

Mobilizing *Inuit Qaujimagatuqangit* in narwhal management through community empowerment:  
A case study in Naujaat, Nunavut

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## Abstract

This research examines the relationship between government wildlife management regulations and the use of *Inuit Qaujimagatuqangit* (IQ) through a case study focusing on narwhal harvesting in the community of Naujaat, Nunavut. Since Fisheries and Oceans Canada (DFO) introduced a community quota system in 1977, the responsibility for hunting management decision-making has shifted to government (specifically, DFO), rather than hunting communities. This shift corresponds with changes in the use of IQ within the community. Interviews with relevant individuals in Naujaat (including hunters, elders, and representatives from the Hunters and Trappers Organization) were conducted to provide insight into the nature of these changes, allowing the relationship between government-based management policies and community perspectives to be characterized. The findings are used to identify opportunities for improving the relationship between community use of IQ and government management programs, culminating in recommendations for the relevant management bodies in Nunavut. These recommendations can enhance the fisheries management regime in Nunavut through better understanding of best practices for inclusion of Inuit priorities and Inuit participation in the management process.

This research is part of the Social Sciences and Humanities Research Council-funded Fisheries – Western and Indigenous Knowledge Systems (Fish-WIKS) partnership project, which aims to understand the relationship between western and indigenous knowledge systems in the context of Canadian fisheries policy.

**Keywords:** *Inuit Qaujimagatuqangit*, knowledge mobilization, community empowerment, marine mammal management, community-based co-management

## 1. Introduction

Since the Nunavut Land Claims Agreement (NLCA) was signed in 1993, efforts have been underway to establish resource management regimes in Nunavut which meet Inuit needs and account for Inuit values, culture, and knowledge. The term *Inuit Qaujimagatuqangit* (IQ) emerged in the context of the creation of the Territory of Nunavut as a means of articulating the unique Inuit perspectives that would be the basis for decision-making in the new territory.<sup>1</sup> IQ encompasses Inuit knowledge, ways of knowing, values, culture, language, social organization, and decision-making practices. Traditional knowledge, including that of Aboriginal peoples and the Inuit traditional knowledge which forms one component of IQ, has also been acknowledged by the Government of Canada.<sup>2</sup> However, rapid changes in the social, economic, and environmental realities of life in Nunavut have dramatically altered the context in which IQ is produced, expressed, and transmitted, complicating the relevance of IQ in addressing issues presently facing Inuit.<sup>3</sup>

This complexity becomes obvious in the field of natural resource and wildlife management, where government policies tend to reflect Western conceptualizations of the relationship between humans and the environment, reinforced by a paternalistic relationship between the Canadian government and Inuit. The resulting resource management approaches can fail to meet the needs of Inuit as the primary resource users, as explored here through the case of narwhal harvesting. Pre-existing Inuit ways of interacting with and managing human-environment relationships, embedded in IQ, are undermined by the imposition of government management policies which fail to account for IQ in identifying and resolving management problems.<sup>4</sup> Resource management problems in Nunavut also represent opportunities to create spaces for Inuit empowerment within management, allowing for IQ to act as the basis for decision-making and ensuring that management meets the needs of Inuit.

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<sup>1</sup> George W. Wenzel, "From TEK to IQ: *Inuit Qaujimagatuqangit* and Inuit Cultural Ecology," *Arctic Anthropology* 41 (2004).

<sup>2</sup> Fisheries and Oceans Canada, *An Integrated Aboriginal Policy Framework*, Fisheries and Oceans Canada Communications Branch, DFO/2007-1239, 2007.

<sup>3</sup> Frank James Tester and Peter Irniq, "*Inuit Qaujimagatuqangit*: Social History, Politics, and the Practice of Resistance," *Arctic* 61 (2008).

<sup>4</sup> Leanne R. Simpson, "Anticolonial strategies for the recovery and maintenance of Indigenous Knowledge," *American Indian Quarterly* 28 (2004).

The NLCA, signed in 1993 between the Government of Canada and Tunngavik Federation of Nunavut, created the territory of Nunavut and acknowledged the rights of Inuit to participate in the management of land, water, and wildlife resources.<sup>5</sup> Nunavut's small, predominantly Inuit population of 36,886 is distributed across 25 communities in three regions.<sup>6</sup> Food security is a recurring issue in these communities and subsistence hunting continues to be an essential source of food and income. Inuit lifestyles have changed dramatically since the 1950s, when the Government of Canada resettled the nomadic Inuit into permanent communities, transforming their traditional methods of hunting and travelling via sea ice. Traditional practices still shape Inuit livelihoods given the continued importance of subsistence hunting and other activities, and IQ informs these activities and Inuit social norms and cultural values.

Analysis of the relationship between government-based narwhal management and the use of IQ at the community scale provides insight into how approaches to resource management in Nunavut can better address Inuit needs and perspectives. Narwhal have been hunted for subsistence by Inuit for centuries. The Government of Canada began regulating the fishery in 1971, by enacting the Narwhal Protection Regulations which introduced a catch quota system.<sup>7</sup> While the overarching policies have been amended in the intervening decades, the current approach is still based on an annual quota for each harvested narwhal population.<sup>8</sup> Narwhal are not commercially harvested anywhere at present, and were not targeted by commercial whaling activities of the 19<sup>th</sup> and early 20<sup>th</sup> centuries.<sup>9</sup> As such, international anti-whaling interests have played a minimal role in shaping Canadian narwhal management.<sup>10</sup> However, the potential risks posted by anti-whaling (such as attracting negative publicity to hunting activities) and the legacy of

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<sup>5</sup> Government of Canada, *Nunavut Land Claims Agreement Act*, S.C. 1993, c.29.

<sup>6</sup> Nunavut Department of Executive and Intergovernmental Affairs, "Nunavut and Canada Population Estimates StatsUpdate, First Quarter 2015," accessed 20 September 2015, [http://www.gov.nu.ca/sites/default/files/nunavut\\_and\\_canada\\_population\\_estimates\\_statsupdate\\_first\\_quarter\\_2015.pdf](http://www.gov.nu.ca/sites/default/files/nunavut_and_canada_population_estimates_statsupdate_first_quarter_2015.pdf).

<sup>7</sup> Fisheries and Oceans Canada, *Integrated Fisheries Management Plan for Narwhal in the Nunavut Settlement Area*, April 1, 2013.

<sup>8</sup> *Ibid.*

<sup>9</sup> Todd McLeish, *Narwhals: Arctic Whales in a Melting World*. (University of Washington Press, 2013).

<sup>10</sup> *Ibid.*

the anti-sealing movement contribute to mistrust between Inuit, environmentalists, and government management,<sup>11, 12</sup> perceived to be acting in the interest of conservation at the expense of Inuit livelihoods.

In this paper, the results of research regarding the relationship between IQ and government management through interviews with narwhal management stakeholders in Naujaat, Nunavut are presented. First, the definitions of IQ, management, governance, co-management, and decolonization are discussed in detail. This analysis uses decolonization as a framing concept for bridging existing management and IQ. The specific management problem then is described, followed by an examination of the cultural, ecological, and management context of harvesting. The methods and findings of the community research in Naujaat are presented according to the themes of (1) memories and IQ, (2) changes and drivers of change, and (3) ongoing issues and options for the future. Ten interviews were conducted with a range of Naujaat residents to gain insight into how the use of IQ has changed over time, perceptions of government-based narwhal management, and commentary on possible options for bridging IQ and government management. Interview responses are analysed to develop recommendations for establishing an Inuit-directed narwhal management regime in Nunavut. Ultimately, creating a narwhal management regime with a basis in IQ requires that Inuit, as the holders and producers of IQ, are empowered to make authoritative decisions regarding narwhal management.

## **2. Management Problem**

While the integration of indigenous knowledge into resource management is challenging, its perceived value has been well-documented, including in the United Nations Declaration on the Rights of Indigenous Peoples, which acknowledges that “respect for indigenous knowledge, cultures, and traditional practices contributes to sustainable and equitable development and proper management of the environment.”<sup>13</sup>

Benefits of integrating indigenous knowledge into resource management include enhanced

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<sup>11</sup> Thierry Rodon, “Co-management and self-determination in Nunavut,” *Polar Geography* 22 (1998).

<sup>12</sup> Teale N. Phelps Bondaroff and Danita Catherine Burke, “Bridging troubled waters: History as political opportunity structure,” *Journal of Civil Society* 10 (2014).

<sup>13</sup> United Nations, *The United Nations Declaration on the Rights of Indigenous Peoples*, adopted Sept. 13 2007.

understandings of the resource for improved problem identification and framing of objectives, and building trust between knowledge-holders by identifying commonalities and establishing shared interests.<sup>14</sup> Together, these benefits mitigate conflict associated with resource management decisions and result in more effective and inclusive management.

This research addresses the problem of the failure of the wildlife management system in Nunavut to successfully integrate IQ into its decision-making practices. This central problem leads to tension between managers and resource users and inhibits effective management. Unequal power dynamics between Inuit and government-based co-management partners within the current co-management system serve to undermine the traditional management practices and knowledge system which stem from IQ. In addition, poor communication between upper level management and Inuit stakeholders creates frustration and confusion regarding the decision-making process,<sup>15</sup> preventing the co-management arrangement from meeting the needs of all users. As a result, wildlife management decisions may not reflect Inuit priorities for narwhal management or marginalize the use of IQ in decision-making. The impacts include the alienation of Inuit resource users from management institutions and a failure to uphold territorial and federal government commitments to draw on IQ in policy-making.

Previous attempts by government and co-management organizations to integrate IQ into management have tended to ‘collect’ specific information to be utilized in the existing management framework, without a critical analysis of the overall approach to management and its relationship to IQ.<sup>16</sup> Due to the holistic and experiential nature of IQ, knowledge cannot be decontextualized or separated from Inuit knowledge holders without compromising its integrity. As such, the use of IQ in narwhal management requires that Inuit knowledge-holders are empowered in decision-making. A system which enables Inuit direction of the management process could ameliorate this problem by empowering Inuit to mobilize IQ in decision-making.

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<sup>14</sup> Aaron Dale and Derek Armitage, “Marine mammal co-management in Canada’s Arctic: Knowledge co-production for learning and adaptive capacity,” *Marine Policy* 35 (2011).

<sup>15</sup> Derek R. Armitage, “Community-Based Narwhal Management in Nunavut, Canada: Change, Uncertainty, and Adaptation,” *Society and Natural Resources: An International Journal* 18 (2005).

<sup>16</sup> Paul Nadasdy, *Hunters and Bureaucrats: Power, Knowledge, and Aboriginal-State Relations in the Southwest Yukon* (Vancouver: UBC Press, 2003).



The narwhal management system is one avenue to explore the failure of wildlife management to effectively incorporate IQ, given the lessons learned through the trial community-based narwhal management program implemented by DFO in select Nunavut communities, including Naujaat, from 1999-2002.<sup>17</sup> The purpose of this research is to provide insight into how narwhal management in Nunavut can reflect Inuit objectives and priorities, and how Inuit control of the management process and decision-making can be established in order to promote decolonization of Nunavut wildlife management and meaningful inclusion of IQ, through the case study of narwhal harvesting in Naujaat.

### 3. Context

The principle conceptual frameworks structuring this research are *Inuit Qaujimagatuqangit*, co-management, and decolonization.

#### a. *Inuit Qaujimagatuqangit*

The term *Inuit Qaujimagatuqangit* was first used in the context of management and governance during the drafting of the NLCA and subsequent creation of the territory of Nunavut. In 1998, Nunavut Tunngavik Inc. arranged for a meeting of elders representing each Nunavut community to identify important topics to be considered in the development of the territory.<sup>18</sup> This discussion led to the defining of IQ, intended to express the breadth and depth of Inuit perspectives to be reflected in Nunavut governance, particularly in response to the narrow understandings of Inuit knowledge, typically described as “traditional ecological knowledge”, previously demonstrated by non-Inuit researchers. The Bathurst Mandate, the Government of Nunavut’s (GN) 1999 five year strategic plan, identified IQ as a guiding conceptual framework for governance in the new territory and identified its specific relevance to economic and education policies.<sup>19</sup> The Nunavut Wildlife Act (2003) provides a more detailed guide for the use of IQ in management and decision-making by listing and describing thirteen specific IQ concepts

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<sup>17</sup> *Ibid.*

<sup>18</sup> Wenzel, “From TEK to IQ.”

<sup>19</sup> Government of Nunavut, *The Bathurst Mandate*, August 1999.

and their associated implications for wildlife management. As such, this act has shaped subsequent IQ-related policies for other aspects of government.<sup>20</sup>

Although a universally accepted definition of IQ does not exist, it can be described broadly as a way of knowing and worldview that has been developed by Inuit over centuries of living on the land, in both traditional nomadic and now permanent communities. IQ includes Inuit language, history, decision-making, social organization, values, laws, philosophy, and knowledge.<sup>21</sup> Many authors emphasize the holistic or “seamless” and non-reductionist qualities of IQ as a non-disciplinary knowledge system, as compared Western knowledge systems which typically take a reductionist approach to knowledge through separation into disciplines.<sup>22,23,24,25</sup> In this sense, IQ should be understood not as a collection of the elements listed above, but rather as the basic worldview from which they emerge. The knowledge component of IQ is not static; it refers to an existing body of Inuit knowledge as well as Inuit methods of producing new knowledge – both what Inuit know and *how* they know. IQ is produced through experience and oral knowledge-sharing; written documentation is not a traditional part of the system.

Cultural colonialism and the rapid social, economic and environmental changes that have followed have transformed IQ and traditional Inuit ways of life over the past century. This in turn has altered the context for the use of IQ in decision-making, especially due to the introduction of Western governance structures which developed from Western knowledge systems, including Western science. Recent attempts to bridge the two knowledge systems in decision-making have attempted to fit IQ into Western science-based research approaches and objectives,<sup>26</sup> rather than allowing the expression of IQ in its own right. Efforts to collect and/or document IQ typically focus on specific facets and thus fragment and

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<sup>20</sup> Government of Nunavut, *Consolidation of Wildlife Act*, S.Nu 2003, c.26.

<sup>21</sup> Jarich Oosten and Frederic Laugrand, “*Qaujimajatuqangit* and social problems in modern Inuit society. An elders workshop on angakkuuniq,” *Etudes/Inuit/Studies* 26 (2002).

<sup>22</sup> Tester and Irniq, “*Inuit Qaujimajatuqangit*.”

<sup>23</sup> Wenzel, “From TEK to IQ.”

<sup>24</sup> Henry P. Huntington, ““We Dance Around in a Ring and Suppose”: Academic Engagement with Traditional Knowledge,” *Arctic Anthropology* 42 (2005).

<sup>25</sup> Nadasdy, *Hunters and Bureaucrats*.

<sup>26</sup> Tester and Irniq, “*Inuit Qaujimajatuqangit*.”

decontextualize the knowledge to fit into predetermined indicators or variables.<sup>27</sup> Removing IQ from its original context misrepresents the knowledge, corrupting attempts to adequately utilize IQ in research and decision-making. Over time, the process of extracting IQ from knowledge-holders exacerbates existing stresses on the IQ system that have resulted from the ongoing transformation of Inuit life and creates mistrust between Inuit and researchers.<sup>28</sup> When knowledge is collected or documented through IQ studies, the knowledge holders no longer have control over how the information captured by the study will be used; it becomes a tool for those conducting the study rather than for the knowledge holders themselves. If decision-makers feel that by using documented IQ studies, they are satisfying a requirement to draw on IQ, then the document also becomes a constraint on how IQ is used, and can inhibit active and ongoing engagement between decision-makers and knowledge-holders.

IQ is sometimes incorrectly used interchangeably with ‘traditional ecological knowledge’, ‘traditional knowledge’, or ‘Inuit traditional knowledge’, including in government-issued management documents.<sup>29</sup> In fact, IQ is more than these terms—although each conveys aspects of IQ, none adequately capture the breadth of IQ as a worldview.<sup>30</sup> ‘Traditional’ also excludes new knowledge and the knowledge production component, suggesting a body of knowledge that has limited relevance to modern practice, which is not the case for IQ. The choice to use IQ as a conceptual framework for this research stems from this discrepancy, which has particular importance in the realm of decision-making. Given that Western scientific knowledge is constantly developing, the corresponding accumulation of Inuit knowledge through IQ must be recognized in order to give equal weight to both systems in the context of wildlife management.

### ***b. Management, Governance, and Co-management***

Broadly, management refers to the application of tools to meet specific objectives. Governance can be understood as the process by which management approaches are selected and applied. Governance

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<sup>27</sup> *Ibid.*

<sup>28</sup> Oosten and Laugrand, “*Qaujimajatuqangit* and social problems.”

<sup>29</sup> Canadian Science Advisory Secretariat, “Evaluation of narwhal with respect to making a CITES non-detriment finding.” Fisheries and Oceans Canada, Science Response 2010/011, December 2011.

<sup>30</sup> Nadasdy, *Hunters and Bureaucrats*.

determines which actors will be involved, how they will interact with one another, and what degree of control is allocated to each within the management process.<sup>31</sup> These preconditions establish the perspectives that form the basis for developing management objectives and selecting appropriate tools to accomplish them. In Nunavut, the NLCA mandates that wildlife issues are addressed through co-management intended to bridge Inuit and non-Inuit needs and interests. In the case of narwhal, the Government of Canada retains the final decision-making power for management; so governance is exercised by the federal government via the agency of DFO within the terms and conditions of the NLCA, while management is carried out through the collaboration of several co-management partners, including DFO as well as the Nunavut Wildlife Management Board (NWMB), Inuit organizations, and others (see Figure 1).

The NLCA introduced a co-management regime for wildlife management by mandating that Inuit be included in all aspects of wildlife management in Nunavut and establishing the NWMB to act as the primary instrument for wildlife management. The relevant government (either territorial or federal, depending on jurisdiction) retains the ultimate authority for decision-making, but decisions must be achieved through adequate consultation with stakeholders, coordinated through the NWMB.<sup>32</sup> Co-management is an approach to management where power is shared between two or more entities, typically government and one or more community-based organizations, often representing indigenous groups. The degree of power-sharing varies across co-management arrangements, but the general purpose is to ensure that affected stakeholder groups are engaged in decision-making and that management reflects their needs, values, and knowledge regarding the resource under consideration.<sup>33</sup>

Co-management can be a useful approach to resolving resource management conflicts, especially in a context such as that of Nunavut where there are multiple diverging perspectives on best practices for resource management. The existing co-management framework in Nunavut could represent a mechanism

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<sup>31</sup> John Kearney et al., “The role of participatory governance and community-based management in integrated coastal and ocean management in Canada,” *Coastal Management* 35 (2007).

<sup>32</sup> Government of Canada, *Nunavut Land Claims Agreement Act*, S. C. 1993, c. 29.

<sup>33</sup> Rodon, “Co-management and self-determination in Nunavut.”

for the mobilization of IQ as a basis for decision-making, but this would require a power-sharing structure within the co-management system that empowers Inuit to inform decision-making through IQ.

Experiences with co-management arrangements across Canada, including in Nunavut, have demonstrated a consistent failure on the part of government to share power in a way that allows for the meaningful inclusion of indigenous knowledge systems in the decision-making process,<sup>34</sup> leading to co-management that allows for only very narrow types of participation from non-government stakeholders.<sup>35</sup> Rodon describes the co-management process in Nunavut as “co-optation” into accepting the standards for wildlife management, such as the use of quotas and hunting seasons, of a science-based approach.<sup>36</sup> This reproduces the inequitable colonial power dynamics that marginalize indigenous voices, including indigenous knowledge, in the first place, which undermines, rather than mobilizes, indigenous knowledge systems.

Co-management in Canada typically uses Western management practices and conceptualizations of nature as the starting point for management decision-making, meaning Inuit must accept aspects of a Western worldview in order to engage in co-management processes, despite their intended role as representatives of Inuit perspectives. As Paul Nadasdy discusses in *Hunters and Bureaucrats*, the use of Western practices as a foundation puts Inuit at a disadvantage in advocating for the use of IQ in decision-making, even prior to negotiating with co-management partners. This foundation can also limit the ability of co-management partners to engage with and understand IQ, because the terms of the discussion have been defined to suit a Western worldview and often have no equivalent or relevance in IQ.<sup>37</sup> These disadvantages indicate that the existing approach to wildlife co-management in Nunavut does not allow for the meaningful inclusion of IQ in decision-making.

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<sup>34</sup> Marc G. Stevenson, “Decolonizing co-management in Northern Canada,” *Cultural Survival Quarterly* 28 (2004).

<sup>35</sup> Kearney et al., “The role of participatory governance.”

<sup>36</sup> Rodon, “Co-management and self-determination in Nunavut.”

<sup>37</sup> Nadasdy, *Hunters and Bureaucrats*.

### *c. Decolonization*

Many of the issues with power disparities in Canadian co-management arrangements are rooted in Canada's colonial history and its legacy. Inuit, as colonized subjects, can only be empowered in wildlife management decision-making through decolonization. In settler states such as Canada, decolonization can be broadly defined as a process through which the colonial structures that maintain the dominance of a settler society by marginalizing indigenous peoples are dismantled in order to create equal partnerships based on mutual respect and shared power for both groups.<sup>38</sup> Colonial structures include both government institutions as well as social attitudes or ideas about a colonized group that contribute to their disempowerment, such as valuing non-indigenous knowledge systems over indigenous knowledge systems. This distinction is particularly relevant in Nunavut, where the NLCA technically established Inuit autonomy over the region, but the federal government and non-Inuit interests retain significant power and influence. Decolonization requires that both settler and indigenous societies recognize how colonialism continues to manifest in present-day governance and social values. In the context of wildlife management in Nunavut, decolonization involves removing barriers to Inuit self-determination, including Inuit control over how resources are defined, accessed, used, managed, and the terms of reference for decision-making and objective-setting, in the management process.

The impact of colonialism on indigenous ways of life and, by extension, ways of knowing, in addition to inadequate efforts to integrate scientific and indigenous knowledge as discussed above, leads to knowledge loss which threatens the existence of indigenous knowledge systems.<sup>39</sup> This is further complicated by the impact of the global-scale rapid technological changes of the past century, which also have a profound effect on the use of traditional knowledge. In some cases, the use of indigenous knowledge systems has gained political dimensions as a tool of resistance to colonial hegemony in order to advance decolonization,<sup>40</sup> demonstrating the link between IQ and decolonization in Nunavut. While

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<sup>38</sup> Peter Russell, "Aboriginal Nationalism and Quebec Nationalism: Reconciliation through Fourth World Decolonization," *Constitutional Forum* 8 (1997).

<sup>39</sup> *Ibid.*

<sup>40</sup> Leanne R. Simpson, "Anticolonial Strategies for the Recovery and Maintenance of Indigenous Knowledge," *American Indian Quarterly* 28 (2004): 373-384.

such movements tend to invoke collectively rather than individually-held knowledge, they serve to raise questions about existing approaches to the use of indigenous knowledge systems in resource management, and in doing so, create opportunities for novel approaches to the use of both collectively and individually-held knowledge in resource management decision-making through the promotion of decolonization.

#### **4. Narwhal Species Background**

##### ***a. Significance to Inuit***

Hunting is an essential component of Inuit ways of life, both as a way of maintaining linkages to cultural heritage and as a means of subsistence.<sup>41</sup> Marine mammal harvesting continues to be an important contributor to food security in the Arctic by providing food that is both healthy and culturally applicable, in communities where store-bought food is often prohibitively expensive and may not represent of Inuit dietary preferences. Maktaaq, the layer of blubber attached to the skin of beluga, bowhead, and narwhal, is an extremely nutritious, highly valued food; consumption of maktaaq also provides a link between present day hunting, historical activities of Inuit, and the cultural values connecting them.<sup>42</sup> Through the provision of maktaaq, Inuit communities are enabled to carry out traditional sharing practices which have social benefits such as strengthening bonds within community networks.<sup>43</sup>

Inuit communities also derive economic benefits from narwhal harvesting, although this is a less significant driver of hunting activities than the cultural component.<sup>44</sup> Narwhal harvesting reduces hunters' dependence on expensive store-bought food, in communities where hunters would struggle to find waged employment sufficient to offset their dependence on subsistence hunting,<sup>45</sup> and contributes to communities' economies overall. Narwhal products are permitted for sale both within Canada and internationally, under the conditions of the Convention on International Trade in Endangered Species of

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<sup>41</sup> Nunavut Department of Environment, Fisheries and Sealing Division, *Nunavut Coastal Resource Inventory: Iglulik Pilot Project*, May 2008.

<sup>42</sup> Milton R. Freeman et al., *Inuit, Whaling, and Sustainability* (London: AltaMira Press, 1998).

<sup>43</sup> *Ibid.*

<sup>44</sup> Carie Hoover et al., "Estimating the economic value of narwhal and beluga hunts in Hudson Bay, Nunavut," *Arctic* 66 (2013).

<sup>45</sup> *Ibid.*

Wild Fauna and Flora (CITES).<sup>46</sup> Narwhal tusks and other parts, such as bones and teeth, can be carved into artwork and jewellery and sold to generate income. Unaltered tusks can also be sold for prices of up to 100 CAD per foot or 15 CAD per inch. A 2013 study by Hoover et al. assessing the overall economic value of beluga and narwhal harvesting in Hudson Bay communities estimated that the value from whale harvesting in Naujaat is equivalent to 3.3% of the income of the average wage earner in Naujaat; overall, the value to the community overall was estimated to be 1890 CAD per narwhal. This value is not negligible, but, as the study concluded, this assessment of the fairly low economic value of harvesting suggests that the primary benefits of narwhal harvesting are social and cultural rather than economic.

The interviews in Naujaat revealed that compared to other marine mammals harvested by Inuit, narwhal do not hold more significance, either culturally or otherwise, compared to other harvested marine mammals such as ringed seals or beluga. Respondents pointed out that until recently, narwhal were not a popular target with hunters because of the significant effort required to catch them compared to seals. As seal pelt prices have fallen in recent decades, and more powerful hunting equipment has become available (such as high-powered rifles and motorboats), the popularity of narwhal has increased. This shift has also corresponded with increasing prestige associated with narwhal hunting for younger hunters.

### ***b. Ecology***

Narwhal are a challenging species to study and scientific knowledge about their life history, distributions, and population interactions involves considerable uncertainty. They are thought to reach sexual maturity between ages 6-8 for females and 11-13 for males, with a life expectancy from 30-50 years.<sup>47</sup> Their gestation period is approximately 15 months, with females giving birth once every three years, although these are estimates.<sup>48</sup> Males average 4.7 m. in length, weighing 1600 kg, while females

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<sup>46</sup> *Ibid.*

<sup>47</sup> Pierre Richard, *Marine Mammals of Nunavut*, (Iqaluit: Qikiqtani School Operations, Nunavut Department of Education, 2001).

<sup>48</sup> Helen Gerson and Richard Gerson, *The Beluga and Narwhal in the Eastern Canadian Arctic*, (Iqaluit: Thistle Printing Ltd, 1986).



are 4.0 m. in length and weigh 900 kg.<sup>49</sup> Males develop the characteristic tusk as they enter adulthood and it grows larger as they age; females have also been known to develop tusks in some rare cases.<sup>50</sup>

Narwhal are found exclusively in Arctic waters, primarily in the waters of Nunavut and western Greenland, where they feed on squid, turbot, shrimp, Arctic cod, and octopus.<sup>51</sup> The global population of narwhal is estimated to be at least 100 000 animals.<sup>52</sup> Across all Arctic nations, no narwhal populations are commercially hunted but 11 populations are harvested for subsistence.<sup>53</sup> There are three populations in Nunavut, divided into five management units; the Northern Hudson Bay population is the only one harvested by hunters from Naujaat and other Kivalliq communities and is considered isolated from the other populations; it is also classified as a data-poor fishery by DFO.<sup>54</sup> The most recent DFO survey of the Northern Hudson Bay population, from 2011, estimated the population size as 12 485 individuals. This survey was based on data is collected through aerial surveys of the population's summering areas.<sup>55</sup> Aerial surveys are often limited by poor weather and sea ice conditions, as well as uncertainty as to the distribution and behaviours of the population which complicates the identification of an appropriate size and location for the study area.<sup>56</sup> Narwhal are known to dive to depths of up to 1500 m. and spend up to 25 minutes under the surface,<sup>57</sup> during which interval they are invisible to observers.<sup>58</sup> The size of pods varies according to the season; summer groupings typically consist of approximately 10 individuals, whereas during spring and fall migrations they aggregate into larger pods.<sup>59</sup> The previous survey from 2000 had resulted in a population estimate of 5053 individuals and researchers attributed the discrepancy

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<sup>49</sup> Richard, *Marine Mammals of Nunavut*.

<sup>50</sup> Gerson and Gerson, *The Beluga and Narwhal in the Eastern Canadian Arctic*.

<sup>51</sup> Richard, *Marine Mammals of Nunavut*.

<sup>52</sup> Tanya Shadbolt, Ernest W. T. Cooper, and Peter J. Ewins, *Breaking the Ice: International Trade in Narwhals, in the Context of a Changing Arctic*, TRAFFIC and WWF Canada, 2015.

<sup>53</sup> Kristin L. Laidre et al., "Arctic marine mammal population status, sea ice habitat loss, and conservation recommendations for the 21<sup>st</sup> century," *Conservation Biology* 29 (2015).

<sup>54</sup> Natalie Asselin et al., "Results of narwhal (*Monodon monoceros*) aerial surveys in northern Hudson Bay, August 2011," Canadian Science Advisory Secretariat, Fisheries and Oceans Canada, Research Document 2012/037 Central and Arctic Region, 2012.

<sup>55</sup> *Ibid.*

<sup>56</sup> Laidre et al., "Arctic marine mammal population status."

<sup>57</sup> Shadbolt, Cooper, and Ewins, *Breaking the Ice*.

<sup>58</sup> McLeish, *Narwhals: Arctic Whales in a Melting World*.

<sup>59</sup> COSEWIC, "COSEWIC assessment and update status report on the narwhal *Monodon monoceros* in Canada," Committee on the Status of Endangered Wildlife in Canada, 2004.

with the 2011 findings to the increased size of the study area for the 2011 survey;<sup>60</sup> this example demonstrates the variability in the findings of narwhal surveys, which has significant implications for management decision-making.

The International Union for the Conservation of Nature lists narwhal as “near threatened” as of 2008, using a population estimate of approximately 80,000 narwhal worldwide and acknowledging the absence of knowledge regarding any population trends.<sup>61</sup> In Canada, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) most recently designated narwhal as a species of “special concern” in 2004. Their report at that time identified that the Northern Hudson Bay population could see a decline of 30% over 30 years if hunting pressures were not reduced; this figure, in conjunction with the uncertainty regarding population trends and threats to the species, were used to justify the “special concern” designation.<sup>62</sup> However, the COSEWIC assessment was based on the results of DFO’s 2000 aerial survey, which yielded a significantly lower estimate than the 2011 survey.<sup>63</sup>

Given the significant knowledge gaps regarding narwhal population dynamics, it is challenging to characterize and quantify specific threats to the species. Aside from hunting pressures, potential sources of risk for narwhal populations include climate change impacts, increased predation by orcas, increased shipping and industrial development in the Arctic, and disturbances from seismic surveys. Narwhal are uniquely adapted to the Arctic marine environment, rendering them highly vulnerable to environmental changes associated with climate change. Detailed predictions of how narwhal might be impacted by climate change are complex because of ongoing uncertainty about their migratory routes, behaviours, and adaptability. Researchers have speculated that changing ice conditions could lead to more stranding events (where narwhal become trapped in small areas of open water surrounded by ice, and drown), which can cause losses of hundreds of individuals at once.<sup>64</sup> Inuit harvesters have also expressed concern that heightened predation by orcas may reduce narwhal populations, based on increasingly frequent

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<sup>60</sup> Asselin et al., “Results of narwhal (*Monodon monoceros*) aerial surveys in northern Hudson Bay.”

<sup>61</sup> Shadbolt, Cooper, and Ewins, *Breaking the Ice*.

<sup>62</sup> COSEWIC, “COSEWIC assessment and update status report on the narwhal.”

<sup>63</sup> Asselin et al., “Results of narwhal (*Monodon monoceros*) aerial surveys in northern Hudson Bay.”

<sup>64</sup> Kristin L. Laidre et al., “Quantifying the sensitivity of Arctic marine mammals to climate-induced habitat change,” *Ecological Applications* 18 (2008).

observations of orcas in narwhal summering areas over the past few decades.<sup>65</sup> Additional concerns have emerged about the narwhal habitat disruption that could result from increased shipping and industrial development, such as offshore oil and gas exploration, as climate change increases the accessibility of Arctic waters to shipping.<sup>66</sup> There have been concerns that exposure to seismic surveys associated with offshore oil and gas exploration may cause behavioural changes in narwhal, such as delaying the beginning of migrations or changing areas of preference, or otherwise alter their habitat which can increase the risk of ice entrapments by forcing populations to deal with unfamiliar ice conditions.<sup>67</sup>

### *c. Management Challenges*

A number of challenges emerge from the combination of ecological characteristics and Inuit uses of narwhal. DFO classifies the narwhal subsistence fishery for the Northern Hudson Bay population as ‘data-poor’, meaning not enough information about the population is available to produce a complete assessment.<sup>68</sup> The challenges resulting from the lack of data concerning a range of narwhal characteristics stem from the difficulties of conducting accurate population surveys. For fisheries management of data-poor stocks, DFO uses the ‘Potential Biological Removal’ (PBR) method which calculates the number of individuals that can be removed from a stock before the population will be adversely affected, to determine recommendations on harvest levels.<sup>69</sup> In the case of narwhal, the PBR is used to calculate a ‘Total Allowable Landed Catch’ (TALC) rather than a ‘Total Allowable Harvest’ (TAH), in order to account for animals that hunters kill or injure but are unable to retrieve, which are losses to the population not captured in the number of landed narwhal. The PBR calculation is based on the most recent stock assessment available, and is the basis for the allocation of regional quotas, which are then divided

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<sup>65</sup> Neida Gonzalez, *Inuit traditional ecological knowledge of the Hudson Bay narwhal (Tuugaalik) Population*, prepared for Fisheries and Oceans Canada, Iqaluit: May 2001.

<sup>66</sup> Shadbolt, Cooper, and Ewins, *Breaking the Ice*.

<sup>67</sup> Heide-Jorgensen, Mads Peter, et al., “Narwhals and seismic exploration: Is seismic noise increasing the risk of ice entrapments?” *Biological Conservation* 158 (2013).

<sup>68</sup> Richard, P. R. “On determining the Total Allowable Catch for Nunavut odontocete stocks,” Canadian Science Advisory Secretariat, Fisheries and Oceans Canada, Research Document 2008/022 Central and Arctic Region, 2008.

<sup>69</sup> Fisheries and Oceans Canada, “Total allowable harvest recommendations for Nunavut narwhal and beluga populations,” Fisheries and Oceans Canada, Canadian Science Advisory Secretariat, Report 2008/035, 2008.

between communities.<sup>70</sup> Although stock assessments vary widely and accuracy cannot be guaranteed,<sup>71</sup> the TALC result has a direct impact on the lives of harvesters, as it determines how much of their livelihood they can attempt to derive from narwhal harvesting for that year. The data-poor status of the fishery could either represent an opportunity for IQ, or an additional challenge for the use of IQ. Managers may see IQ as a valuable guide for decision-making in the absence of precise scientific information; or, the lack of scientific information may push managers towards an approach which would make them less open to decisions based on IQ, if IQ was viewed as a more risk-laden, less accurate source of information by decision-makers.

Narwhal managers also have to address negative public perceptions of narwhal hunting by certain third party groups, which create tension within management. Harvesters are conscious of how their activities have been perceived by anti-whaling and animal rights interests. Managers may be influenced by anti-whaling interests or activism, and researchers experience reluctance from Inuit when seeking support for narwhal research projects (as was experienced by the author during the process of gaining the approval of the hamlet council and HTO in Naujaat to conduct this project). There are examples from recent years of negative media attention targeting narwhal harvesting in Nunavut, including a feature in National Geographic depicting the hunt as wasteful and vicious, and public outcry when a large pod of narwhal became stranded near the hamlet of Pond Inlet and were harvested by the community, rather than being ‘rescued’ as some members of the public hoped, although strandings are a natural mortality event.<sup>72</sup>

Additional challenges in narwhal management include the growing population of hunters in Nunavut, which increases harvesting pressure on the population. A subset of this problem is the increasing number of inexperienced hunters, often from communities that do not have a long tradition of narwhal hunting, and so these hunters have limited opportunities for education about safe hunting practices. Inexperienced hunters are more likely to lose narwhal that they have killed or injured, which undermines the sustainability of the hunt for the future. As well, while it is likely that climate change will have serious

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<sup>70</sup> Richard, “On determining the Total Allowable Catch.”

<sup>71</sup> McLeish, *Narwhals: Arctic Whales in a Melting World*.

<sup>72</sup> *Ibid.*

impacts for narwhal,<sup>73</sup> the uncertainty as to the nature of these impacts complicate long term planning for management approaches.

## 5. Existing Management System

Before 1971, narwhal harvesting was unregulated by government and harvesting activities were controlled autonomously by Inuit.<sup>74</sup> The interviews with narwhal harvesters and managers in Naujaat carried out for this research (see Section 8: Study Design) provided insight into the structure and development of the existing narwhal management system in Nunavut from the perspective of community-level stakeholders. During the interviews, respondents explained that prior to government regulation, management decisions were informed by IQ, both when Inuit followed a mainly nomadic lifestyle, and after the 1950s when most Inuit resettled into permanent communities. Hunting efforts were managed according to the needs of the community, and the quantity of narwhal taken corresponded to the amount required for winter supplies, rather than a predetermined quota or target. Narwhal harvesting was only one component of the hunting activities of communities, so management decisions were also based on additional considerations such as availability of other species, weather conditions, etc. Hunting tools have adapted over time from kayaks and harpoons to include guns and motorized boats and guns, as a result of interactions and technology-sharing between Inuit and non-Inuit, especially 19<sup>th</sup> and 20<sup>th</sup> century European commercial whalers working in Arctic waters.<sup>75</sup> Sharing practices and cooperative hunting have been a central component to all Inuit harvesting activities, from the nomadic era to the present and continue to guide hunting decision-making at the scale of families and communities.<sup>76</sup>

In 1971 the Government of Canada introduced the Narwhal Protection Regulations, establishing an annual catch quota for individual Inuit hunters, which was replaced with quotas assigned to specific communities in 1977. The Marine Mammal Regulations replaced the Narwhal Protection Regulations in

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<sup>73</sup> Laidre et al., “Quantifying the sensitivity of Arctic marine mammals.”

<sup>74</sup> Fisheries and Oceans Canada, *Integrated Fisheries Management Plan (IFMP) for Narwhal in the Nunavut Settlement Area*, April 1, 2013.

<sup>75</sup> Freeman et al., *Inuit, Whaling, and Sustainability*.

<sup>76</sup> Frank Sejersen, “Hunting and management of beluga whales (*Delphinapterus leucas*) in Greenland: Changing strategies to cope with new national and local interests,” *Arctic* 54 (2001).

1993 when they were enacted as an annex to the Fisheries Act, although the community quota system remained in place.<sup>77</sup> In Canada, marine fisheries are under federal jurisdiction and managed through DFO, under the leadership of the federal Minister of Fisheries and the provisions of the Fisheries Act. Under the NLCA, DFO must engage with the NWMB as a co-management partner. The NLCA also contains provisions pertaining to marine mammal harvesting. In the event of conflicting obligations between the documents, the NLCA prevails.<sup>78</sup>

From 1999-2002, Nauyasat was one of six Nunavut communities which participated in DFO and the NWMB's trial community-based narwhal management program. The program was introduced by the NWMB in response to concerns from communities about existing management approaches. Under the supervision of the NWMB and DFO, HTOs in participating communities became responsible for establishing and enforcing bylaws and reporting back to NWMB. However, to be eligible to participate in the program, communities were required to meet specific regulations, including methods of harvesting, monitoring, and reporting. Community quotas were removed, but total allowable catch limits remained in place, which ultimately undermined participating community's management powers when higher than expected catch and struck-and-lost rates for narwhal provoked DFO to unilaterally close the entire fishery for the 1999-2000 season. The program's failure was partly due to insufficient communication between the NWMB and DFO and communities regarding how quotas would apply, and created conflict and mistrust rather than empowering communities in decision-making.<sup>79</sup> The NWMB discontinued the community-based management program in 2011.

#### ***a. Policy Context for Narwhal Management***

##### *Marine Mammal Regulations*

The Marine Mammal Regulations consolidated a number of species-specific regulations, including the Narwhal Protection Regulations, into one document, and became an annex of the Fisheries Act in 1993. The regulations restrict narwhal harvesting to Inuit, and require Inuit to obtain a license prior to hunting.

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<sup>77</sup> Fisheries and Oceans Canada, *Narwhal IFMP*.

<sup>78</sup> *Ibid.*

<sup>79</sup> Armitage, "Community-based narwhal management."

As well, the regulations mandate that hunters follow several hunting guidelines, such as killing animals quickly and use of specific firearms, and prohibit wasting animals and animal parts and hunting calves or adults accompanied by calves.<sup>80</sup> There are no references to the use of traditional, local, or indigenous knowledge.

#### *Nunavut Land Claims Agreement*

Two of the NLCA's main objectives include "to provide certainty and clarity of rights to ownership and use of lands and resources, and of rights for Inuit to participate in decision-making concerning the use, management, and conservation of land, water, and resources, including the offshore," and "to provide Inuit with harvesting rights and rights to participate in decision-making concerning wildlife harvesting."<sup>81</sup> It acknowledges Inuit as the traditional users of the land and resources of Nunavut, although IQ is not specifically identified. The principles listed in Article 5 (Wildlife) refer to the need for respect of Inuit management systems and priorities. The NLCA also revokes the requirement of a licence for Inuk hunters for any wildlife harvesting within Nunavut, provided they are a beneficiary.

The NLCA also establishes the NWMB as the co-management body for all wildlife management in Nunavut. The NWMB is composed of individuals appointed by a combination of government and Inuit agencies. While recognizing that the Government of Canada has the ultimate responsibility for wildlife management, the NLCA assigns several functions to the NWMB, including participating in research, establishing or adjusting TAH levels, and establishing and modifying non-quota limitations. The government can legally limit or restrict Inuit harvesting only to address a conservation concern, to implement the allocation system outlined in the NLCA, and to protect public health and safety. As well, the Minister can overturn NWMB decisions if they are deemed to be inconsistent with the evidence available to the NWMB in making the decision.<sup>82</sup>

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<sup>80</sup> Government of Canada, *Marine Mammal Regulations*, SOR/93-56, last amended February 10, 2011.

<sup>81</sup> Government of Canada, *NLCA*.

<sup>82</sup> *Ibid.*

### *Species at Risk Act*

As a species of ‘special concern’, narwhal are covered under the Species at Risk Act (SARA) which requires that all species of concern are managed to ensure they do not become endangered.<sup>83</sup> SARA mandates that the relevant Minister must prepare a management plan for the species and its habitat within three years of the species’ designation. The management plan must include appropriate conservation measures and be developed in partnership with any provincial or territorial wildlife management authorities, which includes the NWMB.

### *Convention on International Trade in Endangered Species of Wild Fauna and Flora*

Canada is a signatory to CITES, an international agreement which controls the trade of endangered species. Narwhal are listed under Appendix II of CITES, meaning that the export of any narwhal products requires a permit issued by the federal government.<sup>84</sup> Permits cannot be issued until the government has assessed the species population and determined that harvesting activities are non-detrimental to the population, by issuing a Non-Detriment Finding (NDF).<sup>85</sup> If an NDF is not issued, as was the case in 2010, products cannot be exported, which reduces the income Inuit can generate from hunting although there is no impact to quotas.<sup>86</sup>

#### ***b. Stakeholders***

The major stakeholders in narwhal management are: Inuit hunters and other individuals who depend on narwhal harvesting (such as hunters’ families), the local Hunters and Trappers Organizations in each community, the regional wildlife organization, the NWMB, and DFO. Additional stakeholders include the Government of Nunavut Department of Environment (Fisheries and Sealing Division), Nunavut Tunngavik Inc. (NTI), the regional Inuit associations, the Canada-Greenland Joint Commission on the Management of Narwhal and Beluga, and the North Atlantic Marine Mammal Commission.

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<sup>83</sup> Government of Canada, *Species at Risk Act*, S.C. 2002, c. 29.

<sup>84</sup> *Convention on International Trade in Endangered Species of Wild Fauna and Flora*, Washington, D.C., March 3, 1973.

<sup>85</sup> Hoover et al., “Estimating the economic value of narwhal and beluga hunts in Hudson Bay, Nunavut.”

<sup>86</sup> *Ibid.*



### *Hunters and Trappers Organizations*

HTOs are locally-based associations that address community hunting issues, represent their members' interests at higher levels of management, and have control over specific aspects of hunting. The NLCA assigns HTOs responsibility for regulating harvesting techniques among members, allocating community "basic needs level" (the minimum harvest needed to sustain the community), and the general management of harvesting among members regarding issues not covered by other management organizations. HTOs can also apply non-quota limitations to its members to manage harvesting activities.<sup>87</sup> HTO membership is open to all Inuit residents of a community.<sup>88</sup> HTOs are also responsible for counting and distributing tags to hunters, notifying hunters when the tags have all been used, and may carry out some additional tasks on behalf of DFO, such as collecting biological samples from harvested narwhal to support DFO's scientific research programs. The Arviq HTO in Naujaat includes the use of IQ in its own organization policies and procedures, and may coordinate with narwhal co-management partners on undertaking IQ studies (by identifying interview participants, for example). Their board meetings are open to the public, although interview respondents pointed out that non-board members rarely attend. As well, the HTO distributes questionnaires to hunters on behalf of DFO to collect information about their activities and perspectives on management, but similarly, hunters rarely complete them.

### *Regional Wildlife Organizations*

Each of the three regions of Nunavut is represented by a regional wildlife organization (RWO), which are made up of representatives from the HTOs of each community in the region. Naujaat falls under the jurisdiction of the Kivalliq Wildlife Board. RWOs have similar responsibilities to HTOs, at a regional scale (for example, assigning a regional basic needs level, and implementing non-quota limitations).<sup>89</sup> The RWOs are assigned regional quotas by DFO for each season and are responsible for working with the HTOs to determine how many tags will be distributed to each community in the region.

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<sup>87</sup> Fisheries and Oceans Canada, *Narwhal IFMP*.

<sup>88</sup> Government of Canada, *NLCA*.

<sup>89</sup> *Ibid.*

### *NWMB*

The NWMB is the coordinating body for wildlife co-management in Nunavut and shares decision-making authority with DFO, although the Minister retains the ultimate decision-making power. The NWMB works with both DFO and the RWOs and HTOs to assess wildlife issues and make decisions, and has the authority to establish TAH, basic needs levels, and non-quota limitations.<sup>90</sup> The NWMB also conducts consultations with Inuit and co-management partners during the decision-making process, and attempts to utilize IQ in its decision-making and management activities.<sup>91</sup>

### *DFO*

DFO works with the NWMB to uphold its obligations under the Fisheries Act as well as the NLCA. DFO's involvement with wildlife management in Nunavut is guided by the Sustainable Fisheries Framework, which requires DFO to incorporate long-term sustainability into its decision-making,<sup>92</sup> and the Integrated Aboriginal Policy Framework, which details how DFO will approach resource management in partnership with indigenous groups.

### *Government of Nunavut Department of Environment, Fisheries and Sealing Division*

The GN has an advisory role in narwhal management. The Fisheries and Sealing Division of the Department of the Environment has a mandate that includes the economic aspects of all wildlife harvesting activities,<sup>93</sup> and thus takes an interest in narwhal management as it relates to the livelihoods of Nunavummiut. However, they do not have any direct control of the management process.

### *Inuit Associations*

The NLCA assigns responsibility to the NWMB to consult with “designated Inuit organizations” in certain cases, in order to carry out its obligation to “communicate, consult, and cooperate with residents of the Nunavut Settlement Area.”<sup>94</sup> NTI is the territory-wide Inuit organization which was responsible for signing the NLCA on behalf of the Inuit of Nunavut, and has the mandate to ensure that the NLCA is

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<sup>90</sup> *Ibid.*

<sup>91</sup> *Ibid.*

<sup>92</sup> Fisheries and Oceans Canada, *Narwhal IFMP*.

<sup>93</sup> Maha Ghazal, GN Marine Mammal Advisor, personal communication, June 2015.

<sup>94</sup> Government of Canada, *NLCA*.

upheld in all dealings between Nunavut and the federal government or other agencies, and to carry Inuit obligations outlined in the NLCA. In addition to NTI, each region has a regional Inuit association (e.g. the Kivalliq Inuit Association) to represent and advocate for Inuit interests with government and other agencies at the regional scale. The three regional Inuit associations and NTI can all be consulted by the NWMB as designated Inuit organizations under the NLCA if a particular issue requires it, but they are not directly involved in management decision-making.<sup>95</sup>

#### *Canada-Greenland Joint Commission on Narwhal and Beluga*

Certain stocks of narwhal and beluga are believed to migrate between Canadian and Greenlandic waters. To coordinate management of these stocks, Canada and Greenland have established a joint commission to facilitate collaboration between stakeholders from both nations, including representatives from Inuit communities. The main activity of the Commission is the work of the Scientific Working Group which conducts collaborative scientific research about narwhal and beluga populations in the areas of concern. The Commission has an advisory role only in the management of shared narwhal stocks in Nunavut, which excludes the Northern Hudson Bay population.<sup>96</sup>

#### ***c. Decision-Making Process***

The decision-making process for narwhal management in Nunavut involves the convergence of DFO's recommendations and scientific information with the views of Inuit (Figure 1). Inuit knowledge and perspectives exist at the level of individual hunters, and are represented at the community level through the HTO. The HTOs represent their communities through the RWOs, which then advocate on behalf of the entire region by communicating with the NWMB. DFO, under the provisions of the Fisheries Act and NCLA, engages with the NWMB and brings a perspective informed by their scientific research, as well as politics, given their status as an agency of the federal government. The GN and Inuit associations can engage with the process through the NWMB or DFO, but are not formally involved in the process overall.

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<sup>95</sup> Armitage, "Community-based narwhal management."

<sup>96</sup> Freeman et al., *Inuit, Whalers, and Sustainability*.

In accordance with the Fisheries Act and Species at Risk Act, DFO draws on the available science and consultations with other stakeholders to develop the narwhal Integrated Fisheries Management Plan, which identifies management objectives for the fishery and outlines how the objectives will be achieved. The IFMP is then submitted to the NWMB, who conduct their own consultations with co-management partners and stakeholders, including public hearings, and make recommendations on the IFMP to DFO. DFO then decides whether to accept the NWMB's recommendations, and the final IFMP is released.

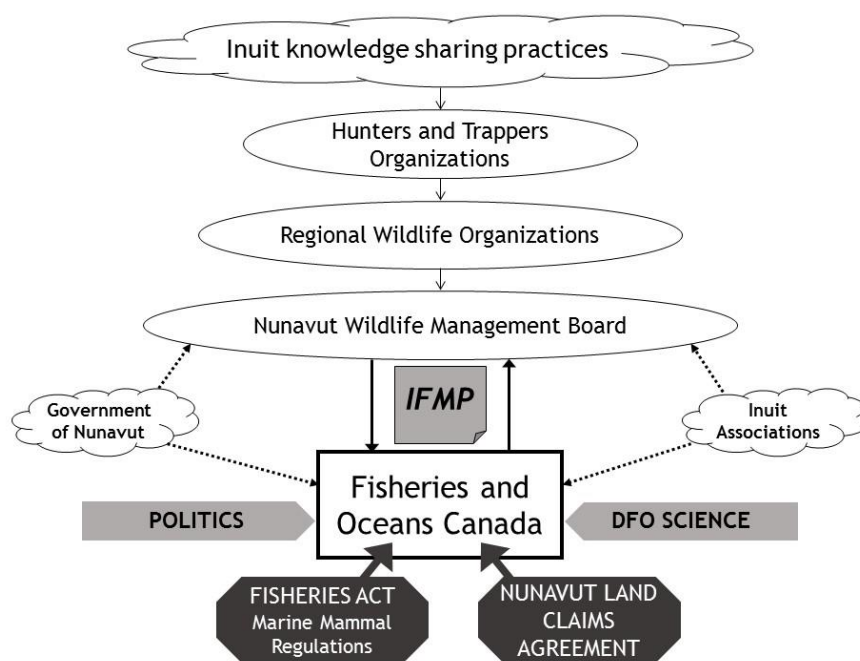


Figure 1. Narwhal management decision-making process (Northern Hudson Bay population) in Nunavut

#### ***d. Narwhal Integrated Fisheries Management Plan***

The most recent narwhal IFMP for the Northern Hudson Bay population was released in May 2013 and the next iteration will be released in 2017. The IFMP is not legally binding and can be adapted at any time, but guides the management of the fishery by identifying both long-term and short-term objectives (Table 1) and the management practices which will be applied to achieve them. It re-states hunting provisions contained in the NLCA, including the requirement for hunters to possess a Marine Mammal Tag in order to hunt narwhal.<sup>97</sup> Fisheries Officers (employed by DFO) and Wildlife Conservation

<sup>97</sup> Fisheries and Oceans Canada, *Narwhal IFMP*.

Officers (employed by GN) monitor and enforce compliance with the Fisheries Act and NLCA, but the HTO is responsible for monitoring compliance with HTO bylaws.

*Table 1. Northern Hudson Bay Narwhal Integrated Fisheries Management Plan Objectives*<sup>98</sup>

Short-Term Objectives	Long-Term Objectives
<ul style="list-style-type: none"> <li>• Conduct surveys of each narwhal stock/population on a five year cycle and secure funding for the surveys</li> <li>• Incorporate community and hunter information into the design and reporting of narwhal surveys</li> <li>• Develop and implement process for accurate and timely harvest reporting</li> <li>• Develop/enhance monitoring program to reduce struck and lost, including an assessment of harvesting methods and equipment, collection of data on rates of struck and loss and development of training materials for inexperienced hunters to reduce struck and loss</li> <li>• Increase public awareness of the importance of narwhal subsistence to Inuit for community cohesion, nutrition, and well-being</li> <li>• Identification of economic opportunities related to this activity</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain vital, healthy narwhal populations capable of sustaining harvesting needs</li> <li>• Protection of narwhal habitat</li> <li>• Improve harvesting methods and equipment to reduce struck and lost rates</li> <li>• Continue to document Traditional Ecological Knowledge of narwhal</li> <li>• Maintain access to international markets for ivory export</li> <li>• Manage narwhal consistent with the wildlife harvesting and management provisions under the NLCA</li> </ul>

The IFMP does not specifically use the term *Inuit Qaujimaqatuqangit* but it does refer to the use of Traditional Ecological Knowledge which has been “collected through workshops, interviews with elders and hunters chosen by the HTO, community consultations and questionnaires.”<sup>99</sup> There is no reference to direct engagement with Inuit on Traditional Ecological Knowledge for developing the IFMP; instead the plan cites several pre-existing traditional knowledge studies that were used to inform management decisions, and includes a commitment to continuing to gather traditional knowledge in its long-term objectives. As well, the IFMP acknowledges the ongoing issues associated with uncertainty in the current population assessment methods and identifies traditional knowledge, in addition to telemetry data, aerial surveys, and biological samples, as a way of addressing knowledge gaps.<sup>100</sup>

<sup>98</sup> *Ibid.*

<sup>99</sup> *Ibid.*

<sup>100</sup> *Ibid.*

## 6. Current Use of IQ

### *a. Policy Context for Use of IQ*

The co-management partners involved in narwhal management each engage with IQ within a particular policy context. In 2007, DFO released “An Integrated Aboriginal Policy Framework,” to guide the development of policies and programs related to Aboriginal communities.<sup>101</sup> A “Guiding Principle” of this document is to “access the knowledge, wisdom, and skills of Aboriginal people, through participatory and collaborative management and decision-making processes,” indicating an interest on the part of DFO in incorporating indigenous knowledge systems into fisheries management. Two of the specific goals listed in the framework include enhancing the involvement of Aboriginal groups in management decision-making “using a model of shared stewardship”, including fisheries management and other areas under DFO’s jurisdiction such as habitat protection, species at risk, and scientific research. The proposed strategies for achieving these goals include supporting increased Aboriginal participation in co-management and decision-making and Fisheries Act amendments that provide for greater Aboriginal involvement. Co-management is envisioned as eventually meaning shared fisheries management authority between DFO and Aboriginal groups. Finally, this framework points to support the use of traditional knowledge in the Species At Risk Act, Oceans Act, and the Convention on Biological Diversity.<sup>102</sup> This document overall conveys a very strong message that DFO is committed to engaging with Aboriginal groups, or in the case of Nunavut, Inuit, and building power-sharing systems for resource management. However, this commitment has not been demonstrated in the relationship between Inuit and DFO within narwhal management in Nunavut through a meaningful engagement with IQ.

The desire for developing policies informed by traditional knowledge is echoed by the three territorial governments of Canada in their collaborative vision for Northern development as outlined in both editions

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<sup>101</sup> Fisheries and Oceans Canada, *An Integrated Aboriginal Policy Framework*.

<sup>102</sup> *Ibid.*

of their joint publication *A Northern Vision* (2007's *A Stronger North and a Better Canada* and 2014's *Building a Better North*). These documents both refer to the importance of drawing on traditional knowledge to inform development in the North, indicating an atmosphere across the territorial governments that could be receptive to the use of IQ.<sup>103,104</sup>

The Nunavut Wildlife Act lists several highly specific principles which the Act identifies as derived from IQ.<sup>105</sup> As a marine fishery, narwhal are under federal jurisdiction and the Nunavut Wildlife Act does not apply. However, by describing in detail specific IQ practices, this Act provides guidance for developing subsequent legislation which attempts to mobilize IQ in wildlife management decision-making. HTOs, RWOs and wildlife conservation officers are also required to abide by the principles in their decision-making processes.<sup>106</sup>

At the community scale, HTOs may use IQ to develop their policies and procedures, and to inform the creation of by-laws and local-level management plans. However, these decisions are nested within the overarching wildlife management system which provides HTOs with minimal decision-making power and is not designed to accommodate IQ decision-making practices. The narwhal management system is not structured by one guiding framework outlining how IQ will be integrated into the system; instead, most of the stakeholders have a different level of engagement with IQ depending on the policies which pertain to them. As a result, the policies around the use of IQ in the entire process of narwhal management are piecemeal rather than encompassing each level of decision-making and the overall structure of the system.

### ***b. Protocols for Accessing IQ***

Nunavut's Scientists Act requires that researchers undertaking projects in Nunavut must obtain a license from the Nunavut Research Institute to conduct their research activities, except research involving

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<sup>103</sup> Government of Yukon, Government of the Northwest Territories, and Government of Nunavut, *A Northern Vision: A Stronger North and a Better Canada*, 2007.

<sup>104</sup> Government of Yukon, Government of the Northwest Territories, and Government of Nunavut. *A Northern Vision: Building a Better North*, 2014.

<sup>105</sup> Government of Nunavut, *Consolidation of Wildlife Act*.

<sup>106</sup> *Ibid.*

wildlife, which is licensed under the Nunavut Wildlife Act.<sup>107</sup> The Nunavut Research Institute promotes engaging with Inuit and the incorporation of IQ for research activities in Nunavut through their application process. Licensing controls how IQ is accessed by those outside the IQ system, by requiring research proposals to address certain data collection and research design issues. In controlling how IQ is accessed by those outside the system, this protocol manages the interface between the IQ system and other (typically, Western) knowledge systems and moves towards addressing the power imbalance between the use of IQ and Western knowledge. This demonstrates that there is an existing space for analysis of the interactions between IQ and other knowledge systems, which could be applied to understanding how IQ can be mobilized in resource management decision-making given how the current system is embedded with a Western knowledge system. This protocol also creates an opportunity to promote research which attempts to understand IQ in its own context, rather than through the lens of Western research approaches, yielding results which do not undermine the integrity of IQ in the process of documenting it.

### ***c. Development***

Engagement with IQ by management has typically taken the form of IQ “studies” that are typically species-specific.<sup>108</sup> One of the key duties of the NWMB at the time of its creation was to undertake a Bowhead Traditional Knowledge Study.<sup>109</sup> Numerous IQ marine mammal studies have since taken place, often called traditional or local knowledge studies.<sup>110,111,112,113,114</sup> These typically identify a specific species, region or community, and involve interviews to gain information about the selected species biology and distribution for various reasons, often to inform conservation and resource management measures. Generally, the focus in these studies is how knowledge gained through IQ can be converted

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<sup>107</sup> Government of Nunavut, *Consolidation of Scientists Act*, S.Nu. 2011, c. 10.

<sup>108</sup> Nadasdy, *Hunters and Bureaucrats*.

<sup>109</sup> Keith Hay, *Inuit Bowhead Knowledge Study: Interim Report*, Nunavut Wildlife Management Board, February 1997.

<sup>110</sup> Gonzalez, *Inuit traditional knowledge of the Hudson Bay narwhal*.

<sup>111</sup> R. A. Remnant and M. L. Thomas, *Inuit Traditional Knowledge of the Distribution and Biology of High Arctic Narwhal and Beluga*, North/South Consultants Inc., July 1992.

<sup>112</sup> Susan Sang, Celeste Booth, and Gordon Balch, “Documentation of *Inuit Qaujimagajuqangit* (local knowledge) in Pangnirtung, Coral Harbour and Arviat, Nunavut,” *Nunavut Wildlife Health Assessment*, WWF Canada and Trent University, September 2004.

<sup>113</sup> Peter Kilabuk, *A Study of Inuit Knowledge of the Southeast Baffin Beluga*, Nunavut Wildlife Management Board, March 1998.

<sup>114</sup> D. B. Stewart et al., “Local knowledge of beluga and narwhal from four communities in Arctic Canada,” Fisheries and Oceans Canada, Canadian Technical Report of Fisheries and Aquatic Sciences 2065, 1995.



into data points or fill gaps in scientific research rather than on understanding the knowledge system itself. A review of the use of IQ in wildlife management in Nunavut in 2008 revealed that while these types of IQ studies had been used in decisions about changes to quotas and some other areas of management, there had been changes in the way that interview participants felt about how the knowledge would be used, recognizing the increasingly political implications of their responses.<sup>115</sup> As well, the bureaucratic structures of wildlife management were seen as impediments to the mobilization of IQ in decision-making, because IQ does not always fit well into such decision-making structures.<sup>116</sup> This indicates that typical approaches to integrating IQ into management have had limited efficacy in adequately capturing IQ in a manner that maintains its integrity as a knowledge system.

## **7. Methodology**

### ***a. Study Design***

Primary data collection for this research consisted of ten in-person, semi-structured interviews with relevant narwhal management stakeholders in Naujaat, during a six week field visit from June-July 2015. Interview questions centred on three themes: (1) hunting practices and knowledge sharing relating to narwhal harvesting; (2) changes in hunting and knowledge sharing over time; and (3) perspectives on the relationship with government managers. All individuals interviewed were current residents of Naujaat, comprising hunters, elders or individuals with a particular experience on IQ issues, and community-level managers, the majority of whom had spent their entire lives in Naujaat or the surrounding area. In most cases, interviewees fell into multiple categories. Interviews were conducted in either English (by the author directly) or Inuktitut (by the author with the assistance of an interpreter), with the support of the community liaison who is a lifelong resident of Naujaat and trusted member of the community. Immediately after each interview, audio recordings were used to produce detailed transcripts. Following the completion of the interviews, the results were organized qualitatively and shared with the community

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<sup>115</sup> George Wenzel, Freid Weihs, and Geoff Rigby, *The Use of Traditional Ecological Knowledge and IQ in the Management of Wildlife in Nunavut: A Critical Review*, prepared for the Nunavut Wildlife Management Board, November 13, 2008.

<sup>116</sup> *Ibid.*

through local radio. Listeners were invited to call in with comments, which were recorded and incorporated into the analysis. This medium was selected because local radio is the primary means of mass communication in Naujaat and was anticipated to be the most effective way to reach a wide audience. Radio is particularly pertinent to the hunting community, as hunters will often use it to communicate their movements and successes with one another. The radio presentation garnered several passionate responses from listeners, indicating that the presentation was successful in expanding the reach of the research.

Given the trends in the relationships between indigenous stakeholders and government managers in Canadian resource management, one component of the interview was intended to assess if Inuit stakeholders in Naujaat perceive the government management negatively and would describe government-based management regulations as an impediment to the use of IQ for local-level decision making. Many responses supported the trends, although many subtleties to the government-community relationship were revealed through the interviews which were not anticipated by the researcher.

#### ***b. Limitations***

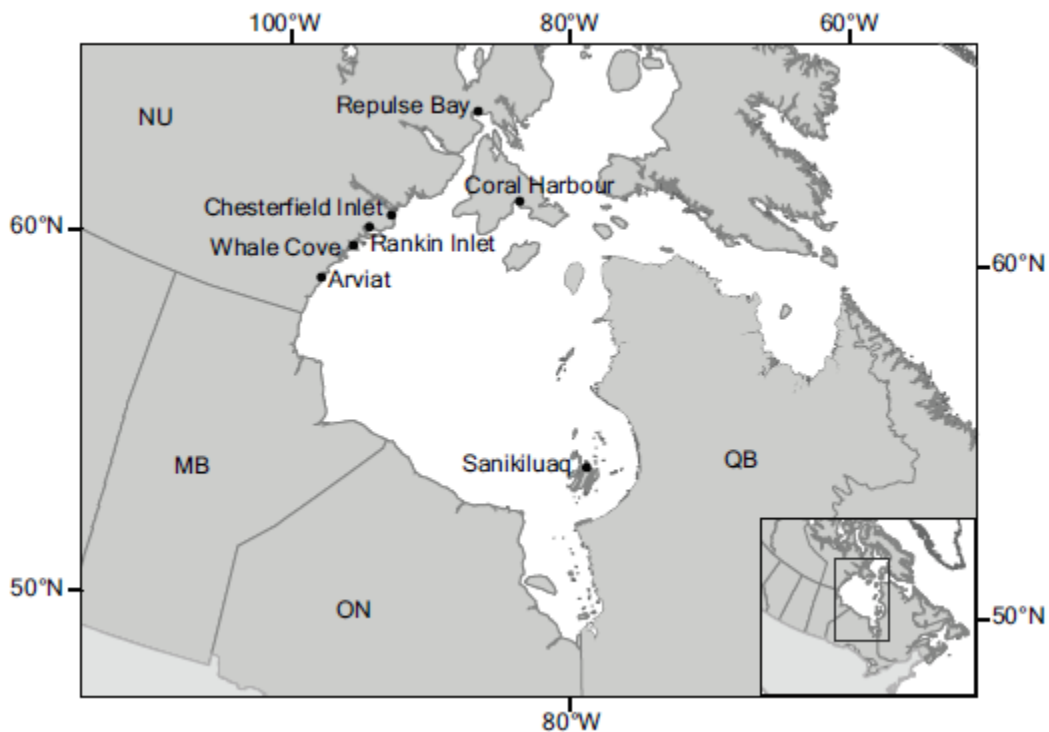
A small sample size of ten interviews was initially determined to be appropriate based on the size of the community. Following the completion of the final interview, the responses were sufficiently consistent across all participants that it was determined that additional interviews were unnecessary. The local radio presentation also provided an opportunity to include a wider range of community members in the data collection and so assess the accuracy of the interview findings.

Six interviews were in English and conducted by the researcher, with the participation of the community liaison, and four were in Inuktitut through the assistance of an experienced interpreter. There is some risk that some information may have been lost through interpretation; to address this, the researcher summarized her interpretation of responses to interviewees to verify their information during each interview. The same interpreter was used for each Inuktitut interview to ensure that the use of certain terms was consistent and that the interpreter had a complete understanding of the goals and objectives of the interviews. This also enabled better comparison of responses from the Inuktitut interviews by ensuring

that responses that were distinctly different from one another were based on the content of the response and not differences in interpretation from the use of different interpreters. The compiled results indicated sufficient consistency between the English and Inuktitut interview responses to control for bias on the part of the interpreter.

***c. Naujaat - Geographical and Historical Context***

The hamlet of Naujaat (formerly Repulse Bay) is a predominantly Inuit community located directly on the Arctic Circle in the Kivalliq region of Nunavut. Naujaat is located on Repulse Bay on the northeastern coast of Hudson Bay. The area is known for abundant narwhal because it forms part of the migration route of the Northern Hudson Bay population.



Source: Hoover et al., “Estimating the economic value of narwhal and beluga hunts in Hudson Bay, Nunavut,” *Arctic* 66 (2013).

*Figure 2. Hudson Bay communities, including Naujaat (Repulse Bay).*

The Inuit in this region, the Aivilingmiut, developed a historical relationship with 19<sup>th</sup> century European whalers because the region was a popular whaling destination.<sup>117</sup> The community's population of 1068 is mostly Inuit (951 Inuit to 107 non-Inuit as of 2014), and it is a fairly young population with nearly 60% of residents aged 25 or under.<sup>118</sup> The young population suggests that there is an influx of new hunters engaging in narwhal harvesting, meaning hunting pressures are increasing and there are more hunters learning about harvesting practices. Naujaat identifies itself as a community which emphasizes Inuit traditions, including hunting culture,<sup>119</sup> and the researcher observed that Inuktitut tends to be the primary language, as opposed to English. There are no representatives of DFO in Naujaat, although federal government representatives are present through the Ukkusiksalik National Park Administrative Office, a branch of federal government agency Parks Canada. The GN is represented through a Wildlife Conservation Officer, responsible for enforcing wildlife management regulations, while local-level decision making relating to general municipal issues occurs through the hamlet council, and specific hunting and wildlife issues are managed through Arviq Hunters and Trappers Organization.

The Arviq HTO has independently developed its own whale harvesting management plan that hunters are expected to follow. This four-page guide is partly based on IQ values, such as requiring that hunters have been in three previous hunting boats before striking a narwhal, and also addresses specific safety protocols such as the use of flotation suits and buoys that appropriately sized for the whale species being hunted. Other communities have used this guide as a model for developing their own plans, and the plan has also been useful in managing the behaviour of hunters who come from other communities to hunt in Repulse Bay.

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<sup>117</sup> Freeman et al., *Inuit, Whalers, and Cultural Persistence*.

<sup>118</sup> Nunavut Department of Executive and Intergovernmental Affairs, "Nunavut and Canada population estimates."

<sup>119</sup> Hamlet of Naujaat, "Town and information," accessed October 26, 2015, <http://www.repulsebay.ca/information.html>.

## 8. Findings

Three key themes emerged from the responses: (a) memories and IQ relating to narwhal management (memories are included as an indicator of how IQ is acquired, utilized, and shared), (b) changes and external factors affecting IQ, and (c) ongoing concerns and options for the future.

### *a. Memories and IQ Relating to Narwhal Management*

The comments relating to memories associated with narwhal and how IQ was and continues to be used ranged from specific hunting techniques, the organization of hunting activities broadly, knowledge transmission, and decision-making practices.

Several respondents explained that prior to the implementation of government regulation, younger narwhal were the main targets of hunting because their meat and maktaaq is more desirable and has a more consistent quality, whereas older narwhal are tougher and not all the maktaaq is suitable for food. At this time, and in most present situations as well, when narwhal were approached, hunters first harpooned the animal using a harpoon attached to a float. The float slows down the animal and enables hunters to then shoot it with greater accuracy, which minimizes the animal's suffering, limits the ammunition required to make the kill, and eases the process of retrieving the narwhal to prevent a wasteful 'struck and lost' scenario. As well, the entire carcass of the narwhal was used: the meat and internal organs were used to feed dog teams (both fresh, and dried to provide dog food throughout the winter), the maktaaq was shared among the community, and the tusk and bones were used for carving. Respondents generally equated these practices with the use of IQ for harvesting decision-making. While similar practices are common in societies from all over the world, these are methods that were developed by Inuit in response to their specific environmental conditions using their knowledge system, and are an example of IQ in use regardless of similarities to practices from other cultures or regions.

Most respondents who could remember a time before government regulation reported that the pace of hunting and associated activities was significantly slower "when they were using the IQ system." Often, hunters in the community would wait for pods of narwhal to swim into bays and observe them from shore before deciding if and when to harvest them. The first narwhal to enter the bay would be spared, because

they were considered 'scouts' for their pods and more narwhal would follow if they passed safely. Through observation, hunters would identify specific individuals to target, in order to guarantee the success of the hunt. Hunting would then take place when hunters were certain they would be successful. One respondent explained that hunters waited for the narwhal to come to them, as if there was a time when the animals were ready to be caught. Hunters would typically not hunt unless they had taken this time to prepare and were sure of success; the first appearance of narwhal for the season did not mean that hunters would go out to pursue them right away. In some cases, hunters would wait for orcas to drive narwhal pods into shallow bays, where they could be caught more easily. Hunting was co-operative rather than competitive, and several hunters would work together to pursue and then bring in the animals; butchering of the carcass and sharing of the resources was also a communal activity. These methods and their embedded values are both components of IQ.

Respondents also described how IQ-based hunting management practices involved hierarchical organization for decision-making about hunting activities, which still influences present-day hunting. Inuit culture values respect for elders, and in the case of narwhal hunting, hunters defer to elders and others with more experience for decisions about when to go hunting, how many narwhal are needed, when and where to shoot the animals, etc. When groups go hunting, the person driving the boat is typically the most experienced and directs the hunt. Younger hunters will typically do the shooting and make the kill, following the instructions of the more experienced hunters.

One of the most common responses referred to a "take only what you need" mentality which informed decision-making prior to government regulation of narwhal hunting. 'Needs' was used by respondents to refer to the amount of dried meat, maktaaq, and other supplies required to support their lifestyle through winter to the start of the next narwhal hunting season. Hunting took place only when food was needed for both people and dogs, and once everyone had met their needs to get through winter, narwhal hunting ceased. This value forms part of the IQ knowledge about hunting which is transmitted through families and shared between hunters. Several respondents who identified as hunters attributed their learning process to their elder relatives, who took them hunting as children and acted as mentors by passing on

their knowledge, including practical issues (e.g. the correct areas to target on a narwhal), ecological information such as migration routes and changes in narwhal distributions, and values (e.g. assisting other hunters in need, concept of ‘take only what you need’; etc.). Knowledge about hunting is transmitted orally and through experience; several respondents pointed out that written documentation is not part of the IQ system and that the knowledge is gained through hands-on experience, guided by more knowledgeable hunters. As well, the act of hunting was identified as a critical component of maintaining and passing on IQ.

### ***b. Changes and Drivers of Change***

When asked to comment on changes in narwhal harvesting within their memory, every respondent with enough experience to recall a time before government regulation described significant changes to narwhal hunting in detail, to an extent which exceeded the anticipated findings for this research. The main changes described by respondents include: the use of new and more efficient technologies; the monetization of hunting; the changing pace of hunting; and increased hunting pressures. The two driving forces behind these changes were identified as (1) the introduction of the quota system by DFO and (2) changing social conditions as a result of colonialism. Specific changes and their associated driving forces are summarized in Table 2.

Initial comments on changes observed in narwhal hunting over the past few decades referred to environmental changes, which have altered the usefulness of environmental knowledge associated with IQ. The changes described related to changing ice and weather patterns, and shifts in narwhal migration routes and distribution. One respondent noted that narwhal no longer come right into the bay near Naujaat and attributed this change to the increasing use of motorized boats. Technological shifts were considered a major contributor to overall changes in hunting practices. Snowmobiles have replaced dog teams as the primary means of transportation on sea ice, and narwhal meat is not used to feed dog teams anymore. In Naujaat, the meat of the narwhal was not traditionally used for human consumption, and so the absence of dog teams means that narwhal meat is no longer useful. The main objective of narwhal hunting is to produce maktaaq for human consumption and acquire the tusk, which can be sold to provide the monetary

income required to support a hunting lifestyle. Narwhal carcasses no longer have a use and the meat typically goes to waste.

Several respondents also pointed out that the more powerful rifles (compared to previous rifles available), ammunition, and motorboats that have become available in recent decades have altered hunting practices. These technologies make narwhal hunting less labour-intensive for the hunter, and thus narwhal are a more popular species for hunting than they were in the past. One respondent also pointed out that as seal pelts have dramatically declined in value, narwhal hunting has become more economically worthwhile compared to other forms of hunting (such as sealing) based on the costs of hunting relative to the returns available from the sale of the tusk and other products. Hunters tend to target larger, older individuals in order to maximize the amount of maktaaq they can get for each tag – older narwhal have longer, more valuable tusks – as opposed to the younger individuals which were traditionally favoured for the quality of their maktaaq.

Most respondents also expressed concerns over the changing pace of hunting, referring to hunting as “rushed” and “competitive.” They have observed a shift from the slower pace of hunting and practice of waiting for narwhal to come into shallow areas towards active pursuit of narwhal once the tags for the season are available. This shift is associated with safety concerns for both hunters and narwhal, because in the haste to catch a narwhal, hunters may take longer shots, increasing the risk that they will not be able to retrieve the narwhal, or it will escape but sustain injuries. As well, several boats may pursue and shoot at the same group of narwhal simultaneously, increasing the risk of boat collisions or that hunters may be injured by wayward shots. Hunting involves less planning and observation than in the past, which increases the chances that narwhal will be lost compared to traditional methods of waiting until the hunter is certain of success. The driving force behind these changes was consistently identified as the introduction of the community quota system. Because each community has a specific number of tags for the season, hunters grow concerned about meeting their needs before the tags are used up, and so as soon as tags are available, hunters begin hunting, rather than waiting for ideal conditions. This creates more competitive conditions for hunting than existed prior to the introduction of the quota system. One



respondent pointed out that due to this rushed approach, the timing of traditional winter preparation activities has been altered. Prior to the introduction of the quota system, families were able to plan for the winter over a longer period of time, knowing that they would be able to hunt narwhal whenever they needed to until the sea ice returned in the fall. Narwhal hunting was one of several activities simultaneously undertaken during the summer to prepare for winter. With the introduction of the quota system and shift to a more rushed hunting season, narwhal are the main priority from the time when the tags become available until they are all gone, thus changing the traditional patterns of seasonal activities.

The competitive atmosphere is enhanced by the increasing numbers of hunters participating in the hunt. Several respondents pointed out that there are more hunters targeting narwhal than in the past, some of which have very little experience with narwhal hunting, compromising the safety of both the species and other hunters. They attributed this change to population growth in Nauyasat, as well as new hunters coming to hunt in the Repulse Bay area from other Nunavut communities that traditionally have not hunted narwhal, who are not familiar with the IQ values and practices associated with narwhal harvesting. These comments were linked to concerns about the monetization of hunting activities, as the motivation for hunting has shifted from food provision to income provision. This is partly an outcome of the lifestyle changes that have taken place in Nunavut communities since settled communities were first established in the 1950s, but one respondent pointed out that this shift in objective changes the attitude towards hunting and suggested that animals were not respected in the same way by hunters who were motivated by money rather than by feeding their families and the community directly. Another respondent echoed concerns over the loss of traditional values in hunting by commenting on the shift from a value system informed by IQ, which emphasizes the human-environment relationship, to a Christian belief system which conceives of this relationship very differently following the legacy of the residential school system in Canada.

Many respondents were eager to convey that despite the changes they discussed, the central components of IQ “will never change.” These comments focussed on the IQ values that are demonstrated through hunting, namely, practices about sharing maktaaq with other members in the community, cooperatively distributing the products of the hunt, and sharing hunting knowledge through families and

between experienced and new hunters. However, regarding changes to the ‘take only what you need’ approach that was identified as a fundamental component of traditional decision-making, several respondents expressed concerns that the quota system has pervasively changed the mentality around hunting to be focused on more individualistic concerns such as maximizing the catch and ensuring that a hunter gets his or her share before all the tags for the season have been used.

*Table 2. Reported Changes in Hunting Practices and Values*

<b>Traditional Practice</b>	<b>Present Usage</b>	<b>Change</b>	<b>Reason for Change</b>
Younger narwhal preferred	Less important	Older narwhal targeted because larger and have longer tusk	<ul style="list-style-type: none"> <li>• Monetization of tusk</li> <li>• Need to maximize product per tag</li> </ul>
Narwhal harpooned (with float), then shot	Experienced hunters; inexperienced hunters sometimes do not	New communities without traditional experience are involved in hunting	<ul style="list-style-type: none"> <li>• Arviq HTO promotes this practice</li> <li>• Population growth</li> <li>• Quota system allows inland and traditionally non-narwhal hunting communities to hunt narwhal</li> </ul>
Meat used for dog food	Not used	Dog teams no longer common	<ul style="list-style-type: none"> <li>• Shift to motorized boats, snowmobiles</li> </ul>
Carcass dried, for winter dog food	Not used	Dog teams no longer common	<ul style="list-style-type: none"> <li>• Shift to motorized boats, snowmobiles</li> </ul>
Maktaaq (blubber) used for food	Still important	N/A	N/A
Maktaaq shared among members of community	Still important	N/A	N/A
Waiting for narwhal to come near	Not from boats, but from floe edge	Narwhal pursued	<ul style="list-style-type: none"> <li>• Rapid hunting season due to tag system</li> <li>• Quota system makes hunt more competitive</li> </ul>
Limited ammunition used, vulnerable parts targeted	Sometimes	Faster pace of hunting requires different strategies	<ul style="list-style-type: none"> <li>• Quota system</li> </ul>
Co-operative effort to harvest, retrieve narwhal	Sometimes	More competition between hunters, typically smaller groups co-operating	<ul style="list-style-type: none"> <li>• Faster pace due to quota system</li> </ul>
Hunting continues until needs are met (for winter provisions, etc.)	Not used	Hunting continues until tags are used up	<ul style="list-style-type: none"> <li>• Quota system</li> </ul>
Use of orcas in hunting strategy (orcas drive narwhal close to shore)	Sometimes	Hunting mainly takes place from boats, not along shoreline	<ul style="list-style-type: none"> <li>• Quota system</li> </ul>
Narwhal not prioritized	No longer true	When narwhal are available, they are the focus	<ul style="list-style-type: none"> <li>• Quota system</li> <li>• Seal pelts not as valuable as they used to be</li> </ul>
Hunting knowledge passed down orally through families	Still important	Opportunities for learning have changed due to faster pace of hunt	<ul style="list-style-type: none"> <li>• Introduction of tag system</li> <li>• Changing technologies</li> </ul>
Hunting knowledge shared between hunters	Still important	Certain aspects of hunt are less cooperative	<ul style="list-style-type: none"> <li>• Quota system has made hunt more competitive</li> </ul>

Skills learned through experience	Still important	N/A	<ul style="list-style-type: none"> <li>• HTO requires hunters have observed three hunts before striking a narwhal</li> </ul>
Decision-making based on hierarchy and respect for elders, experienced hunters	Still important	Not followed to the same extent as previously	Roles for decision-making have changed; hunters responsible for decisions while out hunting but higher level management controls much of the decision-making

One respondent also raised the issue of how colonialism has altered the way that IQ is expressed and mobilized, even at the scale of individual hunters or within families. This respondent referenced the impact of the residential school system on his family and explained that the legacy of this experience has multiple impacts on the use of IQ. The main effect identified was that individuals who experienced residential schools may be less likely to share or express their knowledge of IQ because it is associated with the traumas of being forced to suppress or reject their Inuit identities. As well, this respondent commented that the residential school system and subsequent spread of Christian beliefs and values among Inuit society has undermined IQ values associated with the human-environment relationship and thus altered how IQ is used in decision-making by individual hunters and at the community scale.

### ***c. Ongoing Issues and Options for the Future***

Respondents spoke of several ongoing issues in the field of narwhal management and provided suggestions as to how the management system could be improved to address them, based on their experience of the narwhal management system from a community-level perspective. The main concern expressed by respondents was the effect of the quota system on narwhal hunting. Additional comments included: a need to establish more open communication with DFO, especially regarding information and knowledge sharing; the possible benefits of establishing a community-based management system coordinated through the HTO; and questioning whether it could be feasible to establish a management system based on IQ given the existing system and its effect on hunting behaviour.

In almost every interview, respondents spoke at length about the positive and negative impacts of the quota system. The “rushed” mentality and faster pace of hunting that has emerged in the past few decades were attributed to the quota system, because by limiting the number of narwhal available each season,

hunters are motivated by a desire to catch their share of the quota before the tags are used up by other hunters, and they no longer have the flexibility to assess their needs and hunt accordingly over the course of the entire season. As well, the desire to maximize each tag leads to waste. One respondent recounted a story about catching a young narwhal and being pressured by other hunters to throw it away because they did not want to waste a tag on an animal with a small tusk and less maktaaq. Some respondents also pointed out that meeting the quota has become one of the main objectives of hunting, regardless of the needs of the community, because hunters are concerned that the quota will be lowered if it is not used fully each year, which compromises the use of IQ values in decision-making at the local level. Several respondents also connected this to a change in hunting mentality from “take only what you need” toward maximizing catch, which could lead to overharvesting. The influx of new and inexperienced hunters into local narwhal harvesting was also linked to the quota system by some respondents, who explained that under the quota system, communities that have not traditionally hunted narwhal are still allocated a certain number of tags. Hunters from these communities will travel to areas where narwhal are abundant, such as Repulse Bay, and may interfere with the hunting activities of experienced hunters from Naujaat. Respondents suggested that there could be an opportunity to educate hunters who come to Naujaat to hunt narwhal, but the community would need support to develop and enforce such a program. The rushed pace of hunting that has emerged following the implementation of the quota system also inhibits opportunities for knowledge sharing and educating younger and less experienced hunters about traditional hunting practices and values.

Most respondents also identified poor communication with DFO managers as an ongoing problem. Respondents with experience in local-level management commented that they never saw the results of DFO narwhal studies, such as aerial population surveys, or had a sense that IQ was being used to inform DFO-level management decisions. DFO has no presence in the community, and one respondent suggested that community members would have a more positive impression of DFO’s decision-making if they interacted with DFO and witnessed their representatives interacting with community members, which would enable local stakeholders to share their knowledge with DFO managers. Under the current system,

locals see a disconnect between the decisions that are passed down from DFO and the actual conditions of narwhal resources. In some cases, the annual quota is lowered and then hunters see more narwhal than usual and are not provided with any information as to how the quota decision was made. When DFO is present in the community, it is usually to conduct aerial surveys of the area to gather data about narwhal population size and distribution. Respondents commented that the community is never consulted by DFO about when these studies should be timed to ensure that conditions are ideal. Aerial surveys require that ice conditions and weather both cooperate, and that the population is in the study area at the time of the survey. One respondent pointed out that local residents have an understanding of these factors and could assist DFO in determining when to carry out surveys, but that DFO has never taken advantage of this knowledge. This respondent also pointed out that when local people have concerns with narwhal management, they know how to contact the HTO to express their views, but they are not aware of how to bring such concerns forward to DFO. It was suggested that the relationship with DFO should involve both parties learning from and respecting each other in order to enable knowledge-sharing and educating DFO staff about IQ methods.

One component of the communication issue was identified as a disconnection between perceived problems relating to narwhal and government responses. Respondents voiced frustration about the introduction of government management stemming from the perception that prior to government management, there were no concerns about the declines in the narwhal population. It was pointed out that Inuit harvesting practices under IQ were not responsible for reductions in narwhal populations, and so the government was not justified in removing Inuit control over hunting in order to address concerns about declining populations.

Another recurring issue identified by respondents was the challenges in bridging Western knowledge and IQ, especially regarding knowledge transmission. Because IQ is shared orally rather than documented, knowledge sharing with DFO can be problematic. Respondents pointed out that IQ is learned through experience, and suggested that if DFO managers wish to draw on IQ in decision-making, they need to spend time with hunters and experiencing the hunt first-hand. If documentation of IQ is

required, DFO representatives could then document their experiences following the experiential learning component. One respondent made the insightful point that the language used for resource management decision-making limits the extent to which IQ can be used. Inuktitut is the language of IQ, but the existing management system is derived from a Western paradigm of resource management which has emerged (in Canada) primarily through the use of the English language. Inuit are typically required to translate concepts into English in order to communicate knowledge obtained through IQ, a language that has evolved to express an entirely different worldview. This skews the way that Inuit knowledge is understood and thus how it is used in management.

Most respondents suggested that management would be improved if local knowledge was used in management decision-making; 'improved' meaning that local stakeholders would be better able to participate in decision-making and thus utilize their knowledge of the resource (IQ) and meet their needs for hunting more effectively than the present system. The NWMB was identified as having a helpful role in advocating for Inuit interests, including those of specific communities, but one respondent with wildlife management experience explained that at times the community still finds itself fighting for input on management issues, including quota decisions. Many expressed interest establishing community-based management directed by the HTO; or creating a power-sharing system where the HTO has a greater share of control over particular management decisions, in order to facilitate a more collaborative relationship between the community, DFO, and other higher level management stakeholders and enable the use of IQ in decision-making. Respondents explained that providing communities with greater power over decision-making would enable members of the community to utilize their specialized knowledge of local conditions (IQ) to inform decision-making. Some respondents also pointed out that the HTO's leadership during Naujaat's past experience with community-based management led to positive outcomes, such as the development of locally-based narwhal harvesting policies informed by IQ values which are still in use.

Some respondents pointed out that even under the current management regime, there are opportunities to address some of the ongoing issues with narwhal harvesting and in some cases the HTO could take a

stronger role in accessing these opportunities. One respondent proposed that although narwhal meat is not used in Naujaat because of the decline of the use of dog teams, other communities still use narwhal meat either as dog food or for human consumption, and there could be an opportunity for exchanging narwhal products between communities to reduce waste. Another respondent suggested that narwhal skeletons could be sold to museums and universities rather than being left on the land, generating additional income to support the community and reducing waste. He was aware of the community having been approached with such offers but commented that the HTO had not followed up on the opportunity.

A common concern shared by several respondents, especially elders and older hunters, was a management system based on IQ may not be effective in the modern context of narwhal harvesting, due to increased population, changes in values, changes in hunting objectives (e.g. profit in addition to sustenance), new technologies, new mentalities towards hunting that have developed in response to the quota system, and changes in the distribution and behaviour of narwhal. As a result of these changes, government-based management was perceived to provide necessary services. It was pointed out that the existing bureaucratic structures (HTO and regional wildlife organizations, NWMB, DFO, etc.) for wildlife management were not conducive to IQ-based decision-making practices, which have not traditionally involved similar formal groups. As well, there were concerns raised that shifting control from DFO to the local level in order to mobilize IQ would inhibit the effective enforcement of controls to prevent overharvesting. Respondents tended to view DFO as having the strong enforcement capacity needed to protect the narwhal population, compared to local-level managers. The value of DFO's scientific knowledge of the population and associated management practices was also identified as a valuable component of the management system, which may be lost if decision-making were concentrated within the community. Some respondents also recalled the negative aspects of their past experience with community-based management, specifically how the number of narwhal hunted, as well as those struck and lost, was significantly higher than under the quota system, and were worried that shifting management decision-making power to the community would lead to the same result once again, because values have shifted away from the "take only what you need" mentality. Respondents also frequently

stated that they did not anticipate that DFO would be willing to create a power-sharing relationship and felt it was unrealistic to speculate about community-based management. Despite these criticisms, most respondents felt that the HTO could play a stronger role in management decision-making, such as through determining the quota themselves as opposed to DFO, and in passing on hunting knowledge and creating hunter education programs.

## 9. Discussion

The interview results suggest that government regulation of narwhal harvesting has ignored and undermined IQ in various ways. The introduction of a quota-based system has transformed harvesting by creating more competitive conditions for hunting, leading to a change in values and limiting opportunities for experiential knowledge sharing with new and younger hunters by increasing the pace of hunting. The increased pace also heightens the safety hazards posed to hunters and the risk that narwhal will be struck and lost rather than retrieved, which has negative implications for the narwhal population and sustainability of harvest levels. As well, the objective of catching larger narwhal or those with the largest tusks, which results from the limits imposed by the quota system, may negatively impact narwhal populations; removing the most 'fit' males from pods may reduce genetic diversity and eventually lead to a population of less healthy narwhal.<sup>120</sup> By disrupting the traditional pace and order of winter preparation activities, the quota system also seems to disempower Inuit in the ability to use IQ in the decision-making about harvesting at an individual level. The frustrations with these particular impacts of the quota system expressed by most respondents indicate that the current system for narwhal management not only excludes IQ, but also undermines IQ expression and transmission. When IQ is undermined by the existing management system, IQ holders and Inuit in the community are less able to adapt the manner in which IQ is expressed to suit the changing context and changing objectives for narwhal harvesting.

The influx of hunters from non-traditional hunting communities as a result of the quota system also alters how IQ is used at the community level. Prior to government regulation, narwhal harvests were

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<sup>120</sup> McLeish, *Narwhals: Arctic Whales in a Melting World*.



limited by who had spatial access to hunting areas; the quota-based management approach fails to draw on this aspect of IQ. While it may not be feasible to restrict narwhal hunting to communities that have access to narwhal harvesting areas, this does indicate that there may be management controls other than quotas that could effectively control hunting effort while also drawing on IQ principles.

The quota system does play a role in preventing overharvesting for the short term by limiting harvest levels, and it is evident that collectively, the main concern of most stakeholders in narwhal management wish to protect the narwhal population. However, given the impact of the quota system on the use of IQ, it is likely that alternative management approaches which protect the population but also allow for the expression and mobilization of IQ are possible, especially if the knowledge of Inuit as the primary resource users is harnessed within decision-making by empowering local-level stakeholders. The goal of the quota system and Inuit hunters is to conserve the species; given this common ground, a more collaborative management system is attainable.

The eagerness most interview respondents expressed in conveying that IQ “will never change” may be more reflective of a nostalgia for particular cultural values rather than a perspective on wildlife management practices, but it is indicative of the importance of the values and practices associated with IQ as an integral component of Inuit cultural identities. Certain practices which continue to influence hunting activities, such as the hierarchy of decision-making within hunting groups, speaks to the continued relevance, importance, and utility of the IQ system.

References to poor communication with DFO indicate a lack of empowerment of Inuit within the management system. Due to poor communication, Inuit community stakeholders are not well-informed about the rationale for DFO’s management decisions, although these decisions directly impact Inuit livelihoods, and this inhibits the ability of Inuit within communities to engage with the management process. Lack of engagement prevents the mobilization and communication of IQ from the scale of individual hunters or the local hunting community within the overall decision-making structure. Poor communication also contributes to a lack of trust between Inuit hunters and DFO-level management, which impedes knowledge-sharing opportunities between the two groups and limits the effectiveness of

management. The DFO questionnaires distributed by the HTO suggest that there is some interest from DFO in engaging with the hunting community at a local level, but based on the views expressed by respondents, this approach is evidently ineffective.

The comments on the language used for management indicates a significant dimension to questions about the empowerment of Inuit and how IQ can be mobilized in narwhal management decision-making. Inuktitut is part of the IQ system as the language in which the knowledge system is expressed. In order to adequately convey IQ knowledge, it must be expressed in its original form. It is unlikely that the existing management system will adopt Inuktitut as the language for decision-making; however, empowering Inuit to hold greater decision-making power at a lower level in the management system would provide an opportunity to use Inuktitut in the decision-making process. As well, the experiential nature of IQ requires that those who intend to use IQ have learned through experience. In order to establish a management system informed by IQ, decision-makers need to experience the ways in which IQ is gathered and expressed, by collaborating more closely with knowledge-holders and sharing experiences interacting with the resource. In the current system, Inuit attempting to express knowledge gained through IQ are at a disadvantage because they must translate this knowledge into languages that reflect an entirely different worldview.

Changes in the technologies used in narwhal harvesting, population growth, and environmental changes all have altered the context for the use of IQ, independently from the influence of the government narwhal regulation system; and a monetary income has become a necessity in addition to hunting for sustenance. Empowering Inuit in narwhal management would create opportunities to utilize IQ in responding to these changes in ways that are culturally acceptable and allow Inuit to determine management objectives which will meet their needs. This could have the added benefit of using management to strengthen the IQ system within a changing context, rather than undermining it as the current system does.

The interviews revealed a clear desire for more control over harvesting decision-making at the community level, with the continued support of current co-management partners. A collaborative system

which allocates more power to the community level would build trust between the parties involved, and create the conditions for knowledge-sharing. DFO's aerial surveys represent an ideal opportunity to begin to engage the community and work towards greater collaboration. Coupled with empowerment of Inuit stakeholders through providing more power to community-based managers, this would address the poor communication, lack of trust, and lack of engagement that were identified as key problems in the interviews. The continuing support of higher level management would also provide important enforcement abilities and could help to strengthen the system against potential pressures from international anti-whaling interests.

## **10. Recommendations**

The objectives listed in the narwhal IFMP (see Table 1) echo many of the issues raised in the course of this research, which suggests changes to the existing system are possible. To establish a narwhal management system which enables the mobilization of IQ through the empowerment of Inuit, the following recommendations are proposed:

(1) *Increase collaboration between DFO and community stakeholders.*

This could begin with including communities in planning aerial surveys, and build to creating more information sharing between Inuit hunters and other community-level stakeholders and higher-level managers, including DFO. This is an important step in building trust between individuals at various levels of management in order to enable knowledge sharing.

(2) *Establish equitable partnerships for sharing (i) knowledge and (ii) control of decision-making between high level management and community-based stakeholders.*

The existing management system favours management approaches which do not emerge from the IQ system. More power over decision-making should be provided to community-based managers, to enable the mobilization of locally-held IQ and empower Inuit stakeholders, to reduce the impact of bureaucratic structures and Western management approaches on efforts to integrate IQ into the management process.

*(3) Create improved processes for the education of DFO and other high level managers about Inuit experiences of narwhal harvesting.*

This accounts for the experiential nature of IQ and could involve higher level managers accompanying hunters on hunting excursions in order to learn about hunting practices and gain an appreciation for hunting conditions and how Inuit hunters utilize IQ in hunting.

*(4) Investigate the feasibility of phasing out quota system.*

Given the negative impact of the quota system on the use of IQ and hunting activities overall, it is recommended that alternative approaches, such as effort-based controls, to managing narwhal harvesting be investigated. Because hunters are accustomed to the quota system and have adapted their hunting strategies to suit this system, it is recommended that a transition to a new management system occur in iterative phases, which allows for the development of new strategies to respond to the results of the transition, and account for ongoing changes affecting narwhal harvesting such as population increase and climate change impacts.

## **11. Further Questions**

Future areas of inquiry stemming from this research could address the relationship between the narwhal case study and broader wildlife management issues in Nunavut, and investigate the experiences of hunters in other Nunavut communities to understand differences and trends across the territory. As Nunavut experiences rapid population growth, hunting pressures on many wildlife species are increasing, reinforcing the need to establish effective and equitable fisheries and wildlife management systems.

Disconnections between higher level managers and resource users are not unique to indigenous wildlife management issues; this research could also be applicable to non-indigenous fisheries management cases from other regions and compared to provide a broader representation of fisheries management and community empowerment issues.

## 12. Conclusion

Effective resource management must account for the needs and objectives of the primary resource users, including utilizing their knowledge as a basis for decision-making. In the case of narwhal management in Nunavut, mobilizing IQ in management decision-making requires that Inuit are empowered at the local level to make decisions that reflect their experiential knowledge of the resource. The current narwhal management system fails to empower Inuit and to adequately integrate IQ; some components of the system instead serve to undermine IQ values and practices, and it is plagued by ineffective and insufficient communication and collaboration between community-based stakeholders and high level managers. The final decision-making power rests with federal government, limiting the ability of Inuit to effect change and take responsibility for the resources that sustain their livelihoods. An improved management system would concentrate more power with community-level managers to enable decision-making to draw on IQ and to better reflect the needs and objectives of Inuit, in keeping with commitments from both the territorial and federal levels of government to draw on traditional knowledge in decision-making and management. The findings of this case study in Naujaat have significance for other species and other communities in Nunavut and can inform the development of management systems which empower, rather than marginalize, indigenous knowledge holders.

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