NARWHAL CO-MANAGEMENT IN NUNAVUT: DEEPENED COLLABORATION NEEDED TO IMPROVE PARTNERSHIP, PROCESS AND OUTCOME

by

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Submitted in partial fulfillment of the requirements for the degree of Master of Marine Management

at

Dalhousie University
Halifax, Nova Scotia

August 2012

Dalhousie University

Marine Affairs Program

Halifax, Nova Scotia, Canada

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Date: 28 August, 2012

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Title: Narwhal co-management in Nunavut: Deepened collaboration needed to improve partnership, process and outcome

School: Marine Affairs Program, Faculty of Management

Degree: Master of Marine Management

Convocation: October

Year: 2012

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Signature of Author

Inuit Qaujimajatuqangit/IQ

Let me tell you a story it's strange but true
It's not a joke it could happen to you
A fellow from the South was in quite a state
When to me this story he did relate

He had the decentralization blues
And then to make it worse he got more bad news
The IQ people gave him the word
To do what he considered to be quite absurd

Them say that since he live and work in Nunavut
He should go and learn some Inuktitut
He went to College to language class
He studied night and day but he still can't pass

First he learn to say the word Nakurmik
Then he tried to pronounce Iqaluit
But when he try to say it he say Iquluut
Cause he didn't know exactly where the U to put

This language him says is hard to learn
When teacher give a test, him start to squirm
She say you think it's hard to say Iqaluit
Try Inuit-qaujima-jatu-qangit

Inuitqaujimajatuqangit
Could you please tell me what is it?
It's not the kind of thing you learn from a book
To really understand you have to be an Inuk

Inuitqaujimajatuqangit
Oh lord I can't pronounce it
I can't fit that word inside my head
So I think I will say IQ instead.

Inuitqaujimajatuqangit
Even Inuit have trouble saying it
I can't fit that word inside my head
So I think I will say IQ instead

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Abstract

Since the ratification of the Nunavut Land Claims Agreement (NLCA) in 1993, narwhal harvesting in Nunavut has been governed by a formalized co-management regime. The Nunavut Wildlife Management Board, a body created under the NLCA, has decision-making power, while the ultimate management authority remains with Fisheries and Oceans Canada as marine mammals are a federal responsibility. Calling for an effective system of wildlife management that complements Inuit harvesting rights, fosters public participation, and reflects the traditional and current patterns of Inuit harvesting and wildlife management, the NLCA provides an adequate framework for co-management. However, co-management processes take a long time to mature and the Nunavut narwhal co-management is no exception. While there have been attempts to devolve management responsibility to the local level, cooperation between the co-management partners is challenged by a lack of capacity among the local and regional hunters organizations as well as a lack of trust. The assessment of the shortcomings of the current co-management process revealed issues regarding communication, power sharing and the limited inclusion of Inuit knowledge and values in the decision-making process. A number of recommendations on advancing narwhal co-management are proposed, including capacity building among hunters, a true commitment to adaptive co-management which will facilitate social learning, and the engagement of a facilitator to assist in developing collaborative and effective ways of collecting and sharing information. Such co-production of knowledge would help the Nunavut narwhal co-management partners to form their recommendations and decisions on a more inclusive and equitable knowledge base.

Keywords: co-management, narwhal, Inuit, traditional ecological knowledge (TEK), *Inuit Qaujimajatuqangit* (*IQ*), social learning, co-production of knowledge, Nunavut Land Claims Agreement

Wirz-Held, M. B. E., 2012. Narwhal co-management in Nunavut: Deepened collaboration needed to improve partnership, process and outcome [graduate project]. Halifax, NS: Dalhousie University.

Executive Summary

CHAPTER 1: INTRODUCTION

Inuit have sustainably hunted narwhals for centuries, and to this day, the narwhal is an important cultural, nutritional and economic resource for the Inuit in Nunavut. Since 1993 when the Nunavut Land Claims Agreement (NLCA) was ratified, narwhal hunting in Nunavut has been under a formalized co-management regime. Co-management is a balancing act between government and community control that entails a certain degree of power sharing between the government and the resource users and that recognizes and legitimizes traditional local management systems.

The purpose of this paper is to provide management advice for the improvement of the currently rather sluggishly progressing Nunavut narwhal co-management process. The latter is not fulfilling the expectations of neither policy makers nor the resource users despite the fact that all co-management partners share the same ultimate goal, namely to protect and conserve the narwhal in order to allow for continuous sustainable harvesting by the Inuit hunters. A set of recommendations is proposed based on an inductive analysis of the present implementation of narwhal co-management in Nunavut.

CHAPTER 2: THE NARWHAL, AN IMPORTANT RESOURCE IN NUNAVUT

The narwhal (*Monodon monoceros*) is a medium-sized toothed whale that is found exclusively in the Arctic. The narwhals that frequent Canadian waters are distinguished by their summering grounds into two populations, the Northern Hudson Bay population and the Baffin Bay population. The existence of distinct subpopulations or rather stocks has been proposed, but exact delineations are currently not feasible. Narwhals have distinct summering and wintering grounds and have been found to exhibit high site fidelity to them as well as to migratory routes. The latest aerial surveys of the narwhals in their Canadian summering grounds have yielded population estimates of at least 60,000 animals for the Baffin Bay population and about 12,500 animals for the Northern Hudson Bay population; however, these abundance estimates are afflicted with a great deal of uncertainty. The narwhal is a deep-diving, gregarious and very loquacious cetacean that has a slow reproduction rate. Its most prominent characteristic is a 2-3 metre long ivory tusk which is in fact a tooth growing in a counter-clockwise spiral from the upper left jaw of adult males. Narwhals feed predominantly on Greenland halibut and squid. They do not have many natural predators.

Inuit in the Canadian Arctic traditionally hunted narwhals with harpoons from kayaks, using large floats made of entire sealskins to keep the stricken whale afloat and add drag. Today, narwhals are still hunted in the open water, but also from the floe edge and in ice cracks. They are shot with a rifle and secured and retrieved using a grappling hook, block and tackle and/or a boat. *Mattaq*, the narwhal skin with some blubber attached to it, was and is an important and valued food item. Narwhal meat used to be fed to the sled dog teams, and the ivory tusks were fashioned into tools and sometimes carvings. Since the establishment of permanent trading posts in the Canadian Arctic more

than a hundred years ago, narwhal tusks have been traded for food, goods and cash.

For Inuit, the importance of narwhal hunting extends beyond providing food and revenue; it is a crucial factor in the maintenance of cultural identity and social relationships. Inuit identify themselves as hunters, but this does not infer superiority over their prey. The narwhal, as all animals that are hunted by Inuit, is regarded as a sentient being that has a soul and demands respectful treatment. Hunted food is shared among families and kin, and thus is crucial in creating and reproducing relationships. Hunting also plays an important role in maintaining ecological knowledge and facilitates the transfer of skills and values to the younger generations.

For centuries, Inuit in the Canadian Arctic have been managing their narwhal harvests. In 1971, the Canadian Government enacted, in accordance with the *Fisheries Act*, the *Narwhal Protection Regulations* which assigned annual catch quotas first to individual hunters, later to communities. The quota system was not well received by Inuit hunters as the quotas were assigned rather arbitrarily, not adjusted through time and non-transferable. Pursuant to the quotas, tags were issued by the Department of Fisheries and Oceans (DFO) to communities and re-distributed to hunters who had to attach a tag to every landed narwhal, a system that is still in place today.

Apart from fisheries regulations, there are other laws and regulations that govern narwhal management in Canada, such as the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The narwhal is listed on Appendix II of CITES which regulates the import and export of species that could become threatened with extinction if trade is not closely controlled. Thus, narwhals, including all parts and derivatives of the species, need to be accompanied by a permit from the exporting country when traded for commercial purposes. Such a permit is only to be issued when the national government of the exporting state has advised that the export will not be detrimental to the survival of the species in the wild; thus, it is referred to as a non-detriment finding (NDF). Narwhal management in Nunavut is a challenging undertaking. Subsistence needs and conservation requirements need to be balanced while adhering to a host of national and international legislation.

CHAPTER 3: NARWHAL CO-MANAGEMENT IN NUNAVUT UNDER THE NLCA

After two decades of negotiations between the Government of Canada and the Tungavik Federation of Nunavut, the organization that negotiated on behalf of the Inuit of what is now Nunavut, the NLCA came into force in 1993, followed by the Nunavut Territory in 1999. In addition to settling Inuit land and water rights in Nunavut (based on traditional use and occupancy), the NLCA includes, *inter alia*, provisions for wildlife harvesting. It calls for an effective system of wildlife management that complements Inuit harvesting rights, fosters public participation, and reflects the traditional and current patterns of Inuit harvesting, thus providing an adequate framework for co-management. To this end, the NLCA established the Nunavut Wildlife Management Board (NWMB), a nine-member co-management board that is the main instrument of wildlife management in Nunavut. However, while the NWMB has decision-making power, the ultimate management authority remains with the government, in the case of the narwhal with DFO as marine mammals are a federal responsibility.

The responsibilities of narwhal co-management in Nunavut are split between the NWMB, DFO, and the local and regional hunters associations. The duties of the NWMB

include participating in research, establishing, modifying or removing levels of total allowable harvest (TAH) and non-quota limitations, and ascertaining basic needs levels (BNLs), *i.e.* levels of harvesting by Inuit required to meet their basic needs. The board's decisions affect peoples' rights or interests; thus, it holds hearings in the run-up to coming to a decision. Community-based Hunters and Trappers Organizations (HTOs) shall oversee the harvesting by Inuit, *i.e.* allocate and enforce BNLs and regulate harvesting practices and techniques through informal agreement or by enacting by-laws. As BNLs have not been set yet, HTOs are responsible for allocating community quotas, *i.e.* for handing out tags to their members, and for reporting to DFO about the annual narwhal harvests. Equivalently, each of the three regions of Nunavut has a Regional Wildlife Organization (RWO) which is in charge of wildlife management at the regional level. DFO is the regulator and the lead with regard to aquatic species listed under CITES.

The Government of Nunavut (GN) and Nunavut Tunngavik Incorporated (NTI) are not considered formal co-management partners as they do not have any mandate for marine mammal management. However, they each have an appointee on the NWMB and are also actively involved in the decision-making process through consultations and hearings. As a public government for all Nunavummiut, the GN is affected by the decisions of the NWMB and the narwhal harvesting in general with regard to socio-economic impacts such as income, health and safety and thus has an interest in narwhal management. NTI is an Inuit organization that has been representing the Inuit of Nunavut as a party to the NLCA since the agreement came into force in 1993. NTI is responsible to ensure that both Inuit and the federal and territorial governments fulfill their responsibilities and obligations as set out in the NLCA.

Co-management processes take a long time to mature and the Nunavut narwhal co-management is no exception. An early experiment with community-based narwhal co-management was partially successful. While it represented a truly collaborative effort, the trial nevertheless failed. In the communities that took part in the experiment narwhal quotas were removed, a change that resulted in significant increases in landed narwhals. Thus, DFO swiftly re-established harvest limits; they were, however, more flexible (*e.g.* could be carried over to the following year). This intervention, mainly the result of poor communication among the various stakeholders, was highly contentious and negatively affected the mutual trust among the co-management partners.

The current Nunavut narwhal co-management regime is basically a continuation of the quota and tag system first established in 1971. However, the co-management partners and other stakeholders, with NTI leading the way, agree that changes are needed to further align narwhal management with the provisions of the NLCA. Thus, during the past few years, the Nunavut narwhal co-management partners have been mainly concerned with two related issues, the establishment of TAH levels and BNLs. In order to reduce potential overexploitation of a narwhal population that is hunted in several communities, DFO is suggesting using summering aggregations (stocks) of narwhals as management units. Based on the most recent population and stock abundance estimates, DFO put forward recommendations for the total allowable landed catch (TALC) for each management unit along with a decision tool to allocate these TALC through the seasons. These proposed management measures have been submitted for decision to the NWMB as part of an Integrated Fisheries Management Plan (IFMP) which was drafted by DFO on behalf of all co-management partners. The public hearing took place in late July 2012,

and the board's decision is expected to be released in fall 2012. If established, the TALCs would replace the existing community quotas. A public hearing on BNLs, which were originally supposed to be established by the NWMB within a year of the creation of the board, is scheduled for September 2012.

An extra challenge was added in December 2010 when DFO withheld CITES NDFs for several of the proposed management units, thus banning international trade of narwhal tusks from these areas. This prohibition dissatisfied the hunters from an economic point of view. But they, along with NTI, were particularly alienated as they had not been consulted and the decision was based on management units that had not yet been discussed nor adopted. Based on updated analyses and using the latest abundance estimates, DFO has since retrospectively issued NDFs for most management units. Grise Fiord is currently the only community affected by an export ban.

CHAPTER 4: ANALYSIS AND DISCUSSION OF ISSUES FACING NARWHAL CO-MANAGEMENT

The assessment of the shortcomings of the current co-management process revealed four issues regarding power sharing, communication, and the limited inclusion of Inuit knowledge and values in the decision-making process.

While there have been attempts to devolve management responsibility to the local level, **cooperation** between the co-management partners is challenged by a lack of capacity among the local and regional hunters organizations. On the other hand, the NWMB is now well established as the decision-making authority. Although not formal co-management partners, the GN and NTI are actively involved in the Nunavut narwhal co-management, offering advice, collecting *Inuit Qaujimajatuqangit* (*IQ*; Inuit knowledge, values and beliefs) and making sure Inuit rights are fulfilled. All stakeholders have continuously proven their willingness to collaborate. Even so, not all management functions are being performed jointly, particularly data gathering and analysis as well as recommending TAH levels which are all mainly done by DFO. Ideally, co-management regimes link local-level actors and governments through shared decision-making power. This collaboration is thought to be indispensable in order to achieve sustainable development and should not only include management but also extend to research.

Having different world views as well as different cultural and institutional backgrounds with regard to both oral and written **communication**, the narwhal co-management stakeholders have repeatedly struggled to find common ground. The emergency closure of the narwhal hunt in Qikiqtarjuaq in 2000 and the withholding of CITES NDFs for several narwhal stocks in 2010 as well as the legal action subsequently taken by NTI against the federal government are an expression of poor communication which resulted in a breakdown of **trust**. On the other hand, one of the benefits of co-management arrangements is the fact that collaboration and social learning foster trust building and the formation of social networks of researchers, communities and policy makers. Such adaptive co-management is slow to develop; but once matured, it provides the flexibility and creativity needed to deal with uncertainty and rapidly changing social-ecological systems as well as conflict resolution.

Furthermore, not all co-management partners are in agreement about the **interpretation of key concepts** such as community consultations and the consideration of *IQ*. These two concepts are, although not explicitly, mandated by the NLCA, for its objectives and guiding principles concerning wildlife management cannot be achieved

without consulting with Inuit and without incorporating *IQ*. Indeed, all stakeholders have taken up talking to Inuit prior to making recommendations or decisions. Before submitting the draft IFMP for narwhal to the NWMB, DFO - representatives from the GN, NTI and NWMB took part as observers - engaged in community consultations. However, it remains unclear whether and how the concerns and knowledge of the Inuit were considered in the proposed IFMP. DFO's objectives for the consultations can be interpreted to the effect that DFO views consultations mainly as a means to inform the hunters about management decisions and to provide them with an opportunity to voice their concerns as opposed to a truly reciprocal relationship between the stakeholders. However, in a co-management regime with Inuit, Western scientific knowledge and *IQ* must be considered equally. NTI, the GN and the NWMB advocate the inclusion of *IQ* in narwhal management decision making. The prevalent conceptualization among scientists and policy makers is, however, that traditional ecological knowledge can only be considered relevant when validated by Western science.

Consequential, the fourth issue is the **confrontation of Western scientific knowledge and *IQ***. DFO traditionally bases its recommendations and decisions on internally peer-reviewed science advice. But no matter how diligently the review process is carried out, this conventional method of knowledge production has its limitations. Just because estimates have been peer reviewed does not make them any more certain, even more so in a rapidly changing socio-ecological system. *IQ* on the other hand, is less susceptible to assumptions as it is knowledge that has been handed down through the centuries and that embodies fundamental ideas and values of Inuit life and culture. With regard to wildlife management, *IQ* can offer information about long-term observations of a species, its behaviour and habitat as well as the socio-cultural importance of a resource. But *IQ*, which is neither published nor peer-reviewed, is most often not included in the decision-making process of wildlife management despite the NLCA's mandate.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

The analysis of the main issues facing narwhal co-management in Nunavut brings forth a number of conclusions and respective recommendations. In the past 19 years, formalized narwhal co-management has continuously profited from trial and error and adaptations that resulted from this approach, but has not fully matured yet. In order to advance narwhal co-management in Nunavut, the currently limited power sharing among co-management partners, particularly DFO and the HTOs, needs to be extended. Yet the devolution of power and responsibilities to the HTOs and also the RWOs needs to be accompanied by **capacity building**, an investment that has the potential to improve the entire co-management process from the bottom up as the presence of strong community leaders has been found to be a key element of successful fisheries co-management.

Cooperation could also be enhanced by **formalizing the inclusion of NTI and the GN** in the narwhal co-management regime. Although they do not have jurisdiction over marine mammals, both are actively involved in the co-management process. Their formal inclusion would better reflect the composition of the nine members of the NWMB and provide equal conditions for all the partners, thus eliminating tendencies to take sides and reducing frustration. After all, the stakeholders pursue the same ultimate goal. Thus, being on par with each other could increase the sense of unity among the co-management partners, which in turn would facilitate increased cooperation and power sharing.

Generally, the process would likely benefit from the involvement of a **facilitator**. While the NWMB could assume this role, it might be more effective to turn to an outsider. Linking different governance levels and knowledge systems is a challenging task that requires an active role of all co-management partners. Facilitators can assist the stakeholders, without being one themselves, in developing collaborative and effective ways of collecting and sharing information. This is particularly true when there are conflicts and tensions due to dissimilar cultural backgrounds which is the case in the Nunavut narwhal co-management regime.

There is a need to rebuild trust and to collaborate on establishing a positive atmosphere of conversation. According to the literature, one of the outcomes of adaptive co-management is building trust through collaboration and **social learning**. The latter is an iterative and democratic process to adapt to social and ecological change. Through such a flexible and creative learning process, the Nunavut narwhal co-management partners could learn from mistakes, adapt to new research findings, and integrate *IQ* in decision-making, all without losing the objectives of narwhal co-management. In fact, this is not an easy task and requires that all co-management partners are willing to engage in such a learning process without bias. Empowerment of the resource users and the inclusion of a facilitator would foster increased collaboration and thus social learning, which in turn would foster meaningful consultations, *i.e.* engaging in relationships in which the knowledge and values of all partners are equally respected and considered.

Differing interpretations of key concepts lead to misunderstandings, thereby promoting conflict, hampering the effectiveness of collaboration and eroding trust. Thus, **clarification regarding the meaning of "consulting with Inuit" and "considering *IQ*"** is needed, a task that should be taken on by all stakeholders in collaboration. This would be beneficial for the co-management partners as it is them that would have to proceed according to definitions agreed upon.

In the current Nunavut narwhal co-management process, *IQ* and Western scientific knowledge are not considered equally. Some co-management partners seem to view the two knowledge systems as competitive rather than complementary. To facilitate a revision of this view a new way of gathering and using both scientific and traditional knowledge is needed. **Co-production of knowledge** is a method that could help the narwhal co-management partners to form their recommendations and decisions on a more inclusive and equitable knowledge base. Knowledge co-production is a collaborative effort to bring various sources and types of knowledge together in order to understand and address a specific problem. While *IQ* is at present usually incorporated in the data collection phase of Western scientific research and when knowledge is shared, its integration and application are very limited. Engaging in the co-production of knowledge means that diverse interpretations of knowledge are explored collaboratively and in an open and honest manner. Such a dialogue, which is more likely to happen with the help of a facilitator, is the key to producing, from the integration of scientific knowledge and *IQ*, a new way of thinking and a new knowledge base which are needed to address the social-ecological complexities inherent to narwhal management.

Although not a co-management panacea, social learning and the co-production of knowledge under the guidance of an experienced facilitator seem to be a valid solution to a whole array of issues currently facing the narwhal co-management in Nunavut.

List of Abbreviations Used

AD	Anno Domini
BNL	Basic needs level
CBD	Convention on Biological Diversity
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
cm	Centimetre
CMS	Convention on Migratory Species
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CSAS	Canadian Science Advisory Secretariat
DFO	Fisheries and Oceans Canada
EU	European Union
GN	Government of Nunavut
HTO	Hunters and Trappers Organization
IFMP	Integrated Fisheries Management Plan
IQ	*Inuit Qaujimajatuqangit*
IUCN	International Union for Conservation of Nature
IWC	International Whaling Commission
kg	Kilogram
m	Metre
NDF	Non-detrimental finding
NLCA	Nunavut Land Claims Agreement
NTI	Nunavut Tunngavik Incorporated
NWMB	Nunavut Wildlife Management Board
RWO	Regional Wildlife Organization
SARA	*Species at Risk Act, 2002*
TAH	Total allowable harvest
TALC	Total allowable landed catch
TEK	Traditional ecological knowledge
TFN	Tungavik Federation of Nunavut

Acknowledgements

My graduate project would not have been possible without the support of the Fisheries and Sealing Division of the Nunavut Department of Environment and the Marine Affairs Program at Dalhousie University, and I would like to thank Janelle Kennedy, Wayne Lynch, Lucia Fanning and Becky Field for facilitating a very memorable internship in Winnipeg, Ottawa and Iqaluit. A special thank you is directed to Janelle for not referring me to an HTO and to Becky for her guidance and patience with all administrative matters of the project.

I am also indebted to all the representatives of narwhal co-management partners that took the time to elucidate the complex nature of the Nunavut narwhal co-management arrangement as established under the Nunavut Land Claims Agreement.

I extend a heartfelt thank you to Dr. John Kearney, my academic supervisor. His engaging and effective class about community-based co-management inspired me to further explore this management regime with regard to marine mammals. Thank you for your passion and expertise as well as for your calm, reassuring and unobtrusive supervision of this project. It was a pleasure and a privilege to work with you.

I would also like to thank Dr. Robert Fournier, my second reader, for agreeing to read and assess yet another narwhal paper of mine.

Last but not least, I would like to thank my husband, my family and friends for all their love and encouragement during the development of this graduate project and throughout the excessively busy MMM year. I sure would not have succeeded without their enduring support. Thank you!

CHAPTER 1: INTRODUCTION

1.1 Nunavut, narwhals, and the Nunavut Land Claims Agreement

For the past two decades, narwhal hunting in Nunavut has been under a co-management regime; more precisely, since 1993 when the Nunavut Land Claims Agreement (NLCA) was ratified, a comprehensive agreement between the Inuit of Nunavut and the Government of Canada that settled land and water rights. In addition, the NLCA includes provisions for land use planning, natural resource development, and wildlife harvesting and also stipulated the creation of the Nunavut Territory and its government which were established in 1999 (*Nunavut Act*, 1993; DIAND & TFN, 1993). In the Inuktitut language Nunavut means 'our land'.

Nunavut is not only the newest, but also the least populated (just under 32,000 residents in 2011) yet the largest territory of Canada, covering about two million square kilometres across the Central and Eastern Canadian Arctic (Statistics Canada, 2012). With the exception of the islands in southern Hudson Bay, the entire territory is located north of 60 degrees north latitude (DIAND & TFN, 1993) and also beyond the tree line (Bone, 2012). Vast areas of not easily accessible inland tundra are complemented by countless islands, peninsulas and an extensive coastline. As shown in Figure 1, all but one of the 26 communities in Nunavut are located at the coast. But long before the settlement of the Inuit, they spent part of their nomadic lives at the coast, hunting for marine mammals. Inuit and their ancestors are believed to have sustainably hunted narwhals for at least a thousand years (Savelle, 1994). Until today, the narwhal is an important cultural, nutritional and economic resource for the Inuit in Nunavut which make up 85 percent of the territory's population (Statistics Canada, 2010).

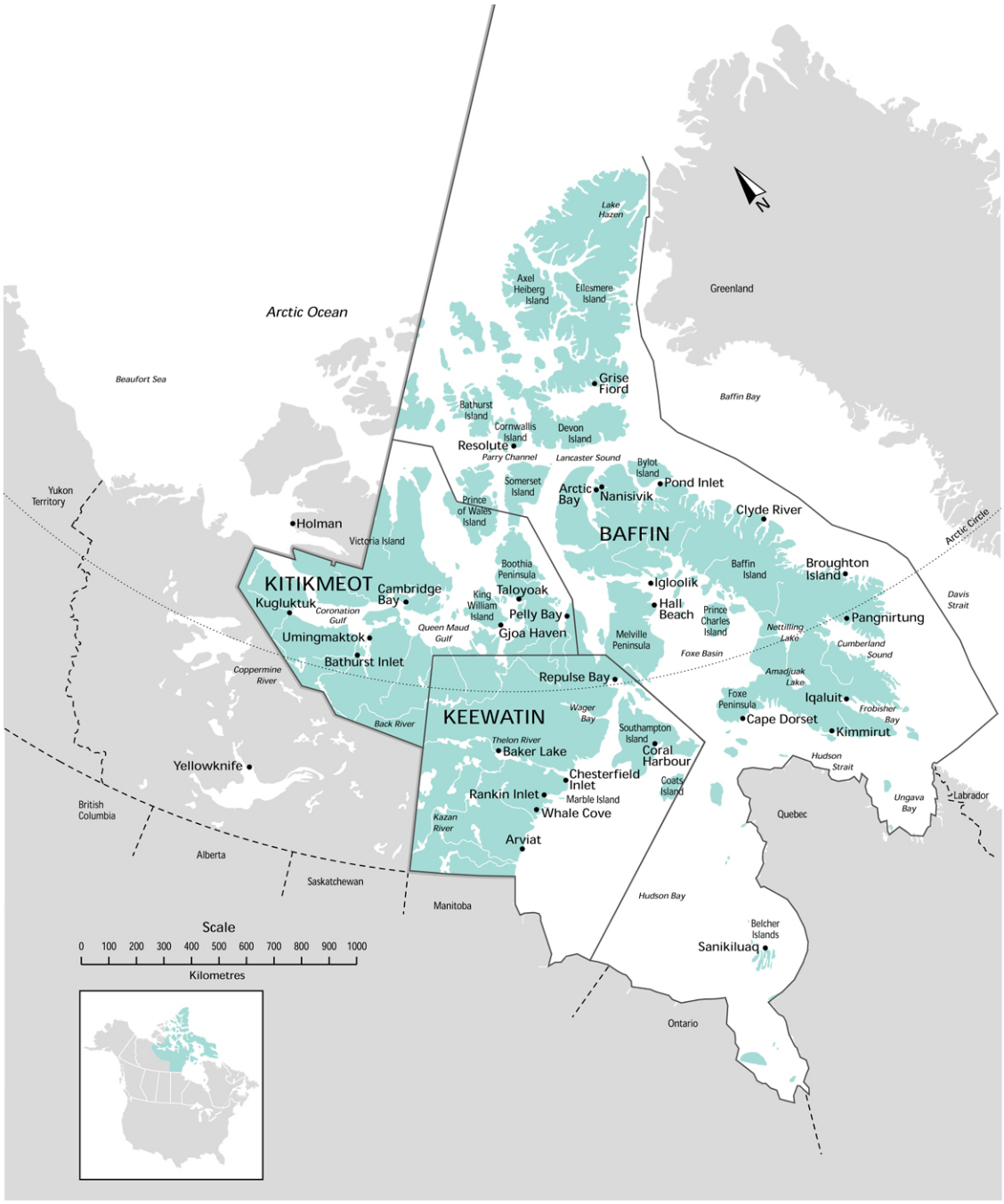

Figure 1. The Nunavut Territory, its regions and communities. Apart from the 26 communities recognized by the Government of Nunavut, the settlements of Nanisivik and Umingmaktok are also labelled along with geographical features such as rivers, bays and islands. Reprinted from Rankin Inlet, 2012. Reprinted with permission.

Concerns regarding the sustainability of the narwhal hunt in the Eastern Canadian Arctic arose in the 1970s. The Canadian government was worried as narwhals, due to economic incentives from rising prices for their tusks, were increasingly hunted for commercial purposes, and thus introduced harvesting restrictions in the form of quotas (Reeves, 1992; Richard & Pike, 1993). Since the ratification of the NLCA in 1993, narwhal management in Nunavut has been the responsibility of the Nunavut Wildlife Management Board (NWMB). This nine member co-management board unites appointees from Inuit organizations as well as the federal and territorial governments and is the main instrument for wildlife management in Nunavut. However, fisheries, including marine mammals, are a federal responsibility and the Department of Fisheries and Oceans (DFO) retains the ultimate narwhal management authority by accepting, rejecting or varying the management decisions made by the NWMB.

1.2 Definition of terms

The goal of any resource management is to protect and conserve the resource in order to allow for continued harvesting in the future. Co-management agreements are systems of shared management decision making between resource users and governments (Pinkerton, 1989). The expression of such systems can range from government-based co-management that merely informs or consults the resource users to information exchange and joint action to community-based co-management with extensive community control (Berkes, 1994; Pomeroy & Berkes, 1997). While co-management is always a balancing act between government and community control, a central element of co-management is a certain degree of community-based resource management (*i.e.* of power sharing

between the government and the resource users) that recognizes and legitimizes traditional local management systems (Pomeroy & Berkes, 1997). Thus, co-management facilitates empowerment of individuals and capacity building among institutions (Jentoft, 2005) and it can be considered a knowledge partnership (Berkes, 2009). The logical extension of co-management is adaptive co-management, a combination of the concepts of collaboration and adaptive management (Plummer & Armitage, 2007). Adaptive co-management is characterized by complex cross-scale linkages among the co-management partners which facilitate social learning and flexibility (Olsson, Folke, & Berkes, 2004). Social learning is a process of iterative reflections, including feedback loops to allow for corrections, that occurs when experiences, ideas and environments are shared with others (Armitage, Marschke, & Plummer, 2008; Keen, Brown, & Dyball, 2005). Reflecting on the learning, *i.e.* on ideas, actions as well as the relationships between knowledge, behaviour and values, leads to new learning (Keen *et al*., 2005).

Resource management that involves Aboriginal people needs to include the integration of their traditional ecological knowledge (TEK) (Manseau, Parlee, & Ayles, 2005). In the case of narwhal co-management in Nunavut, the consideration and incorporation of Inuit TEK is also mandated by the NLCA (DIAND & TFN, 1993). As traditional knowledge held by Inuit encompasses more than factual environmental and ecological knowledge, the Inuit in Nunavut have coined a more overarching term, *Inuit Qaujimajatuqangit* or *IQ*, as non-Inuit find it challenging to pronounce it. *IQ* includes the social and cultural context of traditional knowledge, the process by which knowledge is evaluated and passed on to younger generations (Dowsley, 2009) as well as Inuit beliefs about how the world works and the values that guide ethical behaviour in human

interactions with the environment, including animals (NWMB, n.d.b). Put simply, *IQ* refers to "a common understanding of what life is about" (unidentified elder, as cited in Bielawski, 1992, p.6). Thus, TEK is but a component of *IQ*. Nevertheless, the two terms are often used interchangeably (Wenzel, 2004; Wenzel, Weihs, & Rigby, 2008). Here, TEK is used when relating to the general concept or when quoting authors who used the term, while *IQ* is used to refer to the holistic, dynamic and cumulative set of teachings, knowledge and values (Arnakak, 2000) held by Inuit in Nunavut. All departments and agencies of the Government of Nunavut are mandated to operate and govern in accordance with *IQ* (GN, 2012). This is also the commitment of the NWMB (NWMB, n.d.e).

The current Nunavut narwhal co-management regime is still a rather government-based management. There has been some devolution of power and responsibilities to the hunting communities, but they lack the capacity to be fully equal co-management partners. Despite the fact that narwhal co-management in Nunavut has been identified as adaptive co-management (Armitage *et al*., 2009), social learning happens very slowly as two management crises have reduced trust among the co-management partners. The narwhal co-management process also struggles with becoming a knowledge partnership as Western scientific knowledge and *IQ* are not equally influencing the decision-making process. However, the co-management partners seem to be willing to work towards improving the collaborative process. The establishment of co-management regimes usually takes a long time, several years to decades, and thus there is still room for the Nunavut narwhal co-management to develop further and become a successful adaptive co-management process.

1.3 Analytical framework

The purpose of this paper is to provide management advice for the improvement of the currently rather sluggishly progressing Nunavut narwhal co-management process which is not fulfilling the expectations of neither policy makers nor the resource users despite the fact that all co-management partners share the same ultimate goal. A set of recommendations is proposed based on an in-depth analysis of the present implementation of narwhal co-management in Nunavut which was compared and contrasted with the theory of how co-management works and what it is supposed to achieve.

The research presented here is qualitative and inductive. It is mainly the result of a desktop study, but it benefitted from informal meetings with various stakeholders in the narwhal co-management process. Data collection included published policy documents and DFO science advice reports as well as draft management documents and supporting information (such as letters, comments and responses) available from NWMB's online meetings and hearings repository. Disagreeing with Armitage and his colleagues (2009) that narwhal co-management in Nunavut should be considered adaptive co-management, the analysis presented here was not based on an existing framework for evaluating adaptive co-management such as the resilience-based framework created by Plummer and Armitage (2007). Instead, the analytic framework encompassed the wider field of co-management theory as well as the relevant literature on TEK/*IQ* and its use in resource management. The Nunavut narwhal co-management regime was assessed using a deficiency analysis (like a SWOT analysis that focuses on the weaknesses and limitations) that compared reality, in the form of the current implementation of narwhal

co-management in Nunavut, with the intended goals and outcomes of the very process. Reflecting the main areas where the Nunavut narwhal co-management is not living up to its full potential, the assessment focused on power sharing and social learning processes within the co-management regime. Where gaps between theory and practise were identified, recommendations are presented that have the potential to alleviate the shortcomings.

This paper is organized as follows. Subsequent to this introduction, chapter 2 provides background information on the narwhal, its importance as a resource for Inuit hunters, and a general overview of narwhal governance in Canada under national and international laws and agreements. Chapter 3 specifically discusses the reasons for and the development of narwhal co-management in Nunavut under the NLCA over the past two decades, revealing a number of challenges that revolve around communication/interpretation issues and the inclusion of *IQ* in the decision-making process. An analysis and discussion of the current implementation of the Nunavut narwhal co-management process and associated issues follows in chapter 4 which leads to the presentation of correspondent conclusions and recommendation in the fifth and last chapter.

CHAPTER 2: THE NARWHAL, AN IMPORTANT RESOURCE IN NUNAVUT

2.1 Narwhal abundance, behaviour and ecology

The narwhal (*Monodon monoceros* Linnaeus, 1758), in Inuktitut known as, *inter alia*, *tugaalik* (with tusk), *qirniqtaq qilalugaq* (black whale) and *allanguaq* (with black and white dots) (DFO, 2012d), is a medium-sized odontocete (toothed whale) that is found exclusively in Arctic waters, commonly between 70 and 80 degrees north latitude (Reeves & Tracey, 1980). Of the three cetacean species that inhabit the High Arctic year-round – the other two being the beluga and the bowhead whale -, the narwhal has the most restricted distribution (Richard, 2009). It is most commonly found in the waters of Nunavut as well as West and East Greenland and is rare in other Arctic areas (COSEWIC, 2004). There are believed to be three populations of narwhals, one in the European Arctic (East Greenland) and two in Nunavut/West Greenland (COSEWIC, 2004). The remainder of this paper is concerned with the latter two populations.

Narwhals have a pronounced annual migratory cycle between distinct summering and wintering grounds. The narwhals that frequent Canadian waters are distinguished by their summering grounds into the Northern Hudson Bay population and the Baffin Bay population; however, it is not clear whether the two populations are truly isolated or whether each of them is made up of several distinct subpopulations (COSEWIC, 2004). Thus, DFO usually uses the term stock instead of population in order to refer to a resource unit, *i.e.* a group of animals that are subject to harvesting (Stewart, 2008), rather than a biological unit (Richard, 2010). The Northern Hudson Bay population summers in northwest Hudson Bay near the community of Repulse Bay (COSEWIC, 2004; DFO,

2012a) and is thought to winter in the Labrador Sea off the eastern end of Hudson Strait (COSEWIC, 2004; Westdal, Richard, & Orr, 2010). The Baffin Bay narwhal population winters offshore in the pack ice of Baffin Bay and Davis Strait, while its summer range covers numerous fiords and bays from the central Canadian High Arctic to northwestern Greenland (COSEWIC, 2004; Heide-Jørgensen *et al*., 2003). Narwhals have been found to exhibit high site fidelity to their summering and wintering grounds as well as to migratory routes (Heide-Jørgensen, Dietz, Laidre, & Richard, 2002a, Heide-Jørgensen *et al*., 2003). The latest aerial surveys of the narwhals in their Canadian summering grounds have yielded population estimates of at least 60,000 animals for the Baffin Bay population (Richard *et al*., 2010) and about 12,500 animals for the Northern Hudson Bay population (Asselin, Ferguson, Richard, & Barber, 2012). These abundance estimates, however, are afflicted with a great deal of uncertainty (Asselin *et al*., 2012; Richard *et al*., 2010).

The narwhal's most prominent characteristic, apart from a fusiform body, a convex-shaped fluke and the lack of a dorsal fin, is a 2-3 metre (m) long ivory tusk. Hence the narwhal's scientific name which translates to 'one tooth, one horn'. The tusk is indeed a tooth growing in a counter-clockwise spiral from the upper left jaw of adult males (Reeves & Tracey, 1980). Males without a tusk, tusked females and individuals of either sex with two tusks are rare (Reeves & Tracey, 1980). Various uses of the narwhal tusk, ranging from sensor to ice-breaking tool and weapon, have been suggested; yet its true purpose is still to be elucidated (Kingsley & Richard, 2007; Silverman & Dunbar, 1980).

Sexual dimorphism is also apparent in narwhals with regard to size. Mature males

weigh about 1,600 kilograms (kg) and measure approximately 4.7 m in length, while females weigh about 900 kg and grow to an average of 4 m (Mansfield, Smith, & Beck, 1975; Reeves & Tracey, 1980). Skin colour, on the other hand, depends on the age of the individual. Narwhals are greyish at birth and uniformly black after weaning, developing white streaks on the lower belly as they mature (Reeves & Tracey, 1980). Adult narwhals are uniformly white to cream-coloured on the ventral side and mottled grey to black on the dorsal side while very old individuals, particularly males, can be almost completely white (Mansfield *et al*., 1975; Reeves & Tracey, 1980). Just below the skin, a blubber layer with an average thickness of 7-8 centimetres (cm) (Reeves & Tracey, 1980) protects the narwhal from the cold waters of the Arctic. The blubber layer of a newborn narwhal, which measures around 1.6 m and weighs about 80 kg, is about 2.5 cm thick (Mansfield *et al*., 1975).

The narwhal is a slow-reproducing species. Mature females – they are thought to reach sexual maturity at the age of six to eight years (Richard, 2009) – produce a single calf about every three years (COSEWIC, 2004; Mansfield *et al*., 1975). Mating occurs in spring (peaking in mid-April) and most calves are born in July and August of the following year (Best & Fisher, 1974; Mansfield *et al*., 1975); however, there is some variability in the timing of conception, implantation and parturition (Heide-Jørgensen & Garde, 2011). Thus, the latest research estimates the gestation period to be between 11 and 15 months (Heide-Jørgensen & Garde, 2011). Lactation is believed to last for about 20 months (Mansfield *et al*., 1975; Richard, 2009).

The narwhal is a gregarious and highly social species. During their migrations, narwhals usually travel in groups of several hundred animals (COSEWIC, 2004).

Studying grouping patterns in Koluktoo Bay near Pond Inlet (northern Baffin Island, Nunavut), Marcoux (2011) found narwhal groups to be composed of males, females and claves. However, smaller clusters containing two to nine narwhals were sexually segregated, *i.e*. composed exclusively of males or females with or without calves (Marcoux, 2011). As with many other odontocetes, narwhals are very loquacious underwater, producing predominantly clicks (pulsed sounds) but also whistles (pure tone signals). However, unlike most of its relatives, the narwhal generates sounds which have exclusively narrow-band frequency content (Ford & Fisher, 1978). As in other odontocetes, the clicks are likely used for echolocation, while the whistles are thought to serve primarily as social signals (Ford & Fisher, 1978). Likewise, it is possible that narwhals have a signature call, a distinctive sound to recognize conspecifics and to reconnect with them when one or several individuals have become separated from a group (Ford & Fisher, 1978; Marcoux, Auger-Méthé, & Humphries, 2011; Shapiro, 2006).

Narwhals are deep diving cetaceans that have been documented to dive to at least 1,700 m (Laidre, Heide-Jørgensen, Ermold, & Steele, 2010). Throughout the year, *i.e.* in both their shallower summering grounds and deeper wintering grounds, they seem to dive to the bottom of the water column during the vast majority of their dives (Laidre, Heide-Jørgensen, & Dietz, 2002; Laidre *et al*., 2010). Narwhals have been found to predominantly feed on Greenland halibut (*Reinhardtius hippoglossoides*) and the squid species *Gonatus fabricii*, however only in late fall and winter (Laidre & Heide-Jørgensen, 2005b). Narwhals do not seem to eat much or at all during summer, as stomachs from animals harvested in this season were mostly empty (Laidre & Heide-Jørgensen, 2005b;

Mansfield *et al*., 1975).

Narwhals do not have many natural predators. While orcas (*Orcinus orca*) and polar bears (*Ursus maritimus*) have been reported to prey on narwhals (Higdon, Hauser, & Ferguson, 2012; Jefferson, Stacey, & Baird, 1991; Smith & Sjare, 1990), many more are likely to die in ice entrapments that can kill hundreds of narwhals at a time (*e.g*. Heide-Jørgensen, Richard, Ramsay, & Akeeagok, 2002b; Laidre, Heide-Jørgensen, Stern, & Richard, 2012, Sergeant & Williams, 1983). Whether a recent increase in ice entrapments of narwhals on their summering grounds is linked to rapidly changing sea ice conditions, remains to be seen (Laidre *et al*., 2012). Narwhals wintering in the pack ice of Baffin Bay are also at risk of entrapments as the fraction of open water has been found to be decreasing and becoming more variable among years, rendering access to leads and cracks more limited and less predictable (Laidre & Heide-Jørgensen, 2005a). Being dependent on sea ice for its survival, narwhals will be affected by any climatic changes that alter sea ice conditions (Hovelsrud, McKenna, & Huntington, 2008); in fact, they are considered to be one of the most sensitive Arctic marine mammal species to climate change (Laidre *et al*., 2008). Furthermore, the narwhal has been and still is a valuable resource for Inuit. The harvesting of narwhals by Inuit in Nunavut is the subject of the following two sections.

2.2 Narwhal hunting in Nunavut

The Eastern Canadian Arctic has been inhabited for at least 4000 years; approximately 3000 years ago, the predecessors of today's Inuit began engaging in active whaling, as opposed to using stranded whales to procure bones and other whale parts

(Savelle, 2005). Prehistoric whaling activities involved various species and differed between eras, locations and climatic conditions (Freeman *et al*., 1998; McCartney & Savelle, 1985). Among the prehistoric Inuit, the Thule people (ca. AD 1000-1600) are believed to have been the most committed and sophisticated whalers (McCartney & Savelle, 1985; Richards, 2003). Throughout the centuries, bowhead whales have been the most important cetacean resource, but other species have also been hunted (Freeman *et al*., 1998; Savelle, 1995). However, archaeological evidence for small whale harvesting is scarce (Savelle, 1994).

Narwhals and other cetaceans were traditionally hunted with harpoons from either *qajaqs* (kayaks), slender one-man skin boats, or *umiaks,* open, double-ended skin boats with a length between 20 and 30 feet (Ross, 1975). Large floats made of entire sealskins and attached to the harpoon head added considerable drag to a stricken whale, tiring it out and keeping it at the surface (Boas, 1888/1964). When the whale was eventually exhausted after several hours of pursuit, the hunters, who worked as a team, used lances to strike at its vitals from only a few feet away (Boas, 1888/1964; Ross, 1975). The carcass was then towed ashore for flensing. The hunting of narwhals took place in summer and early fall (Dale, 2009) when they are found in bays and fiords close to shore. In areas of known narwhal abundance, semi-permanent camps were established (Dale, 2009). Prehistoric and historic subsistence hunting of narwhals is believed to have been sustainable (Richard & Pike, 1993).

The arrival of American and European whalers in the Canadian Arctic - in Davis Strait as early as the 1600s (Higdon, 2010), in Hudson Bay in the second half of the 19th century (Ross, 1975) - brought considerable change with regard to how, when and where

narwhals were hunted. Through trade and employment in whaling crews Inuit acquired new gear and techniques (Freeman *et al*., 1998; Ross, 1975). American whaleboats were remarkably similar to *umiaks* in terms of dimensions and performance, yet they were made of wood and thus stronger and more seaworthy which allowed for longer, more effective, and safer hunting seasons (Ross, 1975). The introduction of the rifle increased hunting success and allowed Inuit to hunt narwhals not only in open water in the summer, but also from the floe edge in the spring when narwhals travel through leads in the pack ice and at polynyas in the winter (Dale, 2009). To this day, modern equipment (*e.g*. snowmobiles, outboard-powered boats, sunglasses) is being incorporated into the traditional hunting methods to make them most efficient (Freeman *et al*., 1998; Hovelsrud *et al*., 2008; Smith, 1991). The dog teams and sleds that used to be employed to transport hunters and their gear to the ice edge (Dale, 2009) have been replaced by snowmobiles (Lee & Wenzel, 2004).

Today, the majority of narwhals is being hunted from the floe edge or in ice cracks (Roberge & Dunn, 1990). In these environments, the hunters either move and scan for narwhals or sit and wait until an animal approaches (Lee & Wenzel, 2004). Generally, only narwhals that are within retrieval range (5-10 m) and likely to be killed with one shot are fired upon (Roberge & Dunn, 1990). If a narwhal is struck, the wounded or dead animal is secured and retrieved using a grappling hook, harpoon and block and tackle and/or by the help of a boat (Lee & Wenzel, 2004; Roberge & Dunn, 1990). During open-water hunts, narwhals are still pursued cooperatively by several hunters; however, they now use rifles to kill the animals and operate from outboard-powered boats instead of kayaks (DFO, 2012d; Freeman *et al*., 1998). Where cliffs are

present, they are used as hunting platforms to shoot narwhals in both ice cracks and open water (Weaver & Walker, 1988).

Between 1996 and 2010, on average 500 narwhals were landed (not including struck and lost animals) in Nunavut annually (DFO, 2012d, Appendix 2), providing hunters, their families and communities with food as well as revenue from the sale of narwhal tusks, and allowing for the reproduction of their cultural identity.

2.3 Socio-economic and cultural importance of narwhal hunting

Traditionally, the Inuit used the entire carcass of a narwhal. *Mattaq*, the narwhal skin with some blubber attached to it, was an important food item while the meat was used to feed the sled dog teams, narwhal oil fuelled lamps and provided heat, dried sinews served as sewing thread, and the ivory tusks were fashioned into tools such as harpoon shafts and sometimes into carvings (Freeman *et al*., 1998; Reeves & Mitchell, 1981).

Mattaq is still valued as a delicacy today (Freeman, 2005), but the use of narwhal meat has declined during the second half of the 20th century as snowmobiles have replaced sled dogs for transportation (Smith, 1991). Rich in vitamin C, zinc and other essential nutrients (COSEWIC, 2004), *mattaq* is an important food source from a nutritional point of view. Likewise, many Inuit consider their diet incomplete if they do not have access to their traditional foods, particularly *mattaq* (Freeman, 2005; Freeman *et al*., 1998).

The presence of European and American whalers in the Canadian Arctic during the 19th century led to the establishment of permanent trading posts and shifted the Inuit's

subsistence hunting economy towards a commercial trapping economy (Ross, 1975). Thus, the ivory tusks became increasingly important as a source of income, particularly as the price paid per pound multiplied in the 1960s and 1970s (Reeves & Mitchell, 1981). Most tusks were sold within Canada or exported to Europe, predominantly to the United Kingdom (Reeves, 1992; WDCS, 2004). In 1984, the price for narwhal tusks collapsed as the European Union (EU) banned the import of all cetacean products from outside the EU; however, the trade in narwhal ivory quickly recovered as new markets developed, mainly in Japan and Switzerland (Reeves, 1992). According to unpublished data collected by DFO (as cited in DFO, 2012d), an average of 102 tusks was exported every year between 1990 and 2007. The current value of a narwhal tusk of average length (approximately 1.7 m) and with an unbroken tip is estimated at almost CAD 1000.00 (GN July 2011 meeting presentation materials and unpublished DFO data, as cited in DFO, 2012d). Considering the substantial costs for vehicles, fuel and gear involved in the narwhal hunt, it is fair to suspect, as Reeves (1992) did, that the international ivory trade influences the nature and intensity of the narwhal hunt as it favours the harvesting of animals with large tusks.

For Inuit, the importance of narwhal hunting extends beyond providing food and cash; it is a crucial factor in the maintenance of cultural identity and social relationships. Inuit identify themselves as hunters, but this does not infer superiority over their prey as humans and animals are connected in a cosmic cycle which is in fact maintained by hunting (Laugrand & Oosten, 2010). In Inuit mythology, marine mammals originate from human beings; according to the story of Sedna, a creation myth about the goddess of the sea, seals, walruses and whales grew out of Sedna's fingers. Despite the ostensibly

widespread acceptance of Christianity, animism, the belief that animals and things are inhabited by spirits, is still prevalent. Thus, the narwhal, as all animals that are hunted by Inuit, is regarded as a sentient being that has a soul (*cf.* Dowsley & Wenzel, 2008; Laugrand & Oosten, 2010; Pelly, 2001; Tyrrell, 2007). This view has implications for the relationship between the hunter and its prey. In the past, animals were thought to be reborn continuously; however, this cycle of exchange could only be maintained if the hunters and their wives strictly adhered to an extensive set of rules of respect (Laugrand & Oosten, 2010). To this day, respect toward prey not only determines its abundance but also whether a hunt is successful or not. If an animal is mistreated in any way, it will not present itself to the hunter (Freeman, 2005; Pelly, 2001). However, if it does give itself, respectful behaviour dictates that the animal is hunted (Dowsley & Wenzel, 2008; Tyrrell, 2007).

Inuit social organization was traditionally based on families and kinship groups as well as on food sharing and economic cooperation (Vaughan, 1994). To this day, there is a moral obligation to share food, particularly country food, the locally hunted, fished and gathered food of which many people believe that it should not be sold (Ford & Beaumier, 2011; Gombay, 2010a). The sharing of food between families is crucial in times of need. Thus, sharing networks are based on reciprocity, yet the exchange is neither immediate nor *quid pro quo* as sharing not only involves food but also other goods, services and company (Gombay, 2010b; Kishigami, 2004). Sharing among kin creates and reproduces enduring relationships (Freeman *et al*., 1998; Gombay, 2010b); however, it has become increasingly difficult to share country food in an effective manner as communities grow larger and larger (Freeman, 2005). Hunting also plays an important role in maintaining

ecological knowledge and facilitates the transfer of skills and values to the younger generation (Hovelsrud *et al*., 2008; Kishigami, 2005).

In summary, whale hunting links Inuit not only physically, but also symbolically and spiritually to their cultural heritage (Freeman *et al*., 1998).

2.4 Narwhal governance in Canada

Governmental regulation of narwhal hunting and trade has only been in place for the past 40 years. For centuries, Inuit in the Canadian Arctic have been managing their narwhal harvests. Interviewing elders and hunters in the Nunavut communities of Arctic Bay and Iqaluit, Dale (2009, p. 92) compiled a list of some traditional narwhal management measures. The rules that were passed on from generation to generation targeted sustainability (*e.g*. the first pod of whales was ignored, no whale was to be killed that was not to be eaten), safety (*e.g*. only experienced hunters were allowed to hunt narwhals and they had to do so in rather narrow leads and not at the floe-edge) as well as access (*e.g*. women were not allowed to hunt) and benefit sharing (*e.g*. the meat was to be shared). As discussed in the previous section, food sharing is still practised today.

The Canadian Inuit have constitutional rights to hunt whales for subsistence purposes (*Constitution Act, 1982*). Prior to the NLCA, Inuit in Nunavut hunted narwhals under the provisions of the *Fisheries Act, 1985* (Freeman *et al*., 1998). In Canada, the management and protection of fisheries resources, including marine mammals, are a federal responsibility governed by the *Fisheries Act, 1985* which dates back to Confederation and thus is one of Canada's oldest pieces of environmental legislation (DFO, 2010c). Whale hunting, however, was not regulated until after the commercial

whaling period which in the Canadian Arctic lasted from the 1600s to the early 1900s, peaking in the 18th century (Higdon, 2010; Hjort, 1937; Ross, 1975, Ross, 1985).

In 1971, the Government of Canada enacted the *Narwhal Protection Regulations* as part of the *Fisheries Act* in order to ensure subsistence needs while limiting the expansion of narwhal hunting for commercial purposes (*i.e*. to sell the tusks) (Richard & Pike, 1993). These regulations established annual catch quotas of five narwhals per Inuit hunter (Roberge & Dunn, 1990). In order to render monitoring and enforcement more feasible, the individual quotas were replaced by community quotas in 1977 (Armitage, 2005). The quota system was not well received by Inuit hunters. Out of fear that unfilled quotas would lead to reduced quotas the following year, quotas inevitably became targets, thus adding a competitive element to harvest strategies (Richard & Pike, 1993). Hunters also criticized the limited scientific basis on which the quotas had been assigned, the fact that quotas were not adjusted through time and that they were non-transferable, neither between years nor between communities (Armitage, 2005; Diduck, Bankes, Clark, & Armitage 2005). The community quotas were controlled by a tag system and did not account for narwhal wounded or killed but not landed, *i.e*. struck and lost (Roberge & Dunn, 1990). Pursuant to the quotas, tags were issued by DFO to communities and re-distributed to hunters who had to attach a tag to every landed narwhal, a system that is still in place today (DFO, 2012d; *Marine Mammal Regulations*, 1993).

In 1993, the *Marine Mammal Regulations*, enacted under the *Fisheries Act, 1985*, replaced the narwhal protection regulations and other similar regulations tailored to individual marine mammal species (DFO, 2012d; *Marine Mammal Regulations*, 1993). With regard to the narwhal fishery, the *Marine Mammal Regulations* (1993) prohibit

hunting narwhal calves and adult narwhals accompanied by a calf (Article 18), discourage wastage of meat and specify that only Inuit are allowed to hunt narwhals (Articles 5 and 6), though only in accordance with the quota system (Article 24). These specifications largely reflect the provisions of the previous *Narwhal Protection Regulations* (Roberge & Dunn, 1990). More profound changes to narwhal management were brought about by the Nunavut Land Claims Agreement which also came into force in 1993. This framework and its implications for narwhal management in Nunavut are discussed in chapter 3.

Apart from fisheries regulations, there are other laws that govern narwhal management in Canada. Following the adoption of the International Convention on Biological Diversity (CBD) at the 1992 United Nations Conference on Environment and Development in Rio de Janeiro, Canada developed and passed the *Species at Risk Act, 2002* (SARA) for the CBD calls for the development of national conservation and biodiversity strategies (United Nations, 1992, Article 6). SARA provides for the legal protection of wildlife species at risk, as identified and assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), to prevent them from becoming extinct and to secure the necessary actions for their recovery (COSEWIC, 2009; Species at Risk Public Registry, 2011b). COSEWIC, a body of experts from governmental agencies and non-government organizations, researchers with academic affiliations and independent scientists (DFO, 2012d), has designated all narwhals in Canadian waters as 'special concern' (Species at Risk Public Registry, 2011a), a risk level that does not warrant the development of a recovery strategy or management plan under SARA (*Species at Risk Act*, 2002). Thus, the protection of narwhals in Canada is presently

limited to measures that manage the hunt of narwhals and the movement of narwhal products (COSEWIC, 2004).

In addition to national legislation, there are a number of international agreements that affect narwhal management in Nunavut. Canada has been a signatory to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) since it came into effect in 1975 (Environment Canada, 2010). The narwhal is listed on Appendix II of CITES which regulates the import and export of species that could become threatened with extinction if trade is not closely controlled (CITES, 2012a; CITES, n.d.). Thus, narwhals, including all parts and derivatives of the species, need to be accompanied by a permit from the exporting country when traded for commercial purposes (CITES, 1973, Article IV, section 2). Such a permit is only to be issued when the national government of the exporting state has advised that the export will not be detrimental to the survival of the species in the wild; thus it is referred to as a non-detriment finding (NDF) (CITES, 1973; DFO, 2012c). An NDF is not subject to socio-economic considerations (DFO, 2012c), yet requires thorough and up-to-date abundance estimates of the population(s) involved in order to assess the sustainability of the harvest (CITES, 2012b; DFO, 2012c).

Canada was also a founding member of the International Whaling Commission (IWC), set up in 1946 to regulate whaling after many populations and stocks had collapsed due to excessive hunting, but withdrew from the body in 1982 (Waters, 1992). Both Inuit and the Canadian Government question IWC's involvement in the management of small cetaceans and have no intention to rejoin the commission (Freeman *et al*., 1998). Thus, the International Whaling Commission is not involved in the

governance of narwhal in Canada; however, Canadian scientists provide the IWC Scientific Committee with data on whales and whaling in Canadian waters (Freeman *et al*., 1998; Goodman, 1997).

In addition, Canada is part of the Canada-Greenland Joint Commission on the Conservation and Management of Narwhal and Beluga. Established in 1991 under a Memorandum of Understanding between DFO and the Greenland Home Rule Government's Ministry of Fisheries, Hunting, and Agriculture, the commission recognizes the importance of narwhal and beluga hunting to Inuit in both countries and addresses common management and conservations issues (Freeman *et al*., 1998).

2.5 Challenging management conditions

The previous sections of this chapter presented a number of facts that can become challenges in the context of management. The narwhal is a species that generally needs to be considered data-poor. Furthermore, many research findings with regard to narwhal biology and behaviour are based on a small sample size and challenged by a high degree of uncertainty (*cf.* Asselin *et al*., 2012; Heide-Jørgensen *et al*., 2003; Laidre *et al*., 2002; Richard *et al*., 2010). This is not the desired starting point for management decisions. In addition, tensions arise from the fact that the researchers are predominantly non-Inuit based in southern Canada while the resource users are Inuit that have been living and sustainably hunting in the Canadian Arctic for centuries. For Inuit, the narwhal is not just a resource providing food and income, but an animate partner in the harvesting process (*cf*. Dowsley & Wenzel, 2008; Laugrand & Oosten, 2010; Pelly, 2001; Tyrrell, 2007).

Against this backdrop, it is not surprising that narwhal management in Nunavut is

a challenging undertaking. Subsistence needs and conservation requirements need to be balanced while adhering to a host of national and international legislation. Since the ratification of the Nunavut Land Claims Agreement this has been the task of the Nunavut Wildlife Management Board (NWMB) and its co-management partners. The legal foundations as well as past and current implementations of the Nunavut narwhal co-management regime are presented in the next chapter.

CHAPTER 3: NARWHAL CO-MANAGEMENT IN NUNAVUT UNDER THE NUNAVUT LAND CLAIMS AGREEMENT (NLCA)

3.1 The NLCA and its implications for wildlife management

Land claim agreements are complex legal arrangements between Aboriginal peoples and the Government of Canada. They are instituted in areas where Aboriginal rights claims have not been addressed by treaties or other legal means (AANDC, 2010). Based on traditional use and occupancy of the land by Aboriginal peoples, land claim agreements provide them with defined rights and titles to lands and resources which are protected by the Constitution of Canada (*Constitution Act,* 1982; DIAND, 1981). The first land claim agreement in the Canadian Arctic, the James Bay and Northern Quebec Agreement in Nunavik, was signed in 1975. Today, almost all of the Canadian Arctic is covered by land claim agreements. Entering into land claim negotiations, Aboriginal peoples were concerned with self determination and the preservation of their traditional way of life, while the objectives of the Government of Canada were legal certainty as a precursor for development in the Canadian North and political commitments regarding social justice for Aboriginal citizens (DIAND, 1981; Doubleday, 1989).

After two decades of negotiations between the Government of Canada and the Tungavik Federation of Nunavut (TFN), the organization that negotiated on behalf of the Inuit of what is now Nunavut, the Nunavut Land Claims Agreement (NLCA) was signed on May 25, 1993 and came into force on July 9, 1993 (Fenge & Quassa, 2009; *Nunavut Land Claims Agreement Act,* 1993). Inuit viewed the Nunavut project as a combination of land rights and self-government; however, Aboriginal self-government was not to be addressed in comprehensive land claims negotiations until 1995 when the Government of

Canada adopted a policy recognizing the inherent right of Aboriginal self-government (DIAND, 1981; Fenge & Quassa, 2009). Thus, the political development of Nunavut continued beyond the ratification of the NLCA in which the establishment of a new Nunavut Territory with its own Legislative Assembly and public government was arranged for (DIAND & TFN, 1993, Article 4). The Nunavut Territory and the Government of Nunavut came into being on April 1, 1999 (*Nunavut Act*, 1993). Thus, the NLCA refers to the Nunavut Settlement Area and not to Nunavut with regard to the geographical scope of the NLCA. To simplify matters, this paper will use Nunavut throughout.

In addition to specifically establishing Inuit land and water rights in Nunavut, the NLCA specifies, among other issues, how to deal with natural resource development, land use planning, parks and conservation areas, and wildlife harvesting. With regard to the latter, the objective of the Nunavut Land Claims Agreement is "to provide Inuit with wildlife harvesting rights and rights to participate in decision-making concerning wildlife harvesting" as outlined in the preamble (DIAND & TFN, 1993). Recognizing the "need for an effective system of wildlife management that complements Inuit harvesting rights and priorities, and recognizes Inuit systems of wildlife management that contribute to the conservation of wildlife and protection of wildlife habitat", the NLCA stipulates the creation of a wildlife management system that "reflects the traditional and current levels, patterns and character of Inuit harvesting" as well as "the primary role of Inuit in wildlife harvesting" (DIAND & TFN, 1993, Sections 5.1.2(e), 5.1.3(a)(i) and 5.1.3(b)(ii)). To this end, the NLCA established the Nunavut Wildlife Management Board (NWMB), an institution of public government that is the main instrument of wildlife management and

the main regulator of access to wildlife in Nunavut (DIAND & TFN, 1993, Sections 5.2.1 and 5.2.33). While the ultimate responsibility for wildlife management still lies with the government (federal authorities with regard to fish, marine mammals, migratory birds and species at risk; the Wildlife Division of the Government of Nunavut for terrestrial mammals, birds of prey and non-migratory birds), the authority of the NWMB goes well beyond the power and functions of co-management boards established under earlier land claims agreements in other parts of the Canadian Arctic (Goodman, 1997; Government of Nunavut Department of Environment, 2006). The government, in the case of the narwhal the federal Minister of Fisheries and Oceans, can only vary or reject a decision of the NWMB if it conflicts with conservation of the species and/or public health and safety (Goodman, 1997; DIAND & TFN, 1993, Section 5.3.3).

Concerning narwhal co-management in Nunavut, the management responsibilities are split between the NWMB, DFO, and the local and regional hunters associations. The Government of Nunavut (GN) and Nunavut Tunngavik Incorporated (NTI) are not considered formal co-management partners as they do not have any mandate for marine mammal management. However, they each have an appointee on the NWMB and are also actively involved in the decision-making process through consultations and hearings. The following section introduces the co-management partners in more detail. In addition, their main responsibilities and the linkages among each other are depicted in Figure 2.

3.2 Co-management partners, their roles and responsibilities

Under the NLCA, wildlife management in Nunavut is the responsibility of the Nunavut Wildlife Management Board, a co-management board that consists of nine

appointed members. As specified in Section 5.2.1 of the NLCA, four board members are appointed by Inuit organizations (one by Nunavut Tunngavik Incorporated and one each by the three Regional Inuit Associations), three by the Federal Government and one by the Territorial Government; the ninth member, the chairperson, is jointly appointed by the other appointees (DIAND & TFN, 1993). The NWMB is the decision-making authority with regard to wildlife management in Nunavut. As listed in Sections 5.2.33 and 5.2.34 of the NLCA, the duties of the NWMB include, but are not limited to, participating in research, conducting the Nunavut Wildlife Harvest Study (*i.e.* collecting data on wildlife abundance and harvest levels as outlined in Art. 5.4.1 and the following), establishing, modifying or removing levels of total allowable harvest (TAH) (*i.e.* the overall amount of a stock or population of wildlife that the NWMB decides can be lawfully harvested under the provisions of the NLCA) and non-quota limitations (*e.g.* harvesting restrictions regarding area, season or gear type), ascertaining basic needs levels (BNLs) (*i.e.* levels of harvesting by Inuit required to meet their basic needs), and approving management plans for conservation areas as well as designations for endangered species (DIAND & TFN, 1993; NWMB, 2012a). The NWMB holds four regular meetings each year - at least two are stipulated by the NLCA (DIAND & TFN, 1993, Section 5.2.14; NWMB, n.d.c). The board's decisions affect peoples' rights or interests; thus, it holds hearings in the run-up to coming to a decision and is committed to procedures that are fair to the affected parties (*e.g*. provide timely notice, reasonable disclosure and adequate opportunity to respond before a decision is made) (NWMB, n.d.a). The NWMB's vision is "conserving wildlife through the application of *Inuit Qaujimajatuqangit* and scientific knowledge" (NWMB, n.d.e).

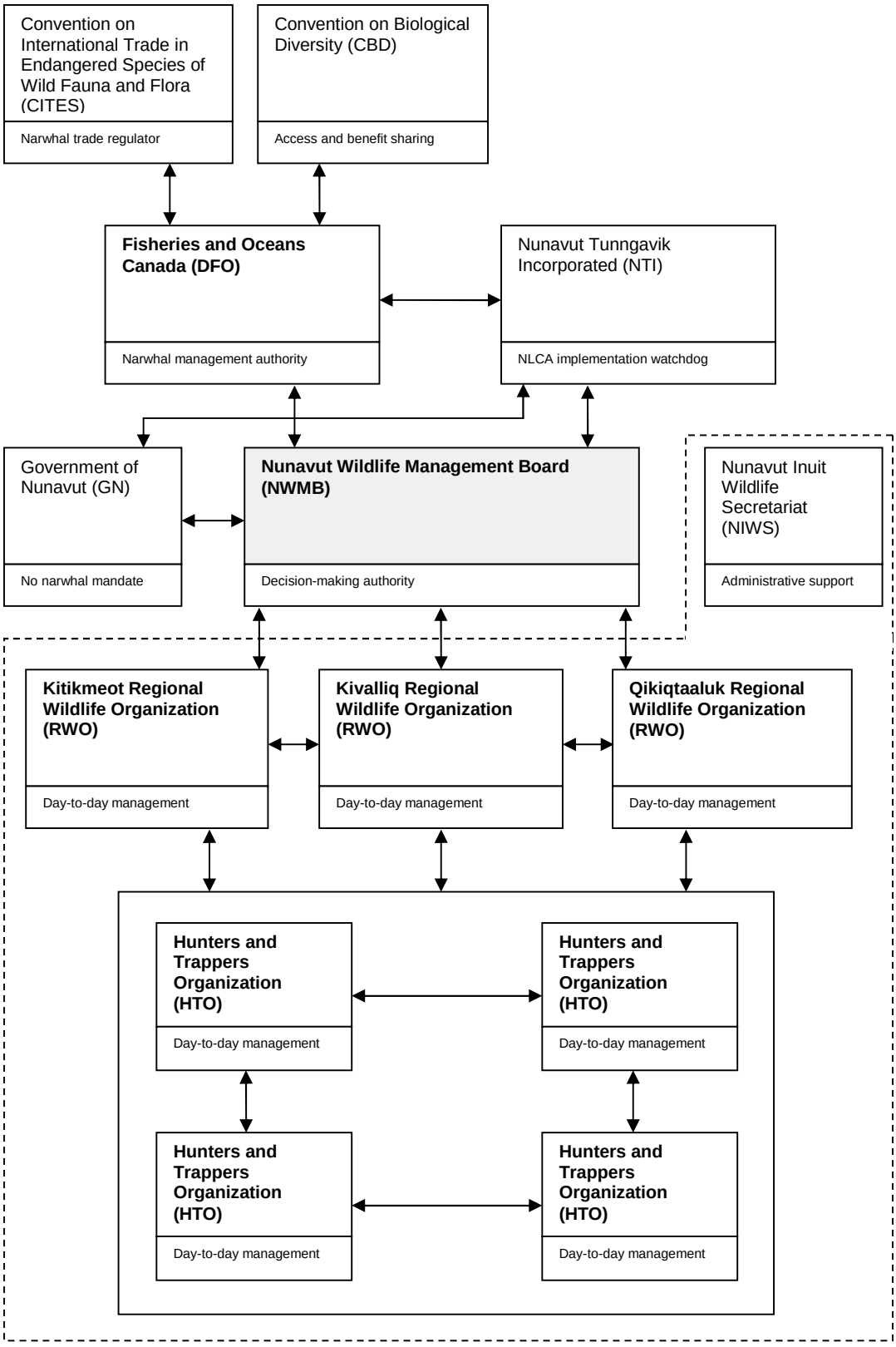

Figure 2. The Nunavut narwhal co-management partners (formal partners in bold), their responsibilities and linkages. Adapted from Armitage, 2005 and Blakney, 2009.

In addition to the responsibilities of the NWMB, the NLCA stipulates that each community shall have a Hunters and Trappers Organization (HTO) (DIAND & TFN, 1993, Section 5.7.2). These community organizations, already extant in every community as hunters and trappers associations, shall oversee the harvesting by Inuit, *i.e*. allocate and enforce basic needs levels (BNLs) and regulate harvesting practices and techniques (including non-quota limitations) through informal agreement or by enacting by-laws (DIAND & TFN, 1993, Section 5.7.3; Richard & Pike, 1993). As BNLs have not been set yet, HTOs are responsible for allocating community quotas, *i.e*. for handing out tags to their members (DFO, 2012d). Based on self-reporting by the hunters, the HTOs also report to DFO about the annual narwhal harvests (DFO, 2012d). Equivalently, each of the three regions of Nunavut (Kitikmeot, Kivalliq (Keewatin) and Qikiqtaaluk (Baffin), see Figure 1) has a Regional Wildlife Organization (RWO) which is in charge of the management of wildlife harvesting at the regional level (DIAND & TFN, 1993, Sections 5.7.4 and 5.7.6).

While the decision making power regarding marine mammal management has been devolved to the NWMB, the Department of Fisheries and Oceans Canada (DFO), as the federal department with primary responsibility for oceans and aquatic resources, is still the regulator, *i.e.* has the final management authority and responsibility. Traditionally, DFO operates within the framework of the *Fisheries Act, 1985* and regulations pursuant to it of which the *Marine Mammal Regulations* are the most relevant for the narwhal fishery. But since the 1990s, DFO has been increasingly involved with Aboriginal communities, both through the co-management regimes effected by land claims agreements and through the Supreme Court of Canada decision in the Sparrow

case (DFO, 2012d); Richard & Pike, 1993). This unanimous decision implies that the constitutionally protected aboriginal right to fish resources (and thus, given the definition of fish in the *Fisheries Act*, to marine mammals) can only be restricted by government if aboriginal harvests threaten the conservation of the resource (Richard & Pike, 1993; *R. v. Sparrow*, 1990). While, in principle, Environment Canada's Canadian Wildlife Service is responsible for the management of endangered species and the control of international trade in endangered species, DFO is the lead with regard to aquatic species listed under CITES (DFO, 2012c; Environment Canada, 2011).

Nunavut Tunngavik Incorporated (NTI) superseded the Tungavik Federation of Nunavut (the spelling of Tun(n)gavik changed over the years) which negotiated and signed the NLCA on behalf of the Nunavut Inuit. NTI is the primary Inuit organization designated by the NLCA and has been representing the Inuit of Nunavut as a party to the NLCA since the agreement came into force in 1993 (DIAND & TFN, 1993, Section 1.1.1). On behalf of the Nunavut Inuit, NTI is the owner of Inuit Owned Lands as specified in the NLCA (DIAND & TFN, 1993, Article 19) and responsible for the management of the royalties derived from these lands, *e.g.* from mining (NTI, 2012d; NTI, n.d.a, Program Delivery). NTI is governed by a ten-member Board of Directors which is in part elected by Nunavut Inuit, in part nominated by the three Regional Inuit Associations (NTI, n.d.b). NTI is responsible to ensure that both Inuit and the federal and territorial governments fulfill their responsibilities and obligations as set out in the NLCA, *i.e.* that the implementation of the NCLA truly benefits the Inuit (NTI, n.d.a). Reflecting its mission "to foster Inuit economic, social and cultural well-being through the implementation of the Nunavut Land Claims Agreement" (NTI, n.d.b, Nunavut

Tunngavik Inc.), NTI engages in a variety of initiatives aimed at social and economic development. NTI does not have a mandate for wildlife management and is thus not a formal narwhal co-management partner. However, as a representative of Nunavut Inuit, NTI has established itself as a committed advocate for Inuit harvesting rights.

The Government of Nunavut (GN) is not a formal co-management partner either as it has no jurisdiction over marine mammals. However, as a public government for all *Nunavummiut* (the people living in Nunavut), it is affected by the decisions of the NWMB and the narwhal harvesting in general with regard to socio-economic impacts such as income, health and safety (W. Lynch, personal communication, May 30, 2012).In addition, territorial Conservation Officers support the federal Fishery Officers in monitoring narwhal hunting activities for compliance with the *Fisheries Act, 1985* (DFO, 2012d).

While the previous sections about the roles and responsibilities of the various Nunavut narwhal co-management stakeholders give an idea of how the co-management process should or could be implemented, the theoretical concept as laid out in the NLCA and the practical application of the co-management framework do not necessarily correspond. The following two sections will look at how the co-management regime mandated by the NLCA was and currently is being implemented.

3.3 Experimental community-based narwhal management

At first, the ratification of the NLCA in 1993 did not bring any change to the management of narwhals in Nunavut. Existing harvesting restrictions and quotas were retained and deemed to have been established by the NWMB (DFO, 2012d). Neither did

the hunters negative perceptions of the community quota system change. Many communities requested the NWMB to not only change the quotas but the entire narwhal management regime (Armitage, 2005).

As a result and on the basis that the NLCA mandates increased Inuit and community involvement in decision making, the NWMB initiated an experimental community-based narwhal management process (Armitage, 2005; DFO, 2012d). This regime transferred the initial management responsibility away from the NWMB and DFO to the community HTOs which had to establish and enforce appropriate by-laws and hunting rules (*e.g.* regarding monitoring and harvesting techniques) and to provide annual reports not only of narwhals landed but also of animals struck and lost as well as wounded and escaped (Armitage, 2005; DFO, 2012d).

The first trial, eventually involving the communities of Repulse Bay, Pond Inlet, Qikiqtarjuaq (Broughton Island), Kugaaruk (Pelly Bay) and Arctic Bay, ran from 1999 to 2002 and the second one from 2003 to 2007 (DFO, 2012d). The communities had to apply and then fulfill a number of conditions (*e.g*. have established hunting by-laws and the capacity to enforce them, comply with harvest reporting requirements) in order to be chosen to take part in the pilot project. In the selected communities (three at the beginning of the first trial in 1999), narwhal quotas were removed under the community-based management regime; however, this change resulted in significant increases in landed narwhals in these communities and thus the NWMB and DFO felt impelled to re-establish harvest limits as of the 2002 hunting season (Armitage, 2005; DFO, 2012d). In Qikiqtarjuaq, where the estimated total hunting mortality (landed, struck and sunk, and wounded and escaped) in 2000 was four to five times higher than the original community

quota of 50 narwhals, DFO even deemed it necessary to make use of the Interim Decisions provided for in Section 5.3.24 of the NLCA to temporarily close the narwhal harvest in October 2000 (Armitage, 2005; DIAND & TFN, 1993; Diduck *et al*., 2005). This intervention, mainly the result of poor communication among the various stakeholders, was highly contentious and prompted some HTOs to temporarily discontinue accurate reporting and the provision of samples to DFO (Armitage, 2005). The closure represented a management crisis; yet, the co-management partners opted to resolve the conflicts and did not abandon the community-based experiment at once (Diduck *et al*., 2005).

During the second trial, the harvest limits became more flexible as participating communities could request approval from the NWMB to carry over up to 50 percent of their annual allocation to the next year or to borrow up to 15 percent from the following year's limit (Armitage, 2005; Dale, 2009; DFO, 2012d). With very few and minor exceptions, landed catches were below the harvest limits during the second trial (DFO, 2012d). As noted by Diduck and his colleagues (2005), the community-based narwhal management experiment was a true collaborative effort and all co-management partners wanted it to work out. Nevertheless, the NWMB terminated the pilot project in 2009; however, the reasons for this decision are unclear. It is fair to assume that the fact that the experiment was not exclusively successful was in part responsible for its cessation. The pending setting and implementation of HAH levels and BNLs (discussed in the next section) were likely another reason for a realignment of NWMB's strategy. Beyond the end experiment, the trial communities could retain harvest limits and quota flexibilities instigated under the community-based management regime (DFO, 2012d).

3.4 The current narwhal co-management process

Since the end of the experimental phase with community-based co-management, Nunavut narwhals have been managed under the provisions of the NLCA and the *Fisheries Act, 1985* and its regulations as described in chapters 3.1 and 3.2. Thus, the current regime is in fact a continuation of the quota and tag system first established in the 1970s and refined through the 1990s. However, the co-management partners and other stakeholders, with NTI leading the way, agree that changes are needed to further align narwhal management with the provisions of the NLCA (DFO, 2012g; NTI, 2012a). Thus, during the past few years, the Nunavut narwhal co-management partners have been mainly concerned with two related issues, the establishment of total allowable harvest and basic needs levels. A twist was added when DFO withheld CITES non-detriment findings for certain narwhal stocks in 2010. Meanwhile, several changes to the existing narwhal management have been proposed and submitted to the NWMB for decision.

In order to establish total allowable harvest levels for all Nunavut narwhal stocks, the NWMB requested DFO to make recommendations to this effect (DFO, 2008). DFO's reasoning and recommendations have been published in three Canadian Science Advisory Secretariat publications between 2008 and 2010 (DFO, 2008; DFO, 2009; Richard, 2010). DFO is suggesting using known summering aggregations (stocks) of narwhals as management units in order to reduce the risk of overexploitation (DFO, 2008; DFO, 2009). On the basis of observations and satellite telemetry studies, but with some supporting evidence from genetic and contaminant analyses (*cf*. Petersen, Tenkula, & Ferguson, 2011) as well as Inuit TEK (White, 2012), DFO identified five management units: Somerset Island, Admiralty Inlet, Eclipse Sound and East Baffin Island for the

Baffin Bay narwhal population and the Northern Hudson Bay population (DFO, 2009). Three more are believed to exist in the High Arctic, namely in Parry Channel, Jones Sound and Smith Sound (DFO, 2009); however, their relationships to other Baffin Bay narwhal stocks is not known (DFO, 2012g). Based on the most recent population and stock abundance estimates (Asselin & Richard, 2011; Asselin *et al*, 2012; DFO, 2012a; Richard *et al*., 2010) and using the potential biological removal (PBR) method, a conservative approach preferred to estimate TAH levels for stocks that are data-poor (the reasoning and calculations are explained in more detail in DFO (2008)), recommendations for the total allowable landed catch (TALC) for each management unit have been put forward (DFO, 2008; DFO, 2012d) along with a decision tool to allocate these TALC through the seasons (Richard, 2011). These proposed management measures have been submitted for decision to the NWMB as part of an Integrated Fisheries Management Plan (IFMP) which was drafted by DFO on behalf of all co-management partners and with their inputs (DFO, 2012d; DFO, 2012g). However, the plan is by no means a document sprung from consensus among the co-management stakeholders. The public hearing on the decisions proposed in the draft IFMP was held in late July 2012. While the discussions were intense and long, the common goal was to reach consensus (NTI, 2012b). The NWMB's decision is expected to be released in the fall of 2012 (NTI, 2012b). If established, the TAH levels in the form of total allowable landed catches would replace the existing community quotas (DFO, 2012g).

In December 2010, DFO's Canadian Science Advisory Secretariat (CSAS) published an evaluation of the sustainability of the 2010 narwhal harvests with respect to making a CITES non-detriment finding (DFO, 2010b). The assessment was based on the

previously suggested, but, as criticized by NTI (2012a), not yet discussed or adopted, management units and respective TALCs (DFO, 2010b). DFO identified conservation concerns for three management units, the Admiralty Inlet and East Baffin Island stocks as well as for the Northern Hudson Bay population, as in these areas harvests were greater than the recommended TALCs (DFO, 2010b). The sustainability of harvest levels in the tentative management units of Parry Channel, Jones Sound and Smith Sound could not be assessed due to a lack of data (DFO, 2010b). In response of this report, the DFO CITES Scientific Authority did not issue non-detriment findings for the above mentioned management units (DFO, 2012g). As a result, international trade of narwhal products from the 2010 harvest from these areas was banned. This prohibition alienated the local hunters and NTI filed an application for judicial review of DFO's decision (DFO, 2012g). The application was dropped in July 2011 in favour of an alternative resolution of the discord. DFO and NTI agreed to address outstanding narwhal management issues in a workshop with all co-management partners and to develop the above mentioned IMFP for narwhal (DFO, 2012g). In addition, non-detriment findings have retrospectively been issued for the narwhal harvests in the management units of Admiralty Inlet and East Baffin Island so that Grise Fiord is currently the only community affected by an export ban (NTI, 2012c). These changes were based on an updated CSAS analysis (DFO, 2012c) using the latest abundance estimates (Asselin & Richard, 2011) as well as the proposed Harvest Allocation Model (Richard, 2011)

The Nunavut Wildlife Management Board was originally supposed to establish, within a year of the creation of the board, basic needs levels for narwhal, beluga and walrus as it was agreed that the then current harvest levels by Inuit did not necessarily

reflect their full needs levels (DIAND & TFN, 1993, Section 5.6.25). Unfortunately, the NWMB is still in the process of establishing these levels. A public hearing concerning the establishment of Inuit basic needs levels for beluga, narwhal and walrus was originally scheduled to take place in March 2012, but has been postponed in response to a request from NTI (NWMB, 2012b). NTI asked for time to explore with DFO the option of solving the long-outstanding issue of ascertaining BNLs by way of an amendment to the NLCA (NWMB, 2012b). This attempt, however, was not fruitful and the public hearing is now scheduled for September 2012 (NWMB, 2012c). As the establishment of basic needs levels is less contentious than the adoption of the proposed Integrated Fisheries Management Plan, the BNL hearing and subsequent decision-making by the NWMB are expected to proceed smoothly (S. Arnold, personal communication, August 10, 2012).

In summary, Nunavut narwhal co-management is more than ever a complex interaction of cultural, socio-economic, environmental, conservational, organizational and institutional aspects (Diduck *et al*., 2005). Yet, it can be assumed that at least some outstanding management issues will be resolved following the upcoming decisions and hearings.

CHAPTER 4: ANALYSIS AND DISCUSSION OF THE MAIN CHALLENGES FACING NUNAVUT NARWHAL CO-MANAGEMENT

Since its ratification in 1993, the NLCA binds the federal government, the territorial government, Inuit hunters through their HTOs and RWOs and the Inuit in general through NTI into a co-management process governed by the NWMB which was established under the agreement (DIAND & TFN, 1993). Recognizing harvesting rights, control of resource access, participation in management, the importance of *IQ* and Western science as well as the principles of conservation, the NLCA provides an adequate framework for co-management (Doubleday, 1989). As with every co-management regime, the practical application of the theoretical concept is a work in progress that takes time and requires willingness to collaborate, learn and adapt (*cf.* Dowsley & Wenzel, 2008; Jentoft, 2005; Kishigami, 2005; Pomeroy & Berkes, 1997). During the past two decades, the Nunavut narwhal co-management partners have proven the motivation to make the complex process work, both to ensure narwhal conservation and for the socio-economic benefit of the hunters. Yet, they are still struggling to truly cooperate in all aspects of narwhal management. In addition, the co-management process has repeatedly been slowed down by poor communication and challenged by disagreement with regard to how exactly narwhal co-management is to be executed under the provisions of the NLCA. Another source of great disparity is the area of conflict concerning the integration of Inuit traditional knowledge and Western scientific knowledge. This chapter analyses and discusses these four main issues which narwhal co-management partners are struggling with.

4.1 Cooperation among co-management partners

The NLCA clearly devolves management power from the federal government to the NWMB; however, the term co-management is not mentioned once in the 300-page document and equivalent notions are scarcely used in Article 5 which is concerned with wildlife (DIAND & TFN, 1993). This conscious or unconscious omission seems indicative of the lack of true cooperation and power sharing in the current narwhal co-management regime in Nunavut. According to the NLCA, the Nunavut Wildlife Management Board is the main instrument for wildlife management in Nunavut, while the federal government through DFO is the ultimate regulative authority (DIAND & TFN, 1993). In reality, DFO provides the scientific background on which the NWMB makes its decisions which are then accepted, rejected or varied by the Minister of Fisheries and Oceans. Prior to the ratification of the NLCA, narwhals were managed solely under the provisions of the *Fisheries Act, 1985* and the regulations pursuant to it, and DFO used to set the quotas in a top-down management approach. As neither total allowable harvest nor basic needs levels have been established yet by the NWMB, the currently employed narwhal management measures (*i.e*. the community quota and tag systems) do not significantly differ from the ones in use before 1993. Actually, NTI perceives this situation as an indefensible discrepancy as some provisions of the *Marine Mammal Regulations* (*e.g*. regulations regarding the disposition of harvest) are not in agreement with the ones of the NLCA and the latter takes precedence over any federal, territorial and local government laws it is in conflict or inconsistent with (DIAND & TFN, 1993, Section 2.12.2; G. Williams, personal communication, June 1, 2012).

Despite the fact that the management measures currently in place are basically the same as before the introduction of the co-management process, there have been major changes to the management regime during the past two decades.

HTOs and RWOs have been given power and responsibilities with regard to the day-to-day management of the narwhal harvest. They are in charge of the allocation of regional and community quotas as well as the distribution of narwhal tags (DIAND & TFN, 1993; DFO, DFO, 2012d). In 11 of Nunavut's 26 communities, the HTOs have enacted and enforce written or verbal hunting by-laws (DFO, 2012g) as they are entitled to under Section 5.7.3 of the NLCA (DIAND & TFN, 1993). In general, the devolution of power and responsibility to the community level is a desirable aspect of a co-management approach; however, the transfer of powers and functions to the lower levels has to be attended by corresponding capacity building (*cf*. Jentoft, 2005). In fact, many HTOs lack the capacity to satisfactorily fulfill their role as outlined in the NLCA (W. Lynch, personal communication, May 30, 2012). Thus, in 2006 the Nunavut Inuit Wildlife Secretariat was established whose mandate is to provide financial and administrative support as well as management training for HTOs and RWOs (Nunavut Inuit Wildlife Secretariat, n.d.). The Nunavut Inuit Wildlife Secretariat is not a formal co-management partner under the NLCA.

The NWMB is now well established as the decision-making authority. However, the board seems to have limited itself to this sole function while neglecting other duties such as the establishment of total allowable harvest levels. As the NWMB is responsible for all wildlife co-management in Nunavut, it likely lacks the capacity to be more actively involved in the debates and discussions leading up to hearings and decisions. As

an example, the board is not part of the tusk traceability working group that was formed in 2011 while NTI and the Government of Nunavut are (DFO, 2012g).

NTI and the Government of Nunavut are not formal co-management partners under the NLCA. However, as the watchdog organization for Inuit rights in Nunavut, NTI plays an important, and often fierce, part in the co-management process. The GN, apart from offering advice and closely following the development of narwhal co-management in its jurisdiction, advocates "ongoing and greater efforts by the co-management partners to take into account *Inuit Qaujimajatuqangit*, update population estimates, and develop alternative methodologies for assessing hunt sustainability" and makes the *IQ* it collected as part of the Nunavut Coastal Resource Inventory accessible to the NWMB (Government of Nunavut Department of Environment, 2012).

Despite the fact that the Nunavut narwhal co-management process has been slow and often frustrating for, and because of, the unlike partners, they have time and again proven to be willing to move forward. Examples of this demeanour are the continuation of the community-based co-management experiment after the emergency closure of the narwhal fishery in one of the participating communities (Armitage, 2005; Diduck *et al*., 2005) as well as the recent agreement to collaborate on drafting an IFMP following the breakdown of trust triggered by DFO not issuing CITES non-detriment findings for several narwhal stocks (DFO, 2012g).

Yet irrespective of these efforts, narwhal co-management in Nunavut still has to be considered incomplete co-management. According to Pinkerton (1989), a co-management system is incomplete when not all management functions are being performed jointly. In the case of the Nunavut narwhal co-management, cooperation is

indeed still limited, particularly with regard to data gathering and analysis as well as harvest allocation recommendations which are all mainly done by DFO.

This reality contrasts with the call for more complete participation of resource users in wildlife management including "making recommendations to the government on the establishment and maintenance of wildlife quotas or providing advice on the formulation of management policies and other related matters", an objective of the federal government's Native claims policy (DIAND, 1981). Co-management as envisaged by the NLCA is supposed to be a multilevel governance arrangement, a notion that is mirrored in the literature. According to Armitage (2005), community-based co-management should, through shared decision-making power, collaboratively link local-level actors (individuals and organizations), regional and national governments. This collaboration, also known as participatory governance, is sought in order to improve the management process by making it more appropriate, more efficient and more equitable (Pinkerton, 1989). A related goal is empowerment, which is at the same time an essential prerequisite of successful co-management (Jentoft, 2005). There is broad international agreement that public participation in decision making is indispensable in order to achieve sustainable development (UNCED, 1992, Section III, Chapter 23).

Collaboration among stakeholders can and should be extended to the research on the resource. Section 5.1.2(h) of the NLCA recognizes the "need for an effective role for Inuit in all aspects of wildlife management, including research" (DIAND & TFN, 1993), while Wiber and her colleagues (2004; 2009) argue that without collaborative research collaborative management is difficult to establish. With regard to narwhal co-management, this aspect is of great importance to the Inuit as many of them feel that

Western scientific research on wildlife, particularly tagging, is too intrusive (K. Oyukaluk, personal communication, as cited in Dale & Armitage, 2011; G. Williams, personal communication, May 31, 2012).

4.2 Communication and trust

Communication is a key element in every collaborative effort. Having different world views as well as different cultural and institutional backgrounds with regard to both oral and written communication, the narwhal co-management stakeholders have repeatedly struggled to find common ground as the submissions to the NWMB (*e.g.* the most current ones for the IFMP hearing that took place in late July 2012 (NWMB, n.d.d)) bear witness to. That continuous and adequate communication is essential, yet not always practised, also became evident during informal talks the author conducted with representatives from several co-management partners.

Since the beginning of narwhal co-management in Nunavut, poor communication has led to a breakdown in trust at least twice (Armitage, 2005; NTI, 2012a). The emergency closure of the narwhal hunt in Qikiqtarjuaq in 2000 (*cf.* Armitage, 2005; Diduck *et al*., 2005) and the withholding of CITES NDFs for several narwhal stocks in 2010 as well as the legal action subsequently taken by NTI against the federal government (*cf.* DFO, 2012g) can be seen as an expression of a lack of communication and trust. NTI criticized the CITES bans on the basis that they violate Inuit harvesting rights as set out in the NLCA and that Inuit were not consulted (NTI, 2010). Why exactly the bans were imposed without consultations remains unclear as DFO has not given their view on the reasons for their hasty decision. In contrast, it is evident that this unexpected

regulatory measure eroded a great deal of trust (Armitage *et al*., 2009).

However, the handling of information and delicate situations may improve in the near future as the co-management partners have agreed to closely collaborate on the outstanding narwhal management issues (DFO, 2012g). For one of the benefits of co-management arrangements is the fact that collaboration and social learning foster trust building and the formation of social networks of researchers, communities and policy makers (Armitage *et al*., 2009). This understanding is not new. More than 20 years ago, Pinkerton (1989) analyzed the prospects, problems and propositions of several fisheries co-management schemes. Concerning the relationships that are created or that are forming among the co-management partners, she identified, among other aspects, trust and the willingness of both resource harvesters and governmental policy makers to share data about the resource to be important prerequisites for and a result of successful co-management (Pinkerton, 1989).

This is particularly true for the emerging approach of adaptive co-management, a management scheme that focuses specifically on learning in order to better live up to complex social-ecological systems (Armitage *et al*., 2009). As discussed earlier, the Nunavut narwhal harvest does indeed present a highly complex social-ecological system. And on the basis that the stakeholders are connected in a formalized process of social learning through a network of horizontal and vertical linkages (see Figure 2), Armitage and his colleagues (2009) actually consider the current Nunavut narwhal management regime to be adaptive co-management. However, narwhal co-management also exemplifies the notion that adaptive co-management processes generally develop slowly (*cf*. Jentoft, 2005; Pomeroy & Berkes, 1997). Based on dialogue, adaptive co-

management fosters increased flexibility and creativity, features that help deal with uncertainty and rapidly changing social-ecological systems as well as conflict resolution (Armitage *et al*., 2009). In the case of narwhals, abundance estimates, stock delineations, harvest allocations and harvest levels are afflicted with a high degree of uncertainty (*cf*. Asselin *et al*., 2012; Richard *et al*., 2010), while climate change as well as the increased engagement of Inuit in the market economy and associated changes to their harvesting practises are the main drivers of continuous social-ecological change.

4.3 Interpretation of key concepts

Related to the communication and trust issue is the fact that the various co-management partners are not in agreement about the interpretation of key concepts such as community consultations and the consideration of *Inuit Qaujimajatuqangit*. Again, the clashes root in differing world views, traditions and organizational structures amongst the stakeholders.

Neither the consideration of TEK/*IQ*, nor consultations are literally mentioned in the NLCA with regard to wildlife co-management administered by the NWMB. However, the objectives and guiding principles concerning wildlife management are listed in detail and provide a framework for the collaboration with Inuit and the integration of *IQ*. The most relevant principles and objectives in this regard are the following (DIAND & TFN, 1993):

- "There is a need for an effective system of wildlife management that complements Inuit harvesting rights and priorities, and recognizes Inuit systems

of wildlife management that contribute to the conservation of wildlife and protection of wildlife habitat" (Section 5.1.2(e));

- To create "a system of harvesting rights, priorities and privileges that reflects the traditional and current levels, patterns and character of Inuit harvesting" (Section 5.1.3(a)(i));
- To create a wildlife management system that "fully acknowledges and reflects the primary role of Inuit in wildlife harvesting" (Section 5.1.3(b)(ii)); and
- To create a wildlife management system that "serves and promotes the long-term economic, social and cultural interests of Inuit harvesters" (Section 5.1.3(b)(iii)) and that "invites public participation and promotes public confidence, particularly amongst Inuit" (Section 5.1.3(b)(v)).

These targets cannot be achieved without consulting with Inuit (hunters and others) and without incorporating *Inuit Qaujimajatuqangit*. Thus, the NLCA mandates, even though not explicitly, consultations with Inuit and the integration of their knowledge, but does not define how this should be undertaken. This lack of precision leaves room for interpretation.

Nevertheless, the NLCA's mandate is currently implemented to the extent that all stakeholders have taken up talking to Inuit prior to making recommendations or decisions. Before submitting the draft Integrated Fisheries Management Plan for narwhal to the Nunavut Wildlife Management Board, DFO - representatives from the GN, NTI and NWMB took part as observers - engaged in community consultations in May 2011 and March 2012 and the information collected during these meetings with members from

HTOs and RWOs was published in a synthesis document (White, 2012) and in two reports called What we heard (DFO, 2012b; DFO, 2012f). However, it remains unclear whether and how the concerns and knowledge of the consulted Inuit were considered in the proposed IFMP (DFO, 2012g; NTI, 2012a). DFO's objectives for the 2011 consultations "were to

1) Promote a better understanding of the available scientific advice related to narwhal abundance and the proposed summering stock hypothesis;
2) Explain the process related to Canada's responsibilities under the *Convention on International Trade in Endangered Species of Wild Fauna and Flora* (CITES) with respect to non-detriment findings (NDF) and issuing export permits;
3) Seek comments, perspectives, and traditional knowledge/expert opinions from Inuit harvesters and community members on the information presented; and
4) Promote relationship-building and continued engagement between DFO and Inuit Communities" (White, 2012),

while the invitation for the 2012 consultations stated two reasons for the meetings, namely "to exchange information and seek public comment on narwhal co-management issues" (DFO 2012e). Thus, it appears that DFO views consultations mainly as a means to inform the hunters about management decisions and to provide them with an opportunity to voice their concerns as opposed to a truly reciprocal relationship between the stakeholders. While it is important that DFO explains the reasoning for their decisions

and recommendations and informs the Inuit about the latest scientific findings, it is not enough. In a co-management regime with Aboriginal people, Western scientific knowledge and TEK must be considered equally (Nakashima, 1993).

Likewise, NTI advocates the full inclusion of *Inuit Qaujimajatuqangit* in any narwhal management decision (NTI, 2012a) and places considerable weight on it as the recent release of a new polar bear bumper sticker exemplifies (NTI, 2012e). Geared toward Nunavummiut, southern Canadians as well as an international audience, the sticker, depicting a polar bear mother with her cub and the words *Qanuinngittugut*, We're ok!, aims to convey the message that polar bear populations in Nunavut are stable and healthy, findings from aerial surveys flown by the Government of Nunavut (NTI, 2012d).

Concerning marine wildlife, the GN is also collecting *IQ* through the compilation of the Nunavut Coastal Resource Inventory, data that has been made available for the NWMB's consideration (Government of Nunavut Department of Environment, 2012). The NWMB, on its part, is currently establishing an *IQ* program (including an *IQ* database and library) to fulfill the above mentioned principle (Section 5.1.2(e)) and objectives (Section 5.1.3) of the NLCA, *i.e.* to ensure the systematic and culturally appropriate inclusion of *IQ* in Nunavut wildlife research and management in general (NWMB, n.d.b). Through the program, the board aims to establish a strong complementary liaison between Western science and *IQ*, thus fostering a more effective wildlife management in Nunavut (NWMB, n.d.b).

The prevalent conceptualization among scientists and policy makers is that traditional ecological knowledge can only be considered relevant when validated by Western science (Casimirri, 2003). While the question of the reliability of TEK and *IQ* is

legitimate, there is no need to verify them against scientific knowledge as they are an alternative form of knowledge. According to Dowsley (2009), the recognition of the differences between TEK/*IQ* and scientific knowledge is in fact a key to encourage Inuit involvement in ecosystem and wildlife management. Consulting with resource users and considering their traditional knowledge should not be a burden, but an integral part of co-management.

4.4 Western scientific knowledge versus *Inuit Qaujimajatuqangit*

DFO traditionally bases its recommendations and decisions on science advice (*e.g*. DFO, 2009; DFO, 2012c). To this end, the department engages in research, collaborates with academia and maintains the Canadian Science Advisory Secretariat (CSAS) which coordinates communication throughout the advisory process (DFO, 2011). In order to define sustainable harvest levels, DFO relies on abundance estimates and stock delineations while acknowledging that the data is compromised by several sources of uncertainty (*cf*. Asselin & Richard, 2011; DFO, 2012c; DFO, 2012g). An important aspect of determining total allowable catches is the process of peer reviewing to scrutinize the recommended harvest levels as well as the underlying abundance estimates and other factors such as stock delineations and management units (DFO, 2010a). DFO's peer review process follows the Canadian government's principles and guidelines for the effective use of science and technology advice in government decision making (DFO, 2010a; Industry Canada, n.d.). Narwhals fall under the responsibility of the National Marine Mammal Peer Review Committee which holds annual meetings but also convenes as issues arise (DFO, 2010d). However, no matter how diligently the review

process is carried out, this conventional method of knowledge production has its limitations. Just because estimates have been peer reviewed does not make them any more certain. In addition to scientific uncertainty, the prevalent presumptions of social and ecological stability and the significance of experts in governance complicate the decision-making process (Armitage *et al*., 2009). Scientific uncertainty is likely among the reasons why the NWMB has not set total allowable harvest levels yet.

Inuit Qaujimajatuqangit, on the other hand, is less susceptible to assumptions as it is knowledge that has been handed down through the centuries and that embodies fundamental ideas and values of Inuit life and culture (Laugrand & Oosten, 2010). Thus, *IQ* not only features environmental and ecological observations and interpretations but also more abstract and ideological aspects of Inuit knowledge (Dowsley, 2009). With regard to wildlife management, *IQ* can offer information about long-term observations of a species, its behaviour and habitat as well as the socio-cultural importance of the resource. What *IQ* cannot provide are numbers such as abundance estimates. However, conservation efforts can be implemented without precise numbers available, an example being the fishery closure for Greenland halibut in Davis Strait off Qikiqtarjuaq which was established by DFO in 1998 to protect over-wintering narwhals and cold water corals (DFO, 2012d). Likewise, the planning process for a National Marine Conservation Area in Lancaster Sound to protect the area and its abundant wildlife from oil and gas exploration and exploitation is well underway despite the lack of reliable population estimates (Nunatsiaq News, 2010; Parks Canada, 2010).

But since TEK and *IQ* are neither published nor peer-reviewed, they are most often not included in the decision-making process of wildlife management. However, the

NLCA, as discussed in the previous section, implicitly mandates the use of *IQ* in the co-management arrangement. True wildlife co-management, as envisaged by the NLCA, can only happen if Western scientific knowledge and *Inuit Qaujimajatuqangit* are integrated, a postulation that is also found in the literature. If Inuit, through their HTOs, and DFO, the governmental regulator, are to be equal co-management partners, "then equal consideration must be given to the distinct systems of knowledge and management that each cultural group brings to the process" (Nakashima, 1993). An adaptive co-management process can help each partner to express their values, interpretations and assumptions and to consider all of them in making management decisions (Armitage *et al*., 2009). The fact that DFO has started collecting Inuit knowledge (*e.g*. White, 2012) is a first step to move in this direction. The inclusion of *IQ* in the management decision-making process is further challenged by the fact that "Inuit knowledge resides less in what Inuit say than how they say it and what they do" (Bielawski, 1992). Thus, it is of paramount importance to gather TEK/*IQ* in an all-encompassing way.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

Fisheries co-management arrangements often emerge after a crisis (Pinkerton, 1989); this is not the case of the Nunavut narwhal co-management arrangement which was formalized through the NLCA in 1993. Formalization and multi-year perspectives have been found to favourably influence co-management agreements (Pinkerton, 1989); however, this does not mean that narwhal co-management in Nunavut is immune to crises. In fact, the co-management partners are currently going through a phase of realignment. They are challenged by having to make difficult decisions with regard to sustainable harvest levels. The public hearing on the proposed IFMP for narwhal took place in late July 2012 and the NWMB is expected to release its decision whether to accept or deny the proposed changes this fall (NTI, 2012b). In the run-up to this intricate decision-making process, the co-management partners faced a number of issues related to different world views and cultures among them. The main issues - incomplete cooperation, poor communication and a lack of trust, dissimilar interpretations of key concepts, and the hesitation to let *IQ* inform the decision-making process - were analyzed and discussed in the previous chapter. Here, the outcome of this assessment is presented in the form of conclusions and recommendations that follow from it.

5.1 A need for deepened cooperation

Despite considerable commitment of each of the partners, narwhal co-management in Nunavut has to be considered incomplete co-management (*sensu* Pinkerton, 1989) as discussed in the previous chapter. Nunavut is a very young territory in which the political structures are still being formed (Dewar, 2009). Formalized

narwhal co-management has been in effect for 19 years and the process has continuously profited from trial and error and adaptations that resulted from this approach, but has not fully matured yet. This is not surprising as adaptive co-management arrangements usually take a long time to develop (*cf.* Armitage *et al*., 2009; Dowsley & Wenzel, 2008; Jentoft, 2005. In order to advance narwhal co-management in Nunavut, greater cooperation among the co-management partners is needed.

The currently limited power sharing among co-management partners, particularly DFO and the HTOs, needs to be extended. However, there are two prerequisites that need to be fulfilled in order for the power sharing to be successful. First, the devolution of power and associated responsibilities to the HTOs and also the RWOs needs to be accompanied by capacity building. If the HTOs and RWOs cannot adequately handle the administration of the management measures they are responsible to apply, then frustration will quickly build up. With regard to the new harvest allocation model proposed by DFO in the draft IFMP, the HTOs and RWOs question their capacity to administer the complex system (*e.g*. some communities would face seasonally changing quotas) as they do not yet understand the rationale for it (NTI, 2012a). Capacity building among the hunters has the potential to improve the entire co-management process from the bottom up as the presence of strong community leaders has been found to be a key element of successful fisheries co-management (Gutiérrez, Hilborn, & Defeo, 2011; Jentoft, 2005; Pinkerton, 1989).

Second, the hunters need to agree with the harvesting limitations that are in place or to be implemented, for otherwise, they may become reluctant to cooperate and, for instance, stop reporting harvesting data to DFO as was the case during the trial phase

with community-based co-management (Armitage, 2005). In order to reach the broadest agreement possible, RWOs, HTOs and their members need to be actively involved in the developing process of the limitations from the beginning. It is not enough to meet with Inuit hunters and let them voice their concerns. Meaningful consultation is engaging in a two-way relationship in which the knowledge and values of both partners are equally respected and considered. This could be fostered by increased social learning, a desired outcome of adaptive co-management discussed in section 5.2.

Another recommendation regarding enhanced cooperation relates to the selection of co-management partners. Apart from the bodies that are currently recognized as formal narwhal co-management partners, there are other parties that are actively involved in narwhal management, above all NTI and the Government of Nunavut. Although they do not have jurisdiction over marine mammals, both are heavily engaged in the narwhal co-management process and each has an appointee on the NWMB. NTI and the GN closely follow the development of the narwhal co-management, offer their knowledge and advice, and take part in consultations and hearings. This status quo could be formalized through an amendment to the NLCA which would have to be negotiated between NTI, as the successor of the TFN, and the Government of Canada. Such changes would need to assign clearly defined roles to all co-management partners. The formal inclusion of both NTI and the GN in the Nunavut narwhal co-management process would better reflect the composition of the nine members of the NWMB and provide equal conditions for all the partners, thus reducing frustration and eliminating tendencies to take sides. After all, the NWMB, DFO, the HTOs and RWOs, NTI and the GN all have the same ultimate goal of protecting the narwhal as a species and as a resource for the Inuit of Nunavut. Thus,

being on par with each other would likely increase the sense of unity among the narwhal co-management partners, which in turn would facilitate increased cooperation and power sharing.

Whether or not NTI and the GN will in the future become formal narwhal co-management partners, the process would likely benefit from the involvement of a facilitator, particularly if the partners will not agree on the draft IFMP. While the NWMB could assume the role of facilitator – as co-management boards have done under other land claims agreements (Notzke, 1995) -, it might be more effective to turn to an outsider, be it an individual or an organization (*e.g*. an non-governmental organization). Linking different governance levels and knowledge systems is, to say the least, a challenging task that requires an active role of all co-management partners. Facilitators, also referred to as coordinators or mediators, can assist the stakeholders, without being one themselves, in developing collaborative and effective ways of collecting and sharing information (Halls *et al*., 2005). This is particularly true when there are conflicts and tensions among the stakeholders due to dissimilar cultural backgrounds, values, world views and traditions (Borrini-Feyerabend, Farvar, Nguinguiri, & Ndangang, 2000), which is the case in the Nunavut narwhal co-management regime. The engagement of a facilitator is not explicitly stipulated by the NLCA, but its provisions do not seem to oppose it either (DIAND & TFN, 1993). As the designated co-management body under the NLCA, the Nunavut Wildlife Management Board would be the appropriate stakeholder to instigate and initiate such an experiment.

5.2 Trust building and open communication

When it comes down to the basics, all stakeholders involved in the Nunavut narwhal co-management process have the same goal, namely to protect and conserve the narwhal in order to allow for continuous sustainable harvesting by the Inuit hunters. However, the common goal is at times overshadowed by the dissimilarities among the co-management partners, be they communication cultures, knowledge systems, or other traditions, values and attitudes. As discussed earlier, poor communication among the stakeholders has led to at least two major narwhal management crises (Armitage, 2005; NTI, 2012a). Particularly the current realignment of the narwhal co-management process in the wake of the unexpected CITES NDF decisions by DFO has greatly strained the mutual trust among the partners. Thus, there is a need to rebuild trust and to collaborate on establishing a positive atmosphere of conversation.

According to the literature, one of the outcomes of adaptive co-management is building trust through collaboration and social learning (Armitage *et al*., 2009). On the one hand, narwhal co-management in Nunavut has been identified as an adaptive co-management process (Armitage *et al*., 2009) and thus the issues concerning trust and communication may be resolved by simply continuing to move forward on the chosen path. On the other hand, the narwhal co-management partners struggle to truly collaborate, thus hampering the benefits of adaptive co-management. Although researchers have not fully established the link between collaboration and learning yet, social learning seems to be prompted by incongruency (or congruency) between intentions and actions (Armitage *et al*., 2008). According to Woodhill (2002, as cited in Armitage *et al*., 2008), social learning is "a process by which society democratically

adapts its core institutions to cope with social and ecological change in ways that will optimize the collective wellbeing of current and future generations". This is the learning process the Nunavut narwhal co-management partners need to engage in, to learn from mistakes, to adapt to new research findings, to integrate *IQ* in the decision-making process, all without losing the objectives of narwhal co-management. Admittedly, this is not an easy task and requires that all co-management partners are willing to engage in such a learning process without bias. Empowerment of the resource users and the inclusion of a facilitator, recommendations made in the previous section, would foster increased collaboration and thus social learning.

5.3 Clarification concerning the interpretation of key concepts

The NLCA does neither specify what community consultations entail, nor what it means to consider Inuit knowledge. Thus, and given their dissimilar cultural and organizational backgrounds, it is not a surprise that different narwhal co-management partners interpret these concepts differently. However, the disagreement on key steps of the co-management process has negative effects on the entire process by promoting conflict, hampering the effectiveness of collaboration and eroding trust as the differing interpretations lead to misunderstandings. To resolve these issues, clarification regarding the meaning of "consulting with Inuit" and "considering *IQ*" is needed.

Specifications of these two key concepts of co-management could be included in the NLCA through an amendment. But instead of having NTI and the Government of Canada agree on what consultations are and what it means to consider *IQ*, it would be more effective if all the stakeholders could take on this task in collaboration. In this way,

they could come up with a consensual definition and would not have to accept someone else's. This would be beneficial for the co-management partners as it is them that would have to proceed according to definitions agreed upon. Also, if the concepts are not specified in the NLCA, they can be adapted and refined as conditions change. If the co-management partners would engage in collaboratively defining the two terms, this approach could be seen as an exercise in knowledge co-production, a method commented on in the next section.

5.4 *Inuit Qaujimajatuqangit* needs to inform the decision-making process

All co-management partners hold some form of community consultations before making recommendations and decisions and are exposed to or actively gather *IQ* at these meetings. As neither the NWMB nor NTI have the capacity to engage in their own scientific research programs (NTI, 2012a), DFO is the main provider of science advice in the Nunavut narwhal co-management process. However, it is not clear to what extent the *IQ* gathered during consultations is informing the rationale of DFO's recommendations such as the currently proposed draft IFMP for narwhal (DFO, 2012g; NTI, 2012a). The objectives for DFO's engagement in community consultations suggest that *IQ* is merely gathered and the concerns voiced by Inuit hunters are simply taken note of as opposed to being included in the decision-making process (DFO, 2012e); White, 2012). Thus, it is fair to conclude that *IQ* and Western scientific knowledge are not considered equally. Some co-management partners seem to view the two knowledge systems as competitive rather than complementary. To facilitate a revision of this view a new way of gathering and using both scientific and traditional knowledge is needed.

It has been 20 years, since the international community passed Agenda 21, a roadmap to sustainable development which states in Chapter 35 that future research should generate and apply indigenous and local knowledge and that decisions should be made taking longer-term perspectives and integrating Western scientific and traditional knowledge (UNCED, 1992). Thus, a transdisciplinary approach to research and management is needed. Co-production of knowledge is a method that could help the Nunavut narwhal co-management partners to form their recommendations and decisions on a more inclusive and equitable knowledge base, one that integrates Western scientific knowledge and *IQ*. Knowledge co-production is a collaborative effort to bring various sources and types of knowledge together in order to understand and address a specific problem (Dale & Armitage, 2011). Evaluating knowledge co-production as a means to foster learning and adaptive capacity in the Nunavut narwhal co-management process, Dale and Armitage (2011) distinguished five dimensions of knowledge co-production: Knowledge gathering, knowledge sharing, knowledge integration, knowledge interpretations, and knowledge application. While *IQ* is usually incorporated in the data collection phase of Western scientific research, knowledge sharing is limited by different cultural backgrounds and language barriers, and knowledge integration is restricted by the very nature of the two knowledge systems at hand, *IQ* being a "holistic blend of knowledge, values, practices, and beliefs" and Western science favouring compartmentalization (Dale & Armitage, 2011). Far more crucial than gathering, sharing or integrating knowledge is its interpretation. Engaging in the co-production of knowledge means that diverse interpretations are explored collaboratively and in an open and honest manner (Dale & Armitage, 2011). Such a dialogue is indeed the key to

producing, from the integration of scientific knowledge and *IQ*, a new way of thinking and a new knowledge base which are needed to address the social-ecological complexities inherent to narwhal management. As careful deliberation and reflection is not a main concern of the present Nunavut narwhal co-management process (Dale & Armitage, 2011; personal observation), the co-management partners would be well advised to explore a more comprehensive way of knowledge co-production with the help of a facilitator or a team thereof.

5.5 Summary

Although not a co-management panacea, social learning and the co-production of knowledge under the guidance of an experienced mediator appear to be a valid solution to a whole array of issues the narwhal co-management in Nunavut is currently struggling with. However, new processes cannot be implemented without the willingness of all stakeholders to give them a try. Currently, the co-management partners are hindered by their dissimilar world views and cultures to truly engage in power sharing and knowledge co-production. But as they all share the same ultimate goal, there is hope that the entirety of narwhal knowledge will in the future be used for the collective good of the species and the Inuit that depend on it.

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