monitor and submit reports. This type of thinking is very different from traditional Inuit ways of managing natural resources.

### ***4) Polar bear management in the Canadian Arctic and beyond***

In the past, the number of polar bears being killed was increasing and people were worried. So, in 1973, Canada, the USA, the Soviet Union, Norway and Denmark signed an agreement to protect polar bears and their habitat. There is one international group for the management of polar bears worldwide: The World Conservation Union (IUCN). They host the Polar Bear Specialist Group for studying polar bears.

### ***How does polar bear management work in Canada?***

The Canadian government has two polar bear management groups that are provincial/territorial and



Polar bears playing. Photo: Harvey Lemelin

federal. These groups are the Polar Bear Technical Committee and the Polar Bear Administrative Committee. Until recently both these committees involved a few biologists who studied polar bears and always worked together – even on the international level with the Polar Bear Specialist Group. Aboriginal people, to whom the polar bear may be most important, had very little say in what happened to the bears. In fact, they were allowed at meetings only as observers. Today though, both committees have aboriginal co-management bodies as members. But, most discussions are still very scientific, technical, and difficult for the average person to understand.

### ***Links and flexibility***

It is still difficult for the local stakeholders to have input into the management of polar bears in Canada today. This is because Canadian polar bear management focuses on vertical links and the exchange of scientific information up to international levels.

### ***How are aboriginal people linked?***

Local stakeholders, the aboriginals, have agreements with each other (geographic links) which arose naturally. The Inuvialuit of the Canadian Western Arctic and the Inupiat of Eastern Alaska

signed a polar bear management agreement in 1988. This agreement allows the two groups of people to manage one shared population of polar bears. A joint commission was set up by this agreement. There are two people from the Inuvialuit Game Council and two people from the North Slope Borough Fish and Game Management Committee (in Alaska) on the Joint Commission. This Commission appoints scientists to a Technical Advisory Committee that reviews harvest data, research results and management recommendations.

Another agreement arose naturally when the polar bear numbers of one community decreased. A second community invited them to hunt polar bears from their region. Communities are flexible enough to respond to other communities. This co-operation makes communities more adaptable and survival easier.

## ***5) The global response to the contaminant problem***

### ***What are contaminants?***

During the mid 1980s, the Inuit in northern Canada and university and government scientists realized that country food, especially marine mammals, was contaminated by chemicals. They called these chemicals Persistent Organic



Checking nets for Arctic char near Sachs Harbour, NWT. Photo: Fikret Berkes

Pollutants or POPs because they take a *long, long* time to break down in the environment. In the following 15 years they discovered that the pollutants or *contaminants* were being transported from the South in the atmosphere. Animals eat the contaminants in their food. The chemicals they contain collect in the fatty parts of animals. When other animals eat contaminated animals, they get higher levels of contamination that build up in them. If people take in too many contaminants, the pollutants can make them get sick or have diseases.

### ***What is the solution?***

On May 23, 2001, there was a conference in Stockholm for all the countries in the world to make a list of banned chemicals. The countries agreed to try and stop using or to reduce as much as possible the pollutants that are harming the Arctic. Only the representatives of each country's government were able to negotiate. A large number of non-governmental organizations, aboriginal groups and industry organizations were also present as observers.

### ***Links and Flexibility***

The countries of the Arctic united to form groups focused on the whole Arctic and fought for contaminants to be banned. Working together gave them more power to bring their problems to the international stage. The Arctic Environmental Protection Strategy, the Arctic Council and the Arctic Monitoring and Assessment Programme were important in bringing the issue of pollutants to light. Pollutants are a global issue. So it cannot be solved without the involvement of southern nations, which produce most of the chemicals the Arctic nations have to deal with. Arctic aboriginal people were involved at every scale, uniting as groups. The crisis enhanced the creation of horizontal linkages through different groups of aboriginals making connections.

### ***Woman holding a baby***

An Inuit carving of a woman holding a baby was present throughout the two years of negotiations as a reminder of the obligations of the



negotiators. It was as if the carving were the “conscience” of the meetings.

## Conclusions

### *How well did the links work?*

Horizontal and vertical links help people and organizations deal with change by enabling them to learn and create new knowledge. The effectiveness of the links is looked at through two questions:

- 1) How much aboriginal participation was there?
- 2) What were the problems in communication and learning?

### *Degree of aboriginal participation?*

The participation of aboriginal communities varies roughly in line with the geographic and political size of the case. The fisheries traditional knowledge study took place in the smallest area and had the greatest participation. The contaminants case was the largest scale, and “actual” involvement of aboriginals in the negotiations was quite low. It was the aboriginal people who stirred up concern after learning the results of the contamination study. The vertical linkages also worked quite well in this project, as the aboriginal people were successful in getting their needs represented by federal representatives.

### *Problems in communication and learning*

Three problems with participatory management and communications were noted from the above stories. These are:

#### **1) traditional knowledge is not being used enough**

Aboriginal peoples hold large amounts of traditional knowledge.

This large body of knowledge and the guidance it could provide is not being used enough. Only the West Side Working Group used traditional knowledge deliberately. There is much local knowledge about narwhal, polar bears and environmental quality – which has not been accessed.

#### **2) a time lag in co-management**

For co-management bodies to work effectively there must be trust among the members and the groups they represent. Trust takes a long time to build.

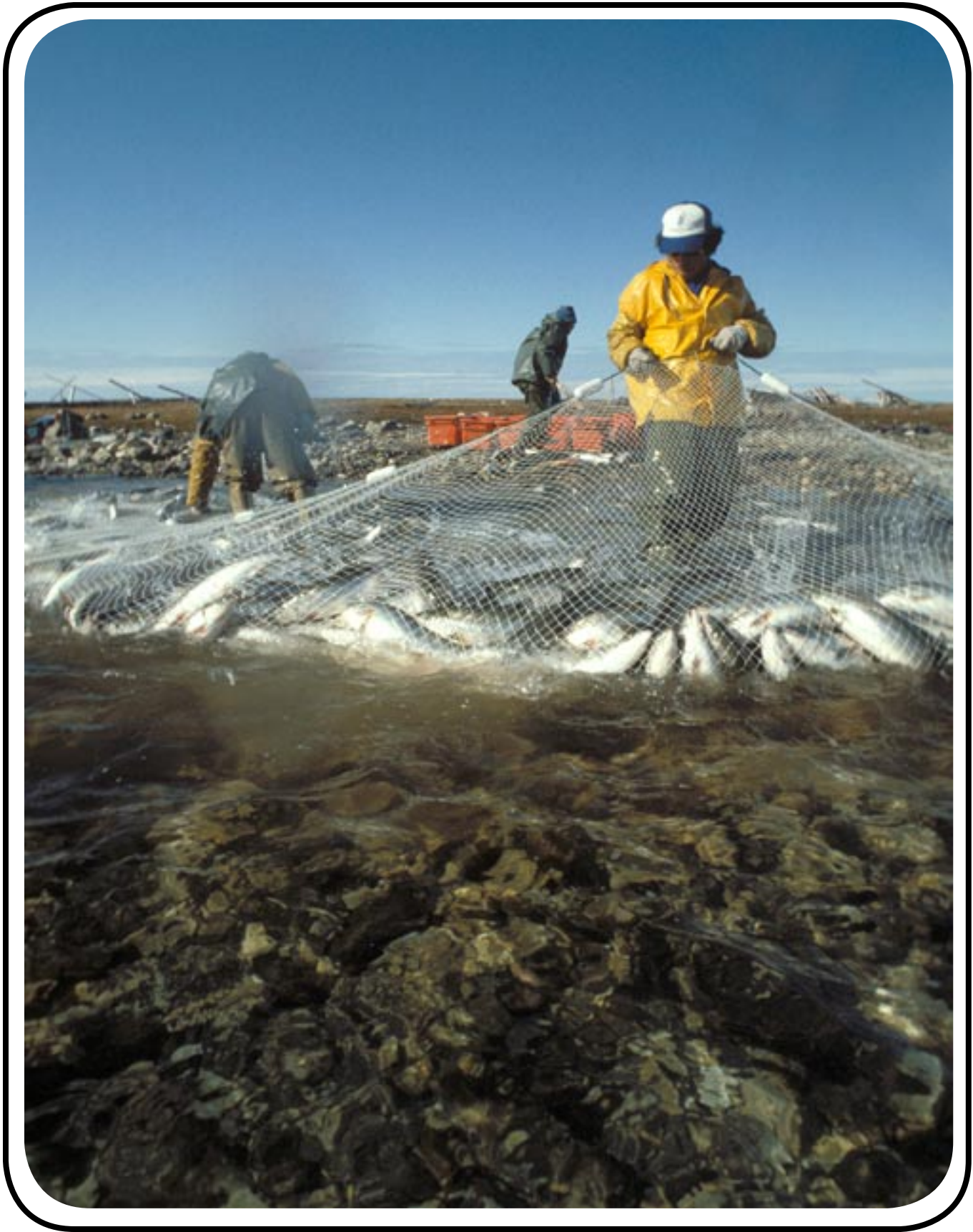
#### **3) difficulties making ideas become reality**

Many ideas and suggestions are brought up. Many links to different organizations are made. But the links, learning and new ideas do not help if the groups are not flexible enough to put the ideas into action.

## *Conclusion*

The regular Western way of resource management does not have the methods in its toolkit to deal with rapid change. What is needed is a type of management that is flexible and gives power to the local people. In this form the links provide connections to and support from higher levels of governance, so that learning can take place. It is especially important to make sure communication flows in both directions in the links: not only from higher levels down to the local level, but also from the community level up to bodies that represent their wishes.

Because everything is changing so fast, the environment is becoming unpredictable. In such an unpredictable system it is more important to have the flexibility to *learn* and adapt than to pretend that the government knows how to deal with issues.



Harvesting Arctic char, Cambridge Bay, Nunavut  
Photo: courtesy of Fisheries and Oceans Canada

# 12: Working Together to Manage Arctic Char in Cambridge Bay

## QUICK LOOK

*This chapter describes the history of managing Arctic char in Nunavut. Adaptive co-management is now being used to manage Arctic char. People are trying out different ways to manage char, and then changing the methods if they don't work. This way they adapt quickly and learn what works.*

### Who?

- The Inuit of Cambridge Bay, Fisheries and Oceans Canada and the Arctic char stocks

### Where?

- Cambridge Bay, Victoria Island in Nunavut and the surrounding rivers and streams

### Why?

- To follow the history of Arctic Char management
- To learn how co-management works, and what benefits it can have

### What?

- In Cambridge Bay informal co-management started up spontaneously. Fisheries and Oceans staff worked with local people to manage a stream for subsistence fishing
- Over time, different Cambridge Bay people and Fisheries and Oceans staff learned to trust each other and work together
- By continuously improving parts of the management plan that didn't work – in the end Cambridge Bay had a good management plan for Arctic Char

This chapter is summarized from:

Kristofferson, A.H. and F. Berkes 2005. Adaptive co-management of Arctic char in Nunavut territory. In: *Breaking Ice: Renewable resource and ocean management in the Canadian North*. (F. Berkes, R. Huebert, H. Fast, M. Manseau and A. Diduck, eds.) University of Calgary Press, Calgary, pp. 249-268.

## Background

### *The Arctic Char*

The Arctic Char is found in Arctic regions all around the world. In Canada it is found in Newfoundland and Labrador, along the Ungava Peninsula to Hudson Bay, throughout the Arctic islands and west to the Mackenzie River. It can be found in the sea, rivers, and in lakes. Char grow slowly, they don't produce many young, they don't spawn very often, and they are good to eat. For these reasons char must be managed very carefully.

### *Managing the Arctic Char*

Human population is increasing and more char are needed for food to support life (although not as many char are being used for dog food). Also, there are not many jobs in Nunavut. It would help people if commercial and sport fisheries could be opened. In some areas such as Cambridge Bay, there are more char than are needed for food. A small commercial fishery was started here in the 1960s. Over time the relationship between the Inuit and the Fisheries and Oceans staff has evolved into informal co-management. When the Nunavut Land Claims Agreement was signed in 1993, official co-management groups were formed. Co-management groups that are able to experiment and learn while managing are the way of the future for managing char.

## The Story

### *Traditional char management*

The Inuit living in Cambridge Bay moved around a fair amount during the year, following their food sources. They used a mix of fish, marine mammals and land mammals. Char was an important

part of their food. If there were lots of char, people were not likely to starve.

The Inuit in the Central Arctic would fish char at the *saputit* during fall migration when they were travelling upstream. At this time there were many char travelling together. These char were also good for eating because they were feeding in the sea. Fish of all sizes were caught and fish of all sizes also escaped. If the number of fish was going down, the people would start fishing somewhere else.

### *Cambridge Bay Inuit*



The people in Cambridge Bay lived traditionally on the land until around 1946. In this year construction was started on a navigation beacon in Cambridge Bay and people were paid to work on it. They started moving into the community. When the demand for fox furs went down more people settled with their relatives in the community and the traditional lifestyle ended.

### *Conventional Western char management*

Western ways of management are based almost completely on scientific information and methods using data collected by scientists. Most of the data are collected at one time with no historical



information. The people who make the decisions are not the resource users and they usually live in a city which is nowhere near the resource. This method does not work very well.

This method was used for the commercial char fishery in Cambridge Bay. The government made rules about where fishing was allowed, set a harvest limit or quota, set a mesh size for gillnets, and set a fishing season. However, there were no laws for the aboriginal food (subsistence) fishery.

### ***Management of the Cambridge Bay fishery***

The first commercial fishing of Arctic char took place at Freshwater Creek in 1961 – a place where there was once plenty of char. But the number of char at Freshwater Creek was already going down because of a large subsistence fishery and a non-native recreational fishery. People no longer moved to different streams when numbers went

down in that creek because it was so close to the community. The commercial fishery was moved to Ekalluk River in 1962.

### ***Difficulties***

It was not easy to have a commercial fishery so far north. Float-equipped airplanes took the catch from the fishing sites to Cambridge Bay, where it was frozen and then flown further south. To cut costs the fishers concentrated in one area at the Ekalluk River from 1967-1969. They caught too many fish and the average weight of a char dropped from 3.4 kg (7.5 lbs) to 1.4 kg (3 lbs) in 1969. The fishery at Ekalluk River was closed for a number of years to let the char grow to a larger size again.

### ***A quota for each river***

In order to stop that problem from happening again, Fisheries and Oceans put in place separate quotas for each river. This situation still exists today.



The counting weir, upstream on Freshwater Creek. Photo: D.K.McGowan



Getting fish from the weir on Freshwater Creek  
Photo: courtesy of Fisheries and Oceans Canada

### ***Co-management of the Cambridge Bay fishery***

During the late 1970s and early 1980s, staff from the Department of Fisheries and Oceans used a weir to count char during their upstream migration. They hired local Inuit as assistants. The Inuit learned how this method of counting worked. Presentations were made to the community about the results of the project. The local Ekaluktutiak Hunter and Trapper Association asked Fisheries and Oceans if they would count the fish in Freshwater Creek – with the long-term plan to increase the numbers again. Fisheries and Oceans agreed to do this.

### ***The Counting Project***

In addition to counting the fish, Fisheries and Oceans also did a tagging study. In 1982, they counted 9,961 char.

The non-native recreational fishery was catching 43% of the fish and the subsistence fishery was taking 50%. After learning of these results, the government reduced the number of fish allowed for recreational fishers and the community cut back on the amount they caught for subsistence. Monitoring of the char has shown that the population is recovering slowly. As of 1994, the number was up to 26,000 and the fish were getting bigger.

This experience showed that, by working together, the government and the community could manage the Arctic char fishery successfully.

### ***Co-management under the Nunavut Final Agreement***

The Nunavut Land Claims Agreement was signed in 1993. This agreement means that joint management of resources is now law. The creation of wildlife management systems accept that



Inuit have priority to harvest wildlife. The Nunavut Wildlife Management Board is the joint management board that was created with the signing of the land claim.

The Department of Fisheries and Oceans is developing Integrated Fisheries Management Plans with resource users. In Nunavut, Inuit traditional knowledge is an important part of these plans.

## Conclusions

### *Co-management is adaptive*

Co-management is adaptive because it is based on learning through information sharing between the different groups involved. This approach leads

to a number of improvements to the original management plan. This is what happened at Cambridge Bay.

### *Trust is essential for co-management*

Fisheries and Oceans staff worked together for many years with the people of Cambridge Bay. Over time, the two groups began to trust each other and understand something of the other's world. People got to know one another as individuals, and each shared their knowledge with the other. It is this trust that must be established and maintained in order for co-management to work for the benefit of all the people.



Returning from char fishing. Sachs Harbour, Inuvialuit Settlement Region, NWT  
Photo: Fikret Berkes



Stretching a polar bear skin, Holman, NWT  
Photo: Monica Schuegraf

# 13: Different Ways to Learn: Polar Bear and Narwhal Management

## QUICK LOOK

*There are two basic ways that people learn. They can learn by changing their actions to get better at what it is they are trying to do. Or, they can learn by changing their actions AND rethinking what it is they are trying to do (or why they are doing it). This chapter shows how communities in Nunavut were able to handle a crisis in narwhal management by engaging in this second type of learning. But for government groups in charge of polar bear management, it was much more difficult to learn in this way.*

### Who?

- 5 communities experimenting with community-based narwhal management in Nunavut – Repulse Bay, Arctic Bay, Qikiqtarjuaq, Pond Inlet and Kugaaruk
- The M'Clintock Channel polar bear population, the communities of Talyoak, Gjoa Haven, Cambridge Bay, the Nunavut Wildlife Management Board and the U.S. Fish and Wildlife Services

### Where?

- Both case studies took place in Nunavut

### Why?

- To see how well groups like the Nunavut Wildlife Management Board and communities can learn from their experiences
- Being able to learn-by-doing means groups are better able to adapt to changes

### What?

- It is important to have a legal framework like a Final Agreement that creates organizations like co-management boards where different groups can talk about their opinions, have discussions, and reach conclusions
- Groups must be willing to try experiments and take risks in order for them to learn from their resource management experiences
- Resource managers must learn to use different perspectives

This chapter is summarized from:

Diduck, A., N. Bankes, D. Armitage, and D. Clark 2005. Unpacking social learning in social ecological systems: Case studies of polar bear and narwhal management in northern Canada. In: *Breaking Ice: Renewable resource and ocean management in the Canadian North*. (F. Berkes, R. Huebert, H. Fast, M. Manseau and A. Diduck, eds.) University of Calgary Press, Calgary, pp. 269-290.

# Background

## *Learning by groups*

Environmental change in the North is happening very quickly. In order for communities to adapt and continue to live sustainably, groups of people such as communities and co-management boards, must be able to learn from changes. Groups of people learning is called “social” learning. What does it mean to learn? Learning is:

- 1) Finding what went wrong and fixing it so that it doesn’t go wrong again *or*
- 2) Finding what went right and making sure it will continue to be right.

## *2 Ways of learning*

There are two basic ways that people learn:

- 1) They can learn by changing their actions to get better at what it is they are trying to do.
- 2) Or, they can learn by changing their actions *and* rethinking what it is they are trying to do (or why they are doing it).

# The Stories

## *1) Community-based Narwhal Management*

### *Historical use of narwhal*

Inuit in the Eastern Arctic have hunted narwhal for thousands of years. People ate narwhal, in particular, the muqtuk, and also used the tusks of the narwhal. But most of the animal was used as dog food. The Inuit did not hunt enough narwhal to have any real impact on the population. Europeans hunted mostly for bowhead whales.

## *Government quotas*

In 1977, the federal government decided to put in place community quotas for narwhal. They were worried that the Inuit were catching narwhal to use the tusks for ivory. But, the community quotas were not based on any real information and seemed somewhat random. Some years the communities caught their full quota of narwhal and still needed more. Other years they were not able to catch their full quota, or any at all. They were not allowed to carry the unused quota to the next year.

## *Nunavut Wildlife Management Board*

In 1993, the Nunavut Wildlife Management Board came into being as a result of the signing of the Nunavut Final Agreement. The Board wanted to return control of resources to the communities, so in 1999 a community-based narwhal management system was introduced in four communities, with a fifth added later on. The communities were Repulse Bay, Arctic Bay, Qikiqtarjuaq (Broughton Island), Pond Inlet, and later the fifth, Kugaaruk (Pelly Bay).

## *How did it work?*

The first phase of the project lasted three years. The Hunter and Trapper Organizations, Regional Wildlife Organizations, the Nunavut Tunngavik Inc., and the Department of Fisheries and Oceans were all involved. Fisheries and Oceans let go of the previous quotas. As part of the project the communities had to meet three requirements:

- 1) communities had to report how many animals were struck, landed and lost;
- 2) hunters had to get and complete a narwhal tag for all the animals landed; and
- 3) the Hunter and Trapper



Autumn narwhal hunt. Photo: Jack Orr, Fisheries and Oceans Canada

Organizations had to make by-laws and rules to govern hunting by their members.

### ***Narwhal crisis***

In the first year the number of animals killed was higher than ever before in all communities except one. This result was worrying to the Board, Fisheries and Oceans, and some community members. There had been much waste because many of the narwhal had been struck and lost; also the meat had not been used very well and people did not think that this level of harvest was sustainable. In October of 2000, the Department of Fisheries and Oceans closed the narwhal fishery in Qikiqtarjuaq with an emergency order.

Although they closed the fishery for that year, they did not go back to the original community quota method. The different groups involved had more discussions about how to make it work properly.

### ***What did the discussions reveal?***

As a result of the discussions it was decided that more biological information was needed about the narwhal populations. More scientific information and traditional ecological knowledge about narwhal was to be collected. Also, it was decided that the Department of Fisheries and Oceans had to communicate better with the communities.

### ***What did the groups learn?***

Throughout this project the different groups were trying to learn from each other. More importantly, they learned from experience by running the community-based management project as an experiment. They made changes in management and then looked at how the changes affected the narwhal populations. Both communities and government people tried to understand how the other thought and how they understood the world.

## 2) *Management of polar bears*

Polar bear management in Canada and internationally is done by a network of government agencies and co-management bodies. These groups are closely linked to university and government research projects. In Canada, management is controlled by the Polar Bear Technical Committee and the Polar Bear Administrative Committee. Internationally there is the Polar Bear Specialist Group that is run by IUCN (World Conservation Union).

### *The polar bear hunting system in Nunavut*

In Nunavut nobody may hunt polar bears without a tag or a license. Tags are issued for particular “polar bear management zones.” A certain number of tags are issued for each zone, and these tags are shared among the communities in each zone. Communities can lend or trade their quota to other communities in the same zone. The tags are given to the Hunter and Trapper Organizations and they give them out within the community. The Organizations also decide how many of their tags will be used for sport hunters.

### *Sport hunting of polar bears*

Most sport hunters come from Europe or the United States. While hunting they are guided by experienced Inuit hunters. Most sport hunters want to be able to bring back the trophy from their hunt. Because polar bears are an endangered species, people have to have special permits to export them from Canada and import them into their own countries.

### *Import rules in the United States*

United States laws say that hunters are only allowed to bring the trophy back if:

- 1) Canada monitors and enforces the rules governing sport hunting; and
- 2) the quotas for sport hunting are based on sound scientific information and are sustainable.

In 1997, the United States Fish and Wildlife Service said that five of the 12 Canadian polar bear populations could be hunted for trophies that could be imported to the U.S. These populations were Southern Beaufort Sea, Northern Beaufort Sea, Viscount Melville Sound, Western Hudson Bay and M’Clintock Channel.



### *Polar bear crisis*

The communities of Talyoak, Gjoa Haven and Cambridge Bay hunt the polar bear population at M’Clintock Channel. In 1998, a study of this population resulted in a low estimate for the number of bears remaining – between 238 and 399 bears. This count seemed to indicate a large decline since the 1970s’ estimate of 700 bears. After hearing about the large decline in numbers, the U.S. Fish and Wildlife Service no longer allowed bears from the M’Clintock Channel zone to be imported into the U.S.

The Nunavut Wildlife Management Board discussed quotas and moratoriums. Despite advice from the director of wildlife to stop hunting



completely, they eventually decided to lower the number allowed to be hunted. In 2000/01 only 12 bears were permitted, and, in the next year no bears were permitted. This plan seemed to be designed to lessen the hardship on the communities and decrease the problems that would have resulted from an immediate end to hunting.

### ***What did the discussions reveal?***

Discussions revealed that there was not enough information about the population to really understand what was happening. Maybe the original estimate of 700 had been too high – and the population had never been that high – and consequently would never be that high. Where did the bears go? Did they have less young than other populations that had not declined? Discussions resulted in communities from the nearby zones sharing their quota with Gjoa Haven, which otherwise would not have had access to any bears.



Polar bear and cub.  
Photo: Harvey Lemelin

### ***What did the groups learn?***

While the groups involved did act to fix the problem, they did not learn in the same way as in the previous

example. They questioned how the quotas were set, but they did not change how they functioned. None of the groups involved learned in the same way and to the same degree as in the narwhal case. It was much more difficult and risky for the groups in the polar bear case to rethink the assumptions and values that they used as management goals. As well, it was difficult for them to understand how the other groups were thinking. Some of these difficulties came from the international laws, policies and relationships that were in place.

## **Conclusions**

In the above examples the learning process has been shaped by a number of different factors:

- 1) The Nunavut Final Agreement, and other similar laws, create a framework that allows for the existence of co-management and other similar groups. These groups are better at discussing and resolving different visions, ways of knowing, and goals.
- 2) Learning happens faster if groups are able to learn from experience. Also, if the risks of trying new methods are not high, then groups are more willing to experiment.
- 3) A shift is taking place in the way resource management is done in the Canadian North. People are more open to different ways of knowing and different ways of working together.



Spearfishing Arctic char.  
Photo: courtesy of Fisheries and Oceans Canada

# 14: Can Laws Help Communities be Flexible and Adapt to Change?

## QUICK LOOK

*Laws created as a result of the land claims are able to help communities and government to be flexible and adapt to changes that are happening around them*

### Who?

- The Nunavut Government after the land claim

### Where?

- Nunavut Territory, the Canadian North

### Why?

- To discover if land claim laws allow communities and governments to be flexible and adaptable
- Or, if governments set up by land claims makes it harder for communities to change

### What?

- The government created by the land claims enable much more effective communication, by providing better connections between government and communities
- The connections between communities are also better, as are connections among different branches of government
- The increase in effective communications means that the government and communities learn much better and can adapt to changes faster and more appropriately
- Communities and government departments are able to learn not only from their own experiences, but also from experiences of other groups in similar situations

This chapter is summarized from:

Banks, N. 2005. Exploring the roles of hierarchy in ideas of resilience: Regulating resource harvesting in Nunavut. In: *Breaking Ice: Renewable resource and ocean management in the Canadian North*. (F. Berkes, R. Huebert, H. Fast, M. Manseau and A. Diduck, eds.) University of Calgary Press, Calgary, pp. 291-315.

## Background

### *The importance of law in interactions between people and the environment*

Law is very important to societies. Laws usually uphold the values of the society that makes the laws. And the values the law upholds are those that are very important to that society. We have many laws today – and many of those laws control how people interact with their environment. For example: quotas for fishing, laws against killing endangered animals or protecting conservation areas. Another example are laws controlling how environmental assessments must be done. It is very important when humans interact with the environment that they are able to change and adapt to changes in the environment. The question of interest then, is whether laws can make communities and governments more flexible in their interactions with the environment. Or, do laws make it harder for governments and communities to adapt to changes?

### *Legal systems in Northern Canada*

In most places in the world there is more than just *one* legal system. For example, in northern Canada there exists federal government, territorial government, aboriginal government and government at a community level. In the last ten years there have been many changes in the way interactions between people and the environment are governed in the North. Do the present systems enable communities and government to be flexible and adapt to change? Do the laws help create connections between groups and cause occasions to communicate to occur? Some of these questions will be answered for laws and regulations of the fishery in Nunavut.

## The Story

### *Systems of laws regulating Nunavut fisheries*

The fishery in Nunavut has gone through four different periods:

- 1) The first period was before the Inuit met white people, when the fishery



Narwhals. Photo: Aqqalu Rosing-Asvid, GINR

was controlled by Inuit traditional rules.

- 2) The second period was the whaling time.
- 3) The third period is when the fishery laws were controlled by the central government.
- 4) The fourth period starts in 1993 and is the beginning of co-management between the Inuit and the federal government.

### **1) Inuit fishery with Inuit traditional laws**

Before the Inuit met the white man their fishery was governed by traditional customs and practices. The Inuit fished for ringed seal, bearded seal, walrus, beluga, narwhal and bowhead. These animals were important for food, oil, and for their ivory tusks. They were harvested by harpooning from kayaks or umiaks, or from the edges of ice floes, or by herding animals into shallow water. Freshwater fish like char and lake trout were important. These were caught using spears, weirs, and with hooks and nets through the ice.

### **2) The time of whaling**

Whaling has taken place in the Eastern Arctic since the beginning of the 1700s. For almost the entire time, there were very few laws regulating it. In fact, whaling seemed to be open to everybody and no government made laws trying to control it.

Whaling continued until about 1915. The primary target was bowhead whales. But after they were overhunted, whalers started to catch belugas, narwhals and other sea mammals like walrus and seals. Inuit were employed by whalers but were *not* recognized as owners of the resource and the whalers did not ask their permission to harvest. Inuit did provide whaling camps with caribou and musk-

ox to eat. When the whaling got very bad, the whalers tried to continue trading with the Inuit for ivory, skins and furs. But eventually the whalers left and did not come back. This departure was bad for the Inuit who had grown to depend on traded goods like rifles and needles. Whaling almost caused bowhead whales to become extinct.

### **3) Government “colonial” laws**

Until authority of the colonial government moved north, there were no government laws regulating fisheries harvests. These laws began to arrive at the same time as did police, missionaries and traders. The first harvesting laws were not about the fishery but about the musk-ox harvest. The first fishery regulations were for walrus in 1928. Belugas were regulated in 1949 and narwhals in 1971. These rules took the responsibility for resource management away from the communities that depended on the resources. Later, Marine Mammal Regulations replaced the old regulations with new ones. The new regulations:

- 1) did not allow Eastern Arctic Inuit to harvest bowheads;
- 2) put in place community level quotas for narwhal, beluga and walrus;
- 3) did not allow non-Inuit to harvest whales.

Other territorial laws controlled fish harvesting. For instance they:

- 1) allowed Inuit to harvest fish without a licence for non-commercial purposes;
- 2) did not let anyone engage in commercial fishery without a licence, and only in a certain body of water;
- 3) had quotas for certain species and specified what type of gear might be used in each body of water.





Ice fishing through 1 metre deep ice near Hudson Bay Coast.  
Photo: Fikret Berkes.

### ***What happened to traditional customs and practices?***

The customary rules and norms of the Inuit did not disappear with the introduction of colonial laws. They must have been used in parallel with the colonial laws. Where these laws did not interfere, traditional laws were probably still used. For example, traditional norms regulated the use of fish and marine mammals, the way they were harvested, the use of different harvesting locations and the sharing of the harvest. The government fishery laws even recognized traditional customs in some circumstances, for example giving *community* quotas, and letting the communities decide how they were divided.

But what happened when traditional customs conflicted with government regulations? In those cases the government law was applied and the traditional customs were not upheld.

### ***4) Co-management after the Nunavut Land Claim Agreement***

In 1993, the Nunavut Land Claim Agreement was settled with the federal

government. This agreement had two main effects on Inuit fisheries.

1) There was more protection for Inuit harvest rights. The regulation of resources was divided into two different categories. The first category is about stocks where there is *not* a concern about conservation. Inuit may harvest as much of these stocks as they need for social and economic reasons. Non-Inuit still need a licence. Where there are conservation concerns, then Inuit may harvest only up to their basic needs level. Non-Inuit may only harvest if there is surplus.

2) A greater role in management was given to the Inuit through the Nunavut Wildlife Management Board. The Nunavut Wildlife Management Board is a co-management body that is able to make rules. It has the same number of Inuit and government members, and has a chairperson nominated by the members. The board has the power to make important management rules and set quotas for fisheries. But the Department of Fisheries and Oceans still has large amounts of power because:

a) The Minister may still override a decision made by the Board;



- b) the Minister can still make emergency decisions to protect fisheries;
- c) the Department is still responsible for issuing licences; and
- d) the Minister still has *primary* responsibility for areas outside the Nunavut settlement area.

However, the Board still has input into some decisions by the Minister. It must be given the chance to respond if the Minister overrides its decisions or puts emergency actions in place.

### ***Differences after the Land Claim***

Before the Nunavut Land Claim was in place the communities and their traditional customs and practices did not get any recognition. There was very little interaction between fisheries authorities and the communities. The only interactions they did have were either very formal, for example, consultations, or very informal, for example, friendships. There were also not many ways for communities to share information and collaborate on decision-making. In the same way government authorities working for fisheries or wildlife did not communicate.

## **Conclusions**

### ***Improving communication and learning abilities***

The land claim, through its creation of the Nunavut Wildlife Management Board, has provided the space and guidelines for communication between all these groups. It should be noted that there were connections and communication between communities before the land claim existed. This way the experiences of one community, or group, can be communicated to others. Bringing together traditional peoples, fishery biologists, bird biologists and large mammal biologists allows each to share their experience with others and to begin to trust each other. This sharing enables groups to learn from not only their own experiences, but also from the experiences of others trying to do similar projects. However, there is still room for improvement in communication and management as some stocks, such as char, are still being overfished.



Cree people fishing for whitefish on La Grande river. Photo: Fikret Berkes



Danish flag flying on Hans Island.  
Photo: modified from *Breaking Ice*

# 15: Is Canada Losing Control of the North?

## QUICK LOOK

*In the summer of 2002, a Danish warship sailed to Hans Island, which Canada thought it owned, and put up a Danish flag. Hans Island is a very small island between Ellesmere Island and Greenland. But if Canada gives up ownership of this island, they may have to give up ownership of more of northern Canada.*

### Who?

- A Danish warship and the Governments of Canada and Denmark

### Where?

- Hans Island, an island between Ellesmere Island and Greenland, the ownership of which is in question

### Why?

- To make people realize that Canada is on the edge of losing control of part of northern Canada

### What?

- By putting a Danish flag on Hans Island, the Government of Denmark is challenging Canadian ownership of that island
- The Canadian government has not really responded to this challenge. If it does not, it may have more challenges to the ownership of northern Canada.
- The Northwest Passage could become international waters if foreign boats use it continuously
- The Government of Canada needs to spend more money patrolling the North and watching for foreign vessels

This chapter is summarized from:

Huebert, R. 2005. Return of the "Vikings": The Canadian-Danish dispute over Hans Island - new challenges for control of the Canadian North. In: *Breaking Ice: Renewable resource and ocean management in the Canadian North*. (F. Berkes, R. Huebert, H. Fast, M. Manseau and A. Diduck, eds.) University of Calgary Press, Calgary, pp. 319-336.

# The Story

## *Who owns Hans Island?*

Hans Island is a small island between Ellesmere Island and Greenland. Both Denmark and Canada have laid claim to this island. The Canadians think that they own it because it was discovered by the British who gave their rights to Canada in 1888. The Danish believe that they should own it because it is slightly closer to Greenland than it is to Ellesmere Island. The two countries have been arguing about who owns it since the 1970s. Yet the Canadians and the Danes have been working together despite their arguments over this island. They even cooperated in an exploratory mission of the area between Greenland and Ellesmere Island.

## *The incidents begin*

Canada and Denmark began to cause problems for each other at the beginning of the 1980s. The company "Dome Petroleum" used Hans Island to do some tests and the Government of Denmark issued a "diplomatic protest" to Canada. In 1984, a Danish Minister visited the island and left a Danish flag. In 1988, a Danish inspection crew reached the island by boat and left another Danish flag. Both times the Canadian government issued a "diplomatic protest" to Denmark.

## *The Danish get more aggressive*

The Danish government began to fight for its claim with more energy. They sent a Danish warship to the island and may have landed a few times. But the island is so remote it is hard to know how many times they have landed.

On July 16, 2002, the Danish government requested clearance for their warship *Vaedderen* to enter the waters around Hans Island. The Canadian

government gave permission but also issued another diplomatic protest. The warship left from Thule, Greenland, in August of 2002, and sailed north until it eventually entered the waters around Hans Island. It is not known for sure but Canada believes that the sailors landed on the island and raised the Danish flag – again. It is also possible that the sister ship of the *Vaedderen*, the *Triton*, did the same during the summer of 2003. In fact, it is possible they have been doing this for quite a few years.



Danish warship, the *Vaedderen*.  
Photo: [www.navalhistory.dk/English/TheShips/VW/Vaedderen\\_frigate\(1992-\).htm#Fotos](http://www.navalhistory.dk/English/TheShips/VW/Vaedderen_frigate(1992-).htm#Fotos)

## *What can the Danish do?*

Denmark is almost the only country that has warships that are capable of sailing in the far North. Their boats have thicker hulls, reinforced rudders and extra protection on the propellers so that they can enter waters with ice up to a metre thick. These boats are able to patrol Greenland and carry important equipment for studying the ocean floor. The continental shelf studies are important for laying claim to areas beyond the 200 mile nautical limit.

## *What can Canada do?*

Canada presently has no boats that are capable of travelling in the waters of



the Canadian Arctic in winter – and no boats that can do these kinds of scientific surveys. Canada hasn't had boats like this since 1954. The Canadian navy stopped doing summer trips into the southern Arctic in 1989, but resumed them in 2002. Still they could not go as far north as Hans Island.

### ***Canadian Coast Guard***

The Canadian Coast Guard ice breakers are the only Canadian boats that actually can travel to Hans Island. The staff is professional and highly trained, but the fleet has very little funding. In fact, budget cuts mean that the Coast Guard can no longer operate all their four heavy- duty vessels year-round.

### ***Canadian Air Force***

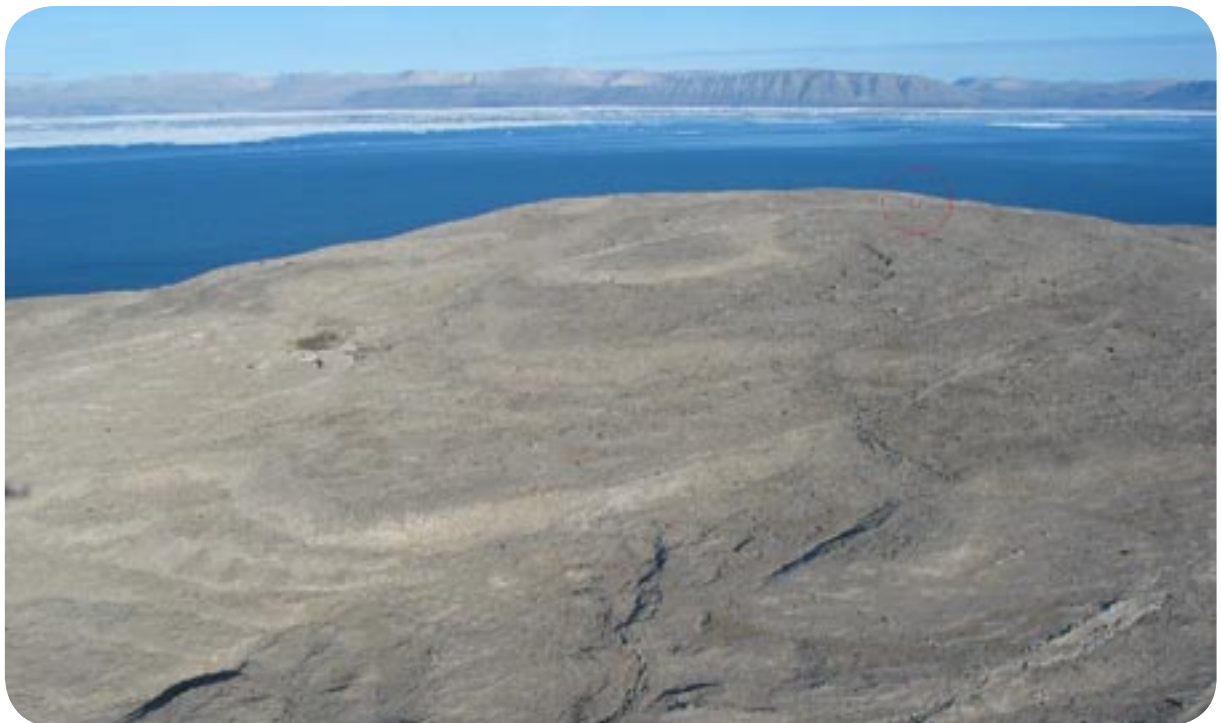
The Canadian air force is also losing its ability to visit the Canadian North. It no longer has medium range aircraft. The long range patrol aircraft

are very old and are not permitted to fly as much. In the 1980s to 1990s, the air force was able to make between 18 and 22 flights per year. Since 1995, they have only made between one and three flights per year.

Canada has improved its satellite monitoring ability and purchased unmanned aircraft which should both be used to improve monitoring of the North. But it is not known when this change might happen. At present Canada cannot match Denmark's ability to reach Hans Island.

### ***Loss of Canadian control?***

If the warship had not asked for permission to enter Canadian waters, or had not been sighted by one of the few air force flights, then Canada might never have known it was there. In fact, Canada has almost no ability to demonstrate its control of Arctic Canada. This lack of surveillance could lead to more claims on different parts of the Canadian North.



View of Hans Island. Photo: modified from *Breaking Ice*

## ***Are other parts of the Canadian North at risk?***

If Canada does not fight aggressively against Danish actions, it will be viewed as a weak and easy target. If, in fact, it loses the claim over Hans Island, it could show how little capability Canada has to properly patrol northern Canada. This would mean that other countries that are disputing northern claims with Canada will find it easier to win their claims. There are *five* other challenges to Canadian ownership of the North right now. These are:

- 1) the United States is claiming that the Northwest Passage is international waters, not part of Canadian waters;
- 2) the ocean border between Alaska and the Yukon is being disputed;
- 3) Canada and Russia might have overlapping claims on the continental shelf in the high Arctic;
- 4) there could be another disagreement over the ownership of the continental shelf between Canada and Greenland;
- 5) there may also be a disagreement over the continental shelf between Alaska and the Yukon.

## **Conclusion**

### ***Can Canada win its claim?***

The problem is not the loss of Hans Island, which itself is not important, but Canada's ability to demonstrate its ownership of the North, by patrolling and monitoring it. Canada needs to create

a well-funded program that will show Canadian presence in the Arctic.

- 1) Canada needs to have a better fleet of ice-breaking ships that are capable of travelling in the high Arctic.
- 2) Canada needs to maintain and upgrade the number of flights that are made patrolling the Arctic.
- 3) Canada should develop a coastal watch system that combines the experience and indigenous knowledge of the Canadian Inuit with advanced technology to keep track of ships in the Canadian Arctic (a program similar to that of the Rangers).
- 4) Canada also needs to train people to work in the Arctic, people who are good at navigation, search and rescue teams specific to Arctic climates, and environmental response teams for spills or other accidents.

In addition, the Government needs to *enforce* the laws that it already has about the type of ships that can enter the Arctic. Some laws are already in place, but the Canadian government has not been enforcing them because it is afraid of the reaction of other countries, particularly the United States. If the Government does not aggressively defend Canada and her claims and rights, it is possible parts of the country may be lost.



# Conclusion

## *Integrated resource management*

Integrated resource management is a way to identify and understand the different demands on the environment and natural resources. It tries to view all different aspects of a situation. It looks at small scale and large scale, and it also looks at things from a social, community perspective and from an environmental perspective. Through integrated resource management, local communities work in partnership with government officials and scientists to care for the environment.

Integrated resource management often works through co-management groups - government and community working together to make resource management decisions. There are a few important ideas that people discover again and again while participating in an integrated resource management process. These include the following:

1) Traditional ecological knowledge is a unique and valuable source of knowledge and information for making resource management decisions.

2) Co-management groups create an opportunity and a space to learn about resource management and to share and use traditional knowledge.

3) People and groups must have the ability to be flexible and adaptable while responding to change.

4) The most important part of successful co-management is good communication, respect for each other and trust.

## *Traditional ecological knowledge is valuable for resource management*

Traditional ecological knowledge is the knowledge and wisdom of elders and people who have spent their lives

on the land. Through watching and listening they have learned much about the natural environment and how it works. This knowledge is usually passed from generation to generation by word of mouth, through stories and by being on the land. For a long time, many southerners, government officials and scientists did not believe the knowledge held by traditional cultures. Through sharing information and experiences on the land, many southerners have come to respect and trust the knowledge of their aboriginal partners. Traditional knowledge is valuable for making resource management decisions. It not only provides information that was not known, but also provides a perspective and way of doing things that is different from conventional resource management.

## *Co-management groups create a space for respect and trust*

Land claim agreements created co-management bodies in both the Western Arctic and in Nunavut. Co-management bodies usually have equal numbers of government and community representatives. Co-management groups allow community and government people to work *together* to make resource management decisions. This is important because it gives more weight to the interests, knowledge, and values of indigenous people, whose knowledge and experiences are a result of thousands of years of life in the North. Co-management groups create a space where traditional ecological knowledge can be shared, collected, documented and used. Co-management groups should also create an opportunity for people to learn more and to build capacity and skills.

### ***Flexibility and responding to change***

Change is happening rapidly all over the world. But in the Arctic it is much more noticeable. Responding to, and adapting to change quickly and effectively is very important for groups that must make decisions. *Learning-by-doing* allows management groups to make decisions, see the results and then make changes to the original decisions, if necessary. Good communication between the people on the land who notice the changes and the people making decisions allows better decisions to be made. Co-management groups create links between the people on the land and the decision makers.

### ***Communication, commitment, respect and trust***

Over and over again the people who wrote this book have discovered that co-management only works when both community members and government people trust each other. The most important lesson is that trust takes *time* and *commitment* from both sides to develop. This is not easy to achieve when people change jobs and move around a lot.

Trust develops out of respect, good communication, listening and

learning. People must work together, in the field and in making decisions. They must listen to different perspectives and make an effort to understand and learn about the worldviews of others. In time, scientists come to respect and accept the traditional knowledge of indigenous people, and indigenous people come to respect and accept the knowledge of scientists. In the end, scientists and indigenous people are able to communicate through some level of shared understanding, respect and trust. Both sides must be willing to put in the time and long-term commitment to develop a relationship with the other.

### ***The Future***

The process of integrated resource management and co-management does not end here. There is still a lot of room for improvement in communication and understanding between the different stakeholders, communities, conservationists, industries and government. The learning will not end. Decisions on how to use resources will always need to be made. Co-management will continue to happen, and hopefully will happen more often. People will continue to work together, learning to trust each other.

### ***Dedication***

Across the North and South there are many people dedicated to making integrated resource management work. It is to them and the questions they ask, that this version of the book is dedicated. Northern people are asking many questions about resource management. But the answers aren't easy; and they aren't simple. To find answers that work people will need to work together, to be flexible and adaptable, to trust and respect each other.

*How can we develop our resources responsibly while keeping our health, well-being, and culture?*

*How can we sustain our waters, lands, and the traditional activities that depend on them?*

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# Glossary

**Adaptive management** – learning-by-doing; an approach to managing resources when there is not enough information.

**Co-management** – sharing of power and responsibility between the government and communities. For example, as required by northern land claims agreements.

**Contaminants** – Various kinds of pollutants, including oil, POPs, and heavy metals in the environment, usually invisible.

**Country food** – the term used by many indigenous people referring to any food that is obtained from the land. For example, caribou, beluga, fish, ducks, and geese.

**Diplomatic protest** – A complaint by one government against another. It serves as a record to show that governments do care about what is happening.

**Ecosystem** – living beings and their non living environment, all interacting as a unit, in a particular area. Close to the concept of “land.”

**Ecosystem approach (ecosystem-based management)** – the management of human activities in a way that respects and protects the land.

**Indicator** – signs or signals that are noticed or measured when the environment changes; signs of more complex changes that are not easy to notice.

**Integrated management** – a continuous process of balancing the demands of different stakeholders. Designed to overcome fragmentation in resource management.

**Muqtuk (mattak)** – a northern delicacy usually made from the inner skin of beluga whales; occasionally from narwhals. Muqtuk is culturally very important to Inuit people.

**Oceans Act** – a federal law that came into force in 1997. It directs Fisheries and Oceans to build partnerships with aboriginal groups and coastal communities.

**Population** – the number of animals of one species that live in a specified area; it is an ecological term.

**Species** – a biological term that refers to a unique type of living organism.

**Subsistence** – hunting and fishing for household and community needs; harvesting for non-commercial purposes.

**Sustainability** – means the present generation can get what they need to live without hurting the ability of their children and future generations to meet their own needs.

**Traditional knowledge** – knowledge, practice, and belief handed down through generations about the environment; local knowledge. Also known as Inuit Quajimajatuqangit (IQ) by Inuit people.



