

**Managing Nature, Producing Cultures:
Inuit Participation, Science and Policy in Wildlife
Governance in the Nunavut Territory, Canada**

Submitted by

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Abstract

<i>Thesis title:</i>	Managing Nature, Producing Cultures: Inuit Participation, Science and Policy in Wildlife Governance in the Nunavut Territory, Canada
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In this thesis, a critical analysis is proposed of the relationships between Inuit participation, science and policy in wildlife governance in the Nunavut Territory, Canada. This analysis situates the emergence of a participatory regime for the governance of wildlife in Nunavut, explores its performance and examines the relations between the ways in which wildlife governance arrangements are currently represented in policy and how they are played out in practice across the territory.

To pursue these objectives, this research draws upon a number of theoretical perspectives and methodological strategies poised at a crossroads between environmental geography, science and technology studies, political ecology and ecological anthropology. It combines participant observation, semi-directed interviews and literature-based searches with approaches to the study of actor-networks, hybrid forums and scientific practices associated with Latour and Callon, as well as with Foucauldian and post-Foucauldian analyses of power, governmentality and subjectivity.

This analysis suggests that the overall rationale within which wildlife governance operates in Nunavut remains largely based on a scientific and bureaucratic framework of resource management that poses significant barriers to the meaningful inclusion of Inuit views. In spite of their participation in wildlife governance through a range of institutional arrangements, consultation practices and research initiatives, the Inuit of Nunavut remain critical of the power relations embedded within existing schemes, where significant decision-making authority remains under the control of the territorial (or federal) government, and where asymmetries persist with regard to the capacity of various actors to produce and mediate their claims. In addition, while the use of Inuit knowledge, or *Inuit Qaujimaqatunqangit*, in wildlife governance in Nunavut has produced some collaborative research and management endeavours, it has also crystallised a divide between 'Inuit' and 'scientific' knowledge, generated unresolved conflicts, fuelled mistrust among wildlife co-management partners and led to an overall limited inclusion of Inuit observations, values and beliefs in decision-making.

À mes parents,
Hélène et Richard.

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List of acronyms

ACIA	Arctic Climate Impact Assessment
ACPB	Agreement on the Conservation of Polar Bears
ANT	Actor-network theory
CAFF	Program for the Conservation of Arctic Flora and Fauna
CBC	Canadian Broadcasting Corporation
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CSWG	Circumpolar Seabird Working Group
CWS	Canadian Wildlife Service
EBFRS	East Bay field research site
FB	Foxe Basin
FN	Field notes
GC	Government of Canada
GN	Government of Nunavut
GN DoE	Department of Environment, Government of Nunavut
GNWT	Government of the Northwest Territories
HTA	Hunters and Trappers Association
HTO	Hunters and Trappers Organization
IDREC	Social Sciences Interdivisional Research Ethics Committee
IPCC	International Panel on Climate Change
IQ	<i>Inuit Qaujimagatuqangit</i>
ITC	Inuit Tapirisat of Canada
ITK	Inuit Tapiriit Kanatami
IUCN	International Union for Conservation of Nature

IUCN/SCC	International Union for Conservation of Nature Species Survival Commission
JBNQNHRC	James Bay and Northern Quebec Native Harvesting Research Committee
KHTO	Kangiqliniq Hunters and Trappers Organization
KIA	Kivalliq Inuit Association
KWB	Kivalliq Wildlife Board
MBC	Migratory Birds Convention
MBCA	Migratory Birds Convention Act
MOU	Memorandum of Understanding
NIRB	Nunavut Impact Review Board
NIWS	Nunavut Inuit Wildlife Secretariat
NLCA	Nunavut Land Claims Agreement
NRI	Nunavut Research Institute
NSA	Nunavut Settlement Area
NTI	Nunavut Tunngavik Incorporated
NWT	Northwest Territories
NWHS	Nunavut Wildlife Harvest Study
NWMB	Nunavut Wildlife Management Board
PBAC	Polar Bear Administrative Committee
PBTC	Polar Bear Technical Committee
PBSG	Polar Bear Specialist Group
RCMP	Royal Canadian Mounted Police
RFID	Radio frequency identification
RWO	Regional Wildlife Organization
SC	Statistics Canada

STS	Science and technology studies
TEK	Traditional ecological knowledge
TFN	Tungavik Federation of Nunavut
USFWS	United States Fish and Wildlife Service
WHB	Western Hudson Bay

Note on language and spelling

The terminology I employ throughout this thesis reflects northern conventions. This thesis subscribes to English naming conventions for place names (e.g. it uses ‘Igloolik’ rather than ‘Iglulik’). Communities that have changed names, such as Iqaluit and Kimmirut, are referred to by their current rather than by their former appellations of Frobisher Bay and Lake Harbour. For the sake of precision, references to people are given in Inuktitut. ‘Inuit’ is used consistently as the plural of ‘Inuk’. The terms ‘Nunavummiut’ and ‘Iglulingmiut’ refer to the residents of the Nunavut Territory and the community of Igloolik respectively, and include both Inuit and non-Inuit. Most proper names appear as they are spelled by the person named or as they appear in published sources. All other Inuktitut words are italicised and are spelled according to the Inuit Cultural Institute Standard Orthography. Their meanings are explained in the text or in footnotes. Direct quotations from the interview material, particularly from interviews conducted in Inuktitut and simultaneously translated by interpreters, have sometimes been corrected for style and grammar. Where relevant, square brackets indicate editorial changes.

faut-il, en somme, convenir
que ces grandes bêtes de large
savent mieux que personne
où commence la mer et où finit le fleuve?
faut-il donner raison aux baleines voyageuses?
faut-il endosser les doutances géographes?
faut-il préférer l'indécision
des marsouins indigènes?
faut-il choisir l'audace des loup-marins voyageurs?

ne pourrait-on pas, au demeurant,
remettre tout simplement
à l'arbitrage des oiseaux
le soin de nous instruire des estuaires?

– Pierre Perrault, *Irréconciliable désir de fleuve*.

Chapter 1. Introduction

1.1. Context and objectives

In June 1993, following decades of negotiations, the Canadian Parliament enacted two pieces of legislation: the *Nunavut Land Claims Agreement Act* and the *Nunavut Act*, which led to the creation of the Nunavut Territory and Government six years later. Taken together, these two measures constitute the terms of a social contract between the Inuit¹ of Nunavut and the people and Government of Canada.

On 1 April 2009, Canada's newest territory celebrated its 10th anniversary. For the occasion, Enoapik Sageatok, a respected elder from Iqaluit (the territory's capital), was asked to light the *qulliq*² during a ceremony held at the Nunavut Legislative Assembly. As she tended the open flame, she explained:

The *qulliq* was central to our traditional lifestyles prior to Inuit being moved off the land when we, Inuit, were responsible for our own governance. [...] During that era, *qullit* required oil, which we had to render from the blubber as young girls. We didn't have any assistance from the outside world, other than what we were able to glean from the animals we harvested [...]. Those of us from the older generations relied completely on the light and heat of the *qulliq* and without the animals to provide all of our necessities, our ancestors couldn't have made us. [...] I urge the [members of the Legislative Assembly] not to forget their constituents. We have expectations of the government when they tell us that they will take care of us (GN 2009: 1-2).

Pondering the substantial livelihood changes that had occurred throughout her lifetime, the elder reflected upon a history in which territorial and federal government institutions, policies, rationalities and procedures had come to play prominent roles in organising the conduct of life in the eastern Canadian Arctic. In doing so, she reminded the elected members of the assembly not only of their roles in tackling the challenges facing the country's largest

¹ The word Inuit means "the people" and is applied generally across the Arctic to refer to Eskimo-speaking peoples. Approximately 155,000 Inuit live in a variety of Arctic environments today (Nuttall 2005).

² Inuktitut word designating a fat-burning stone lamp (plur.: *qullit*).

jurisdiction,³ but also in attending to the cultural, economic, political and environmental needs of the majority Aboriginal population inhabiting a territory initially carved by Inuit demands for self-determination (Wilson 2002).

While Nunavut was created as a ‘public’ government⁴ without the exclusionary elements of the Aboriginal self-government regimes emerging elsewhere in Canada (Abele et al. 2009), the initial vision for a Nunavut homeland entailed the establishment of a government operating according to Inuit ways and values; its organisation and culture was expected to reflect the territory’s unique geography and culture (Dahl et al. 2000; Hicks 1999; Hicks and White 2000). Given the fundamental role that animals have occupied in the organisation of Inuit subsistence activities and cultural ecology, an important dimension of the arrangements formally instituted through the Nunavut Land Claims Agreement (NLCA) relates to the politics of wildlife within the Nunavut Settlement Area.

In fact, the NLCA contains provisions that encourage Inuit participation in wildlife governance by acknowledging “the need for an effective role for Inuit in all aspects of wildlife management, including research” (GC 1993). It also stresses the “need for an effective system for wildlife management that complements Inuit harvesting rights and priorities, and recognizes Inuit systems of wildlife management that contribute to the conservation of wildlife and protection of wildlife habitat” (GC 1993). Furthermore, the Agreement lays foundations for the creation of a wildlife co-management regime that seeks input from both Inuit and scientific knowledge in a decision-making process designed to

³ The Nunavut Territory covers more than 2.1 million square kilometres, and is the largest territorial unit in the Canadian federation (Appendix 11.1., Fig. 11.1.; Fig. 4.2.). Nunavut has one city and twenty-six hamlets. Its population reached 29,474 in 2006 (SC 2006).

⁴ Rather than adhering to an ‘Aboriginal self-government’ model under which only Aboriginal people would participate in government or be eligible for its programmes and services, Nunavut (meaning “our land” in Inuktitut) has a *public government* which operates within the principles of Canadian parliamentary democracy. All Nunavummiut are entitled to vote, run for office and participate in public affairs. The government’s jurisdiction and activities extend to both Inuit and non-Inuit residents. According to Hicks and White, Nunavut was designed both to “accommodate Inuit self-determination aspirations yet fit comfortably within established traditions of mainstream Canadian governance” (Hicks and White 2000: 31). However, since about 85 per cent of Nunavut’s population is Inuit, the Nunavut public government could be interpreted as a *de facto* Inuit government.

ensure the protection of wildlife and wildlife habitat within the Nunavut Settlement Area (NSA). The invention of a hybrid environmental governance regime in Nunavut (i.e. one which attempts to bring into play different cultural perspectives and knowledge practices in research and decision-making) has thus opened up new spaces for dialogue among multiple actors. However, to date, *whether* and *how* such opportunities have been seized remains to be comprehensively assessed.

What social, cultural and environmental rationales and objectives has the collaborative governance of animals in the Nunavut Territory implied? What are the means through which this project has been pursued? As the occasional burning of the *qulliq* in the Nunavut Legislative Assembly exemplifies, rhetorical and symbolic commitments to the inclusion of Inuit ways and values in Nunavut governance have been made. However, in the context of advances in the field of wildlife biology and the progressive scientisation of wildlife management practices in the Canadian Arctic, what roles have Inuit understanding of and relations with the biophysical world concretely played in the business of governing animals living under the midnight sun? Indeed, recent academic literature has identified challenges to a constructive and collaborative engagement between Aboriginal resource users, wildlife biologists and managers involved in the process of governing wildlife in northern Canada, given unequal power relations among these actors, as well as differences in their views and assumptions (Ellis 2005; Nadasdy 2003a, 2003b; Peters 2003; Stevenson 2006; White 2006a).

At a time of heightened concerns over the socio-ecological impacts of human development and anthropogenic climate change in the Arctic region (ACIA 2004), the dynamics pertaining to the mobilisation of an increasingly complex actor-network⁵ in northern wildlife conservation initiatives clearly warrant further scrutiny. This thesis

⁵ This term will be further defined in Chapter 2.

contributes to such an effort by presenting a critical analysis of the relationships between Inuit participation, science and policy in wildlife governance in Nunavut. Its aims are:

- i. to situate the emergence of a participatory wildlife governance regime in the Nunavut Territory with relation to the history of wildlife management and the movement towards recognising Inuit rights in Canada;
- ii. to explore the modalities of its performance by analysing the objects, subjectivities, knowledge practices, dialogical procedures and power relations that it has brought into being;
- iii. to assess the dynamics pertaining to the deployment of hybrid and dialogical spaces of wildlife governance by analysing the production and mediation of 'Inuit' and 'scientific' knowledge through such spaces;
- iv. to compare the parallels and disjunctures that exist between the ways in which current wildlife governance arrangements in Nunavut are represented in policy and how they are played out in practice.

The first goal of this thesis is to contextualise and analyse the emergence of the discourse and procedures of participatory wildlife governance in Nunavut. This is achieved by painting a socio-historical landscape characterised by political negotiations and Inuit struggles for authority, autonomy and legitimacy as a result of their colonisation by the Canadian state (Hicks and White 2000; Tully 2000). In doing so, I describe how, for the greater part of Inuit history, the harvest and use of wildlife species were self-regulated. I then depict the historical process through which federal and territorial authorities have created 'wildlife' as a domain that is fit for modern forms of regulation in northern Canada, and how they have increasingly employed scientific knowledge as a tool to legitimise their action. I illustrate how Inuit demands for political autonomy have led to a general trend towards a shift from early top-down, science-based wildlife management practices towards a situation in which Aboriginal

perspectives are increasingly taken into account and where, under the Nunavut Land Claims Agreement, Inuit are provided with the right to participate in decision-making concerning wildlife harvesting, research and management (Chapter 4).

After setting such a scene, I proceed to analyse the modalities and rationalities pertaining to the contemporary performance of wildlife governance in the Nunavut Territory (Chapters 5 to 8). To further this second aim, I describe the objects, subjectivities, knowledge practices, dialogical procedures and power relations that governing wildlife has produced in the eastern Canadian Arctic. In doing so, I argue that the configuration of Inuit participation in Nunavut governance has led to an increased politicisation of ‘scientific’ and ‘Inuit’ knowledge as dichotomous or polarised categories (Bravo 2006), at the same time as Inuit demands have arisen for epistemic equivalence between the two.

The third objective of this thesis is thus to take a closer look at the production and mediation of Inuit and scientific knowledge that occurs through the performance of governance. It investigates the ways in which different types of knowledge are constructed, identified, transformed and authorised through the formation of a political assemblage whose spatiality is constituted by complex relations between people, things and animals. This analytical approach suggests that the world of wildlife management and research in northern Canada can powerfully illuminate the contemporary shaping of relations between scientific and indigenous viewpoints and traditions, allowing one to address important questions about which strands of debate become pursued and embodied in policy at different times, which of them do not, and why this might be.

Lastly, in light of a close consideration of the relationships between Inuit participation, science and policy in wildlife governance in Nunavut, this thesis aims to contrast the ways in which current wildlife governance arrangements in Nunavut are officially portrayed in policy discourse with how they are performed in practice (Chapter 9). Along with a growing number

of critiques of wildlife co-management and participatory environmental governance in northern Canada (Nadasdy 2003a; Stevenson 2006; White 2006a), I challenge the assumption that Aboriginal participation in such processes leads seamlessly and straightforwardly to the empowerment of previously marginalised groups or to more efficient managerial practices. While indigenous groups worldwide have heralded the creation of Nunavut as a “bold political experiment [creating] the first full territory in a modern nation ever to be governed and administered by Aboriginal people” (Marecic 2000: 275), I argue that, in practice, the project of attaining meaningful Inuit participation in wildlife research and management in Nunavut has achieved mixed success to date. This thesis seeks to explain why wildlife governance has only partially fulfilled Inuit demands for self-determination and increased control over their traditional territory within the Canadian liberal-democratic state.

Chapter 2. Theory and methods

2.1. Introduction

As the previous chapter has highlighted, a central pursuit of this thesis is to offer a critical analysis of the interplay between Inuit participation, science and policy in gaining knowledge about and managing wildlife across the Nunavut Territory. To embark on such a journey, I take the concept of nature's multiplicity as a point of departure by asking how something called 'wildlife' is rendered legible and governable in Nunavut and how 'wildlife' enters history as an object of cultural, political and scientific calculation, as well as a site for emotional investment (Anderson and Braun 2008; Braun 2002; Castree and Braun 2001).

Rather than envisaging wildlife as an object over and above which politics and science happen, the analysis that follows suggests that the animals we seek to research, manage, hunt, experience or preserve do not lie external to culture, history and politics. On the contrary, they are part of a constant and plural process of meaning-making for hunters who rely on them for subsistence, scientists who dedicate their careers to understanding their ecology, and wildlife managers who devise strategies for ensuring their conservation and sustainable use. Indeed, through practices ranging from storytelling, public hearings and wildlife regulations to hunting, meat sharing, scientific sampling and mathematical modelling, animals are constantly transposed materially and semiotically into various forms such as stories, public debates, creatures in need of protection, acts and regulations, meat, gifts that reinforce social ties, scientific samples and population models that form part of the very fabric of life in the eastern Canadian Arctic (Braun and Castree 1998).

Thus, by carefully considering multiple narratives and ongoing discussions, negotiations and controversies over the meaning and status of wildlife and disputes over whose voices should be heard in the governance of animals living within Nunavut's borders,

this research aims to situate the emergence of the wildlife management regime currently in place in Nunavut within a historical context and explore its performance by analysing the subjectivities, knowledge practices, dialogical procedures and power relations that it has produced. In addition, this thesis performs a normative analysis that ultimately explores parallels and disjunctures between the ways in which current wildlife governance arrangements in Nunavut are represented in policy and how they are played out in practice.

To pursue these objectives, I draw upon a number of theoretical perspectives and methodological strategies situated at a crossroads between environmental geography, science and technology studies (STS), political ecology and ecological anthropology, and whose combination appears well suited to an understanding of the subject of my enquiries. These shall now be discussed in further detail.

2.2. Theoretical framework

2.2.1. Governance networks and governmentality

The emergence of *governance* as a critical concept in the social sciences can be traced to the search for new ways of conceptualising modes of social co-ordination amidst changing interactions between governmental and other societal actors. In the last three decades or so, the popularity of this concept as an analytical tool has risen along with a growing perception that the role of nation-states in managing nature has been transformed with relation to the increasing political and strategic influence of non-state agencies, as well as international and sub-national governmental and parastatal organisations (Plumptre and Graham 2000; Rhodes 1997; Rose 1999).⁶ Thus, while there has been considerable diversity in the ways in which *environmental governance* has been understood by scholars (Bridge and Perrault 2009;

⁶ As a result, definitions of *governance* now abound in the literature. For a discussion of existing definitions, see Bridge and Perrault (2009) and Demers (1999). Jonas and While, for instance, refer by this term to any “mode of co-ordination in which the aim is to control, guide or facilitate economic and social activities distributed across the landscape, including activities involved in transforming nature” (Jonas and While 2005: 73).

Bulkeley 2005), the term generally implies a focus on means of “authoritatively allocating resources and exercising control and co-ordination” (Rhodes 1996: 653), in which state actors are not necessarily the only or most significant participants.

Over recent years, the notion of *network* has also become an influential theoretical and methodological register across the social sciences to understand the mutual entanglement of nature, science and politics, and to conceptualise scientific and environmental governance processes more specifically (see Chivers and Evans 2009 for an overview; Goldman, Nadasdy and Turner 2011). Stemming from the domain of science and technology studies (STS), an area of inquiry that has contributed to bring the influence of nature and politics to the fore in the production of scientific knowledge, as well as to recognise the local, particular, differentiated and plural character of scientific practices (Latour 1987, 2005; Latour and Woolgar 1979; Murdoch 1997), *actor-network theory* (ANT) represents an approach that has strongly influenced scholars towards envisaging governance processes in network terms (Barry 2001; Bulkeley 2005; Bulkeley and Watson 2007; Irwin 2008; Rutland and Aylett 2008).

The notion of *actor-network* was initially developed by Bruno Latour (2005, 1999b, 1993, 1987), Michel Callon (Callon 1986) and John Law (1992b, 1999). Actor-network theory provides an approach to studying how social orderings are contingently achieved through the enlistment of human and nonhuman (e.g. animal and material) *actors* or *actants*⁷ into relationships called actor-networks. Actors or actants are major elements of actor-networks, and have been described as any element (e.g. person, animal, object) which bends space around itself, makes other elements dependent upon itself and translates their will into a language of its own (Callon and Latour 1981), and whose ability to act constitutes the outcome of relations, rather than an inherent property of certain human entities.

⁷ Throughout this thesis, the terms *actor* and *actant* are understood synonymously and used interchangeably.

Rather than presenting governance issues in terms of institutional processes and human agency alone, the study of actor-networks which are constitutive of wildlife governance practices “allows a more fluid and ‘hybridised’ exploration of the development, emergence and resolution [or irresolution] of particular problems”, without purifying or totalising discussions into such predetermined categories as ‘science’, ‘nature’ or ‘politics’ (Irwin 2008: 592).⁸ Furthermore, acknowledging the active presence of nonhuman entities through wildlife governance networks promises to sketch out a more fully materialist and posthumanist theory of politics “by opening up various possibilities for reconfiguring the political as the work of constitution or assemblage in which things [and animals] force thought, association and attachment” (Braun and Whatmore 2010: xxix). The recognition of nonhumans as governance actors also appears more attuned to an Inuit ecology of human-animal relations (see Chapter 3).

Indeed, I conceptualise *wildlife governance* as a performative and transformative process constituted by actor-networks comprised of human and nonhuman entities whose evolving relations give rise to senses of place, space, time and power relations. More specifically, it is through such actor-networks that governments, international institutions, communities, societal organisations, corporations and citizens interact, articulate their interests, exercise their rights and obligations and mediate their differences in order to control, guide or facilitate activities involved in producing and transforming animals and the biophysical world.

Contemplating wildlife governance through the analytical lens of actor-network theory does not take the state to be the centre of political power; it recognises that nonhumans play a

⁸ The underlying epistemic and ontological perspective offered by *actor-network theory* (which needs to be distinguished from the question of governance) allows the framing of research concerns through a non dualistic and anti-essentialist account of human/nonhuman relations which seeks to define a new way of thinking about society-nature-technology-animal interactions: “Actor-networks are the chains which give rise to natural and social realities, realities which can only be understood as stabilised sets of relations which allow the construction of centres and peripheries, insides and outsides, humans and nonhumans, nature and society, and so on” (Murdoch 1997: 743).

part in governance and are not merely its objects. This theoretical perspective thus allows us to shift the emphasis away from the state as a fixed and uncontested socio-territorial institution and towards an evolving constellation of relations between human and nonhuman entities involved in performing governance: this is a process implying dynamics of co-operation, but also exclusion and domination between various actors and bodies of knowledge. Since the Nunavut Territory is a relatively new political invention, displaying controversial and unstable attributes (Barry 2002), such a situation offers ample scope for exploring the art of governance-in-the-making, a process of ordering rather than an achieved political order.

Furthermore, as current dialogues between STS and geography have explored the spatial register of networks, a potential exists for environmental geographers to contribute to and clarify the different ways in which space is deployed in governance. The definition of wildlife governance presented above suggests a distinct spatiality which invites us, not to conceive *space* as a existing “independently as an unshakeable frame of reference inside which events and places would occur” (Latour 1987: 228), but, conversely, to see it as a consequence of the ways in which heterogeneous entities relate to one another (Bingham and Thrift 2000; Moseley et al. 2007; Kuby et al. 2007; Norton 2005). Relational thinking about space further leads to envisioning *scales* of governance as the provisional effects of actor-networks rather than as predetermined territorial boundaries; this in turn allows for a critical interrogation in terms of who is included and excluded from such scales (Bulkeley 2005; Macleod and Jones 2007).

The strength of such an ANT-inspired account of wildlife governance resides in a respect for the particularities and contingencies of any given historical context and, in a related way, its ability to accommodate relations and materials that do not fit within more sweeping and totalising accounts. However, as analyses guided by ANT have generally

tended to emphasise description over explanation and advocate scepticism in the face of normative judgements, such a theoretical approach has been criticised for blunting the critical edge of research, lacking a clear political element, and being reluctant to acknowledge that some human actors have “far more capacity to direct the course of socio-natural relations than do others” (Castree 2002: 141; Eden et al. 2000; Jasanoff 2004a).

Amidst these critiques, Latour (2004) has attempted to politicise ANT by setting out a ‘politics of nature’ that does not resort to the old binaries of ‘nature’ and ‘society’. He draws inspiration from Stengers’s (1997) cosmopolitics to include nonhumans and humans in collectives that give rise to new political practices, whereby those enjoined together affect one another in the co-fabrication of knowledge and those for whom experts speak are able to speak back and actively participate (Hinchliffe et al. 2005; Stengers 2005). In doing so, Latour (2004) redefines politics as the progressive composition of a good common world and offers a vision to account for an extended range of human and nonhuman actors at the science-policy interface. While his critique of ‘traditional’ representative politics (i.e. resting on a nature/society divide) is persuasive, I nonetheless find his theoretical propositions and model quite impractical for the study of wildlife governance not in the abstract, but in practice. Indeed, by studying the actor-networks involved in the governance of wildlife in Nunavut, one easily notices that biologists commonly claim to produce ‘facts from nature’ and that various human actors (such as wildlife managers, policy advisors and members of co-management boards) tend to see themselves as ‘speaking for’ wildlife and organising societal assemblies for the conservation of nature, thus embracing representative politics relying on a strong nature/society divide.

Throughout this thesis, I intend not only to *relate* the activities of particular entities in order to reveal how wildlife governance is made through actor-networks constituting Nunavut but also to *evaluate* whether such a process has attained some of the democratic objectives set

in the Nunavut Land Claims Agreement (Chapter 1). I will base this evaluation on the normative assessments performed by those directly involved in researching and managing animals across the territory, as well as on my own personal observations. I therefore suggest that an attempt be made to overcome the potential shortcomings of a descriptive approach that would rely exclusively on ANT to trace the contours of actor-networks, by drawing on the STS literature on *governmentality* to question the rationalities, power dynamics and strategies involved in governing wildlife across the territory. Initially sketched by Michel Foucault⁹ (1997, 1991, 1979), and developed by Nikolas Rose (1996; 1989; Rose et al. 2006), Mitchell Dean (1999) and others (Agrawal 2005; Barry 2001; Barry et al. 1996), governmentality provides a framework for studying how modern governments try to pursue their aims by disseminating particular forms of knowledge in order to produce a self-governing citizenry.

As an analytical perspective, governmentality is far from being merely a theory of power, authority, or even of governance. Rather, it asks particular questions of the phenomena that it seeks to understand, questions that are amenable to precise answers through empirical inquiry. Analyses of governmentality have sought to identify *political rationalities*, their conditions of formation, the principles and types of knowledge that they borrow from and generate, the practices that they consist of, as well as their contestations and alliances with other arts of governing (Rose et al. 2006). Furthermore, instead of seeing any single body (such as the state) as responsible for managing the conduct of citizens, governmentality scholars have recognised that a whole variety of authorities govern in different sites, with relation to different objectives (Dean 1999). Under such a theoretical lens, “good

⁹ The concept of *governmentality* emerged as the unifying theme of a series of lectures that Foucault gave at the *Collège de France*, late in 1978. Moved by the desire to understand how conduct can be shaped by institutions of power and the types of knowledge that they create and use, he turned his attention to the ways in which the modern state facilitates the creation of a self-regulating individual in order to maintain itself and achieve its aims (Rose et al. 2006; Rutland and Aylett 2008). In his essay on governmentality, Foucault argued that a certain mentality (that he termed ‘governmentality’) had become the common ground of all modern forms of political thought and action and was an “ensemble formed by the institutions, procedures, analyses and reflections, calculations and tactics that allow the exercise of this very specific albeit complex form of power” (Foucault 1979: 20).

governance”, then, represents “the art of managing the interactions between [a complex imbrication of men and things] in such a way that they may grow and prosper in a desired manner” (Rutland and Aylett 2008: 630). The notion of governmentality thus appears useful in examining how the Government of Nunavut has attempted to achieve its objectives by “conducting the conduct” of its citizens through the establishment of “regimes of truth” (Rose 1999: 19), and, in so doing, evaluate whether it has met its objectives in practice (Chapter 9).

However, while the notion of governmentality appears useful if we wish to explore how political institutions can achieve their policy objectives by creating resonances between the interests of the state and the interests of individual subjects, it tells us very little about how state interests emerge. As Rutland and Aylett suggest: “At issue here is both the process of forming political priorities and the role of political agency in this process, neither of which receive much attention within the framework provided by governmentality” (Rutland and Aylett 2008: 631). Foucault and many authors inspired by his work characteristically attend to the ways in which a broad array of elements synchronically interact, define, and reinforce one another, and pay less attention to diachronic relations. How do the discourses that bind these elements emerge over time? Who (or what) was involved in producing them? Critiquing Foucault, Law argues that: “[D]iscourses, so to speak, perform and instantiate themselves. There is nowhere else to go. Nothing else animates them. There is no puppeteer. Instead, they animate themselves” (1994: 107).

Although governmentality offers crucial insights for my analysis of the implementation of the Nunavut Land Claims Agreement through an array of policies, research practices, consultative mechanisms and regulations performed to govern wildlife (and people) across the Nunavut Territory, it thus appears less well suited to fulfil my interest in situating and interpreting the emergence of a participatory wildlife governance regime in the eastern

Canadian Arctic (Chapter 4). Actor-network theory, in turn, supplies a complementary set of tools to help reveal how political priorities and the capacity to achieve them emerge over time from the dispersed energies of diverse actants, both human and nonhuman. Indeed, this approach suggests that we pay due attention to the formation of actor-networks occurring through various *translations* (Latour 2005, 1987). The process of translation designates all the negotiations, intrigues, calculations, acts of persuasion and violence by which an actor or force takes (or causes to be conferred on itself) authority to speak or act on behalf of another actor or force (Callon and Latour 1981).

In sum, for the purposes of this analysis, the value of actor-network theory is that it is concerned with processes and with the role of nonhumans. However, since ANT takes scant account of different forms of governmentality (e.g. in this case, the emphasis on participation and dialogue as ways of governing relations between different groups), Foucauldian approaches help overcome this shortcoming.

Thus, by drawing on poststructuralist and postmodern literatures on both ANT and governmentality within geography and STS, I hope to yield a fuller account of governance by exploring evolving actor-networks comprised of animals, people and things, and moved by specific (and sometimes competing) rationalities that are historically situated. Given that a central aim of this thesis is to analyse the performance of the wildlife governance regime in place in Nunavut by examining the *objects, knowledge practices, subjectivities, dialogical procedures* (i.e. hybrid forums) and *power relations* that are brought into being through this process, I will now further conceptualise these notions and describe how they can productively contribute to the interrogation of the empirical case under study.

2.2.2. *Nonhuman actors*

How can the presence and agency of animals and other nonhuman entities be adequately registered in activities involved in governing animals and the biophysical world? This question poses theoretical as well as empirical challenges, which I aim to address through this study. To do so, I find useful to engage with the scholarly literature that has reflected upon the notion of *nonhuman actor* through the lenses of actor-network theory and posthumanist geography (Lorimer 2010, 2009; Whatmore 2002). In fact, such contributions are central to the understanding of ‘wildlife’ that permeates this thesis.

Rather than using reified entities that are already components of the world (such as ‘nature’, ‘society’, ‘wildlife species’, ‘Inuit knowledge’ or ‘Western science’) as starting points for analysis, the study of actor-networks focuses on the complex and controversial nature of what it is for an actor to come into existence and for things to be “made public” (Latour and Weibel 2005), uncovering and tracing the many performative connections, translations and heterogeneous relations existing among a variety of symmetrical entities (i.e. human, nonhuman, material, discursive) (Hinchliffe 2005; Latour 2005; Law and Hassard 1999). This approach suggests that we abandon the study of ‘society’ and ‘nature’ and instead envisage a *collective* made up of a multiplicity of associations between human and nonhuman actants (Latour 2004). While it should be acknowledged that these concepts are or may be essentialised by the actors themselves, the analysis of actor-networks seeks to move beyond such reified categories by illuminating the process of their formation and performance.

In doing so, it proceeds to a reimagination of social agency that, similarly to what has been achieved through much of Native American ethnography (Fienup-Riordan 1990; Nelson 1969; Wenzel 1991), recognises the creative presence of nonhumans in the fabric of life (Hinchliffe et al. 2005) and registers their part in scholarly accounts by considering “the

entire set of tasks that allows the progressive composition of a common world” (Latour 2004: 53).

The study of ‘wildlife species’ inspired by such a perspective leads to conceptualising these entities as active “relational achievement[s] spun between people and animals, plants and soils, documents and devices in heterogeneous social networks which are performed in and through multiple spaces and fluid ecologies”, rather than imagining them with relation to “an essentialist vision of pristine, bucolic, and utopian images of plants and animals in the wild” (Whatmore 2002: 14). This invites a critical reflection on how wildlife comes to be problematised: when, by whom and with what implications. Constructing such a relational view of the quasi-objects (Latour 2005) of my inquiries will enable me to depict, as Sarah Whatmore suggests, ‘topologies of wildlife’ occupying their own times and places through the tracing of the building process behind the assemblage of wildlife governance networks that span the local to the global, and which are “the result of the enrolment of a multitude of human and nonhuman actors” (Whatmore 2002: 14; Whatmore and Thorne 1998).

Through this lens, for example, the processes through which the polar bear has become a politicised figure in Nunavut and elsewhere at a time of heightened concerns with regard to anthropogenic climate change attains legibility. This approach allows us to trace how polar bears are established as actors and positioned through deliberative forums where Inuit hunters, civil servants and biologists debate the conservation of the species by mobilising knowledge claims produced through the use of scientific research methods and observations performed during hunting trips (Chapter 7).

Furthermore, such a relational view of ‘wildlife’ holds lessons for how the *agency* of actors is to be understood. As Hinchliffe, Whatmore and Murdoch explain (Hinchliffe and Whatmore 2006; Murdoch 1997; Whatmore 1999), the point is not only that agency is extended to nonhumans within hybrid collectives, as is commonly claimed by a revitalised

‘animal geography’ (Philo and Wilbert 2000; Wolch and Emel 1998). It is also the case that agency is distributed across wider networks within which entities acquire the capacity to cause effects. Hence, the capacity of any particular actor (whether human or nonhuman) can be seen to belong not to the individual actor (as humanist approaches have taught us) but to the larger collectivity out of which any actor is composed. Agency, in short, is acquired and relational, rather than inherent and individually possessed. For example, the fact that the radio collars used for conducting research on polar bears has sparked a national debate on the ethics of scientific research does not solely rest on the scientific device itself, but is rather embedded in the complex history of wildlife management and the Inuit rights movement in Canada (Chapter 6). Thus, taking nonhumans (such as animals and technologies) into account in analysing how collectives are assembled through a decentred notion of agency implies understanding these less as passive objects or effects of human actions and more as active parties in the making of sociopolitical associations (Braun and Whatmore 2010).¹⁰

This said, as one attempts to trace the agency of a wide cast of human and nonhuman entities involved in the building of wildlife governance networks, the fact that power dynamics are constitutive of this process and affect the performance of associations should not be overlooked. The analysis of actor-networks must not fail to acknowledge the structural and systemic limitations that might be placed on the becoming of particular bodies. What is required is a sensitivity to the ways in which specific humans and nonhumans, in particular circumstances, are enrolled or excluded from certain associations.

While actor-network theory appears to be an important resource for thinking about the place and agency of actors in this study, I have nonetheless found this approach most useful

¹⁰ The tenet of *general symmetry* or *symmetrical analysis*, which refers to the necessity for the nonhuman elements of an actor-network to be treated analytically in the same way as the social and human elements (Law 1992) constitutes one of the most heavily criticised aspects of ANT (McLean and Hassard 2004). Brunn and Langlais (2003), for instance, have argued that human actors perceive and act upon their world in ways that nonhumans cannot (Brunn and Langlais 2003). While recognising this distinctiveness, I also acknowledge that perspectives on human and nonhuman agency depend on one’s worldview.

when used in combination with Foucauldian and post-Foucauldian accounts of *power*, which notably make it possible to problematise how the configuration of associations can be directed by some actors more than others.

2.2.3. Power and subjectivities

Throughout this thesis, I propose that ‘wildlife’ be recognised as a contested domain by questioning the subjectivities and power relations that, beyond rhetoric and rationales, the performance of wildlife governance has produced in practice in Nunavut. However, envisaging governance solely in actor-network terms appears inadequate to further this objective. Indeed, a common critique of the theory underpinning actor-networks is that it underplays the importance of both power and subjectivities (Walsham 1997; McLean and Hassard 2004). This research overcomes this limitation by drawing on the notions of *power* and *subjectivity* developed by Foucault, Allen, Agrawal and others (Agrawal 2005; Allen 2004, 2003; Foucault 1976, 1977; Foucault and Gordon 1980) to examine the actor-networks under study.

While the concept of power appears central to ANT (Law 1992b), this notion has received surprisingly little theoretical attention from scholars that have contributed to this field. Indeed, Latour (2005) explains his choice to provisionally set aside any in-depth consideration of power in the description of actor-networks by arguing that social scientists have tended to attribute too much agency and coherency to this thing called ‘power’ and have assumed that power can explain various social situations. Nonetheless, he and other ANT scholars have pointed out the extent to which the configuration of actor-networks does not preclude inequality (non-equivalence) amongst heterogeneous actants and have insisted that the distribution of power within a network should be understood as a relational effect, conditioning the performance of any particular entity, rather than as a set of causes (Law

1992a, 1992b, 1986; Whatmore 1999). According to Latour (2005, 1987), actors do not hold power by themselves, they do so only through relations that must be ceaselessly renegotiated: “Power, like society, is the final result of a process and not a reservoir, a stock, or a capital that will automatically provide an explanation” (Latour 2005: 64). According to this view, actor-networks are powerful to the extent that they endure and succeed in performing and enrolling others, thus lending themselves increased strength and durability.

Because I have decided to describe actor-networks while highlighting asymmetries in powerful relationships between wildlife biologists, managers, Inuit hunters and the animals that they seek to hunt, manage or research, I suggest that we turn to the work of Michel Foucault and John Allen who have both helped theorise the notion of power in ways that will further inform my analysis.

Foucault’s assertion that “power is everywhere not because it embraces everything, but because it comes from everywhere” (1978: 93) illuminates power as dispersed, ubiquitous and dynamic. In his view, power is not possessed by dominant actors, but is instead distributed throughout the complex social networks in which it circulates. His invocation of power does not describe a substantive property or reified capacity that actors or institutions possess or exercise: “Power is not something that is acquired, seized or shared, something that one holds onto or allows to slip away” (Foucault 1978: 94). Instead, it expresses “how actions act upon existing actions or on those which may arise in the present or in the future rather than upon [actors] directly by affecting a whole field of responses, reactions, results and possible interventions” (Rouse 2005: 117-118).

Latour’s conceptualisation of power as relational is thus not incompatible with Foucault’s description of disciplinary power (Foucault 1979).¹¹ However, Foucault reminds us that it is, indeed, “people [who] build places, weave narratives, and extend networks”

¹¹ In fact, ANT is indebted to Foucault’s work. However, this relation is obscure.

(Braun 2005: 351), even if such activities could not occur without enrolling the nonhuman world. Indeed, Foucault emphasises the heterogeneity of the apparatus (*dispositifs*) that distribute power; these include not just people but also the instruments of power (e.g. buildings, documents and scientific tools).

Inspired by Foucauldian perspectives on power, Allen similarly holds the view that power exists only as an outcome of social relationships and practices, rather than as a ‘capacity’ or ‘thing’ that can be stored or possessed. He further establishes that this notion should not be conflated with resources, as power only arises in the effective mobilisation of such resources (Allen 2003). However, while acknowledging the importance of Foucault’s description of power as ubiquitous and immanent in all social relations, Allen contends that this insight appears disempowering as it loses sight of the spatial components of power and the specificities of different modalities of power (Allen 2004). In his detailed study of the difference that geography makes in the use of power (Allen 2003), Allen thus interrogates the spatial effects of the various modalities of power (e.g. authority, domination, seduction, manipulation, coercion and inducement), and argues that neither a centred nor decentred view of power is particularly helpful in terms of understanding the spatial trappings of this concept. He suggests that thinking of power “as a *topological* arrangement (as a *relational effect* of social interactions where there are no predefined distances or simple proximities to speak of) may help us to avoid being caught in the all too familiar, yet shifting binary of power” (Allen 2004: 19). The treatment of the empirical material presented in this thesis through such a theoretical lens shall thus contribute some empirically grounded analysis to an emerging post-Foucauldian literature that has dealt with the spatiality of power effects.

In addition, the idea that power does not operate negatively on preconstituted subjects but rather plays a key role in subject formation is critical to the notion of *subject* that I have developed throughout this thesis. A definition of power as a condition and consequence of

subject formation shall be salient in my analysis of the dynamic relations pertaining to the actor-networks involved in the business of researching, using and managing Nunavut's wildlife. Indeed, according to Foucault, one of the prime effects of power is how "certain bodies, certain gestures, certain discourses, certain desires come to be identified and constituted as individuals" (Foucault 1977: 98). As Agrawal states:

The relationship between subject formation and power rests for Foucault, then, on an utter refusal to view power simply as the ability of a person to make another do something, and is predicated on a positive conceptualisation of both freedom and power. Power is not just about the ability to constrain certain kinds of actions, peoples or outcomes; it is as much about the possibility of producing them [...] (Agrawal 2005: 220).

Subjects, then, are constituted by the spacing and timing of their own activities as much as they are by those of others who seek to influence their behaviour. Their conduct is thought to be shaped as much by what they absorb and imagine (the 'truth' of their circumstances) to be as it is by the physical layout, distribution and organisation of their surroundings (Allen 2004).

While there exists a vast post-Foucauldian literature on the idea of subjectivity (Bell 2007; Venn and Terranova 2009), I intend to build specifically upon Agrawal's notion of *environmental subjects*, which he defines as "individuals who see the generalised need for environmental protection in some form and whose practices and words bear the mark of this acceptance, if not of personal conversion" (Agrawal 2005: 18). Indeed, this notion related to shifts in human subjectivities in the context of the production of technologies of environmental government appears useful in questioning how contrasting ways of disciplining subjects emerge, coexist or conflict through the use of scientific observations and Inuit knowledge for the purpose of 'conserving wildlife' in Nunavut. Furthermore, it allows us to explore productively how Inuit both resist and, in some cases, endorse the logics of scientific and bureaucratic management in wildlife governance (Chapters 5 to 8).

Finally, in addition to considering how power dynamics relate to the constitution of subjects, this thesis is concerned with the relationship between *power* and *knowledge*, as one of its key objectives is to examine the production and mediation of Inuit and scientific knowledge through powerful wildlife governance networks. Indeed, as Foucault's neologism *power-knowledge* suggests, power is based on and makes use of knowledge to the same extent as power (re)produces knowledge. One way to view the power-knowledge relationship is to posit that knowledge production contributes to the constitution of objects and allows one to act upon objects; knowledge production also contributes to the formation of environmental subjects (Agrawal 2005; Foucault and Gordon 1980). Under this theoretical lens, the power of a wildlife biologist, for example, cannot be simply defined as his or her capacity to influence harvest regulations and conduct scientific research. Rather, one may consider the chains of powerful relations through which maps of animal movements combined with an individual's knowledge of population dynamics and mastery of rhetoric can trigger changes in harvesting quotas, which can then produce a range of actions and interventions from diverse actors (Chapters 5 to 7). Similarly, testimonies made by Inuit hunters during public hearings may be considered not only as the products of specific experiences and understandings of animal ecology, but also as crucial pieces of evidence that are both the consequence and condition of the performance of a powerful decision-making process.

Echoing Foucault's insistence on the mutual inherence of power and knowledge, various STS scholars have recognised that scientific knowledge cannot be separated from the politics and associated policies with which they co-evolve (Macfarlane 2003). The concept of co-production developed by Latour (1993), Callon (Callon et al. 2001), Jasanoff (2004a, 2004b) and others, for instance, brings to light the need to examine the role of knowledge in the exercise of political power by highlighting "the often invisible role of knowledge,

expertise, technical practices and material objects in shaping, sustaining, subverting and transforming relations of authority” (Jasanoff 2004b: 4).

Given my interest in the role of Inuit and scientific knowledge in wildlife governance networks, the idea of co-production thus stresses the need to address *knowledge* and *expertise* in my analysis of powerful governance networks. In the section that follows, I therefore present further comments aiming to situate my work within a wider literature stemming from the domains of STS, political ecology and ecological anthropology, which have problematised such notions.

2.2.4. Knowledge and expertise

Over recent years, the role of knowledge in governance has received increased attention in studies that have addressed the link between science and policy. Early conceptualisations adopted an enduring popular view of science as objective, isolated from social values and political interests, while at the same time offering impartial knowledge to policy institutions in an attempt to ‘speak truth to power’ (Jasanoff and Wynne 1998).

However, such a sense of separation between scientific knowledge, politics and society has since been comprehensively critiqued (and rightfully so) by work in the field of science and technology studies, which has shown science itself to be a thoroughly social process. As mentioned above, a range of work in STS has elaborated the concept of co-production, where scientific, political and social orders are mutually constituted (Jasanoff 2004a). According to this strand of research, knowledge-making should be envisioned as embedded into governance practices, which, in turn, influence the making and use of knowledge. In addition, studies of governmentality have helped highlight how knowledge appears key to ‘the conduct of conduct’ both because it helps governing bodies to orchestrate properly the various elements of the state and because it constitutes the primary vehicle through which the state

spreads its particular priorities and goals among a population (Foucault 1991; Miller and Rose 1990).

Inspired by analyses of governmentality and STS scholarship, I endorse the view that knowledge (and its associated politics) represents a crucial component of wildlife governance. Far from envisaging knowledge as separated from the contexts of its development and implementation, I view this notion as the contingent and the contextualised outcome of specific, historically situated practices involving both human and nonhuman actors (Latour 1987, 1999a; Yearley 2008). Intimately bound up with particular sets of institutions and relations of power, domination and control (Evans and Collins 2008), knowledge does more than simply report back objectively on the outside world as it interprets and defines its object in ways that facilitate certain courses of action and not others. In this study, for example, I show how the scientific monitoring of animal populations renders possible the establishment of harvest populations and sustainable quotas as well as the differentiated treatment of specific hunting groups as defined by the status of the population from which they harvest. Far from being neutral or objective, knowledge is thus “a way of devising techniques for inscribing it [...] in such a way as to make the domain in question susceptible to evaluation, calculation and intervention” (Miller and Rose 1990: 7).

Since I am interested in the manner in which both scientific and Inuit knowledge of the natural world and political action have become mutually embedded and co-constituted in wildlife governance practices in Nunavut, I also find it particularly illuminating to reflect upon the fact that, in dealing with Aboriginal knowledge systems and modern scientific ones, Watson-Verran and Turnbull (Turnbull 2000; Verran 2001; Watson-Verran and Turnbull 2000, 1994) advocate for an openness with relation to these very basic categories:

Though knowledge systems may differ in their epistemologies, methodologies, logics, cognitive structures or socioeconomic contexts, a characteristic they all share is localness. Western contemporary technosciences, rather than being taken as definitional knowledge,

rationality¹² or objectivity, should be treated as varieties of knowledge systems (Watson-Verran and Turnbull 1994: 116).

Looking at scientific knowledge under this light thus allows us to address the ways in which modern science, like all other kinds of knowledge, is thoroughly cultural, and the ways in which it tends to conceal its own fundamental indeterminacies by subtly and tacitly building the cultural and institutional terms of its own validation (Latour 1993, 1987).

In addition, as Agrawal (1995) notes, there exist some major philosophical and practical limits to describing indigenous knowledge and Western science as pure, distinct categories. First, the heterogeneity among the elements filling the conceptual boxes marked 'indigenous' or 'Western' defies the possibility that a finite and small number of characteristics can define them, as different knowledge systems possess specific histories and distinctive patterns of change. Second, the knowledge held by indigenous groups such as the Inuit can nowadays hardly remain unaffected by the knowledge, scientific or otherwise, of the wider world.

Instead of imagining 'Inuit' and 'scientific' knowledge as substantive objects with predefined boundaries, I therefore take the view that 'Inuit' and 'scientific' knowledge can be productively seen as heterogeneous and systematic *assemblages* (Deleuze and Guattari 1988 [1987]). Such assemblages are comprised of an amalgam of places, bodies, voices, skills, practices, technical devices, theories and strategies, and embedded in powerful actor-networks that are constitutive of the governance process. Envisaging knowledge within this dialectal frame moves beyond reified notions of 'Inuit knowledge' and 'Western science'; it enables us to look at and question how such categories have been produced and mediated in the policy discourse in Nunavut as two distinct components that can be integrated seamlessly through the establishments of forums, relationships and research practices.

¹² According to Latour (1993, 1987), Watson-Verran and Turnbull (1994) suggest that, instead of using the notion of 'rationality' to account for differences between science and other knowledge systems (e.g. indigenous ones), one should rather look at differences in the effectiveness of technologies of surveillance employed through such systems. In Latour's account, allies can be better aligned in science than they can in other systems.

By exploring the actor-networks involved in the making of knowledge about animals, I will further show how the process of combining science and Inuit knowledge in wildlife co-management has not really been about knowledge integration per se, but rather about the creation of a contested political experiment in constant (trans)formation. As Watson-Verran and Turnbull state: “Boundaries between knowledge systems are vague and indefinable. Knowledge systems are polysemous so that where one system leaves off and another starts is a matter of strategic negotiation on the part of those involved in knowledge production enterprises” (Watson-Verran and Turnbull 1994: 131). The scrutiny of such a process of negotiation will thus reside at the heart of my analysis of the power dynamics embedded in the use of knowledge assemblages¹³ in wildlife governance in Nunavut.

In fact, many studies of the interactions between scientific expertise and lay publics have shown how holders of scientific expert knowledge have tended to denigrate specialist lay knowledges and have defined lay resistance as based on ignorance or irrationality rather than on substantive if unarticulated objections to inadequate constructions of lay social identity which scientific discourses assume and impose (Irwin and Wynne 1995; Van der Ploeg 1993; Watson-Verran and Turnbull 1994; Wynne 1996). Research on public reception of scientific expertise has also contributed to challenge the view of the non-scientific world as epistemically vacuous by highlighting the porosity, fluidity and constructedness of the boundaries established between science and lay knowledge, as well as by recognising the constructive kinds of interaction and mutual inspiration or dependency which may exist between them (Irwin 1995; Rabearisoa and Callon 2004; Wynne 1992).

In the wake of such research, this study questions the ways in which knowledge holders and producers are invited to participate (or denied participation) in governing wildlife in the eastern Canadian Arctic. It examines how Inuit hunters, wildlife biologists and representatives

¹³ Unlike Watson-Verran and Turnbull, who use the expression ‘knowledge systems’, I prefer conceptualising knowledge as a systematic ‘assemblage’; this formulation better connotes the heterogeneous, porous and transformative nature of knowledge.

from governmental and Inuit organisations view their roles in this process and considers the types of interactions existing among such actors. In order to do so, I will examine the powerful and controversial mechanisms through which competing knowledge claims are tested, held accountable and validated through consultative exercises, research practices and political forums. In order to perform such an analysis, I suggest drawing on the notions of *controversies* and *hybrid forums*, which appear useful to explore the shaping of a new regime of relations between science, indigenous knowledge and democratic politics in Nunavut.

2.2.5. Controversies and hybrid forums

Soon after I began conducting research on the politics of wildlife management in Nunavut, I realised how conflicting dynamics appeared to drive many of the interactions I observed between Inuit hunters, wildlife biologists and managers in spite of the participatory and inclusive rhetoric presented in the Nunavut Land Claims Agreement and other official documents describing co-management as a collaborative process (GC 1993). In fact, disagreements and tensions developed not only among actors about what the ‘facts’ of the matter actually were (e.g. conflicts over the size of animal populations) or what issues existed (e.g. whether the handling of wildlife constituted an ethical scientific practice), but also with relation to how ‘scientific facts’ and ‘Inuit knowledge’ should be produced and circulated through consultative mechanisms and research procedures. In light of this situation, the notion of *knowledge controversy* thus appears well suited to a questioning of the relations between Inuit participation, science and policy in wildlife governance in Nunavut.

Over recent years, the central and increasingly contentious role of science and technology in democratic societies has given rise to a plethora of scientific and public controversies over scientific and technical issues and has been accompanied by a growing demand for greater public participation in scientific and technical decision-making (Bucci and

Neresini 2008; Marres 2007; Whatmore 2009). Within this context, knowledge controversies have become the focus of an abundant and growing literature. STS scholars and environmental geographers have studied controversies in and around the practice of science in order to gain insights into the ‘democratisation’ of science and technology. They have done so in the following ways: by analysing the negotiations involved in the fabrication of scientific facts and technical artefacts by disputing scientists; by examining how various sectors of the public are constituted and engage in technoscientific governance; and by exploring the ways in which knowledge controversies arise, are contained within the scientific community or expand into the public domain, are brought to a close, and why they persist (Martin and Richards 1995). Whatmore, for instance, describes knowledge controversies as:

[M]oments of ontological disturbance in which the things on which we rely as unexamined parts of the material fabric of our everyday lives become molten and make their agential force felt. [...] Such situations, matters or events render what we think we know or, more usually, what ‘experts’ claim to know about something the subject of intense public interrogation. Expert knowledge claims, and the technologies through which these become hardwired into the working practices of industry and government, manifest themselves in the products and policies we live with and the sociomaterial environments we inhabit. [...] [Knowledge controversies are] generative events in their potential to foster the disordering conditions in which reasoning is forced to ‘slow down’, creating opportunities to arouse a different awareness of the problems and situations that mobilise us (Whatmore 2009: 587-588).

The approach to controversy analysis that is deployed in this thesis is akin to the ones developed by STS researchers and environmental geographers who have envisioned controversies as *generative political events* with the potential for yielding new ways of practicing relations between science and democracy, and, more specifically, as valuable sites for carrying out research into the production and use of scientific knowledge claims in technoscientific governance and the mobilisation of publics throughout this process (Barry 2011; Collins and Pinch 1993; Irwin and Michael 2003; Irwin 2001; Latour 1987; Leach et al. 2005; Whatmore 2009). Their analyses generally suggest that we look at all sides

of a given controversy using the same repertoire of conceptual tools (Latour 2004; Martin and Richards 1995). According to this principle of symmetry, the researcher is required to treat the conflicting claims of the disputants impartially, and must attempt to explain adherence to all views, whether these are perceived to be true or false, rational or irrational, successful or failed, in an equivalent way by approaching “the places where the facts [...] are made” (Latour 1987: 30). STS approaches to the study of controversies also contradict the view that disputes over ‘facts’ and their interpretation can be resolved by the impersonal objective rules of experimental procedures alone; it highlights how the ‘truth’ or ‘falsity’ of scientific claims can derive from the interpretations, actions and practices of scientists and policy-makers, rather than simply residing in ‘nature’ (Collins and Pinch 1993).

STS researchers have further highlighted the need to be attentive to the redistribution of expertise that might occur through controversies. Indeed, “publics quite as much as knowledges” (Whatmore 2009: 596) may be produced in the event of knowledge controversies that translate into increased public engagement activities (Irwin and Michael 2003). In the case of Nunavut, such perspectives invite us to consider who constitutes the ‘public’¹⁴ being consulted, researched or communicated to over controversial wildlife issues, as well as how this public’s expertise becomes (or fails to become) mobilised in forms of democratic governance that aim to secure and sustain ‘public confidence’ (GC 1993). In particular, given the prescribed use of both Inuit knowledge and scientific information in wildlife research and management in the territory, the controversies under study require paying special attention to the ways in which *Inuit Qaujimaqatuqangit* is produced through consultative mechanisms and research practices, mediated through spokespersons and generally mobilised in the practice of governance. As such, this research promises to

¹⁴ However, as Irwin and Michael rightfully argue, “[researchers] should be sensitive to the possibility that it is not the ‘obvious’ or ‘unitary’ constituencies of public, or scientific, or government actors that are key to understanding a given [controversy], but admixtures of these” (Irwin and Michael 2003: 142).

contribute an unique case to the existing literature on knowledge controversies: one that incorporates not only scientific but indigenous expertise.

In my analysis of deliberations relating to the ethics of scientific practices (Chapters 6 and 8) and the establishment of hunting quotas (Chapter 7) in Nunavut, I further intend, as Barry suggests, to convey a sense of indeterminacy and openness that may highlight the extent to which controversies play a critical role in innovation in governance (Barry 2011). Indeed, while criticising views of knowledge controversies that suggest “the existence of a dispute that is focused on a particular claim to knowledge, a specific object or a particular issue”, Barry introduces the term *political situation* to focus on a particular kind of situation in which “public disagreements about what was known or how it came to be known have played a critical part” (Barry 2011: 2). In a political situation, the question of the spatiality, temporality and extent of controversies is itself in play and at issue, rather than being straightforwardly produced:

The question of what should be included as part of the situation, its history and future, its urgency, its spatial dispersion and temporal extension, the significance of particular sites, is integral to the situation. [...] The scale and topology of a situation, its duration and shifting intensity, its constituents, its history, its privileged sites, its identity and multiplicity, its relevance for particular groups or classes, and its visibility cannot be assumed. Situations are not static locations, isolated locations; they are set of relations in motion, progressively actualised (Barry 2011: 5).

According to Barry’s perspective on political situations, the analysis of environmental knowledge controversies that I propose assumes their irreducibility to a given ‘context’ or to the presence of existing political forces, ideologies or interests. Rather, it explores how various actors, material processes, ideas and practices are formed and reformed with relation to ongoing and evolving situations.

Finally, in order to characterise the type of democratic process performed during public controversies over technoscientific issues (e.g. public hearings, consultations and collaborative research), I will draw on the concept of *hybrid forums* initially developed by

Callon, Lascoumes and Barthe (Callon et al. 2009 [2001]). Hybrid forums play host to deliberative processes in which heterogeneous actors (e.g. affected groups, experts, politicians, officials and affected groups which may themselves be considered heterogeneous at some level) collectively define the problems in which they are all implicated (Callon et al. 2001: 36, 167-168). These forums describe the proliferation of public spaces in which scientific expertise, and the commercial and regulatory practices that it underpins, are becoming the subject of intense disputes. They are ‘hybrid’ both because they raise mixed economical, ethical, legal and technological concerns in new and complex ways and because of the variety and heterogeneity of social interests engaged in them (e.g. lay persons and experts, pressure groups and civil servants, hunters and wildlife biologists) (Callon et al. 2001: 36). Hybrid forums provide not only a medium for exchange; they create an opportunity for exploration and learning, since they allow for mutual transformations between actors through the establishment of transgressive spaces of ‘dialogue democracy’ alongside delegative democracy:

In favouring the deployment of these explorations and learning opportunities, hybrid forums participate in a questioning (a partial one, at least) of the two great divides that characterise Western societies: the one that separates experts from laymen and the one that distances ordinary citizens from their institutional representatives. In hybrid forums, these distinctions and the asymmetries they entail are inverted [*chamboulées*] (Callon et al. 2001: 59).¹⁵

Within the Nunavut context, I use the concept *hybrid forums* to question the coalitions, reconfigurations of subjectivities, commitments and forms of knowledge production that punctuate the formation of hybrid spaces of wildlife governance. In analysing the dynamics and organisation of such controversial forums, I pay close attention, not only to the active part played by nonhumans in the fabric of these forums, but also to their potential deployment as tools for legitimising alliances and power relations. In doing so, I contrast the normative

¹⁵ My translation.

assumptions negotiated in hybrid forums with those presented in official government policies, as well as with those put forth by the actors themselves in order to evaluate the deployment of participatory spaces of wildlife governance in Nunavut.

2.3. Research methods

The theoretical perspectives and strategies that I have outlined so far in this chapter carry methodological implications. In fact, my theoretical commitment to explore the actor-networks that are embedded in the performance of wildlife governance necessitates an analytical movement that discerns associations between human and nonhuman actors in order to gain an understanding of the relations between Inuit participation, science and wildlife policy in Nunavut. As Whatmore observes:

I do not think that one can, or ought to, look to ANT to provide some sort of ready-made compass. Nonetheless, there are useful beginnings here for journeys [...] which make it possible to explore the ways in which the entities, capacities and processes conventionally pre-assigned to the spheres of the 'natural' and the 'social' are mutually conditioned and constituted in the everyday business of *living* in the world (Whatmore 1999: 30).

Methodologically, this suggests following and examining associations existing between people, animals and objects playing a part in actor-networks pertaining to the daily governance of wildlife species in Nunavut, without preconceived assumptions about their identity, agency and positionality within these networks.

2.3.1. A multi-sited ethnography

Such a research agenda appears well suited to a multi-sited and ethnographic approach (Clifford and Marcus 1986) that extends from international organisations, national and territorial bureaucracies, scientific field stations and local activities, to the complexities of everyday life. I have therefore employed participant observation, qualitative interviews and literature-based searches in order to suit the context and objectives of this thesis (Hay 2010).

The material originally presented here is not currently available in ORA

Figure 2.1. Interview conducted in Igloolik (left) and participant observation during a hunting trip near Coral Harbour (right) (Photos: M. Ammaq (left) and H.G. Gilchrist (right))

First, semi-directed interviews with Inuit hunters, wildlife biologists, civil servants and other actors involved in wildlife governance in Nunavut have been central to this project (Fig. 2.1.). Interview participants were selected on the basis of level of involvement and expertise in the events, dialogical procedures, controversies and governance processes studied here.

Through this method of data collection, widely used among researchers in northern Canada (Ferguson and Messier 1997; Nakashima 1991; Nakashima and Murray 1988), the participants are guided in the discussion by the interviewer, but the direction and scope of the interview are allowed to follow the associations identified by the participants, enabling interviewees to expand on their answers and express information not specifically queried but which they consider important. The semi-structured format ensures some degree of conformity in the data collected for comparative purposes, while creating space for a degree of openness to explore unexpected and potentially important matters should they arise. Semi-directed interviews create a space for open and flexible conversations while avoiding the rigidity of questionnaires (Rubin and Rubin 2005). They also allow a variety of ‘partial’ but

vital perspectives to emerge from a range of actors and enrich the wider framework of examined relations (Huntington 1998).

For the analysis of the qualitative data gathered through interviewing, an interpretative approach is used. As described by Kitchin and Tate, such a methodological approach to qualitative analysis seeks “to make use of the data produced through categorisation and connection of patterns, categories, and basic descriptive units” (Kitchin and Tate 2005: 898). It requires the researcher to interpret the data in order to gain greater insights into it rather than just identifying patterns or categories. The core of interpretative analysis consists of describing data, classifying information and finding out how concepts interconnect.

In addition to individual interviews, I have used participant observation whenever possible as a privileged method of empirical investigation (Fig. 2.1.). While my position as a young Euro-Canadian or *Qallunaq*¹⁶ woman with limited Inuktitut skills,¹⁷ as well as the fact that I am studying Nunavut governance in a strictly academic capacity certainly colour, to a degree, my appreciation of the events, spaces and actors under study, I have found participant observation to be a valuable research technique in pursuing my research objectives. In fact, as I attended board meetings, public consultations, conferences, and accompanied hunters and wildlife biologists in their harvesting activities (of wild game or empirical data), I carefully observed, engaged and recorded my experiences, aiming to capture what Marilyn Strathern has described as the ‘ethnographic moment’, a moment of knowledge or insight which denotes a relation between immersion and movement, “a relation which joins the understood (what is analysed at the moment of observation) to the need to understand (what is observed at the moment of analysis)” (Strathern 1999: 6). Such a dynamic process of reflexive

¹⁶ *Qallunaq* (plural: *Qallunaat*) is an Inuktitut word commonly employed in the eastern Canadian Arctic to refer to non-Inuit. The origins of this expression are obscure. The word *qalluk*, meaning ‘eyebrow’, is often said to be its root as the prominent eyebrows of the first European explorers might have appeared impressive to Inuit. However, Brody (1991) suggests a more plausible view according to which *Qallunaat* was first used in West Greenland, where there is a word for ‘south’ that closely resembles *qalluk*. The term for ‘southerners’ could have originated there and been carried westward into Arctic Canada.

¹⁷ At the beginning of my field research, I took a three-month-long course in Inuktitut at the Pirurvik Centre for Inuit Language, Culture and Wellbeing, in Iqaluit. It allowed me to acquire some basic Inuktitut skills.

immersion has indeed allowed me to develop a cultural familiarity that informs my analysis, to uncover important factors which illuminate my comprehension of research problems, and to discover discrepancies between participants' subjective reporting of what they believe and what they do (Clifford and Marcus 1986; Spradley 1980).

Finally, I have used documentary information to complement the collection of primary data through semi-directed interviews and participant observation. This process has enabled me to gain a more thorough understanding of the broader social, historical, political and ecological contexts of my inquiries and has guided my empirical research. I therefore draw upon government publications, minutes of meetings and public consultations, newspaper articles, management plans, annual reports and the like to examine the production of hybrid spaces of environmental governance over time in Nunavut.

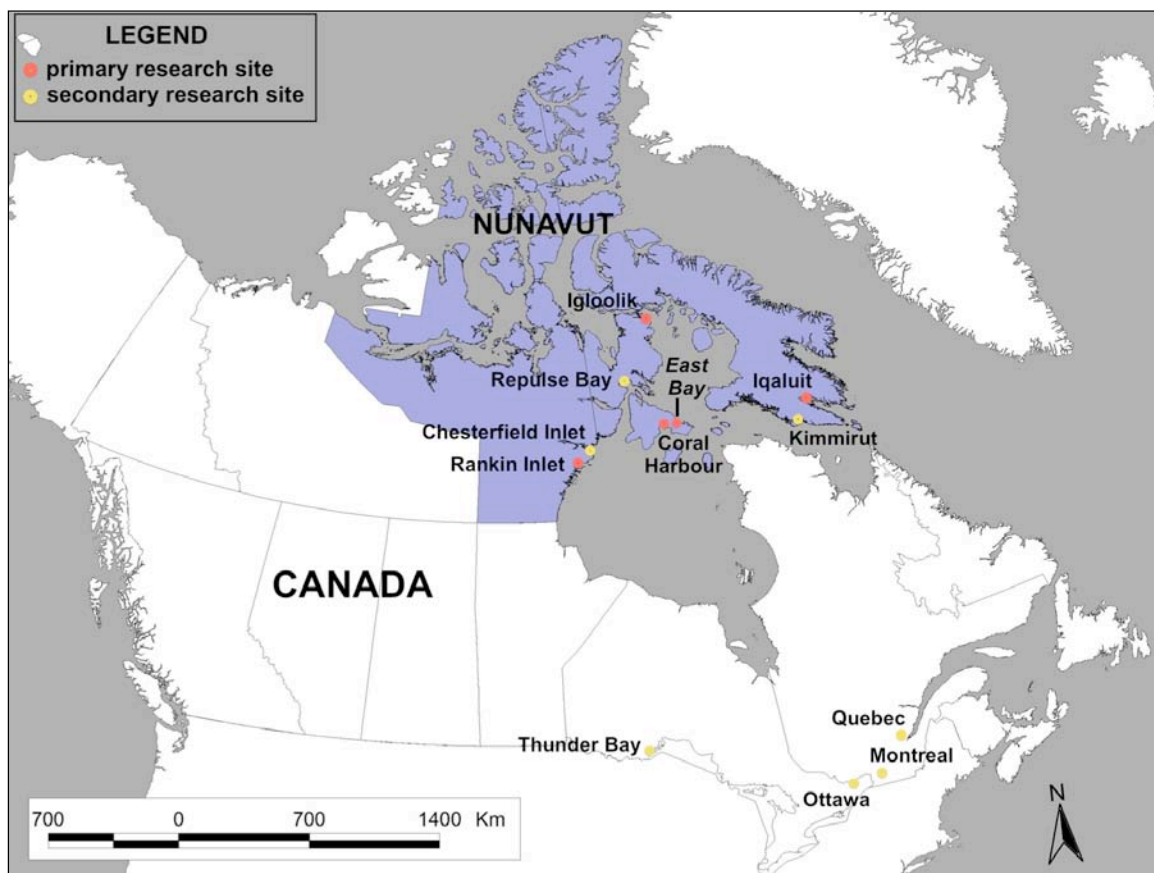


Figure 2.2. Field research sites

I conducted field research within the Nunavut Territory during the summer of 2008 and over a period of ten months in 2009. This time span made a shift from focused to selected information possible (Spradley 1980). It also allowed me to acquire some necessary research skills, familiarise myself with the local culture, build trust with research collaborators and obtain a greater control over the Inuktitut language, native to most Inuit participants whom I interviewed with the help of local translators, whenever needed or requested.

In June and July 2008, I spent two months with a team of wildlife biologists at the East Bay field research site, on Southampton Island, Nunavut. From January to October 2009, I travelled to Iqaluit, Igloolik, Rankin Inlet and Coral Harbour, and I stayed briefly in Cape Dorset, Kimmirut, Chesterfield Inlet and Repulse Bay (Fig. 2.2.). The duration of my stay in each city or community depended on the breadth and depth of the primary and secondary data that needed to be collected, the timing of various events of interests (e.g. consultation tours, public hearings, board meetings, scientific fieldwork seasons and hunting trips) and the pace of my progress in establishing meaningful contacts with research collaborators and participants (a process which I had initiated during two preliminary field visits in 2007 and 2008).

In addition to the research I conducted in northern Canada, I held interviews with key stakeholders in Thunder Bay, Ottawa and Montreal, Canada. I also attended three conferences where wildlife biologists working on species of concern for this thesis and/or delegates from Nunavut were present. These are: the 3rd North American Sea Duck Conference in Quebec, Canada, in November 2008; the 15th meeting of the Conference of the Parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in Doha, Qatar, in March 2009; and the 20th International Bear Association Conference in Ottawa, Canada, in July 2011. During the course of my field research, I conducted a total of 108 formal interviews with key stakeholders involved in wildlife governance in Nunavut and

had many more informal exchanges on this topic. A comprehensive list of all interview participants and their institutional affiliations (where applicable) can be found in Appendix 11.2. (Fig. 11.2.).

2.3.2. Using case studies

Throughout my fieldwork, I explored the relations between Inuit participation, science and policy in Nunavut by focusing on tracing and analysing the networks of actors implicated in the process of governing two species of cultural significance for Inuit, namely the common eider (Latin: *Somateria mollissima*, Inuktitut: *mitiq*) and the polar bear (Latin: *Ursus maritimus*, Inuktitut: *nanuq*) within this territory (Freeman and Foote 2009; Henri et al. 2010; Nakashima 1991; Randa 1986; Fig. 2.3.).

The material originally presented here is not currently available in ORA

Figure 2.3. Male (top left) and female (bottom left) common eiders and polar bears (right)
(Photos: H.G. Gilchrist (left) and S. Aqpik (right))

In doing so, I have, as Latour suggests (1987; 2005), ‘followed’ the actors involved in using, knowing, thinking, managing and discussing common eiders and polar bears across a spectrum of institutions and spaces, ranging from public hearings to scientific field stations,

community meetings and elders' homes. The choice and design of case studies focusing on particular animal species circumscribed and limited the scope of my inquiries, thus allowing for more in-depth investigations into the networks of actors mobilised by specific species that produce various spaces of governance (Ellet 2007; Nadasdy 2003a).

In adopting a case study approach to structure my research activities, I have also interrogated my proposed topic from an empirical perspective that relates to my theoretical framework in dialogical terms, rather than from a purely abstract point of view. Indeed, this strategy has allowed me to use theory as a means of raising issues, questioning observations and tracing associations that pertain to particular cases, rather than treating theory as something that can be readily 'applied' (Latour 2004).

While such a mode of enquiry has been criticised by some for failing to address the issue of generalisability (Noor 2008), I suggest that the two cases under study represent 'ideal types' in the spectrum of forms of wildlife governance. Moreover, the combination of these cases unveils a wide range of dialogical procedures and power dynamics pertaining to the process of governing wildlife. Indeed, common eiders and polar bears have generated controversies and discussions varying in scope and scale in Nunavut and beyond. Unlike the areas of eider research and management, which remain relatively uncontroversial, since they imply political processes, knowledge categories and scientific practices largely unquestioned by the actors involved, managing polar bears proves to be a highly contentious issue through which actors come to articulate a strong critique of the wildlife governance regime currently in place in this territory.

As biologists, ordinary citizens, managers and Inuit hunters enter the business of knowing and managing eiders and polar bears in Nunavut and elsewhere, the cases under study thus help highlight the unique configuration of two distinct but related actor-networks bringing into being objects, subjectivities, knowledge practices, dialogical procedures and

power relations. They also allow for a close consideration of the ways in which knowledge about *Ursus maritimus*, or *nanuq*, *Somateria mollissima*, or *mitiq* are produced, transformed and authorised through the formation of hybrid governance assemblages. In tracing the political life of animals (Appadurai 1986), I thus hope to yield a rich and multi-faceted analysis that tackles the complexity of the forces intervening in this process (Ellet 2007) and that ultimately addresses disjunctures between the ways in which current wildlife governance arrangements in Nunavut are represented in policy and how they are enacted in practice.¹⁸

2.3.3. Ethics

[Researchers] remind us of ducks. We see them first in the late spring after break-up and they go South before freeze-up in the fall.

– James Ross, Fort McPherson, NWT, 1994 (cited in Robinson 1996: 127)

People do not care how much you know, until they know how much you care.

– Anonymous

The ethical issues surrounding this project must be sensitively considered, because they are embedded in and subjected to norms emerging from a precise political, legal and cultural context. Indeed, the history of relations between academic researchers and Aboriginal peoples in northern Canada has been charged with tense episodes (Brizinski 1993).

For instance, over the last few decades, social and natural scientists alike have often been criticised for their failure to consult, seek permission, inform and report back to communities and research participants on projects involving them (Freeman 1977). As a result, Aboriginal writers have articulated scathing criticisms of the self-proclaimed positive actions of outsiders within indigenous communities (Deloria 1969), and some Aboriginal leaders and educators have asserted that most university-based northern research still

¹⁸ While theoretical and methodological arguments have played major roles in framing my case studies, pragmatic considerations have also influenced my choice of empirical focus. Over the past few years, I have developed a network of collaborators who have helped me access the information required for these cases. Thanks to these collaborators, I have become a privileged observer of the making of both common eider and polar bear science and was introduced to key stakeholders in the field of wildlife research, management and conservation.

constitutes a colonial activity, as it is biased towards academic needs (Caine et al. 2007). Furthermore, Aboriginal community members have repeatedly articulated fears (well founded in past colonial experiences) that their knowledge may be misused or distorted, and that their control of research processes and questions may be reduced through incorporation and distillation into the domain of academic discourse (Nadasdy 2003a; Ermine, Sinclair and Jeffrey 2004). In northern Canada, many social scientists are still working today to overcome the view of research as an exploitative process (Jackson 1993; Rubin and Rubin 2005).

To address such concerns, funding agencies, licensing bodies and regulatory agencies established under the Nunavut Land Claims Agreement now require researchers to engage and consult with Inuit communities during all phases of research, to provide local training and other benefits, to communicate project results effectively and to obtain adequate territorial research licenses (Gearheard and Shirley 2007; Nickels et al. 2007). Thus, throughout this research project, I made sure not only to comply with such requirements, but also to develop ethical guidelines that suited the specific aims and methods of this study, as well as my level of personal and professional commitment to the people, animals and places I engaged with. The biologists, researchers, hunters and government employees whom I got to know over the course of a Master's project realised in Nunavut in 2006-2007 were very helpful in guiding my initial steps through this process.

Before the start of this project, I therefore contacted local organisations¹⁹ in each of my primary research sites, to present my research objectives and methods and ask for their collaboration. Upon receiving their support, I obtained a research license from the Nunavut

¹⁹ The Nunavut Wildlife Management Board, the Igloolik Hunters and Trappers Organization, the Aiviit Hunters and Trappers Organization (in Coral Harbour) and the Kangiqliniq Hunters and Trappers Organization (in Rankin Inlet) all offered their formal support for this project, conditional upon the sharing of research results and, in some cases, the payment of a salary (which averaged CAN\$75/hour) to research participants in compensation for their time. Interviewees affiliated with other organisations have agreed to participate in this project on an individual basis.

Research Institute (Appendix 11.3., Fig. 11.3.). This project was also granted approval by the Oxford Social Sciences and Humanities Interdivisional Research Ethics Committee (IDREC).

During the course of this study, I have pursued (whenever possible) an ongoing sharing of research data and findings with research participants and interested parties, thereby permitting their critical feedback to enter and shape research directions. In addition, matters of confidentiality, anonymity and the protection of potentially sensitive information were addressed prior to any interview. Before each interview, I explained to the respondents the nature, objectives and procedures of the study. Each interviewee was asked to sign a consent form (Appendix 11.4., Fig. 11.4.) in Inuktitut or English, which stated their rights and outlined the terms of a confidentiality agreement. Participants were asked to specify whether they agreed to have their names credited in the results of the study and/or have their responses attributed by name in the results or whether they preferred to remain completely anonymous. In some rare cases, participants asked to approve my use of their testimonies prior to the dissemination of this thesis, a procedure to which I agreed.

Interviews with unilingual Inuktitut speakers and with bilingual participants who preferred to express themselves in Inuktitut were conducted with the help of translators hired locally. Discussions were held with interpreters before and after interviews to ensure mutual understanding of the methods involved, the type of information sought, and the nature of the information received. Most conversations with participants were recorded and later selectively transcribed, coded and analysed. After the completion of this thesis, I intend to share the results of this study with research participants and interested parties by sending summary reports in English and Inuktitut, and by travelling back to Nunavut in spring 2012 to present and discuss research findings in person.

Throughout this project, given my positionality as a ‘non-Inuk’ or ‘Southerner’ affiliated with a British institution in a territory where research has often been associated with

an exploitative process whose extractive logics resemble the power dynamics characterising eras of British and Canadian colonialism in the Arctic (Smith 1999), I have also felt it necessary to dedicate time and effort to building trust with collaborators and research participants. I have done this by maintaining transparency with regard to my intentions, identity and affiliations, and by being careful to raise only the most realistic expectations for this study's potential outcomes.

Finally, while challenges to the building of collaborative research partnerships certainly exist in Nunavut, I believe that my position as an 'academic outsider' can nonetheless facilitate a form of generative participation among Nunavummiut. As Caine, Salomons and Simmons state:

Occupying a semi-autonomous location with respect to both university and the community, the academic outsider is able to generate an inter-animated dialogicality. [...] Insofar as they engage [participants] in a [research] process beyond the scope of the governing structures that constrain them, [academic researchers] are able to nurture a culture of critique and self-activity (Caine, Salomons and Simmons 2007: 462).

Imbued with a strong sense of accountability to both research participants and collaborators, and an awareness of the academic requirements for knowledge protection, I hope that my thesis will facilitate critical reflection among northern residents, policy-makers and academic audiences.

2.4. Conclusion

In sum, while a range of theoretical and methodological avenues are available for exploring the relationships between Inuit participation, science and policy in wildlife governance, my concern here is to develop an analytical approach that helps integrate the analysis of policy processes and governance with the study of science and indigenous knowledge.

My proposed theoretical framework thus draws on Foucauldian and post-Foucauldian analyses of power, governmentality and subjectivity, as well as on approaches to the scientific practices, actors and networks originally associated with Latour, Callon and others, and which have examined the embeddedness of knowledge and expertise within social, institutional and political fields. Employed in combination with ethnographic research methods, qualitative interviews, as well as literature-based searches, such a theoretical framework appears well suited to a questioning of the politics of participation in Nunavut wildlife governance. In performing the present analysis, I aim to contribute to a number of bodies of existing academic literature. The next chapter explores these in greater detail.

Chapter 3. Literature review: the case for and context of research

3.1. Introduction

This thesis engages with the literature that has critically discussed both the theory and the practice of wildlife governance, with a particular focus on studies that have explored indigenous participation in this process. In this context, this chapter first provides an overview of the scholarly analyses that have contextualised indigenous participation in environmental governance. Indeed, one of my objectives is to understand the emergence of a participatory regime for governing wildlife in the Nunavut Territory.

The literature that has sought to examine participatory wildlife governance initiatives is then discussed. This exploration serves as a means of situating, within a broader analytical landscape, the second main goal of this thesis, which is to explore the performance of wildlife governance in Nunavut. In doing so, this review places an emphasis on surveying the different research trends that have characterised the study of Aboriginal participation in the *co-management* of natural resources. In fact, major applications of participatory approaches to governance have been generated under this umbrella term in Canada's northern territories; and *co-management* is the designated name for the regime of wildlife management currently adopted in Nunavut.

I have also reviewed analyses that have assessed the outcomes of indigenous participation in environmental governance (again, with a focus on studies evaluating wildlife co-management practices in northern Canada). Such a survey resonates with another aim of this research project which seek to contrast the ways in which current wildlife governance arrangements in Nunavut are represented in policy and how actors experience them in practice.

While reviewing the relationships between Inuit participation, science and policy in wildlife governance in Nunavut, this thesis deploys an analysis that pays particular attention to the production and mediation of ‘Inuit’ and ‘scientific’ knowledge through hybrid spaces of governance. It draws on recent academic work that has conceptualised the notion of *hybrid forum* and applies this conceptual apparatus to empirical cases. This chapter describes these findings in some detail.

Finally, this synthetic review explores two additional bodies of literature: the scholarly discussions that have questioned the role of science in the sociopolitical history of the Arctic region, and the academic work that has discussed Inuit knowledge of and relations with the biophysical world. Given the centrality of animals in Inuit cultural ecology and the importance that scientific practices have had over recent decades in informing wildlife policies in the Canadian North, the final two sections of this chapter will examine domains of academic enquiry which are central to an understanding of contemporary forums of governance where Inuit and scientific expertise are produced and negotiated.

3.2. Indigenous participation in environmental governance

3.2.1. Framing the context for indigenous participation

In recent decades, a profusion of new, decentralised institutions for resource management have developed as a result of efforts made by multiple stakeholders to address an array of crises, conflicts and dilemmas surrounding environmental governance (Folke, Colding and Berkes 2003; Houde 2007). In Canada and elsewhere, the rise of participatory approaches to natural resource and environmental governance involving indigenous groups has been depicted in the academic literature as resulting from an array of interrelated factors.

First, centralised bureaucratic resource management regimes have been criticised for leading to ecological collapses and for failing to improve people’s livelihoods (Agrawal 1995,

2003; Holling and Meffe 1996; Scott 1998). Consequently, attention has started to focus on collaborative processes, which are viewed by many as able to: enhance the robustness of ecological management decisions by gaining access to systems of knowledge and management practices that are better attuned to local contexts (Berkes 1998; Pálsson 1998); increase the efficiency of management schemes by involving those that are directly affected by the outcomes of such arrangements (Hanna 1998; Kearney 1989; Pinkerton 1989); and foster equity in decision-making processes by moving away from management models controlled by a central state that is remote from the needs of local people and cultural specificities (McCay 1996; Pagdee et al. 2006). In addition, scholars have argued that the growing recognition of the complexity of resource and environmental issues occurring under uncertain socio-ecological conditions has led theoreticians and practitioners alike to advocate participatory approaches to resource and environmental governance (Diduck 2004).

The academic literature has also generally attributed the rise of collaborative approaches to environmental governance, both in Canada and elsewhere around the world, to the growing power and political organisation of indigenous groups within a context of the growing environmental threats posed by development (Coates 1992; Jentoft 2000; Jentoft et al. 2003). The movement towards the recognition of Aboriginal rights in Canada has thus substantially impacted the configuration of indigenous participation in environmental governance. Many emerging collaborative arrangements can be seen as not only changing the ways in which lands and resources are governed, but also as restructuring Aboriginal-state relations more broadly (Jull 2003; Natcher et al. 2005). In fact, such regimes have often been endorsed as a political means for resolving longstanding conflicts between indigenous peoples and state governments (Tully 1995, 2000). For example, the close relationship between the development of co-management agreements and Aboriginal land claims in Canada indicates that the growth of the political power of indigenous groups has played a major role in the

development of participatory environmental governance practices throughout the country (Treseder and Honda-McNeil 1999).

Substantial academic research has thus sought to contextualise the rise of participatory environmental governance arrangements involving indigenous peoples in Canada and elsewhere. Scholars have generally presented and explained this phenomenon with relation to the recognition of the socio-ecological shortcomings of centralised resource management as well as with relation to the growing power and political influence of indigenous groups. It appears, however, that such a body of literature has largely overlooked the task of situating the emergence of a participatory regime for governing wildlife in Nunavut.

Much has been written about the societal changes and negotiations that led to the creation of this territory, as well as about the reconfiguration of Inuit-state relations entailed by this historical event. For example, academic research on this subject indicates that current governance arrangements in Nunavut were influenced by factors dating from the end of the Second World War to the early 1980s. These include: the end of colonisation and the legal recognition of the Inuit (Henderson 2007; Loukacheva 2007); increased exploitation and extraction of natural resources in the Canadian Arctic (McPherson 2003); military activity and challenges to Arctic sovereignty (Quinn Duffy 1988); social and economic changes brought about by the modernisation of Inuit societies (Mitchell 1996); and Inuit political mobilisation and their move towards self-determination and autonomy (Bennett and Rowley 2004; Dahl et al. 2000; Fleras and Elliot 1992; Therrien 1999; Wilson 2002). However, scholars have not specifically considered the linkages between such sociopolitical changes and the rise of Inuit participation in governing wildlife in the eastern Canadian Arctic. In fact, while a growing number of academic voices has recently engaged in critically assessing the effects of the wildlife governance regime in place in Nunavut (Dowsley 2007; Dowsley and Wenzel 2008;

Price 2007; White 2006a, 2008)²⁰, elucidating the context of its emergence has yet to be comprehensively performed (a project which this thesis addresses).

3.2.2. Modalities of participation: the study of co-management

In addition to offering insights about the circumstances that have led to the creation and implementation of participatory governance, the academic literature that has discussed indigenous involvement in environmental governance in Canada has concerned itself with describing and defining the evolving manifestations of such participation. This has led to some developments that are relevant for situating the arguments presented in this thesis, especially with regards to past and present trends in the study of *co-management*²¹ (Carlsson and Berkes 2005; Plummer and Armitage 2007; Plummer and Fennell 2007).

If examples of co-management can be found with relation to various resource sectors, the majority of Canadian experiences with such initiatives have related to wildlife governance (Diduck 2004). Over the past few decades, co-management through the comprehensive land claims process²² has become the dominant approach to wildlife management in Canada's northern territories. Throughout this period, provincial and territorial governments have worked with Aboriginal groups to establish a wide variety of co-management boards and committees throughout the region. Some of these initiatives have been ad hoc responses to specific management problems; but, increasingly, Aboriginal groups and governments are establishing permanent co-management bodies through the land claim process (Spaeder and Feit 2005). Such institutional arrangements have contributed to make legible Aboriginal

²⁰ This literature will be discussed in greater detail in section 3.2.3.

²¹ The term co-management is relatively recent. Pinkerton (2003) traces the earliest use of the term to the late 1970s in the management of salmon under the Boldt Decision by the United States Treaty Tribes in Washington State. However, the practice of formalised power sharing in resource management goes back to earlier times. The earliest wildlife co-management arrangements date from the 1980s in Canada and Alaska (Kendrick 2003).

²² Co-management also exists outside of the comprehensive land claims process. However, the latter type of wildlife management does not have the same legislative basis as comprehensive claims and may be expressed by a variety of terms, including *cooperative management*, *collaborative management*, *joint management*, *participatory management* and *multi-stakeholder management* (Berkes 1997).

notions of 'wildlife' and 'governance' as negotiated outside state governance networks (Feit 2005). They have rendered visible the concept of 'self-management' which some Aboriginal groups maintain has always existed (Feit 1988). In the Nunavut Settlement Area, a wildlife co-management regime has been set up through the NLCA. This thesis analyses the performance of such a process, which suggests an engagement with scholarly analyses that have explored and conceptualised the modalities of the performance of various co-management arrangements.

Co-management research is traceable to works by Berkes (1989), Berkes et al. (1991), Feit (1988), Osherenko (1988) and Pinkerton (1989) who, among others, have initially helped theorise this notion as the sharing of power and responsibilities between government and local resource users. The early literature on the subject was primarily concerned with defining the different types of structural or institutional configurations which co-management could entail. It showed that co-management could refer to a range of arrangements with varying degrees of power sharing for joint decision-making by the state and by communities (or user groups) concerning a set of resources or an area (Berkes et al. 1991; Notzke 1995). Berkes (1994), for instance, described seven levels of co-management arrangements, ranking from weak systems consisting of token government consultations with local resource users to full community control.

While early theoretical propositions have tended to focus on structural definitions of co-management, implying formalised hierarchical *structures* involving homogeneous actors with prescribed roles, later developments led to refinements in understanding co-management as an adaptive *process* characterised by networks of relationships, a perspective that emphasises the functional aspect of this phenomenon (Pinkerton 2003; Plummer and Fitzgibbon 2004):

An approach focusing on the legal aspects of co-management, and emphasising the formal structure of arrangements (how governance is configured) runs the risk of neglecting the functional side of co-management. An alternative approach is to start from the assumption that

co-management is a continuous problem-solving process, rather than a fixed state, involving extensive deliberation, negotiation and joint learning within problem-solving networks. This presumption implies that co-management research should preferably focus on how different management tasks are organised and distributed concentrating on the function, rather than the structure, of the system. Such an approach has the effect of highlighting that power sharing is the result, and not the starting point, of the process (Carlsson and Berkes 2005: 68).

The shift towards such a conceptual landscape has allowed theoreticians and practitioners to highlight the presence of multiple interests at play in the co-management process, which can hardly be construed as an interaction between an unitary state and a homogeneous community. Furthermore, such developments have conveyed the idea that co-management should be understood as an approach to governance, and not merely as some kind of formalised power sharing arrangement (Carlsson and Berkes 2005; Borrini-Feyerabend et al. 2004). This suggests a research agenda that is based on the assumption that co-management can be approached and analysed as a set of adaptive networks of relationships involving negotiation, deliberation, knowledge generation and joint learning.

In the wake of such insights, the term *adaptive co-management* has recently emerged to reveal a new direction of co-management scholarship (Armitage et al. 2007; Folke et al. 2003, 2005; Olsson et al. 2004). This term refers to the study of a “process by which institutional arrangements and ecological knowledge are tested and revised in a dynamic, ongoing, self-organised process of trial and error” (Folke et al. 2002: 20). Recent studies of indigenous participation in environmental governance through this lens have yielded analyses that have contributed to the unpacking of co-management as power sharing, institution building, trust and social capital building. Such studies have attempted to offer governance advice through the recognition of complexities in socio-ecological systems characterised by dynamic and nonlinear interactions (Dowsley 2009a; Kofinas 2005). Furthermore, scholars have considered the role and importance of knowledge generation and bridging organisations in

adaptive co-management (Berkes 2009; Eamer 2006; Olsson et al. 2007; Reid et al. 2006; Singleton 1998; Spak 2005). As Berkes points out:

Co-management can be considered a knowledge partnership. Different levels of organization, from local to international, have comparative advantages in the generation and mobilization of knowledge acquired at different scales. Bridging organizations provide a forum for the interaction of these different kinds of knowledge, and the coordination of other tasks that enable co-operation: accessing resources, bringing together different actors, building trust, resolving conflict and networking (Berkes 2009: 1692).

In spite of theoretical advances allowing for the recognition of the complexities of governance, the recent literature on co-management has suffered from a major shortcoming, as it fails to address adequately the relation between abstract formulation and the experiences of the actors involved (Spaeder and Feit 2005). For example, while compelling arguments have been made that co-management ought not to be envisaged as a ready-made political-administrative hierarchy or system but as a dynamic problem solving process mobilising various knowledge claims (Armitage 2005; Berkes 2009; Plummer 2006), few studies to date have engaged in analysing the modalities of and power dynamics generated by the use of different sources of knowledge in co-management, and how such a performative process reinforces or amplifies certain knowledges, subjectivities and power relations at the expense of others. Furthermore, in putting great emphasis on the collaborative and adaptive dimensions of such arrangements, scholars have generally failed to engage in any critical analysis of their potential failure or the antagonistic dynamics or unresolved tensions they create among actors. This thesis clearly addresses such gaps through theoretical yet empirically grounded contributions that explore the co-management regime set up under the Nunavut Land Claims Agreement: it investigates the objects, subjectivities, knowledge practices, dialogical procedures and power dynamics that, beyond rhetoric and rationales, the performance of the co-management regime has produced in practice.

3.2.3. Evaluating indigenous participation: from enchantment to disillusion

In recent years, in addition to contextualising and describing the advent of participatory governance arrangements involving indigenous groups, scholars have performed a growing number of normative evaluations of these schemes, whether successes or failures. They have also explored the intended and unintentional effects yielded by those socio-ecological experiments. More specifically, some three decades after the implementation of several legally-based co-management agreements in northern Canada, several researchers have moved beyond speculation by reflecting on practice in order to grasp the consequences of such processes and their underlying dynamics (Berkes et al. 1991; Hoekema 1995; Huntington 1992; Kruse et al. 1998; Ostrom et al. 2002; Pinkerton 1989, 1992; Pomeroy and Berkes 1997; Usher 1995). This thesis seeks to contribute to efforts such as these. Its aim is to contrast the official objectives of the participatory wildlife governance regime in place in Nunavut with the experiences of actors taking part in its performance as well as with the normative assumptions contained in the notion of *hybrid forum*.

The proactive, meaningful involvement of indigenous peoples in environmental governance in Canada and elsewhere has often been pursued with the starting supposition that it may enhance legitimacy, efficiency and/or equity in decision-making (Plummer and Fitzgibbon 2004). In addition, such participation has been largely advocated based on the normative ground that the direct involvement and empowerment of people in resource management decisions affecting their livelihood constitutes good governance (Kooiman 2003). Much of the Canadian experience with participatory environmental governance has yet to be subjected to extensive evaluation. A significant body of literature nonetheless argues that a number of initiatives involving Aboriginal groups seem to have met early expectations, thus validating the rationales which initially presided over their implementation.

Researchers studying participatory environmental governance arrangements involving indigenous groups have frequently posited that the collaborative management of resources represents an opportunity to bring to the discussion table knowledge that is acquired at different scales²³ and stems from diverse intellectual or cultural traditions, and that this results in improved understanding and better decision-making (Berkes 1994; Eamer 2006; Freeman 1992; Freeman and Carbyn 1988; Johannes 1989; Johnson 1992). Scholars have also advanced the proposition that governance regimes incorporating a broad range of ecological knowledge, including those of resource user communities, tend to have a capacity for adaptation to change and are better able to deal with social and ecological uncertainty (Folke et al. 2002). Reid and colleagues (2006), for instance, have explored how science and local knowledge could best be brought together, concluding that the most robust bridges were those constructed by combining such complementary kinds of knowledge and capabilities at different levels of governance. Within the body of literature that has attempted to evaluate the outcomes of participatory governance arrangements involving Aboriginal groups in Canada, many scholars have thus brought forward the argument that cultural diversity can enhance the pool of human resources from which management decisions are drawn, assuming that group heterogeneity will generate a diverse set of problem-based solutions (Carlsson and Berkes 2005).

Another important dimension of the positive effects that have been identified as resulting from Aboriginal involvement in environmental governance in Canada relates to the empowerment of such groups and communities through their participation in decisions that impact their livelihoods. The argument that shared responsibility in governance would increase stewardship and equity was originally advanced for justifying the need for the

²³ Cash and Mooser (2000) have referred to this phenomenon as *scale-specific comparative advantage*.

development of a range of participatory initiatives throughout the world (Bradshaw 2003; Castro and Nielsen 2001). Some recent research findings have corroborated that hypothesis.

White (2008), for instance, has studied a variety of co-management boards dealing with land, wildlife and environmental issues which have been established under the land claim process in northern Canada, and are explicitly designed to bring significant Aboriginal influence to bear in key land and wildlife decisions. He argues that, overall, the evidence supports the conclusion that northern land-claim boards represent “an important vehicle for substantially enhanced Aboriginal involvement in and influence over government decisions affecting the wildlife and environment of traditional Aboriginal lands” (2008: 71). The view that the co-management process generally constitutes a signal of improvement for Aboriginal peoples in terms of both their formal involvement in governmental processes and the consideration of their interests and preferences has been echoed and supported by others (Dowsley 2007; Treseder and Honda-McNeil 1999). Scholars have argued that co-management involving indigenous groups within a negotiated framework of substantive power sharing provides a venue for augmented levels of confidence in decision-making processes, as well as a way to address claims for self-determination and increased control over traditional territory within liberal-democratic state systems (Goetze 2005). In addition, participatory arrangements have been praised for helping overcome mutual mistrust between resource harvesters and government representatives (Bailey et al. 1995), as well as resolving conflicts between Aboriginal and state systems of wildlife management (Osherenko 1993, 1988).

However, while many academic voices have depicted the empirical outcomes of Aboriginal involvement in participatory governance in Canada in a positive light, a growing number of analyses have also recognised substantial shortcomings in this process. Such

critiques will now be explored in further detail in order to situate the discursive panorama engaged by this research project.

Over recent years, the dominant positive diagnostics resulting from scholarly evaluations of participatory environmental governance regimes involving indigenous communities have been called into question as critical reflection from multiple perspectives on the experience accumulated to date is urged (Cruikshank 1998; Ellen et al. 2000; Feit 1988; Morrow and Hensel 1992; Scott and Weber 2001; Spak 2005). For example, situating their critiques of participation within the context of development initiatives²⁴, Cooke and Kothari (2001) have persuasively and broadly criticised received wisdom concerning the overwhelming benefits of participatory initiatives by building a case for interpreting participation in development as a “new tyranny” or as a phenomenon facilitating the illegitimate and unjust exercise of power. A spectrum of sophisticated critiques has also been mounted on the topic of collaborative governance regimes in Canada, ranging from an expression of mild concern over problems that could be addressed within existing frameworks to an articulation of stringent attacks interpreting such arrangements as forms of co-optation, domination and as agents of cultural assimilation undermining Aboriginal aspirations to self-determination.

A survey of such discourse reveals that the shifts in power dynamics that have (or have not) resulted from participatory initiatives constitute a focal point of academic critiques. Indeed, participatory environmental governance arrangements established in Canada have been dismissed for providing little more than token Aboriginal influence over land and wildlife decisions, for remaining essentially under the control of federal, provincial or

²⁴ Nadasdy (2005) argues that the discourse of co-management in Canada is strikingly similar to that of participatory development elsewhere in the world, and that co-management in North America is merely a regional manifestation of what is in reality a global phenomenon. The author suggests that “any attempt to understand co-management in Canada, then, must take this wider international context into account” (Nadasdy 2005: 216). According to this logic, academic voices that have sought to bring the phenomenon of participatory development under scrutiny are also taken into account here.

territorial governments and, perhaps most damningly, for undercutting rather than enhancing Aboriginal peoples' self-determination and autonomy by enmeshing them in Western modes of thought and behaviour. While to date, critics of such regimes in northern Canada have not opposed the collaborative rationale and broad aims pertaining to participatory approaches in general, they nonetheless have questioned the outcomes of these regimes' practices and have maintained that Aboriginal influence under co-management regimes falls woefully short of what might be achieved under full-fledged Aboriginal self-government.

For example, Nadasdy (2003b, 2005) sharply contrasts the promises of positive social change brought about by co-operative resource management regimes (i.e. improved management and the empowerment of local communities) with their unintended political consequences. Focusing on the case of the Ruby Range Sheep Steering Committee, a co-management body established to address concerns about a population of Dall sheep in the southwest Yukon, he critically argues that co-management, which is supposedly empowering Aboriginal groups, may in fact have the opposite effect. The author envisions the institutionalisation of co-management discourse and practice "as a subtle extension of empire, replacing local Aboriginal ways of talking, thinking and acting with those specifically sanctioned by the state" (Nadasdy 2005: 227), and further claims that the current modes of indigenous participation in co-management makes it much more difficult for such groups to challenge this process than it had been for them to question top-down decisions of the old state management system. Stevenson's analysis of co-management arrangements in northern Canada endorses a similar logic, but the author is even harsher in his judgement and overall assessment: "Aboriginal peoples' participation in state-sponsored projects of co-management has served to disempower them by creating virtually insurmountable barriers to the inclusion of their values, understandings, knowledge and institutions into these processes" (Stevenson 2006: 172). In his view, "it would be [therefore] difficult to conceive a more

insidious form of cultural assimilation than co-management as currently practiced in northern Canada” (Stevenson 2004: 68).

This last comment highlights a second aspect of Aboriginal participation in environmental governance which has been at the forefront of numerous academic critiques, namely, plans to incorporate meaningfully Aboriginal knowledge into decision-making processes. Such initiatives have constituted the cornerstones for many participatory arrangements in Canada. As a result, scholars who have been concerned with evaluating the performance of these projects have often critically examined the process of knowledge integration and its underlying assumptions. As Natcher and colleagues (2005) argue, because collaborative governance regimes have more to do with managing human relationships than resources per se, their ultimate success or failure depends on the participants’ abilities to engage rather than subvert differences in knowledge and experiences.

In fact, a recent overview of the field, emphasising practices in North America, concludes that “despite the growing awareness of the importance of Aboriginal knowledge for natural resource management, the current regulations and practices in many regimes still do not provide effective formal mechanisms for including traditional ecological knowledge in active management” (Menzies and Butler 2006: 2). Various researchers have pointed out that, through their participation in the management of natural resources, Aboriginal groups are forced to speak in uncharacteristic ways (i.e. in the language of either wildlife biology or bureaucratic resource management), and to take part in processes that undermine the social relations, practices, beliefs and values originally meant to be preserved (Harrold 2002; Morrow and Hensel 1992; Nadasdy 2003a, 2003b; Sandlos 2007; Stevenson 2006, 2004, 1996). Research into wildlife co-management institutions in northern Canada has thus found that indigenous knowledge plays at best a minor role in the operation and decisions of co-management boards (Cizek 1990; Kendrick 2000; Rodon 2003; Peters 2003; Spak 2005), and

has suggested a wide-ranging critique that does more than simply pointing out to the failure of co-management to achieve its aims.

Spak (2005), for example, has examined the position of indigenous knowledge in Canadian co-management organisations. She argues that the overall rationale within which co-management boards in Canada operate remains based on a Euro-Canadian scientific and bureaucratic framework of resource management: “Scientifically trained resource biologists do in the end decide which aspects of [indigenous knowledge] are to be included in the management process and which are to be ignored” (Spak 2005: 235). In his analysis of the efforts to integrate traditional ecological knowledge (TEK) and Western science for the purpose of co-management, Nadasdy (1999) offers a similar diagnosis. He states that such an endeavour is highly problematic, as it leads to the decontextualisation and compartmentalisation of Aboriginal knowledge through its translation (and distortion) into forms that can be incorporated into existing management bureaucracies and acted upon by scientists and resource managers (see also Cruikshank 1998). According to White (2008), the task of involving TEK in decision-making processes has met with challenges that have much to do with the ways in which this knowledge is understood. Often, schemes for involving Aboriginal peoples in decision-making have been criticised for reducing TEK to a collection of mere factual data about the environment, thus failing to acknowledge the value system and cosmological context within which this traditional knowledge was generated and within which it makes sense (McGregor 1999, 2000; Gallagher 2003; Simpson 2001; Usher 2000).

In the case of the Nunavut Territory, with a legitimate territorial government run by an Inuit majority, the expectation was that things would be different; Inuit would “regain control of their lands and their lives” (Dahl et al. 2000), notably through the recognition of “Inuit systems of wildlife management that contribute to the conservation of wildlife and protection of wildlife habitat” (GC 1993). However, in spite of the ongoing initiatives to develop a

hybrid environmental governance regime that attempts to bring into play multiple perspectives on decision-making processes, the question of how to incorporate both Inuit and scientific knowledge into Nunavut governance remains a challenging one. In fact, an expanding body of academic literature has highlighted significant and unresolved tensions between Inuit and Aboriginal understandings, western scientific views and the exigencies of the modern bureaucratic state (Armitage 2005; Dowsley and Wenzel 2008; Ellis 2005; Price 2007; Stevenson 2006; Thornton 2002; White 2006a). Loukacheva (2007) describes the current situation in the following terms: “Notwithstanding a decade of Nunavut governance, Inuit are being challenged by the transition and adjustment to non-Inuit values of other societies and the risk of being overwhelmed by Western concepts of governance” (Loukacheva 2007: 32).

3.3. Hybrid forums: a review of existing applications

In order to assess the dynamics pertaining to the deployment of hybrid and dialogical spaces of wildlife governance in Nunavut, I offer to observe critically the production and mediation of ‘Inuit’ and ‘scientific’ knowledge through such spaces. To achieve the latter objective, the concept of *hybrid forum* is employed. The present review of existing applications and critiques of this conceptual tool outlines the contributions that this research aims to make to its development.

Callon and colleagues (2001, 2009) recently elaborated the notion of hybrid forum to define the type of democratic process performed during public controversies over techno-scientific issues (cf. section 2.2.5. for a more elaborate presentation of this concept). By raising scientific, economical, ethical, legal, environmental and technological concerns, as well as engaging a variety of social interests and actors, hybrid forums provide not only a medium for exchange; they allow for mutual transformations between actors through the

establishment of a ‘deliberative democracy’ (Callon, Lascoumes and Barthe 2001: 36, 167-168; Callon 2002; Callon and Rip 1991). The theory of hybrid forums thus not only constitutes an analytical framework for techno-scientific controversies occurring within democratic states; it also implies a normative proposition: negotiations between identities in hybrid forums create a common world or collective in which all actors and concerned groups are likely to find a place. According to Callon and colleagues (2001, 2009), the multiplication of hybrid forums through the use of dialogical procedures represents the condition of emergence of a new (and more equitable) technical democracy.

The elaboration of the theory of hybrid forums and the subsequent application of such a conceptual apparatus to empirical cases can be situated within the context of the development of sociological research on science and expertise in France since the 1980s (Joly 2007). To date, a burgeoning academic literature on hybrid forums has focused on recent techno-scientific debates that have occurred within the French democratic system, such as public controversies over genetically modified organisms (Joly et al. 2000, 2003; Marris and Joly 1999; Marris et al. 2008), HIV research and treatment (Barbot et al. 1998; Barbot 2002; Dalgalarondo 2004), mad cow disease (Rip et al. 2000) and nuclear waste management (Estadès and Rémy 2003; Lochard et al. 2000). These studies have been informative in identifying the potential shortcomings of and limitations to early conceptualisations of hybrid forums.

A common critique addressed to Callon and colleagues relates to the normative assumption that developing hybrid forums will lead to the deployment of spaces of dialogue leading to a ‘democratisation of democracy’ (Callon et al. 2003). Indeed, Dalgalarondo reviews the use of the hybrid forum as a normative model and criticises the over-idealistic view of mobilisation through associations that are expected to induce reform and generate democracy in the health field in France (Dalgalarondo 2004). Lolive (2006: 153) also takes a

critical stance as to the effects of hybrid forums by pointing out that knowledge co-production often comes up against asymmetries in expertise and research capacities between different actors, which may lead to the instrumentalisation and ineffectiveness of this strategy of democratisation. Similarly, Tucker (2007) doubts whether the normative prescriptions suggested by Callon and colleagues would be “sufficient to solve the problems that follow from the monolithic and exclusionary structure of French governance and institutional science” (Tucker 2007: 202). He questions the applicability of the theory of hybrid forums to other democratic systems, since this notion has been exclusively applied to French cases to date.

A second trend within the literature that has questioned the robustness and empirical utility of the notion of hybrid forum has focused on evaluating its potential for thorough analytical descriptions of the public spaces where techno-scientific controversies unfold. In fact, Agerri (2002) has criticised this theoretical tool for conveying a somewhat vague definition of what actually constitutes a hybrid forum, and suggests that the structural attributes of such forums should be better distinguished, especially as to their delimitation in time, space and across institutional scales. In response to such a critique, Barthe, Callon and Lascoumes have acknowledged the current need for “better understanding [...] the configuration and dynamics of such forums and show[ing] how they vary with the nature of the questions at hand” (Barthe, Callon and Lascoumes 2002: 64) by confronting existing theoretical claims with more empirical cases.

Within the context of such critical discussions, this study questions both the descriptive and normative qualities of the model of the hybrid forum by applying it to the analysis of the public spaces for debates deployed in Nunavut in order to address wildlife co-management and conservation issues (i.e. examples of such spaces include: public hearings, government consultations and collaborative research initiatives). Given the diverse nature of both the

actors and questions mobilised around the co-management of wildlife within a territory that is a recent political invention undergoing constant transformations, this case offers fertile ground for drawing on theoretical insights recently developed by Callon, Lascoumes and Barthe (2001, 2009) in order to analyse the ecology of hybrid forum formation and development in northern Canada.

In doing so, I echo existing critiques of the theory of hybrid forums by questioning the utility and translatability of its descriptive categories, as well as evaluating the normative effects of the dialogical spaces under study. This analysis will illustrate the need to transcend the perception of hybrid forums as spaces of mutual understanding where actors are moved by their will to construct a common world, and where games of power and rhetoric, as well as the pursuit of group or self-interest can be viewed as marginal. It will also suggest that the laymen/expert divide characterising the vocabulary employed by Callon and colleagues is problematic, and may prove inadequate within a context involving indigenous 'experts'. In addition, this study addresses conceptual issues that have been overlooked in the existing literature on hybrid forums, such as: the possibility of conceptualising hybrid forums as part of a wider governance process, the problem of envisaging power asymmetries as the sole product of negotiations between actors rather than as a determining factor, as well as potential limitations in reducing dialogic democracy to a matter of procedures.

The cases under study reveal that power relations conceived as both conditions and consequences of the formation and deployment of hybrid forums may partly determine their degree of dialogism as well as strongly influence modalities of knowledge co-production. These cases also suggest that hybrid forums should be considered in light of the singularities of the socio-historical context in which they emerge. Furthermore, the Nunavut experience illuminates the fact that procedural criteria do not constitute the sole conditions of emergence for a new technical democracy; it provides an example of dysfunctional hybrid forums in

which the practice of dialogical procedures leads to the crystallisation of expertise divides rather than fostering the collaborative coexistence and transformation of multiple identities. In sum, in offering such a critique of the model of hybrid forum, I aim to contribute to a growing literature which has sought to develop this conceptual tool as a means of engaging with the complexities of the coalitions, reconfigurations of expertise, commitments and forms of knowledge production that characterise the performance of heterogeneous techno-scientific controversies within democratic states.

For the time being, this objective leads to a synthetic review of two more bodies of literature, namely: scholarly discussions that have questioned the role of science in the sociopolitical history of the Arctic region and with relation to indigenous groups and cultures in northern Canada, as well as research that has explored Inuit knowledge of and relations with the biophysical world. Given the growing influence of scientific practices on wildlife policies in the Canadian North and the importance of animals in past and present Inuit culture, these domains of academic inquiry are pivotal to an informed analysis of the production and mediation of Inuit and scientific knowledge occurring in hybrid forums of wildlife governance in Nunavut.

3.4. Inuit ecological knowledge

I do not believe that the question of ‘What is an animal?’ can be resolved by a unitary theoretical or conceptual paradigm. Rather, [...] every such paradigm has some view of animality already deeply embedded, and often only dimly recognised, within its most fundamental assumptions. [...] It is only through concerted efforts, by scholars representing many disciplines and intellectual traditions, that we can begin to unpack the multiple and many-layered meanings of ‘the animal’.

– Tim Ingold (1988: 15)

Animals have occupied a fundamental role in the organisation and development of Inuit subsistence activities and unique cultural ecology (Wenzel 1981). Inuit understandings of and relations to *nuna* (the ‘land’) and *uumajuit* (the ‘animals’) may consequently be interpreted as

central to an appreciation of the dynamics of wildlife governance processes where Inuit perspectives about the biophysical world are mediated (Fienup-Riordan²⁵ 1990).

Much of the research about animal/land/human relationships among hunter-gatherers, in general, and Inuit, in particular, has focused on describing subsistence harvesting techniques and their practical results, as well as observable social interactions and ceremonial or ritual activity (Nelson 1969; Wolfe 1979; Damas 1972). Early Arctic anthropologists have, for instance, compiled detailed lists of prescribed rules articulated primarily in terms of the prohibitions and prescriptions that have guided Inuit in their interactions with and between the human, animal, and spirit worlds (Boas 1888, 1901, 1907; Mathiassen 1928; Nelson 1899; Rasmussen 1929, 1931).

While pragmatic and ecological approaches²⁶ to the study of subsistence practices have until recently dominated research on the Inuit, attempts have also been made to analyse the ideological and symbolic dimensions²⁷ of Inuit and other northern Aboriginal hunting and harvesting practices (Blaisel 1993; Brightman 1983; Hallowell 1960; Martin 1978; Saladin d'Anglure 1980; Scott 1989). Various scholars have thus commented on how an appreciation of the Inuit concept of animals as intelligent, social, and spiritually powerful other-than-human persons is fundamental to understanding how productive decisions were made in the past and continue to be made to this day (Brody 1976, 1991, 2001; Fienup-Riordan 1990, 1991a, 1991b; Randa 1993; Wenzel 1991). Illustrative of this statement are many reports of

²⁵ From her work among the Alaskan Yup'ik Eskimos, the anthropologist concludes: "Today, perhaps the best that can be hoped for is an increased awareness on the part of non-native researchers, managers and politicians of the meaningful organisation of Yup'ik social relations, particularly human/animal relations, according to a cultural logic very different from their own. Even with such an awareness, conflict will likely continue in the arena of fisheries and game management. Although economic in character, these conflicts are grounded in ideological differences as much as in disparate material circumstances" (Fienup-Riordan 1990: 183).

²⁶ According to this perspective, "foraging strategy, settlement patterns, and material techniques are considered predictable from a principle of energy-efficient least effort [...] or from biological need satisfaction" (Brightman 1983: 414).

²⁷ In Wenzel's opinion, such analyses remain nonetheless limited given their challenging nature: "No aspect of Inuit harvesting is as frustrating to systematic understanding as the ideological connectivity between hunters and their prey. Often, well-meant analyses are too shallow, while the worst such attempts trivialise what they purport to analyse. Even in such a large and varied body of ethnographic and ethnological literature, the best works on Inuit-animal relations are limited" (Wenzel 1991: 135).

the fact that, among Inuit living in the eastern Canadian Arctic (Tyrrell 2006) and Bering Strait Yup'ik Eskimos (Fienup-Riordan 1990), animals control the hunt and humans are to treat them respectfully to earn their cooperation:

Hunters believed that animals gave themselves to them by virtue of proper attitude and action in the context of both human and animal/human interaction. Hunters viewed animals as an infinitely renewable resource possessing both immortal souls and awareness comparable to that of human persons. By this view, human predation could not directly affect animal population adversely. Rather human activity was instrumental only insofar as it was able to influence reactive decisions in the animal and spirit worlds. A hunter did not act on a finite population of animals, only on their accessibility (Fienup-Riordan 1990: 172).²⁸

Since Inuit have for so long conceived their relationships with animals as social in nature and as vital to their physical and cultural survival, Inuit subsistence hunting, Wenzel argues, “integrates the human and animal components of the arctic environment into a single shared community” (Wenzel 1991: 136). Hence, developments within the domain of ethnoecology may be understood to have further contributed to analysing the ways in which different components of such a community of beings carry meaning to the Inuit. Focusing mainly on how Inuit perceive and organise the natural world, such a strand of research has yielded interesting commentaries about the zoological and biological taxonomic classification schemes employed by Inuit, as well as about differences in status among animals in Inuit material culture, knowledge and representations (Dorais 1993; Dritsas 1986; Paillet 1973).

Finally, another recurring theme in the literature is the changing and evolving nature of Inuit knowledge of and relations with the natural world. In fact, since the first contacts between Inuit and Europeans, the relationships between Inuit, the land and animals have been subjected to a certain number of transformations in the domains of hunting strategies and techniques, but also in the realm of ideologies, ritual practices and geographical knowledge

²⁸ As Randa points out, such beliefs may hinder the acceptance of quota systems currently promoted by wildlife management practitioners. In his view, ensuring that animal populations remain at sustainable levels by imposing quota makes no sense for traditional Inuit as they believed humans had no influence on animal population size (Randa 1993).

(Collignon 1996, 2006; Dorais and Sammons 2002; Dowsley and Wenzel 2008; Fienup-Riordan 1999; Heyes and Jacobs 2008; Matthiasson 1992; Thorpe 2004; Zavaleta 1999). For Canadian Inuit, such a complex process has been precipitated, in the last century, through: the spread of Christianity; the shift from dispersed to centralised settlements since the 1950s; an increased access to industrial technologies, processed foods, wage labour and modern education; as well as (among other factors) the advent of exogenous forms of control of the land and natural resources traditionally used by Inuit (Damas 2002). However, in spite of the heterogeneous, evolving and culturally syncretic quality of contemporary Inuit knowledge of the biophysical world, researchers and Inuit alike have highlighted lines of continuity prevailing, for instance, in the unique ecological knowledge and ethical code of conduct that Inuit maintain with regards to the land and animals (Anderson and Nuttall 2004; Randa 1993).

This research further contributes to the academic literature on Inuit understandings of the biophysical world by highlighting the role that such perspectives have played in governance, a question that, so far, has been incompletely addressed (Dowsley and Wenzel 2008; White 2008). While scholars have depicted the evolving nature of Inuit ecological knowledge mostly through the study of the material, representational, ideological and symbolic dimensions of Inuit subsistence, I propose to draw and build on these advances by linking them with an analysis of a relatively uncharted territory within which such knowledge is nowadays produced and having its effects: the realm of politics and governance.

3.5. The study of science and technology in northern Canada

In the Canadian Arctic, the presence and historical power of holders and producers of Western scientific knowledge represent two of the many factors that have contributed to a recent shift towards an increased participation of Aboriginal groups in environmental governance. Indeed, as Kulchyski and Tester (2007) have sought to demonstrate, the science

of game management drove the development, through the post-World War II period, of state policies which interfered considerably with Inuit hunting practices but also, in the process, altered other aspects of Inuit life most dramatically. According to these authors, the process through which an enveloping regime of wildlife management attempted to “supplant Inuit relations to animals with the logic, discourse and machination of science” (Kulchyski and Tester 2007: 11) generated a culture of resistance beginning as early as the 1960s which has been instrumental in the development of Inuit rights and the move towards self-government in northern Canada. My current concern with Inuit participation in wildlife governance in Nunavut can thus be linked to a growing body of literature which has questioned the role of science in the social history of the Arctic and which has explored the making of scientific knowledge in boreal regions.

In Bravo and Sörlin’s (2002: 10) view, “disjunctures of an unexpected magnitude” pertaining to scientific practices performed throughout the circumpolar North render impossible the identification of a clear concept of ‘scientific practice’ in the Arctic region and make it difficult to conduct a conventional comparative study of ‘Western science’ across northern nations. Such a statement serves to illustrate the diversity of scientific endeavours that have taken place in the Canadian North over the last few centuries and, consequently, that have directed research on this topic.

For instance, scholars have explored in considerable depth the role played by science in early European expeditions to the Canadian Arctic archipelago (Levere 1993); they have also underlined the original contributions of Euro-Canadian fur traders to advances in natural history (Houston et al. 2003). While colonial expeditions provided the framework for the production of early scientific knowledge about Canada’s northernmost reaches, the motives for pursuing scientific enterprises multiplied throughout the last century, leading to corresponding shifts in academic research on the subject (Adams et al. 1987). Such motives

now range from concerns over defence, sovereignty, environmental protection, and interest in social and natural resource development to answering global scientific questions through participation in major international research programmes (Hobson 1990; Roots 1990). Roots further suggests that a general shift in research emphasis has occurred over recent decades:

In the Canadian Arctic Islands, although there are many areas in many subjects where data are inadequate and careful observations are few or absent, the descriptive phase (in which scientists recorded as accurately as possible what was there) has to a great extent been replaced [...] by studies of processes (natural or induced by humans), or of causes and effects of observed phenomena. The emphasis today is not so much on what is there, but on how things got the way they now are, and what changes are currently taking place (Roots 1990: 51).

In spite of this diversity, however, scholars have largely neglected the observational and experimental practices involved in such a range of scientific activities. In focusing on scientific field practices in the Canadian Arctic, Powell's innovative work thus attempts to set new agendas for historical geographers of science around an analysis of the practice of geographical sciences in northern regions (Powell 2004, 2007), and joins in a burgeoning academic scholarship about the epistemic status of variegated field practices in the Arctic region. Powell's work notably examines the developing notion of the field experiment in environmental sciences conducted in the Canadian High Arctic during the period 1958-70 and reviews a set of field practices performed under the auspices of the Canadian Government's Polar Continental Shelf Project (Powell 2007). Powell describes how "geographical scientists moved from a conception of good scientific activity as involving topographical survey, to one of structured observational measurements, and then to field experiments, in a period of around fifteen years" (Powell 2007: 1796). He further shows that field scientists involved in these multidisciplinary scientific investigations of the continental shelf had to deal with a number of logistical, corporeal, and epistemic difficulties in the High Arctic. These obstacles hindered attempts to develop a scientific literature based upon experimental practices during fieldwork, thus illuminating the relationship between the Arctic as both an expeditionary and

experimental space in which the authority of adventurous observation and experiment coexist.

While much has been written about the role of science in early Arctic colonial exploration and military developments in the North, a careful review of the studies carried out to date concerning the practice of scientific activities in the Canadian Arctic reveals that relatively little scholarly attention has been directed so far to studying scientific field practices. The same can be said of the dearth of academic analyses that have looked at the ways in which science and its practitioners have historically related to indigenous groups and cultures in northern Canadian contexts. The pioneering works of Kulchyski and Tester (2007), Bravo (2006, 2000), Bielawski (2003, 1996) and Nadasdy (2003a) constitute notable exceptions to this state of affairs. Their respective contributions will now be explored in turn.

3.5.1. Science, policy and indigenous voices

In recent articles, Bravo (2000, 2006) has discussed the changing landscape of the science/policy interface in northern Canada which led to an increased politicisation of scientific and indigenous knowledge as dichotomous or polarised categories. He interprets the current demand for an epistemic equivalence between science and indigenous knowledge in Nunavut's governance as "a dilemma symptomatic of a particular moment or period in Nunavut's history and perhaps, more generally, world history" (2000: 469). This statement suggests that research should focus on the power relations involved in the crystallisation of such a divide between knowledge systems, a task that has been overlooked in the literature exploring scientific cultures in northern Canada (Nadasdy 2003a). Indeed, Watson-Verran and Turnbull (1994) have argued that the great divide in knowledge systems coincided with the great divide between societies that are powerful and those that are not, and that the creation of a difference between science and other knowledge systems has more to do with the power to

impose a narrative as the truth through devices such as maps and books than it does with the processes of knowledge building.

In fact, in the eras of imperial exploration and colonisation of northern Canada, field sciences have been a key vehicle for describing and taking sovereign possession of the Arctic. For example, Christie (1990) has shown how the potential for military conflict and concerns over sovereignty have led to great progress in northern hydrography, sea-bottom studies, marine geology, and oceanography. In a similar manner, science has had an authoritative role in northern development in the post-1945 era, both as the arbiter of nature and as an ideology of colonial management. However, Bravo (2006) illustrates how, as the combination of nationalism and political devolution shaped late twentieth-century indigenous aspirations around the circumpolar North, the authoritative space that scientific practices had conquered over time became increasingly contested as indigenous groups sought new political accords and a greater involvement in decision-making processes concerning the territories they had traditionally occupied.²⁹ Kulchyski and Tester's (2007) critical account of the relation between the implementation of science-based game management policies and the rise of the Inuit rights movement exemplifies this contestation process, which eventually led the Canadian government to regulate scientific practice, encourage scientists to think differently about their fieldwork and open new spaces for public science³⁰ in the North. The following statement exemplifies such a shift:

Past procedures must change. Native people are concerned that a lot of the research does not address local problems. They are not happy with the way we [scientists] have gone into their backyards, carried out field work and

²⁹ In Bravo's opinion, the idea of indigenous knowledge and similar concepts like traditional ecological knowledge have vied with field sciences for the authoritative spaces opened up in the wake of the Berger Commission. This Royal Commission inquiry led by Justice Thomas Berger of the Supreme Court of Canada held public hearings in communities along the Mackenzie Valley to ascertain the full range of consequences of the construction of a pipeline. Taking the inquiry to the people, rather than vice versa, was unprecedented in the history of northern Canada, as it allowed the voices of northerners to be heard on the national stage and signalled fresh ways of running participatory democracy (Bravo 2006).

³⁰ Public science refers here to "some kinds of science practiced by public audiences who play a role in defining the terms and conditions of their own knowledge practices" (Bravo 2006: 223) rather than expert science rendered understandable for wider public audiences.

returned south with our rock samples, with our artefacts, etc. [...] We must remember that people are part of the ecosystem. We have to involve people in our studies and in the collection and analysis of our data. [...] For too long we have undertaken our research in their backyards without consulting them. Soon, we will be obliged to recognise that they own the land and want to participate in advancing scientific knowledge in the Canadian Arctic (Hobson 1990: 18-19).

As a result of such an ideological change, Bravo (2000) points out to the complexities and local differences regarding the ways in which, in Nunavut, situated knowledge practices (both 'indigenous' and 'scientific') are now mediated in schools, field stations, community councils, on the land and in elders' homes, as well as in the legislatures and policy offices of government:

My own ethnographic experience in northern communities suggests that the relationship between science and indigenous knowledge functions differently within communities than at the regional or national level. How science, technology and indigenous knowledge are perceived depends in part on the sites where they are discussed. [...] This should give greater grounds for optimism that epistemological rhetoric is sufficiently open as to sustain a wider range of possible dialogues than one might have supposed (Bravo 2000: 471).

The author suggests that the practices of science and indigenous knowledge should thus be envisaged and conceptualised as thoroughly entangled and mutually constitutive rather than mutually exclusive. Indeed, while the initial rise of indigenous knowledge as a political category can be linked (among other factors) to antagonistic relations between Aboriginal groups and science-based government policies, a much more complex set of relationships between a range of conceptualisations of science and local or traditional knowledge is now clearly visible throughout the Canadian Arctic sociopolitical landscape. The history of the Eastern Arctic Research Laboratory at Igloolik constitutes a case in point, showing how public science in Nunavut became a controversial institution of knowledge whose meanings were negotiated and held in tension between different communities (Bravo 2006).

In his analysis of Aboriginal-state relations in the southwest Yukon, Nadasdy (2003a) presents a somewhat more pessimistic view of the current configuration of scientists and

indigenous voices in northern Canadian governance. Applying Bruno Latour's theoretical ideas³¹ to explore the links between science, policy and the Kluane Nation, the author takes some of the current initiatives to incorporate science and traditional ecological knowledge into natural resource management and places them in a new light. He argues that we might more usefully view current attempts to integrate science and traditional ecological knowledge in the Canadian North as "a process that is extending the social and conceptual networks of scientific resource management into local communities rather than as part of an attempt to meld two distinct epistemological systems (which, from [Latour's] point of view, do not even exist as such)" (Nadasdy 2003a: 141). From Nadasdy's critical perspective, the project of knowledge integration is thus, in actor-network terms, extending the networks of scientific resource management into the "outside world" of Aboriginal communities by rendering the life experiences of Aboriginal elders and hunters into forms that can be used and interpreted far from these communities, in laboratories and centres of calculation (Latour 1987) where power affects a whole field of responses, reactions, results and possible interventions (Foucault 1976).

Nadasdy's solution to this undesired state of affairs is "the devolution of control over local land and resources to Aboriginal communities", thus relieving indigenous peoples "of the burden of having to express themselves in ways that are foreign to them to justify their views to scientists and bureaucrats" (Nadasdy 1999: 15). Such a proposition has since been criticised for overlooking power dynamics pertaining to existing Aboriginal-state relations. Hunn and colleagues, for instance, have argued that "it would seem more in the interest of the survival of indigenous communities to foster a dialogue, however imperfect, with the professional scientists and resource managers entrusted by national governments" (Hunn et al. 2003: 80).

³¹ To the best of my knowledge, Nadasdy is the only researcher to date who has analysed scientific practices relevant to natural resource and wildlife management in actor-network terms in the northern Canadian context.

3.6. Conclusion

From a review of the studies that have questioned the role that science and its practitioners have historically played in northern Canada, it is possible to conclude that the complex relationships that are now characterising the knowledge/policy interface pertaining to participatory environmental governance regimes in the region constitute a fertile research terrain that remains to be explored. Indeed, while the Arctic region may seem well suited to have a place in science and technology studies (STS), it has been largely absent from this academic domain, unlike what can be observed in many other parts of the world (Latour 2005; Thompson 2002). Aside from Nadasdy's work on Aboriginal-state relations in the Yukon Territory (Nadasdy 2003b), existing research about the Canadian Arctic has completely overlooked the study of science conceptualised as a performative process constituted by networks of both human and nonhuman actors. Furthermore, with a few exceptions (Powell 2007, 2004; Bravo 2006, 2000), so far, little scholarly attention has been directed in this region to investigating scientific field practices and, more generally, the relationship between science and policy.

In exploring an original case of scientific knowledge production and mediation in environmental governance in Nunavut, this study contributes an empirically and conceptually innovative analysis relevant to the development of STS and Arctic science studies. Following Bravo's advice, this thesis focuses on describing power relations that have led to the creation and crystallisation of the divide between 'Inuit' and 'scientific' knowledge systems, a divide that is currently part of the framework within which the current wildlife governance regime is operating in Nunavut. My analysis considers how recent changes in the circulation of power between Inuit and the Canadian state has led to the creation of spaces for both scientific and Inuit knowledge in the governance of wildlife within this territory; it also questions the production and configuration of such spaces. For example, I examine how Inuit demands for

participation in wildlife research and views about animal welfare have come to influence the conduct of scientific field practices in Nunavut.

This study's review of the academic literature that has sought to evaluate the social, political and ecological outcomes of a range of environmental governance arrangements involving Aboriginal groups in Canada also reveals the emergence of a complex assemblage of differing and sometimes conflicting research findings. Analyses of participatory environmental governance regimes in Canada and elsewhere have variously interpreted such experiments as: ways of enlisting uncontrolled social groups in the conservation of resources while simultaneously and covertly co-opting them into compliance with nation state regimes; means of empowering for disenfranchised rights claimants; and vehicles for continuing sociopolitical struggles.

In the context of such a contrasted discursive panorama, this research traces the (desired and undesired) consequences of recent and ongoing changes in the modalities of Inuit participation in wildlife governance in Nunavut. Which Aboriginal aspirations have been involved in the negotiation of a participatory wildlife governance regime in Nunavut? How have these been, or how may they be, fulfilled throughout various power-sharing provisions and the invention of hybrid political assemblages? My thesis addresses these central questions, which have only been partially answered to date (White 2008, 2009).

As the content of this review illustrates, most academic assessments of collaborative regimes in northern Canada have also tended to focus on exploring dynamics at play within the realm of 'formal' spaces of governance, such as co-management boards (Peters 2003; Spak 2005; White 2006a). This study will contribute to expanding this scope by discussing some spaces that may appear less conspicuously in wildlife governance (such as field research stations, hunting grounds, schools and government offices), but which nonetheless have an important role to play in this process. In addition, while scholars have given considerable

thought to critical evaluations of the position of Aboriginal knowledge in environmental governance, much less attention has been directed to date in northern Canada to examining the mediation of both Aboriginal and scientific knowledge within such a process: this is a project this thesis will pursue.

Recently, a number of contributors have been calling for an expansion of the theoretical impetus and empirical foci of both STS (Latour 2005) and indigenous knowledge research (Sillitoe et al. 2002), as well as for a multiplication of bridges between these two spheres of inquiry (Watson-Verran and Turnbull 2000). Hence, at a time when STS research around issues of lay or non-expert knowledge has been conducted primarily in Western contexts (Turnbull 2000; Verran 2001), my work will engage with the mediation of indigenous knowledge in the development of hybrid forums, and thus contribute to an emerging literature situated at the interface of STS and the study of indigenous knowledge (Braun 2002; Fairhead and Leach 2003; Goldman, Nadasdy and Turner 2011; Verran 2002). This creates the opportunity for an interdisciplinary engagement that should transcend the given epistemological and ontological assumptions of existing disciplines (Barry et al. 2008).

Finally, in questioning the interrelations among Inuit participation, science and policy in contemporary environmental governance in Nunavut, this thesis seeks to inform ongoing assessments of the changing configuration of Aboriginal-state relations, and the evolution of Inuit-state relations in Canada more specifically (Tully 1995). Over the last few decades, the field of human geography has been criticised for its failure to engage meaningfully with 'real world' problems (Martin 2001). Echoing this concern, this project actively seeks to contribute to debates centring on the rights, obligations and performance of the parties engaged in environmental governance in Nunavut. It does so by exploring the invention and performance of consultative mechanisms, research practices and policy processes involving both human and nonhuman actors across the territory. My hope is that the results of this research project

will contribute to more equitable and effective wildlife governance practices in the Canadian North and elsewhere.

Chapter 4. Producing 'wilderness': building wildlife governance networks in Nunavut

Wilderness is not quite what it seems [...]. It is not a pristine sanctuary where the last remnant of an untouched, endangered, but still transcendent nature can for at least a little while longer be encountered without the contaminating taint of civilisation. Instead, it is a product of that civilisation, and could hardly be contaminated by the very stuff of which it is made. Wilderness hides its unnaturalness behind a mask that is all the more beguiling because it seems so natural.

– William Cronon (1996: 7)

4.1. Introduction

Authors who have put forward the idea of nature as a socialised space have recently challenged the notion of *wilderness* as something existing outside 'society' or 'culture' (Braun 2002; Braun and Castree 1998; Cronon 1996). William Cronon and others have convincingly illustrated how views of 'pristine' or 'primeval' nature positing nature as something that lies outside history have often done so by denying other histories of land occupation and use, specifically those of indigenous peoples (Cronon 1996). In demonstrating that wilderness can be envisaged as *produced* rather than simply *given*, their work shows that it is possible, if not imperative, "to identify the specific historical forms that nature's production takes, and to locate the specific generative processes that shape how this occurs" (Braun 2002: 11).

In accordance with such a suggestion, this chapter traces the historical emergence of contemporary wildlife governance arrangements in Nunavut by considering how *wildlife* progressively became available to, and was transformed by, forms of political calculation in northern Canada (Foucault 1991). Given that the main research questions of this thesis are explored through the use of two case studies, my account will focus on the history of polar bear and common eider governance networks.

I first describe how, for the greater part of their history, the Inuit self-regulated their use of and hunt for polar bears, eiders and other animal species. I then illustrate how, since the

late 19th century, the formal apparatus of the Canadian state has progressively come to embroil itself with the business of knowing and administering animals in the eastern Arctic, and the lives and activities of the people who rely on these animals for subsistence. I explore how 'wildlife' became constituted as a domain and object of state intervention in the Northwest Territories (a territory from which Nunavut was carved in 1999), but only through a partial erasure of Inuit territorialities, experiences and perspectives. In doing so, I depict a general trend towards a shift from early top-down wildlife management practices towards a situation in which local and Aboriginal perspectives are increasingly taken into account.

My analysis then focuses on how relationships between a constellation of actors and institutions engaged in interconnected spaces of governance occurring at different scales (ranging from the local to the global) (Jessop 2007) have come to characterise current wildlife governance arrangements in the Nunavut Territory. It describes how such a regime was initially advocated as a recognition of Inuit rights to the lands and resources upon which they had relied for centuries, and justified on the grounds of sociopolitical equity by the actors involved in its design and implementation. I also demonstrate how this type of regime has since been heralded in public discourse as a process that should allow Inuit to be empowered through their equitable representation and meaningful involvement in wildlife research and management.

Throughout this chapter, the main institutions and actors involved in contemporary wildlife governance in Nunavut are identified, as well as their roles, responsibilities and objectives in this process. This will set the stage for questioning, in subsequent chapters of this thesis, the existence (or absence) of discrepancies between the theoretical objectives of participatory wildlife governance and its practical achievements to date. This will be done by exploring the objects, subjectivities, knowledge practices, dialogical procedures and power relations characterising the production of governance networks involving people, animals and

things in the eastern Canadian Arctic.

4.2. Pre- and early colonial times: obeying *maligait*

Since the arrival of the ancestors of modern-day Inuit in the Canadian Arctic from about 1,000 years ago³² (McGhee 1990) up until around the mid-20th century, the Inuit lived in numerous, dispersed clusters of small hunting camps, which tended to be made of interrelated extended families (Damas 2002; Rigby, MacDonald and Otak 2000). Animals (Inuktitut: *uumajuit*),³³ including marine and terrestrial mammals, fish and birds, were fundamental to Inuit livelihoods. The rhythm of daily and seasonal life was largely organised around activities such as hunting, fishing, gathering, tracking the movement of large game, preparing meat for storage, and manufacturing clothing from hides. Collective hunting and particularly the sharing of meat helped to structure and reinforce kinship ties and group solidarity (Wenzel 1991), and game animals held a place of great importance in Inuit spirituality (Laugrand and Oolsten 2010).

Prior to European contact, the use of, and hunt for animal species, including polar bears and eiders, were self-regulated by hunting groups who would observe sets of taboos, rituals and ethical codes of conduct in an attempt to maintain appropriate attitudes to capture animals (Randa 1993). In order to ensure successful hunts, Inuit hunters would deploy naturalist and cynegetic competencies but also respected rules of conduct edicted by invisible forces known to humans by shamans.³⁴ In pre-Christian times,³⁵ such rules of respect governed a wide range

³² The Inuit of Nunavut are descendants of the Thule people who spread across what is now the Canadian Arctic from present-day Alaska around the start of the first millennium (McGhee 1990).

³³ According to Nakashima (1991), the group of organisms that Inuit refer to as *uumajuit* corresponds most closely, but not precisely, with the group which western scientists refer to as 'animals'.

³⁴ Before the advent of Christianity, Inuit believed that the animals that were hunted and killed were sentient beings endowed with a *tarniq*. This was why it was important for people to respect the game. As an Inuit elder explained to Rasmussen: "The greatest peril of life lies in the fact that human food consists entirely of souls. All the creatures that we like to kill and eat, all those that we have to strike down and destroy to make clothes for ourselves, have souls, like we have, souls that do not perish with the body, and which must therefore be propitiated lest they should revenge themselves on us for taking away their bodies" (Rasmussen 1929: 57, cited in Laugrand and Oolsten 2010: 115). According to Laugrand and Oolsten, *tarniq* became the Inuktitut translation

of behaviour. Some rules concerned the earth and the animals, others the relationships between human beings. Most rules had to do with the different parts of the animals that were hunted and specified how different categories of people should (or should not) handle these parts within specific contexts. There was great variation in the rules to be observed, not only in different geographic areas, but also between families and even individuals. According to Laugrand and Oolsten (2010: 116), Inuit used various terms to refer to these rules: “[F]or example, *pitailiniq*, refraining from doing something; *tirigusuusit*, specific injunctions imposed on a person; *tiringnaqtuq*, anything that is a cause of one needing to observe *tirigusuusiq*; and *maligait*,³⁶ accepted guidelines for doing things that need to be respected.” Only by observing these rules could human beings maintain an order where animals would allow themselves to be killed and reborn as hunters and prey were connected in a cycle of exchange: the hunter depended on the animal for survival, and the animal was brought to life again by the rules of respect that the hunter and the wider community observed (Laugrand and Oolsten 2010; Wenzel 1991).

In pre- and early colonial times, Inuit thus only ‘managed’ *uumajuit* insofar as they attempted to control the quality of their relationships with animals following self-imposed rules of conduct. This would progressively change when, around the end of the 19th century, the newly formed Canadian state³⁷ began to implement regulations aiming to manage northern

of the Christian concept of soul after the transition to Christianity: “The missionaries taught that only human beings had souls, and thus, when the word *tarniq* was accepted as a translation of the Christian concept of soul, most *pitailiniit* [restrictive rules] were no longer observed” (Laugrand and Oolsten 2010: 124).

³⁵ Christianity was first introduced in the eastern Canadian Arctic around the 18th century. This phenomenon implied substantial transformations in the taboos, rituals and rules performed by Inuit with relation to animals. For a detailed history of the conversion of Canadian Inuit from shamanism to Christianity see Laugrand and Oolsten (2010).

³⁶ The word *maligaaq* (plural: *maligait*) is today commonly used as translation for “Canadian law” (Laugrand and Oolsten 2010). Participants interviewed repeatedly referred to this term to designate modern wildlife regulations and management practices.

³⁷ Canada legitimated its colonial sovereignty over Inuit territories using missions, religious proselytising, trade activity and the establishment of administrative systems (Loukacheva 2007). There was no ‘conquest’ of the Inuit of Nunavut per se, as British imperial rule over the area was established long before the Arctic was even adequately charted (Ashlee 1984). British sovereignty over the territory occupied by Inuit was partially established by Martin Frobisher in 1576 but was not formally asserted until 2 May 1670, when King Charles II of England granted what was then called Rupert’s Land to ‘The Governor and Company of Adventurers of

game, and consequently, those who relied on it for their subsistence, by trying to insinuate specific ways of thinking (or political rationalities) in Canada's Aboriginal citizenry.³⁸

4.3. Early game management and regulations in Canada

In the late 19th century, the influx of trappers, traders, whalers, explorers and miners in northern Canada led to increasing hunting and trapping, and a commercial trade of meat and skins throughout the region, in which Inuit participated. As a result, early Canadian preservationists and conservationists³⁹ developed a growing sentiment that the expansion of a commercial economy posed a threat to animal populations in the North. Starting in the late 19th century and throughout the 20th century, northern 'wildlife' thus progressively became constituted as a 'natural' and 'national' object of state intervention.⁴⁰ According to John Sandlos, throughout much of the last century, the Canadian federal government adopted a paternalistic approach to wildlife conservation in the Northwest Territories⁴¹ (NWT):

From the passage of the first wildlife protective legislation specific to the Northwest Territories in 1894 until the devolution of control over wildlife policy to the territorial government in 1970, federal wildlife authorities assumed that state control over the region's Aboriginal hunters was the only way to save big game populations. [...] There was no thought of

England trading into Hudson's Bay'. The British North America Act of 1867 provided for and stipulated conditions for admission of these territories to the Dominion of Canada. Sovereignty of what was known as Rupert's Land and the North-Western Territory was transferred peacefully to the Dominion of Canada in 1870. Upon the admission of these regions to the dominion, the province of Manitoba was established out of a portion of this territory. The remaining territory was united and named the Northwest Territories. For a comprehensive review of the history of British and Canadian colonialism towards Inuit (a project which lies beyond the scope of this thesis) see Ashlee (1984), Bennett and Rowley (2004), Damas (2002), Kulchyski and Tester (2007), Loukacheva (2007), Mitchell (1996) and Quinn Duffy (1988).

³⁸ It should be stated that Inuit contacts with missionaries, fur traders and whalers around that time probably also affected Inuit-animal relations (see Eber 1989; Laugrand and Oolsten 2010; Wenzel 1991). However, such an analysis lies beyond the scope of this thesis.

³⁹ Early Canadian interest in species preservation was heavily influenced by ideas development in the United States. Wildlife conservation, as part of a larger movement concerned with the efficient use of resources and scientific management, emerged in North America towards the end of the 1800s (see Kulchyski and Tester 2007).

⁴⁰ Major works on the history of wildlife conservation in northern Canada have tended to ignore the political conflicts surrounding state game protection initiatives, depicting conservationists as enlightened and heroic figures (Burnett 2003; Foster 1998; Girard 1994). However, some studies have recently begun to challenge this dominant narrative (Loo 2001; Kulchyski and Tester 2007; Sandlos 2007).

⁴¹ Originally known as the North-Western Territory, this Canadian territory was first created in June 1870, when the Hudson's Bay Company ceded Rupert's Land and the North-Western Territory to the Government of Canada.

implementing a co-operative approach to wildlife conservation during this period; the imposition of restrictive game laws, the enclosing of traditional hunting grounds within national parks and game sanctuaries, and the introduction of police and game wardens to the area were all part of a process whereby the federal state began to assert unconditional authority over the traditional hunting cultures of [the Inuit]. [...] Native hunters were expected to submit to the remote authority of federal wildlife officials. Indeed, the prevailing sentiment among conservationists in Canada through much of the 20th century was that Native hunters in the NWT were incapable of conserving wildlife; only the rational intervention of the experts in the state bureaucracy could prevent the wholesale destruction of wildlife at the hand of northern Aboriginal people (Sandlos 2007: 7-8).

Far from passively obeying imposed rules and regulations, Aboriginal communities throughout the NWT formally resisted their marginalisation from federal wildlife conservation plans and programmes through letters, petitions and boycotts of treaty payments. Less formally, hunters simply refused to obey the game laws, hunting the animals they regarded as their birthright (Kulchyski and Tester 2007). In either case, many Aboriginal northerners bitterly resented the meddling of outsiders who purported to be managing northern wildlife in the best interest of local people (Sandlos 2007). Aboriginal hunters often refused to endorse the strategies and logics deployed by government employees to guide their hunting practices.

Furthermore, while early game management in northern Canada was based principally on socially and culturally constructed norms, values and experiences, it became increasingly reliant on the tools and logics of wildlife biology. Kulchyski and Tester (2007) observe that the science of game management did not develop in the Northwest Territories until after the Second World War. Prior to the war, the inputs to management decisions and the making of game laws were mostly anecdotal. They drew on the observations of a limited number of Arctic experts and adventurers and were often driven (based on historical experience)⁴² by a conviction that many species in the NWT were in decline and in danger of extinction.

⁴² By the 1890s, bison were gone from both the Canadian and American plains. In Canada, the musk-ox had virtually disappeared from the Arctic mainland by 1900. These observations provided clear evidence that the extermination of species was a possibility (Kulchyski and Tester 2007).

Culturally constructed assumptions about destructive Aboriginal hunting practices⁴³ also guided the making of early wildlife policies and regulations. As the scientisation of game management progressed from the 1950s onwards, government officials were provided with scientific 'facts' and rationales upon which they could elaborate management regimes that increasingly emphasised the surveillance and supervision of Aboriginal hunters. This phenomenon occurred precisely at a time when the Government of Canada shifted its policy towards Inuit from "deliberate neglect" (in the interest of preserving Inuit independence) to "massive intervention" in almost every aspect of Inuit life and culture (Ashlee 1984; Mitchell 1996).⁴⁴ Attempts to manage game after the Second World War were to have significant implications for Inuit rights and for the genesis of Inuit resistance to the management not only of wildlife, but also, by implication, of Inuit lifestyles, relationships and material resources in the latter part of the century (Kulchyski and Tester 2007).

Indeed, if one looks at the general trajectory of Canadian northern wildlife policy throughout the 20th century, a clear trend emerges: early top-down management, which often disregarded Aboriginal hunting practices and cultures, has evolved towards a situation in which Aboriginal perspectives and rights have been increasingly taken into account, or at least mentioned, in official policy statements and in legal documents (Burnett 2003; Dowsley 2007, 2009b; Sandlos 2007). Throughout this history, early decisions based on moral reason alone were progressively supplanted by policies justified by instrumental reason, as wildlife management turned largely to 'evidence-based' management (Kulchyski and

⁴³ While some wildlife officials promulgated the notion of the 'wanton slaughter' of game by Inuit, other state officials suggested otherwise. However, Kulchyski, Tester and Sandlos suggest that the view according to which Aboriginal peoples were seen as "primitive, and not suffering from the benefits of civilisation and scientific knowledge" (Kulchyski and Tester 2007: 27; see also Sandlos 2007), and that the introduction of firearms among such groups could have a devastating impact on wildlife was a prevalent one.

⁴⁴ Minimal expenditure on Inuit health and welfare characterised the relations between the Canadian state and Inuit from the late 19th until the mid-20th century. State administrators were then concerned primarily with ensuring that Inuit did not become dependent on the state for welfare and that they continued to hunt and trap for the Hudson's Bay Company. In the late 1950s, however, federal officials increasingly attempted to 'modernise' and 'sedentarise' Inuit lifestyles. A thorough analysis of this process lies beyond the scope of this thesis. See Ashlee (1984) for a detailed study of colonialism in the Northwest Territories.

Tester 2007). In addition, the various strategies adopted by federal and territorial governments to pursue 'conservation' objectives and produce self-governing political subjects (Foucault 1991) often met with resistance on the part of Aboriginal hunters. Rather than presenting a detailed historical overview of this process, this section will give an episodic account of some of the key events, actors and institutions that, prior to the creation of Nunavut, led to the formation of regimes for the management of two species of cultural significance for Inuit, and which are the focus of this thesis: common eiders and polar bears.

4.3.1. Managing migratory birds

In August 1916, representatives of Canada and the United States signed the International Treaty for the Protection of Migratory Birds (referred to subsequently as the Migratory Birds Convention (MBC)) to address declining migratory bird populations. The Migratory Birds Protection Act (MBCA) was passed a year later to implement the provisions of the MBC. This became the first piece of legislation to establish a national framework governing the use of wildlife, or at least migratory birds, across Canada (Kulchyski and Tester 2007). This act defined groups of birds to be protected (including waterfowl) and outlined the regulatory and control measures that the authorities of the day might impose on their behalf, as necessary (Burnett 2003).

The MBC (1916) and MBCA (1917) were to have profound implications for Aboriginal hunting rights in the NWT and throughout the country. Burnett explains: "While the Migratory Birds Convention was a landmark treaty, it did not recognise the rights of Aboriginal people. Its provision conflicted with traditional harvesting practices, causing a great deal of concern among [them]" (2003: 67). As a result of these initiatives, Inuit hunting was regulated for the first time in the Northwest Territories. Section 3 of the Northwest Game Act passed by Parliament on 23 July 1917 reads as follows:

Notwithstanding anything contained in subsections one and two, the game therein mentioned maybe lawfully hunted, taken or killed, and the eggs of birds therein mentioned may be lawfully taken, by Indian or Eskimos who are *bona fide* inhabitants of the said territories, [...] *but only when such persons are actually in need of such game or eggs to prevent starvation* [emphasis added] (cited in Kulchyski and Tester 2007: 32).

The material originally presented here is not currently available in ORA

Figure 4.1. Culturally constructed assumptions about destructive Aboriginal hunting practices guided the making of early migratory bird regulations (Source: Laing 1964: 237)

In other words, Indians and Inuit became subject to seasonal restrictions on hunting, which included closed seasons for a number of migratory bird species, including geese and ducks (Kulchyski and Tester 2007; Fig. 4.1.). A major discrepancy between the letter of the law and its application among Aboriginal peoples in the North was inevitable, as the following observation by a government employee makes abundantly clear:

As long as the Eskimos can remember, they have looked forward to the return of the birds to their land, to the taste of fresh eggs eaten raw or boiled. Snow geese eggs are the favourite, with murre coming a close

second. Under white man's law, the gathering of these eggs is forbidden, but few Eskimos in this area [Bylot Island, northern Baffin Island] pay much attention to this. The Eskimos know it is against the law to take the eggs, but, having no clear concept of what a law is, or means, they do not pay much attention to it. "Perhaps the policeman would catch [arrest] you for taking the eggs," said one old Eskimo in an answer to my query, "but then you are a white man. He would not catch me for this is my land, not the white man's. He [the policeman] does not understand geese. I do, just as my father did before me. The policeman tells me I must not take eggs. And why should I not take the eggs? Must I who am hungry for the taste of fresh eggs stand by and watch the foxes and the weasels eating eggs? No, I like eggs" (Doug Wilkinson, 1955, cited in Kulchyski and Tester 2007: 95).

Since there were no game officers in the Northwest Territories in the 1920s, enforcement of migratory bird regulations was then left to the Royal Canadian Mounted Police (RCMP), who appear, based on the number of cases and prosecutions recorded at the time, not to have made enforcement a priority. According to Kulchyski and Tester, "[e]nforcement was, by admission to the RCMP, sporadic depending on the inclination of the officer and his perception of what was important and appropriate in the context in which he found himself" (2007: 36). In addition, prior to 1939, developing and enforcing wildlife regulations affecting Inuit hunters was made all the more difficult by their questionable legal status. It was only in 1939 that the Supreme Court of Canada decided that, for administrative and legal purposes, the term 'Indian' included Inuit, and thus that Inuit were a 'federal responsibility'⁴⁵ (Loukacheva 2007). These circumstances help explain why there were no prosecutions of Inuit hunters under the Northwest Game Act (1917) during the 1920s and 1930s and that the regulations under the Migratory Birds Convention Act were loosely enforced during that period (Kulchyski and Tester 2007).

As the 1930s drew to a close, there was considerable impetus among provincial and federal game management officers to create a national organisation to study and influence the regulation of wildlife in Canada. In 1947, the Government of Canada created a new agency,

⁴⁵ The British Royal Proclamation of 1763 was the first legal document to recognise Indian nations or tribes, and acknowledge that they continued to possess traditional territories until these were 'ceded' or purchased by the Crown. However, it did not specifically refer to the existence of rights for the Inuit (Kulchyski and Tester 2007; Loukacheva 2007). Nor were Inuit referred to in the Indian Act of 1876 (Abele 2009).

the Dominion Wildlife Service (renamed Canadian Wildlife Service (CWS) in 1950), to which it attributed most of the federal responsibilities for wildlife management in Canada. This event would have significant effects for the management of migratory birds in Canada. Charged with administering Canada's responsibilities under the Migratory Birds Convention, the Canadian Wildlife Service developed an increasingly comprehensive national research and management programme to conserve migratory birds. According to Burnett:

It is no exaggeration to say that ducks and geese dominated the ornithological agenda at CWS, at least during the first twenty years after 1947. [...] The reason for this perceived bias was straightforward enough. The principal legislative *raison d'être* of the service was the Migratory Birds Convention Act, which placed considerable emphasis on the conservation of game birds. Waterfowl were by far the largest and most sought-after group of migratory game birds under its protection. An important element in the discharge of that responsibility was knowing the approximate size of waterfowl populations and whether they were growing or declining (Burnett 2003: 64-65).

However, in spite of these developments, the fundamental issue of Aboriginal rights remained poorly addressed within such an emerging national regime for researching and managing of migratory birds. During the 1960s, the disposition of a number of cases in which Aboriginals were charged with offences under the Migratory Birds Convention Act for subsistence hunting stressed the urgent need for a constructive solution (Kulchyski and Tester 2007). The passage of the Constitution Act of 1982 added urgency to the question. In fact, Section 35 of the new Canadian legislation included explicit guarantees for those traditional hunting rights that the MBC had failed to recognise. Prior to 1982, the courts had insisted that federal laws must prevail over Aboriginal rights. Once these rights were enshrined in federal law, decisions and initiatives began going the other way (Burnett 2003).

For example, the Department of Justice subsequently advised that closed-season provisions of the MBCA might no longer withstand Supreme Court scrutiny when applied to people who possess Aboriginal or treaty rights (Kulchyski and Tester 2007). In addition, in 1993, the Canadian Wildlife Service agreed to support ad hoc committees with Aboriginal

people to help develop Canada's position on amending the Migratory Birds Convention, and appointed three Aboriginal members to the negotiating team (Burnett 2003). Consultations were held among Aboriginal groups, CWS, provincial and territorial governments and nongovernmental organisations. Anticipating eventual success in amending the MBC, in 1994 the Government of Canada introduced amendments to the MBCA, which officially recognised Aboriginal rights for the harvest of migratory birds. In 1995, a protocol to amend the MBC was initialled by the chief negotiators for both Canada and the United States. The document outlined several key amendments which further recognised the rights of Aboriginal hunters: it accommodated the traditional harvest of migratory birds by Aboriginal peoples in northern regions, where the birds are present only during that period of the year when the convention requires that the season be closed; it permitted qualified residents of northern Canada to take migratory game and nongame birds as part of a subsistence lifestyle; it allowed for an earlier fall hunting season for NWT residents; and it increased the involvement of Aboriginal peoples in the study and management of migratory bird populations (Burnett 2003).

In sum, throughout the 20th century, 'migratory birds' were progressively transformed by forms of political calculation as they became the object of national and international conservation initiatives, including the signing of an international agreement, the creation of a national institution specifically dedicated to wildlife research and management, and the design and implementation of migratory bird regulations. As the above overview has highlighted, little consideration was given to Aboriginal rights and knowledge in the early building of such a conservation infrastructure for migratory birds, which was much more a story of the state increasing its reach to northern game and the people who relied on this game for subsistence. However, this form of governmentality progressively changed as Aboriginal and Inuit rights came to be formally recognised in Canada in the latter part of the 20th century, and as significant autonomy was granted to local groups to manage their own bird hunting and egg

gathering activities in accordance with their needs and local protocols. In fact, two possibly contradictory movements have emerged over the last few decades: one towards greater rights for the Inuit; the other leading towards greater scientific and managerial interest in the question of managing migratory birds.

4.3.2. Managing polar bears

Through the 1950s and particularly during the 1960s, the recorded number⁴⁶ of polar bears killed in northern Canada and elsewhere rose significantly. Many factors may have contributed to this phenomenon, including: the increasing value of polar bear hides in North America and Europe; the growing number of non-native hunters seeking the opportunity to kill a polar bear; the increased need for cash income among Inuit;⁴⁷ the ready availability of high-powered rifles; and the extensive use of snowmobiles, aircrafts and ships, all facilitating access to the species (Burnett 2003; Kulchyski and Tester 2007; Stirling 2011). Former Canadian Wildlife Service polar bear biologist Ian Stirling writes: "In Canada, between 1953 and 1964, the recorded harvest fluctuated between 350 and 550, while in 1967 it suddenly jumped to 726. The records are incomplete in most countries, so we will never know the actual numbers of bears killed" (Stirling 1988: 65). In response to growing concerns expressed by wildlife biologists on the numbers of polar bears being killed each year, and in the absence (at the time) of scientific information that could be used to regulate their harvest within sustainable limits, much political work went into progressively turning polar bears into objects of territorial, national and international policy and research initiatives from the 1950s onward (Dean 1999).

⁴⁶ Before the GNWT started monitoring the number of polar bears killed every year, RCMP detachments across the Canadian Arctic had collected some information on numbers of bears killed annually.

⁴⁷ As the price of Arctic fox declined in the late 1940s and early 1950s, Inuit developed other strategies for making cash income, including the sale of polar bear hides (Kulchyski and Tester 2007).

In the Northwest Territories, attention first focused on polar bear management as the result of a report submitted by the Canadian Wildlife Service in 1953, in which unease was expressed over the hunt of females and cubs by Inuit. The report suggested that more females and cubs were taken by Inuit hunters on Southampton Island and that such an imbalance was not “biologically sound”. These observations did not result in any restriction being placed on Inuit hunting, although representatives from both the Department of Northern Affairs and National Resources and the RCMP did suggest a prohibition against the killing of females with cubs at that time (Kulchyski and Tester 2007). A few years later, however, as the CWS again identified the polar bear as a species of concern, this situation changed. In 1957, in response to the greater number of polar bear skins sold by Inuit hunters, Schedule B of the 1949 NWT Game Ordinance was amended to exclude the hunting of female polar bears with cubs less than a year old. The decision was made without prior consultation with local hunters (Kulchyski and Tester 2007).

At the international level, various initiatives taken around the same period echoed the early steps made in northern Canada to protect polar bears. In September 1965, wildlife experts from all “polar bear countries” (i.e. Canada, the United States, Norway, Denmark (Greenland) and the Soviet Union) met in Fairbanks, Alaska, to discuss the status of polar bears internationally. The meeting concluded that “scientific knowledge on the polar bear is far from being sufficient as a foundation for sound management policies”, and that “each nation should, to the best of their ability, conduct a research programme on polar bears within its territory [by taking] whatever steps are necessary to conserve the polar bear until the results of more precise research findings can be applied” (Udall and Wood 1965). The International Union for the Conservation of Nature (IUCN) was asked by these five nations to act as an information centre in this process and to coordinate the exchange of research results. It is interesting to note that not one Aboriginal person was in attendance at the meeting. In

Kulchyski and Tester's view, "Inuit were [in this case] given no role in discussing a situation that involved a complex interaction between the market price for skins, technology and changing material circumstances" (2007: 116).

In the wake of the 1965 meeting, two committees, namely the Polar Bear Technical Committee (PBTC) (1970) and the Polar Bear Administrative Committee (PBAC) (1969) were formed in Canada to coordinate the management of polar bears across provinces and territories and to plan future research (Banks and Lee 2009). In addition, in 1968, the IUCN hosted an international conference of polar bear biologists at its headquarters in Switzerland. Besides discussing a number of scientific questions and management needs, the scientists who were present organised themselves into what is today known as the IUCN Polar Bear Specialists Group (PBSG) of the Species Survival Commission. Initially, the group met every two years from 1968 to 1972, to discuss the coordination of polar bear research and management. It is significant that, with the active support of their governments, PBSG members successfully negotiated the objectives and text of a document entitled "Agreement on the Conservation of Polar Bears" (ACPB). This international treaty was signed on 15 November 1973, ratified in 1976, and reaffirmed indefinitely in 1981 by the five polar bear range states. Although compliance with the treaty's terms was purely voluntary on the part of the signatory governments, the Agreement gave impetus to polar bear conservation and research, as signatory countries agreed to conduct national research programmes on polar bears and to exchange data from these studies. In addition, the ACPB set out specific conditions under which polar bear hunting activities could take place, including harvesting by local people (i.e. including Aboriginal groups) exercising traditional rights (Burnett 2003; Lentfer 1974).⁴⁸ According to Stirling, one of the most significant aspects of the ACPB is that

⁴⁸ When Canada ratified the ACPB in 1976, it also submitted a Memorandum of Understanding to clarify that hunting polar bears was a traditional right of Inuit and Indian peoples and that Aboriginals living in a settlement could authorise the selling of a polar bear permit from the subpopulation quota to a non-Inuit or non-Indian hunter, but with additional restrictions (i.e. such a hunt should be conducted within Canadian jurisdiction under

it set a precedent for environmental cooperation among circumpolar nations: “It was the first time the five Arctic nations successfully negotiated a framework for addressing a unique circumpolar concern” (Stirling 2011: 251).

While the late 1960s was marked by major developments in polar bear conservation at the international and national levels, significant changes in management practices also occurred during this period in the Northwest Territories. In the years immediately following the first international meeting of polar bear specialists in 1965, the total size of the recorded polar bear kill throughout the Arctic continued to increase (Stirling 2011). Consequently, the Canadian government decided not to wait for the results of long-term research studies or for an international agreement to be negotiated before taking action. In 1967, the first polar bear hunting quotas were established in the Canadian Northwest Territories, without much prior consultation with the Inuit.⁴⁹ Effective on 1 July 1967, quotas were set for twenty-five Arctic settlements in an attempt to limit total polar bear kill to 386 bears a year, compared with 525 harvested bears the previous year. Such quotas were initially assigned to communities based on the average of hides they had sold in recent years (Macpherson and Jonkel 1970). At the time, there were no scientific data on the size of any polar bear populations on which to base sustainable annual quotas (Schweinsburg 1981). According to Stirling (2011), government agencies explained to Inuit hunters that the quotas would be revised as new data became available. As a result of the managerial initiative, the harvest dropped markedly in 1968, but increased through the 1970s, mainly in response to local political pressure. During the late 1970s, increases in quotas were granted only if these were recommended on the basis of new scientific information on any individual population (Prestrud and Stirling 1994).

the guidance of an Aboriginal hunter and by using a dog team) (Bankes and Lee 2009; Stirling 2011). This still applies today.

⁴⁹ At the time, Aboriginal hunters of the NWT were responsible for approximately 90 per cent of Canada's polar bear harvest (Delegates 1966).

Thus, through the 1960s and the 1970s, the Government of the Northwest Territories (GNWT) took its role in polar bear management seriously as it implemented community quotas, and stressed the need for more scientific surveys, more questionnaires, more scientific 'facts' and, ultimately, what amounted to stricter monitoring of Inuit hunters and their practices (Kulchyski and Tester 2007). At the time, the lack of scientific data on polar bears combined with concerns over excessive hunting provided the right conditions for the emergence of polar bear conservation as a political priority for the territorial government, and for the deployment of strategies for pursuing this goal (Rose et al. 2006; Rutland and Aylett 2008).

In fact, along with the new quota system, the GNWT instituted an intensive scientific research programme in order to determine polar bear population parameters, and contributed to the development of a national polar bear database (Lunn et al. 2002). This programme provided essential data for developing and refining the scientific bases for the quota system. At the community level, information on each bear harvested began to be collected for statistical analyses. At the polar bear population level, the territorial government, in collaboration with the Canadian Wildlife Service, started conducting ecological research and population surveys (Dowsley 2007; Taylor and Lee 1994).⁵⁰ For example, population ecology studies using mark-recapture⁵¹ and radio telemetry techniques were carried out in various

⁵⁰ Wildlife biology was given impetus by refinements in the development of aircraft leading to the aerial surveying of large mammal populations, which commenced in the 1930s. In the Canadian Arctic, this approach began to be used after the Second World War, given the aviation experience gained by some biologists during the war, the availability of aircraft and pilots, and the development of more sophisticated approaches to navigation over challenging terrain (Kulchyski and Tester 2007: 11).

⁵¹ Most of what biologists currently know about polar bears comes from capturing animals and then releasing them alive at the site of capture. Capturing bears allows for the collection of biological samples (e.g. blood, fat, hair or teeth samples), the measurement of physical stature and condition, and the installation of tracking devices. Perhaps most importantly, capture efforts that are repeated regularly over multi-year periods permit an estimation of vital rates such as reproduction and survival, which, in turn, allows the estimation of population size. Demographic parameters are estimated by what are called capture-recapture or mark-recapture analyses, which have provided most of the population assessments for polar bears worldwide and are based, at some level, upon the ratios of marked to unmarked animals in a given sample (Amstrup et al. 2005). Perhaps the most famous early application of capture-recapture was the estimation, by Pierre Simon Laplace, of the population size of France in 1802 (Cochran 1978; Stigler 1986). Over the last 200 years, capture-recapture methods have

areas, often at the request of hunters seeking quota increases or for other reasons, such as during preparations for permitting oil exploration (Dowsley 2007; Schweinsburg et al. 1982; Taylor et al. 2005).

As scientific information accumulated and techniques were developed and refined for delineating and estimating polar bear populations in the Northwest Territories and elsewhere, such advances progressively informed and shaped polar bear management practices. The agreement signed in 1993 between the GNWT and local communities exemplifies how polar bear science and policy became increasingly co-produced (Fairhead and Leach 2003) in northern Canada as scientific understandings of the species evolved:

As with many species being actively managed, our understanding of the habits of polar bears has increased in recent years. [...] A main development was that polar bears live within 12 fairly distinct populations within the Northwest Territories and surrounding jurisdictions. The Territorial Department of Renewable Resources expressed a desire to move towards a system of management that was based on populations (GNWT 1993: 2).

Although polar bears were once believed by some biologists to be circumpolar nomads (Pederson 1945) or to exist in genetically isolated stocks (Larsen et al. 1983), greater consensus began to emerge among the scientific community around the idea that polar bears exhibit seasonal fidelity to local areas and that land barriers, sea ice types and sea ice movements can explain the limited exchange observed between geographical areas (Taylor et al. 2001). Boundaries between polar bear populations were initially proposed on the basis of qualitative information relating to topography and sea ice cover posing barriers to movements, as well as on the basis of reconnaissance data. Also taken into account were certain management considerations reflecting the geographical location of polar bear harvest activity and the “anecdotal sampling of traditional knowledge of Inuit hunters” performed by scientific and managerial authorities (Taylor et al. 2001: 691). These initial perspectives were

undergone progressive refinements and developments that are relevant for estimating demographic parameters of interest to polar bear biologists and managers (Armstrup et al. 2005).

revised as scientific data accumulated through mark-recapture and mark-kill research and studies done using radio and satellite telemetry (96,⁵² 10/09/09). As a result of this process, polar bear management units in the NWT (and later Nunavut) progressively came to reflect population boundaries informed by scientific observations and, to a limited extent, the knowledge held by Inuit hunters. Throughout the 1970s, 1980s and 1990s, harvest quotas were then set for each of these science-based population units and were allocated among Inuit communities throughout the NWT.

This time, however, unlike what had happened in the late 1960s when quotas were initially imposed with scant consultation with Inuit hunters, wildlife managers and biologists began consulting northerners, as a burgeoning participatory wildlife management infrastructure started to emerge in the NWT (96, 10/09/09). Indeed, during the 1970s, community-based organisations for wildlife co-management were set up by the GNWT,⁵³ which provided base funding and organisational support for the creation of hunters and trappers associations (HTAs). These HTAs were created in order “to provide an opportunity and a medium for community input into wildlife management; to serve as a network for the dissemination of information at the community level on wildlife and hunting-related policies, regulations and legislation; and to act as an association for the hunters to promote harvesting and provide services for their members” (Anonymous 2001: 8). Local HTAs generally comprised eight local residents, elected by members of the community who held General Hunting Licenses. In most communities, the HTA would then select a chairperson from among the elected members. Around the same period, the GNWT also provided funding for the establishment of three regional societies constituted by chairpersons from each local HTA.

⁵² For clarity and anonymity purposes, interview participants are identified with numbers throughout this thesis. See Appendix 11.2. (Fig. 11.2.) for a complete list of research participants and their positions and/or institutional affiliations.

⁵³ The GNWT acquired jurisdiction over wildlife from the Federal Government in 1948 and developed its Game Ordinance in 1949. Public review of the Game Ordinance began in 1975 and resulted in the government-initiated development of local hunters and trappers associations (HTAs) to advise the Game Management Service (Clancy 1990).

A resident from Gjoa Haven remembers such a sea change in the relationship between Inuit and territorial wildlife managers and biologists:

[People started to feel as if they could talk back to the *Qallunaat*] only after the hunters and trappers associations started forming, the hamlets started forming, and the community councils in those days and also the other committees started forming. [...] [T]hose councillors or the committees of the hunters and trappers started planning. [...] And [people] were still quite afraid of saying anything. The only fellows who seemed to have been speaking out were from those committees. A lot of people were even still afraid to mention [in the meetings] what they didn't like about the quotas and the rules and things like that. But later on it was explained to them that they could fight back, and they could make the rules or slightly change them. [...] We tried to talk about something, tried to get [hunting regulations] better for our own needs (Moses Nargyak, Gjoa Haven, 18/05/1998, cited in Kulchyski and Tester 2007: 138).

During the 1980s and 1990s, the signing of various agreements involving both the territorial government and local HTAs marked the beginning of a concrete shift from early top-down to more collaborative polar bear governance practices in northern Canada. The first Memorandum of Understanding (MOU) on the management of polar bears was created in the NWT in 1986. The signatory parties were the Government of the Northwest Territories and the hunters and trappers associations (HTAs) of Clyde River and Broughton Island (now Qikiqtarjuak). After the formation of this first MOU, all other communities in the NWT became signatories to similar collaborative management agreements (Davis 1998; 96, 10/09/09).

In summary, the above review of early governance practices for polar bears and migratory birds illustrates that, since the late 19th century, attempts made by the Canadian state to govern northern 'wildlife' have been directed, not only towards managing animals, but also towards regulating Inuit through the management of the game upon which they have depended for sustenance as well as for personal and collective meaning, and the cultural forms to which hunting gives rise. It was not until the mid-twentieth century, however, that

the federal and territorial governments developed a significant capacity to enforce and implement wildlife rules and regulations in northern Canada.

My review also shows how the devices and logics of wildlife biology (rather than Inuit views, knowledge and experience) progressively became potent tools for justifying wildlife policies that had previously been based on the moral reasoning of Euro-Canadian conservationists and preservationists. Indeed, when 'wildlife' became constituted as a domain of state intervention in northern Canada, this process originally occurred via the exclusion of Inuit from the building of institutions, the making of regulations, and the setting of research agendas that would impact their livelihoods. This exclusion led to both active and passive forms of resistance from Inuit hunters, who often refused to see their conduct disciplined by logics and principles which they judged unfair and illegitimate. Such a situation started to change around the 1970s and 1980s, as Aboriginal and Inuit rights came to be formally recognised in Canada, and as more collaborative wildlife governance practices began to emerge in the Northwest Territories. Kulchyski and Tester (2007) rightfully argue that a clear link can be established between early top-down wildlife management practices and Inuit aspirations towards greater political autonomy:

Inuit resistance to the management of birds and mammals by *Qallunaat* authorities is [thus] a significant consideration in the development of Inuit rights and in the move towards Inuit self-government. It is therefore not surprising that one of the first items on the agenda of the national Inuit rights organisation, Inuit Tapiriit Kanatami (formerly the Inuit Tapirisat of Canada, created in 1971), was Inuit hunting rights (Kulchyski and Tester 2007: 17).

Hence, the story of early game management in northern Canada appears to be a critical one if we wish to appreciate the emergence of a participatory wildlife governance regime in Nunavut, one actively promoting the protection of Inuit hunting rights and the inclusion of Inuit voices in decision-making. In the next section, I will therefore examine the historical

situation that led to the creation of the Nunavut Territory; I will also analyse the new forms of governmentality arising from this event with relation to wildlife governance.

4.4. The creation of Nunavut

I always thought as an Inuk kid growing up in an Inuit world that I had my own land. I always thought that. But then one day we were asked to vote for Nunavut. And then I asked: "Why?" They said to me that we are selecting some of our land, some of our land that was to become ours.

– Anonymous

Until the middle of the 20th century, the federal presence in the northern regions was relatively slight in Canada. According to Abele: "Almost everywhere in the North, Aboriginal people could avoid most contact with outside institutions if they chose; and, certainly, their contact with the federal state was minimal, even when they were in need of medical care or relief" (Abele 2009: 24). However, the advent of the Second World War would change this situation forever for the Inuit. Concerns for sovereignty and security, the postwar expansion of the welfare state into the North, and increased demand for northern energy and other resources all led to a much greater state presence in all parts of northern Canada (Abele 2009). By the end of the 1960s, state-led changes to northern life which aimed to "improve Inuit standards of living" included the settlement (and resettlement)⁵⁴ of the Inuit population in communities where social housing was provided; an extension of medical care; and the introduction of compulsory education and social transfer payments (Mitchell 1996; Wilson 2002). Taken together with attempts to regulate Inuit harvesting, these initiatives amounted to a massive transformation in the lives of Inuit. In Abele's view, although Inuit were not helpless victims of these events, "it is plain that the sheer magnitude, scope and pace of the externally driven changes undermined local control and a sense of efficacy in many communities" (Abele 2009: 27).

⁵⁴ Besides efforts to encourage and sometimes coerce Inuit to leave the land for settlements where government services could be more easily provided, a number of forced relocations across great distances occurred. These met with significant failures in execution (see Tester and Kulchyski (1994) and Marcus (1995)).

In this way, throughout the 1970s, Inuit started to formulate a collective response to what had amounted to their internal colonisation by the Canadian state (Hicks 2004), notably by forming organisations for political self-representation (Amagoalik 2007).⁵⁵ In fact, as Wilson argues, much of the call for self-government in Nunavut was initially rooted “in the idea that the Inuit identity was challenged and subverted by their participation in essentially foreign governance structures” (Wilson 2002: 30). In 1971, the Inuit Tapirisat of Canada (ITC) (renamed Inuit Tapiriit Kanatami (ITK) in 2001)⁵⁶ was created by an organising committee of Inuit “who decided it was time to speak with an united voice on various issues concerning the development of the Canadian North and the preservation of Inuit culture” (Freeman 2011: 1). In 1976, ITC proposed that the federal government create Nunavut as part of a comprehensive settlement of Inuit land claims in the Northwest Territories (ITC 1976).⁵⁷ The process of establishing Nunavut had many stages⁵⁸ but culminated in the creation of the new Territory and Government of Nunavut, which was forged as a result of the division of the NWT. This political settlement was ensured by the Nunavut Act of 1993 and by the Nunavut

⁵⁵ According to Loukacheva (2007) and Henderson (2007), the formation of Inuit political associations in the 1970s was stimulated by and paralleled the existing political culture in Canada. Several factors influenced this process, including: the failure of the 1969 White Paper on Native Policy, which, in the eye of some, counselled assimilation for Aboriginal peoples; the discovery of oil fields in Alaska, which put pressure on resource development on land occupied by Aboriginal groups; the impact of the Supreme Court of Canada’s *Calder* decision, which confirmed unextinguished Aboriginal title to land, leading the government to identify a process for Aboriginal groups who had not signed treaties to negotiate comprehensive land claims; and the signing of the James Bay and Northern Quebec Agreement, which represent the first ‘modern’ Canadian treaty. Furthermore, after 1982, Inuit were negotiating their cultural and political autonomy and their land rights within the framework of de facto citizenship and constitutional processes. Indeed, the Canadian Citizenship Act of 1947 designated the Inuit as Canadian citizens and Inuit were able to vote in federal elections in 1962. Section 35 of the Constitution Act of 1982 further recognised and affirmed existing Aboriginal and treaty rights of all Aboriginal peoples in Canada. Such ‘treaty rights’ include rights that now exist by way of land claims agreements or may be so acquired (Loukacheva 2007).

⁵⁶ Inuit Tapiriit Kanatami (literally meaning “Inuit united in Canada”) is a national advocacy organisation representing and promoting the interests of Inuit in Canada. By 2010, ITK represented over 55,000 Inuit living in 53 communities across four Inuit regions of Canada (Appendix 11.1., Fig. 11.1.): Nunatsiavut (Labrador), Nunavik (Northern Quebec), Nunavut and the Inuvialuit Settlement Region (Northwest Territories) (Freeman 2011). The status of ITK vis-à-vis the growing population of Inuit living outside the land claims regions however remains unclear.

⁵⁷ The NWT contained several Aboriginal groups with distinct interests and claims. The Inuvialuit of the Western Arctic, who were originally covered by the ITC’s Nunavut proposal, thus negotiated a separate land claims agreement in 1984 (Loukacheva 2007: 29).

⁵⁸ For a comprehensive review of the creation of Nunavut see Henderson (2007) and Hicks and White (2001).

Political Accord concluded by negotiators for the Tungavik Federation of Nunavut,⁵⁹ the Government of Canada and the Government of the Northwest Territories (Fig. 4.2.). It was also explicitly included in the Nunavut Land Claims Agreement (NLCA). The NLCA is the largest Aboriginal land claim settlement in Canadian history and was adopted by Parliament (along with the Nunavut Act) in June 1993.

The Territory and Government of Nunavut were created on 1 April 1999. Inuit leaders and scholars alike have broadly interpreted this event as resulting from a fundamental compromise that allowed Inuit to pursue their goal of regaining control over their lands: in exchange for the rights and benefits set out in the NLCA, the Inuit agreed to surrender all their Aboriginal claims, rights, title and interest in and to lands and waters in the Nunavut Settlement Area (NSA) (Amagoalik 2007; Henderson 2007; Hicks and White 2001).⁶⁰ Along with the settlement of the Nunavut Land Claims Agreement, which guaranteed Inuit a variety of rights and benefits, the Inuit of Nunavut chose a form of 'public government' for their territory. This created a system of public governance applying to all Nunavummiut (that is, all citizens of Nunavut, be they Inuit or non-Inuit), but which gives priority to the accommodation of Inuit interests and protection of their rights. Thus, a dual political culture and a hybrid system of governance policies have developed in Nunavut: "On the one hand, there is a legal regime and policies intended for the [Inuit] beneficiaries of the NLCA, who represent the majority of Nunavut's population [about 85 per cent]. On the other hand, there is public government for all Nunavummiut, which gives special consideration to Inuit values and concerns" (Loukacheva 2007: 35).

⁵⁹ The Tunngavik Federation of Nunavut took over the claim negotiation mandate from ITC in 1982. It was the organisation officially recognised from 1982 to 1993 as representing the Inuit of what is now Nunavut for the purpose of negotiating treaties and land claims settlements. Nunavut Tunngavik Incorporated replaced the Tungavik Federation of Nunavut upon the ratification of the Nunavut Final Agreement (Henderson 2007).

⁶⁰ Arguably, this controversial 'extinguishment' provision of the NLCA brings some features of colonial legacy to the agreement (Loukacheva 2007).

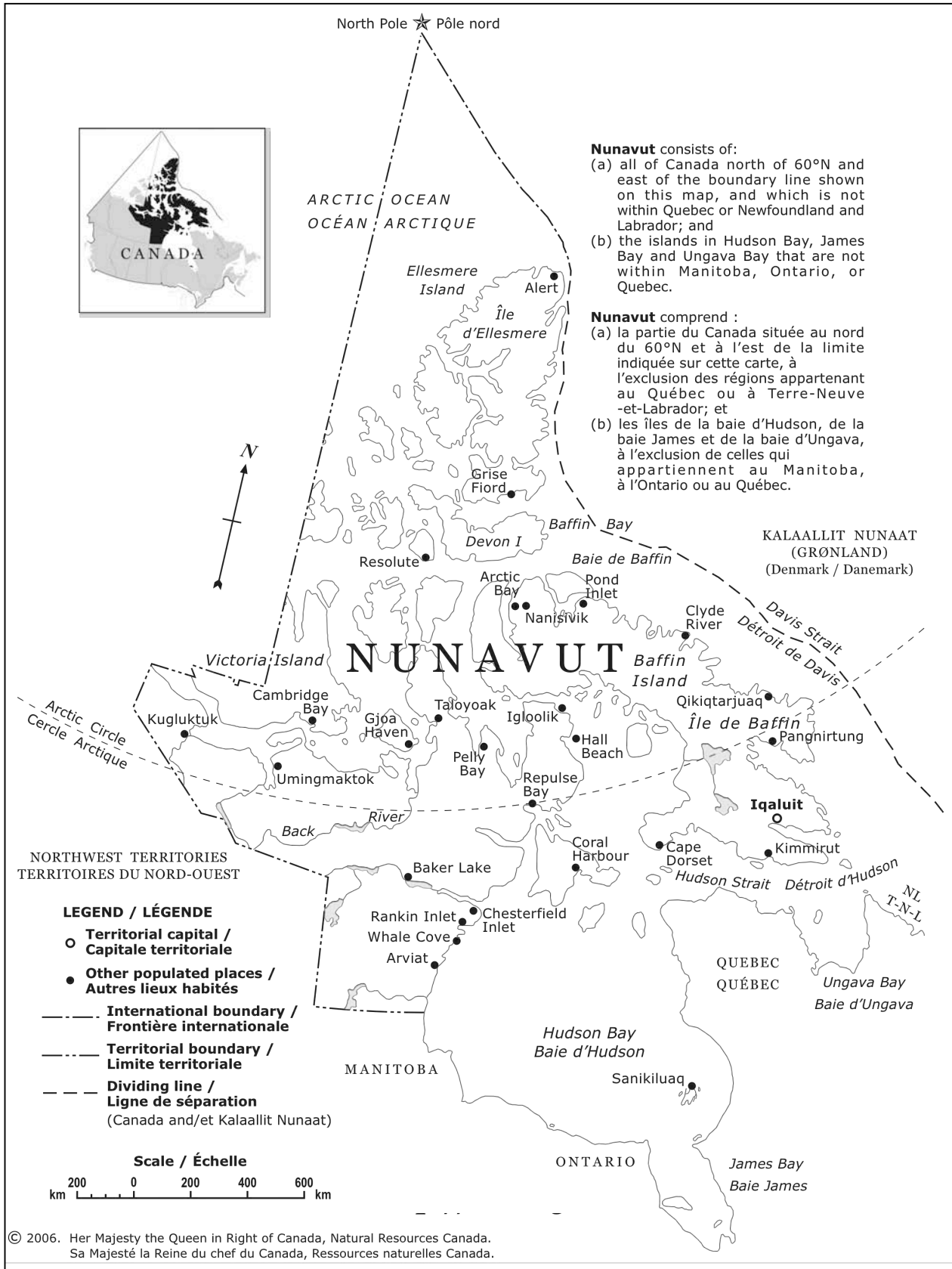


Figure 4.2. The Nunavut Territory (Source: Natural Resources Canada, www.atlas.gc.ca)

In Henderson's view, such an arrangement "offered claim negotiators and voters the promise of a polity that would be more proximate to regular citizens, more reflexive of its predominant Inuit population, and more concerned with economic and social development in the eastern Arctic" (Henderson 2007: 190). The fundamental premise of the NLCA was that Inuit should regain control of their lands and their lives through their equitable representation and meaningful involvement in territorial governance and the protection of their rights. Inuk leader Jack Anawak states: "What we have been seeking throughout the years is the acknowledgement by the Canadian government that this was, and is, our land and that we have the right to control what happens to that land, our homeland" (Anawak 1993: 8). Given the central role that animals have occupied in the organisation of Inuit subsistence activities and cultural ecology, a significant dimension of the arrangements formally instituted through the Nunavut Land Claims Agreement relates to the politics of wildlife within the Nunavut Settlement Area.

4.4.1. Crafting wildlife governance networks under the NLCA

The provisions of the NLCA relating to wildlife are contained principally in Article 5 of the NLCA and in related sections of the Implementation Contract (GC 1993). Most of these provisions were negotiated in the early 1980s and were among the first NLCA sections to be successfully concluded (61, 19/01/09). At the time, Inuit conducted their negotiations within a framework of guiding principles, and this significantly contributed to shaping the current infrastructure for wildlife management in Nunavut (Anonymous 2001; Bankes and Lee 2009).

Among such considerations was a strong will to craft co-management arrangements by means of which responsibility for resource management in Nunavut could be shared between the government and resource users, with traditional and scientific knowledge recognised equally. Negotiators also attempted to promote a proactive role in wildlife governance for

communities, while seeking to involve those communities affected in planning and decision-making on issues related to the management of Inuit lands and resources to the greatest extent possible. Finally, the negotiators encouraged the use of existing infrastructures by ensuring that the NLCA would permit Inuit to utilise organisations already under the GNWT, to assume responsibility for specific powers, functions and authorities that had been assigned to Inuit under the claim (Anonymous 2001). For example, at the time of negotiation, a NWT-wide network of hunters and trappers associations, linked through three regional wildlife organisations, had already been in existence for over two decades; these bodies represented an established, economical vehicle for carrying out several of the implementation functions described in Article 5 of the NLCA. Thus, the principles of shared responsibility, equal participation and managerial efficiency underlie the political rationalities (Foucault 1991; Rose et al. 2006) put forward by Inuit when crafting wildlife governance arrangements under the NLCA.

After this brief introduction to some of the intent on the part of Inuit negotiators in matters of wildlife management, I will now examine what their efforts have produced in practice, by describing an “ensemble formed by [...] institutions, procedures, analyses and reflections, calculations and tactics” (Foucault 1979: 20) characterising contemporary wildlife governance in Nunavut. In doing so, special attention will be directed to the institutions, legal provisions and mechanisms that have implications for both eider and polar bear research and management in the territory. The following elements will therefore be emphasised: the importance of the NLCA; the role of the Nunavut Wildlife Management Board (NWMB) as co-management authority; some key elements of the new Wildlife Act; the roles played by the Government of Nunavut, community-based HTOs and RWOs; and the position and function of the CWS, which holds responsibility for birds migrating through the Nunavut Settlement Area. While Nunavut Tunngavik Incorporated (NTI) is not considered as an official co-

management partner under the terms set out in the NLCA, its role in wildlife governance will also be examined, since over the years, this organisation has come to play an important part in this process.

In examining relevant aspects of the wildlife governance networks currently operating in Nunavut, I will begin with some of the provisions contained in the NLCA, which is a constitutionally protected document that devotes its longest article to 'wildlife'; Article 5 is primarily concerned with two distinct but interrelated matters, namely, an articulation of Inuit hunting rights and the creation of co-management arrangements for wildlife (Bankes and Lee 2009). The article details Inuit harvesting rights, priorities and privileges, and recognises "the primary role of Inuit in wildlife harvesting" (GC 1993, Section 5.1.3). Indeed, it states that the overall objective of the Nunavut wildlife management regime is to "serve and promote the long-term economic, social and cultural interests of Inuit harvesters" and "provide optimum protection to the renewable resource economy" (GC 1993, Sections 5.1.2 and 5.1.3). The NLCA also encourages Inuit participation in wildlife governance by acknowledging "the need for an effective role for Inuit in all aspects of wildlife management, including research" (GC 1993, Section 5.1.3). It highlights the importance of taking Inuit expertise into account in a governance regime that "recognises Inuit systems of wildlife management that contribute to the conservation of wildlife and protection of wildlife habitat" (GC 1993, Section 5.1.2).

The NLCA further establishes the Nunavut Wildlife Management Board (NWMB) as an institution of public government, and declares that the NWMB is to be the "main instrument of wildlife management" and the "main regulator of access to wildlife in the Nunavut Settlement Area" (GC 1993, Section 5.2.33). Created in 1994, the Nunavut Wildlife Management Board serves as an advisory group to the federal and territorial government ministers, and as a decision-making body created to ensure the protection of wildlife and

wildlife habitat within the Nunavut Settlement Area. The board is structured as a co-management body that seeks input from both Inuit and scientific knowledge in the management process, most notably by including equal numbers of Inuit-appointed and government-appointed members to oversee wildlife harvesting and management.⁶¹ The NWMB engages in a number of activities and functions, including: the establishment, modification or removal of quotas and non-quota limitations on wildlife harvesting;⁶² the holding of public hearings for decisions requiring the input of resource users; the identification of wildlife management research requirements; and the funding of research on wildlife.

It is also worth noting that the NLCA makes a fundamental distinction between species that are subject to a total allowable harvest⁶³ (TAH) or quota (such as polar bears) and those that are not (such as common eiders). The Agreement identifies that the NWMB has the sole authority to establish, modify or remove, from time to time and as circumstances require, the levels of total allowable harvest in the Nunavut Settlement Area. The NLCA considers that a species will be treated as a TAH species if there is a conservation need or if any quota (or restriction) on the amount of wildlife that could be harvested was in force immediately prior to the date of ratification of the Agreement (as in the case of polar bears). This quota is deemed to have been established by the NWMB and remains in effect until removed or otherwise modified by the Board. The polar bear was thus treated as a quota species before

⁶¹ NWMB's membership consists of members (and support staff) nominated by the Regional Inuit Associations (i.e. one member from each of the Kitikmeot, Kivalliq and Qikiqtaani (Baffin) regions), Nunavut Tunngavik Incorporated (one member), the Government of Nunavut (one member), the Department of Fisheries and Oceans Canada (one member), the Canadian Wildlife Service (one member), Indian Affairs and Northern Development Canada (one member), the Nunavut Wildlife Management Board (one member), and two alternate members nominated by Makivik Corporation.

⁶² The NWMB makes wildlife decisions that can only be overruled by the territorial or federal Minister of the Environment due to public safety or conservation concerns. The decisions of the NWMB generally reflect a very strong emphasis on local views (Bankes and Lee 2009; Dowsley 2009b).

⁶³ There is no other way that the NWMB or the relevant Minister can establish a quantitative limitation on Inuit harvesting except by following the rules for establishing a TAH. These rules include the Inuit right to the entire TAH up to the basic needs level (GC 1993). A TAH can only be established, and can only restrict or limit Inuit harvesting to the extent necessary: "(a) to effect a valid conservation purpose; (b) to give effect to the allocation system outlined in Article 5, to other provisions of Article 5, and to Article 40; or (c) to provide for public health or public safety" (GC 1993, Section 5.3.3).

the NLCA came into force and, in 2004, the NWMB established TAH levels for the species in Nunavut (see Chapter 5 for more details). Under the Agreement, Inuit have a preferential right to harvest the established quota of TAH species up to the 'basic needs level'; this effectively affords Inuit the exclusive right to harvest polar bears in Nunavut.

Because the NLCA is not a complete code and because it recognises the importance of an ongoing role by both Inuit and territorial and federal governments in governing wildlife, a few words should be said about the Nunavut Wildlife Act. Indeed, subject to terms of the NLCA, territorial wildlife laws, as well as laws relating to federal fisheries and migratory birds⁶⁴ continue to have relevance within the NSA. Therefore, following extensive consultations with Nunavummiut, the Government of Nunavut adopted a new Wildlife Act in 2003 with the purpose of establishing a comprehensive regime for managing wildlife and its habitat in the territory. The Wildlife Act implements and reinforces some of the wildlife-related provisions of the Agreement and contains a number of innovative features, not least of which is its commitment that principles and concepts of *Inuit Qaujimagatuqangit* should inform the interpretation and application of the legislation. The expression *Inuit Qaujimagatuqangit* (IQ) (literally, "that which has long been known by the Inuit" (White 2006a: 241)) encompasses all aspects of traditional Inuit culture, including values, language, social organisation, knowledge, life skills, perceptions, and expectations (Wenzel 2004). Thirteen IQ principles and concepts are defined and applied under the Nunavut Wildlife Act (GN 2003, Section 8), including:

- (e) *piliriqatigiingniq*, which means that people must work together in harmony to achieve a common purpose;
- (f) *avatimik kamattiarniq*, which means that people are stewards of the environment and must treat all of nature holistically and with respect, because humans, wildlife and habitat are interconnected and each person's actions or intentions toward everything else have consequences, for good or ill; and

⁶⁴ In Canada today, 'wildlife' remains a property of the Crown and responsibility for its management is shared among provinces, territories and the federal government. While terrestrial mammals (including polar bears) are mostly a provincial and territorial responsibility, the management of migratory birds (including common eiders), fish and marine mammals largely falls under federal jurisdiction.

(i) *surattittailimaniq*, also called *iksinnaittailimaniq*, which means that hunters should hunt only what is necessary for their needs and not waste the wildlife they hunt (Banks and Lee 2009: 203).

The Government of Nunavut (GN), another official wildlife co-management partner under the NLCA, has also committed itself to the principle of *Inuit Qaujimajatuqangit* in an attempt to ensure the incorporation of Inuit values, approaches and practices in government operations (Anonymous 2002; GN 2004). In Henderson's view, IQ, which has become an *idée fixe* of Nunavut politics in recent years⁶⁵ and "a chief effort to create a shift in the political culture of the eastern Arctic", has, however, often been "ill-defined and, thus, hard to integrate easily within the bureaucracy" (Henderson 2007: 190). Similarly, according to White, "a precise specification of what [IQ] entails remains a work in progress, but it involves Inuit principles such as sharing and cooperation as well as an emphasis on flexibility rather than rigid adherence to formal bureaucratic procedures" (White 2010: 307). Nonetheless, over the last decade, IQ coordinators and committees (such as the Department of Environment Elders Advisory Committee)⁶⁶ have been created across the GN to imbue the territorial government with a sense of the importance of Inuit culture and values.⁶⁷ Timpson argues that the tangible products of their work remain limited to date, as "the pressure on public servants to prioritize the delivery of services over the development of long-term cultural projects makes it difficult for IQ to be developed in any systematic way" (Timpson 2006: 527).⁶⁸

⁶⁵ The use of the term *Inuit Qaujimajatuqangit* gained currency after a meeting of Nunavut leaders in Igloolik in 1998 (Anonymous 1999, 1998). References to IQ therefore only emerged after the signing of the NLCA.

⁶⁶ The role of the Department of Environment Elders Advisory Committee is to facilitate the application of the principles and concepts of *Inuit Qaujimajatuqangit* to wildlife and environmental management in Nunavut.

⁶⁷ All GN departments now have either an IQ committee or working groups, as well as an elder to advise on IQ. The territorial government has an interdepartmental IQ task force, and the Department of Culture, Language, Elders and Youth, assumed to be the lead IQ department, convenes an elder's group on the topic, the GN *IQ Katimajit*. Rhetorically, members of the legislature and deputy ministers clearly affirm their commitment to IQ, and suggest that it is essential that the political system, its legislature and bureaucracy reflect it. And yet there is obvious concern that support for IQ seems to be more symbolic than substantive (Henderson 2007; White 2006b).

⁶⁸ Henderson identifies four challenges facing efforts to ensure that Nunavut institutions reflect IQ: "First, there is an obvious translation problem when one seeks to apply values, practices, and knowledge rooted in the past, in lives lived on the land in small family settings, to a contemporary environment, where individuals live in communities within a rights-based polity. Second, it is difficult to apply values and behaviour practiced by individuals or small social groups to the culture of institutions. Third, there is the problem of contested notions

Among the many responsibilities held and activities conducted by the Government of Nunavut with relation to wildlife, it is worth mentioning those that directly relate to subsequent chapters of this thesis. The Wildlife Management Division of the territorial Department of Environment (GN DoE) holds a legislated mandate for the management of terrestrial wildlife species in Nunavut. In addition to the Nunavut Wildlife Act, the Wildlife Management Division is responsible for fulfilling GN responsibilities under a wide range of federal legislation as well as national and international agreements and conventions; these include ongoing responsibility for co-managing Nunavut wildlife as obligated under the NLCA. One of the primary goals of the Division is to achieve a balanced approach to wildlife management that meets legislative requirements, uses both science and *Inuit Qaujimaqatuqangit* and reflects the values and needs of Nunavummiut. More specifically, the objectives of the GN DoE Wildlife Management Division are: to provide up-to-date information to co-management partners from various sources, including in-house scientific research on terrestrial wildlife species (e.g. polar bears) and *Inuit Qaujimaqatuqangit*; to ensure responsible wildlife management and land use decisions; to develop wildlife management plans with co-management partners for the protection of wildlife populations; to meet national and international obligations; to provide support and resources to co-management partners and harvesters; and to ensure legislative and regulatory compliance through education and enforcement (GN 2011). Finally, it should be stated that the territorial or federal Minister of the Environment retains “ultimate responsibility for wildlife management” in the NSA (GC 1993, Section 5.1.2).

While ultimate responsibility for wildlife management rests within the GN under the NLCA, community-based and regional-level organisations also have significant roles to play in wildlife governance in the territory, since they represent official co-management partners.

of Inuit values and knowledge. Fourth, among those notions not contested, there might be a fundamental incompatibility between IQ and the worldviews underpinning Euro-Canadian bureaucratic structures and processes (Henderson 2007: 194)” (see also White 2006b).

Indeed, the NLCA set up a Nunavut-wide network of local hunters and trappers organisations (HTOs) as well as three regional wildlife organisations (RWOs). These institutions formalised⁶⁹ and expanded upon the work previously set out by the GNWT for hunters and trappers associations and RWOs. HTOs and RWOs today are involved in co-management through consultations with government decision-makers and with the NWMB. Local HTOs represent and provide services to Inuit in the communities on wildlife management and harvesting, programme delivery and implementation of several sections of the NLCA. They are governed by democratically elected boards⁷⁰ who hold the right to consult with territorial wildlife managers. Among other responsibilities, HTOs have the authority to allocate the polar bear community TAH among hunters and hold complete control over decisions regarding the guided polar bear trophy hunt. They are also in charge of reviewing applications for territorial wildlife research permits. HTO membership consists of all beneficiaries under the claim (NIWS 2008a, 2008b).⁷¹ The three regional wildlife organisations, namely, the Kitikmeot Regional Wildlife Board, the Kivalliq Wildlife Board and the Qikiqtaaluk Wildlife Board, represent the major administrative regions of Nunavut. RWOs provide a forum for coordinating Inuit harvesting interests at the regional level (NIWS 2008a, 2008b).

Another important institution in the territory's wildlife management is Nunavut Tunngavik Incorporated (NTI), a non-profit corporation with three mandates: to oversee implementation of all Inuit responsibilities under the NLCA; to ensure, on behalf of Inuit, that all other parties to the claim meet their obligations; and to represent beneficiaries under the claim. Although its official role in wildlife management is quite limited under the NLCA, NTI

⁶⁹ Prior to the signing of the NLCA, community-based hunters and trappers associations were consulted on some wildlife decisions, but were provided with no legal seat at the quota-setting table (Dowsley 2009b).

⁷⁰ Every two years or so, the voting members of the HTO elect a chairperson and seven other board members to serve on the HTO board. Within each HTO, one secretary manager is also responsible for the organisation's overall management and administration.

⁷¹ There are two kinds of HTO members. Voting members are all Inuit beneficiaries sixteen years of age or older. An Inuk resident of a community who is not registered as a beneficiary can also apply to be voting member. Non-voting members designate all Inuit beneficiaries younger than sixteen residing in Nunavut (NIWS 2008a).

is now recognised as an unofficial government partner or advisor in decision-making (Dowsley 2009b; Légaré 2000). In fact, over the last decade, this organisation has developed a significant capacity to engage in wildlife matters, not only at the territorial level, but also on the federal and international scenes as well. Today, in the area of wildlife, responsibility lies with NTI's Wildlife Department, whose triple mandate is: "to act as a 'watchdog' to ensure that all parties implement their respective responsibilities in the area of wildlife management; to advocate on behalf of Inuit on wildlife management issues; and to initiate projects and support programs" (NIWS 2008b: 7). NTI thus represents Nunavut Inuit in territory-wide consultations by the federal and territorial governments on wildlife issues. It is also a regular participant in the proceedings of the Nunavut Wildlife Management Board and provides support to Inuit harvesters, HTOs and RWOs (NIWS 2008b). The NTI Wildlife Department today employs seven full-time employees, including Inuit staff, specialists in wildlife regulatory issues and a biologist, and it draws on outside consultants as required.

Finally, under NLCA supervision, the Canadian Wildlife Service (CWS), other wildlife management agencies (i.e. notably the NWMB, HTOs, NTI and the GN), and the Inuit all cooperate in the management of harvested migratory birds.⁷² As previously mentioned, the CWS is Canada's national wildlife agency, and handles wildlife matters that come under federal government responsibility. These matters include: the protection and management of migratory birds and nationally important wildlife habitats; research into nationally important wildlife issues (including migratory birds such as common eiders); and control of both international trade in endangered species and international treaties (such as the ACPB and the MBC). CWS responsibilities for migratory bird populations are pursuant to legislation in the Migratory Birds Convention Act (1917, 1994). Under this Act, CWS administers the Migratory Birds Regulations (1997), which regulate hunting and possession of migratory

⁷² Today all but two avian species (the common raven (*Corvus corax*) and the willow ptarmigan (*Lagopus lagopus*)) living within Nunavut's borders are considered 'migratory', thus primarily an area of federal responsibility.

birds, and the Migratory Bird Sanctuary Regulations (1997), which provide for the establishment and management of migratory bird sanctuaries.

4.5. Conclusion

Throughout this chapter, I have explored some of the historical forms that the production of 'polar bears' and 'migratory birds' have taken in northern Canada. I have attempted to show how the colonisation of Inuit by the Canadian state, the rise of conservationist sentiments among Euro-Canadians, the application of science to wildlife management and the development of the Inuit and Aboriginal rights movement in Canada all figure among the generative forces that have shaped how this process has evolved since the late 19th century.

In (re)tracing the building of wildlife governance networks in the Northwest Territories and later in Nunavut, I have illustrated how northern game (as much as the culture of those who relied on it for subsistence) progressively became available to, and transformed by, forms of political calculation that included the making of hunting regulations and the creation of institutions and scientific research programmes dedicated to wildlife conservation. During this process, I have observed a general trend towards a shift from early top-down governance practices towards a situation in which Aboriginal perspectives are increasingly taken into account.

In fact, by analysing the political rationalities (Rose et al. 2006) underlying the early design and implementation of wildlife governance arrangements in Nunavut, I have demonstrated that the Nunavut project can be partly interpreted as a response to a process that "attempted to supplant Inuit relations to animals with the logic, discourse, and machination of science" and bureaucratic management (Kulchyski and Tester 2007: 11). Initially advocated as a means through which Inuit could "regain control of their lands and their lives" (Hicks and

White 2000) through the protection and recognition of their hunting rights and the sharing of game management responsibilities, wildlife governance in the Nunavut Territory has since been described in official documents (e.g. the NLCA) and presented by actors as a participatory process that should empower Inuit via their equitable representation and meaningful involvement in researching and managing animals.

After introducing the roles, responsibilities and objectives of some of the main institutions and actors involved in contemporary wildlife governance in Nunavut, I am now in a position to bring such a normative assumption under further scrutiny. This is the examination I propose to carry out throughout the remaining chapters of this thesis. While the next three chapters (Chapters 5 to 7) will concentrate exclusively on polar bear research and management, Chapter 8 will describe the second case study that is analysed in this thesis, focusing on the performance of common eider governance. The final chapter (Chapter 9), in turn, will offer a synthesis that discusses the insights gained from the two cases under study.

Chapter 5. Negotiating the making of scientific knowledge in Foxe Basin

5.1. Introduction

After a public consultation held in Kimmirut in the local school gymnasium, we find ourselves standing in front of a map showing the boundaries of the Foxe Basin polar bear population. The territorial polar bear biologist discusses a translation issue that arose during the meeting with members of the public, an interpreter and representatives from the local hunters and trappers organisation. On one of the PowerPoint slides presented by the biologist, 'Foxe Basin' had been inadequately translated as "the area around Cape Dorset". As a result, many feel that what the 'Foxe Basin polar bear population' actually represents remains nebulous for some community members. Clearly, a novel Inuktitut expression is needed to convey the meaning of this geographical space. Given that the consultation process revolves around the idea of gathering the best scientific information possible for managing the 'Foxe Basin polar bear population', this is neither a trivial nor a purely semantic issue. This situation reflects how, to date, such a geographical space has been produced and negotiated mostly through powerful scientific and managerial networks operating in relative isolation from northern communities (Field notes,⁷³ 05/03/09).

The situation depicted above (Fig. 5.1.) took place during a consultation process that occurred in 2009 in the Foxe Basin region, Nunavut, within the context of a scientific research project on polar bears. It highlights negotiations between the language and practices of wildlife biologists and managers and those of Nunavut citizens. To understand better the dynamics and logics of such a moment of public engagement in scientific research, I suggest that this event be viewed as a point of interference between two historical trajectories. The first trajectory concerns advances made in the field of wildlife biology, which have yielded a

⁷³ For the purposes of brevity, the term 'field notes' will hereafter be designated by the acronym 'FN'.

progressive scientisation of polar bear management in northern Canada over the last few decades. The second trajectory illustrates the growth, over a similar period of time, of Canadian Inuit demands for political autonomy; this created the impetus for developing a participatory wildlife governance regime under the Nunavut Land Claims Agreement and, later, within the Nunavut Territory.



Figure 5.1. The community of Kimmirut (left) and a discussion around a map of the Foxe Basin population (right) (Photos: D. Henri)

This chapter takes as its point of departure a series of events during which the making of polar bear science became a matter of public debate, and will examine how the entanglement of such histories has led to the production of contested spaces for Inuit participation in wildlife research in Nunavut. It will also illustrate how the formation of these new political assemblages has given rise to objects, subjectivities, knowledge practices and power dynamics generated through relational networks involving both human and nonhuman actors (Agrawal 2005; Fairhead and Leach 2003; Foucault and Gordon 1980; Latour 2004, 2005).

Both historical and analytical in scope, this chapter will thus draw on the notions of *assemblage* (Deleuze and Guattari 1988) and *actor-network* (Latour 1987, 1999b, 2005), because these notions encourage us to think in terms of the shifting webs of relations

encompassing humans, animals, and machines simultaneously, and in which specific identities and subjectivities are always contingent rather than fixed. As Foucault (1977) suggests, the world we know is not an ultimately simple configuration of events that can be reduced to accentuate their essential traits, ultimate meaning, or value. On the contrary, the world is a profusion of entangled moments. Hence I propose the adoption of Deleuze and Guattari's (1988: 90) term *assemblage* to designate the amalgam of places, bodies, voices, skills, practices, technical devices, theories and strategies involved in producing spaces for Inuit and public participation in scientific research, and to connote the ad hoc contingency of a collage, whose emergent effects embrace a wide variety of components. The use of Latour's *actor-networks* to define the evolving relations involved in shaping such assemblages, in turn, invites this analysis to focus on the controversial nature of what it means for an actor to come into existence by uncovering and tracing the many performative connections existing among human, nonhuman, material and discursive entities (Latour 2005; Law and Hassard 1999).

In addition, Foucault's insistence that knowledge be understood as both the condition and the effect of power distributed across complex social networks (Foucault and Gordon 1980; Rouse 2005) further sharpens a sense of what is at stake in the project of historicising and analysing the dynamics involved in the making of polar bear science in Nunavut. Indeed, what will be scrutinised here is not wildlife in itself, but the construction of *spaces of visibility* in which wildlife becomes constituted, by asking how, for instance, something called *nanuq* or *Ursus maritimus* is made legible; and how it enters the history of wildlife governance in Nunavut as an object of political calculation and as both a focus and a lure for emotional investment.

To pursue this objective, this chapter will describe a consultative process during which government-sponsored scientific research is brought under public scrutiny, thereby offering opportunities for Inuit involvement in producing policy-relevant knowledge about polar bears

in the Foxe Basin region, Nunavut. It will show how the format and content of this event are the products, not only of advances made in the field of polar bear biology, but also of political changes occurring in the wake of the NLCA. In doing so, I introduce the role the production of scientific knowledge plays in shaping technologies of participation (Agrawal 2005) in wildlife governance, by showing how the practices and tools of polar bear science and their mediation in policy contribute to the production of social and natural categories (e.g. polar bear populations, management units, 'Inuit societal values') and how these become potent forces in framing terms of public engagement and reflection (Goffman 1975). I also aim to demonstrate how this historical process results in limited Inuit participation in negotiating the terms of production of scientific knowledge in particular, and in framing practices of polar bear management more generally. Finally, I will illustrate how science, Inuit knowledge and wildlife policy fit into struggles for authority between actors over control of the territory's wildlife resources. I will reflect on the ways in which these entities operate in shaping new subjectivities through forms of inclusion and exclusion, in ways which sometimes constrain effective public critique and expression of alternative perspectives, but which also create opportunities for new forms of engagement and transformation among actors such as hunters, biologists and wildlife managers.

By offering an ethnographic account of the politics of participation in polar bear research and management in the Foxe Basin area, this chapter therefore focuses on a dimension that has been largely overlooked in the few studies that have analysed wildlife governance in Nunavut. Indeed, White (2008) and Dowsley (2007, 2009a) have recently identified the need for a greater scrutiny of community-level politics. The following analysis contributes to this research effort.

5.2. Negotiating knowledge practices

During winter and spring 2009, representatives from the Department of Environment, Government of Nunavut, undertook a series of community consultations and meetings with local hunters and trappers organisations (HTOs) within the context of the Foxe Basin Polar Bear Research Project. The aim of this collaborative research initiative was to gather and produce information relevant for the sound management of polar bears in Nunavut. Throughout the consultations, a team of government experts flew between the communities of Kimmirut, Cape Dorset, Coral Harbour, Repulse Bay, Chesterfield Inlet, Rankin Inlet, Hall Beach and Igloolik (cf. Figure 4.2.), where meeting rooms, school gymnasiums and airport terminals became stages for discussions about scientific research, Inuit societal values and their relations to polar bear management practices.

The following analysis contextualises and describes this consultative process, which epitomises ongoing negotiations and tensions between actors involved in polar bear governance in Nunavut and internationally. Indeed, such an institutionalised attempt to introduce local participation in wildlife research, policy and planning processes generated events during which knowledge claims, polar bear science technologies and the regulatory and policy practices of government agencies that they inform became topics for public interrogation and dispute (Whatmore 2009). How actors holding diverse knowledge of and experiences with polar bears come to interact, as well as how and to what extent public criticism of the scientific and policy practices of powerful institutions came to be expressed are questions for the ethnographic enquiry below.

5.2.1. A short history of polar bear science and management in Foxe Basin

Foxe Basin was named after Luke Foxe (1586-1635), an English explorer who set forth in 1631 to find the Northwest Passage. The account of his travels, *North-West Fox*, was

published in London in 1635. In this book, the explorer gave names to many geographical features; one toponym that is still in use today and employed within the context of contemporary polar bear research and management is 'Foxe Basin' (Morley 2000). A brief incursion into the history of this term illustrates that the semantic categories employed to describe features of the 'natural world' are the products of situated practices and power relations. Indeed, the use of 'Foxe Basin' to designate a polar bear management unit that was central to the framing of the discussions taking place during the 2009 consultations in eight Nunavut communities results from a specific scientific and political history.

Polar bear management in Nunavut today involves the allocation of hunting quotas based on management zones established through periodic scientific population inventories and modelling, as well as based on Inuit knowledge of population trends (GN 2005). However, this has not always been the case. As illustrated in Chapter 4, the current state of managerial practices for polar bears across the territory reflects the evolution, over the last decades, of how scientists understand polar bear movements, habitat use and general ecology, as well as progressive reconfigurations of the role of science and Inuit knowledge in designing management strategies.

In the Foxe Basin area, extensive scientific research on polar bears did not get underway until the mid-1980s (60, 18/09/09). Indeed, in a review of the state of scientific knowledge about polar bears in the Foxe Basin, Hudson Bay and James Bay region conducted in 1986, polar bear biologists Stirling and Ramsay write:

The region [...] probably contains three or five relatively discrete subpopulations of polar bears. The details of seasonal movements and subpopulation boundaries are poorly known. Despite the fact that about 200 polar bears are harvested in this area annually by Inuit and Indian hunters, there are no reliable estimates of the size of the total population or of any of the subpopulations. [...] The principal reasons for this include the large size of the overall area, the relative inaccessibility of much of it (particularly offshore), and limited funding (Stirling and Ramsay 1986: 341-351; Fig. 5.2.).

As with many species being actively managed, our understanding of the habits of polar bears has increased in recent years [...] A main development was that polar bears live within 12 fairly distinct populations within the Northwest Territories and surrounding jurisdictions. The Territorial Department of Renewable Resources expressed a desire to move towards a system of management that was based on populations (GNWT 1993).

The material originally presented here is not currently available in ORA

Figure 5.2. Polar bear management zones based on discreteness of populations in 1986 (Stirling and Ramsay 1986: 342) (left) and movements from radio collared polar bears in 1986-1988 (Taylor et al. 1990: 8) (right)

If polar bears were once believed by some biologists to be circumpolar nomads (Pederson 1945) or to exist in genetically isolated stocks (Larsen et al. 1983), greater consensus thus emerged among the scientific community around the idea that polar bears exhibit seasonal fidelity to local areas and that land barriers, sea ice types and sea ice movements can provide explanations for the limited exchange observed between geographical areas (Taylor et al. 2001). Boundaries between polar bear populations were initially proposed on the basis of qualitative information relating to topography and sea ice cover indicating barriers to movements, as well as on reconnaissance data. While the Inuit living in the northern Hudson Bay and Foxe Basin settlements of the

—Northwest Territories had been making formal requests to the territorial government since 1977 for increases in their polar bear quotas, few adjustments had been made, since no population estimates were available for Foxe Basin (Taylor et al. 1990). In 1984, the Department of Renewable Resources, GNWT, thus initiated a mark-recapture programme on Southampton and Coats Islands. Two years later, however, this project was redesigned to overcome technical and financial difficulties; traditional mark-recapture appeared to be too expensive to produce a reliable population estimate for the entire Foxe Basin region, and two years of work in this area had shown that both weather conditions in the fall and the inaccessibility of some polar bears precluded capturing a sample large enough to be used for a population estimate (Stirling and Ramsay 1986; Taylor et al. 1990). As a result, researchers began performing aerial telemetry surveys to determine the boundaries of polar bear

populations resident in Foxe Basin by deploying radio transmitters⁷⁴ on animals (Fig. 5.2.). In addition, an alternative to traditional mark-recapture, called tetracycline marking technique,⁷⁵ was field tested and developed for polar bears. This contributed to the production of the first science-based population estimate for the Foxe Basin population in 1994 (60, 18/09/09). The mean population size for polar bears in Foxe Basin from 1989 to 1994 was thus estimated to be 2,197 (Taylor et al. 2006).

Following the release of such an estimate, a management agreement was signed between the GNWT and the hunters and trappers associations from communities belonging to the newly delineated 'Foxe Basin polar bear management unit' (GNWT 1993). This agreement included the setting of the first science-based hunting quotas for Foxe Basin communities (60, 09/06/09).

While conservation concerns prompted the establishment of community-based quotas in the late 1960s that were based on harvest records in the NWT, scientific advances made in the wake of such regulations led to the progressive scientisation of polar bear harvest management practices in northern Canada (Chapter 4). As this overview of the early history of polar bear science and management in the Foxe Basin region illustrates, scientific knowledge gained prominence in informing managerial approaches, notably by identifying population boundaries which subsequently became units for quota allocation. Furthermore, scientific devices such as population estimates, maps of polar bear populations (Fig. 5.2. and 5.3.) and management zones became powerful tools for articulating research strategies and shaping societal processes. These devices not only constituted novel ways of spatially and

⁷⁴ Again, researchers faced some technical difficulties. Fixed-wing aerial surveys were conducted to relocate instrumented animals until September 1988, when it appeared that most of the transmitters had failed (Taylor et al. 1990).

⁷⁵ The remote injection of the antibiotic tetracycline as a biomarker was used for the first time on polar bears for estimating population numbers with mark-recapture statistics (Taylor and Lee 1994). Tetracycline binds with calcium and leaves a permanent mark in the bones and in the dentine and cementum of polar bears' teeth. In sectioned uncalcified teeth, this mark is visible under ultra-violet light. Therefore, tetracycline can be used as a mark by being injected into polar bears from a helicopter. The recapture sample can then be seen to come from the annual harvest of polar bears in this region. From this sample, the proportion of marked animals and the year of marking can then be determined by sectioning and aging each tooth (Taylor et al. 1990).

quantitatively representing aspects of polar bear ecology, but also began yielding information on where, how and when subsequent scientific research and consultations with Inuit communities would occur. As a result, the practice of polar bear science and its mediation in policy contributed to the production of social and natural categories actively framing the terms of public engagement and reflection (Latour 2005).

Indeed, under Nunavut's current wildlife governance regime, opportunities do exist for Inuit and public engagement in the making of polar bear science. As the situation described at the beginning of this chapter exemplifies, opening up such participatory spaces can allow for a critical examination of scientific devices and an unveiling of the power dynamics that are at play between actors involved in the process of knowing and governing polar bears. The next section of this chapter explores this idea in further depth through an analysis of a series of public consultations conducted in 2009 within the context of the Foxe Basin Polar Bear Research Project.

5.2.2. Designing spaces for Inuit participation

From the completion of the first polar bear population inventory in Foxe Basin in the mid-1990s and 2007, little scientific attention was directed to this area by polar bear biologists: territorial research efforts, characterised by limited financial and human resources,⁷⁶ shifted geographic focus to other subpopulations (96, 10/09/09). During this period, substantial political changes occurred throughout the Canadian North, some of which would affect the subsequent conduct of polar bear science in the region.⁷⁷

⁷⁶ Although limited, the financial resources allocated to polar bear research in Nunavut have nonetheless been significant in relative terms. Since Nunavut's creation, the total territorial budget for the polar bear programme has averaged CAN\$1M per year, which represents approximately 50 per cent of the monies annually allocated by the Government of Nunavut for wildlife research in the territory (88, 27/01/09).

⁷⁷ Chapter 4 gives a detailed account of such shifts in wildlife governance. This section thus simply highlights changes that are especially significant for the development of my arguments.

The Nunavut Lands Claims Agreement (NLCA), for example, led to the formalisation of a wildlife co-management regime where local institutions such as hunters and trappers organisations gained official authority and decision-making powers. Furthermore, the NLCA contains provisions encouraging Inuit participation in this process by acknowledging “the need for an effective role for Inuit in all aspects of wildlife management, including research”, and identifying “the need for an effective system for wildlife management that complements Inuit harvesting rights and priorities, and recognises Inuit systems of wildlife management that contribute to the conservation of wildlife and protection of wildlife habitat” (GC 1993).

With regard to polar bear management, a series of negotiated agreements were established throughout the NWT, and later Nunavut, between local hunters and trappers organisations (HTOs) and other governmental agencies; these reflected the terms of the NLCA. A series of Memoranda of Understanding (MOU) signed in 2004 between local HTOs, regional wildlife organisations and the territorial Department of Environment of the Nunavut Government, constitutes the latest form of such agreements. According to these MOU, scientific research on each polar bear population should be carried out on a 15-year rotating schedule. The territorial Minister of the Environment and the Nunavut Wildlife Management Board (the co-management board instituted under the land claim) then uses the information produced through these surveys to decide on the maximum number of animals that can be harvested (i.e. the *maximum sustainable yield*) for each polar bear management area (which approximately matches each polar bear population unit).⁷⁸ Regional wildlife organisations (RWOs), made up of community representatives, then divide the resulting quota (or *total allowable harvest*) amongst communities.

The 2004 MOU further stipulated that while scientific data was to be used to set quotas for the first seven years of the 15-year management period, *Inuit Qaujimagajatuqangit* (IQ) shall

⁷⁸ Although the NWMB has made it clear that its decision-making process is not legally bound to obey these MOU, all parties generally agree that communication and consensus on a management plan for the species is consistent with best practices for wildlife management.

be used to modify these quotas for the following eight years or until new scientific data are collected on the population. The rationale behind the strategy of using both scientific information and IQ was that, in theory, this new system should be more accurate because it includes scientific procedures where accuracy can be quantified, but which are constrained in the frequency of their population estimates, as well as local knowledge, which provides frequent but less precise observations of population trends (Dowsley 2007). Along with the use of Inuit knowledge of polar bear population trends in quota-setting procedures, Inuit participation in polar bear research and management is further encouraged in some of the objectives of the MOU. These are:

To ensure participation of local people in research activities and the collection of harvest data for the population [...]. To identify a management approach that meets the needs and preferences of the hunters that harvest polar bears from the population [...]. To hold management meetings with representatives of the parties to this MOU at least once every seven years to review and update information and set direction for the continuing management of polar bears (GN 2005: 4-5).

The result of extensive negotiations and consultations between various co-management partners within the Nunavut Territory in the wake of sociopolitical changes brought through the NLCA, the 2004 MOU thus set a framework for guiding current polar bear research, management and consultation initiatives within the territory. These agreements clearly show how the methods and theories of polar bear science and the experience and knowledge held by Inuit should play their parts in making polar bear governance in Nunavut.

Within this context, in 2007, the Department of Environment, Government of Nunavut (GN DoE), launched the *Foxe Basin Polar Bear Research Project 2007-2012* as a means to fulfil its research mandate under the NLCA, the 2004 polar bear MOU and the international Agreement on the Conservation of Polar Bears (Chapter 4). This collaborative⁷⁹ research initiative sought to conduct an up-to-date population inventory as part of the research cycle

⁷⁹ Researchers affiliated with the GN DoE Wildlife Research Division, the Department of Biological Sciences of the University of Alberta, and the Department of Fisheries, Wildlife and Conservation Biology of the University of Manitoba all took part in this project.

described in the 2004 MOU, and to gain a better understanding of seasonal movements and ice habitat selection of polar bears (Peacock et al. 2008). Indeed, the Foxe Basin (FB) polar bear population⁸⁰ (Fig. 5.3.) had not been the object of significant scientific research attention since the 1990s, and neither delineation of population boundaries using satellite telemetry nor estimation of demographic rates had ever been done in Foxe Basin (these two scientific practices are instrumental in contemporary population-based management) (Lunn et al. 1987; Taylor et al. 1990; Taylor et al. 2001). In addition, Inuit harvesters inhabiting the eight Nunavut communities comprised within the boundaries of the Foxe Basin population had indicated increases in polar bear numbers⁸¹ (McDonald et al. 1997): a further justification for the need to conduct scientific research in the area (Peacock et al. 2008).

The Foxe Basin Project includes several components that address the Government of Nunavut's research and management responsibilities. These include a population inventory (boundary delineation and estimation of population parameters) that will result in a recommendation for harvest management. Geographic delineation is to be achieved using movements recorded from satellite tags on both adult females and males.⁸² According to the initial project proposal, the physical marking and recapture of polar bears would be employed in order to estimate population size. Researchers would also use physical mark-recapture to estimate individual annual survival and incorporate this demographic parameter into

⁸⁰ According to the 2004 MOU, the Foxe Basin (FB) polar bear population is comprised of Foxe Basin, northern Hudson Bay and the westernmost extent of Hudson Strait (Fig. 5.3.). The Nunavut communities of Chesterfield Inlet (8), Coral Harbour (40), Repulse Bay (12), Hall Beach (8), Igloodik (10), Cape Dorset (10), Kimmirut (10), as well as the Qikiqtaluuk Wildlife Board (4) and the Kivalliq Regional Wildlife Board (4) harvest from Foxe Basin (their total annual allowable harvest is indicated in parentheses) (Fig. 4.2.). The FB population is also harvested by Quebec communities (average of 0-7 polar bears per year from 1997-2005). However, this harvest is not regulated (Aars et al. 2006).

⁸¹ Their observations resulted in an increase in the 2005 quota from a total of 97 to 109 bears per year, a number which was considered sustainable at the time with a population estimated at 2,300 bears (Taylor et al. 2006).

⁸² Hitherto, boundary delineation of polar bear populations has used satellite information collected from adult females only, because the circumference of the necks of adult males is too large for them to wear satellite collars. Within the context of this project, the use of satellite transmitter ear tags aims to collect data on male polar bear movement. Data from four male polar bears shall thus be used for the Foxe Basin project in addition to the data collected on female movement for delineation and habitat analyses (60, 18/09/09).

computerised population models in order to evaluate population growth and sustainable harvest (Peacock et al. 2008).

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Figure 5.3. Polar bear populations in Canada, including the Foxe Basin (FB) study population (Source: Aars et al. 2006)

Another significant dimension of this project concerns the incorporation of Inuit values and views on polar bear science into the research design. In light of concerns expressed by Inuit and their representatives regarding the morality and perceived negative effects of scientific research methods involving the physical capture and chemical immobilisation of polar bears (such as mark-recapture) (Fig. 5.4.), there has been growing support among wildlife management partners in Nunavut for developing wildlife research practices that minimise the handling of polar bears (Peacock et al. 2008). Indeed, in recent years, Canadian Inuit have publicly expressed mounting concern about the impact of scientific research on this

species of cultural significance.⁸³ A resolution passed on 10 June 2009 during the Annual General Meeting of *Inuit Tapiriit Kanatami* (a national advocacy organisation representing and promoting the interests of Inuit in Canada) illustrates this statement:

The Inuit of Canada have serious and increasing concerns about the intrusive methods by which Western science researchers are handling and gathering research data on polar bears that is causing stress and harm to the animals (namely through methods such as the use of tranquilizers, direct handling of the animal, taking bodily samples, collaring, paint marking, recapturing, and using aircraft to track, chase, and seize the animals) [...]. The Inuit of Canada are deeply concerned that these research methods ignore, do not take into account, or do not respect Inuit knowledge [...] on polar bears (ITK 2009).

In 2007, Nunavut Tunngavik Incorporated (NTI) (the corporation representing Inuit under the NLCA) also passed a resolution demanding a federal and territorial ban on 'intrusive scientific wildlife research':

Inuit have said for years that *Inuit Qaujimagajatuqangit* must be incorporated into any scientific research in Nunavut, especially when it comes to polar bear research [...]. Our requests have largely been ignored, and this is unacceptable [...]. NTI believes research is important, but this type of intrusive research must come to an end. It is disrespectful of animals and Inuit (NTI 2007a).

Amid increased pressures from territorial and national Inuit organisations and the recognition of the Government of Nunavut's mandate to involve Inuit in all aspects of wildlife management in a meaningful way (Chapter 4), the research methodology proposed for the Foxe Basin Project thus includes 'less-invasive' aerial survey methods for polar bear population estimation. The original research proposal suggests conducting aerial surveys in concert with a mark-recapture population inventory, in order to provide a "rigorous and quantitative comparative assessment" of population estimates resulting from both mark-recapture and aerial surveys (Peacock et al. 2008: 3). It is also proposed that Inuit knowledge of polar bear habitat be combined with scientific data for predictive habitat modelling. Finally, the use of radio frequency identification tags (or RFID tags) is cited in the research

⁸³ The cultural rationales, values and mechanisms underlying such concerns will be explored in further depth in Chapter 6.

protocol as a way to minimise polar bear handling: such tracking devices are a recent innovation in wildlife tracking technologies and allow researchers to identify individual bears by flying over them rather than recapturing them.

The material originally presented here is not currently available in ORA

Figure 5.4. Movements of Foxe Basin polar bears wearing GPS/Argos satellite collars and ear tags from August to November 2008 (left), bear with a satellite transmitter ear tag (top right), and Elizabeth Peacock and Jay McConnell deploying a satellite collar (bottom right) (Source: Government of Nunavut and University of Alberta, unpublished data (left); photos: E. Peacock (top right), V. Sahanatien (bottom right))

The proponents of this type of research protocol therefore view their project as a means of balancing the need to accommodate and respect Inuit concerns on the physical handling of polar bears, and recognising Inuit rights to participate in wildlife research, while generating scientifically robust data fulfilling the territorial government's responsibility to produce the information necessary for the sound management of the species (60, 18/09/09). An

information leaflet presented by representatives from the GN DoE Wildlife Research Division during public meetings held in Foxe Basin in winter 2009 contained this passage:

Nunavut has 65 per cent of the world's and 90 per cent of Canada's polar bears. As a result, Nunavut has a unique responsibility and opportunity to be the world leader in polar bear research and conservation. We can be a leader in polar bear research and conservation while being truly accountable to *Inuit Societal Values*, as the polar bear is of cultural, social, nutritional and economic importance to Nunavummiut. Polar bear research cannot continue without the support of Nunavummiut. It is therefore necessary that we use science that is in line with *Inuit Societal Values*. The Foxe Basin polar bear project has been designed to be the first example of a rigorous research project that will combine science and *Inuit Qaujimajatuqangit*, and will develop research techniques that are in line with *Inuit Societal Values* (GN 2009).

The above use of 'Inuit Societal Values' and '*Inuit Qaujimajatuqangit*' as conceptual constructs reflects their increased use in territorial governance over the last decade. While *Inuit Qaujimajatuqangit* was first defined during a workshop on traditional knowledge held in Igloolik in 1998 (Wenzel 2004), 'Inuit Societal Values' is a more recent terminological invention that has been notably employed in *Pinasuaqtavut 2004-2009*, a vision statement document outlining specific objectives to be accomplished under Nunavut's second legislature (GN 2004). Here, employing these reified categories connoting a wider policy context and bureaucratic culture becomes a means for researchers to convey a seamless idea of proactive Inuit involvement in the Foxe Basin Project. 'Inuit Societal Values' represents a strategy that, to a degree, essentialises Inuit values in order to present them as compatible with scientific research practices and projects.

When research proponents began consulting with local HTOs and communities to discuss their ideas, however, tensions soon appeared in the process of negotiating what was actually meant by 'meaningful' Inuit participation in the Foxe Basin Polar Bear Project (and, by extension, wildlife research in the territory). Between 2007 and 2009, project leaders in collaboration with GN DoE representatives conducted extensive consultations within the eight

communities situated within the boundaries of the Foxe Basin population. The team presented the project and requested feedback and support from HTOs and community members.

In 2008, as a result of a consultative process during which scientific research techniques became heavily politicised, the mark-recapture component initially suggested in the research proposal was cancelled and postponed by the territorial Minister of the Environment due to community concerns; it was again abandoned for the 2009 field season (88, 27/01/09). While some local stakeholders welcomed the research initiative and acknowledged the efforts made by researchers to develop less-invasive techniques (Zarate 2009), a majority opposed the project and denied their support on the basis of ethical concerns over the effects of scientific research on both polar bear ecology and bear-human relations. Not only were Foxe Basin residents worried about the physiological impacts of various research techniques on bear health and survival, but they also critiqued behaviours and attitudes which they deemed disrespectful to a spiritually powerful and intelligent figure considered to be part of an integrated system of reciprocal rights and responsibilities between humans and animals.⁸⁴

5.2.3. Debating polar bear science and Inuit participation

Clearly, the discussions and controversy arising in the aftermath of the Foxe Basin research initiative led to a crystallisation of contrasting positions among various actors with regard to the practice of polar bear science and the politics of Inuit involvement in research. This section will describe this phenomenon in greater depth, examining the dialogical procedures, subjectivities and power dynamics that the configuration of new political assemblages in wildlife research has brought (or failed to bring) into being in Nunavut. To do this, I will analyse a series of events that played a pivotal role in such a transformative process, namely, public consultations conducted in 2009 within the context of the Foxe Basin Polar Bear Research Project.

⁸⁴ These perspectives are further explored in Chapter 6.

After each meeting I attended in Kimmirut, Chesterfield Inlet, Cape Dorset, Repulse Bay and Igloolik during a round of community consultations held from March to April 2009, I asked community representatives to share their thoughts and opinions about the events that had just unfolded in front of our eyes. The responses I gathered from my informal survey were diverse, ranging from expressions of a high level of satisfaction to feelings of powerlessness, relative indifference and the formulation of strong criticism. The two comments below are representative of positions from both ends of this spectrum:

People say that they never got consulted when the laws were imposed on us. With the land claims agreement, you can't do that anymore [...]. I thought the consultation went very well. People were speaking very clearly about what they think about the wildlife and the management practices that wildlife researchers do on the animals. The people mainly always say that they like to see the animals left alone because some of them suffer a lot from radio or satellite collars and people don't like whenever a helicopter has to chase [animals] and tranquillise them [...]. But people also understand that this has to be done in order to make the world understand how many animals we have around. And the new techniques that biologists were talking about. [...] I think that this is something very positive, which can help out in making the animals less physically stressed.

– Michel Akkuardjuk, HTO chairperson, Chesterfield Inlet (98, 09/04/09)

The government came here with a research package with everything organised without any local input. That's not okay. When [researchers] go to the HTOs to have their project approved without involving locals, then there tends to be a lot of disagreement [...]. That is why there is so much conflict and opposition with this project in the community.

– David Aqqiaruq, HTO board member, Igloolik (47, 03/06/09)

While these divergent views are helpful in gauging local actors' normative appreciations of consultation and research practices qualitatively, such varied perspectives also direct attention, albeit subtly, to the power dynamics involved in producing consultative spaces. In other words, the identity of the persons who frame dialogical procedures (Callon et al. 2001) occurring within these spaces appear to be as much a matter of concern here as are the commentaries and practices they are engaged in shaping. As highlighted in the above-mentioned quotations, the Foxe Basin consultations not only provided opportunities for local

stakeholders to engage in critical debate on the representation of 'Inuit values' proposed by researchers: it also raised issues regarding the quality and framing of such discussions.

In fact, interviews conducted with researchers, government representatives and community members attending these meetings, as well as participant observation performed during such events, reveal the primary role played by project leaders in producing technologies of participation (Agrawal 2005) guided by the needs and discourse of polar bear science and management. The interviews also unveil the capacity of scientific researchers and government representatives to set the general terms of community engagement during the consultative process. Indeed, even though prior to community visits, a government researcher asked local HTOs representatives whether they wished to hold a public consultation in addition to an in-camera meeting at the HTO (thus allowing local stakeholders some agency in framing publicity surrounding Foxe Basin Project discussion) it was project leaders and government representatives who mostly shaped the format, content and scope of these events:

Community meetings generally lasted between two and four hours. After a brief prayer led by a community member (generally a respected elder or HTO board member), a Regional Manager from the GN DoE introduced the consultation. A presentation made by the territorial polar bear biologist followed. The biologist introduced the context, aims and methods of the Foxe Basin research project, justified the need for scientific research citing territorial, national and international agreements, briefed the audience about progresses accomplished to date, and asked for community support in the pursuit of future research activities. A local interpreter provided simultaneous translation from English to Inuktitut. At the end of the meeting, there was a relatively brief question period. Community members were presented with an opportunity to provide feedback to a ready-made project taking place within the context of an overarching population inventory cycle outlined in the 2004 MOU (FN, 11/04/09).

The above comments illustrate the agency of researchers and government officials in orchestrating consultative events where local actors are expected to play the role of feedback providers, not proactive and co-equal partners in issue-framing.

Furthermore, in discussions mostly imbued with the logics, methods and devices of scientific research, it appears that varying levels of familiarity with the specialised culture and

language of polar bear science among community members further hindered their productive engagement with government experts. For example, when asked about the reason for her silence at an HTO meeting in Chesterfield Inlet, one board member replied:

I don't know what to think. I didn't know what questions to ask, you know... They used all these complicated words... I am new to these things so and I didn't really know what to say (99, 09/04/09).

It is important to mention, however, that this situation did not preclude some local actors from creatively interpreting their roles, actively engaging in HTO and public meetings, and influencing researchers and government representatives. For example, in spite of recognising the limited input of the local HTO in framing the consultation process, the secretary manager working at the Kimmirut HTO suggested that the presentation made by the biologist offered an opportunity for iterative learning among actors:

People have to learn more from that [consultation] approach so they will know how they can best answer the scientists and say what they know themselves. It is a learning process at the same time for both [...]. We have to learn how to speak with biologists to explain to the world what our situation is (85, 03/03/09).

Echoing this view, the territorial polar bear biologist describes how the conduct of consultations in Foxe Basin progressively shaped her understanding of community perspectives:

At first I thought that because the MOU describes the inventory cycle, it basically says what I would say at a consultation, right? And everyone signed it and agreed to it [...]. But I had never been to communities so I did not know how people felt [...]. What happened was that once I went to the [Foxe Basin] communities in 2007 I heard, first hand, how totally opposed people were to what was in the MOU (60, 03/03/09).

In this way, the dynamics of Inuit participation in consultations held in the name of scientific research, polar bear conservation and 'Inuit Societal Values' highlights opposition and struggles for authority at the local level. It also illustrates how unrealistic it is to believe that consensus and homogeneity exist at the community level on polar bear research and management issues. As a government researcher summarises:

So one issue around the consultation is that people feel that biologists come and tell them what they are doing instead of asking permission. [...] When the government has a mandate and is the institution that approves the research permit [...], when they have the ultimate responsibility to decide whether something happens or not, it's like saying: "We are going to come to ask you if we can do this except that in the end we decide anyways." So it's already written that we decide anyways and so to the people it seems like lip service and it is! [...] That's not a way to genuinely involve people. And we are required to genuinely involve people under the land claim (58, 10/06/09).

While the territorial Minister of the Environment has the ultimate authority to approve, reject or modify a given wildlife research project through a formalised permitting process, such power distribution clearly fails to generate unanimous support at the community level. For example, in Igloolik, a community where the HTO has vocally critiqued the Foxe Basin Project, an HTO board member mentioned during an interview: "It's like they hear us but they don't listen. Even if we [HTO board members] don't want the research they go ahead and do it anyways" (51, 05/06/09). A perspective to which a government researcher responded: "If Hall Beach supports the project but Igloolik doesn't, it does not mean that everything will be stopped. People need to realise that you don't always get what you want. Igloolik needs to realise that there are people outside the HTO" (60, 18/09/09).

From conversations with HTO board members, it also appears that existing tensions regarding the authority of different institutional actors to shape consultation and research practices are further compounded by the fact that local actors display varying degrees of understanding of the extent of their official roles and responsibilities in the wildlife governance process. Indeed, on more than one occasion during interviews, HTO board members erroneously commented that they thought their organisation had "the power to stop government research" if they wanted to, whereas this is a ministerial prerogative

(FN, 05/05/09). Furthermore, the Executive Director of the Nunavut Inuit Wildlife Secretariat,⁸⁵ an organisation created to provide support for HTOs and RWOs, bluntly states:

The biggest barrier to the meaningful participation of HTOs in the wildlife management system is a lack of capacity and, to some degree, still a lack of understanding. [...] [HTO board members] are just learning what their powers and their responsibilities are under the NLCA. They say: “Well, we have all these rights under the NLCA!” But many of them don’t really know what these rights are and they are just learning about them now because they have never really had support behind them (81, 17/03/09).

Analysing the social dynamics involved in producing spaces for Inuit participation in polar bear research in Foxe Basin has shown that up until now, differences do exist between actors in terms of both their power to frame the content and conduct of community consultations and their capacity to engage proactively in discussions generated during such events. This case has also highlighted how such asymmetries yield opposition and struggles for authority at the local level. I will now explore how the unfolding of such tensions (as well as more collaborative relationships) has led to the formation of subjectivities among actors involved in wildlife governance in Nunavut.

In his analysis of emerging technologies in environmental government, Agrawal (2005) explores the relationships between changes in governance practices and the subjectivities of participants in those practices. The author argues that subjectivities can be transformed as a result of changes in technologies of government: “new environmental subject⁸⁶ positions emerge as a result of involvement in struggles over resources and with relation to new institutions and changing calculations or self-interest and the notion of self” (Agrawal 2005: 3). Agrawal highlights the need to look at politics, institutions and identities as intimately linked and defines these as constituent parts of technologies of government.

⁸⁵ The Nunavut Inuit Wildlife Secretariat was created in 2004 as a means of addressing capacity and mismanagement issues within HTOs and RWOs. Its primary mandate is to provide financial and administrative support for HTOs and RWOs, as well as to offer advice on the implementation of their obligations under the NLCA.

⁸⁶ As introduced in Chapter 2, Agrawal defines *environmental subjects* as “individuals who see the generalised need for environmental protection in some form and whose practices and words bear the mark of this acceptance, if not of personal conversion” (Agrawal 2005: 18).

Given the efforts made to involve Inuit in the Foxe Basin Polar Bear Project and, more generally, the progressive configuration of a participatory regime for governing wildlife in Nunavut, there appears to be justification for examining the formation of subjectivities that may occur among a variety of actors through the mobilisation of technologies of government, involving dynamics of collaboration, opposition, inclusion and exclusion in such context. In the pages below, I will therefore explore the subjectivities produced through the various events, dialogues and discussions that took place throughout community consultations held in Foxe Basin in 2009.

Just before a public meeting in Kimmirut, the territorial polar bear biologist asked me whether I thought she should remove some of the graphs and equations included in her presentation. She wondered what to include and what to leave out, in order to present clearly the methods, devices and findings of polar bear science to an audience mainly composed of experienced hunters and community members genuinely interested in wildlife (FN, 03/03/09). After the event, the biologist commented on the choices she had had to make, pointing to some of the difficulties she faced in her role as a science communicator:

You never know what people are not going to understand. If I say, well I have found that polar bears are surviving, I would feel weird not showing a graph of that. But am I allowed just to say that not to confuse people? But then they will say: “Well how do you know that?” [...] Does that mean I have to go into the details of mark-recapture? And there is also such a variety of understandings [...]. We were telling [people] that polar bear survival was increasing and that we were giving them all these injections [to immobilise them]. So [someone] said: “Well, maybe the medicine you are giving them is helping them to survive longer” (60, 03/03/09).

This last comment illustrates how the consultations held in Foxe Basin created the need for a scientific expert to engage with members of local publics presenting a range of experiences and levels of exposure to the language, assumptions and theories of the discipline of polar bear biology. This situation led to specific communication challenges which, I argue, reflect a definition of the role of territorial biologists as both producers of scientific

knowledge and as *public scientists*, that is, experts whose work and practices are accountable to lay publics.⁸⁷ In the case under study, the formation of such subjectivity or the process of (re-)ordering the meaning of being a polar bear biologist in Nunavut can thus be characterised by a problematic engagement with lay publics, as well as by tensions arising between competing responsibilities and agendas (Fig. 5.5.). As the biologist employed by the GN during Foxe Basin consultation suggests:

I am not an anthropologist nor an expert in communications. I am a population modeller and that is what my training is. And I realise that there is a social component to this job and I am doing my best at it [...] but this is taking up to 80 to 90 per cent of my job. [...] I also need to take programming courses and I don't even remember the last time I read an academic paper about polar bears. So all this focus on [the communication] aspect of my job is causing me to become a worse biologist. [...] They say: "The polar bear thing is changing, we need more help in the policy arena and community issues so your job is different now." I understand that they want biologists to be public relations experts, but my training is in biology and population modeling (60, 03/03/09).

If the conduct of community consultations in Foxe Basin highlights how communication and agenda-setting challenges can be part of the process of becoming a public scientist in Nunavut, such events also produce spaces liable to contribute to the rise of yet another type of environmental subject, to which I suggest giving the umbrella term *concerned citizen*. During both HTO and public meetings, the numerous questions, explanations and critical interventions raised by community members spoke to an emerging sense of engagement in issues of common concern among audiences addressed by the travelling consultation team. Consultative events became forums where citizens could question some of the practices of polar bear science and management (albeit at times to a limited extent, as mentioned earlier in this chapter).

⁸⁷ The expression *lay publics* here refers to publics mostly comprised of non-scientists rather than non-experts. Indeed, many members of such publics (e.g. Inuit hunters) are considered by their peers and may consider themselves as holding expert knowledge about wildlife. This distinction is essential to establish since it has been overlooked in the academic literature that has examined the lay-expert divide in hybrid forums (Callon et al. 2001).



Figure 5.5. Travelling and communicating science in Igloolik (Photos: D. Henri)

For example, a lengthy discussion occurred during an HTO meeting in Kimmirut regarding the southeastern boundary of the Foxe Basin population unit. Why was the boundary there? Could it be moved? Board members inquired about a previous request they had made to the territorial government for a boundary change as they felt that the “line drawn on the map” of polar bear management units did not reflect polar bear movements⁸⁸ and was unduly complicating hunting strategies in the community (HTO meeting transcript, Kimmirut, 03/03/09). On another occasion, an HTO board member from Kimmirut raised concerns about the accuracy of aerial surveys for estimating polar bear population size, using the analogy of a cookie box sitting half empty on the meeting table: “If you survey this area [pointing to the empty rows of cookies] but not this one [pointing to the full ones] and you use the number of bears you count there to conclude that there are fewer bears, then you get the wrong numbers. This is why hunters have to help in the survey” (FN, 03/03/09). Such comments triggered an exchange about scientific sampling methods, which again illustrates the power of scientific practices in framing the modalities of Inuit participation in polar bear

⁸⁸ In fact, on many occasions during my field research, many Inuit hunters and HTO board members I spoke with mentioned that they “did not believe” in scientific population boundaries. They acknowledged and described what they perceived to be seasonal migration patterns among polar bears feeding around their communities, but rather thought that bears travelled wherever food was abundant.

research. Indeed, a government representative alluded to the limits of community involvement in aerial survey design:

People often want to be involved in the design of the survey but the thing is that in science we have certain ways of sampling. We don't just go where the bears are, we have to cover the entire area. [...] Look, this is how science works. We have to either randomly sample or systematically sample or we do stratified sampling sometimes [doing] more heavy sampling in high density areas, and less sampling in others. So people want to be involved in the design but the design has to be a science-based design (HTO meeting transcript, Kimmirut, 03/03/09).

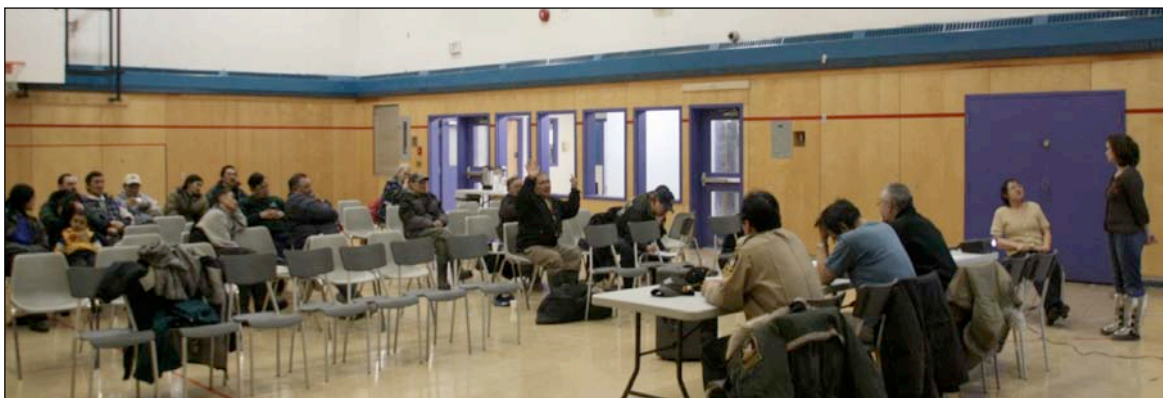


Figure 5.6. A community member takes the floor during a public meeting in Kimmirut

(Photo: D. Henri)

Community meetings also offered opportunities for concerned citizens to assert certain cultural values (Fig. 5.6.). For example, an elder in Kimmirut emphasised how, in his view, handling polar bears for scientific purposes amounted to “playing with bears” and was highly disrespectful, to which a government representative objected: “We don’t play with animals. We do research for a reason” (Public meeting transcript, Kimmirut, 03/03/09). Similarly, when shown an RFID tag, an HTO board member from Chesterfield Inlet stated that even though this new technological tool was smaller than a traditional collar, it could still affect tagged animals in their aptitudes for hunting, but, most worryingly, that using this tacking device was still “not showing respect to the bears” (HTO meeting transcript, Chesterfield Inlet, 11/06/09).

While I have attempted to demonstrate so far that the notions of *public scientist* and *concerned citizen* are useful conceptual tools for describing the emergence of environmental subjectivities that have occurred within the context of the Foxe Basin consultations, some obvious challenges to this meandering process of subject formation warrant further analysis. In fact, in the case under study, two factors, in particular, appear to have challenged the meaningful affirmation of such subjectivities in issues of mutual interest.

Firstly, the existence of a certain level of mistrust between community members and government representatives certainly hindered some productive exchanges. For example, one HTO board member said to me after a meeting in Igloodik: “They won’t say it out loud but some of [the board members] just don’t believe what the government says. So many times in the past the government said one thing and did something else. They don’t see why it should be any different now” (FN, 28/05/09). In Repulse Bay, an HTO board member commented during an interview: “Trust is certainly an issue. But this is getting better. At least they come to tell us now what they plan to do” (100, 08/04/09).

Secondly, the consultation process clearly presented communication difficulties for all parties involved. Actors displayed various levels of fluency in English and Inuktitut, as well as differing levels of familiarity with the vocabulary and concepts of wildlife biology and polar bear management. In spite of the efforts deployed by local interpreters, misunderstandings sometimes persisted. As a government representative pointed out:

This lost in translation thing is a huge issue. It’s really important to have a translator that understands the terminology correctly because this can do a lot of damage to our credibility and not get the information across (88, 27/01/09).

On a few occasions during the HTO and public meetings held in Kimmirut, a local Conservation Officer also intervened to explain concepts he thought had not been accurately described. After the local interpreter incorrectly translated ‘polar bear habitat’ by “the place where females go to have their young”, he provided his own definition of ‘habitat’. He also

explained the functioning of the RFID technology in some detail, as he sensed that this remained unclear to some community members. His versatility in Inuktitut and English, as well as in the language and concepts of biology and wildlife management, made him an important cultural broker in ensuring that the discussions ran smoothly (FN, 03/03/09).

5.3. Conclusion

This exploration of the dynamics involved in the production of spaces for Inuit participation in polar bear research in Nunavut has identified an ongoing process of subject formation occurring as a result of the engagement of local publics in building scientific knowledge. This analysis has also related an empirical account of how controversial knowledge production processes cannot be separated from politics and associated policies (Latour 2004; Whatmore 2009). It has described how the practices and tools of polar bear science and their mediation in policy have contributed historically to the production of social and natural categories (e.g. polar bear populations and management units) which evolved into potent forces for establishing the terms of public participation and reflection.

The existence of contemporary asymmetries among actors, in their capacity to frame the content of and conduct community consultations, and to influence scientific research practices, has further been identified. The case under study demonstrates how such differences yield opposition and struggles for authority between stakeholders over control of wildlife resources within the territory. However, it also shows that, in spite of their overall limited involvement and powers in negotiating means of production of scientific knowledge and practices of polar bear management more generally, *concerned citizens* have played a proactive role in contrasting their own views with the representations of 'Inuit societal values' and '*Inuit Qaujimagatuqangit*' provided by territorial government representatives and *public scientists* within the context of the Foxe Basin Project.

The next chapter will further contextualise and deepen the analysis performed so far by taking a closer look at Inuit perspectives on polar bear research and management in the community of Igloolik.

Chapter 6. Iglulingmiut perspectives on polar bear research and management

6.1. Introduction

In May 2009, two months after attending public consultations held within the context of the Foxe Basin Polar Bear Research Project, I flew back to Igloolik, one of the communities where government representatives had sought local support for their scientific research activities. Over recent years in Igloolik, governmental attempts to strike collaborative partnerships with the local hunters and trappers organisation have been encountering substantial difficulties and have met with resistance from community members. A government researcher explains:

We have tried to have [the Igloolik HTO] do some work for us but [HTO board members] backed out on that last year [...]. They did not want to support our polar bear research so they decided not to build a cabin or cache fuel for us because of the controversy over the [Foxe Basin research] project. [...] So we did the work ourselves (60, 09/06/09).

While I have previously uncovered the existence of tensions between resource users and GN representatives throughout the process of negotiating the production of scientific knowledge on polar bears (Chapter 5), this chapter will aim to unearth some of the rationales and perspectives underlying these types of struggle at the community level. To do so, I suggest that we ‘follow actors’ (Latour 2005) we first encountered during the Foxe Basin community consultations, namely, polar bear harvesters and HTO board members from Igloolik.

In *Reassembling the Social*, Latour articulates a vision for a critical ‘sociology of associations’ in which the term ‘social’ is not defined as a special domain of study, a specific realm, or a stabilised set of affairs that may be mobilised to account for some other phenomenon, “but only as a very peculiar movement of re-association and reassembling” (Latour 2005: 7). According to this logic, the task of the social scientist is “no longer to

impose some order, to limit the range of acceptable entities, to teach actors what they are, or to add some reflexivity to their blind practice” but rather to trace associations between them, “to catch up with their often wild innovations in order to learn from them what the collective existence has become in their hands, which methods they have elaborated to make it fit together, which accounts could best define the new associations that they have been forced to establish” (Latour 2005: 12).

Through such a theoretical lens, the study of the praxis of participatory wildlife research and management in Igloolik invites us to travel wherever new associations are made between the human and nonhuman actors involved in such processes, in order to make these relations the objects of enquiries. Rather than taking ‘polar bear science’, ‘wildlife regulations’ and ‘Inuit participation’ as frames of reference or starting points for analysis, I therefore suggest performing a critical ecology⁸⁹ of associations by examining what it means for these entities to come into being. I will do this by exploring the networks of human and nonhuman actors that are enrolled in the dynamic process of governing polar bears in Igloolik. Importantly, such an analytical movement suggests that actors be granted the ability to invent their own theories of what the ‘social’ or, in this case, what ‘wildlife research and management’ truly is made of (Latour 2005: 11).

Hence, by providing perspectives stemming from a network comprised of people, animals and objects localised in the Igloolik area, this analysis seeks to act as a magnifying glass to allow for a more in-depth consideration of the dynamics of collaboration, contestation and subject formation already identified in Chapter 5. Grounded in ethnographic research and the content of 33 semi-directed interviews conducted with polar bear hunters, HTO board members and government representatives,⁹⁰ this chapter will discuss Iglulingmiut (literally,

⁸⁹ I prefer using the term ‘ecology’ instead of ‘sociology’, because it better connotes the presence of nonhumans (e.g. animals) in relational networks made up of associations between animals, people and things.

⁹⁰ See Chapter 2 for a more detailed account of the methods employed.

“the people of Igloolik”)⁹¹ perspectives on polar bear research and management; it will also explore how various local actors view and negotiate the terms of their engagement in such processes. In order to contextualise the histories, opinions and attitudes presented, I will describe the significance of polar bears in past and present Iglulingmiut subsistence and culture, and will briefly present a history of recent relations among the actors directly involved in the Foxe Basin Polar Bear Research Project in the community of Igloolik. Throughout this chapter, I will pay particular attention to how various actors narrate and experience polar bear science, wildlife management, and participatory governance processes and practices. This exercise should flesh out the plural meaning of ‘science,’ ‘policy’ and ‘*Inuit Qaujimajatuqangit*’, thereby stepping beyond the seamless participatory and collaborative rhetoric presented in official government narratives in order to present a critical account of wildlife governance in Nunavut.

The analysis below indicates that, in spite of efforts to foster meaningful Inuit participation in polar bear research and management, mistrust and conflict have characterised some of the relationships existing between local communities, scientific researchers and government authorities in Nunavut. It argues that some of the root causes for this phenomenon reside in differences or incompatibilities between Inuit conceptions of human-animal relations and scientific practices, as well as in credibility issues between wildlife biologists and resource users. In addition, a local critique of the legitimacy of power relations embedded in past and current wildlife regulations and management schemes is identified as a source of tension. This situation illustrates how including both ‘*Inuit Qaujimajatuqangit*’ and scientific information in polar bear research and management is not only about combining

⁹¹ Anthropologists have identified eight regional groups among Canadian Inuit based on linguistics, culture and ecological adaptations (Damas 1968, 1972). Each group has typically been further divided into bands that have self-defined themselves by their common geographic territory. Such groups or bands have named themselves after the regions in which they live, adding the suffix *-miut* meaning ‘people of’. While the modern-day community of Igloolik is comprised of people usually considered to be the *Iglulingmiut*, the *Aivilingmiut* and the *Tununirmiut* (Rasing 1994), the term *Iglulingmiut* here generally refers to the inhabitants of the hamlet of Igloolik, and reflects a contemporary use of the word.

knowledge per se, but also and most importantly about negotiating power and trust relationships through the governance process. It thus highlights the importance of carefully considering multiple histories and perspectives about past and present research and management practices in building collaborative governance networks.

This chapter seeks to contribute in several ways to the related academic literature on Inuit participation in wildlife governance, polar bear sentience and nonhuman agency. Much has been written about the material, social and spiritual significance of polar bears in Inuit culture (Freeman and Foote 2009; Dowsley 2007; Randa 1993, 1986; Saladin d'Anglure 1980; Wenzel 2005). However, while various scholars have commented on how an appreciation of the Inuit concept of polar bears as intelligent, social, and spiritually powerful other-than-human persons is fundamental to understanding how productive decisions were made in the past and continue to be made to this day (Brody 2001, 1991, 1976; Fienup-Riordan 1991a, 1991b, 1990; Randa 1993; Saladin d'Anglure 1980; Wenzel 1991), only a few academic contributions to date have sought to problematise the relation between Inuit beliefs and values about polar bears and current research and management schemes for this species (Dowsley and Wenzel 2008; Schmidt and Dowsley 2010; Henri et al. 2010; Tyrrell 2006). This chapter participates in such an effort by highlighting the role that Inuit understandings of polar bears have played in governing the species in Igloolik, drawing on theoretical insights from scholars that have conceptualised nonhuman agency in actor-network terms (Latour 2005; Murdoch 1997; Slocum 2004; Whatmore 1999, 2002). Before I turn to this analysis, the modern-day hamlet of Igloolik shall be briefly presented.

6.1.1. Igloolik

Igloolik is a coastal Inuit community situated on Igloolik Island in northern Foxe Basin, Nunavut, Canada, approximately 320 kilometres north of the Arctic circle (69°23'N,

81°48'W) (Fig. 4.2.). Located off the east coast of Melville Peninsula, the island and the mainland have a relatively flat topography. They are part of the northern Arctic ecozone and have a polar tundra climate. Because of the abundance of sea mammals in the region, there has been a human presence on the island of Igloolik for over 4,000 years.⁹² Although Europeans have sporadically visited the area since the early 19th century,⁹³ it was not until the 1930s that *Qallunaat* established a permanent base on Igloolik Island, with the founding of a Roman Catholic mission. In the late 1930s, a Hudson's Bay trading post was created, but it was not until the late 1950s that the present-day community began to emerge (Damas 2002). An Anglican mission was founded in 1959 and by the mid-1960s, a school, a nursing station, a Royal Canadian Mounted Police detachment and a cooperative were permanently established (Dorais and Sammons 2002). Today, there are three churches in Igloolik: Anglican, Catholic and Glad Tidings (a Pentecostal congregation). As far as education is concerned, the community has a day-care centre, a pre-kindergarten programme, an elementary school, and a high school. A Nunavut Arctic College Community Learning Centre also provides basic adult education.

In 2006, the population of Igloolik reached 1,538 residents, of whom some 95 per cent were Inuit and five per cent non-Inuit (SC 2006). Since the 1960s, the settlement has expanded dramatically; and the economy has shifted over the last decades from being based entirely on subsistence activities to a mixed economy where both the informal and formal economic sectors assume major roles (Damas 2002). The harvesting of renewable resources continues to be a valued activity among Iglulingmiut and has social, cultural and economic significance (Condon et al. 1995; Rasing 1994). The mainstays of the wildlife harvest include walrus, ringed seal, caribou, char, polar bear, narwhal, beluga, and a variety of migratory

⁹² *Igloolik* literally means "where there are houses".

⁹³ Captain William Edward Parry wintered there in 1822-1823 during his quest for the Northwest Passage. Charles Francis Hall sojourned on the island in 1867 and 1868 in his search for the Franklin expedition, and members of the Danish 5th Thule Expedition also visited Igloolik in 1921.

birds during spring and summer (NWMB 2004). Except for a period of open water from mid-July to early October when travel by boat is possible, travel and harvesting are largely performed on sea ice, and, for walrus, on the moving ice beyond the floe edge. Participation in harvesting activities varies throughout the community. While some Iglulingmiut (especially among older generations) identify themselves as full-time harvesters, many balance hunting with full or part-time jobs (SC 2006).



Figure 6.1. The Igloolik Hunters and Trappers Organization (left) and the GN DoE Wildlife Research Division headquarters (right) (Photos: D. Henri)

The wage economy is largely based on public administration and tourism, including the production of traditional art and the guiding of southern sport hunters. In recent years, mining development has also provided well-paying seasonal jobs during the summer. The cooperative, the Northern (a food and general merchandise store), the Hamlet Office (which provides municipal services), as well as the Igloolik Hunters and Trappers Organization (Fig. 6.1.) employ several people. The community is also home to the Igloolik Research Centre, which sponsors a major oral history project on *Inuit Qaujimagatuqangit*. Nunavut Tunngavik Incorporated, the territorial land claims corporation, maintains some departments and divisions in Igloolik, as does the Government of Nunavut.

In fact, the Wildlife Research Division of the Department of Environment (Fig. 6.1.) was recently relocated from Iqaluit to Igloolik, as part of a wider ‘decentralisation’⁹⁴ scheme. In 2004, a total of 22 jobs were allocated to the community, including the positions of territorial polar bear biologist and technicians. While the aims of the decentralisation initiative were to spread economic benefits of government employment beyond the territorial capital, encourage Inuit participation in the public service and empower local communities,⁹⁵ the analysis below will clearly demonstrate that, in the case of polar bear research and management in Igloolik, the latter objective remains far from achievement, despite government initiatives.

6.2. Polar bears in Iglulingmiut subsistence and culture

The relationship between the polar bear and Inuit is complex and multi-dimensional. For millennia polar bears have been admired, feared, respected and have formed part of the subsistence practices of the Inuit. Archaeological records indicate that the species has probably been hunted in the eastern Canadian Arctic for some 4,000 to 6,000 years (McGhee 1990). However, such evidence also highlights the fact that, historically, polar bears have played a peripheral role in Inuit subsistence (Wenzel 2005).

In the Igloolik region, for example, early anthropologists and explorers have reported that while *nanuq* represented a source of food, clothing and tools (Mathiassen 1928), the species was not very abundant and occupied a marginal role in Inuit material culture. In fact, before the advent of the quota system in 1967, it was rare for Iglulingmiut to go specifically after bears, which were most often hunted opportunistically (Randa 1994: 133; see also

⁹⁴ Rather than designating the transfer of authority from the central government to provincial governing bodies, the term ‘decentralisation’ (which is commonly used in Nunavut) here refers to a process of *deconcentration*, whereby centrally located authorities and entities are relocated and geographically dispersed without giving autonomy or power to a lower level of government (Hicks and White 2005).

⁹⁵ To date, public opinion in Nunavut remains divided regarding how well these ambitious goals have been met. See Henderson and White (2010), Hicks and White (2005) and Légaré (2009) for further analysis of Nunavut’s decentralisation scheme.

Brody 1976). As Gideon Taqqaugaq, a polar bear hunter from Igloolik, states: “People would hunt only when they would see polar bears [...]. Because there were so few polar bears back then people might not see them for a whole year. But once they saw bears they hunted them. They would not go specifically for bears” (48, 22/05/09).



Figure 6.2. Pitaa and Tommy Awa on a polar bear hunt near Igloolik in winter 2009 (left) and recording polar bear hunts at the Igloolik Hunters and Trappers Organization (right) (Photos: D. Henri)

With the growth of sport hunting⁹⁶ throughout northern Canada since the mid-1980s, however, the species has now come to assume an economic role⁹⁷ in the lives of Inuit that may be “larger than at any time in the past” (Wenzel and Dowsley 2005: 35). Today, in addition to representing a source of revenue through outfitting and the sale of skins, polar bears continue to be a source of food for Nunavummiut: approximately 400 bears are harvested in the territory annually (NWMB 2004). In Igloolik each year, hunters are allocated a total of 19 polar bear tags, divided between the Foxe Basin (11) and Gulf of Boothia (8)

⁹⁶ Since the mid-1980s, polar bear sport-hunting underwent significant growth in the Canadian North. Nunavut Inuit, although free to assign 100 percent of their community bear quota to sport hunters should they wish, in fact allocate barely 25 percent of their quota in any year to sport hunting, which, in Wenzel and Dowsley’s opinion (2005), suggests that the cultural value Inuit place on *nanuq* is decidedly more important to them than the economic return that polar bears might provide.

⁹⁷ Before the United States banned the import of polar bear products after the species was listed as *threatened* under the Endangered Species Act in 2008, Inuit received approximately one-half (CAN\$1.5M) of the monies actually paid by sport hunters to Nunavut (Wenzel and Dowsley 2005). CAN\$35,000 represents the approximate overall price of a sport hunt (Gissing 2005).

polar bear management units (Fig. 6.2.). Many community residents consume polar bear meat and fat, and polar bear cubs are considered to be a delicacy, especially among elders.

In contrast to its overall minor historical impact on Inuit material culture,⁹⁸ *nanuq* has occupied a dominant role in Inuit imagination (Randa 1986). In fact, scholars have argued that no animal has as large a symbolic place in Canadian Inuit culture as the polar bear, which figures predominantly in Inuit cosmology and mythology (Saladin d'Anglure 1980; Wenzel and Dowsley 2005). The significance of the symbolic status occupied by the polar bear in Inuit culture might be explained by the many parallels, transpositions and analogies which can be drawn between *Homo sapiens* and *Ursus maritimus*. Polar bears, due to their predatory nature, their reliance mainly on marine mammals and fish for sustenance, and their ability to build snow houses and stand on two legs, have been seen as spiritually powerful figures whose existence paralleled the human experience in many ways (Randa 1986; Trott 2006). Simonie Issigaitok, an HTO board member, explains: "Inuit believe that [polar bears] are mostly like human beings. They are the same as Inuit. They hunt almost like Inuit. I hear that they are smart like human beings" (53, 05/06/09).

Indeed, for the greater part of Inuit history, the use of and hunt for polar bears was auto-regulated by groups who obeyed sets of taboos, rituals and ethical codes of conduct in an attempt to maintain appropriate attitudes for ensuring animal capture (Chapter 4). Scholars have widely recognised and documented the fact that naturalist and cynegetic competencies would not ensure a successful polar bear hunt; Inuit had to respect rules of conduct edicted by invisible forces known to humans by shamans (Laugrand and Oolsten 2010; MacDonald 1998; Randa 1993; Rasmussen 1929). The Iglulingmiut, in particular, had a reputation for being very strict in the application of rules, especially with regard to sea mammals (Rasmussen 1929). By observing these rules, human beings could maintain a moral

⁹⁸ The importance of *nanuq* in Inuit material culture, however, shows regional and historical variations, which Randa discusses in detail in *L'Ours polaire et les Inuits* (1986).

order, where animals would allow themselves to be killed. Animals were thought to reincarnate continuously, and the same prey was always expected to return to a hunter who had shown it due respect. Arsene Ivalu describes how this logic applies today to polar bears: “Bears will not become extinct, animals will not become extinct because they always come back [...]. They are always getting reborn. They say that old scarred males bears are the ones that have become reborn many times and have collected the scars over many years, over their different life times” (29, 17/05/09).

Between the end of the 18th century and the middle of the 20th century, the transition to Christianity in the Canadian Arctic led to substantial transformations in the rules governing such a cycle of exchange (Laugrand and Oolsten 2010). Although the complex system of ritual rules that once existed has now largely disappeared, respect for prey is still considered a core value in modern Inuit society. Levi Qaunaq explains: “This is something that was passed on by our elders: you have to treat animals respectfully, you have to treat animals in a good way. [...] This is something that our elders have taught us. They have followed this and we, in turn, follow this now” (35, 19/05/09). Indeed, participants interviewed in Igloolik identified various ways in which one could honour the moral obligation to respect polar bears (and animals more generally), including: sharing meat with relatives and community members, not wasting meat, not fighting over hunting quotas or “talking badly” about wildlife, and not playing with or unnecessarily handling live animals. Since the creation of Nunavut, some government initiatives have also stressed the notion of Inuit respect for wildlife and have aimed to reinforce its importance among Nunavummiut. For example, the inclusion of the *Inuit Qaujimagajatuqangit* principle of *avatimik kamattiarniq* (i.e. all wildlife should be treated with respect) in the new territorial Wildlife Act (GN 2003; Chapter 4) reflects the institutionalisation of this cultural norm which has been increasingly linked with (and

reinterpreted through the lens of) modern concepts of sustainable development and conservation.

In today's Nunavut communities, at a time when people's syncretic knowledge of and heterogeneous experiences with *nanuq* and other animals can be forged through hunting trips, travels on the land and story-telling from elders as much as they may be informed by biology classes, television programmes and conversations with biologists, Inuit still speak of a unique human-bear relationship. Polar bears must be treated with respect, as they are accorded sentience, intelligence and are considered to be part of an integrated system of reciprocal rights and responsibilities between humans and animals (Schmidt and Dowsley 2010; Shannon and Freeman 2009; Stairs and Wenzel 1992; Tyrrell 2006).

The existence of this type of relationship became apparent on various occasions during my stay in Igloodik in 2009. For instance, a few months before I landed in the community, a young male bear had killed eleven dogs from a team belonging to a prolific hunter. This dramatic event was still a matter of discussion at the time of my research: many speculated as to why the bear had killed the dogs. Interestingly, most conversations involved judgements about the behaviour of the owner of the animals that had passed away. Had the hunter done something to upset the bear? Had he properly shared his hunt? Had he boasted about his aptitude? Had he shown respect to *nanuq*? The wife of the afflicted dog owner remained puzzled:

I try to respect [polar bears]. But this summer, two bears came to our camp. And when we were making tea a bear tried coming to us but we got in the boat. Then the bear killed our dogs. Then a bear was eating just outside our house. I don't know why. Why us? I am wondering why. There has to be a reason. Because before bears seemed to be scared of my husband... but not anymore [...]. [People in town] are probably talking behind our backs but we don't know (50, 04/06/09).

On other occasions, as I questioned and interviewed hunters about polar bear research and management, some cautioned me against "wanting to see a bear" or "talking badly" about

nanuq, as they believed my thoughts and words could cause a polar bear to appear unexpectedly and cause physical harm to humans or property damage (FN, 22/05/09). Augustine Taqqaugaq explains: “We were told not to talk about bears, period. We were told not to want to see a bear [...]. We were told all that because bears can hear you and if you talk about them then they will come to you” (42, 26/05/09). These examples all illustrate the contemporary presence, among Iglulingmiut, of the view that polar bears have the ability to know and respond to human thoughts, intentions and actions. They also evoke a unique bear-human relationship where the notion of respect plays a pivotal role.

In summary, enmeshed with many strategic domains of Inuit existence (a source of food, clothing, tools and money) and abundantly represented in Inuit oral tradition, the polar bear has been, and continues to be, an significant component of the material and intellectual culture of Canadian Inuit. The above overview of the evolving role played by *nanuq* in the past and present cultural ecology of Iglulingmiut has laid the groundwork for the histories, opinions and attitudes that will now be further explored.

6.3. Local views on polar bear research and management

At the time of my research in Igloolik, the relationships between researchers working at the GN DoE Wildlife Research Division headquarters and board members holding meetings at the hunters and trappers organisation right down the road were tense. In 2007, GN DoE researchers requested the support of the Igloolik HTO within the context of the Foxe Basin Polar Bear Research Project (see Chapter 5). HTO board members initially accepted to collaborate with the initiative by building a cabin and setting up fuel caches in preparation for scientific field research. However, about a year later, the Igloolik HTO withdrew its support from the project. An HTO board member explains:

Even though the government came with a proposal to have the local people cache up fuel and help with the cabins, the locals did not want the bears

tranquillised and they did not want ear tags and tattoos put on the bears [...]. Initially, the HTO approved the project but later on, when we were informed that the locals did not want us to participate then we stopped participating. We did a radio show and we heard from the public that people did not want this (51, 05/06/09).

In March 2009, government researchers consulted once more with HTO board members in search of a collaborative partnership. Two months later, they were still waiting to hear from the local organisation. As I walked back and forth from the Wildlife Research Division headquarters to the Iglolik Hunters and Trappers Organization, holding interviews with GN DoE employees as well as polar bear harvesters and HTO board members, I was gradually able to sketch out a clearer picture of the multiple and complex narratives that stood at the backdrop of this situation.

6.3.1. Researching polar bears or playing with nanuq?

While scientific understanding of polar bear ecology has undergone a constant refinement over the past few decades, so have the techniques employed by wildlife biologists to collect and analyse primary data. During a visit of the GN DoE Wildlife Research Division headquarters (colloquially called the 'polar bear lab'), a technician showed me objects that have become important pieces of equipment in GN employees' polar bear research toolkits: satellite collars, syringes, vials of drugs used for immobilising bears, dart guns, ear tags, tattooing instruments, notebooks and computers. As she opened a freezer, the fruit of many hundred hours spent in the field and many more thousand dollars of research money invested emerged from a white mist: rows of polar bear blood, bones and tissue samples sat patiently on frozen shelves, waiting to be deciphered (FN, 10/06/09; Fig. 6.3.).

The material originally presented here is not currently available in ORA



Figure 6.3. Chemical immobilisation of polar bears (left) and storing tissue samples collected from this procedure (right) (Photos: J. McConnell (left) and D. Henri (right))

While wildlife biologists and managers generally view field research as “a unique, important and adapted mean to acquire useful information which can support informed management decisions for the conservation of polar bears (60, 09/06/09)”, in recent years other actors imbued with a strong sense of stewardship towards *nanuq* have urged caution in the application of this principle. Indeed, Inuit across Canada, and especially in Nunavut, have publicly expressed mounting concerns about the impact of scientific research on this species of cultural significance (see Chapter 5).

In response to these views, polar bear biologists and managers in Nunavut and elsewhere have emphasised the importance of scientific research, especially within the context of the growing uncertainties posed by climate change (Peacock et al. 2010). They have highlighted their responsibilities and legal requirements to conduct research programmes that relate to the conservation and management of polar bears in their jurisdictions. Members of the scientific community have stressed “the need for the effective monitoring of polar bears

based on techniques involving physical capture and satellite-collaring” (which have proven critical to understanding polar bear ecology) (PBSG 2009). At the same time, wildlife biologists have tried with mixed success to develop less invasive research protocols to accommodate Inuit values and beliefs regarding polar bears. For example, Nunavut researchers cite the development of non-invasive aerial survey techniques and the use of improved tracking devices as an acknowledgement of Inuit values, and a means of reducing polar bear capture in monitoring population size (see Chapter 5).

The existence of such a debate regarding the ethics of wildlife research clearly illustrates that, in the Canadian Arctic, what it means to “show respect” both to polar bears and the various holders of knowledge about the species gives rise to multiple interpretations. In fact, although many actors involved view scientific research as an indispensable tool for managing and protecting polar bears, the content of 26 interviews performed with hunters and HTO board members from Igloolik reveals rather different perspectives on the methods currently employed by scientists wishing to gain a better understanding of polar bear ecology. While all scientific research in Nunavut is regulated by ethical guidelines regarding animal care and must be approved by designated authorities prior to being conducted, evidence suggests that this regulatory process is in tension with Iglulingmiut views and values. Indeed, 92 per cent of hunters and board members interviewed (24 out of 26) expressed concerns regarding scientific practices that they judged both *harmful* and *disrespectful* to polar bears. A polar bear hunter evokes community perspectives in the following terms: “They are doing research but for us Inuit it is not good. We are not allowed to play with animals so it seems to be that they are just playing with them, that they are having fun with them. [...] We don’t like that” (49, 04/06/09).

The capture, immobilisation and handling of polar bears, for instance, are techniques commonly employed by polar bear researchers today and have been extensively used over the

last few decades in the Northwest Territories, and later, Nunavut. Such techniques are frequently used in combination as ways of approaching and safely handling bears in order to allow for: the collection of biological samples (e.g. blood, fat, teeth or hair) and measurements of physical stature and condition; the installation of tracking devices such as radio or satellite collars and tags; and, perhaps most importantly, the marking or identification of individuals as part of a mark-recapture analysis (cf. note 51).

To date, the few scientific studies that have sought to identify the physiological effects of capture and handling have found that some short-term effects of handling are unavoidable (Cattet et al. 2008; Messier 2000). They include stress associated with pursuing animals before darting,⁹⁹ bruises caused by the darts, and minor wounds due to removing a premolar (for age determination), applying ear tags and tattooing the animals. Furthermore, the Government of Nunavut recommends that the meat of polar bears that have been anaesthetised should not be consumed for at least 45 days after immobilisation.¹⁰⁰ Studies have also shown that, while bears can also be injured occasionally during darting and handling (at a rate of 1 case per 100), the risk of mortality due to the capture of polar bears for management and population studies is extremely low (one death per 1000 bears captured) (Messier 2000). The long-term effects of capturing, immobilising and handling polar bears remain unclear, however, since some capture-related effects may go undetected. Researchers have nonetheless concluded that overall, these long-term effects are both difficult to measure and negligible (Cattet et al. 2008, 2003; Messier 2000). In any case, they judge that such

⁹⁹ Researchers generally approach polar bears by helicopter. Animals are then chased until they can be darted in a safe location (e.g. away from open-water to avoid drowning).

¹⁰⁰ In doing so, the territorial government adheres to Health Canada regulations requiring that meat from polar bears immobilised with *Telazol*[®] and *Zoletil*[®] (two drugs commonly used to anaesthetise polar bears in Nunavut) should not be eaten for 45 days after bears have last received these drugs (Alexander 2009). Research has shown that immobilisation drugs are quickly metabolised by polar bears. For example, *Telazol*[®] can be detected in fat tissues up to 30 days after immobilisation but are undetectable in polar bear blood within 24 hours after anaesthesia (Semple et al. 2000). The 2004-2005 Polar bear MOU stipulated that a CAN\$300 compensation would be paid to hunters for meat that cannot be consumed because of drug residues. In March 2009, the Government of Nunavut announced a revised CAN\$1000 compensation scheme in response to concerns expressed by hunters over the rising costs of gas and hunting equipment.

effects, if they occur, are acceptable considering the conservation value of scientific data secured through the capturing, immobilising and handling of polar bears (60, 09/06/09).

The views expressed by Iglulingmiut regarding the effects of polar bear capture, immobilisation and handling yielded a different diagnosis (Fig. 6.4.). Arsene Ivalu summarises community concerns in the following terms:

[Research] has very much of an impact [...]. [Polar bears] could get skinny after they have been handled. And their hearing goes and they are bothered when [researchers] put holes in their ears. They are chased by helicopters with large sounds. They are drugged. And as result of being drugged, they become aggressive. And as a result of them being handled and as a result of them having less hearing, they are less able to hunt now and less able to provide for themselves [...]. And we find them not scared of us at all, coming back more (29, 17/05/09).

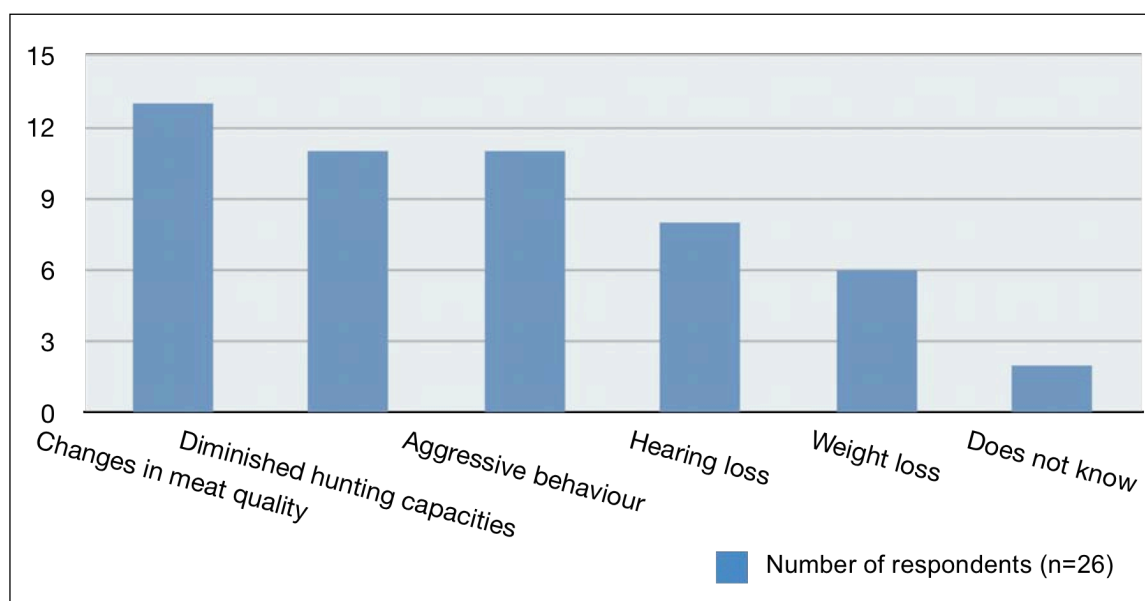


Figure 6.4. Effects of scientific research on polar bears according to Iglulingmiut

Indeed, a significant proportion (42 %) ¹⁰¹ of the polar bear hunters and HTO board members interviewed expressed concerns regarding the detrimental effects of tranquillisers on both the cognitive abilities and hunting capacities of this apex predator. “[Polar bears] are

¹⁰¹ While no questionnaire was used during interviews, some themes were systematically discussed using open-ended questions. Each respondent was thus encouraged to express his/her views on the effects of scientific research practices on polar bears. All comments relating to this topic were subsequently coded. The use of percentages here is thus indicative of the frequency of participants’ responses.

smart [...]. They are predators. They are experts about how they go about hunting their prey. We the older people think that [drugs] may affect their cognitive ability and their ability to hunt after they have been tranquillised”, says Louis Uttaq (41, 25/05/09). Lydia Qaunaq further states: “I feel for those bears that have been drugged. Their cognitive abilities change as soon as they are trapped. [...] Like things happen to them sometimes even after they have been drugged. They lose their abilities to look for prey and they go into rages, they become wild” (43, 26/05/09).

The material originally presented here is not currently available in ORA

Figure 6.5. Polar bears killed in defence of life and property in Foxe Basin, 1980-2008

(Source: Peacock et al. 2010: 103)

The same proportion of respondents (42 %) also believed that polar bears have a tendency to display more aggressive behaviour and less fear of humans after being captured and handled: “Maybe that’s part of the reason why we see more aggressive bears... because they were handled by people so they are not as afraid of us anymore” (29, 17/05/09). Some participants nuanced this statement, however, by acknowledging that other factors, such as

changes in polar bear abundance and distribution, may explain the behavioural shifts they have been observing. In fact, in Igloolik and northern Canada more generally, there has been a net increase in human-bear encounters in recent years, leading to a rise in cases of bears being killed in defence of life or property¹⁰² (Dowsley and Wenzel 2008; Tyrrell 2006; Fig. 6.5.).

The material originally presented here is not currently available in ORA

Figure 6.6. Polar bears scavenging at a garbage dump (left), walrus meat caches in Igloolik (centre) and cabin damaged by a bear (right) (Photos: S. Medill)

Many factors may contribute to this state of affairs, including both recent transformations in human settlement and travel patterns as well as changes in northern ecosystems (e.g. changes in sea-ice regimes and polar bear population size and distribution). All participants interviewed in Igloolik nonetheless attributed an increase in polar bear sightings to a growth of the polar bear population,¹⁰³ a situation which gave rise to concerns for public safety (Fig. 6.6.):

Back then, bears were scared of people. Bears raiding meat caches was very infrequent. Now bears come to town and raid caches, they do not seem to be afraid anymore. They are coming into camps and they are raiding dumps [...]. Back then, bears would not eat from dumps, they would eat what they caught. Bears are becoming a nuisance, they are begging and asking for food [...]. They are dangerous. It is even dangerous now to try to live elsewhere in a camp outside the community because they have a tendency to come around (33, 18/05/09).

¹⁰² In summer 2008 alone, there were 11 cases of defence kills performed by Igloolik residents within the Foxe Basin polar bear management zone. This led to the closure of the winter polar bear hunt as Iglulingmiut are currently allowed to hunt an annual total of 11 bears from that subpopulation, whether taken in defence or not.

¹⁰³ Analyses of the scientific data collected over the course of the Foxe Basin Research Project would later corroborate this statement made by Inuit hunters (E. Peacock, *pers. comm.*).

When commenting on the impacts of scientific research methods on bear behaviour, interviewees thus remained cautious so as not to overemphasise the role played by such practices in the behavioural changes they have observed over their lifetimes.

Furthermore, half of the participants (50 %) believed that the use of anaesthetic drugs had long-lasting negative effects on the quality and taste of polar bear meat. Jobie Ulayuk, an active polar bear hunter, states: “I love polar bear meat. [...] I don’t want my meat to be tranquillised. Some people say that there is an effect. They say that the meat is different. I have caught bears before that were tranquillised. We did not eat the meat. We gave it away to the dogs” (45, 02/06/09). Some respondents further identified hearing loss (31 %) and weight (23 %) loss as consequences of the scientific research currently conducted on polar bears. In Laben Kunuk’s opinion, for instance, the use of helicopters for chasing bears can have a negative impact on both the hearing and bodily condition of the animals, a view that he forged through discussing with elders. The 43-year-old hunter explains:

I am all against [scientific research]. Most tagged polar bears are usually skinny because I heard that they use choppers when they tranquillise the bears. The choppers are loud. I think that they take [the polar bears’] ability to hear when they are hunting. For a polar bear that has never been tagged, he can hear a prey from a mile or two miles away under the ice when hunting seals. When they have been tagged, the chopper’s noise damages their ears and they can’t eat their prey anymore. I have heard that from the elders and I believe it. When bears can’t eat very much they get skinny (46, 02/06/09).

To summarise, while the community members interviewed tended to hold a common concern regarding the effects of scientific research on polar bear health and survival, individual participants identified a wide spectrum of potential consequences, ranging from behavioural changes (e.g. diminished hunting capacities and aggressiveness) to declines in body condition (e.g. hearing and weight loss) and meat quality. When questioned about the impacts of scientific practices, a technician working at the Wildlife Researcher Division

headquarters pointed out to the existence of a sharp contrast between some of the views held by members of the scientific community¹⁰⁴ and local perceptions:

There are a lot of myths circulating about how our procedures are affecting bears [...]. This whole immobilisation thing comes into play with the hunters. For example, they think that immobilisation spoils the meat for the rest of the polar bear life whereas studies clearly demonstrate that the drugs are out in 20 days. The myth is that it wrecks the meat for life (57, 10/06/09).

The presence of conflicting perspectives among Iglulingmiut, wildlife biologists and managers regarding the appropriateness of scientific research techniques on polar bears can thus be explained by the existence, among such actors, of diverging views on the empirical effects of these methods. Such a line of reasoning alone, however, does not suffice to elucidate the multiple narratives embedded in this situation. In fact, as the previous section of this chapter illustrates, respect for animals has been and continues to be a core value in Inuit society. Polar bears, in particular, are attributed sentience and intelligence and are believed to relate to humans through an integrated system of reciprocal rights and responsibilities in which humans must “show respect” to bears. Therefore, Inuit notions of *respect* for wildlife, I would now like to argue, also lie at the heart of current tensions between community members and government representatives.

On numerous occasions during interviews conducted with polar bear harvesters and HTO board members, participants described mechanisms of disrespect which, in their view, were triggered by the behaviour of scientific researchers. For instance, according to some interviewees, wildlife biologists and field technicians transgressed the cultural norm of respect for polar bears when handling live animals:

¹⁰⁴ It should be stated here that such views are far from being homogeneous. Ongoing dialogues and debates do exist among polar bear researchers regarding the impact of the methods they employ. Members of the scientific community have, for instance, expressed divergent views about the cumulative impact of research on the Western Hudson Bay polar bear population, which has been extensively studied since the 1960s (55 per cent of this population is currently physically tagged, and the physical capture and chemical immobilisation of polar bears is a common practice in the region). The intensity of this research has fuelled controversy on both the effects of these methods on polar bear behaviour and on the decline of the subpopulation (Dyck et al. 2007, 2008; Henri et al. 2010; Stirling et al. 2008).

We were told never to play with animals. In that case, it seems like [researchers] are doing that. And, in my opinion, they are doing something that we were not allowed to do. We were told not to mistreat animals, not to hurt them. That is something [elders] told us not to do (43, 26/05/09).

Rebecca Mikki, manager of the Igloodik HTO, described in detail similar logics of disrespect. In her view, the use of scientific research to augment current understanding of polar bear ecology and potentially inform conservation policies is no valid justification for failing to abide by the principle of not harming live animals:

Inuit believe that we should never harm an animal unless we are going to kill it and eat it for food. We are not just going to play with it to find out what will happen. I mean, how old the animal is, how good the teeth are and where it has been. We don't put collars to know where they are going afterwards. Inuit believe that we should never harm animals unless we are going to kill them (52, 05/06/09).

The chairman of the Igloodik HTO, David Irgaut, attempted to synthesise the issue at hand by pointing to the existence of a contradiction between scientific research practices and the prohibition against playing with or mistreating animals, a moral imperative widely shared among Iglulingmiut today:

We were always told to respect animals. What is going on now is really different than what we were taught. We were taught never to handle live animals or play with animals and researchers do that. They make noise around them; they drug them; they pierce their ears; they put markers inside their mouths. In the past, people would be totally against it. It is something that would have never, never been allowed. It is maybe only because there are so many *Qallunaat* that it's okay for some of them to handle bears. Like otherwise there would have been repercussions. Something bad would have happened to you like the species would get back at you (54, 08/06/09).

This testimony further illustrates the extent to which some respondents felt that disregarding one's responsibility to show due respect to polar bears could lead to unexpected consequences. Indeed, participants attributed to this species a unique power to respond to human thoughts, actions and intentions. For example, interviewees repeatedly highlighted the fact that while some animals (e.g. fish) were prone to disappear if humans displayed

disrespectful behaviour (e.g. fighting over them), polar bears were the most resilient species of all and could, correspondingly, react to human conduct in unpredictable ways:

[Polar bears] are the hardest creatures of all. You can fight over them, you can argue over them but they will always be there. Whereas if you fight over other animals, then they will have a tendency to disappear.

– Samuellie Ammaq (36, 19/05/09)

Bears can hear. They hear right now. Like they are hearing as we speak. They hear when they are talked about. But they are the one species that will not change even if you talk badly about them. If you badmouth another species then that species will disappear, not the bear.

– Lydia Qaunaq (43, 26/05/09)

You can talk bad about [polar bears], oppose them, kick them in the rear end. They are going to take a lot of abuse. They are the animal that can take as much abuse as humans. But then they are the animal that can kick back as much as humans. They have a cut-off point.

– Anonymous (55, 08/06/09)

The above comments, revealing local views on polar bear sentience and resilience, highlight how the Inuit notion of respect for *nanuq* evokes a relational system in which polar bears are conceptualised as active rather than passive actors endowed with the ability to respond to human conduct and attitudes (Schmidt and Dowsley 2010). The definition of polar bear agency in such terms stands in stark contrast to how wildlife biologists would conventionally qualify bear behaviour. This agency therefore suggests that, according to Iglulingmiut, what is at stake in evaluating the impact of scientific research on bears goes far beyond a simple assessment of the empirical effects of certain methodologies. Normative evaluations performed by community members also relate to perceptions of their roles and responsibilities within an integrated system of reciprocal rights and obligations between animals and humans (including scientific researchers). This last statement, however, should be further nuanced in order to avoid either a simplistic generalisation or its homogenising application to all Iglulingmiut, or, worse, to Inuit in general.

In the modern-day community of Igloodik, rules of conduct governing such a system appear to be dynamic and currently undergoing significant transformations. In fact, the

26 hunters and board members interviewed within the context of this research described a spectrum of beliefs and values relating to human-bear relations. For example, while Lydia Qaunaq, 67, stated that she firmly believes that bears can hear humans speak and, therefore, that humans should be cautious not to offend animals through their speech, Jobie Ulayuk, 50, did not agree. When asked whether he thought bears could respond to what people say and do, the former HTO board member started laughing:

No, they can't hear you! I am one of those that believe some IQ and some I don't believe at all [*laughter*]. For example, there is a saying that if you don't know how to build an igloo you cannot have a wife. That saying is just made for you to learn how to build an igloo. Nowadays people have wives even if they can't build igloos [...]. [Elders] also say that when bears have a den, they have a *qulliq* inside. That is why, they say, there are carbon residues in the den. That is not true (45, 02/06/09).

Similarly, Gideon Taqqaugaq, 50, recalls a shift in his own beliefs: "When I was a kid my parents used to tell me about polar bears. My parents sometimes used to tell me not to talk about them because they could hear me. I even thought that before. But now I really don't believe it anymore" (48, 04/06/09).

Participants thus pointed to the fact that values and beliefs about wildlife are not only subject to variations between individuals but also between generations. Levi Qaunaq, 43, was born in Igloodik and left school after completing grade 7 to start hunting with his father. Here he describes the existence of intergenerational differences in the transmission and acquisition of knowledge about wildlife, a phenomenon he attributes partly to the increased exposure of Iglulingmiut to external cultural influences:

There may be differences in opinions between some elders and [people from my generation]. Those of us that are more exposed to White culture, we think differently than from how some other people do. Some of us think in terms of today's reality but then again there are some of us who were taught the old ways and are trying to follow them [...]. For example, if you share wildlife, if you use wildlife respectfully, if you use wildlife in a good way then there will always be more but if you fight over animals, if you have disagreement then those animals will become scarce. But even if other hunters from my age group were provided with those teachings from the elders, we are not really teaching to the younger generation anymore. [...]

We have TV, we have the internet, we have all these video games, we have all sorts of distractions [...] Some of us believe what the elders say and some don't [...]. I know that we are losing our culture because of all these distractions. We are not passing on our knowledge to the younger generation (35, 19/05/09).

Jacob Malliki further argues that, over the last decades, the introduction of modern schooling and the expansion of the wage economy in his community have contributed to shifts in modes of knowledge transmission regarding wildlife, but also to changes in the strategic significance of such a knowledge base in sustaining contemporary livelihoods. The 43-year-old HTO board member who completed grade 8 before entering the paid labour force declared:

I believe that the younger generation will eventually be more in support of science because of their education. There are very few people in the community that provide [their children] with information about animals. [...]. We try to teach our kids to be in school. I think we hardly teach them the basics about animals... The hunting culture is changing big time, definitely. I can no longer just do hunting to provide for my family. There has to be money now. There has to be money (49, 04/06/09).

At a time of intergenerational transformations in Iglulingmiut use of, relation to and knowledge about animals, Tommy Awa, 39, a former Hamlet Office employee who identified himself as a full-time hunter at the time of our interview, believes that such changes would lead younger generations to acquire a knowledge base characterised by a greater emphasis on scientific understandings of wildlife:

I think that my children will believe both the biology teachers and us, the hunters. But they will believe what they learn from the school more, I think. Because I don't teach them much about wildlife. I teach them more to play sports and guitar [...]. Science was not important before. But we are getting to know it better now. Also younger people grew up in schools so they think that the science is very important. This is changing (38, 04/06/09).

Although an in-depth discussion of this statement lies beyond the scope of this analysis, the testimony cited above nonetheless highlights the dynamic and increasingly syncretic character of Inuit knowledge, values and beliefs about wildlife.

So far, tensions between Iglulingmiut, wildlife managers and biologists with regard to scientific research on polar bears have been partly attributed to differing perspectives among

such actors as to the empirical effects of scientific methods. In addition, the dynamic and evolving nexus of values and beliefs held by Igloolik residents about bear-human relationships has been identified as clashing with the ethical guidelines followed by scientific researchers. While this first category of issues relates to current *methods* of scientific research, interviewees identified a second category of problems relating to the incorporation of Inuit observations, values and beliefs into scientific research on polar bears, and which pertains to the quality of *procedures* and *relationships* inherent in the conduct of scientific research activities. This suggests that the current degree of local involvement in government-sponsored scientific research processes, as well as community members' level of familiarity and confidence with the methods, objectives and language of wildlife biology also affect the extent to which polar bear researchers and managers in Nunavut have engendered "an effective role for Inuit in all aspects of wildlife management, including research" (GC 1993).

HTO board members interviewed in Igloolik clearly stated their dissatisfaction with the level of local involvement in the scientific research process. In the case of the Foxe Basin Polar Bear Research Project, Pitaa Awa summarises local concerns and expectations in the following terms:

It seems that the government created a research package and had timelines and everything organised without local input. When researchers come [to the HTO] to have their project approved without involving locals in setting up the study, it doesn't work for us [...]. But if the government said that it wants to do a study and informs the HTO right from the start and the HTO and the government work together and come to a decision as to how the study should be carried out best, then there would be more agreement and less conflict (51, 05/06/09).

Moreover, a low level of trust in the accuracy of scientific methods and, by extension, in scientific researchers, permeated the discourse of many polar bear hunters and HTO board members interviewed in Igloolik, including Arsene Ivalu:

I find their research of no value to me. I have not confidence in their ability to identify all bears. They are high above [in planes and helicopters] and even when you are on the land you cannot even see all of them, even when

you are close by. Especially when [bears] are in the water and you are flying far away, you are going to miss them. So I feel that they don't see all of them (29, 17/05/09).

A polar bear hunter in his mid-thirties bluntly states: "I don't understand much about researchers because they have been researching for years now and they haven't learned anything yet. [...] I would feel better if there was no research at all" (46, 02/06/09). More nuanced in her critique, Attuat Attiki, an elder especially respected for her skills in preparing polar bear skins, attributes such mistrust to the lack of familiarity of some Iglulingmiut with the rationales behind scientific research:

Perhaps people should be better informed as to the purpose of the actions of [polar bear] researchers. Why do they tranquillise [bears]? Why do they put collars on them? Is it just that they want to do a physical measurement of that bear? Is it because they want to know the age of that bear? What have those actions achieved? [...] It seems that they just do it for the sake of doing it, it seems that they do it just for the sake of playing with animals [...]. If we were provided with information and reasons as to why [they do research] and what doing that achieves then we would have a better understanding. It seems that we don't know. They do it and we don't know why (33, 18/05/09).

The low value some community members attribute to scientific research on polar bears combined with the existing perception, among others, of being insufficiently informed on the subject have contributed to fuelling mistrust in scientific methods and information, as well as in the researchers themselves. Rebecca Mikki, who has been working as the Igloodik HTO secretary manager since 2003, explains what she identifies as a common reasoning underpinning the reluctance of some hunters to trust wildlife biologists:

In many ways [scientific research on polar bears] is not useful. Inuit use their IQ [*Inuit Qaujimagatuqangit*] on animals. They believe their beliefs. Hunters usually say that scientists who come from down South have no idea about what they are talking about sometimes. Because scientists don't have their experience. They don't know the land like hunters do. They only talk from books or from other peoples' knowledge. They don't exactly know what is going on and yet they try to explain things to them. Inuit know from experience and from the stories their ancestors told them (52, 05/06/09).

Such a view illustrates the existence, among Iglulingmiut, of the expectation that one can only become an ‘expert’ about wildlife through prolonged first-hand experience on the land. In a similar manner, David Irgaut, chairman of the Igloolik HTO, describes some of the mechanisms of local mistrust towards scientific researchers by alluding to a difference between book- and experience-based learning, the latter mobilising seemingly more respect than the former among community members:

Qallunaat will do documentaries or will read [interview] transcripts and become experts on a species like the polar bear without ever having experienced the species directly. If an Inuk reads a questionnaire about a species, he cannot say that he is an expert on that species unless he has personal experience, unless he is there directly, where the animal is. If he only reads about it and asks questions about it then he cannot profess to be an expert. But some *Qallunaat* will read, ask questions and then become experts on a species without ever having actually seen it (54, 08/06/09).

Echoing this view, a Conservation Officer who has been involved for over 20 years in wildlife management in the Northwest Territories and later Nunavut, highlights a fundamental and ongoing credibility issue between biologists and local actors:

So I think that there is a credibility issue on both ends of the spectrum. The biologists have that credibility issue with [HTO board members] and [board members] have credibility issues with various other players [...]. I don’t think that they really revere each other and that is where the problem starts. It is a long way from correcting itself. If it is ever going to get corrected (55, 08/06/09).

In Igloolik, credibility problems among scientific researchers and HTO board members have persisted in spite of the presence of communication channels between the two groups of actors. Citing her own experience, the Igloolik HTO manager relates how, although visibly insufficient to foster a wide understanding of research at the community level, communication and outreach initiatives led by GN DoE employees have nonetheless allowed HTO board members to familiarise themselves with and engage with the methods, language and objectives of polar bear biology, albeit not without difficulties:

Biologists are working [in Igloolik] and they come [to the HTO] to report with *PowerPoint* presentations. They give us maps showing polar bears

with collars. Showing where they are and where they go. And they are reporting to us. They showed us where polar bears travel and where they are having their babies [...]. After hearing them a few times, I find that I understand what they are trying to say or what they are trying to do. But when I first heard about them, I had no idea what they were doing [...]. To my knowledge, I found that a few times [board members] misunderstood the people who came here to talk about what they wanted to do. This happened quite a few times since I have been here. We try to get translators, professional ones, [...] but sometimes they don't understand what they are talking about, sometimes they misinterpret the meaning [of what they are supposed to translate] (52, 05/06/09).

While trust and credibility issues between community members and scientific researchers can be related to one's level of familiarity or willingness to engage with the experiences and practices underpinning the production of either scientific knowledge or *Inuit Qaujimagatuqangit*, poor or inadequate communication practices taking place between such actors may also be to blame. This became apparent on many occasions during the course of my research in Igloolik.

The interpreter I worked with, for instance, once interrupted the flow of a participant's speech to rectify what he judged to be a 'major misunderstanding' shared among current HTO board members about scientific research. The interpreter, who had previously worked as a wildlife technician for the GN DoE and therefore was very familiar with the methods and practices of polar bear biologists, felt compelled to object to the following statement made by a board member who was explaining why he was reluctant to support GN-sponsored research: "In 2007, the HTO heard that the GN did a study for three days and came to conclusions which resulted in a decline in the quota for Western Hudson Bay.¹⁰⁵ We do not want the same thing to happen here. We do not want the GN to do a rushed job and in the end come to a conclusion that is not true" (47, 03/06/09). The former wildlife technician later turned to me to translate his own contribution to the interview:

It's a major, major, major misunderstanding! I am telling him that you cannot fly around for three days and come to a conclusion... But that's what

¹⁰⁵ This case is further discussed in Chapter 7.

the locals thought, that the government was to fly around for three days and then decide what the population would be... I keep trying to tell him that these kinds of inventories take years and years, like minimum three years. That's how much misunderstanding there is (56, 05/06/09)!

When asked about the level of communication and feedback existing between GN researchers and the local HTO, the territorial polar bear biologist similarly described significant challenges to the establishment of a constant and adequate flow of information between the GN DoE Wildlife Research Division and Nunavut's 27 hunters and trappers organisations:

My job is a territory-wide job so I interact with all HTOs. We interact with the Igloolik HTO here just like we would with any HTO except that I have had the opportunity to talk with them more because of proximity. For example, I think that I have talked with them about research in Foxe Basin about five different times now, which is more than what I have done with other HTOs. But even then, it doesn't seem to be enough [...]. We have people doing communication work but, I mean, half our section should be public relations or communications [...]. People from the communities say: "You only come when you need something from us, you don't consult us!" But I say: "Do you know how much it costs to visit your community?" The charter alone is CAN\$30,000. You know, to come once. I have not even been to half of the communities even if [public relations] is all I do right now (60, 09/06/09).

As the two examples above illustrate, issues of communication pose yet another challenge to the building of research partnerships between community members and scientific researchers and add to these groups' mutual mistrust. However, many polar bear harvesters and HTO board members interviewed in Igloolik shared the view that ongoing tensions between such actors had deeper roots and ramifications which plunged into past and present polar bear management practices.

6.3.2. *'Managing' polar bears*

In the Igloolik area, the first polar bear regulations were introduced in 1957, when it became illegal to hunt female polar bears accompanied by cubs less than a year old. One decade later, in 1967, a quota was also set across the Northwest Territories, based on harvest

records as a result of concerns expressed by biologists about overhunting (see Chapter 4).

John Arnatsiaq, who was a teenager living with his family in an outpost camp at the time, remembers the event:

We used to have radios for hunters [...]. So, one time, we got a call. It was late October. They said there was a polar bear hunting season now and we were allowed four. There were two families there. It was late October and there were some bears around camp, as usual [...]. We had a limit of polar bear tags and we said: “What!? What is going on?” [...] My father left and he came back to camp later on at freeze up and he said that there is a quota now. So every year you have to get this much for the camp or for that area [...]. That’s how it was and we could not understand why [...]. People at the time obeyed the rules. They had to. Because if not, they were taken to court (34, 19/05/09).

Some sixty years after the first rules were set on regulating the harvest of polar bears in their region, Iglulingmiut interviewed remained divided about the overall usefulness and appropriateness of past and present regulations. A participant summarises:

So there are some people who go against the quota system just because it is the quota system. And there are some of us who will say that the quota is there to protect the animals and they will go with that. And there are some people who don’t even want to look at the quota system again whatsoever because it is against their beliefs (55, 08/06/09).

Despite the presence of such a range of views among interviewees, a general feeling of resentment towards polar bear regulations pervaded their testimonies. If the first quota system and harvesting regulations for polar bears in Canada were implemented with little or no Aboriginal input (Dowsley 2007; see Chapter 4), many still felt bitter about this situation today. Indeed, 35 per cent of polar bear hunters and HTO board members questioned identified the legacy of past top-down polar bear management practices as one of the many factors hindering collaborative research today. More than 15 years after the lifting of the prohibition to hunt polar bear cubs,¹⁰⁶ David Aqqiaruq, 58, evokes how harmful the imposition of such a regulatory practice has been:

¹⁰⁶ The hunt of polar bear cubs was again permitted in 1993 through agreements signed between the GNWT and local hunters and trappers associations (GNWT 1993). Today, HTO representatives must request a special permit

Before these rules came into place, we were harvesting any bear and cubs were a delicacy, especially among the elders. And when the government started imposing rules then they told us not to harvest cubs anymore. That hurt really bad. That took away part of what we were used to, part of our traditional diet. Young bear is more tender and tastier than old adult bear. What happened then is still discomfoting to me today (47, 03/06/09).

Abraham Umayuruluk, 79, shares a similar view:

I was really against [the prohibition to hunt cubs] because I really felt for the elders. Before there were quotas, they would hunt all bears, regardless of sex, regardless of size. And I really felt for the elders because when quotas came along we were told to harvest only tough old bears. I really felt for those who would love to eat young bear meat. That was taken away from them [...]. We were just told by another entity to harvest only adults and that was it. So I was mad, yes (32, 18/05/09).

Among the respondents who felt early polar bear regulations had been simply imposed by government authorities without prior consultation or discussion with resource users, most believed that such a statement still holds true today. Samuelli Ammaq states:

These rules were imposed from the South and we have to follow them and our present elected board members are still controlled by the same people that controlled the rules. They have to live with their rules. I don't know. I feel that we have no say. We have always been controlled by the *Qallunaat* (36, 19/05/09).

Interviewees also repeatedly alluded to the idea that the “fear of going to court” rather than an understanding of the rationales presiding over the implementation of *maligait* (government regulations) had motivated the obedient behaviour of harvesters.¹⁰⁷ In fact, many deplored a lack of information about past and current regulatory practices: “Actually, nobody told me why these rules were put into place until you mention it now because I don't do research like yourself. Now you tell me and I know. Because I don't listen to the radio and I just like to go out hunting” (35, 19/05/09). According to Pitaa Awa, a board member for both

from the GN DoE before allowing such hunts, which are accounted for in the quota system. However, many hunters interviewed in Igloolik were not aware that such a procedure existed.

¹⁰⁷ Compliance with polar bear regulations has always been high in the Canadian Arctic. Today in Nunavut, only a few offences to polar bear harvesting regulations are filed by Conservation Officers annually. An experienced Conservation Officer explains: “Communities are small and people think twice before doing something. Everybody knows who is out on the land and where and with whom. An illegal kill of polar bear would not go easily unnoticed” (Anonymous). In recent years, however, polar bear harvesters as well as HTO board members have publicly threatened to disregard territorial regulations and hunt as they please as an act of resistance to unpopular management decisions (see Chapter 7).

the Igloodik HTO and the Nunavut Wildlife Management Board, some community members therefore generally tend to comply with polar bear regulations motivated by the fear of being prosecuted, rather than feeling guided by any moral conviction to abide by rules which contribute positively to the conservation of the species:

The government is very powerful. So even though we Inuit are against a policy, we follow the rules because something could happen to us [...]. We will be taken to court if we harvest a female with cubs even though as Inuit we want to harvest them. We follow those rules because we are afraid (51, 05/06/09).

At a time when human-bear encounters are becoming increasingly frequent in Igloodik, Lydia Qaunaq further identifies an emerging tension between community members' need for safety and their fear of prosecution:

We are very obedient and we started obeying the rules even though we did not like them. Even now, a person's life could be in danger because we are so afraid of the law. Because people so much want to follow the rules that were imposed on them. Even if a bear is attacking and is being a threat, they will not kill it. They will just try to let him run away even to the point of putting themselves in danger. We want to follow the law. We feel that if we do not follow the law, we will be taken to court, we will be jailed for trying to protect ourselves (43, 26/05/09).

Interview participants thus frequently described polar bear regulations as *foreign*, *imposed* and even *fearful* objects whose agency was connoted negatively. Their views appear rooted in resentment towards colonial-style top-down management, but also in Inuit perspectives on control and autonomy. According to Briggs (2000), in pre-settlement Inuit camps, people tried not to interfere with one another's actions and did not try to influence or even inquire into each other's intentions, plans or motives; social order was maintained by paying attention to the needs of others, on the one hand, and by taking care not to interfere, on the other hand, "so that a high level of social responsibility was balanced with a great deal of personal freedom" (Briggs 2000: 112). While these social norms have undergone some transformations over the course of the last decades (see Rasing 1994), they are still relevant to understanding Iglulingmiut attitudes towards hunting regulations today. In fact, some

community members view prescriptive wildlife rules and regulations as conflicting with Inuit concepts of autonomy, responsibility and personal freedom of action, and as intruding in a relationship that ultimately exists between the hunter and the hunted. Lydia Qaunaq states: “It’s not the Inuit way to be prevented from catching an animal [...]. It’s also not the Inuit way to restrict or stop other people from hunting a species” (43, 26/05/09).

When describing their fears of being fined or taken to court for offenses to wildlife regulations, interviewees frequently employed the term *ilira*. Brody (1991) and Briggs (1970) have both discussed its use among Canadian Inuit. Brody explains: “The term captures the feeling of the dominated towards those who dominate them, and may also connote dependence. Inuit frequently use this word to characterise their feelings about Whites, and the range of its meaning is nearly co-extensive with the range of their attitudes towards Whites” (Brody 1991: 178). Used within the context of polar bear management, *ilira* clearly connotes the feeling of an illegitimate domination. This can also contribute to explain Inuit responses to dominating sorts of proposals embedded in polar bear governance, whether those proposing to dominate bears (by drugging, tagging or tattooing them) or those that would dominate hunters by telling them which bears to hunt and when: while generally abiding by existing rules and research practices, hunters are prompt to criticise the prescriptive and prohibitive nature of both.

Thus far, my analysis of Iglulingmiut perspectives on polar bear management has revealed the presence, among polar bear harvesters and HTO board members, of a legacy of resentment towards management practices which were originally implemented with little or no input from resource harvesters (e.g. the first polar bear quotas and the prohibition against hunting females with cubs) and which conflict with Inuit views on autonomy and control. I have argued that such feelings are compounded by the fact that many community members have abided by past and current polar bear regulations because of a “fear of the law” rather

than in light of an informed understanding of the rationales underlying restrictions in their hunting behaviour. The difficulties recently encountered by government representatives in building a collaborative research partnership with the Igloolik HTO can therefore be situated within a wider discourse of resentment commonly mobilised by community members. I would now like to illustrate the ways in which Iglulingmiut perspectives on the appropriateness (or lack thereof) of hunting quotas for regulating polar bear abundance, as well as their criticism of the roles and powers of HTOs within the polar bear co-management regime in Nunavut also form the backdrop for contemporary tensions between scientific researchers, resource users and HTO board members in the community.

As previously mentioned in this chapter, Igloolik residents currently hold a range of views regarding the usefulness of hunting quotas meant to ensure the presence of healthy polar bear populations. This situation can be explained by community members' perspectives on factors possibly influencing polar bear abundance. Indeed, while all respondents clearly reported seeing more bears around their community in recent years, a phenomenon which they systematically attributed to an increase in polar bear numbers in their region, they offered many explanations as to why they thought the polar bear population was growing in the first place. When asked to identify factors that may have contributed to this growth, only a minority (15 %) of polar bear harvesters and HTO board members interviewed mentioned ecological factors.¹⁰⁸ Two of this minority, Herve Paniaq and Levi Qaunaq, each suggested that changes in sea-ice could be causing increased sightings and abundance in their region:¹⁰⁹

Now the case is that because we have less ice, the bears that used to be concentrated on ice blocks are now on the land and they are slowly making

¹⁰⁸ Every respondent was encouraged to express his/her views about factors influencing polar bear abundance through open-ended questions. Again, the use of percentages indicates the frequency of participants' responses.

¹⁰⁹ Such observations have been corroborated by recent scientific findings that have pointed to a declining polar bear ice habitat in the Foxe Basin region: researchers have identified a decrease in the abundance of multi-year ice, as well as a lengthening of the ice-free season in this area (Ford et al. 2009; Sahanatien and Derocher 2007). In Igloolik, later freeze-ups have recently prompted the HTO to postpone the opening of the polar bear hunting season for a few weeks in order to ensure the security of hunters. The Igloolik HTO Secretary Manager explains: "We used to open [the polar bear hunting season] on 15 October. But because the ice does not form that early anymore, we wait until our Annual General Meeting to set a date" (52, 05/06/09).

their way up here [...]. You can see more bears now because the bears that used to be concentrated on multi-year pack ice are now concentrated on land-fast ice and on the land.

– Herve Paniaq (31, 17/05/09)

We used to have more multi-year pack ice before. Maybe then bears used to be more down on the ice. We have less multi-year pack ice around now and maybe that's why we are seeing more of them on land in the summer.

– Levi Qaunaq (35, 19/05/09)

Although participants identified ecological shifts as a potential cause of change in polar bear abundance, a majority of comments related to another type of factor: human behaviour. The attitudes and actions of harvesters, researchers and wildlife managers were identified by respondents (46 %) as influencing the presence of *nanuq* in their region:

[Researchers] show no respect to the polar bear and you can see that there are too many bears around [...]. It's because there are too many political issues on polar bears that there are so many. Once you talk negatively towards the polar bear, they are bound to react. That's what Inuit believe.

– George Qulaut (30, 08/06/09)

Now I am going to give you what I think. We have always been told not to fight over animals. Maybe that's the reason why we are seeing a lot more [polar bears] coming into town. Maybe they know that we are talking about them in a bad way [...]. Maybe that's why we see a lot of them now.

– Attuat Attiki (33, 18/05/09)

Because the world is always saying that we are just running out of polar bears, [...] [bears] just come to show that they are here. They are doing that to Inuit even if Inuit are not saying that. Just to let the world know that they are there. That's how I see it.

– Michelline Ammaq (50, 04/06/09)

Furthermore, hunters and board members who commented specifically on the effects of hunting quotas offered two types of responses. Firstly, four respondents (15 %) described the existence of a causal relationship between restrictions on harvest size and polar bear abundance. Abraham Umayuruluk explains: “The case is that after quotas were put in place, bears became too numerous [...]. Because when quotas were put in place then the bears increased and now they are becoming a danger to people” (32, 18/05/09). Levi Qaunaq further describes how he came to such an understanding:

I have never really understood the quota system until recently. And recently I understood that it was there as a tool for conservation, for not finishing the bears [...]. We have Nunavut now and perhaps we should start thinking that this is going to be our reality, that we will be living with the quota system [...]. We are many people now. We are congregating together and maybe this is something that we will have to do. Maybe I am wrong because I have not caught up with my elders and I don't know what they went through. But I think that having a quota for species might be the best way (35, 19/05/09).

Secondly, nine participants (35 %) expressed strong scepticism with regard to the scientific belief that the implementation of quotas could correlate with changes in population size. In their view, paying 'respect' to polar bears by refraining from 'playing with them' or wasting their meat constitutes the ultimate set of factors that govern the animal's actual presence or absence. Jacob Malliki, an HTO board member in his early fifties, explains the logic behind his disbelief in any causal link between hunting quotas and polar bear abundance:

Researchers and White people think that if we kill polar bears then [the population] will decrease but that if we don't hunt them, then the population will go up. That's why they put a quota but I don't believe that [...]. Polar bears can increase or decrease but it's not up to the quotas. No. It does not matter how many bears you harvest. Even if you kill a lot of animals, they come back. As long as you don't play with them. As long as you are not having fun with them, as long as you don't [waste] them [...]. As long as you don't do that. They will come back (49, 04/06/09).

In light of these perspectives, it appears unsurprising that some Iglulingmiut may see little value in supporting scientific population inventories on which harvest quotas are based. In fact, the view held by some Inuit, according to which animal populations are renewed through hunting and therefore cannot be depleted because of hunting, clearly clashes with scientific concepts such as maximum sustainable yield (Dowsley and Wenzel 2008; Fienup-Riordan 1990). Wenzel writes: "In this regard, stochastic models of polar bear [...] population dynamics appear to be as metaphysical to Inuit as Inuit beliefs about replenishment through hunting appear to biologists" (Wenzel 2008: 18). The existence of such a fundamental difference between Inuit and scientific views regarding the socio-ecological forces governing polar bear abundance may thus help explain the reluctance of some participants to engage

with and support the type of research and management initiatives that derive from the logics of population ecology. Simonie Issigaitok, who works as a board member at the Igloolik HTO, summarises:

I notice something about Inuit and *Qallunaat* researchers. It's that they can hardly understand each other [...]. Inuit believe that if they hunt more bears there will be more. But if they start leaving them, then bears will be gone. White people believe that polar bears will start disappearing if Inuit start hunting them too much. But according to Inuit way, it's the other way around [*laughter*]. That is why they cannot understand each other (53, 05/06/09).

Again, two different causal mechanisms are at play here: while biologists commonly relate polar bear abundance to hunting pressure and other ecological factors, some Inuit hunters view the observance of rules of respect (e.g. such as hunting according to one's needs) as the ultimate determinant of bear presence.

After demonstrating the ways in which some views held by Iglulingmiut on polar bear abundance somewhat contradict the ecological premises upon which current research and management efforts are based, I would like to show how a local critique of the role of HTOs in wildlife governance in Nunavut also constitutes a keystone for understanding contemporary tensions between scientific researchers, resource users and HTO representatives in Igloolik. In fact, a majority (88 %) of board members interviewed identified a clear link between the difficulties they had encountered in establishing collaborative, equitable and trustful research partnerships with GN DoE researchers and their critical appraisal of the powers of HTOs within the polar bear co-management regime set up in the territory (see Chapter 4). For example, four out of the eight board members working at the Igloolik HTO expressed strong dissatisfaction with the fact that government-sponsored research on polar bears (and other wildlife) could ultimately be conducted without the support of their organisation. In Nunavut, GN DoE representatives are ultimately responsible for deciding, after consulting with

communities, what type of scientific research is adequate to fulfil the Government of Nunavut's management responsibilities under the Nunavut Land Claims Agreement.

In addition, when asked to describe the role of their organisation in polar bear management in the territory, most board members expressed feelings of powerlessness, sharing a perception of being “just following *maligait* [rules]” rather than taking an active part in their making:

What does not work is that HTOs have to follow the rules and regulations that were set by a higher authority, like the GN. And their mandate should be to follow the wishes of the people. [Board members] have to follow the rules that are imposed on them, and that is why things are never working out well. Because they have to follow rules. If they could disregard the rules and follow the wishes of the locals then things would be better.

– Pitaa Awa, HTO board member (51, 05/06/09)

Because of all the rules and regulations and how we have to work with the government on different projects, we usually don't seem to have a chance to fully represent the wishes of the people that have elected us. Because we have to work with such constraints.

– David Aqqiaruq, Igloodik HTO board member (47, 03/06/09)

Polar bear harvesters who had been involved in HTO politics shared a similar diagnosis. “The HTO has little or no say at all. They just follow. If they would give a little more effort then perhaps some changes could be made but overall they just follow what they are being told”, says Herve Paniaq (31, 17/05/09). Attuat Attiki further states: “We try to ask [board members] to do this, to do that but they are hindered by different rules and regulations that they have to follow” (33, 18/05/09). Arsene Ivalu, a former HTO board member, places his criticism of the local HTO's powers within the wider context of the disillusioning advent of wildlife co-management in Nunavut:

The expectation was there [...]. The reason we were so much in favour of having Nunavut was so that we could participate in decision-making regarding the animals that we depend on [...]. But after Nunavut, that was not the case. We feel that we are even in a lower position now than before Nunavut was created. Yes, we are being asked questions but what we are making are just noises and nothing is being done to have us included. Yes, we are being asked more questions and we are making more noises but we feel even more alienated than before. The HTO cannot represent us anymore

because it has to represent others [...]. They are just there to please other entities instead of acting for the local people (29, 17/05/09).

6.4. Conclusion

This chapter has presented Iglulingmiut perspectives on polar bear research and management and has explored community members' normative evaluations of the polar bear governance regime currently in place in Nunavut. In drawing the contours of a dynamic nexus of values and beliefs about polar bears, this analysis has further contextualised struggles previously identified between resource users, scientific researchers and wildlife managers with regard to the production of scientific knowledge concerning polar bears in the territory (Chapter 5).

This chapter demonstrates that, in spite of efforts to foster meaningful Inuit participation in polar bear governance, ongoing tensions have characterised some of the relationships existing between local communities, scientific researchers and government authorities involved in polar bear research and management in Nunavut. Interviews with polar bear hunters, HTO board members and government employees suggest that this phenomenon may be due to differences and incompatibilities between Inuit and scientific conceptions of human-animal relations and polar bear agency, by trust and credibility issues between wildlife biologists and resource users, and by the ways in which actors view the very nature of causality, autonomy and control.

The very presence of differing perspectives among such actors regarding the empirical effects of scientific methods has been highlighted. Moreover, the dynamic and evolving nexus of values and beliefs held by Igloodik residents about human-bear relationships has been identified as clashing with the ethics of scientific research. Dissatisfactions expressed by hunters and HTO board members with respect to the current level of community involvement in government-sponsored scientific research processes and the power relations embedded in

past and current polar bear regulations and management schemes have also been targeted as sources of tension and mistrust. I have related this criticism, in turn, to the low level of familiarity and confidence of some community members with the methods, objectives and language of polar bear research and management, and to inadequate communication and translation practices among scientific researchers, wildlife managers and community members, which belies deeper divides about what wildlife conservation and governance should be. A legacy of resentment towards past top-down polar bear management practices, combined with the perception, among some resource users, of the inadequacy of hunting quotas for regulating polar bear abundance have been further described as hindering the establishment of collaborative relationships between actors involved in polar bear governance networks in Nunavut.

By presenting Iglulingmiut views on polar bear research and management, this chapter highlights the importance of carefully reflecting upon local histories and perspectives about past and present research and management practices, when building such partnerships. While coming to a consensus among stakeholders sharing different values and visions may constitute an unattainable goal (Mouffe 2000, 2005b), this case study nonetheless points to the necessity of paying due attention to local circumstances in order to foster participatory governance practices combining science and Inuit knowledge. It further suggests that the key to comprehending the unity beneath the diverse modern views on wildlife management held by Inuit lies in going beyond simply ascertaining whether or not individuals accept old beliefs about bears, to understanding how Inuit posit that changes in bear presence or absence are, to a degree, responses to the quality of human-bear relationships; it also means understanding how human actors can most constructively respond to these presences and absences.

Finally, since the views, opinions and attitudes presented in this chapter arise from a selected group of participants from Igloolik, the generalisability (Kitchin and Tate 2000) of

such narratives to other regions or communities in Nunavut warrants caution, for differences may exist on how communities and individuals have experienced and viewed the process of governing *nanuq* within the territory. In spite of this limitation, this case study does single out significant and ongoing issues within the framework of contemporary polar bear governance in Nunavut. I will argue that such fault lines can travel and resonate well beyond the shores of Igloolik Island. In fact, the narratives presented above constitute crucial keys towards understanding the debates and controversies to be discussed in the next chapter.

Chapter 7. Polar bears, climate change and sustainable use: debating Inuit knowledge and science in Western Hudson Bay

7.1. Introduction

As the three previous chapters have highlighted, the production of spaces for Inuit participation in polar bear governance has yielded tangible initiatives in Nunavut. However, polar bear research and management initiatives across the territory currently give rise not just to collaborative relationships but also to dynamics of contestation and exclusion among hunters, scientific researchers and decision-makers. While negotiations surrounding the production of scientific knowledge (Chapter 5) and community perspectives on polar bear research and management (Chapter 6) have so far served as catalysts for a critical discussion of the knowledge practices, subjectivities, dialogical procedures and power relations that currently characterise the politics of participation in wildlife governance in Nunavut, one of the most controversial dimensions of this performative process has yet to be explored.

Over recent years, the setting of hunting quotas for various polar bear populations has triggered significant controversies in the territory and beyond, especially in cases where scientific information and local knowledge conflict. For instance, during the last decade, the status of the Western Hudson Bay polar bear population has been at the forefront of many contentious policy initiatives and has generated much attention from the media and various organisations involved in polar bear governance (Freeman and Foote 2010). While Inuit observations have indicated an increase in polar bear abundance for this population, many wildlife biologists and managers have suggested that climate change and related sea-ice conditions have negatively impacted demographic rates in Western Hudson Bay (NWMB 2007a, 2007b). This situation has given rise to a great deal of debate among policy-makers, scientists, harvesters and conservationists at the local, territorial, national and international levels. The setting of quotas for this population has led to the mobilisation of

numerous actors (e.g. wildlife managers, hunters, Environment Ministers, biologists, translators and representatives from non-governmental and Inuit organisations) from the local to the international scale. In addition, quota setting has allowed for the deployment of multiple hybrid forums (Chapter 2) for dialogue and negotiation; it has yielded diverse strategies of public consultation and knowledge production among interested parties.

Callon suggests that controversies act as force fields in which expertise becomes enmeshed with and redistributed through “an ever-growing, ever-more-varied cast of characters” (Callon 1998: 260) who are sufficiently affected by what is at issue to want to participate in collectively mapping it into knowledge and, thereby, into its social ordering. Controversial situations, matters or events hold the potential “to render what we think we know or, more usually, what ‘experts’ claim to know about something the subject of intense public interrogation” (Whatmore 2009: 587) through a process that puts forward the technologies and strategies underlying knowledge production practices (e.g. such as those of wildlife biology and *Inuit Qaujimagatuqangit*) and regulatory protocols instituted by policy agencies. In fact, according to Whatmore (2009), environmental knowledge controversies are generative political events in which:

the knowledge claims and technologies of environmental science, and the regulatory and policy practices of government agencies that they inform, become subject to public interrogation and dispute [...]. Such events may take many forms, but arise when the rationales and reassurances of environmental science and policy fail to convince those affected by what is at issue (whose direct experience and/or knowledge of it contradicts prevailing expertise) or to allay their concerns (Whatmore 2009: 588).

Thus, researching environmental knowledge controversies should not seek to settle a debate by reference to the ‘cold facts’ underpinning its development. In Whatmore’s (2009) opinion, research on this subject should rather aim to locate the sources of a controversy, explore the ‘partisanship’ or wider sociopolitical affiliations of the knowledge claims articulated through it (i.e. the values, interests, opinions, identities, as well as the institutional,

political and scientific allegiances of actors or groups of actors from which such claims originate) and pay due attention to the multiple and emergent constitution of publics and their political capabilities.

In other words, the analysis of knowledge controversies in democratic societies makes possible the examination of what Callon and colleagues (2009) propose to call *overflows* engendered by the development of science and techniques:

Overflows are inseparably technical and social, and they give rise to unexpected problems by giving prominence to unforeseen effects. All, specialists included, think they have clearly defined the parameters of the proposed solutions, reckon they have established sound knowledge and know-how, and are convinced they have clearly identified the groups concerned and their expectations. And then disconcerting events occur [...]. [C]ontroversies help to reveal events that were initially isolated and difficult to see, because they bring forward groups that consider themselves involved by the overflows that they help identify (Callon et al. 2009: 28).

Any study of the identities and interests of actors mobilised by such overflows should therefore examine a distribution of actors that “is not known in advance but is revealed as the controversy develops, and it is precisely for this reason that the latter is an apparatus of exploration that makes possible the discovery of what and who make up society” (Callon et al. 2009: 28).

By viewing the controversy created in the wake of recent quota changes for the Western Hudson Bay polar bear population as a generative political event, this chapter will aim to analyse the progressive configuration of deliberative spaces of polar bear governance generated in that context. To further this objective, I will draw on the notion of *hybrid forum* developed by Callon and colleagues (Callon et al. 2009, 2001) to discuss critically the production and mediation of knowledge claims, and to study the mobilisation of actors and resources through various dialogical spaces, including a public hearing organised by the Nunavut Wildlife Management Board, and community consultations held by the GN DoE.

Drawing extensively on interview material, transcripts from consultations, government

reports and direct observations,¹¹⁰ this chapter will depict and analyse situations in which local, national and international interests are mobilised as a result of the use of Inuit ecological knowledge and scientific information in quota-setting procedures at the territorial level. In reflecting upon what happens when scientific knowledge concerning polar bears escapes academic circles, and when *Inuit Qaujimagatuqangit* travels from elders' homes and hunting grounds to become positively allied to governmental agendas and policies, I aim to question whether the Western Hudson Bay controversy is giving rise to new and collaborative ways of redistributing expertise and practicing relations between science, Inuit knowledge and democracy in Nunavut.

The events, strategies and procedures I will describe illuminate the ways in which the recent configuration of Inuit participation in wildlife governance in Nunavut has led to increased politicisation of 'scientific' and 'Inuit' knowledge as dichotomous or polarised categories, and to demands for an epistemic equivalence between these two sources of expertise (Bravo 2006). My analysis will also reveal tensions between knowledge claims produced by a range of actors operating across governance scales and will unveil power dynamics and struggles for authority and legitimacy among resource users, wildlife managers and scientists. The controversies reviewed in this chapter epitomise, in my view, some of the limitations and difficulties that co-management partners in Nunavut are currently experiencing as they attempt to foster decision-making from both 'Inuit' and 'scientific' perspectives.

From the evidence I will present, I will argue that many factors currently hinder a collaborative and deliberative governance process that meaningfully reflects Inuit views. These include: differing levels of acceptance, among actors and institutions, of the validity and importance of Inuit observations; the deployment of consultative mechanisms dominated

¹¹⁰ See Chapter 2 for methodological details.

by the logics of scientific management; asymmetries between the financial and human capacities of various actors to produce and use scientific information and Inuit knowledge in decision-making; and contrasting views on the nature and potential of wildlife management. On the other hand, I will demonstrate that the Inuit of Nunavut are becoming increasingly proactive in developing strategies to mediate their perspectives in territorial, national and international forums, notably through the 'scientisation' of Inuit ecological knowledge claims. In sum, this chapter will illustrate how, at a time of ecological transformations associated with climate change, debates surrounding the role of knowledge practices in Nunavut polar bear governance have occupied a central place in discussions focusing on the meaning of the term 'sustainable use' for this iconic species.

7.2. Mobilising knowledge claims under a changing climate in Western Hudson Bay

Contrary to what we might have thought some decades ago, scientific and technological development has not brought greater certainty. On the contrary, in a way that might seem paradoxical, it has engendered more and more uncertainty and the feeling that our ignorance is more important than what we know.

– Michel Callon and colleagues (Callon et al. 2009: 18-19)

According to the International Panel on Climate Change, climate change is expected to be most dramatic and rapid in the polar region, and will cause major physical, ecological, sociological and economic impacts on the Arctic (ACIA 2004; IPCC 2007a, 2007b; Ford et al. 2006; Ford and Furgal 2009). In spite of much scientific research, significant uncertainty still exists concerning the rate and extent of climate change in the Arctic, and how such phenomena will affect regional climatic processes and the diverse components of northern ecosystems (IPCC 2007a).

This said, recent statements stemming from international organisations involved in polar bear governance have echoed a growing scientific concern regarding the present and potential future impacts of climate change on polar bears and their habitat. Indeed, after a

meeting held from 17 to 19 March 2009 in Tromsø, Norway, the parties¹¹¹ to the 1973 Agreement on the Conservation of Polar Bears (ACPB) unanimously concluded and declared:

Climate change has a negative impact on polar bears and their habitat and is the most important long-term threat facing polar bears. Action to mitigate this threat is beyond the scope of the Polar Bear Agreement. Climate change affects every nation on the earth and reaches well beyond the five parties to the Agreement so the parties should look to other forums and national and international mechanisms to take appropriate actions to address climate change (Anonymous 2009: 1).

Furthermore, during the 15th meeting of the IUCN Polar Bear Specialist Group¹¹² (PBSG) held in Copenhagen from 29 June to 3 July 2009, the PBSG renewed the conclusion from previous meetings that the greatest challenge to the conservation of polar bears is ecological change in the Arctic resulting from climatic warming: “Declines in the extent of the sea-ice have accelerated since the last meeting of the group in 2005, with unprecedented sea-ice retreats in 2007 and 2008. The PBSG confirmed its earlier conclusion that unabated global warming will ultimately threaten polar bears everywhere” (PBSG 2009).

While a general scientific consensus has emerged around the idea that the loss of sea-ice habitat (upon which polar bears depend for feeding, travelling and mating) associated with climate warming poses a significant and ongoing threat to the conservation of the species (PBSG 2009), how specifically and at what rates climate change will affect the iconic animal remains a matter of discussion, debate and research among the scientific community, which widely acknowledges the complexity and uncertainty inherent in this process (Amstrup et al. 2008; Derocher et al. 2004; Stirling and Derocher 1993; Stirling and Parkinson 2006; Fig. 7.1.).

¹¹¹ These parties consist of the five range states for polar bears, namely Canada, the United States, Denmark (Greenland), Norway and Russia.

¹¹² As a specialist group member of the International Union for Conservation of Nature Species Survival Commission (IUCN/SSC), the Polar Bear Specialist Group (PBSG) is composed of up to 25 technical experts from the five polar bear range states. It is officially mandated “to produce and compile scientific knowledge about the world’s polar bears” and “to provide independent scientific advice to decision-makers and management authorities” (Obbard et al. 2010). It is also the official scientific advisory group to the parties of the 1973 Agreement on the Conservation of Polar Bears (see Chapter 4).

The material originally presented here is not currently available in ORA

Figure 7.1. Polar bear feeding on ringed seal (left), swimming in open water (top right) and on the land (bottom right) (Photo: A. Taylor (left) and E. Peacock (right))

As one of the southernmost polar bear populations, Western Hudson Bay (WHB) (Fig. 5.3.) may be among the first to respond to climatic warming in the Arctic (Derocher et al. 2004; Gough et al. 2004; Peacock et al. 2010). The distribution, abundance and ecology of the WHB polar bear population have been the subject of scientific research programmes since the late 1960s, making it one of the most studied populations in the world (Aars et al. 2006; Derocher and Stirling 1995; Derocher et al. 1997; Lunn et al. 1997; Regehr et al. 2007; Stirling et al. 1999; Taylor and Lee 1995). In fact, a large proportion of the adult population is currently marked, and extensive records exist from mark-recapture studies and the return of tags from bears killed by Inuit hunters (PBTC 2007).

To date, several peer-reviewed scientific articles have related the status of Western Hudson Bay polar bears to climate change and related ice conditions (Stirling and Derocher 1993; Stirling and Parkinson 2006; Stirling et al. 2004, 1999; Regehr et al. 2007). Among the scientific community, the current prevailing view is that the Western Hudson Bay population is under increasing nutritional stress. A causal link is hypothesised between this

stress and a decrease in polar bears' ability to access their primary prey, the ringed seal (*Pusa hispida*) (Fig. 7.1.). Decreased access to ringed seals is, in turn, presumably related to earlier ice break-up¹¹³ associated with a long-term warming trend in spring temperatures, which forces bears to arrive on land earlier in the year. This reduces their critical spring hunting season while simultaneously prolonging their seasonal fast. As a result, the condition of adult female polar bears as well as a number of demographic parameters (including abundance) in Western Hudson Bay have been shown to decline significantly over the past 20 years (Regehr et al. 2007; Stirling et al. 1999; Obbard et al. 2010).¹¹⁴

Yet not all sources of information regarding the status of polar bears in Western Hudson Bay suggest a struggling population. Inuit living along the shores of Hudson Bay have reported seeing more bears in recent years, which has been interpreted as evidence by many community members that the population is increasing (Dowsley and Taylor 2006; McDonald et al. 1997; NTI 2007b; NWMB 2007a; Tyrrell 2009, 2006). For example, in the community of Arviat, Nunavut, sightings seem to have increased at certain times of year, even posing concerns for public safety:

¹¹³ Over the past three decades, the date of break-up of the sea-ice in western Hudson Bay has advanced by three weeks (Stirling et al. 2004, 1999).

¹¹⁴ Stirling and colleagues (1999) were the first to document a positive correlation between the timing of sea ice break-up and the condition of adult females (i.e. the earlier the break-up, the poorer the condition of the bears), as well as to suggest that declines observed in various demographic parameters measured for WHB polar bears had resulted from the trend towards earlier sea ice break-up, which in turn appeared to be due to a long-term warming trend in spring temperatures (Stirling et al. 1999). To date, Dyck and colleagues (2008, 2007) are the only researchers to have challenged this view through the publication of peer-reviewed scientific articles. The authors argue that long-term warming of late spring air temperatures could not be proposed as the ultimate factor causing earlier sea-ice break-up around western Hudson Bay since they found that "spring air temperatures around the Hudson Bay basin for the past 70 years (1932-2002) show no significant warming trend and are more likely identified with the large-amplitude, natural climatic variability that is characteristic of the Arctic" (Dyck et al. 2007: 73). Dyck and colleagues also suggest that factors other than climate warming, such as increased human-bear interactions (notably caused by tourism and scientific research activities on polar bears), could be responsible for a decline in the polar bear population of Western Hudson Bay and must be taken into account in a more realistic study and explanation of the population ecology of Western Hudson Bay polar bears. Although the conclusions from Stirling, Regehr, Derocher, Parkinson and others (Regehr et al. 2007; Stirling and Derocher 1993; Stirling and Parkinson 2006; Stirling et al. 2008, 2004, 1999) have been extensively cited and used by decision-makers in Nunavut, the views of Dyck and colleagues have played a marginal role in the policy process so far. In fact, their papers have not been considered as relevant evidence by the Nunavut Wildlife Management Board in decisions surrounding the setting of hunting quotas for the WHB polar bear subpopulation. While a discussion of the scientific validity and significance of their claims lies beyond the scope of this thesis, the presence of such views among the scientific community should be noted.

During late October, when the [sea-ice] begins to form, sightings of polar bears close to and in the community become more common. Along the coast, hungry bears awaiting the formation of sea-ice are attracted by the smell of beluga whale carcasses left along the shoreline by hunters following the beluga whale migration and harvest in early fall. Bears are frequently seen on the outskirts of the community and at the garbage dump, just a short distance from the edge of town. At this time of year, school is occasionally closed early due to the close proximity of bears (Tyrrell 2006: 194).

While many Inuit residents have attributed the increase in human-bear encounters around their communities to increases in the polar bear population, most polar bear scientists suggest that receding floe edges and longer ice-free seasons have concentrated polar bears in areas where humans are more likely to encounter polar bears (Stirling and Parkinson 2006), and that the Western Hudson Bay population is in overall decline due to the effects of earlier ice break-up on demographic rates (Regehr et al. 2007; Stirling et al. 1999).

In Nunavut, where polar bear hunting quotas are established based on both *Inuit Qaujimaqatunqangit* and scientific expertise (Chapters 4 and 5), such contrasting views and perspectives regarding polar bear health, distribution and abundance under changing climatic conditions in western Hudson Bay have led to controversial management decisions in recent years (Dowsley and Wenzel 2008). Indeed, in 2004, hunting quotas were modified for the five Western Hudson Bay communities, from a total of 47 bears to 56 bears per year, based on Inuit perceptions suggesting an increase in polar bear abundance in the region. This decision was later reversed in 2007, as the quotas were brought down to a total of 38 polar bears per year for the 2007/2008 hunting season,¹¹⁵ and to eight from 2008/2009 onwards, based on newly published scientific evidence documenting a population decline in WHB (NWMB 2007b; Regehr et al. 2007).

The process of setting total allowable harvest levels (quotas) for this polar bear population has led to the mobilisation of numerous actors and knowledge claims through

¹¹⁵ In Nunavut, polar bear hunting tags are allocated for each hunting season, which runs from 1 July to 31 June every year. Local hunters and trappers organisations can, however, decide to open and close the hunt at different dates for their members and visiting sport-hunters.

various consultative exercises and research initiatives. The analysis below will explore this controversial process in detail, and will pay close attention to the role of experts and knowledge through the various forums, consultative exercises, discussions and research initiatives arriving in the wake of this controversy.

7.2.1. A review of the 2004 Government of Nunavut decision to increase polar bear quotas

According to scientific inventories, the size of the Western Hudson Bay polar bear population was estimated to be 1,200 bears in fall 1988 and fall 1995 (Derocher and Stirling 1995; Lunn et al. 1997; PBTC 2007). Based on this information, the average annual harvest of approximately 55 polar bears from this population (in both Nunavut and Manitoba)¹¹⁶ was judged to be sustainable at that time by territorial, provincial and national management authorities. A decision taken in 2004 by the Government of Nunavut to increase polar bear quotas for WHB and other populations based on *Inuit Qaujimajatuqangit* disrupted this state of agreement and triggered discussions of international scope among the various actors involved in polar bear governance.

On 22 December 2004, following a recommendation from the Nunavut Wildlife Management Board, the Government of Nunavut implemented new polar bear Memoranda of Understanding¹¹⁷ (MOU) for managing the 12 polar bear populations under its jurisdiction. These MOU called for a quota increase of 115 bears across Nunavut and nine for the WHB population specifically, based on Inuit observations that polar bear abundance had augmented

¹¹⁶ The responsibility of managing the Western Hudson Bay polar bear subpopulation is shared by two subnational jurisdictions, namely the province of Manitoba and the territory of Nunavut. Prior to 2004, a quota of 55 was shared between Nunavut (28) and Manitoba (27). However, because the Government of Manitoba does not allow polar bear hunting, it temporarily loaned 19 of its 27 tags to the Government of Nunavut, which then attributed 47 hunting tags annually (PBAC 2004).

¹¹⁷ In 2001, the Government of Nunavut initiated a consultative process that led in 2004 to the signing of a series of Memoranda of Understanding regarding polar bear research and management in the territory. As explained in Chapter 4, the 2004 MOU constitute the latest round of agreements between the Government of Nunavut, regional wildlife organisations and local hunters and trappers organisations regarding the management of Nunavut's 12 polar bear populations. The stated objective of these management agreements is to maintain healthy populations of polar bears while ensuring maximum harvest opportunities for the Inuit residents of Nunavut, based on both scientific information and *Inuit Qaujimajatuqangit*.

in some parts of the territory. The official rationale underpinning such a controversial decision can be found in the 2004 MOU. These agreements state that a scientific population inventory should occur every 15 years for each polar bear population in the territory. They also stipulate that, during the seven years subsequent to an inventory, annual quotas should be based on a *conservative harvest rate* set based on scientific information. For the remaining years of the cycle, the memoranda specify, annual quotas should be set according to a *guided harvest rate*, which “incorporates *Inuit Qaujimajatuqangit* perception of trend” (GN 2005).

Thus, as a result of the implementation of the 2004 polar bear MOU, qualitative observations of population trends performed by resource users were formally used to set harvest levels for the first time in the history of polar bear management in Nunavut. As a GN DoE employee states: “In signing the MOU, we agreed to take hunters’ observations into consideration when making quantitative decisions. This was the first time this was ever done. Observations from hunters were used before in various ways, but never in a quantitative context to set up quotas” (Anonymous)¹¹⁸. Given that the last population inventory for Western Hudson Bay had been performed in the mid-1990s, the Government of Nunavut could refer to the strategy deployed in the negotiated agreements to defend a raise in quotas from 47 to 56 for that population, based on Inuit knowledge that more bears were being sighted in and around communities. In order to justify this increased level of harvest, the GN estimated (again, relying on Inuit observations) that the size of the WHB population must be at least 1,400 bears in order for such an augmented harvest to be sustainable, and this is the population estimate then used by the Government of Nunavut for management purposes.

While the 2004 MOU provided much detail about the type of information (i.e. scientific or from *Inuit Qaujimajatuqangit*) that should be used in setting harvest levels at different phases of population inventory cycles, it remained silent with respect to the ways in which

¹¹⁸ This type of reference is used throughout the thesis for direct quotations from interview participants who consented to be credited by name in the results of the study but who preferred not to have their responses directly attributed to them by name.

Inuit observations and knowledge would explicitly become quantified harvest levels and population estimates. Such a use of IQ in decision-making soon became contested as various actors involved in polar bear governance both within and outside the territory began voicing their concerns and criticism. As the statements below illustrate, what lay at the heart of the controversy were not only the increased harvest levels proposed by the GN DoE, but also (and most importantly) the ways in which quotas had been derived.

In March 2004, while the 2004 MOU draft was undergoing final review (and which called for an increased harvest of polar bears, based on IQ), the GN DoE informed the NWMB that members of the Polar Bear Technical Committee¹¹⁹ (PBTC) were concerned over increasing polar bear quotas based on *Inuit Qaujimaqatuqangit* alone, especially given that the IQ used to make this decision had not been thoroughly documented (NWMB 2007b). One month later, in April 2004, the Manitoba Director of Wildlife also expressed his Department's concerns to the GN DoE regarding the proposed increase of allocations for the shared WHB polar bear population, pointing out that the Canadian Wildlife Service¹²⁰ had undertaken a new scientific study that would result in a population estimate by the fall of 2005. The director recommended that no quota change take place until the new estimate was completed. This suggestion was not pursued by the NWMB (and later the GN DoE), which eventually passed a resolution approving a quota increase. Prior to this decision, at a NWMB regular meeting held from 4 to 7 October 2004, some board members had expressed uncertainty, however, with regard to: revising population estimates in light of Inuit testimonies; the manner in which *Inuit Qaujimaqatuqangit* was being represented; and the lack of inter-jurisdictional support for quota increases at the national and international

¹¹⁹ As explained in Chapter 4, provinces and territories have primary responsibility for polar bear management in Canada. However, coordination among the provinces, territories, wildlife co-management boards and the federal government is carried out through the Polar Bear Administrative Committee (PBAC), supported by the work of the Polar Bear Technical Committee (PBTC).

¹²⁰ In Canada, most research on polar bears is conducted in universities and government agencies, including the Canadian Wildlife Service (CWS) (a branch of the federal Department of the Environment, also known as Environment Canada). In Western Hudson Bay, CWS holds long-term data on population characteristics and changes in sea-ice.

levels (NWMB 2007b).

After the GN DoE decision to accept the NWMB's recommendation to increase harvest levels, the tone of criticisms levelled against Nunavut's position became more acerbic. In fact, actors operating at the national and international scales of the polar bear governance process voiced concerns that were accentuated by new scientific findings. Indeed, in February 2005 (only two months after the implementation of quota changes), the Canadian Wildlife Service released a preliminary analysis of data collected in Western Hudson Bay within the context of a three-year research effort to re-estimate the size of the population. The analysis indicated the strong likelihood of a decline for WHB.

Soon after this information was released, the Polar Bear Administrative Committee (PBAC) held its annual meeting, and discussed the use of traditional knowledge and science in the management of polar bears. Again, while no one questioned the fact that Inuit were seeing more bears and expressed concerns for their safety as a result of more human-bear interactions, the use of Inuit observations in quota-setting procedures was debated:

There was an appreciation of the concern of Nunavut residents of increased encounter rates with bears and with increased numbers of problem bears. However, seeing more or encountering more bears does not necessarily mean that there are more bears. Ecological changes can influence interaction rates and these rates can change dramatically between years even if there is no change in population size (PBAC 2005: 9).

Furthermore, PBAC members discussed how the official incorporation of traditional knowledge into the new Nunavut MOU conflicted with the 1973 Agreement on the Conservation of Polar Bears, which calls for "the use of the *best available scientific information* when setting quota for a population [emphasis added]" (Lentfer 1974). Some committee members also criticised quota increases for shared populations (such as WHB) for the sole benefit of Nunavut hunters, without any consultation with other jurisdictions (PBAC 2005).

Additionally, in June 2005, during the tri-annual meeting of the International Union for Conservation of Nature (IUCN) Polar Bear Specialist Group (PBSG) held in Seattle, United States, lively discussions occurred over changes in population estimates based on IQ and increases in quotas in Nunavut. Some PBSG members argued that quotas in Nunavut were raised without examining all the available information, since the international Agreement clearly states that decisions relating to hunting quotas should be science-based (Aars et al. 2006). Participants in the meeting expressed comments supporting the value of and the need to respect Inuit culture and knowledge, while indicating a feeling of discomfort and scepticism with regard to the application of IQ to estimate the size of polar bear populations.

The proceedings of the meeting state:

There was considerable debate of the recent changes in subpopulation estimates and quota increases for some polar bear subpopulations in Nunavut [...]. There was concern expressed about the use of traditional knowledge to increase subpopulation estimates. [...] There was no disagreement with the accuracy of local knowledge and there was no one doubting that hunters are seeing more bears. What was questioned was that an increasing subpopulation is the only explanation for seeing more bears. Western Hudson Bay was raised as an example of where scientific knowledge and local knowledge disagree [...]. One of the main concerns was that because the observations of hunters are not written down, it is difficult to assess changes or compare observations that may be made in a variety of areas by different people in different years and so on. Everyone shares the same conservation goals but harvest levels need to be based on science. It was recommended that user organisations consider developing a format for recording data that might be useful for interpreting ecological trends and other information [...]. There was further concern and reiteration that the [PBSG] was being asked to effectively accept numbers that [it] either had no way to evaluate or had not had the opportunity to review; there was a definite high level of uneasiness (Aars et al. 2006: 19-20).

Finally, in 2005, the United States Fish and Wildlife Service (USFWS) also requested to see how the Government of Nunavut had collected and catalogued traditional knowledge on polar bears in order to inform the territorial government's decision to increase harvest levels. The USFWS wanted to know, among other things, exactly how the GN DoE had set final harvest levels for polar bears in Nunavut, how it had calculated population estimates for

polar bears based on traditional knowledge, and how the territorial government had planned to corroborate the information produced by traditional knowledge about population size and trends and that was used to set quotas (George 2005). However, when asked to produce documentation on how its employees had used traditional knowledge in decision-making, the GN DoE could not do so, since it had not recorded discussions during any of its community consultations on polar bear management (George 2005). Such consultations had been meant to collect traditional knowledge from Nunavut communities so that this knowledge could be incorporated into the memoranda of understanding (MOU) which outline management plans and quotas in Nunavut. According to the GN DoE, the MOU signed in 2004 are the only record of what was said during the community consultations (Anonymous). The polar bear biologist who attended the consultative exercise later explained how traditional knowledge had been used to set quotas: “The number did not come from the Inuit, only the perception that the population had increased. The number was something that we, GN, provided as, ‘okay there must be this many then for it to have increased’. That’s how it went” (NWMB 2007a: 354). According to the USFWS, however, the robustness and transparency of these methods for collecting, documenting and using Inuit knowledge in decision-making did not stand up to close scrutiny (Fig. 7.2.).

The above review of the reception of the GN DoE decision to increase quotas based on Inuit knowledge reveals the degree to which various actors involved in polar bear governance (such as some members of the PBTC, PBAC, PBSG, USFWS and NWMB) viewed this managerial initiative in a critical light. Indeed, while these actors theoretically acknowledged the value of Inuit knowledge in informing polar bear management practices, many showed reluctance to accept its use in practice for establishing hunting quotas and quantitative population estimates, and pointed to inadequacies between this practice and the wider international governance framework for polar bears (i.e. the ACPB). Although none of these

actors questioned the accuracy of local observations (that Inuit were seeing more bears), they nonetheless seriously doubted the validity of the interpretations derived from such observations (that populations had increased).

The material originally presented here is not currently available in ORA

Figure 7.2. The Government of Nunavut was criticised nationally and internationally for quota increases in 2004 (Source: cartoon published in *The Globe and Mail*)

This analysis further illustrates how these actors placed demands on the Government of Nunavut for more transparency with regard to how it used IQ in decision-making, and, in doing so, articulated requests for a ‘satisfying way’ of validating Inuit knowledge claims. For example, some suggested that this could be accomplished through a more systematic, rigorous and organised documentation, analysis and representation of Inuit observations. Hence, the ‘scientisation’ of the use of Inuit knowledge in management was proposed as a potential means of addressing the perceived accountability problem that the GN DoE faced when using undocumented evidence from local Inuit experts in its decision-making. Finally, much of the criticism surrounding the 2004 quota increase for the WHB population was targeted at the fact

that the Government of Nunavut had come to this unilateral decision without adequately consulting other stakeholders; this in turn highlighted pressures in favour of a better-coordinated and more collaborative approach for managing shared populations.

When asked to comment about the GN DoE initiative to increase quotas in 2004, wildlife managers, biologists and representatives from Inuit organisations interviewed in Nunavut all suggested that this event, as well as its subsequent critical reception by various actors clearly illustrated the difficulties they currently face in attempting to include *Inuit Qaujimagatuqangit* in governance processes both meaningfully and convincingly. According to some, the problem of representing Inuit knowledge for decision-making purposes lies at the heart of this challenge. An NWMB employee states:

Quotas were increased with the IQ knowledge of the elders saying that they had seen way more bears and that there were more bears attacking and destroying equipments. But [this decision] later came crashing down on their heads. The fact that it was based on scattered and undocumented evidence explains why this decision was later under attack (Anonymous).

One of his colleagues further explains:

The decision misrepresented IQ in the sense that what was called IQ there was an in-camera meeting with some HTO members. The meeting was not even recorded [...]. This was incredibly disappointing to me because we are struggling to meaningfully incorporate traditional knowledge into our decision-making process (Anonymous).

In addition, while many interviewees agreed that the absence of documentation of Inuit perspectives within the context of the 2004 decision harmed the credibility of the management system in place in Nunavut in the national and international eye, some shared the view that such a ‘mistake’ provided Nunavut co-management partners with a learning opportunity. A wildlife manager summarises:

This decision created a lot of problems for Nunavut. In retrospect, the NWMB and the GN, I think, should have asked for a more detailed traditional knowledge study [...]. The GN and the NWMB have really learned from that. And I think that’s good for traditional knowledge because now we are actually collecting it more systematically. There is also an expectation that when traditional knowledge is used in decision-making, it

has to be something that is used in writing and that has been well collected (88, 27/01/09).

Participants also indicated that this event brought to light the presence of differing levels of acceptance, among actors and institutions, of the usefulness of Inuit knowledge in quota-setting procedures, as well as the existence of unanswered demands for robust and defensible means of using Inuit perspectives in decision-making:

There has been a growing appreciation of traditional knowledge over the years but I think internationally there is still a little way to go for it to be accepted. And again, I think it comes down to the fact that if it's not documented, if it's not there in writing, then how can you gather this whole thing called traditional knowledge and make it available to be used with some rigor behind it? And I think that's the issue at the international level.

– Anonymous, NWMB employee

Canada has nationally moved from saying “it's inappropriate to use Aboriginal knowledge in decision-making” to “you should and you have to do it”. [...] So, generally, people say they should do it but they don't know how to do it and that's probably our problem, too. We would love to know how to solve this and use [the balance between Inuit knowledge and science] effectively, in a manner that shows good and responsible management. But we don't know how. And I don't think anybody has figured that out either. Everybody is trying things, but nobody seems to be able to resolve it.

– Anonymous, GN DoE employee

In sum, this review of the 2004 initiative to increase polar bear quotas in Western Hudson Bay (and other polar bear populations in Nunavut) has revealed the tensions between the territorial government and national and international actors involved in polar bear governance regarding the use of Inuit knowledge in decision-making. This case also highlights the difficulties that co-management partners in Nunavut are currently experiencing as they attempt to find meaningful ways to use both ‘Inuit’ and ‘scientific’ perspectives in managing wildlife at the territorial level. In the sections that follow, I aim to analyse these challenges in further detail by exploring the configuration of deliberative spaces of polar bear governance that were generated while the Western Hudson Bay controversy unfolded.

7.2.2. *Engaging a dialogue: the Western Hudson Bay consultation*

In 2005, the official release of the Canadian Wildlife Service's scientific analyses of the status of the Western Hudson Bay population painted a grim picture for the future of polar bears in the region. According to the data produced by this federal agency, the WHB polar bear population had declined from 1,200 in 1987 to 950 in 2004 (a reduction of about 22 per cent) due to the combined effects of climate change and overharvesting (Regehr et al. 2007). The decline in population appeared to be due to the negative effects of climate warming, which caused ice to break-up progressively earlier, adversely affecting the condition of the bears. Because of their progressively weakening condition, survival rates for cubs, sub-adults and bears 20 years of age and older deteriorated and, when added to the loss of bears through harvesting, probably initiated a decline in total size for the WHB polar bear population. The final CWS analysis further hypothesised that once the population had begun to decline, polar bear harvest in the region was no longer sustainable, but nonetheless went on unchanged, even increasing in 2004; this means that the additive contribution of polar bear harvesting to the reduction in total population size probably accelerated between 1988 and 2004 (PBTC 2007).

The public release of this information carried significant implications for Inuit living in the five communities dotting the coastline and interior of Western Hudson Bay (i.e. Arviat, Whale Cove, Rankin Inlet, Chesterfield Inlet and Baker Lake) (Fig. 4.2.). Indeed, the MOU implemented in 2004 in Nunavut specified that when a population has been reduced by more than 10 per cent, polar bears should not be harvested until the population recovers to a 'target number'. Thus, in theory, the CWS findings should have triggered a complete moratorium on polar bear harvest in WHB. Within this context, the Government of Nunavut initiated a management consultation with HTO representatives from the five Western Hudson Bay communities, the Kivalliq Wildlife Board (KWB) and NTI in order to discuss management

options. The polar bear biologist working for the GN DoE at the time introduced the consultative exercise as follows:

When we did the [MOU] consultations, we heard the population was rising so we thought the population was 1,400 and we increased the quota by nine. In February 2005, CWS provided information from their study. They said their study showed the population in 2004 was 950. The hunters said there was an increase and the research said there was a decrease. That's the management problem and we need to discuss options (Dowsley and Taylor 2006: 35).

On 1 and 2 December 2005, consultation participants met in Arviat to examine the situation. In light of their discussions, it appeared clear that HTOs did not support a reduction in the WHB quota, since most community residents believed that polar bear numbers had increased or at least not declined in their region (Dowsley and Taylor 2006). Moreover, HTO representatives did not want to recommend management action or respond to the suggestion of the GN DoE polar bear biologist for a quota reduction until they had met with their communities to discuss the matter further.

During the consultation, the GN DoE biologist presented scientific information about WHB bears, using a presentation developed by CWS scientists as well as his own harvest data and population simulation results (Dowsley and Taylor 2006). In doing so, he mobilised and summarised scientific claims supporting the conclusion that the WHB subpopulation was declining. Thus, scientific facts found a spokesperson in the GN DoE polar bear biologist. *Inuit Qaujimagatuqangit* also found its proponent: after the scientist's presentation, a representative from NTI introduced the preliminary results of an *Inuit knowledge study on WHB polar bears* he had conducted during the previous summer, at a time when the GN DoE decision to increase quotas based on undocumented evidence had become the target of severe criticism. The study involved a two-day workshop with five elders from the Kivalliq coastal region. After alluding to a perceived asymmetry between the time and resources available to government biologists on the one hand, and Inuit organisations on the other hand, for

gathering and presenting relevant evidence at the meeting, the researcher explained his approach and findings:

The documents prepared by biologists and wildlife people have been done for almost a year. We just recently prepared our IQ information from elders to documents. We interviewed elders last summer in Churchill. [...] The hunters believe that there are more bears than before. In areas where biologists do surveys in Churchill, they should also include Rankin, Chesterfield Inlet and Seal River area. The scientific research boundary is way too small to get an accurate population estimate. The elders say they should do their own research. The meeting we had with elders is still being processed into documents and videotapes. The elders don't know the exact population, but they say the population is stable (Dowsley and Taylor 2006: 39).

While the study outlined discrepancies between Inuit and scientific views about polar bear abundance, it also revealed participants' critical engagement with scientific methods and findings. Their criticism found resonance in the views of HTO board members present at the consultation in Arviat. Indeed, part of the ensuing discussion turned on local concerns that the CWS mark-recapture study failed to cover the entire WHB summer retreat area, and, consequently, that the apparent decline recorded by scientists could be due to a northerly range shift rather than an actual reduction in numbers.

In addition, the research initiative aiming to represent Inuit views about polar bear abundance and ecology in Western Hudson Bay can be seen as a strategy to address perceived asymmetries between the effectiveness of wildlife biologists and managers in utilising scientific knowledge claims about WHB polar bears in decision-making, and the capacity of resource users to mediate their perspectives in defensible terms through managerial circles. As a GN DoE representative stated during the consultation: "Except for this workshop, Inuit knowledge on WHB polar bears is known only from the comments of hunters that live along the Kivalliq coast, including those recorded as part of our meeting transcript" (Dowsley and Taylor 2006: 2). Within this context, a researcher involved in the Inuit knowledge study described his role in this way:

From my perspective, I try to bring in the knowledge that the gatekeepers provide. I ask them to give it to me and then I try to share that in a way that is respectful [...]. Inuit have a lot of knowledge and I am still trying to figure it out but when you live up here for hundreds of years you gain expertise that nobody else has, right? [...] They put numbers like reduction of 22 per cent in Western Hudson Bay because of climate change. Well, what's missing here is the Inuit perspective (Anonymous).

The NTI employee further evoked the challenge of finding appropriate strategies and methods for representing Inuit views alongside scientific views in bureaucratic management procedures, arguing that documenting local perspectives has constituted a step forward in this direction:

That's my question, you know. How do you convince scientists and managers that IQ is valid? [...] Measuring, counting, taking tissue samples, that's a *Qallunaat* way of doing science. And it's really hard to argue against that. But Inuit science is based on observations and hunting, right? The real hunters are observing what is going on out there. But they're not putting it on paper. That's the biggest problem: to put it out on paper so that I can take a look at it and question it. And I know that's a problem so we are starting to get our act together and record [IQ] and put it on paper, those of us that can do it. This way I can bring [that knowledge] to a biologist or at a meeting and say: "Look guys, this is what Inuit are saying." And after that, that's beyond my control if they want to believe it or not. [...] So we are starting to use very effective tools: pen and paper (Anonymous).

In sum, NTI's Inuit knowledge study on Western Hudson Bay polar bears thus not only highlighted discrepancies between Inuit and scientific views concerning polar bear abundance, but also showed how actors who participated in its making engaged in commenting on the scientific methods employed by CWS biologists to estimate the size of the WHB subpopulation. In doing so, Kivalliq elders, in collaboration with NTI representatives, signalled their will, as *concerned citizens* (Chapter 5), to bring contributory expertise¹²¹ (Collins and Evans 2007) to the managerial table. The research initiative can be further viewed as a strategy to address perceived asymmetries between the effectiveness of wildlife biologists and managers in making scientific knowledge claims about WHB polar bears in

¹²¹ In *Rethinking Expertise* (2007), Collins and Evans analyse the meaning of expertise upon which the practice of science and technology rests. The authors define 'contributory experts' as holders of a specialised expertise, which "enables those who have acquired it to contribute to the domain [i.e. in this case, polar bear management] to which the expertise pertains" (Collins and Evans 2007: 24).

decision-making, as well as resource users' capacities to mediate their perspectives in defensible terms through managerial circles.

The consultation performed after the release of scientific information regarding the status of the WHB polar bear subpopulation constitutes an example of a hybrid forum in which actors mobilised expertise in order to deliberate on the course of action to be taken in a situation characterised by conflicting knowledge claims. This consultative exercise suggests that a polarisation of 'Inuit' and 'scientific' perspectives resulted from such discussions; it also highlights the different strategies deployed by representatives from the GN DoE, Inuit and local organisations to engage proactively in the debate and articulate their views.

In the end, the dialogic event we are examining failed to lead to a consensus. Rather, it yielded promises of further consultations with community members at a time when a concrete management initiative was expected from the Government of Nunavut. Indeed, while seven management options were developed and discussed during the consultation (Table 7.1.), HTO representatives decided they would consult further with their communities before supporting any quota change or research initiative. In light of this decision, which would further delay managerial action, the GN DoE polar bear biologist concluded the meeting by pleading for proactive measures:

The world is watching and expecting us to do something. This is a tough issue to deal with. I am a little scared, politically and biologically about what the future holds. We really need to think about this, yet act as quickly as possible so we can keep this management regime working properly (Dowsley and Taylor 2006: 53).

The outcome of the consultative exercise discussed above thus illustrates the presence of tensions between what Barthe and colleagues have termed 'clear-cut' or 'traditional' decision-making and a new mode of iterative decision-making that is likely to emerge through hybrid forums. The latter can best be conceptualised as an adaptive "series of *rendez-vous*"

designed to allow for the production of knowledge and the enrolment of actors necessary in order to address uncertain situations (see Table 7.2.):

The dialogic democracy devised by hybrid forums rests on procedures of consultation that do not sit easily with the idea of sharp, clear-cut decisions. The search for a common world presupposes in fact careful consideration of backward steps, that actors avail themselves of the means to be able at any moment to return to abandoned options, and that evaluations are constantly revised in terms of new knowledge and points of view (Callon et al. 2009: 191).

The material originally presented here is not currently available in ORA

Table 7.1. Management options developed at the Western Hudson Bay consultation

(Source: Dowsley and Taylor 2006: 49)

The material originally presented here is not currently available in ORA

Table 7.2. Two decision models (adapted from Callon et al. 2009: 222)

During the Western Hudson Bay polar bear controversy, the endorsement of such an iterative model may present the advantage of building greater community support for decisions to address a problem of legitimacy within the polar bear management regime in Nunavut, as well as render the use of multiple sources of knowledge possible for dealing with uncertainty. Yet we should not overlook the fact that the idealised expansion of individual decision-making to a network of diversified actors and to the plural of repeated activity suggested by Callon and colleagues can also come at some cost. In the case under study, for instance, delayed action may hinder the credibility of the Nunavut polar bear management system (notably among national and international stakeholders) and thus precipitate a return to a clear-cut decision mode, as subsequent episodes of the Western Hudson Bay controversy will show.

7.2.3. Making things public: the Western Hudson Bay public hearing

Ten months after HTO representatives went back to their respective communities to consult with their members following the meeting held in Arviat, discussions among territorial wildlife co-management partners regarding the status of WHB polar bears were at a standstill. This situation was abruptly brought to an end when the Nunavut Minister of the Environment submitted a request to the Nunavut Wildlife Management Board for a decision on a management response to conservation concerns regarding the Western Hudson Bay polar

bear population. The initiative precipitated the next *rendez-vous* in a series of events aiming to explore and potentially resolve the polar bear controversy in the western part of Hudson Bay.

In October 2006, a Ministerial Management Initiative (pursuant to Section 5.3.25 of the NLCA) was brought before the board, citing a conservation concern resulting from the release of the same scientific information that had prompted the earlier consultation in Arviat, and which indicated that the WHB population had declined between 1995 and 2004 due to the combined effects of climate change and overharvesting. The Government of Nunavut submitted five options to the NWMB for a management response, all of which proposed a reduction in the total allowable harvest for that population. Given the contentiousness of this issue and in order to fulfil requirements set in the NLCA with regard to the promotion of an “effective role for Inuit in all aspects of wildlife management” and the recognition of “Inuit systems of wildlife management that contribute to the conservation of wildlife and protection of wildlife habitat” (GC 1993), the NWMB decided to deal with the ministerial management initiative by organising a public hearing. This type of hybrid forum is the highest form of public consultation held by the NWMB.

On 24 and 25 April 2007, the Nunavut Wildlife Management Board held a public hearing “to consider an adjustment to the total allowable harvest for the Western Hudson Bay polar bear population” (NWMB 2007b: 4). In attendance as official parties at the hearing were representatives from the Government of Nunavut’s Department of the Environment, the Canadian Wildlife Service, Nunavut Tunngavik Incorporated (the corporation that represents Inuit under the NLCA), the Kivalliq Wildlife Board, the HTOs of the five Western Hudson Bay communities (namely: the Arviq HTO, the Aqiggak HTO, the Baker Lake HTO, the Issatik HTO and the Aggigiq HTO), as well as several elders from the Kivalliq region and some members of the public. A complete list of the actors present at the hearing is shown

below (Fig. 7.3. and 7.4.).

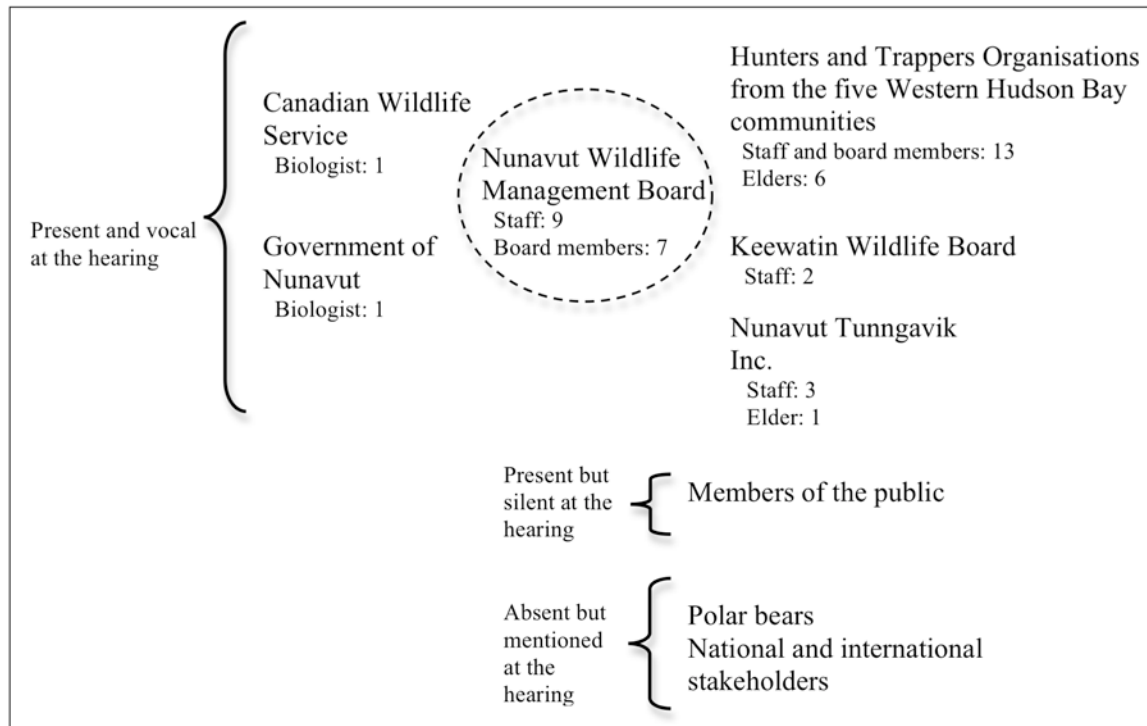


Figure 7.3. Actors¹²² at the Western Hudson Bay polar bear hearing

According to Callon and colleagues (2009), public hearings or enquiries mean to reconcile two objectives by bringing together a range of actors. Firstly, they aim to increase the effectiveness and safety of public decisions through some degree of transparency regarding the reasons and contents of a given project or issue. Secondly, public hearings seek to address problems of legitimacy within democratic societies through the recognition of the right of actors concerned by a project to express their views, and even to object it. In Callon’s opinion, such forums are likely to produce social acceptability that avoids or prevents conflicts, and that leads to a “democratisation of democracy” which in turn brings about “a common world that is not just habitable but also liveable and living, not closed on itself but

¹²² Polar bears have been included in this list of actors, because their agency is not external to the production of knowledge debated at the hearing and because the composition of the identities of researchers, hunters and policy-makers whose livelihoods or professional careers are affected by the fate of this species. Furthermore, even though polar bears are physically ‘absent’ from the event, they are, in some sense, ‘present’ to the constituents who hold the view that *nanuq* can respond to human thoughts, words and intentions in unpredictable ways (Chapter 6), and attribute a powerful agency to this animal.

open to new explorations and learning processes” (Callon et al. 2009: 35).

Callon and colleagues (2009) further suggest that the normative space within which hybrid forums take place can be analysed according to two dimensions: the first dimension relates to the intensity of cooperation among knowledge holders working towards the “exploration of possible worlds” (i.e. the identification of problems to solve and the conceptualisation of acceptable solutions); the second dimension corresponds to the amount of space hybrid forums leave open for the emergence and consideration of new groups and identities in deliberations (Callon et al. 2009: 126). To facilitate this analysis of hybrid forums, they put forward criteria that allow for an evaluation of the organisation and the implementation of these normative spaces, and which enable us to classify dialogical procedures in terms of their ability to foster dialogic democracy or promote the double exploration of *possible worlds* and *identities*. Such criteria (as well as explanations as to how they apply to the case of the Western Hudson Bay public hearing) have been summarised in Tables 7.3. and 7.4. and will guide the discussion below.

The Western Hudson Bay polar bear hearing followed a well-defined structure. The first part of the event consisted in the presentation of opening remarks during which the procedures governing the forum were outlined. This was followed by submissions¹²³ made by the CWS, the GN and NTI. After each submission, all parties¹²⁴ and members of the public were given a reasonable opportunity to comment on or question the information that was presented. Their oral testimonies were taken into account in the decision-making process. Meeting binders were distributed among parties in English or Inuktitut and simultaneous translation was provided throughout the meeting. Following the event, the NWMB held an in-camera session to deliberate. NWMB board members made a decision pursuant to the terms

¹²³ Following certain guidelines, any interested person or body may file with the NWMB a written submission prior to a public hearing.

¹²⁴ Any representative or agent of the Government of Canada or Government of Nunavut, any hunters and trappers organisation or regional wildlife organisation, any Inuk, and any other person or body whom the NWMB considers appropriate can be accorded the status of party at a public hearing (NWMB 2007b).

of the NLCA and forwarded it to the relevant Minister (i.e. in this case, the territorial Minister of the Environment). All materials filed with the NWMB or produced by it were made publicly available, subject to relevant confidentiality or privacy concerns.



Figure 7.4. A public hearing on polar bears in Nunavut (Photo: D. Henri)

At the beginning of the hearing, NWMB’s legal counsel reminded the audience that the notion of fairness underlined the procedures deployed:

[T]he bottom line purpose for the hearing is this concept of fairness. Eventually, when all is said and done, when the NWMB has heard from everyone, a decision affecting Inuit rights is going to be made by the board. And as with any decision, not everyone can be expected to be happy with it, but what I think the NWMB wants to strive for is that everyone comes to the conclusion that the process was a fair one and that fair procedures were followed (NWMB 2007a: 15).

While in theory many procedural provisions were made to ensure the openness, fairness and transparency of the consultative exercise, whether these objectives were attained in practice remains to be scrutinised. If dialogic democracy is above all “a matter of procedures” (Callon et al. 2009: 188), I suggest that the embodiment of such procedures in actors’ thoughts, words and actions is equally important to take into account.

Criteria	Sub-criteria	Value	Explanation
Intensity	Degree of earliness of involvement of <i>contributory experts</i> ¹²⁵ in exploration of possible words	Moderate	<ul style="list-style-type: none"> - The need for better collaboration between biologists and hunters was identified but not formally addressed and was hindered by mistrust. - The level of preparedness and capacity of actors to engage productively in discussions varied.
	Degree of intensity of concern for composition of collective	Strong	<ul style="list-style-type: none"> - Parties present at the hearing represented specific interests and were treated fairly. - NWMB board members are supposed to distance themselves from established interests when making a decision. - The WHB hearing fostered information exchange between biologists and hunters and encouraged the formulation of new research hypotheses.
Openness	Degree of diversity of groups consulted and degree of their independence vis-à-vis established action groups	Moderate	<ul style="list-style-type: none"> - Spokespersons were present from all established co-management partners in Nunavut. - Any party could make a submission to the NWMB. - Procedures were in place to allow an objective inventory of positions and to facilitate their expression in the public space. - Asymmetries were nonetheless present in the capacity of actors to articulate their claims in defensible terms. - The public remained silent throughout the hearing.
	Degree of control of representativity of spokespersons of groups involved in debate	Moderate	<ul style="list-style-type: none"> - Anyone present at the hearing could speak on either on his/her own behalf or on behalf of the group they represented. - A limited amount of people could be present at the hearing given travel/time/costs constraints.
Quality	Degree of seriousness of voice	Moderate	<ul style="list-style-type: none"> - Parties could express themselves and ask questions without any censorship restraint. - Time constraints in discussions were mentioned on various occasions. - The role of elders in discussions was also debated.
	Degree of continuity of voice	Weak	<ul style="list-style-type: none"> - The procedure condensed discussion and exchanges into a strictly framed time and space. - The decision-making process that followed the event involved in-camera meetings among NWMB board members and a veto power from the Minister. - This event did not lead to further consultation and led to a clear-cut decision.

Table 7.3. Degree of dialogism in procedures at the Western Hudson Bay public hearing

¹²⁵ Callon, Lascoumes and Barthe (2009) employ the term *laypersons* here. However, the layperson/expert divide that characterises the vocabulary they employ appears inadequate for the case under study given that knowledgeable (or expert) resource users are involved. I therefore suggest using the expression *contributory experts* (Collins and Evans 2007).

Criteria	Value	Explanation
Equality of conditions of access to debates	Moderate	-While the high cost of travel restricted accessibility to the hearing, provisions were made by the GN and NTI to address this issue. -English and Inuktitut translation of the hearing were offered but difficulties arose in the translation of technical terms from English to Inuktitut. -The recording of the hearing allowed oral testimonies to be taken into consideration in decision-making.
Transparency and traceability of debates	Moderate	-Submissions and responses were available on the NWMB website and the hearing transcript was available upon request. -There was some media coverage of the event. - The decision-making session was held in camera among NWMB board members and staff.
Clarity of rules organising debates	Moderate	-The NWMB provided clear guidelines for hearing participants. -While diverse actors participated to the event, their preparedness, procedural familiarity and expectations varied.

Table 7.4. Implementation of dialogical procedures at the Western Hudson Bay public hearing

Indeed, although substantial efforts and resources were allocated to the translation of oral and written material into both English and Inuktitut, the degree to which various actors could understand the concepts presented, as well as constructively engage within the formal setting of a hearing varied greatly according to their level of experience and preparation. For instance, an elder who was present at the hearing commented:

As a young man, I was starting to learn and to read about the NLCA and it's tough, it's really tough for people that don't know how to read. It's really tough for the elders. And sometimes it's really tough for interpreters and translators. The lawyer from NWMB says it's like this and [NTI representatives] say it's like that. All of it is really technical. It's hard to understand. It's not just hard for me (Anonymous).

In addition, while various hunters and HTO representatives expressed legitimate concerns that the geographic area upon which the scientific research on WHB was based was not comprehensive enough to provide an accurate population estimate, their comments and questions revealed a general misunderstanding of the mark-recapture technique (cf. note 51) commonly employed by biologists to assess the size of polar bear populations. This hindered

their proactive contribution to the discussions. The following statement made by an HTO board member exemplifies this idea: “But if no one has done any survey [...] where the Arviat hunters hunt, how can you say that there’s no polar bears there when you haven’t done any survey there? That’s my question” (NWMB 2007a: 238). Interpreters who had attended public hearings on polar bears also commented to me on how at times, important terminological differences were overlooked during the process of simultaneous translation (e.g. such as the difference between *counting* polar bears and *estimating* their abundance); this created an additional challenge for some actors (especially unilingual Inuktitut speakers) wishing to engage with the scientific research methods presented, and for biologists hoping to convey scientific information clearly.

Furthermore, the ways in which actors evaluated the fairness of the procedures in place varied in terms of their perceptions of the role they ought to have in governance. Indeed, the fact that hearing procedures were designed to ensure a back-and-forth exchange between those who had filed submissions (i.e. the CWS, the GN and NTI) and the other actors present generated a certain level of uneasiness with regard to the position of elders at the forum. Since elders had not made any written submissions, they were relegated to simply asking questions or commenting on presentations, and this conflicted with the expectations held by some participants. A representative from NTI addressed the chairman in these terms:

Mr. Chairman, you said earlier that you would open the floor if the elders wanted to ask questions, and I would like to thank you for doing that. [But] I was thinking that also, because the elders are from around this area, that we could give them the opportunity to voice their experience. We should be asking questions to these people because [...] they are from this area rather than having them asking questions (NWMB 2007a: 214).

An elder from Arviat later echoed this sentiment: “I just want to say that us elders should be asked. And I know that we should be asking questions, too, so that way we can come to a clear understanding and have a unified understanding by having dialogue amongst each other” (NWMB 2007a: 293). Thus, even if a diverse and open cast of actors (including a silent

public) was encouraged to partake in discussions and to learn to play by the procedural rules in order to ensure fairness, this process did not take place without tensions. The knowledge co-production that occurred throughout the hearing clearly came up against asymmetries in the expertise and the level of procedural familiarity among different actors: this may have led to partial ineffectiveness in this democratisation strategy.

The case of the Western Hudson Bay public hearing also speaks to the need for transcend the over-idealistic perception of hybrid forums as spaces of mutual understanding, where actors are moved by the will to construct a common world, and where games of power and rhetoric and the pursuit of group or self-interest can be seen as marginal. Indeed, a careful review of the hearing transcript combined with an analysis of interviews conducted with hearing participants reveals an overwhelming perception that a divisive logic of confrontation pervaded this trial-like consultative exercise. As an NTI representative summarised: “[Public hearings] are not about this whole relationship to wildlife anymore. It’s more like me against you and who is going to win” (80, 09/02/09).

As a result of power struggles, many actors felt that the proof-building process that took place at the forum led, to a degree, to the marginalisation of Inuit views in the face of the scientific discourse or at least revealed the lower epistemic status reserved for *Inuit Qaujimagatuqangit* in deliberations. Various factors may help explain this state of affairs. First, the decentralisation of Inuit voices at the hearing appears to have put such views at a disadvantage, because the various hunters, elders and representatives from Inuit organisations who testified were generally reluctant to draw generalisations from their experiences or to speak in the name of others.¹²⁶ Reflecting back on the event, the chairman commented:

The general feeling of the meeting was that Inuit knowledge was not organised enough to present itself to be understood. Inuit knowledge was

¹²⁶ The tendency among Inuit not to overstate one’s area of expertise, combined with a reluctance to question openly other Inuit experts was something I was able to observe during field research (see also Huntington 1998). Respect for autonomy and tolerance of other experiences (even when contradicting one’s own) underlie these attitudes (Briggs 1970).

not well represented because of lack of preparation. The Inuit did not have a spokesperson to speak on behalf of Inuit. Different people talked about what they believed in and stated that what they were saying did not speak for Inuit as a whole (61, 19/01/09).

In addition, whereas in theory equal opportunities were provided for all actors to file submissions and raise questions or comments during the hearing, it appears that both the organisation and content of the oral and written testimonies provided by local resource users and NTI representatives impeded the straightforward incorporation of such perspectives into decisions. Biologists from the GN DoE and CWS, on the other hand, were far more effective at translating the scientific information they provided into precise policy recommendations. A senior government manager shared this view:

We go to scientists and ask: “How can we use your Western science information to make informed wildlife management decisions?” And they tell it. They say: “Here is the information and I recommend a quota of ten animals for that population because there are 100 in there and they reproduce at a rate of four per cent or whatever.” They can explain it scientifically but if you go to holders of [traditional knowledge] and you say: “How can you use this information to make informed wildlife management decisions?” Well, it’s definitely not so clear (Anonymous).

An NWMB employee further stated:

One of the issues we face is to interpret and apply [*Inuit Qaujimaqatuqangit*] into our decisions. At our public hearings, we record oral testimonies [...]. So I went through the whole transcript and took out most of what I believe was the IQ information that I thought was relevant to the decision-making process. [...] The amount of time you need to go through 600 pages of public hearing transcript is big. When you read science, it’s essentially already interpreted. You just have to look for inconsistencies and then interpret them. I would not say that checking references and running models is easier than interpreting IQ but I would say that it’s a much more straightforward process. [...] It would really help if IQ was documented properly [...] and already interpreted to some extent because I would feel horrible if I didn’t interpret IQ correctly. But I guess it’s better to do it the way I do than not doing it at all (Anonymous).

Thus, even if procedures are in place for an equal appreciation of Inuit and scientists’ perspectives, within the context of NWMB public hearings, the use of such procedures by hunters, elders and NTI representatives was clearly not optimised in the case of the Western

Hudson Bay forum. According to various NWMB employees and board members, this situation partly relates to a research capacity issue:

IQ has not always been documented so it's hard to convince the scientific people. It's been hard to convince them that IQ is important like science because it's not written. [...] Inuit observations have been repeated to scientists but not taken into account unless they are properly documented. Scientific requests have more teeth because they are written. We need to document Inuit knowledge so that they realise that we are not as simple as they think we are.

– Pitaa Awa, NWMB board member (51, 05/06/09)

There is nothing stopping Inuit from throwing a hundred thousand documents in there. But they simply don't have it [...]. Yes, there's a lot more work that should be done about documenting IQ.

– Anonymous, NWMB employee

However, and more importantly, many informants believed that the very framing of the event, which called for a decision on *how many bears* could be harvested in the region (i.e. the setting of a total allowable harvest level), limited the input that Inuit knowledge could provide. Indeed, some GN and NWMB employees alike viewed the inclusion of qualitative observations of polar bear abundance performed by Inuit as inherently problematic for setting a quantitative allowable harvest:

I know the Government of Nunavut, as well as the NWMB and a lot of other wildlife organisation in Canada have a very difficult time in defining how to use traditional knowledge and how to use it in a way that is defensible [...]. The key issue is that people want [decision-makers] to use [it] in the setting, for instance, of quotas on species. But that's very difficult [...]. There are two obstacles. First, how do you defend [...] your harvest management system at the international level? [...] Then, how do you use that when people say that there are more animals? Scientific information, however, can provide that information to us. Scientists do surveys and, using specific methodologies, can provide an accurate portray of the amount of animals out there. Based on that, we can set a quota that is defensible (Anonymous).

Some also perceived the decision-making process around quota setting as poorly conducive to the use of Inuit values:

In my experience, I don't believe that the ethical aspect of IQ has been incorporated too much into any of our decisions [on total allowable harvest rates]. I think that most of our decisions are mostly based on science or some of the IQ research and information presented at hearings and I don't

believe that we are making decisions based on ethics [...]. When the [NWMB] makes decisions, I think it's hard to incorporate values and ethics (Anonymous).

In sum, Inuit voices raised at the Western Hudson Bay hearing did succeed in reframing the debate, not only as an ecological problem, but also as a matter of public safety, Inuit rights and animal welfare (Chapter 6), thus contributing to a substantive exploration of possible worlds. Their concrete input in the setting of a TAH (a matter that ultimately laid at the heart of the consultative exercise), however, remained limited or constrained, according to the limited modes of expression and kinds of opinion accorded legitimacy.

Yet another way in which the conduct of the Arviat public hearing uncovered power dynamics revealing the lower epistemic status occupied by Inuit views as compared to scientific perspectives in current polar bear governance relates to discussions that took place around the validation of Inuit expertise through the use of scientific methods. Information exchanges between wildlife biologists and resource users led to the formulation of the following hypothesis: if local observers were seeing more bears, and scientists were noticing a subpopulation decline, perhaps this could be due to a distributional shift in the subpopulation, leading biologists to underestimate bear abundance in the region. At the hearing, this possibility led to a push for an additional mark-recapture survey that would extend the area from which the 2005 CWS population estimate had been derived:

I mean, we find this not just puzzling but troubling, because we believe the Inuit knowledge and we believe the CWS survey and they're not consistent. And that's why we want to do the follow-up survey [...]. Maybe there's been a significant increase or a significant shift to that population and there's a scientific explanation that will reconcile the two perspectives (NWMB 2007a: 355).

The initiative was encouraged by the GN DoE polar bear biologist but also welcomed by representatives from NTI: "The problem is that I know you guys [GN representatives] are under a lot of pressure to make a decision. Scientifically speaking, what Inuit are saying hasn't been discredited or confirmed, scientifically speaking. So, therefore, [Inuit] are asking

the scientific community: “Come on guys, let’s extend the survey!” (NWMB 2007a: 358). In this case, the need for validating Inuit observations via scientific means before incorporating such views into decisions reveals a widely shared notion among managerial circles: in order to be defensible and valid in the eye of a majority of stakeholders involved in polar bear governance at the territorial, national and international levels, decisions regarding hunting quotas should, above all, be based on the methods and logics of science (cf. 2004 decision to increase polar bear hunting quotas based on IQ). As a representative from NTI commented retrospectively during an interview: “We knew that for the GN and the international community to believe what Inuit were saying, we needed to be backed by science. That’s partly why we agreed to the extended survey in Western Hudson Bay” (Anonymous).

After exploring some of the ways in which the organisation and implementation of dialogic procedures at the Western Hudson Bay public hearing led to asymmetries in the power of various actors to engage proactively in shaping and framing which problems to solve and how to conceptualise acceptable solutions, another dimension of this hybrid forum should be analysed: the space the forum leaves open for the emergence and consideration of new groups and identities (Callon et al. 2009). The diversity of actors present and the openness of this space to the public shows for the hearing’s potential for addressing problems of legitimacy within the wildlife governance regime in place in Nunavut, by recognising concerned actors’ rights to express their views. Yet a closer look at how this event unfolded reveals a winding path towards the building of a collective where actors mutually recognise the value and legitimacy of their respective expertise, and where issues of mistrust between knowledge holders can be overcome to produce greater social acceptability for decisions.

In fact, the tone and content of the discussions occurring at the Western Hudson Bay polar bear hearing exposed an ongoing trust issue between biologists and Inuit resource users. In fact, some hunters and elders present at the forum challenged both the validity of scientific

claims and the credibility of the producers of such information by alluding to the fact that wildlife biologists lacked experience on the land, demonstrated a weak level of engagement with hunters, and lived and worked far from the species they claimed to be knowledgeable about:

The government scientists made a mistake because they were not raised up here like us. They have to utilise the knowledge of Inuit [...]. People who say that the polar bears are declining in numbers don't know anything, because they don't live up here. We who have lived here all our lives know that (NWMB 2007a: 50-51).

Before I ask a question, I would like to make a comment that the Keewatin Wildlife Board should perhaps invite [the CWS polar bear biologist] to go boating to show him the polar bears. I'm sure he can learn a great deal from that, rather than sitting in a little cabin over there. [...] [The biologist] should travel with somebody during the summer. He's going to see lots of polar bears. And it would be appropriate for him to travel with a hunter (NWMB 2007a: 336-337 and 346).

Moreover, many community representatives expressed the feeling that scientists do not hold Inuit expertise in high regard because of Inuit lack of academic credentials and the limited extent to which Inuit observations have been thoroughly documented:

Even the Inuit knowledge can be the same as [the knowledge of] scientists because [Inuit] live in Nunavut. But because Inuit don't have a certificate, even though they have a great knowledge, they're told that, because you don't have a certificate and you don't have it in writing, we don't believe you (NWMB 2007a: 80).

We have been living and travelling through these areas for a long, long time. The knowledge is passed around down from generation to generation. Knowledge of 100 to 200 years to the current date may be kept by several families. The knowledge is proving that Inuit have ruled these lands for thousands of years. [Inuit knowledge], of course, has to be considered truly the same as biologists' accounts. Our mandated bodies with management plans and other necessary structures in place and the Inuit knowledge equal to a Ph.D. must be considered seriously (NWMB 2007a: 27).

Mistrust between parties present at the hearing hindered, to a degree, the building of a collaborative space open to a meaningful examination of the actors' multiple experiences and identities. Indeed, tensions between the criteria used to validate the contributions of various actors were palpable during the event; if some viewed the use of formal qualifications as a

leading criterion of expertise with scepticism, others felt uneasy with the thought of considering uncredentialed experience or qualitative observations alone as a means of crafting robust decisions. According to an employee from NTI, a lack of mutual understanding and respect between hunters and biologists lies at the core of this situation:

A lot of the times, what it comes down to is when do the scientists and the hunters have an opportunity to get to know each other. They are usually separated by a language barrier. Then, they are also separated by scientists being in helicopters or in Twin Otters [a type of airplane commonly used for polar bear research] or in an office. The only time most hunters see biologists is at meetings. The scientist does not know the hunter, has no appreciation of his knowledge or his experience and vice versa. [Hunters and biologists] are strangers (76, 23/01/09).

Furthermore, most of the public hearing participants interviewed agreed that this type of consultative event alone could not address a relational issue with deep roots. A representative from NTI who had been involved in multiple hearings and meetings since the creation of Nunavut stated:

There needs to be an avenue not in a public forum such as the public hearing. At a hearing, there is a beginning and an end [...]. It's hard. Scientists get to the table and they don't agree with each other and then you bring hunters that have totally different ideas. It whacks everybody that is already whacked, right? From my perspective, I think what Inuit want is for [wildlife biologists] to come up here and explain themselves [...], to go to the communities and explain themselves. I don't think they will get shot up or anything like that so I encourage [biologists] to come up to Nunavummiut and explain themselves to the hunters. This way Inuit can [ask]: "Ok, why are you saying this?" Because Inuit have a really tough time understanding their conclusions, what they are saying (Anonymous).

Once again, it appears crucial to relate the existence of such fault lines in relationships between resource users, wildlife biologists and managers involved in wildlife governance in Nunavut to a legacy of top-down managerial practices and a historical association, in the minds of many resource users, between '*Qallunaat* science' and a culture of restrictions on harvesting (see Chapter 6). For instance, this history of resentment permeated an exchange between the CWS biologist and the chairman of the hearing:

[CWS biologist] – I am here to learn, as well. I am not just here to tell people what I think [...]. I am here to learn as well as to talk, and I would welcome comments and criticisms.

[Chairman] – [...] If we look back to the events in the 1950s, we were no longer allowed to harvest polar bears with cubs, and our fathers were no longer allowed to harvest cubs because CWS created those laws. In those days, Inuit did not have the right [to say] whether they disagreed with the prohibition of harvesting cubs [...]. And in the early 1970s, there was a quota system made [...]. Back then, the GNWT created that law, and hunters were not given an opportunity to make their concerns known and be involved. [...] But today, [...] Inuit are now being involved and given an opportunity to speak on the management of wildlife. [...] And you have been given an opportunity to make your remarks. As I stated, I am very happy to see that because in the past we never had that opportunity (NWMB 2007a: 32-34).

In addition, the fact that Inuit hunting rights had been unduly restricted in the past as a result of ‘scientific mistakes’ certainly contributed to damaging the credibility of scientific information in the eyes of some resource users. As a GN employee trained in wildlife biology points out:

[Where does mistrust between hunters and scientists come from] is a complex question but one of the factors is our mistakes. Scientific mistakes. [...] And we don’t admit to that much, to the limitations of our knowledge. Our science tends to be pretty damn confident about itself [...] but it’s proven wrong quite often and that’s the nature of science. Theories die violent deaths at the hand of the next one. So, I guess hunters have learned that we are not perfect [...]. Most recently, what happened was that estimates from [the Department of Fisheries and Oceans] on bowhead whales were proven wrong.¹²⁷ And the hunters looked at that and they said: “You have been restricting our ability to hunt that species for a long time based on the fact that you were just wrong” (Anonymous).

In summary, the above analysis of the performance of the Western Hudson Bay public hearing sheds a critical light on the normative suggestion that dialogic procedures we see in hybrid forums may lead to a ‘democratisation of democracy’ through an open exploration of knowledge and a fluid mobilisation of identities. Clearly, the WHB event fostered the participation of a range of actors in a discussion that broadened the problematisation of the

¹²⁷ In a submission made to the NWMB in December 2007, the federal Department of Fisheries and Oceans acknowledged that it had drastically underestimated the size of the eastern Arctic-western Greenland bowhead whale (*Balaena mysticetus*) population, thus reversing years of concern regarding its status and validating claims made by Inuit hunters that the population had increased (CBC 2008).

issue at hand, not only to address a ‘bear number’ problem, but also to debate notions of public safety, Inuit rights, animal welfare, scientific enquiry and uncertainty. In this process, learning took place as hunters, elders, biologists, wildlife managers and interpreters discussed the temporal scale of local observations, the practice of mark-recapture analysis or optimal design for scientific surveys. This learning process did not lead, however, as Callon and colleagues suggested, to “the discovery of mutual, developing, and malleable entities that are led to take each other into account and thereby transform themselves” (Callon et al. 2009), even though the hearing marked a radical break from past top-down wildlife management practices (Chapter 4).

While this type of forum mobilised procedures that were meant to encourage fair, open and transparent exchanges between diverse actors, the degree of dialogism surrounding this process appeared to be further impaired by asymmetries in the parties’ abilities to engage productively in discussions, due to their respective levels of preparedness, procedural familiarity and expectations. The actual running of the Western Hudson Bay hearing also highlights the degree to which confrontational power dynamics in hybrid forums can yield struggles for authority and legitimacy among actors; such a dysfunctional hybridity polarises perspectives and divides parties instead of enabling them to participate in building a common world where boundaries between knowledge claims and identifies become blurred. The hearing’s chairman summarised the content of the discussions that had taken place in the following terms, highlighting tensions amidst actors in two camps:

The Government of Nunavut indicated that the number of bears in the Western Hudson Bay population is declining, that the current level of harvest is unsustainable and that the quota should be reduced. [...] The position of NTI, KWB and hunters is that over the past several decades they have noticed increases in numbers of bears, that [bears] are becoming more aggressive and therefore represent a public safety issue, and that their geographic distribution has changed so that more bears are occurring in areas not surveyed by CWS (PBAC 2007: 6).

Furthermore, the decision-making process¹²⁸ following the public hearing was mostly performed according to a ‘traditional’ mode of decision-making (cf. Table 7.2.) rather than an iterative one: this somewhat limited the event’s dialogic implications. In fact, on 30 August 2007, the GN Minister of the Environment accepted and then implemented NWMB’s recommendations on the total allowable harvest for the Western Hudson Bay polar bear subpopulation. These consisted primarily in a phased reduction in harvest and provisions for further scientific and IQ research: the WHB quota was brought down from 56 to a total of 38 polar bears per year for the 2007/2008 hunting season; the need to organise a future IQ study was highlighted; and an additional scientific survey was planned for fall 2007 to explore areas of the WHB population that were not covered by previous CWS surveys. If no new significant information were to become available as a result of this research initiative, the Minister also decided that the TAH for WHB would be further lowered to eight bears from 2008/2009 onwards. Such a two-step phased reduction in harvest was eventually implemented.

The responses that flowed from Western Hudson Bay communities following the implementation of such significant quota reductions further highlight how the holding of a public hearing failed to produce social acceptability for this decision at the local level. The measures that emerged from this strategy of democratisation, which arguably aimed to address problems of legitimacy characterising a ‘top-down era’ in wildlife governance in northern Canada, led to sharp criticism by various individuals and organisations. The Kivalliq Inuit Association (KIA) and the Kivalliq Wildlife Board, for instance, wrote formal letters to the GN protesting against the new quota. During an interview with the Nunatsiq News (a

¹²⁸ Following a public hearing requiring a decision, the NWMB holds an in-camera decision-making session. After having ‘impartially’ and ‘thoroughly’ considered all available information, board members make a decision pursuant to the terms of the NLCA, either consensually or by vote. The NWMB then forwards its decision, which may not be made public, to the relevant Minister. Within 60 days (for the Government of Canada) or 30 days (for the Government of Nunavut), the Minister must accept the decision and notify the NWMB in writing or give the NWMB reasons in writing for rejecting the decision. Where the Minister rejects the initial NWMB decision, the NWMB must reconsider it in light of the written reasons provided by the Minister and make a final decision, which may be made public. The Minister may in turn accept, reject or vary NWMB’s final decision (GC 1993). In all cases, the relevant Minister can thus theoretically exert its veto power over any NWMB decision. This is, however, rare in practice.

newspaper with wide readership across the territory), Jose Kusugak, KIA's former president, predicted that wildlife authorities would have a hard time enforcing a quota based on inaccurate science:

I can assure you, because of the population of polar bears breaking into cabins, going into towns, that stupid law is going to be broken many times in the next few years [...]. We're suggesting that, being a stupid law, it ought to be challenged because the [polar bear] count is not valid as far as the people are concerned (cited in Windeyer 2008).

This situation illustrates how hybrid forums need to be interpreted within a wider sociopolitical context, if we wish to make an accurate assessment of their potential for fostering dialogic democracy.

7.2.4. Talking back: the Kangiqliniq HTO research project

You need resources to collect IQ, you need commitment and set time aside to do it properly. Other than that you do disservice to people [...] I am tired of lip service about IQ. Everything is done for science. It's applied, it's documented, it's recorded, it's put into place, it's made into law. I want IQ to have the same value, legitimacy and impact as science does. Science and IQ need to be at the same level [...]. There is a lot of work to be done in documenting IQ. I think to some extent some people have tried it but it's not there yet.

- Anonymous, NTI employee

In April 2009, over a year after the implementation of the second phase of quota reductions in Western Hudson Bay, I discussed the aftermath of this event with Norman Ford, the secretary manager of the Kangiqliniq Hunters and Trappers Organization, in Rankin Inlet. In his view, the consultation, public hearing and additional scientific survey that were performed prior to and after the decision to decrease the Western Hudson Bay TAH did not satisfy most local residents: "People from all communities were very displeased with the quota going down [...]. Communities were not informed properly and were not involved in the decision to decrease the quotas [...]. The meetings were very rushed and a lot of members were not informed" (103, 12/03/09). The HTO manager also pointed to strong local dissatisfactions with regard to the scientific survey realised in 2007, which resulted in further

quota reductions. In fact, although the research initiative was performed based on suggestions made by various Inuit hunters that the WHB polar population might have shifted northwards, the secretary manager described how a rift remained between local hunters and polar bear biologists:

The Kivalliq communities really went with the survey thinking that it would substantiate Inuit IQ. We thought: “Ok, let them do the survey and they will find out that the population is there.” We thought the survey would back the Inuit knowledge that bears are increasing, not decreasing. But when the survey was completed, it was not thorough enough¹²⁹ to substantiate the IQ view [...]. But the conclusions of the survey were not accurate [...]. The survey was supposed to take two weeks and it was done in four days. And the [hunter] who was with the biologists was from Arviat and the people who were supposed to help the biologists were supposed to be from all [western Hudson Bay] communities to help with the survey. And the [hunter] who was in the plane during the survey said that when they got to the polar bear populated area, they stopped. That’s why the science is not accurate (103, 12/03/09).

During conversations held with hunters from western Hudson Bay communities, many had similar stories to tell. A representative from NTI formulated his criticism of the 2007 survey in this way:

The research was supposed to go on for two weeks but in reality they only did a three-day study between Chesterfield Inlet and Churchill. That’s when they went by helicopter and they had one person participating from Arviat. But we were not happy with that research at all. We cannot even call it research. It was just a glimpse over three days. They did not get an expert from Rankin Inlet. We were upset about that. Altogether, the outcome of this project was just upsetting. They are trying to call it research and use it into decisions (Anonymous).

Interestingly, one of the polar bear biologists involved in the project had a different perspective to share:

Basically, we started the survey at the boundary of the WHB population, which is just south of Chesterfield Inlet. We worked down from Chesterfield Inlet to Churchill and caught bears [...]. We budgeted for two weeks based on weather or engine failure. You know, you always budget for more than what it’s going to take just in case something happens. If people took those two weeks that we budgeted for in the proposal as if we were

¹²⁹ During the survey conducted by the GN DoE in 2007, polar bears were found marked in much the same proportions as bears marked in the traditional study area, demonstrating that the population had not been undersampled.

supposed to be out there flying for two weeks then there is a big misunderstanding here. We said we would need maximum two weeks of money to do this work because of weather or bears or whatever. But we were able to survey this coastline in four days and we took an HTO member from Arviat with us [...]. We also flew inland areas where [local hunters] said that there were polar bears (60, 09/06/09).

The presence of such conflicting narratives and the fact that many hunters felt disconnected to or misinformed about the consultative exercises and decision-making processes involving the WHB polar bear population thus highlights how a certain lack of communication (especially between the GN, the NWMB, HTOs and local communities) currently hinders the building of collaborative and trustful relationships among wildlife co-management partners in Nunavut. For example, a NWMB employee pointed out a communication breakdown between community representatives and local HTOs within the context of NWMB public hearings and meetings:

We provide an opportunity for the HTOs right down to the community level to participate in decision-making. That's good and there has been a lot of improvement there [...]. But the next step is the level of participation of the people who are being sent as community representatives to meetings [...]. A lot of the people who go to [NWMB] meetings often never report back so that the communities don't know what's going on and what happened, what decisions were made. I cannot tell you how often this is happening but that's something that is definitely still a concern because I see it with our representatives right from our community here. There are some people that come to hearings and never say a word. And when they go back to their community the local HTO says: "Was there a meeting? Because our representative hasn't said anything." You know they all have a binder at the meeting. But some representatives just dump their binders and never take it back with them and never share the information. So there is still that concern (Anonymous).

In the case of the Western Hudson Bay polar bear controversy, it appears that the frustration experienced by local hunters and community members in the wake of quota reductions was not only a product of local dissatisfaction with regard to the power (or lack thereof) of Inuit voices in quota-setting procedures, but also partly the result of poor communication practices between co-management partners.

In 2009, this type of situation led some board members from the Rankin Inlet HTO to

Carried out in partnership with the KWB, NTI and other Kivalliq HTOs, the project aimed at producing additional information that would be relevant to polar bear management, but that would also address a wider credibility crisis between the Government of Nunavut and the western Hudson Bay residents who had little faith in the accuracy of the scientific information used by GN DoE employees. The Kangiqliniq HTO manager, who had been leading the research initiative in collaboration with other HTO staff and board members, described its goals as follows:

We want to go back to the GN and say: “We surveyed last year and there were so many bears and this year there was so many bears.” And just between the two or so there will be an increase or a decrease. And then either scientific information or traditional knowledge will give us an idea of where the population is really at (103, 12/03/09).

To reassess the population status of WHB polar bears, project leaders would rely on interviews with polar bear hunters and elders, as well as on an aerial survey (a scientific method that reflects local preferences for avoiding the chemical immobilisation of bears) including representatives from each of the five participating communities.

However, after carefully reviewing Kangiqliniq HTO’s proposal, NWMB employees did not appear fully convinced by the rationale and research strategy presented. Indeed, even though the IQ component of the project appeared to be a priority for the board,¹³¹ the NWMB decided that it required “more precise methods” (Anonymous) that would be employed by researchers prior to making a decision on the request for funding. In fact, while the NWMB actively seeks to encourage community-based research initiatives and projects that can contribute to using Inuit knowledge in decision-making (notably through the NWMB Studies Fund), staff and board members also want to ensure that the studies they fund will lead to the production of robust and defensible results grounded in the use of adapted methodologies. A comment from a GN DoE employee shows how this concern pertained to the project led by

¹³¹ NWMB’s 2007 decision concerning the total allowable harvest for WHB included a recommendation to conduct “an IQ survey (with NWMB funding) of polar bear movements” for that polar bear population (NWMB 2007).

the Rankin Inlet HTO at that time:

I think community-based monitoring is really legitimate but [...] I just don't know how the Government of Nunavut or the NWMB will be able to use [the information produced by the Kangiqliniq HTO] for a TAH recommendation for the WHB area. In deciding whether to fund this proposal, it would be important for the NWMB to critically review the proposal and determine if the HTO is aware of what potential results can or cannot be and what potential methods can or cannot be accomplished [...]. I think this could be a great way for people to learn about science, learn about what goes into it and learn about the money, learn about how to write a proposal and really feel ownership over a survey [...] but I also think that it's really important to do this research in a way that is defensible, in a way that government can use because the GN cannot just use [a statement] like: "We saw 15 bears that day and five bears that day" (Anonymous).

While funding opportunities do exist in Nunavut for local organisations to undertake community-based research aiming to contribute Inuit perspectives to the management of wildlife, some conditions obviously apply. In addition to demonstrating some research skills through the writing of a feasible proposal, funding applicants must also be well enough versed in bureaucratic language and culture to meet administrative requirements. However, the extent to which capacity issues currently bar community actors from fully accessing NWMB funding and producing knowledge that is more acceptable to managerial networks remains a matter of concern among wildlife management partners. In spite of the support provided at times by NWMB staff to help local project leaders with research design, two employees from this organisation explain:

[The NWMB] provides a certain amount of support [to community members] to make sure that people can put their proposal together. But if they don't have an HTO manager that can write well what are they going to do? They are left out of everything. [...] Another problem that I saw was following through the project and writing a report. I think that sometimes these forms we use are meaningless. Why are we doing it that way? Why don't we do it in another way (Anonymous)?

One of the challenges that communities may face in applying for funding is to find someone to lead a project in a community where some of the expertise is not always there [...]. And even if you receive some of this funding a lot of the reporting requirements are often further complex. If you don't have any experience with it and if you don't meet these funding requirements then this will affect your funding [...]. I think there is a need

to develop some expertise within the communities and to find some way to support communities to [lead and manage community-based projects] (Anonymous).

An employee from the Nunavut Inuit Wildlife Secretariat (NIWS), an organisation designed to build administrative capacity at the HTO level, further states:

We have been encouraging HTOs to try and do [research] because there is all that money sitting at the NWMB and they have the right to apply for it but we don't have the capacity to help them [...]. I wish we had time to help all HTOs [with community-based research initiatives] but at this time we don't [...]. To me, the NWMB is not being flexible enough. To me, they should just be applauding that HTOs are doing something on their own (81, 17/03/09).

In the case of the research initiative led by the Rankin Inlet HTO, project leaders who had no formal training in research clearly encountered some challenges in framing and organising a methodologically rigorous project that would meet NWMB guidelines. In fact, the aerial survey component of the project was eventually dropped, and NWMB funding was granted for the IQ portion of the research on the condition that the Kangiqliniq HTO provide a clear and sound description of the methods to be employed for collecting and documenting Inuit knowledge. In July 2010, approximately a year and a half after the HTO initially submitted its proposal to perform an independent reassessment of the status of the WHB polar bear subpopulation, project leaders were still in the process of designing a questionnaire and discussing the methodology to use. When compared to the ways in which wildlife biologists mobilised financial and human resources to produce scientific evidence throughout the Western Hudson Bay polar bear controversy, the slow and laborious pace of the progress of the Kangiqliniq HTO polar bear research project speaks to the existence of ongoing asymmetries between the capacities of actors to assert their identities, express their knowledge as evidence, and mediate their claims through wildlife governance networks in Nunavut.

7.3. Conclusion

At a time when climate change has been identified as a significant threat to polar bears (PBSG 2009), management practices in Canada have become the object of increased scrutiny among various governmental and non-governmental bodies. In light of the above mapping of the Western Hudson Bay polar bear controversy, it appears that both the science of a population decline in this area and the direct use of Inuit knowledge in quota-setting procedures have, over the last few years, catalysed multi-scalar discussions, consultative mechanisms, decisions and research initiatives. As this controversial process unfolded, it led to the enrolment of a growing cast of actors who, in speaking for and about *nanuq* or *Ursus maritimus*, brought the production of 'scientific facts', the representation of *Inuit Qaujimajatuqangit* and the making of policies inspired by both under close scrutiny. Far from being external to the dynamic actors-network mobilised through this controversy, polar bears have played a central role in this web of relations among people, animals and things. Indeed, the agency of this nonhuman actor entered the picture as soon as its behaviour and capacities found resonance in the words, thoughts and actions of the hunters, biologists and wildlife managers whose research activities, decisions or livelihoods have been affected by the fate of this iconic animal.

Throughout this chapter, the exploration of the roles played by human and nonhuman actors involved in the configuration of deliberative spaces of wildlife governance generated within the context of the Western Hudson Bay polar bear controversy has offered a few insights. First, it highlights the ways in which various policies, funds and consultative mechanisms currently function in Nunavut to promote Inuit participation in wildlife management. These include: the use of *Inuit Qaujimajatuqangit* in the setting of polar bear harvest levels; the existence of funds to support community-based research; and the holding of public hearings in which specific provisions are made to encourage the inclusion of Inuit

views. The case of the controversy that crystallised in Western Hudson Bay, however, does reveal how a divide between ‘Inuit’ and ‘scientific’ perspectives resulted from implementing such initiatives.

In my view, this polarisation reveals some of the limitations and difficulties that co-management partners in Nunavut are currently experiencing in fostering meaningful participation by Inuit in decision-making. In fact, the above analysis illustrates how the following factors presently hinder the making of a dialogic governance process that considers Inuit views along with scientific ones across the territory: these include varying levels of acceptance, among local, territorial, national and international actors and institutions, of the validity and importance of Inuit knowledge in wildlife management; the articulation of unanswered demands for robust and defensible means of representing Inuit perspectives and fostering their use in decision-making; asymmetries between the financial and human capacities of various actors to produce and use scientific and/or Inuit knowledge in decision-making; the deployment of consultative mechanisms and hybrid forums mostly framed and dominated by the logics of scientific and bureaucratic management; and, finally, ongoing trust and legitimacy issues among stakeholders.

For example, my analysis of the Western Hudson Bay public hearing reveals that while procedures mobilised through this hybrid forum aimed to encourage fair, open and transparent exchanges among diverse actors, the event’s degree of dialogism appeared to be lessened by asymmetries in its parties’ abilities to engage productively in discussions due to their respective levels of preparedness, procedural familiarity and expectations. The actual running of the hearing also highlights how confrontational power dynamics leading to struggles for authority and legitimacy among actors can yield a dysfunctional hybridity that polarises perspectives, divides parties and fuels mistrust instead of yielding participation in a ‘democratisation of democracy’ that occurs through an open exploration of knowledge and a

fluid mobilisation of identities (Callon et al. 2009). Furthermore, the case of the Kangiqliniq HTO research project and the 2004 decision to increase the polar bear quota based on *Inuit Qaujimagajatuqangit* in Nunavut show a growing (yet mostly unanswered) demand, among stakeholders and institutions involved in polar bear governance, for finding culturally adapted, transparent and defensible means of collecting, validating and using Inuit knowledge in decision-making. These two initiatives also highlight how territorial decisions regarding the polar bear harvest must now carefully balance local concerns alongside national and international interests and positions, since managerial action may potentially trigger a complex range of social, ecological and economic consequences, especially at a time of uncertainty associated with climate change.

In sum, as Natcher and colleagues argue (2005), while the conservation of wildlife populations constitutes the tangible ecological goal of co-management, this participatory process also pursues the objective of developing a governance system that builds trust and allows for problem solving, information exchange, deliberation and learning among participants (Berkes 2009). In fact, if trust does not develop among co-management partners, this strategy of fostering more inclusive and democratic governance may not only fail to occur, but actually backfire into a fractious battle between actors directly involved in the process (e.g. representatives from NTI, the NWMB, the GN, local HTOs and some resource users), but also between citizens and their representatives. The Western Hudson Bay polar bear controversy illustrates this tenuous trust balance at work, and why wildlife co-management in Nunavut has achieved only limited success to date as mistrust and power struggles remain between actors in spite of the development of various procedures meant to foster the inclusion of multiple identities and sources of knowledge in wildlife governance across the territory.

In this case, the long-standing division between hunters, biologists and wildlife

managers with regard to the status and size of the Western Hudson Bay population clearly calls for collaborative research involving resource users, biologists and policy-makers, sustained communications between management partners, and capacity building initiatives, notably at the community level.¹³² This analysis further indicates that the way to foster trust, mutual respect and genuine exchange of knowledge is to build a process for the co-production of knowledge, not only through hybrid forums, but through hybrid ways of building knowledge bases and interpreting evidence into policy. At the end of this chapter I suggest the potential of this path, while noting that it remains blocked due to mistrust and the risk that exists of opening up certain ways of knowing to the less initiated or the unaware, lest such ways of knowing be undermined, de-legitimized or subordinated.

The next chapter will now turn to the second case study explored in this thesis and, in doing so, shall illustrate how researching and managing eiders in Nunavut constitutes a process whose dynamics stand in stark contrast to the controversial and heavily politicised business of governing polar bears.

¹³² These are ideas are further discussed in Chapter 9.

Chapter 8. Tales of becoming an eider duck: managing *mitiq* and the politics of eider knowledge on Southampton Island

8.1. Introduction

Today, after a lengthy and lively conversation about the many challenges facing polar bear governance in Nunavut, I asked a representative from NTI about whether the topic of eider ducks had ever been raised as a matter of concern within his organisation. As it has generally been the case when I discuss this subject with wildlife managers working in Nunavut, his answers to my questions were brief. Common eiders were indeed “on the radar” as he (and others) had been made aware of some conservation concerns for this species. However, in his view, their management remained relatively uncontroversial and uneventful within the territory. The manager indeed laughingly recalled an episode which spoke to the untroubled yet persistent presence of eiders in the lives of Nunavummiut:

We once tried to set up a rationale to assess the importance of various species for communities. We evaluated if different species were available in each community, if they were used for food, for clothing or if there was any commercial value to them. Then we took all the different species and tried to figure out if some species were more important than others [...]. So we did all of this and when the conclusion came with sat back with our mouths open... Eider ducks had scored the highest! We said: “But how could eider ducks score so high?” And here is the reason: every community has eider ducks and eiders are not only meat but also eggs and down, and there is a commercial aspect to the species which is the collection of down. So eiders cover all the areas. They are in every community. There is no other species like that.

Common eider ducks (Latin: *Somateria mollissima*, Inuktitut: *mitiq*) are currently an important source of meat, eggs and down for subsistence hunters in northern Canada. They have had a longstanding cultural significance for the Inuit who have developed a detailed ecological knowledge of the species¹³³ (Gilchrist et al. 2005; Nakashima 1988, 1990, 1991).

¹³³ Two related eider species can be found within Nunavut borders, namely the common eider and the king eider (*Somateria spectabilis*). This chapter focuses more specifically on the common eider, a species which arguably plays a larger role in Inuit subsistence than king eiders given their abundance and accessibility. In fact, unlike king eiders, common eiders are often concentrated in large numbers during their annual cycle, which facilitates

While common eiders currently hold minor importance in Inuit subsistence economy relative to wild game mammals such as seals, caribous, belugas, narwhals and polar bears (Randa 1993), they nonetheless represent the most hunted duck species in Nunavut (NWMB 2004) and, as the above anecdote suggests, they are also a significant component in the cultural landscape of Nunavummiut. In addition to carrying significance for the Inuit, *mitiq* has, for years, captured the interest of and generated activities from another group of people across the Canadian Arctic: wildlife biologists. Common eiders are, in fact, generally well studied, mainly because of their large numbers and profile, their economic importance and their significance in subsistence and sport harvests across their distributional range (Milne and Dau 1976; Reed and Erskine 1986).

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Figure 8.1. Male common eider duck (left) and female with ducklings (right)
(Photos: H.G. Gilchrist)

Knowing and managing migratory eider populations in Nunavut therefore involves a constellation of actors embedded in different cultural traditions, and who share common yet sometimes conflicting interests in the species. Drawing on a series of interviews conducted with biologists specialised in eider ecology, wildlife managers, Inuit hunters and field research assistants, as well as on ethnographic research conducted at East Bay (a scientific

their harvest. They have also been the subject of conservation concerns over recent years in the eastern Canadian Arctic.

field station where research on king and common eiders has been performed since 1996) and in the neighbouring community of Coral Harbour,¹³⁴ in this chapter I will introduce the second case study that is discussed in this thesis. It aims to analyse how knowledge claims about eiders are produced, transposed and translated into managerial initiatives through various spaces of eider governance in Nunavut and beyond. The spaces considered include formal ones, such as NWMB and HTO meetings, as well as more informal ones, such as a field research site, a school, a radio show and the homes of Coral Harbour residents. While doing this, I will pay close attention to Inuit perspectives on and participation to the making of eider science in Nunavut. I will also explore the agency of human and nonhuman actors in this process, thus helping address the anthropocentric bias that has often characterised the study of politics and governance. As Latour states:

Only through an extraordinary shrinking of the meaning of politics has it been restricted to the values, interests, opinions and social forces of isolated, naked humans [...]. [By] letting facts merge back into their dishevelled networks and controversies [...], politics then becomes what it has always been [...]: the management, diplomacy, combination and negotiation of human and nonhuman agencies (Latour 1999b: 229).

In tracing the political life of common eiders through various spaces, considering their active role in the formation of a heterogeneous governance assemblage, and linking local phenomena to broader national and international policy-making processes and structures, I will show how researching and managing eiders in Nunavut constitutes a process whose dynamics stand in stark contrast to the controversial and heavily politicised business of governing polar bears. I will demonstrate that the current configuration of spaces of eider governance remains largely unchallenged and uncontested by wildlife biologists, Inuit hunters and co-management partners within the territory, and argue that this situation can be explained by a range of factors, including: the low level of interference of eider research and migratory bird regulations with current Inuit harvesting practices and values; the secondary

¹³⁴ See Chapter 2 for methodological details.

(and overall declining) importance of eiders in Inuit cultural ecology; and, importantly, the motivation and work ethics of individual biologists who have played a pivotal role in creating collaborative relationships and in fostering communication with Inuit communities. Indeed, the account that follows participates in the examination of science as a technological, but also as an ethical practice (Osborne 1998; Weber 1946).

This case study illustrates that the tensions and debates depicted in the polar bear case study cannot be extrapolated to represent how Inuit participation, science and policy are played out in the governance of all animal species in Nunavut. On the contrary, the following pages will illustrate that the modalities of their entanglement across spaces and scales of wildlife governance vary depending on what is discussed, where and by whom.

8.2. Becoming an eider duck

Prior to describing the agency of biologists, Inuit hunters, wildlife managers and nonhuman actors in the dynamic configuration of an eider governance network in Nunavut and beyond, some comments are in order regarding how common eiders have become objects of scientific attention, human consumption, regulatory intervention and cultural tradition. Indeed, the quality of engagement by various actors in eider research and management may vary according to the meaning each attaches to the species. Therefore, the ecology of the common eider, the role that this animal has played in Inuit cultural ecology, and how it progressively became a matter of scientific interest and managerial scrutiny in the eastern Canadian Arctic will be now briefly presented.

8.2.1. An overview of common eider ecology

The behaviour and reproductive ecology of the common eider constitute keys to exploring the positionality of this species in governance networks, since they appear to be

central to an understanding of this animal's agency in guiding the subsistence practices of Inuit, the activities of scientific researchers and the initiatives of wildlife managers in Nunavut and elsewhere.

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Figure 8.2. The distribution of common eiders (*Somateria mollissima*) in North America
(Goudie et al. 2000: 1)

Somateria mollissima is a large marine duck that inhabits Arctic and Subarctic coastal habitats and has a circumpolar distribution (Fig. 8.2.). Some populations are entirely sedentary, while others exhibit both regular migratory movements and facultative movements induced by advancing pack-ice and freeze-ups in the northernmost portion of their winter range. In the eastern Canadian Arctic, spring migration begins in March and extends to mid-June. Fall migration takes place mostly in October and November (Abraham and Finney 1986). A colonial nester, the common eider is well known for its gatherings of tens to thousands of nesting pairs during the summer months on coastal islands, islets and sometimes on narrow, low-lying points of land, as well as on islands in freshwater lakes and river deltas

near marine waters. Breeding chronology varies from year to year, depending on weather conditions, and can be delayed up to a month in years with late spring thaw in the Arctic (Robertson 1995). Clutches average three to five eggs, which hatch approximately 26 days after incubation begins. The nest, built by females, is mostly made of down preened from the hen's belly (Fig. 8.4.). *Somateria mollissima* feeds mainly on molluscs and crustaceans from the sea bottom in shallow areas where wave action and tide result in relatively extensive intertidal zones (Goudie et al. 2000).

Common eider duck populations appear to be vulnerable to decline, as this species is long-lived, has delayed reproductive maturity and low rates of reproduction (Palmer 1976). Moreover, common eiders are often concentrated in large numbers during their annual cycle, which makes them sensitive to disturbance and environmental catastrophes, such as diseases, oil spills and overexploitation by hunters. These factors combine to render *Somateria mollissima* populations vulnerable to anything that contributes to the mortality of adult breeding birds, and populations may be slow to recover once conditions improve (Turner et al. 1996).

Two out of the six or seven recognised subspecies of common eider can be found on Southampton Island, where the East Bay field research site and the community of Coral Harbour are located.¹³⁵ These subspecies are, in order of importance: the northern common eider (*S. m. borealis*), which nests primarily in Ungava Bay and Hudson Strait and winters along the coast of the Gulf of St. Lawrence, Newfoundland and southwest Greenland (Goudie et al. 2000; Fig. 8.1.), and the Hudson Bay eider (*S. m. sedentaria*), which breeds and overwinters within the confines of Hudson Bay and James Bay (Nakashima and Murray 1988).

¹³⁵ The king eider is also observed migrating and occasionally nesting in this area. Inuit from Coral Harbour sometimes harvest it.

8.2.2. Inuit and eiders

Given the common eider's wide distribution and accessibility to Inuit hunters and the fact that its meat and eggs are good sources of food, while its down and skin provide unique materials for clothing and tools, *mitiq* has held longstanding cultural significance for Inuit (Reed and Erskine 1986; Nakashima 1991).

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Figure 8.3. Past and present Inuit uses of the common eider (Photos: D. Henri (left, right) and D.J. Nakashima (centre))

In past centuries, all parts of the eider duck were used by Inuit for food, clothing, tools and medicinal purposes. These uses varied across groups and geographical regions, mostly depending on the availability of resources for subsistence, but also on individual and group preferences (Henri 2007; Oakes 1990). The range of tools and clothing crafted from eider products was diverse: eider wings were sewn together and used as whisk brooms (Fig. 8.3.); secondary wing feathers were used to clean out gun barrels and as arrow fletching; skins were used to make slippers, accessories and parkas¹³⁶ (Fig. 8.3.); down was dipped in old fat from a *qulliq* (a fat-burning stone lamp) and saved to make candles; and eider fat was rubbed onto the surface of *kamiit* (seal skin boots) to prevent them from drying. In addition, eider feet

¹³⁶ A century ago, when the caribou population on the Belcher Islands perished, Ungava Inuit living on these islands quickly switched from caribou to eider to meet their basic needs. They developed remarkable skills at making eider parkas (Nakashima 1991; Oakes 1990).

could be used as water containers for short hunting trips or as toys for children; the leftover bits of neck trimmings and tails served as hand towels; and the duck's preening glands were used for fox bait. Different parts of the eider also served medicinal purposes: tufts of down were used to clean oozing wounds, and down-covered skin was used as pads and to clean newborn babies (Oakes 1990). In the past, nearly every edible part of the eider duck was eaten. Oakes (1990) reports that even the clams found in the ducks' oesophagus could be inspected and, if a clam was still tightly closed, it was opened and eaten as well.

Among the many uses that Canadian Arctic Inuit have made of the common eider, some remain part of their lifestyles today. In fact, hunters currently harvest¹³⁷ the species for its meat, eggs and down, and many Inuit women make down-filled parkas, trousers, mittens, hats and blankets, as well as various accessories from the eiders, including brooms and toys for children (Fig. 8.3. and 8.4.). Inuit concentrate their harvesting activities and observations of the species at different periods of the year and in various locations, depending on their patterns of eider use and travels, and according to the seasonality of eider ecology (Henri 2007). In the eastern Canadian Arctic, egg and down harvesters generally observe common eiders during the months of June and July: the nesting period, when eider eggs and down are readily available. Harvesting expeditions generally last a day (and occasionally two or three), and are often conducted within the context of wider hunting trips, mostly within a 150-kilometre radius of the harvesters' community of residence. Eider hunting activities may take place year round but are especially concentrated in the spring and fall, during migratory seasons. Spring is when most hunting is done: the ducks are generally sought in May and June, up until the start of the nesting period. Hunters generally gather at the floe edge during day trips. In the fall, hunters report starting their activities in October, as soon as ducklings reach the appropriate size (Nakashima 1991; Henri 2007).

¹³⁷ Traditionally, Inuit hunted eiders with *bolas* (leather straps attached to rocks on their ends). Today, shotguns and occasionally traps are used.

The material originally presented here is not currently available in ORA



Figure 8.4. Eider down found in nests (left) is today used by Inuit as filling in parkas (right) and accessories (Photo: H.G. Gilchrist (left) and D. Henri (right))

Little information is available on historical trends in Inuit harvesting patterns of eider duck (Reed 1986). During the early 1980s, approximately 14,000 birds were taken annually by Aboriginal hunters in the eastern Canadian Arctic (Reed and Erskine 1986; JBNQNHRC 1988). Recent harvest data from the Nunavut Wildlife Harvest Study¹³⁸ (NWHS) suggest that between 5,000 and 8,000 common eider ducks are reportedly harvested annually in Nunavut (NWMB 2004). For this survey, harvest data were collected monthly from Inuit hunters for a total of five years, covering the harvest months from June 1996 through May 2001. Table 8.1. synthesises the information gathered through the NWHS on eider meat, eggs and down harvests for Coral Harbour, two neighbouring communities (by way of comparison), and for all Nunavut communities. In sum, Inuit use of *mitiq* has had a long history which has led to the accumulation and transmission of a specialised body of knowledge that still thrives in Nunavut, and which is rooted in the ecology of a species whose agency has played a central role in guiding Inuit subsistence practices.

¹³⁸ The Nunavut Wildlife Harvest Study was mandated by the Nunavut Land Claims Agreement to determine harvest levels and patterns of Inuit use of wildlife species in order to aid in the management of wildlife resources across the territory.

Community	Inuit population ¹³⁹	Number of hunters harvesting each eider product			Mean annual harvest over five years (June 1996 to May 2001)		
		Meat	Eggs	Down	Eider ducks ¹⁴⁰	Duck eggs ¹⁴¹	Eiderdown ¹⁴² (number of nests)
Coral Harbour	775	7	6	5	19 ¹⁴³	50	87
Cape Dorset	1,130	89	63	2	787	3,241	10
Sanikiluaq	631	106	21	10	2,451	233	171
All Nunavut communities	22,947	938	363	21	6,000	7,909	314

Table 8.1. A synthesis of harvest information on eiders for Coral Harbour, Cape Dorset, Sanikiluaq and all Nunavut communities from the Nunavut Wildlife Harvest Study (Source: NWMB 2004)

8.2.3. A short history of eider science in the eastern Canadian Arctic

While the relationship between Inuit and common eiders has evolved over the course of many centuries, it was not until the late 1990s that the species became a subject of lasting scientific interest in the eastern Canadian Arctic. As described in Chapter 4, throughout the 19th and 20th centuries, the Canadian state, its civil servants and citizens progressively turned ‘wildlife’ and ‘migratory birds’ into areas of federal, provincial or territorial responsibility and intervention, and identified these as objects that ought to be scientifically researched and managed. During this process, a regulatory and managerial infrastructure involving multiple actors was gradually put into place for migratory bird conservation in Canada and internationally. This governance network, in turn, established the proper preconditions for the

¹³⁹ Population estimates for 1999 provided by the Evaluation and Statistics Division, Department of Intergovernmental Affairs, Government of Nunavut.

¹⁴⁰ The harvest of king and common eiders was not differentiated in the NHWS.

¹⁴¹ Most of the ‘duck eggs’ appear to be from eiders. For eggs, most harvest estimates seem too low: it appears that many hunters were not reporting their egg harvests (NWMB 2004).

¹⁴² For eiderdown, harvest estimates appear to be much too low, because down is generally harvested while eggs are collected. It is felt that many hunters did not report this harvest. It is not unusual for hunters to gather down from at least 100 nests (NWMB 2004).

¹⁴³ In Coral Harbour, eider harvests were judged to be low; the community felt that a more accurate estimate would be between 70 and 80 ducks per year (NWMB 2004).

Canadian Wildlife Service to formulate the need to allocate human and financial resources for eider research and management in the eastern Arctic (Chapter 4).

During the mid-1990s, in response to growing concerns regarding the status of circumpolar eider populations, the Circumpolar Seabird Working Group (CSWG) of the Program for the Conservation of Arctic Flora and Fauna (CAFF)¹⁴⁴ began drawing up a Circumpolar Eider Conservation Strategy and Action Plan. CSWG members (from all Arctic countries except Sweden) produced a final strategy in 1997, which provided a brief overview of the biology, ecology, and population status of the four recognised eider species.¹⁴⁵ It described the major threats to eider duck populations in the circumpolar Arctic and suggested a series of action items to address management and conservation issues. The *Canadian implementation of the CAFF Circumpolar Eider Conservation Strategy and Action Plan* produced by the CWS Seabird Committee identified the northern common eider population breeding in the eastern Canadian Arctic and wintering in southwest Greenland as a 'high research priority' given concerns over harvest levels for this population:

It is widely acknowledged that information regarding eider ecology and population dynamics in Canada is severely lacking. The logistical and financial difficulties associated with conducting research in remote areas where eiders breed, migrate and over-winter has contributed to the lack of information [...]. In west Greenland, recent colony surveys [...] suggest that dramatic declines have occurred in eastern Arctic eider populations (Boertmann and Mosbech 1996). [...] The effects of the Greenland winter harvest on king and common eiders that originate in Canada is not known [...] and may not be sustainable. Insufficient information exists to determine the population trends of northern eiders in the Canadian Arctic (Gilchrist 1999: 2-5).

In the wake of such calls for more attention to the northern common eider, the CWS Prairies and Northern Region Sea Duck Team further outlined research priorities for this subspecies:

¹⁴⁴ The Program for the Conservation of Arctic Flora and Fauna (CAFF) was established to address the special needs of Arctic species and their habitats. It forms one of the four programmes of the Arctic Environmental Protection Strategy, adopted in 1991 by Canada, Denmark/Greenland, Finland, Iceland, Norway, Russia, Sweden and the United States. Since its inaugural meeting in Ottawa in 1992, the CAFF programme has provided scientists, wildlife managers, conservation groups and indigenous peoples with a distinct forum in which to tackle a wide range of Arctic conservation issues at the circumpolar level (Anonymous 2000).

¹⁴⁵ In addition to the common and king eiders, two other eider species exist, namely the steller eider (*Somateria spectabilis*) and the spectacled eider (*Somateria fischeri*).

Despite that [northern common eiders are] harvested during the breeding season by Aboriginal subsistence hunters (adults, egg and down collection), and in winter in Greenland and Newfoundland, there is little information regarding population trends and harvest levels. Consequently, further assessment of range, abundance and population trends is required. Future research should estimate components of population dynamics and identify factors causing variations in adult survival and recruitment (including harvest). Studies using satellite telemetry that identify important staging, molting, and wintering areas, should be initiated (Anonymous 2000: 15).

As discussions over the status of eiders unfolded at the international, national and regional levels, the Canadian Wildlife Service was progressively identified as an institutional actor that should take a leading role in filling perceived gaps in the existing scientific knowledge about eiders breeding in northern Canada. In other words, conservation concerns articulated through a wide governance network provided an impetus for the CWS to launch the first long-term programme for the study of eiders in the eastern Canadian Arctic. A CWS employee who has played a pivotal role in setting up and developing this research initiative describes its beginnings:

I was hired in 1995 right out of university. In Yellowknife at the time, where I worked with the Canadian Wildlife Service, the eastern Arctic was understudied [...]. The eastern Arctic supports a tremendous number of marine birds, sea birds and sea ducks [...] but there was no one researching sea ducks at all in the eastern Arctic. No research had been done since the early 1980s, mid-1970s. So there was twenty years of nothing and there was a concern that the eider ducks that were breeding in Nunavut were migrating to Greenland where there is a very heavy sea-bird hunt [...]. But there had been no one confirming whether those were Canadian breeding birds, how many eiders existed in the Arctic, whether the harvest was sustainable and so on. But there was a growing conservation concern and Inuit in Nunavut felt that the number of eiders was going down and Greenland Inuit also felt that the number of eiders there in the winter time was going down [...]. So when I was hired the first thing my supervisor asked me to do was to write a scoping document to review the conservation issues, the information that existed and the information needed [about eiders] and then from that develop a five to ten-year research strategy [...]. So after that review strategy it was clear that we didn't know how many eiders there were, we didn't know where they migrated to and so on [...]. So my thought was to establish a multi-faceted research programme which included very focus scientific studies at one or two locations as well as broader geographic surveys and also banding and these types of things (9, 23/07/08).

Thus, until the late 1990s, biologists knew little about the demographic status, migratory patterns and breeding ecology of common eider populations living in the eastern Canadian Arctic. This situation, combined with growing international concerns regarding the status of circumpolar eider populations, prompted the Canadian Wildlife Service to deploy new research efforts. In 1996, the organisation established a research station at the eider colony of East Bay, on Southampton Island, Nunavut, to study the demography and reproductive ecology of common and king eiders (CWS 2008). This station has been in operation ever since. Lying within the boundaries of the East Bay Migratory Bird Sanctuary,¹⁴⁶ the field station was set up on Mitivik Island (64°01'47''N, 81°47'17''W), a small 24-hectare island which supports the single largest known colony of common eiders¹⁴⁷ in the Canadian Arctic (Fig. 8.5. and 8.6.). The research site is located about 40 kilometres east of Southampton Island's only community, Coral Harbour, whose residents occasionally come over to the East Bay area to pick eider eggs and down or to perform other harvesting activities.

A project leader describes the influence of not only human agency, but also eider behaviour and ice movements, in the careful choice of this field site:

After developing a research strategy, the next step was to look for a field site. Logistically, working on an eider colony [...] may be one of the most challenging logistical studies ever undertaken in the Arctic. Eiders typically nest on small offshore islands that are surrounded by moving pack-ice and generally too small to land a plane or camp without disturbing the birds. So studying eider colonies often requires boating and yet the ice can be bad throughout the summer. And the other thing is that eiders nest often on small islands and archipelagos, so when you study one island intensively

¹⁴⁶ Established in 1959, the East Bay Migratory Bird Sanctuary serves as a stopover and breeding ground for many migratory bird species. In addition to constituting an important breeding ground for common eiders, East Bay also supports king eiders (*Somateria spectabilis*), Canada geese (*Branta canadensis*), Atlantic brant (*Branta bernicla*), herring gulls (*Larus argentatus*), black guillemots (*Cephus grylle*), red-breasted mergansers (*Mergus serrator*) and snow buntings (*Plectrophenax nivalis*). The island also attracts both land and sea mammals. Caribou (*Rangifer tarandus*), Arctic fox (*Alopex lagopus*) and polar bears (*Ursus maritimus*) frequent the area and the island itself during the breeding season. Bearded (*Erignathus barabatus*) and ringed seals (*Pusa hispida*) are present year-round, and beluga whales (*Delphinapterus leucas*) and walrus (*Odobenus rosmarus*) are found in the bay after ice break-up (Mallory and Fontaine 2004).

¹⁴⁷ The colony primarily supports the northern subspecies (*borealis*) of common eiders, although individuals of the Hudson Bay subspecies (*sedentaria*) also nest in small numbers.

and you do a lot of banding in the archipelago to access a subpopulation, it's very difficult to determine whether a female banded at one site has moved or whether it's dead when it's absent [from a colony], because eiders females can move from one island to another. So I was looking for an island that was large enough to camp on and accessible by boat and air, for a colony that was isolated from other islands, geographically, and for a colony that was large enough in terms of the number of birds to sustain a study [...]. I talked to other biologists and I read the literature that existed and it came down to this little island that had been visited once. Incidentally, it was in a migratory bird sanctuary that had originally been established for snow geese preservation and conservation. The island was 'discovered' by scientists accidentally and they estimated approximately 3,000 to 4,000 breeding pairs. It was last visited in 1981-1982. It was on Southampton Island [...] so I was familiar with the local Inuit community. I had good reports and relationships with them and so very early in 1995-96 I visited the island for the first time [...]. The East Bay Island had all the logistical components we needed. A lot of thought and consultation was put into this because it was going to be a tremendous investment in terms of human resources, money and time to establish this project. We wanted to make sure that we were in the right place (9, 23/07/08).

The material originally presented here is not currently available in ORA

Figure 8.5. The East Bay Migratory Bird Sanctuary and field research site (Source: Mallory and Fontaine 2004: 59)

Each summer since it was set up fifteen years ago, the East Bay field research site has hosted numerous biologists, students and field assistants who have collected data and generated scientific information that has contributed to discussions about eider management at the territorial level and to the design of national and international eider management strategies (Gilchrist 1999; CSWG 1997). Throughout the years, the research activities taking place on Mitivik Island have given rise to a growing actor-network comprised of actors who have taken part in producing, negotiating and communicating scientific knowledge claims, and translating these into managerial initiatives in Nunavut and elsewhere. The above introduction to the ecology of the common eider, the significance of this species to Inuit and the history of eider science in the eastern Canadian Arctic (and on Southampton Island more specifically) have now set the stage for taking a further look into the objects, subjectivities, power dynamics and communication practices that have characterised an evolving governance network. During this exploration I will discuss local perspectives on the making of eider science and Inuit participation in the governance of this species in Nunavut.

8.3. An ethnography of engagement in eider research and management

What has eider research and management meant for those who harvest, study or regulate the use of this species in Nunavut? What roles have scientific information and Inuit expertise played in governing this animal across the territory? What does this say about the extent to which participatory promises for co-management (Chapter 4) have (or have not) been met in the case of eider governance? To answer these questions, I have tracked the migration of common eiders through spaces where the fate, behaviour and ecology of this species are discussed and where various actors engage in a range of research, harvesting and regulatory activities. This section will therefore analyse observations and testimonies gleaned at the East Bay field research site, at the 3rd North American Sea-Duck Conference held in

Quebec City in 2008, in the offices of civil servants and representatives from Inuit organisations in Iqaluit, as well as during HTO meetings, school presentations, a radio show and interviews held in the houses of eider harvesters in the community of Coral Harbour.

8.3.1. Doing eider science on Southampton Island

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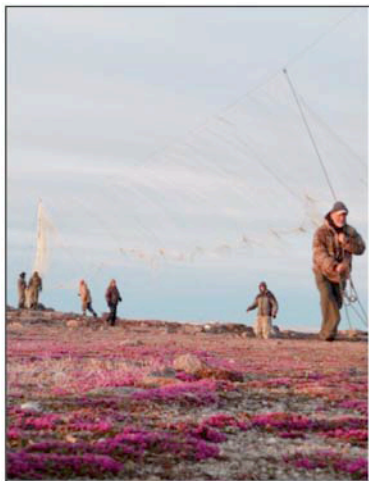
Figure 8.6. Map of the East Bay research site (left), the island camp (top right), Mitivik Island (right centre) and the mainland camp (right bottom) (Map: P. Smith; photos: H.G. Gilchrist (top and bottom) and D. Henri (centre))

On 6 June 2008, around the same time as the first eiders arrived on Mitivik Island after their annual spring migration, a Twin Otter aircraft landed on a small gravel ridge still partially covered in snow close to the East Bay mainland camp¹⁴⁸ (Fig. 8.6). The plane carried equipment, food, as well as a crew of six people comprised of biologists and field assistants,

¹⁴⁸ In 1997, a second research camp was set up at East Bay. The East Bay mainland camp (Fig. 8.6) is located on the south shore of the bay, on the limestone plains of Southampton Island. In addition to support research activities on the mainland, this camp serves as a staging area for field crews travelling to and from East Bay Island, since the airstrip used by both field crews is located near the camp.

including myself. Our role was to help with eider banding and data collection at the East Bay field research site during the months of June and July. We used a snowmobile and sled to travel five kilometres from the Mainland Camp to the Island Camp in order to join a team of four researchers. These had arrived ten days earlier to set up camp before the arrival of eiders, whose migratory and daily behaviour would dictate the timing of research activities on the island throughout the summer. A member of the field crew explains:

In May we have to arrive before the birds get here to establish camp and to put everything in place. The reason for doing that is that we want to minimise our disturbance to birds. One of our busiest times in the field project is immediately upon the arrival of the eiders, when most of our banding and physiological work takes place. So we can't be also putting up tents at the same time [...]. Some years the birds are cooperative but it's not always that way. We are at the whim of birds here (3, 12/06/08)!



The material originally presented here is not currently available in ORA

Figure 8.7. Flight net (left), the banding station (centre) and a canvas tunnel leading to an observation blind (right) on Mitivik Island (Photos: H.G. Gilchrist (left, centre) and D. Henri (right))

On Mitivik Island, a cabin, one shed and a few small tents make up the camp (Fig. 8.6.). Both the single-room sleeping cabin and storage shed are permanent structures while the laboratory tent, food storage tent and equipment tent are set up each year when the field crew arrives. Seven plywood observation blinds constructed around the island allow researchers to

conduct observations while hidden from view; to access these blinds without causing disturbance to the colony, researchers crawl through above-ground canvas tunnels leading to the blinds (Fig. 8.7).

In the summer of 2008, the research activities and tasks of the East Bay field crew were numerous and diverse, only interrupted by short periods of sleep, rest and inclement weather, as well as by the occasional visits of polar bears to the island. From 13 June to 26 June, common and king eiders were caught in flight nets¹⁴⁹ and banded¹⁵⁰ as they arrived on the island (Fig. 8.7.). The nets were usually opened from 4 am to 11 am (when eiders are most active), and sometimes again in the late evening. Female eiders and ducklings were trapped and banded as they left the island using a funnel trap from 14 July to 28 July. In 2008, a total of 547 common eiders, 13 king eiders and 180 ducklings were banded. When bringing eiders to the banding station, the field crew also took multiple measurements from each bird (e.g. wing chord and bill, head and tarsal length), as well as various blood and tissue samples (e.g. blood, feather and mucus samples) that were later analysed in specialised laboratories (Buttler 2009; Gilchrist and Black 2008). In addition, five permanent plots were established around the island to document eider-nesting activities such as male attendance, incubation, hatch and predation. These were monitored twice daily from observation blinds, with high-powered spotting scopes and binoculars. During the field season, various initiatives were also taken to investigate how avian cholera, a disease present in the colony since 2005,¹⁵¹ was

¹⁴⁹ The flight net used at East Bay is 20 feet tall and 300 feet long. It is made of a fishing net suspended by metal shower curtain rings to an aircraft cable (Fig. 8.7.).

¹⁵⁰ Birds are banded in a way that allows individuals to be identified after release. Information on individuals re-sighted helps determine survival estimates based on gender, age and race, as well as migration routes, wintering grounds, population trends and causes of mortality. Between 1996 and 2008, over 5,800 adult common eiders, 2,000 ducklings and 225 king eiders were banded at East Bay. Band recovery reports have been received from researchers, hunters and bird banders, indicating that eiders banded on Mitivik Island have been recovered in the eastern Arctic, eastern and Atlantic Canada, and Greenland (Gilchrist and Black 2008).

¹⁵¹ In 2005, the first signs of avian cholera were observed in East Bay. Again in 2008, cholera was present on the island and a total of 1,470 dead common eiders were counted (about 32 per cent of the breeding population) (Gilchrist and Black 2008). Avian cholera is a naturally occurring disease affecting birds, and especially wild waterfowl (Friend 1999). An infection due to the bacterium *Pasteurella multocida* passes from one bird to another. In the wild, avian cholera is often suspected when large numbers of dead ducks or geese are found within a short period of time, when few sick birds are seen, and when the dead birds appear otherwise healthy.

affecting eiders nesting on the island; cloacal and choanal swabs and blood serums were collected while trapping birds early in the summer, and carcasses and pond water were sampled throughout the breeding season. Finally, after the nesting season, the size of the colony was estimated (Gilchrist and Black 2008).

From late May until the beginning of August, the East Bay field research team kept busy with the making of eider science, leading an insular existence in tune with the life cycle of eiders and punctuated by the worrisome visits of foxes and polar bears (two natural predators of the eider who were kept away from the island to allow researchers to pursue successfully their research agendas),¹⁵² as well as by weekly satellite phone calls to one of the principal investigators of the project, based in Ottawa. Indeed, given the number of scientific projects going on simultaneously on the island, the multiple research interests of actors present at the field site and the expectations of those who, from faraway institutions, were

Few sick birds are generally seen during cholera outbreaks because they die quickly, within 12 to 48 hours of being infected, showing few signs of illness or disease. Significant outbreaks of fowl cholera have been reported among common eider populations whose breeding distribution extends the furthest south into the boreal zone (Goudie et al. 2000). However, this disease, to the best of scientific knowledge, has never been identified in northern populations prior to 2004. Therefore, the rapid spread of avian cholera in Nunavut and the severity of the mortality caused among eider ducks nesting at the East Bay colony is currently a matter of great concern to wildlife managers and Inuit relying on eider meat, eggs and down for subsistence (Buttler 2009; Henri 2007; 9, 23/07/08).

¹⁵² During the summer of 1996, two bears visited Mitivik Island: this brought the entire research programme to an abrupt halt. The following description of the event appears in the *Second Annual Report* from East Bay: “Two polar bears arrived on the eider island on 12 July, and immediately began to forage on eiders and their eggs. Within 7 days, the eider colony was almost entirely destroyed by the bears. We estimate that the bears ate over 14,000 eider eggs (approximately 4,000 nests containing a mean of 3.7 eggs). After several unsuccessful attempts to force them off the island using rubber bullets and ‘bear bangers’, we packed up the camp and evacuated the island by zodiac. With the assistance of [Coral Harbour residents], we moved our gear to a gravel landing strip and left East Bay for Iqaluit on 19 July. [...] It was clear that very few if any nests had survived predation by the bears, so further research efforts on the island were pointless” (Gilchrist and Heise 1997). Following this event, East Bay researchers decided to shelter Mitivik Island from bears and foxes. The leader of the scientific project presents the rationale that presided this decision: “Polar bears and arctic foxes are key components of eider duck ecology because eiders nest on the ground. [...] And what happened was that at East Bay, because of the prevalence of mammalian predators, we had to make a decision early as to whether we were going to intervene on behalf of eiders, in a way, to prevent predation. [...] Because you can go to all this effort and expense of going up to research eiders [...] and all of that effort can be destroyed quickly by bears and foxes [...]. And so when we write up our science we have to be explicit saying our science results are in the absence of mammalian predators [...] but these types of issues with predator removal during a scientific type of project are common for the studies of colonial nesting birds” (9, 23/07/08). A field technician concludes: “When this project will be over, this will be a smaller colony and a good place to come and feed for a few happy bears” (6, 17/06/08)! Thus, paradoxically, if eiders ‘in the wild’ constitute objects of research at the East Bay field research site, it appears that they cannot be so unless the ‘wilderness’ or ‘natural state’ in which they live becomes actively constructed by humans (see also Cronon 1996).

hoping to make productive use of the data collected that summer, a simple phone call could make a difference for the field crew:

Initially, earlier in the project when we had fewer questions and fewer researchers, it was much easier. Then, as the diversity of research topics increased, it became more challenging. And what we try to do is that prior to the field season we have a meeting where the principal investigators come to one location with a number of graduate students and we discuss what our priorities are [...]. Then we set a scientific research agenda and try to anticipate the staff needs and the equipment needs and in doing that we try to take a lot of pressure off the field crew. And one of the greatest steps forward in Arctic research is actually the satellite phone! [Project leaders] might be in offices down South, but if there is a situation where the crew feels they are overworked and they can't accomplish what was originally set out, they can phone us and we can help them assess what to drop and what's important to do [...]. That kind of communication is really important (9, 23/07/08).

While the scientific activities conducted on Mitivik Island were initially set up to establish a banded population of breeding eiders in order to study demographic parameters (such as annual survival rates and reproductive success) and gain a better understanding of eider migration, these activities have since enrolled a growing network of researchers whose interests range from reproductive ecology to physiology, breeding biology, energetics and avian diseases.¹⁵³ A behavioural ecologist who has played a leading role since the beginning of the project describes this enlistment process:

What's really interesting with eider ducks is physiological, because how they're adapting to weather, temperature, predation and disturbance is often a function of how they're changing their physiology during incubation [rather] than how they're changing their behaviour [...]. So, as I worked at East Bay I realised that to get really good at some of those important questions facing eider ecology, I had to enlist physiologists. And eventually disease specialists as well because as an ecologist you can't have that level of expertise in every subject. And so East Bay became a diverse, collaborative project with other professors who have very focused expertise on breeding biology, energetics, physiology of hormones, immune system response to disease. This work was more lab-based so it reflects that scientists come to East Bay and they collect blood samples, tissue samples and so on and then they take it back to very sophisticated labs. [...] So I am a behavioural ecologist but I realised that much of what was really impacting birds and how they respond to climate and these other issues was

¹⁵³ Since 1996, more than 75 peer-reviewed publications and 20 graduate theses were produced from data collected at East Bay.

going to be detected through physiological techniques and not behavioural techniques alone, which necessitated expanding the project and attracting collaborators (9, 23/07/08).

Today, every field season at the East Bay research site therefore mobilises a web of collaborators who all share an interest in optimising the human and financial resources¹⁵⁴ invested in the project, and maximising its scientific and managerial outputs. To accomplish this, as they observe and manipulate eiders, biologists and field assistants must perform a balancing act between seizing data collection opportunities and ensuring animal care. An experienced biologist summarises:

In my experience, you are balancing scientific and animal care philosophy of many researchers in the field at the same time [...] and that is often where disagreements occur. To what degree are we going to pursue this research and to what expense to the birds? [...] And some of those things have to be balanced daily, based on weather conditions, mounting predator pressure and time pressure. Sometimes, you need to get samples at specific stages of reproduction and that [process] is always moving forward. So if you don't get specific samples soon, you won't be able to get them at all. As those pressures mount, people's patience wears thinner. And that's the real complexity of [...] working through a field season. A lot of people are looking at us living and working in exotic places and handling beautiful birds but they don't understand sometimes where the stress is generated from this (9, 23/07/08).

A graduate student who has worked for many summers on Mitivik Island further presents his view of the ethics of scientific research with respect to animal welfare:

My view is that an animal should never suffer unduly. So [the question as to whether] to manipulate and handle an animal or take blood samples from it is a very important one. We are banding eiders to get an idea of the long-term survival of the population and [...] that's a very good thing for the species. So it's always a question of stressing or sacrificing a small number of birds to help the larger cause. And I am happy when I can answer practical questions that have direct [management implications] [...] but you also have to learn pure things for science to go forward [...] You always have to weigh out how valuable is your research question and evaluate what it's really doing for science and for aiding the species [...]. Decisions are always context-specific but they are easier to make when the question is strong (5, 15/06/08).

¹⁵⁴ The budget for the 2008 field season on Mitivik Island was estimated at CAN\$145,000 (Gilchrist and Black 2008).

This section has explored some of the ecological, logistical, scientific, human and ethical aspects of the practice of eider science at the East Bay field research site. In it, I have depicted an evolving actor-network made up of relations between people, animals, and scientific tools and technologies, as well as highlighting the delicate synergy that the field crew must forge with the nonhuman objects of their study in order for their efforts to yield productive outcomes. This ethnographic account of eider research on Southampton Island would however not be complete, however, without a close examination of another dimension of this process, namely, the contribution of local field assistants to the scientific activities conducted at East Bay and the ongoing communication taking place between scientific researchers and residents from the neighbouring community of Coral Harbour. These have both played a peripheral yet essential role in facilitating the making of eider science on Southampton Island.

8.3.2. The presence of Inuit through the networks of eider science

The very name of Mitivik Island, which in Inuktitut literally translates as “where one goes to get eiders”, speaks to the fact that Inuit living in the Southampton Island area have known for some time about the existence of this preferred summer gathering place for breeding eiders. But while common eiders have historically played a significant role in Inuit subsistence activities, it appears that environmental circumstances have kept Coral Harbour residents from regularly accessing the island in the summer months. Indeed, a biologist working at East Bay states that sea-ice conditions, the presence of other wildlife resources and, over recent years, the abundance of snow geese¹⁵⁵ (*Anser Caerulescens*) on the mainland

¹⁵⁵ Over the past 50 years, several goose populations have increased dramatically in North America, and some of them are now severely impacting their habitat to the point of threatening its integrity. It has been hypothesised that this situation occurred because wintering and spring migrating geese benefit from feeding on agricultural fields in the South, thereby maintaining a positive population growth despite a shortage of summer food in the Arctic (Menu et al. 2002; Reed et al. 1998).

have discouraged egg and down harvesters from Coral Harbour from paying frequent visits to the naturally sheltered eider colony. A researcher explains:

It turns out that eiders are present on the island at a time when it's very difficult for people to travel on Southampton Island [...]. Once the eiders arrive, we can describe it as the 'slushy' season. The ice is melting and the snow is covered in water. Inuit from Coral are spending most of their hunting activities collecting snow geese and eggs closer to town. Between town and us there is about 200,000 geese so the common eider for Coral Harbour residents is actually not a very important harvested species. For other communities it's different, but because Southampton Island also supports caribou, snow geese and arctic char, eiders are a very small component of their harvest (9, 23/07/08).

The 40 kilometres local residents must travel between Coral Harbour and East Bay further prevents them from easily accessing the Mitivik Island area, as it takes from 6 to 8 hours of travel over rough terrain to reach the bay by all-terrain vehicle in the summer. A Conservation Officer working in Coral Harbour comments: "If the study site was next to the community, I think that the question of sharing access to the field site [between local residents and biologists] would create more discussions, but since there is little conflict of interest over the resource here, the question of access to eiders is hardly an issue in the community" (20, 08/02/09).

Thus, if many local hunters are well aware of the existence of an eider colony on Mitivik Island, few actually travel there today to perform eider harvesting activities: this considerably limits the possibility of encounters between community residents and scientists working on the island. A field worker who had been conducting research at East Bay for five years nonetheless recalls the few visits received by the research team under a positive light:

I find that the interactions that we've had with the people living here have always been a bonus. And we've had little but it has always been interesting [...]. There was a group that came by the first summer I was here. It was a group of men in their early forties and they had three of their young teenage boys along with them. They were looking for seals around the floe edge. They came for tea one evening and they hung out with us and then they came back after their hunt and camped on a corner of the island. We talked a lot and it was nice. Some people talked hockey, others talked seal hunting so those were nice interactions [...]. There was also once a group that came

in a small helicopter that belonged to a mining company. They had chartered the helicopter to come over here for a couple of days to pick eggs and collect down on the island. That was nice too [...] but we got off to a rocky start because they surprised us and [...] they were a bit defensive saying: “We are here to collect down and it’s our right!” But we said: “Ok, this is fine. We just want to know what you are doing here and what’s the plan because we, too, have plans.” So, in the end, that was a good experience and it wasn’t disruptive. They walked through the colony and picked their eggs and down (6, 17/06/08).

While interactions between the East Bay crew and Coral Harbour residents remain limited, a member of the 2008 field team explains how researchers generally try to share information about their work with local visitors:

We have always tried to explain some of [the research that] goes on. I don’t understand everything that goes on here [...] but I can explain the core of the project: how well are the birds, when they are initiating, if they are successful, how many are surviving from one year to the next, if the population is healthy, decreasing or increasing. So we always try to make sure that we explain this to people [...] because I think it’s important to justify what we do here when we meet local folks. So I have tried and it has always been well received. I have never met anyone stating that they don’t like what we are doing here (6, 17/06/08).

Aside from their occasional travels to Mitivik Island, yet another way in which local Inuit have become enmeshed in the networks of eider science on Southampton Island has been through their hiring as field assistants to support scientific researchers in their daily activities. Since the beginnings of the East Bay field station, such local assistants have been hired for their knowledge of the region and their expertise as guides. They have played a significant role in providing logistical support to field crews, notably by helping them travel safely to and away from the island through broken sea-ice, aiding them with polar bear safety, and assisting them with camp maintenance and (but to a limited extent) with the collection of scientific data. Josiah Nakoolak, a Coral Harbour resident, has been involved for over a decade in the scientific work conducted at East Bay. This is how a researcher evoked the significant contribution that this field assistant has made to the research project:

I don’t think that the project would be like it is today without someone like Jos. He does everything from the basics of going to collect our water all the

way to telling us when we should leave the island and when it's not safe to be outside. And, honestly, I wouldn't know anything about all that! [...] I mean, there are people here in camp that know what they are doing [...] but without Jos, I think we would be having a very, very hard time. And then that's just logistically but, personally, I have always had a good time with Jos [...]. He knows an awful lot about birds and always has interesting stories. So just listening to him and talking to him has made my life a lot more interesting, especially up here. So there is a logistical as well as a personal component [to having people from Coral Harbour] working with us and both are really important (5, 15/06/08).

A field worker who has experienced five research seasons on Mitivik Island further describes the unique connection that local field assistants contribute to establish with the neighbouring community given the low level of familiarity of most crew members with Coral Harbour and local perceptions of their work:

We have occasional guests on the island but Jos is really our connection to the Inuit community here [...]. I guess we have stopped to fuel the Twin Otter [in Coral Harbour] but I have never really been to the community myself so I don't really know what the community thinks about this project and I guess it's the same for most people here [...]. I have only had a glimpse. [...] I mean, [someone] dropped here one year to collect some down and said: "Well, we don't know anything about what's going on here!" And [a biologist from our team] was in Coral Harbour every year right [to talk about our research] so whatever you do there will always be some people that miss it because they're out on the land or whatever (2, 10/06/08).

My observations and the interviews I conducted on Mitivik Island during summer 2008 allowed me to analyse the modalities of Inuit involvement in eider research and to describe some of the qualities of the relationships between East Bay researchers and Coral Harbour residents. The content of these observations and interviews reveals how various factors, such as the remoteness of the island and patterns of Inuit harvesting, were limiting the frequency of encounters between these two groups. Furthermore, discussions held with field assistants and scientific researchers suggested that the interactions between community members and East Bay workers were collaborative overall rather than confrontational, and that local field assistants played a peripheral yet essential part in the functioning of the research activities taking place on Mitivik Island.

In winter 2009, I took a step further in exploring the presence, influence and agency of Inuit and biologists within the networks of eider governance in Nunavut by conducting research in Coral Harbour. There, I interviewed eider harvesters and participated in a range of communication, education and outreach activities organised by one of the East Bay project leaders. The predominantly Inuit community of Coral Harbour (64°08'13''W, 83°09'51''N) is located on the southern coast of Southampton Island. This permanent settlement was established in the 1950s and 1960s and brought together *Avilingmiut* and *Uqqumiut* (cf. note 91) that had been previously living in dispersed camps on the island. These two groups of Inuit were initially brought to Southampton Island at the beginning of the 20th century¹⁵⁶ through their interactions with whalers and traders from the Hudson's Bay Company (Shannon 2003). As of the 2006 census, 769 people lived in Coral Harbour, deriving their livelihood from a mixed economy where wage employment and the harvest of wildlife species both played significant roles (SC 2006).

In light of the information shown in Table 8.1., the importance of contemporary Inuit eider harvesting patterns can be assessed in Nunavut and for the community of Coral Harbour. In fact, while the common eider is the most-harvested duck species in the territory, it appears that its significance in the subsistence activities of Coral Harbour residents is small today compared to what it was in the past and what it currently is in some other Nunavut communities. In fact, although *mitiq* is still harvested on Southampton Island for its eggs, meat, down and skin, the eider harvesters interviewed in Coral Harbour unanimously report that a decline in the use of the species among community members has occurred over the last few decades:

¹⁵⁶ The previous indigenous inhabitants of Southampton Island, the *Sadlermiut*, are thought to have died out from an epidemic disease around 1902 (Shannon 2003, 2001).

The younger people, the younger generation does not generally eat eider anymore. Some young people like them but not as much as older people. Elders are generally [...] the ones who prefer eiders. If they want an eider, someone will go hunting for them.

– Johnny Nakoolak (14, 02/02/09)

There are a lot of other animals that we can eat so we don't bother with eiders as much as we used too. Like caribou, seals, geese... When I was younger, my wife and I would eat eiders but now I cannot recall any of my children eating eiders. The young people prefer eating store-bought food.

– Johnny Kataluk (16, 04/02/09)

I slowed down quite a bit on catching [eiders] because there was nobody really to look forward to eat them. Now I catch a few once in a while just to give to my mom. We use the fat to keep the *kamiit*¹⁵⁷ soft and the fur for other things, too.

– Anonymous (24, 10/02/09)

Conversations with eider harvesters revealed that the use of eiders by Coral Harbour residents is contingent upon a number of factors, including the availability of (other) subsistence resources, opportunities and the cost of travelling to harvesting sites, as well as individual preferences. For example, interviewees repeatedly related the rising snow goose population in the region to recent changes in eider harvesting practices:

Back then, we used to hunt [eiders] quite often, more than geese [...]. Now the younger generation has turned towards hunting geese [...], possibly because of the taste difference and also because they are easier to catch. Everyone prefers geese now. But if anything gets scarce and we need food we can always turn to eiders again because they are always there. We can still eat eiders if we like but now it's noticeable that people don't eat it as much as they did before.

– Mike Emiktut (13, 01/02/09)

Before there were less geese but now they're all over the place! I prefer eating geese now because eiders are kind of strong. And if I catch them it's just going to be a waste because I don't know who will want one. [...] I am not interested in tasting eider eggs either. They are smelly and I don't want to touch them!

– Tommy Nakoolak (21, 09/02/09)

Since the beginning of the East Bay field project in 1996, within the context of the declining and relatively limited use of eiders by Coral Harbour Inuit, biologists conducting research on Mitivik Island have deployed various strategies to report their findings back to

¹⁵⁷ Sealskin boots.

local residents. In addition to sending summary reports and brochures to the local HTO, one of the principal investigators of the project has been paying regular visits to the community during which he has participated in meetings with HTO board members and organised school visits and radio shows. The biologist describes these initiatives in the following terms:

Coral Harbour is the community closest to our field site. It's a community of about a thousand people now. [...] The population there grows quickly there and a lot of people are very young.¹⁵⁸ So to keep the community informed [about our work] necessitates continuous communication because [...] the population is changing so rapidly. [...] And we learned early that simply sending reports is not very effective. [...] We found that we needed other ways and especially in Inuit culture meeting a person, speaking face to face, is really how things are done. We try to make annual or biannual visits to the community. At HTO meetings, we use slide shows to present what we do and to emphasise that most of the issues affecting eider conservation occur in Greenland, outside their area, and in Nunavut. So we emphasise the point that our work at East Bay is benefiting Inuit in Nunavut and it is. And then, by being there in person we can clarify misunderstandings, which are numerous. Those misunderstandings can be anything from how much I pay Inuit assistants to the disturbance we cause to birds [...]. So we talk about our scientific methods and the efforts we go through to minimise disturbance. [...] They also want to know what we do with polar bears. They want to know about our safety issues. Those types of things. And I typically visit the community in the winter time when the community is there in town. [...] I am there for several days so I generally go on a radio show and I answer questions from the community. Then I go to the school and I give a talk to school children who in the short-term may be working for us or visiting the island as adults. Finally, there is also a very practical element to our visits because in Nunavut, local communities have a say in terms of [research] permit issues. So in order for the processing of our permit to run smoothly a key thing to do is to keep people well informed about what we are doing and why. So that's another benefit of showing up in person (9, 23/07/08).

A range of motives has thus been driving the communication and outreach efforts that have been deployed over the years by researchers to keep community members engaged with and informed about the scientific work being done on birds migrating through the East Bay area. In addition to providing opportunities for clarifying misunderstandings, answering questions from community members, highlighting safety issues and informing potential East

¹⁵⁸ According to census data, the median age of the Coral Harbour population was 18.9 years in 2006, compared to 23.1 years in Nunavut (the lowest of all provinces and territories in the country) and 39.5 years in Canada (SC 2006).

Bay visitors and future field assistants about the science conducted in the vicinity of Coral Harbour, such initiatives have aimed to build collaborative and trustful relationships with HTO board members and other community residents. This building of local support for scientific research has also greatly facilitated the acquisition of required research licenses. Indeed, all research on wildlife taking place within the Nunavut borders must go through the appropriate licensing process¹⁵⁹ and be approved by authorities who may require supportive statements from local organisations. For instance, before granting a territorial research license for any given scientific project, and in addition to setting up various reporting requirements,¹⁶⁰ the Nunavut Impact Review Board (NIRB) considers (among other criteria) the level of support coming from local HTOs (NIRB 2007, 2006).

In February 2009, after making a series of entertaining presentations to grade 8 to 12 students at the Coral Harbour school, a biologist who had been working at East Bay for some 20 years therefore clearly had the process of building local support in mind when he commented: “These guys sitting now [in school] will be the ones sitting at the HTO board in the future” (FN, 14/02/08). Throughout his week-long visit to the community, the researcher also held a meeting with HTO board members and a call-in radio show to present the work of

¹⁵⁹ The licensing of scientific projects taking place in Nunavut is an aspect of the territorial wildlife governance regime that warrants further research. Indeed, various people I have talked with have repeatedly mentioned how this process currently presents a counter-productive administrative burden for HTO representatives (who often lack the capacity to deal with the volume of permit applications received annually), as well as for scientists (who must often fill out multiple forms that overlap in content and purpose for a single research project). A biologist who has lived and worked in Nunavut for over a decade makes the following statement with regard to the consultation culture resulting from the territorial licensing process: “In some communities, there are just not enough people to do the stuff that we now require as scientists, governments and organisations with co-management and consultations. I frankly think that some communities are just really burnt out [...]. After a while, every other scientist just want to come and talk and consult with communities and a lot of these communities are very small and a lot of this stuff frankly is not of interest to people. [...] I mean, if there are only five people working at the HTO board and there is about 30 scientific projects around that community in one year do you honestly think that all five people of that board want to spend at least 30 nights of their year listening to scientific presentations on something that they may really frankly not be interested in? [...] Of course, I agree with the underlying foundation of the co-management and consultation system which makes total sense but I also think that the consultation structure that we have created with all the sign offs that we need to go along leads to a lot of burn out in some communities [...]. Because of the way we have set up the whole process of reviewing and approving science in Nunavut then a lot of people [at the HTO level] feel a tremendous pressure to have input on it and that inherently leads to burn out” (94, 18/09/09).

¹⁶⁰ The NIRB also encourages (but does not oblige) scientific researchers to include a traditional knowledge component in their activities, as well as to hire Inuit assistants from local communities.

his team and to provide opportunities for feedback and questions. Both events ran smoothly and collaboratively. At the local HTO, board members questioned the researcher about banding procedures and their impacts on birds, the possibility of commercially harvesting down, and about avian cholera. The tone and atmosphere of the event were informal and relaxed. For example, as he described the seasonal activities taking place on Mitivik Island, the biologist laughingly commented on the laborious observations performed by field workers from tower blinds:

In July, we stop catching [eiders] as soon as they start laying their eggs. [...] Then, we spend our time watching them from those wooden boxes. And that's when it gets really boring! That's when people from town who work with us say it's too dull! We can't walk anywhere because there are too many birds [...] and so if you are not used to that you can kind of go crazy [...]. We are watching birds and it's almost as exciting as watching snow melt! (FN, 15/02/08)

Furthermore, during the radio show, most of the questions and concerns raised by listeners were surprisingly, not about eider research per se but about ravens, a non-migratory species whose abundance had increased in the community. According to callers, the “noisy black birds” were becoming a nuisance in town because they were feeding on garbage and baits used in fox traps, as well as on meat and fish left on sleds and porches.

In Coral Harbour, after participating in diverse uncontroversial forums where a CWS biologist shared information and stories about the work of his research team on Mitivik Island, I conducted fifteen individual interviews with eider harvesters residing in the community. During the interviews, I asked open-ended questions to invite participants to describe their level of familiarity with the eider research conducted at East Bay, and to share their views and opinions (if any) on this scientific project. Respondents were specifically encouraged to express their perspectives with regard to communication practices taking place between scientific researchers, HTO board members and community residents, and the ethical dimensions of the research techniques employed by biologists working on eiders (Fig. 8.8.).

All eider harvesters I interviewed knew about the existence of a research project on eiders at East Bay, as they had heard about it through radio, HTO and school presentations made by travelling biologists, by visiting the Mitivik Island area themselves, or after talking to relatives.

In the experience of a CWS employee who has worked on various research projects on eiders and other migratory birds in Nunavut, two types of concerns have been occasionally expressed by Inuit with regard to the methods employed by biologists working on avian species across the territory:

The one area where we have intermittently experienced problems is the banding of birds. In general, we've never had problems with it after some explanations but certainly a consistent theme is that people are always questioning verging on not being very happy with marking birds. [...] The other [area of local concern] of course has been disturbance to birds. There was [one community] where people perceived that scientists simply being on an eider colony would cause disturbance. And we have done our best to explain all the work that [CWS biologists] have done on eiders and how it's not in our interest to make birds desert because then our projects also fail [...]. So when we say we want to do research [on eiders and other birds] we can almost guarantee that we will get those two comments back. Number one is: "We don't want you to mark the birds because the birds don't like being marked." And number two is: "Don't disturb the birds because the birds will move or fail." It's a constant challenge that we've had to deal with (94, 18/09/09).¹⁶¹

While avian research has sporadically sparked critical discussions in Nunavut, a majority of participants (80 %) interviewed in Coral Harbour had no comments to make on the methods employed by researchers (33 %), nor did they express any concern whatsoever (47 %) with respect to the handling and banding procedures that scientists have been deploying on eiders for over a decade. Bernie Matoo, a hunter who has been involved with the HTO since the late 1990s, states: "I have never heard of any concern about banding eiders in the community [...]."

¹⁶¹ The effects of scientific research practices (including capturing, holding, sampling and banding) on eiders have rarely been measured explicitly in the scientific literature. However, biologists are aware that eiders are sensitive to disturbance, and therefore often consider the importance of minimising handling time and the effects of their presence on eider colonies (e.g. through the use of blinds and canvas tunnels). Buttler and colleagues (2011), for instance, have shown that the probability of death among common eiders increased with holding time during avian cholera epizootics. The research team responded by limiting such time to 90 minutes (Buttler et al. 2011).

As HTO board members, we want to support the research that is done on our island as long as researchers provide us with reports” (15, 03/02/09). If eider banding per se was never raised as an issue by interviewees, three of them (20 %), including Jimmy Eetuk, nonetheless suggest that the disturbance caused by researchers was leading eiders to move away from Mitivik Island: “Because there has been work done [around the island] and there has been people coming and going from there I think that the birds are coming to town more to get away from the people at East Bay. Because there are areas around town where eiders never used to nest but now they nest here” (18, 06/02/09).

Two current HTO board members further describe a dramatic contrast between the discussions generated in Coral Harbour by the research techniques employed for eiders and the discussions surrounding techniques used for gathering scientific knowledge about polar bears:

I don't think there has ever been a problem or any complaint about eider ducks being put transmitters or being banded. We never hear about that. Our biggest concern is about the research being done with polar bears. We don't like them being collared or tranquillised (23, 09/02/09).

– Willie Nakoolak (23, 09/02/09)

There is no other choice but to catch [eiders] by net. I don't mind them handling the ducks the way they handle them. [...] Polar bear biologists are coming into town next week or the following week¹⁶² [...]. People in town actually have a lot of things to say [about scientific research methods used for bears]. [...] It's a lot more serious than what you are asking about ducks, for sure!

– Anonymous

Asked about why Coral Harbour hunters generally show different levels of concern about biologists handling bears and eiders, Mike Emiktut, a respected elder in the community, explains:

I figure that the difference between banding eiders and collaring bears depends on the way animals are affected. [...] We hear more people bringing up concerns about the way [scientific research] is affecting bears,

¹⁶² Soon after my stay in Coral Harbour, a research team from the Canadian Wildlife Service came to perform a community-wide consultation about the listing of the polar bear as a species of ‘special concern’ under Canada’s federal Species at Risk Act (2002).

whereas I have never heard anything about how bad it's affecting the eiders. As long as it's helping the surveying and there is no damage being done healthwise to the animals, it's okay. Local people (and not just the HTO board) are the ones who observe how [scientific research] is affecting the animals because they can see it firsthand (13, 01/02/09).

Differences in Inuit perceptions of the effects of handling on *mitiq* and *nanuq*, along with the fact that scientific research on the common eider (a species of secondary and overall declining importance in local subsistence activities) interferes very little with the harvesting practices of Coral Harbour residents, may help explain why the discourse held by interviewees tended to change substantially according to the species they discussed.

Although the methods used by East Bay researchers to gather scientific information on eiders generated few critical comments from respondents interviewed in Coral Harbour, a similar statement can also be made about participants' perspectives on the communication practices taking place between scientific researchers, HTO board members and community residents (Fig. 8.8.). Indeed, while 40 per cent of interviewees had no specific comment to make or opinion to share (likely because of their lack of exposure to or indifference to the subject), the same proportion of hunters appeared satisfied with past and current reporting practices on eider research. Susie Angootealuk, a former HTO board member confidently states:

I know that researchers have been working [at East Bay] because I sat on the HTO board before. And they have always done good reports to the board on the progress of their surveys. I feel that they have done a really good job in informing the board and the community. It's better than not letting us know what they are doing there (28, 12/02/09).

Pauloosie Nakoolak, a participant who has heard about eider research over the radio also concluded: "I am very comfortable with the way these presentations have been passed on to us because this is the only way that we are going to know how to preserve our animals and wild birds. I am happy with the ways in which we have been updated. We do hear about the research when it comes up on the radio every once in a while" (27, 11/02/09). Accustomed to

being asked questions about what goes on during the summer months on Mitivik Island, Josiah Nakoolak, a Coral Harbour resident who has been working as a field assistant at the East Bay field research site offers a more nuanced yet overall positive judgement:

When I go back to town, people ask me all kinds of questions. People in town are generally happy with the research but I hear that sometimes they would like [researchers] to talk more about what they do. Some people are curious with what [biologists] do with the birds but in general people are okay with the research (19, 06/02/09).

While most comments by interviewees placed communication practices among researchers, the local HTO and community members in a favourable light, a minority of participants (20 %) was more critical. A recently appointed HTO board member, for instance, judged the information presented by researchers to be insufficient:

They don't really communicate at all. I have noticed that since I have been at the board. I know that there is more than one scientist there doing research on eiders, shorebirds and other things. But all we hear about is the research that they are doing on eiders. We mostly hear about avian cholera, where eiders travel, where they go, at what time of year they start coming in and going out. That's really about it. I wish I could hear more about what other researchers are doing and that they could inform the community about it (24, 10/02/09).

Another respondent directs his critique towards the local HTO:

We were not really given any information about what goes on there except that one time when they said that the birds nesting here fly all the way to Greenland. So if this was brought up at a public meeting, the public would probably say: "We never hear about this research and this survey being done!" So the public would probably get angry about that. We would not be angry at the researchers or anything but at the HTO board members because they're the ones who approve the research licenses and they should keep the community informed.¹⁶³ It's their responsibility to inform the community

¹⁶³ According to one informant, a designated HTO spokesperson generally uses the radio to share information with community members about scientific research conducted around Coral Harbour whenever board members deem it appropriate (15, 03/02/09). Over the course of this research project, various biologists and wildlife managers interviewed have alluded to the fact that while the communication practices of scientists working in Nunavut were often subject to criticism at the community level, HTO board members tended to be held far less accountable for their actions (or lack thereof). Indeed, a CWS biologist who has taken part in and observed the performance of various scientific projects taking place across the territory summarises: "Because of the regulations that came through the land claims agreement, I think scientists have been forced to do a much better job at communicating science to communities [...]. But I think one area that does not get much attention is that some HTOs are doing a terrible job internally at disseminating information. So [a researcher] may go to a community to present some information to an HTO board and then that's it, the information does not get relayed to the community at large. The information will be forgotten the next day unless somebody talks about it with

and they have not been giving out much information. It would be good for them to give out more information so that we could know how many birds there are out there, and also if we should avoid the area for a certain time not to bother scientists. It would be great if they could give out more information about the research (22, 09/02/09).

Under the wildlife co-management regime created through the NLCA, both researchers and HTO board members share a responsibility to inform duly Nunavummiut of any scientific activities taking place close to their community of residence (GC 1993; NIRB 2007, 2006). As a result, if Inuit participation in wildlife governance is to be properly assessed, the communication practices of both parties should be scrutinised. In the case of eider research at East Bay, interview participants had some moderately critical comments to make but had mostly positive feedback regarding the communication and outreach initiatives conducted by scientific researchers and HTO board members.

Lastly, all five interviewees (33 %) who specifically discussed the means employed by scientific researchers to communicate their findings expressed a preference for verbal reporting and community visits that are conducted by the biologists themselves, and this is the strategy which biologists working at East Bay have routinely employed:

I prefer when researchers use the local radio, because as Inuit we are more into verbal communication than paper. [...] Everybody can do paperwork, but when somebody speaks, there is an agreement there. So that's why we prefer verbal communication.

– Susie Angootealuk (28, 12/02/09)

The best way for scientists to talk about their work is to visit the community and talk about what kind of research they have been doing. The best way I think is to see people in person.

– Anonymous

relatives or friends over coffee. [...] I frankly think [that] it's been a taboo for government organisations to criticise communities for their internal messaging and their internal information sharing. [...] Communities could do a way better job at sharing the information. I really think that this is an area that really needs to be looked at pretty carefully" (94, 18/09/09). This situation clearly calls for further research on how information on wildlife research and management is shared in Inuit communities today. Indeed, my observations suggest the existence of tensions between Inuit respect for autonomy and others' knowledge and current administrative requirements imposed upon HTO representatives to relay scientific and managerial information to the wider community (this amounts to 'pronouncing' that a certain state of affairs exists among wildlife species).

The above preferences for personalised and verbal communications echo a comment made during an interview held in Iqaluit by an NWMB board member who described how the initiatives deployed by East Bay researchers in Coral Harbour revealed a ‘new way’ of doing science in Nunavut:

My advice to biologists is: go to communities and spend some time. And this goes back to [researchers working out of East Bay]. I think [some of them] are pretty good at building [personal and community] relations. And that’s the whole point of communicating research, you know. [...] I mean, a lot of it is about confidence building. Go into the community, spend some time there, talk to the HTO, the mayor, go on the local radio, drink some tea, mingle in town, be creative. Let [people] know you. Just flying in for a few hours and having a meeting is not enough nowadays. That’s the way things were done years ago. I have been there and I am speaking from experience [...]. If you can get to know people [as individuals] you will have a lot more success [...] and I think you can close a lot of the gap between biologists and community members by doing that (Anonymous).

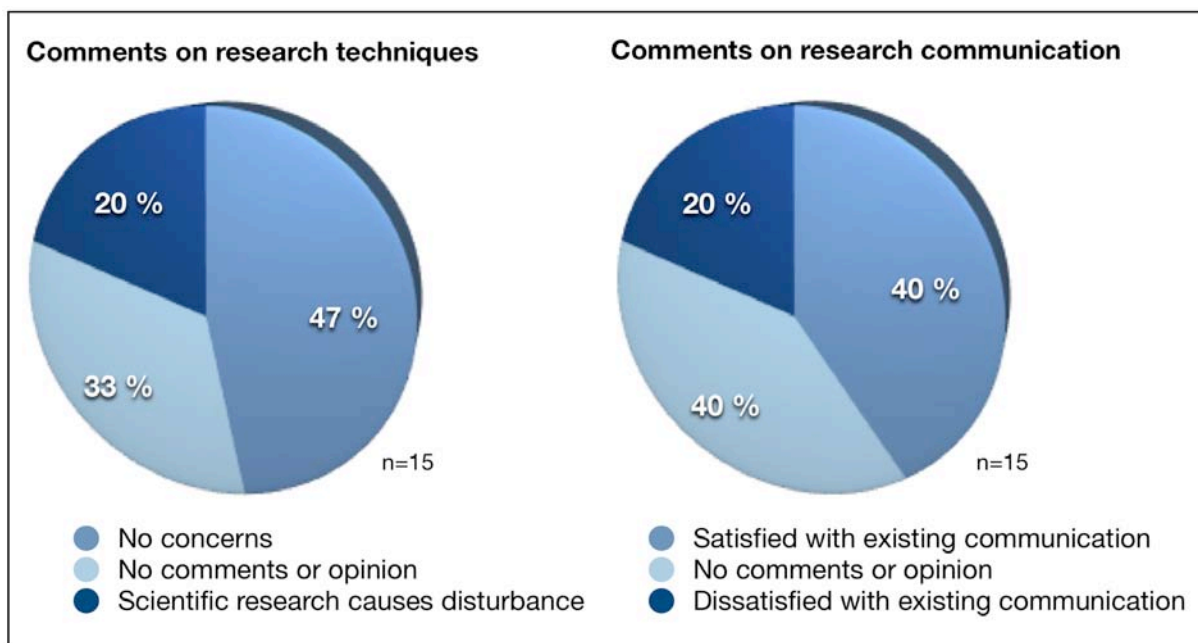


Figure 8.8. Perspectives from Coral Harbour residents on eider research at East Bay

In sum, while the three preceding chapters on polar bear research and management clearly speak to the existence of a ‘gap’ between biologists, wildlife managers and the Inuit of Nunavut, this section has offered a contrasting portrayal of the relationships existing among

Coral Harbour residents, HTO board members and scientific researchers working out of East Bay. Indeed, observations conducted throughout a field season on Mitivik Island and during the visit of a biologist in Coral Harbour, as well as testimonies from researchers, field assistants, eider harvesters and HTO board members reveal the relatively uncontroversial, unchallenged and mostly collaborative presence of a diverse cast of actors during the making of eider science on Southampton Island. The section that below further explores the ramifications of this eider governance network by looking at how scientific knowledge claims with regard to common eiders have been transposed and translated into managerial initiatives both within and beyond Nunavut borders. It also asks some questions about Inuit engagement in this process.

8.3.3. Entering eider management networks in Nunavut and beyond

Eider management issues were central to the very birth of the East Bay research programme (Gilchrist 1999). A project leader explains how the will to address concerns over harvest sustainability initially motivated the scientific study:

[The field site] was set up to establish a banded population of breeding adults so that we could monitor demographic parameters [and look at] factors that would influence [eider] survival and reproductive success. We also knew that we would eventually put [this information] into a demographic computer simulation model to assess whether the harvest rates were sustainable [...]. So, yes, management issues were key from day one (9, 23/07/08).

A few years after the start of the programme, data collected by researchers working on Southampton Island led to a concrete management initiative. On 1 January 2002, the Greenland Home Rule government instituted new eider harvest regulations aiming at a considerable reduction in pressure on the part of Greenlandic hunters.

The results from research conducted at East Bay contributed in two major ways to an international study recommending a lower Greenland harvest. Firstly, through banding and

satellite telemetry, the project confirmed that the majority (about 60 per cent) of both male and female northern common eiders breeding on Southampton Island migrate in order to winter along the coasts of southwest Greenland,¹⁶⁴ where they are heavily hunted (Mosbech et al. 2006). In fact, by implanting satellite transmitters to track the subspecies to and from breeding grounds in both eastern Arctic Canada (i.e. from Mitivik Island) and western Greenland, and from its wintering grounds in south-western Greenland, a group of researchers identified three major migration flyways for northern common eiders (Mosbech et al. 2006; Fig. 8.9.).

The material originally presented here is not currently available in ORA

Figure 8.9. The distribution and population structure¹⁶⁵ of northern common eiders (*S. m. borealis*) (Sources: CWS 2002: 4 (left) and Gilliland et al. 2009: 26 (right))

Secondly, this new information on geographic delineation as well as on demographic parameters derived from data collected on Mitivik Island were incorporated into a population

¹⁶⁴ It was found that while western Greenland is estimated to have a breeding northern common eider population of 40,000 adults, the wintering population in this region likely exceeds 450,000 birds. Thus, at least 400,000 birds from this wintering population must be originating from Canada (CWS 2002).

¹⁶⁵ Eiders that breed and winter in eastern North America are represented by open circles, while eiders that breed in eastern North America and winter in Greenland are represented by closed circles. Hatched circles represent eiders that breed and winter in Greenland and the arrows designate population connections.

model developed to assess the sustainability of the reported harvest of northern common eiders in Canada and Greenland for the first time (Gilliland et al. 2009). A biologist describes the input provided by East Bay researchers to the computer modelling initiative:

Before 2000, there was a concern that common eiders in Greenland were overharvested. So we developed a population model to examine harvest [...]. And, at this point in time, we were really data deficient. We did not have much information on the size and trends of these populations [...]. So when survival rates were calculated for East Bay, we did put that into the model (12, 11/08/08).

Largely basing themselves on data collected at East Bay, the authors of the model concluded that the eider harvest in Greenland was not sustainable, given existing regulations:

Overall, our model suggests that the high harvest reported in Greenland during 1993-2000 endangers the sustainable use of the northern common eider population and that management actions are required. Common eider harvest levels in Greenland should be reduced by at least 40 per cent of the 1993-2000 levels to stop projected declines, and allow for recovery of the decimated Greenland breeding population (Gilliland et al. 2009: 24).

As a consequence of these recommendations, efforts were deployed to legislate lower harvest levels for northern common eiders in western Greenland. In 2002, regulatory changes were made to shorten the length of the hunting season¹⁶⁶ and to set a daily bag limit of five common eiders each for recreational hunters (CWS 2002). While these amendments to hunting regulations were applauded by the research community and conservation organisations in Greenland, Denmark and Canada, they were initially met with strong political opposition from Greenlandic hunters. A Danish biologist states: “Some hunters were really angry. We had a public information meeting in Nuuk before the rules were enforced and a lot of people came to this meeting. They were asking all kinds of questions. Some were really angry [...]. Some of the comments that came from the audience were just really unfriendly” (11, 10/08/08). Prior to harvest reductions, about 60,500 northern common eiders were hunted annually in Greenland by subsistence and professional hunters relying on eider ducks for food

¹⁶⁶ As of 1 January 2002, Greenlandic regulations state that eider hunting starts on 16 October (eight weeks later than previously) and ends on 14 February (14 weeks earlier than previously) so that there is no hunt during the spring and during wing moult when eiders are flightless (CWS 2002).

and income¹⁶⁷ (Christensen 1999; Gilliland et al. 2009; Pars et al. 2001). The eider hunt fell to about 15,000 birds after the regulatory changes (Piniarneq 2007).

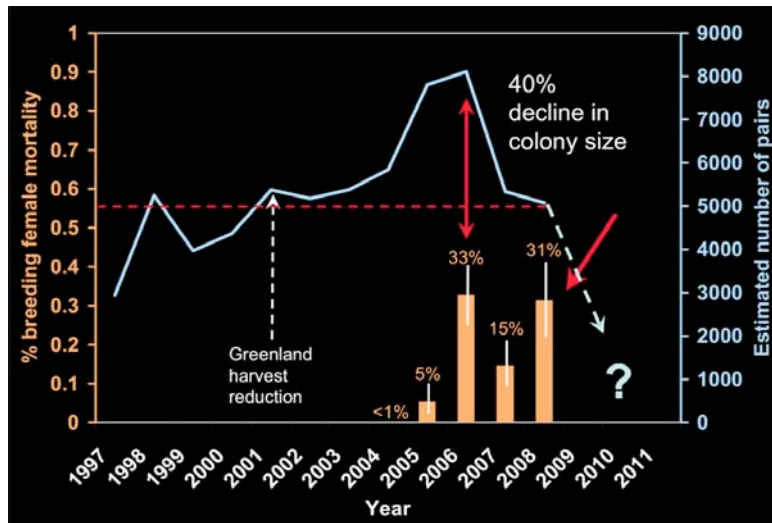


Figure 8.10. Eider colony size and breeding female mortality on Mitivik Island (Source: I. Buttlar)

After new regulations were implemented in Greenland in 2002, biologists working on Mitivik Island detected an increase in female adult survival rates and a sudden growth in eider colony size (Buttler 2009; Merkel 2009; Fig. 8.10.). In 2007 and 2008, Greenlandic hunters became aware of these breeding population increases and requested that the harvest regulations be reversed (Gilchrist and Black 2008). However, wildlife biologists and managers have been reluctant to engage in further regulatory changes given the recent avian cholera outbreaks that have occurred among northern common eiders in Canada and Greenland (11, 10/08/08). Indeed, avian cholera has been present on Mitivik Island every summer since 2005 and has had devastating effects on the colony. Adult survival rates and reproductive success have both plummeted, resulting in declines in both the numbers of females that nest there every year and the probability that they hatch ducklings (Buttler 2009; 9, 23/07/08; Fig. 8.10.). Inuit hunters from the west Hudson Strait, north

¹⁶⁷ By comparison, between 5,000 and 8,000 birds were harvested annually in Nunavut (NWMB 2004).

Hudson Bay and Foxe Basin areas have also reported an increase in disease events among common eiders and other avian species since 2004, a phenomenon which could be related to avian cholera (Henri 2007).

While eider research conducted on Southampton Island has produced information that has been instrumental in influencing policy-making across the Davis Strait, the effects of its translation and travels through governance networks at the territorial level have remained more limited in scope. The work of biologists at East Bay has generated discussions at the Nunavut Wildlife Management Board with regard to research funding and conservation concerns over avian cholera and overharvest in Greenland, but without leading to any policy change. An NWMB employee describes the ways in which eiders have been discussed during board meetings:

Eider management has been raised as an issue through the board mostly through the work of [CWS biologists] [...]. The NWMB has supported their research for numerous years and is very pleased with their research [...]. The major issues that have been brought to us is the overharvest in Greenland and the decrease in the population due to avian cholera. [...] But that's about all that has been brought to the board about eiders (Anonymous).

Two CWS biologists involved in the research conducted at East Bay further commented on the collaborative relationships they have maintained with the NWMB, the main instrument of wildlife management in the Nunavut Settlement Area:

The Nunavut Wildlife Research Trust [a research granting programme administered by the NWMB] has been a strong contributor to our research so I try to keep the board informed. They have contributed money to satellite telemetry research thanks to which we have confirmed the migration of Canadian breeding eiders that went to Greenland. They have also contributed to the costs of the demographic information that we fed into our population model. They have assisted our travels to Greenland and communicated with Inuit [...]. So the NWMB has been very supportive and has been a key contributor to the research on eiders at East Bay and in the Arctic. So in support of that I keep them informed (9, 23/07/08).

There seems to be recognition by the NWMB that the northern common eider population could potentially be in trouble after we have gone to the board to present what seems to be going on about Greenland and avian

cholera. And how they have reflected that is that they provide funding through the NWRT to support eider projects [...] although there has been no direct very clear management decisions made about eiders (94, 18/09/09).

Even though conservation concerns have been growing recently among the actors involved in eider management in Nunavut, largely as a result of the research activities conducted on Southampton Island, eider harvest has never been subjected to territory-wide¹⁶⁸ quotas or restrictions. Furthermore, the above testimonies reveal how discussions about eider management have remained largely collaborative and uncontroversial within Nunavut borders. A NWMB employee summarises the state of eider research and management in the territory in this way: “Eiders are low on the totem pole in terms of our management priorities. But they get a lot of work and money” (Anonymous). From my interviews and observations, it thus appears that the process of translating (Latour 1987) scientific observations about eiders into scientific facts presented to and discussed by wildlife managers at the territorial level has been a comparatively smooth and mainly non-confrontational one, in which a limited number of actors have been enrolled, including some Inuit board members (from both the NWMB and local HTOs) and field assistants. The fact that current migratory bird regulations do not interfere with Inuit eider harvesting practices (no significant restrictions have been recommended for this species to date in Nunavut) might well help explain this state of affairs. Indeed, from a political ecology standpoint, there is no competition for eiders between conservationists and subsistence users, though many Inuit are wary of this situation evolving, based on past patterns of increasingly restrictive management interventions.

¹⁶⁸ The only harvesting rule that was put into place regarding eiders at the territorial level relates to the acceptance by the NWMB of a recommendation by the Canadian Wildlife Service to maintain a certain down harvest level in the community of Sanikiluaq, where a large-scale annual harvest of eiderdown takes place (94, 18/09/09).

8.4. Conclusion

Throughout this chapter, a constellation of actors and spaces pertaining to eider governance networks has been explored. After introducing the ecology of the common eider, the role that *mitiq* has played in Inuit cultural ecology, and how this animal progressively became a matter of scientific interest and managerial scrutiny in the eastern Canadian Arctic, I have analysed the agency and engagement of various human and nonhuman actors (e.g. people and animals, but also scientific research tools) in the dynamic performance of eider governance within and beyond Nunavut borders. In doing so, I have presented an ethnographic account of the politics of eider science on Southampton Island and have reflected upon the use of scientific knowledge claims in managing this species. I have also discussed local perspectives on the making of eider science and Inuit participation in the governance of this species in a more general way.

From this navigation through the words and actions of biologists, hunters, field assistants, managers and elders, a portrait gradually emerges of the objects and relations embedded in a network whose spatiality encompasses Coral Harbour, Ottawa, Mitivik Island, western Greenland and Iqaluit (Fig. 4.1.). Indeed, a careful look at how scientific knowledge claims about eiders have been produced, transposed and translated into managerial initiatives reveals the ways in which the process of governing this species remains largely unchallenged and uncontested by wildlife biologists, Inuit hunters and co-management partners within the Nunavut territory.

The analysis presented above highlights a range of factors that may explain this collaborative state of affairs. The low level of interference of eider research and migratory bird regulations with current Inuit harvesting practices and values, and the fact that eiders currently occupy secondary (and overall declining) importance in Inuit cultural ecology have both been identified as contributing to a non-confrontational governance culture, where power

dynamics remain mostly uncontested. I have further shown that the motivation and work ethics of individual biologists who have invested time, money and efforts in establishing collaborative relationships with local residents may also have played a role in easing potential tensions between eider harvesters and scientific researchers, and in fostering the uncontroversial and concerted governance of *mitiq*. For example, evidence illustrates that the hiring of Inuit research support staff has clearly contributed to enhancing trust and mutual understanding between community members and eider researchers (as well as improving the efficiency of scientific operations at East Bay). Such findings point to the fact that the ‘ethos’ of scientists working with wildlife can make a difference in crafting politics of participation that engage with and accommodate Inuit perspectives and cultural values.

This case study invites us to think of science as an *ethical practice*, by stressing “that science is a product, not simply of a rational response to the natural world, but of certain kinds of human commitment” (Osbourne 1998: 47). As Max Weber (1946) observed, scientific research suggests an ethical component as it is dependent not just on a set of ideas as to what science is but on a certain kind of setting, such as the field site, where scientists conceive particular relations with their surrounding human and nonhuman entities.

In sum, this chapter has described a case study that demonstrates the ways in which governing eiders in Nunavut stands in sharp contrast to the contentious and politicised business of researching and managing polar bears. Harvest regulations, the research methods employed by biologists, and communication practices among scientists, wildlife managers and Nunavummiut do lie at the heart of ongoing polar bear governance struggles across the territory, yet these three elements constitute relatively unproblematic components of eider research and management initiatives. Moreover, the configuration of hybrid forums characterising eider governance networks in the eastern Canadian Arctic appears to be

relatively simple when compared to the variety of consultative mechanisms organised to address polar bear governance issues, and the number of actors mobilised in the latter process.

This case study illustrates that the tensions and debates depicted in the three previous chapters (which focused specifically on polar bear research and management) cannot be extrapolated to represent how Inuit participation, science and policy play out in the governance of all animal species in Nunavut. This situation does not merely relate to the conservation status of a given resource, but also to the ways in which community engagement and scientific practices have evolved.

As the next chapter will show, a comparison between the two cases this thesis has examined so far will yield a nuanced and productive assessment of the normative promises of the participatory wildlife governance networks currently in place in the territory of Nunavut.

Chapter 9. Conclusion: towards hybrid wildlife governance in Nunavut

In this chapter I synthesise and assess the key arguments that have been developed throughout the presentation of the two case studies discussed in this thesis (Chapters 4 through 8). This will provide an opportunity to draw comparisons, establish parallels and mark contrasts between these cases and also to situate the results within the broader literature on science and technology studies, indigenous knowledge and environmental governance.

The discussion that follows illustrates the ways in which Inuit participation, science and policy are transforming one another through powerful political assemblages which in turn give rise to processes of inclusion and exclusion among the actors involved in wildlife governance in Nunavut. It ultimately serves to demonstrate that, to date, the project of attaining meaningful Inuit participation in wildlife governance in the Nunavut Territory has achieved only mixed success. Produced for the sake of ‘managing nature’, the deliberative spaces of governance studied here have indeed ‘produced cultures’ characterised by collaborative relationships, but they have also left unresolved contestations, dissatisfactions and polarisations among actors.

In light of such an analysis, this chapter suggests potential avenues for addressing some of the challenges and difficulties encountered in the making of participatory wildlife governance in Nunavut. While doing so, I shift perspective from a purely analytical discourse to one that is normative and prescriptive. I conclude this thesis by providing some conceptual and practical recommendations for those interested in fostering successful participatory wildlife governance initiatives in Nunavut and elsewhere, by asking: what could ‘good wildlife governance’ mean in this age of global environmental change, ecological uncertainty and multiculturalism in liberal democracies?

9.1. Synthetic review of two case studies

This study raises two sets of questions. One concerns what we can learn from the power relations, knowledge practices, subjectivities and dialogical procedures existing among Inuit, wildlife biologists and managers involved in polar bear and common eider governance in Nunavut. The second set of questions examines to what extent have the participatory promises contained in the Nunavut Land Claims Agreement on managing wildlife been kept over the course of the last decade.

In Chapter 4 I addressed the first objective of this thesis: situating the emergence of a participatory wildlife governance regime in Nunavut with relation to the history of wildlife management and the movement towards recognising Inuit rights in Canada (cf. Chapter 1). I offered an historical overview of the emergence of contemporary wildlife governance arrangements in Nunavut, focusing on a description of past and present governance networks for polar bears and common eiders. I examined the ways in which these species (and the lives of the people who rely on them for subsistence) have progressively evolved into objects of state intervention in the Northwest Territories since the late 19th century, and later in Nunavut, and how the scientisation of game management has played an active part in this process. I showed how the building of wildlife governance networks in northern Canada initially occurred through a partial erasure of Inuit experiences, perspectives and land use practices; this took place notably by establishing closed hunting seasons for waterfowl (which disregarded Aboriginal hunting practices and rights), and by implementing hunting quotas and regulations for polar bears without prior consultation with the Aboriginal groups that depended on the species for food and income.

Throughout Chapter 4, I depicted a general trend that began with early top-down wildlife management practices in northern Canada and progressed towards a situation in which local and Aboriginal perspectives are being taken increasingly into consideration.

Indeed, the participatory wildlife governance regime described in the NLCA was first advocated as a means of recognising Inuit rights to the lands and resources upon which they had relied for centuries for subsistence. I also illustrated how current wildlife co-management schemes in Nunavut have since been portrayed in the public discourse as processes that should allow Inuit to be empowered through their equitable representation and meaningful involvement in wildlife research and management.

After setting participatory wildlife governance practices in Nunavut within a wider socio-historical context, in Chapters 5 through 8 I examined the performance of actor-networks mobilised around the governance of two species of cultural significance for the Inuit: the polar bear and the common eider. During this process, I explored my second and third objectives: analysing the objects, subjectivities, knowledge practices, dialogical procedures and power relations that wildlife governance has generated in Nunavut; and, more specifically, assessing the dynamics involved in developing hybrid and dialogical spaces of wildlife governance in the territory. I accomplished this by reflecting upon the production and mediation of Inuit and scientific knowledge through such spaces (cf. Chapter 1).

In Chapter 5, I took, as a point of departure, a series of consultative events during which the production of scientific knowledge concerning polar bears became a matter of discussion and public debate in the Foxe Basin region. I analysed the making of contested spaces for Inuit participation in wildlife research in Nunavut. This introduced the role of science in shaping technologies of participation in wildlife governance; it showed the ways in which the practices and tools of polar bear biology and their mediation in policy have contributed to the production of social and natural categories (e.g. polar bear populations, management units, 'Inuit societal values') that have become potent forces in framing the terms of Inuit and public engagement in polar bear research across the territory. The analysis demonstrated how this historical process has yielded limited Inuit participation in negotiating the terms of production

of scientific knowledge and the framing of polar bear management practices. It highlighted the fact that local actors (e.g. HTO representatives and resource users) currently have limited capacities to either frame the content and conduct of community consultations or to influence scientific research practices for polar bears, as compared to government actors and wildlife biologists.

Finally, in Chapter 5, I identified an ongoing process of subject formation, resulting from an engagement of local publics in making scientific knowledge about *nanuq* in Nunavut. I argued that, in spite of their overall limited involvement in and powers to negotiate the production of scientific knowledge and polar bear management practices, *concerned citizens* have been playing proactive roles, by contrasting their own views with the representations of ‘Inuit societal values’ and ‘*Inuit Qaujimagajatuqangit*’ that are offered by territorial government representatives and *public scientists* within the context of the Foxe Basin Project. This illustrates the fact that the implementation of participatory strategies for governing wildlife in Nunavut has led to the affirmation of new environmental subjects.

In Chapter 6, deepening the analysis of the dynamics of collaboration, contestation and subject formation identified in Chapter 5, I took a closer look at Inuit perspectives on polar bear research in the community of Igloodik, and explored how various local actors viewed and negotiated the terms of their engagement in such processes. My analysis indicated that, in spite of efforts to foster meaningful Inuit participation in polar bear research and management, mistrust and conflict have characterised some of the relationships among local communities, scientific researchers and government authorities in Nunavut. I further argued that some of the root causes of this phenomenon reside in: differences and incompatibilities between Inuit and scientific conceptions of human-animal relations and polar bear agency; trust and credibility issues between wildlife biologists and resource users; and the ways in which actors view the very nature of causality, autonomy, authority and control.

Indeed, the differing perspectives between and among Inuit hunters, biologists and wildlife managers regarding the empirical effects of scientific methods on polar bears currently give rise to tension and conflict in management. I identified the dynamic and evolving nexus of values and beliefs held by Igloolik residents on human-bear relationships as a view that clashes with the ethics of scientific research. For example, some Iglulingmiut emphasised that the moral imperative to show respect to polar bears was clearly being compromised by some of the biologists' capture and handling techniques. I also analysed the dissatisfactions expressed by hunters and HTO board members with regard to the current level of community involvement in government-sponsored scientific research, and the power relationships embedded in past and current polar bear regulations and management schemes as sources of tension and mistrust. Such criticism was generally due to the low level of familiarity and confidence on the part of some community members with the epistemology of wildlife biologists (e.g. their methods, objectives and language); it also arose from inadequate communication among scientific researchers, wildlife managers and community members.

Finally, I described the legacy of resentment towards previous forms of top-down polar bear management practices, combined with the perception, among some resource users, of the inadequacy (or inefficacy) of hunting quotas for regulating polar bear abundance, as a hindrance to the establishment of collaborative relationships between the actors involved in polar bear governance networks in Nunavut (including the bears themselves). I showed how Inuit ontological perspectives on polar bear personhood conflicted with the scientific understanding of polar bear population dynamics upon which current quotas are based.

After presenting community perspectives on polar bear research and management (Chapter 6) and negotiations surrounding the production of scientific knowledge (Chapter 5), in Chapter 7 I explored the controversy generated around the setting of polar bear hunting quotas in Western Hudson Bay. This chain of events provided another means of engaging in a

critical discussion of the knowledge practices, subjectivities, dialogical procedures and power relations currently characterising the politics of Inuit participation in polar bear governance in Nunavut. More specifically, Chapter 7 examined the configuration of deliberative spaces of polar bear governance generated within this context, and drew on the notion of *hybrid forum* (cf. Chapter 2) to chart their development. The events, strategies and consultative procedures described there show how Inuit participation in wildlife governance in Nunavut has led to an increased politicisation of ‘scientific’ and ‘Inuit’ knowledge as two dichotomous or polarised categories bound to opposing groups; at the same time, demands have arisen for an epistemic equivalence between the two forms of knowledge. Such events, strategies and procedures further revealed tensions between knowledge claims produced by a range of actors operating across governance scales; they uncovered struggles for authority and legitimacy among resource users, wildlife managers and scientists.

In fact, in Chapter 7, I began by highlighting the status of various policies, funds and consultative mechanisms currently in place in Nunavut for promoting Inuit participation in polar bear governance. These include: the use of *Inuit Qaujimaqatunqit* in setting polar bear harvest levels; the existence of funds to support community-based research; and the holding of government consultations and public hearings where specific provisions are made for encouraging the inclusion of Inuit views. Here I argued that, despite these efforts, many factors continue to hinder a collaborative and deliberative governance process that meaningfully considers Inuit views. These factors are: differing levels of acceptance, among actors and institutions, of the validity and importance of Inuit observations; an articulation of unanswered demands for robust and defensible means to represent Inuit perspectives and foster their use in decision-making; the deployment of consultative mechanisms dominated by the logics of scientific management and evidence gathering; the existence of asymmetries between the financial and human capacities of various actors to produce and use scientific

information and Inuit knowledge in decision-making, and contrasting views between the parties on the nature and potential of wildlife management. Nonetheless, I also demonstrated that the Inuit of Nunavut are becoming increasingly proactive in developing strategies for mediating their perspectives in territorial, national and international forums, notably through the documentation and ‘scientisation’ of Inuit ecological knowledge claims. Their strategies of mediation, have only been partly effective to date, however, and in some cases have led to further marginalisation of Inuit views.

In Chapter 8, following three chapters analysing polar bear governance in detail, I examined my second case study, exploring the ways in which knowledge claims about common eiders are produced, transposed and translated into managerial initiatives through different spaces of eider governance in the Nunavut Territory and beyond. In this way, I paid close attention to Inuit perspectives on and participation in the making of eider science in Nunavut and examined the agency of human and nonhuman actors in this process. I showed how eider research and management in Nunavut reveals dynamics that stand in stark contrast to the controversial and politicised business of governing polar bears. Indeed, the current configuration of spaces of eider governance remains largely unchallenged and uncontested by wildlife biologists, Inuit hunters and co-management partners within the territory. I described a range of factors that may explain this state of affairs. These include: the lower levels of interference of eider research and migratory bird regulations with current Inuit hunting practices and values; the secondary (and generally declining) importance of eiders in Inuit cultural ecology; and, importantly, the motivations and work ethics of individual biologists, who have played significant roles in creating collaborative relationships and developing adapted communication strategies with Inuit communities and in the field with networks of indigenous research assistants and hunters. I ended the chapter by suggesting that this situation is not merely a matter of the relatively unproblematic conservation status of the

common eider duck; it is also a product of how community engagement and scientific practices have evolved for this species.

Clearly, then, the conflictual dynamics characterising contemporary polar bear governance networks in Nunavut do not necessarily apply to the ways in which Inuit participation, science and policy are experienced and practiced by actors involved in governing other animal species across the territory. Comparing and contrasting the cases of common eider and polar bear governance yields a nuanced normative assessment of the opportunities and challenges facing wildlife co-management in Nunavut today.

9.2. Comparing two cases

When comparing the actor-networks involved in the process of governing polar bears, on the one hand, and common eider ducks, on the other hand, the first striking observation to be made concerns the *diversity of actors* present through such actor-networks. Indeed, contemporary common eider governance in Nunavut draws in a limited number of human actors (such as Inuit harvesters, biologists from the CWS, field research assistants, HTO and NMWB board members and wildlife managers) in comparison to polar bear governance across the territory and beyond. The latter process is characterised by a complex actor-network made up of various representatives from local, territorial and national Inuit organisations (e.g. local HTOs, NTI and ITK); biologists and managers from territorial and federal governmental institutions (e.g. GN DoE, NWMB and CWS); members of national and international committees involved in polar bear management and conservation (e.g. PBAC, PBTC and PBSG); as well as many concerned Inuit hunters and Nunavut citizens. The complexity and scale of these two actor-networks appear to be a function of the political significance of *nanuq* and *mitiq* in Nunavut, and of the scope of the controversies their governance has generated in the territory.

Furthermore, significant differences can be observed between the two cases analysed in this thesis with respect to the *intensity of the mobilisation of actors* and the *quality of the relationships* existing among them. In the case of common eider governance, this study reveals that discussions and debates over eider research and management have yielded few formal consultative processes in Nunavut; that the work of biologists researching common eiders has generated some conservation concerns among territorial co-management partners, but without leading to any policy change or significant harvest restriction in Nunavut; and that while *Inuit Qaujimagatuqangit* has not been used per se for crafting concrete eider management initiatives in the territory, Inuit field research assistants have participated productively in scientific research on common eiders. In addition, the actors involved in eider governance have reported mostly satisfactory communication practices occurring among biologists, government representatives and Nunavummiut. Inuit hunters have also expressed only very moderate concerns over the ethics of scientific research on *mitiq*, a species whose behaviour does not interfere much with human activities, aside from cynegetic ones. The current relationships between actors involved in eider governance in Nunavut thus appear mostly collaborative and trustful in nature, and have been significantly developed through informal spaces of research and governance (such as field research stations, the homes of northern residents, schools, radio shows and person-to-person meetings).

In contrast, my analysis of polar bear governance in Nunavut highlights that a diverse cast of actors has been taking part in a range of formal consultative mechanisms such as public hearings held by the NWMB and government consultation tours. These hybrid forums have been linked to conservation concerns over the status of specific polar bear subpopulations; to the establishment of restrictions on Inuit hunting (e.g. the setting of ‘sustainable’ harvest levels); and to ethical concerns (related to ontological issues of bear ‘personhood’) expressed by Inuit and their representatives with regard to scientific research

practices on *nanuq*. Such dialogical spaces have also tended to be controversial and confrontational in nature, characterised by unsatisfying communication practices, and related to the disruptive effect of bear behaviour on human activities (e.g. concerns over human safety and property). In addition, the official use of *Inuit Qaujimagatuqangit* in both research and management initiatives for polar bears has been contested and strongly debated. Thus, although polar bear governance has led to a significant mobilisation of human, financial and technical resources in Nunavut, the process of building a participatory governance regime for polar bears in this territory has been fraught with controversies, conflict and mistrust.

Indicators		Polar bear case study	Common eider case study	
Status of the species	Significance of the species for the Inuit	High	Moderate	
	Level of scientific interest in the species	High	High	
	Level of conservation concern for the species	High	Low to moderate	
	Level of interference by regulations with Inuit hunting and subsistence practices	High	Low	
	Level of threat to humans posed by the species	High	None	
Quality of actor-networks	Identity of actors	High	Moderate	
	Intensity and quality of relationships	Number and intensity of consultation initiatives and hybrid forums	High	Low
		Level of stakeholder satisfaction with communication practices	Low	High
		Use of IQ in research and decision-making	Moderate	Low
		Level of mistrust and conflict between stakeholders	High	Low
Level of interference of the behaviour of the species with human activities	High	Low to moderate		

Table 9.1. A comparison between two case studies

The above comparison of actor-networks embedded within the governance of common eiders and polar bears in the Nunavut Territory thus reveals sharp contrasts between the two

cases studied (Table 9.1.). While eider research and management has remained relatively uncontroversial, implying consultation practices, knowledge claims, managerial processes and animal agency that have been mostly unproblematic in the eyes of the actors involved, managing polar bears has proven to be a contentious issue through which actors have come to articulate strong criticism of the wildlife governance regime currently in place in Nunavut.

This analysis further suggests that various factors can help explain differences in the type and quality of interactions among the actors involved in common eider and polar bear governance, respectively. Firstly, the status of the two species under study reveals interesting insights (Table 9.1.). In fact, the polar bear is a species of significance for both the Inuit and the scientific community. Current polar bear regulations also tend to interfere with Inuit hunting and subsistence practices. Although posing a significant threat to human safety and property, *Ursus maritimus* has been the object of heightened conservation concerns and initiatives, especially within the context of climate change where polar bears are the iconic and emblematic species threatened by global warming. In comparison, while the common eider duck generates a high level of interest from the scientific community, the cultural significance of the species for the Inuit, albeit still strong, appears to be declining. The conservation status of *Somateria mollissima* raises only low to moderate concerns, and current hunting regulations have no significant impact on Inuit harvesting practices in Nunavut. As well, eiders are not poster animals for the risks of global climate change and pose no safety concerns for humans.

In light of this situation, I therefore conclude that observed contrasts between the actor-networks involved in eider and polar bear governance may be partly explained by differences in the cultural significance of *nanuq* and *mitiq* for the Inuit, in the human safety issues polar bears and common eiders raise as well as in the conservation status and related regulatory framework for each of these two species. The two empirical cases suggest that the stronger

the conservation concerns, regulatory restrictiveness, cultural significance (both for the Inuit and the scientific community) and level of interference with human activities are for a given species, the greater is the potential for conflict and controversy among the actors involved in the governance of this species in Nunavut.¹⁶⁹

However, this conclusion, by itself is too simplistic, as my results also suggests that the degree to which governance processes are contested (or not contested) by wildlife biologists, Inuit hunters and co-management partners in Nunavut also depends on the history of scientific practices and community engagement for a given species, and on the aptitude and capacities of individual actors (of wildlife biologists, in particular) to foster collaborative relationships and spaces through their work. In fact, studies of scientific controversies have often said little about the significance of these historical legacies (Martin and Richards 1995; Whatmore 2009).

After presenting a synthetic overview of the main arguments made throughout this thesis, and establishing comparisons between the two case studies explored, I am now in a position to address fully the fourth and last objective of this thesis; that is, to compare the parallels and disjunctures between the ways in which current governance arrangements in Nunavut are represented in policy and how they are played out in practice. While doing so, I will assess critically the achievements of participatory wildlife governance in the Nunavut Territory.

9.3. Wildlife governance in Nunavut: a mixed success

As we have seen in Chapter 4, the Nunavut Land Claims Agreement did set significant directions and objectives for the participation of Inuit in wildlife governance in Nunavut. The

¹⁶⁹ Although this conclusion applies to eider and polar bear governance, I acknowledge that it remains a partial one, based on a limited number of cases. Analysing the governance of other species in Nunavut in further depth may further nuance this assessment.

Agreement indeed acknowledges “the need for an effective role for Inuit in all aspects of wildlife management, including research” (GC 1993). The Agreement also highlights the importance of taking Inuit expertise into account within a governance regime that “recognizes Inuit systems of wildlife management that contribute to the conservation of wildlife and protection of wildlife habitat” (GC 1993). In addition, the NLCA allowed for the creation of co-management arrangements through which responsibility for wildlife governance could be shared among different levels of government and resource users. In light of what has been learnt from the two case studies, we are now in a position to assess whether these objectives have been fulfilled in practice, to date.

First, the cases of common eider and polar bear governance have illustrated that a range of consultative spaces and decision-making processes have been developed across the territory to allow Inuit (and Nunavummiut) to participate in wildlife research and management initiatives. These dialogical spaces and procedures include: the holding of public hearings by the NWMB, government consultations with local communities (in the form of public meetings or consultations with local HTOs), and, more informally, various types of meetings and information sessions organised by scientific researchers in local communities. While these hybrid forums have permitted some level of knowledge generation and sharing, collaborative learning, problem solving and consensus building among certain participants, their constrained dialogical processes have also generated polarisation, opposition, mistrust, disengagement, and feelings of disempowerment among other actors.

My analysis has attributed such difficulties in building participatory and collaborative actor-networks for governing wildlife in Nunavut to a number of factors, including: the design of consultative spaces and decision-making processes dominated by the logics of scientific management; the deployment of inadequate communication practices among co-management partners and Nunavummiut; the existence of asymmetries in the abilities of parties to engage

productively in discussions (notably according to their level of preparedness and procedural familiarity); local and Inuit organisations' criticism of existing power relations; the expression of struggles for authority and legitimacy among actors; and differing expectations with respect to the roles and powers of Inuit in wildlife management. Rather than contributing to a concerted inclusion of Inuit perspectives in wildlife governance, the above factors have precluded Inuit from meaningfully mediating their claims through various consultative spaces and decision-making processes.

Another significant way in which Inuit participation has been promoted in wildlife governance since the Nunavut Territory was created is through policies and initiatives seeking to foster the use of Inuit expertise or *Inuit Qaujimajatuqangit* in wildlife research and management practices. I have analysed the ways in which various projects have sought to collect and document Inuit ecological knowledge and promote its use in decision-making across the territory. I also attempted to demonstrate that the Inuit of Nunavut are becoming increasingly proactive in developing strategies to mediate their perspectives in wildlife governance processes through the documentation and 'scientisation' of their ecological knowledge. Furthermore, the participation of Inuit in scientific research has been encouraged in practice through the hiring of Inuit field research assistants, through a licensing process that requires community input and through the reporting and consultation practices of wildlife biologists with local communities.

Although various initiatives have sought to recognise and use both *Inuit Qaujimajatuqangit* and scientific information in wildlife research and management in Nunavut, the eider duck and polar bear examples have shown that many factors currently pose challenges to a meaningful consideration of Inuit perspectives alongside scientific ones. The events and testimonies analysed in this thesis have indeed revealed that the use of IQ in wildlife governance is currently hampered by factors such as differing levels of institutional

acceptance of the validity and importance of Inuit observations in managing wildlife; dissatisfactions among Inuit hunters and their representatives with regard to their level of involvement in scientific research; the challenge of finding defensible and convincing means of representing Inuit knowledge claims and fostering their use in governance; asymmetries between the financial and human capacities of various actors to produce and use scientific information and Inuit knowledge in decision-making; and incompatibilities or tensions between Inuit conceptions of human-animal relations and scientific research practices and understandings of animal ecology.

In light of this analysis, it appears that the attempt to secure meaningful Inuit participation in wildlife governance in the Nunavut Territory has achieved mixed success to date, and has only partly addressed Inuit claims for increased control over their traditional territory in the eastern Canadian Arctic. The consultative mechanisms, dialogical spaces and decision-making processes studied here have indeed yielded collaborative relationships, but they have also generated unresolved contestations, polarisations and significant dissatisfactions among actors. In posing such a diagnosis, this thesis contributes an empirical case to the literature that has evaluated the performance and outcomes of participatory environmental governance and, more particularly, wildlife co-management.

Indeed, various scholars have suggested that the proactive and meaningful involvement of Aboriginal peoples in environmental governance regimes may improve the legitimacy, efficiency and equity of such schemes. Researchers have frequently held the view that the involvement of Aboriginal groups in wildlife co-management may provide augmented levels of confidence in decision-making processes, alleviate mistrust between resource users and government representatives, and enhance the overall perceived legitimacy of management regimes (Bailey et al. 1995; Bradshaw 2003; Osherenko 1993; White 2008). These authors have further put forward the idea that using Aboriginal knowledge and science in wildlife

management can bring knowledge to the discussion table that is acquired at different spatio-temporal scales and stems from diverse intellectual or cultural traditions, resulting in improved understanding and better decision-making (Berkes 1994; Carlsson and Berkes 2005; Eamer 2006; Freeman and Carbyn 1988), especially within the context of social and ecological uncertainty (Folke et al. 2003).

While similar suppositions initially drove the design of policies and co-management arrangements in Nunavut (Chapter 4), the ways in which such schemes have played out over the last decade across the territory clearly show that these aspirations have seldom been achieved in practice (Chapters 5 to 8). In fact, along with growing criticism of wildlife co-management and participatory environmental governance in northern Canada (Nadasdy 2005, 2003a, 2003b, 1999; Menzies and Butler 2006; Rodon 2003; Peters 2003; Spak 2005; Sandlos 2007; Stevenson 2006, 2004, 1996; White 2008, 2006), this thesis challenges the assumption that Aboriginal participation in such processes leads straightforwardly to the empowerment of previously marginalised groups or to more efficient, consensual managerial practices.

Instead, my findings demonstrate that the overall rationale within which wildlife governance operates in Nunavut remains largely based on a Euro-Canadian scientific and bureaucratic framework of resource management which poses significant barriers to the meaningful inclusion of Inuit views and fuels a certain level of mistrust among co-management partners. In spite of their participation in wildlife governance through a range of institutional arrangements, consultation practices and research initiatives, the Inuit of Nunavut are critical of the power relations embedded in existing schemes, where most decision-making powers remain essentially under the control of the territorial (or federal) government, and where the status of 'wildlife' rarely rises above the word 'resource'. In addition, I have shown how the use of *Inuit Qaujimagatuqangit* in wildlife governance in Nunavut, far from

seamlessly resulting in improved understanding and decision-making, has produced only a certain number of collaborative research and management endeavour; it has also crystallised a divide between science and Inuit knowledge, generated unresolved conflicts and led to an overall limited inclusion of Inuit observations, values and beliefs in decision-making.

Unlike scholars such as Stevenson (2006, 2004) who have suggested that co-management arrangements in northern Canada represent an “insidious form of cultural assimilation” (Stevenson 2004: 68) undermining Aboriginal aspirations toward self-determination, in this thesis I have offered a more moderate critique of the participatory wildlife governance regime instituted under the Nunavut Land Claims Agreement. In fact, by examining the cases of common eider and polar bear governance, I have highlighted how Inuit demands for self-determination and shared responsibility in the governance of their traditional territory have, to an extent, led to greater Inuit involvement in researching and managing wildlife in Nunavut, notably through the development of multiple deliberative spaces or hybrid forums, where concerned actors can articulate their views. These spaces therefore need to undergo further ethnographic enquiry if we are to find out the circumstances under which ‘co-management’ will or will not develop. Indeed, this study has illustrated how hybrid forums are evolutionary and not simple ‘preconditions’ or ‘prerequisites’ for co-management, as some authors have suggested (cf. Berkes 2009, 2007; Reid et al. 2006; Schwarber 1992).

The empirical cases explored also lead us to question the normative assumptions contained in the hybrid forum model described by Callon and colleagues, which has been used throughout this study to assess the performance of various dialogic spaces of wildlife governance. According to Callon, Lascoumes and Barthe (2009), the theory of hybrid forums implies a normative proposition: negotiations among identities in such forums have the potential to create a common world or collective in which all actors are likely to find a place.

The analysis offered in this thesis suggests otherwise; it shows how hybrid forums can also polarise perspectives, divide parties, generate conflictual power dynamics and fuel mistrust among parties instead of leading to a ‘democratisation of democracy’, occurring through an open exploration of knowledge and a fluid mobilisation of identities (Callon et al. 2009).

In light of such findings and in order to better conceptualise the current workings of participatory wildlife governance in Nunavut, I therefore find Chantal Mouffe’s model of ‘agonistic-antagonistic politics’ useful in addressing what I perceive to be a theoretical limitation of Callon’s notion of hybrid forum (Mouffe 2000, 2005a, 2005b). Critiquing the idealist and rationalist view of democratic liberalism according to which the achievement of a universal consensus among a plurality of voices is possible through the use of reason, Mouffe stresses the need to recognise the necessary possibility of antagonism by “coming to terms with the lack of a final ground and the undecidability that pervades every order” (Mouffe 2005b: 804). Once the “ever-present possibility of antagonism” through deliberative spaces of democratic governance is acknowledged, one of the main tasks for democratic politics then becomes “defusing the potential antagonism that exists in social relations” (2005b: 805) by constructing ‘tamed’ or ‘agonistic’ relations of antagonism that do not destroy political associations and that accept conflict as legitimate:

If we want to acknowledge on the one hand the permanence of the antagonistic dimension of the conflict while on the other allowing for the possibility of its “taming”, we need to envisage a [new] type of relation. This is the type that I have proposed calling “agonism”. While antagonism is a we/they relation in which the two sides are enemies who do not share any common ground, agonism is a we/they relation where the conflicting parties recognise the legitimacy of their opponents, although acknowledging that there is no rational solution to their conflict. They are adversaries, not enemies. This means that, while in conflict, they see themselves as belonging to the same political association, as sharing a common symbolic space within which the conflict can take place (Mouffe 2005b: 805).

Thinking realistically about the performance and prospects of participatory wildlife governance in the Nunavut Territory thus implies abandoning the dream of a final

reconciliation among those involved in this process (or of IQ significantly reshaping science). It also means trying to find ways to reach acceptable compromises between the various perspectives, demands and expectations of Inuit hunters and their representatives, wildlife biologists and managers, and Nunavummiut. But how to foster the multiplication of spaces of agonistic confrontations for governing wildlife in Nunavut? This is a complex question: in the final section of my thesis I attempt to find the beginning of an answer.

9.4. Recommendations

This analysis has shown that while current wildlife governance arrangements in Nunavut have offered considerable opportunities for the building of collaborative partnerships, the meaningful participation of a range of actors in this process has met with a number of challenges, detailed above. I would therefore like to identify some avenues that may mediate the difficulties encountered in the making of participatory wildlife governance in Nunavut.

Before I do, however, the central assumption underlying and driving the content of my recommendations should be stated. While some scholars have suggested that the problems facing wildlife co-management in northern Canada today could be (and should be) overcome through a unilateral devolution of control over land and resources to Aboriginal communities (Nadasdy 1999), I do not believe such a proposition to be either realistic or desirable in the Nunavut context. In fact, proposals to transfer all management authority to Inuit would overlook power dynamics existing within the current wildlife governance framework. The NLCA represents a constitutionally protected agreement outlining Inuit-specific rights to wildlife and shared responsibilities among the territorial and federal governments and Inuit beneficiaries for the management of wildlife. The negotiation of this agreement also extensively involved Inuit, and a corporation, Nunavut Tunngavik Incorporated, is currently

responsible under the NLCA to ensure, on behalf of Inuit, that all parties to the claim meet their obligations. Similarly to Hunn and colleagues (2003), I therefore hold the view that it would seem more in the interest of Aboriginal communities and, in this case, of the Inuit of Nunavut, to foster a dialogue and alternative forums, however imperfect, with the biologists and managers entrusted by territorial and national governments than to act without them. To promote such an engagement, various steps could be undertaken.

First, to address mistrust, legitimacy and credibility issues within Nunavut's current wildlife governance regime, the promotion of a greater mutual understanding among wildlife co-management partners and Nunavummiut across the territory appears to be key. To further this objective, the creation of spaces and events should be encouraged, where constructive information exchanges can take place between Inuit resource users, scientists and policy-makers to discuss specific research questions or management issues. During this process, culturally adapted means of communicating both scientific and Inuit perspectives should be sought. More specifically, greater transparency relating to the methods used for collecting, interpreting and validating both scientific knowledge and *Inuit Qaujimaqatunngit* should be promoted, not only among research and managerial circles, but also among northern communities. Greater mutual understanding between IQ holders and wildlife biologists should be further encouraged with neither the precondition of simply incorporating and reconciling IQ within the 'universal' framework of science, nor that of incommensurability between ontologies, epistemologies and praxis. This could reinforce confidence in management initiatives and potentially generate further acceptance of and respect for the use of both sources of expertise by various actors, as well as contribute to a move towards an increasingly inclusive focus on cross-cultural knowledge in governing wildlife.

For instance, the Nunavut Wildlife Symposium, held from 16 to 20 March 2009 in Rankin Inlet, provides a good example of a space where productive and creative information

exchanges did occur among Nunavummiut, wildlife biologists and managers involved in wildlife governance. Organised by the Government of Nunavut in collaboration with NTI, NIWS and NWMB, the event provided an opportunity (aside from formalised public hearings and government consultations) for over 140 delegates from across Nunavut (including at least two participants from each community HTO as well as representatives from NTI, NWMB, NIWS, RWOs and federal government departments) to engage in a dialogue and openly discuss issues of concern. The Symposium agenda included various workshops, formal speeches and presentations, but also opportunities for informal and interactive group discussions, stories from elders and a community feast that encouraged the sharing of both meat and knowledge to strengthen relationships. As a workshop facilitator commented to me: “This meeting is different in that people are not supposed to only complain but try to come up with solutions as to how to make [wildlife research and management] work better and differently in Nunavut” (FN, 15/03/09). As a hybrid forum, the meeting was successful in producing the kind of dialogical and deliberative space necessary for true collaborative understanding and governance in a dynamic socio-ecological context.

The fact that wildlife governance in the Nunavut Territory is now mobilising multiple actors across institutional scales, ranging from the local to the international, further stresses the imperative to support initiatives promoting collaborative partnerships. To work towards the latter objective, however, current asymmetries in the capacities of various parties and institutions to engage productively in knowledge production practices, discussions and decision-making processes must be redressed. In order to do this, the building of capacity among local organisations, such as Hunters and Trappers Organizations, should be further promoted. This, in turn, could potentially ease current tensions and struggles for authority resulting from feelings of powerlessness currently expressed by some Inuit hunters and representatives from local HTOs.

If any of the above initiatives are to be successful, however, they must engage more with relevant Inuit conceptualisations of appropriate deliberative forums and ways of interacting for disseminating, interpreting and acting on empirical data, and with the power and normative relations that this involves. As I have attempted to show, much remains to be desired by Nunavummiut for a wildlife governance regime that, in Lydia Qaunaq's words, is closer to "Inuit ways" (43, 26/05/09) of communicating and dealing with control, authority and conflict. But what would this mean in concrete terms? How could wildlife management conflicts be resolved in a way that is more attuned to Inuit values and expectations? How might the communication and consultation practices of wildlife co-management partners better serve the needs of Inuit citizens in Nunavut? While I have offered some modest suggestions in this regard (i.e. emphasising personalised communication, fostering a certain work ethic among those involved in the production of scientific information, and multiplying non-confrontational and informal spaces for exchange and dialogue), more reflection is clearly needed on the subject and must take into account the changes in social relations now occurring within Inuit communities. As Briggs points out:

Life in a modern settlement both generates new sources of conflict and undermines old ways of managing it. Social order has to be renegotiated on a new basis, and new modes of communication more appropriate to life in a large and diverse community have to be found [...]. New ways of dealing with interpersonal difficulties are also developing, ways that carry forward and combine with the new some elements of the old, still active values and ways of interacting. In general, people recognize a much greater need to *talk* about issues and problems and *negotiate* solutions, and forums in which to engage in these activities are proliferating. [...] One still finds fear of confrontation, while at the same time, the diversity of lifestyles and the adoption of the European practice of living by rules and regulations instead of by subtle interpersonal negotiation and silent adaptation, means that matters certain to be controversial must frequently be expressed (Briggs 2000: 116-117 and 119).

Amid such a changing normative landscape, there is thus a crucial need for experimenting with new ways of addressing the relationship between Inuit participation, science and policy in wildlife governance in Nunavut; by doing so, we will be contributing to

bridging the polarising gap that currently exists between ‘Inuit’ and ‘scientific’ perspectives across the territory.

More than a decade ago, Agrawal (1995) argued that it was time to dismantle the divide between Aboriginal and scientific knowledge by identifying mutually affirming ways in which scientists and Aboriginal communities could use all knowledge that offers information to deal with the issues being faced. Such thoughts still hold true today in Nunavut, as neither western science nor *Inuit Qaujimagatuqangit* will be sufficient, in isolation, for understanding the complexities of the combined effects of global climate change and socio-economic development on Arctic ecosystems. It therefore appears imperative to foster the use of deliberative practices and forums that are likely to establish a common but differentiated ground (rich and diverse, but navigable) among different ways of knowing, experiencing and managing relations with the natural world.

This project can only be meaningfully pursued by managing the coexistence of human and nonhuman beings, not merely in numbers, but in quality of their relations (Thornton 2008). In fact, because participatory wildlife governance regimes have ultimately more to do with managing relationships rather than ‘resources’ per se, their success or failure will depend on our ability to promote trust and respect among humans and nonhumans, and to acknowledge the polysemy inherent in these concepts. As an elder eloquently summarised during a public hearing: “How can we trust scientific information if we don’t trust the people who produced it? How can we respect wildlife if we don’t agree with what respect means in the first place?” (FN, 29/09/2009). Only by addressing these questions are we likely to work towards ‘good wildlife governance’ in this age of global environmental change, devolved and multi-scale, multicultural governance in liberal democracies.

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Appendices

11.1. Inuit regions and communities in Canada

The material originally presented here is not currently available in ORA

Figure 11.1. Inuit regions and communities in Canada (Source: Nickels et al. 2007: 3)

11.2. List of research participants

Interview number	Name of participant	Institutional affiliation and/or position (if any, at the time of interview)	Date of interview	Location of interview	Consent to being identified by name in results	Consent to having responses attributed by name
1	Anonymous	Field Technician at the East Bay Field Research Site (EBFRS)	09/06/08	EBFRS		
2	Anonymous	MSc Student (Carleton University)	10/06/08	EBFRS		
3	Anonymous	Field Technician (EBFRS)	12/06/08	EBFRS		
4	Anonymous	Field Technician (EBFRS)	12/06/08	EBFRS		
5	Anonymous	Post-doctoral Researcher (Carleton University)	15/06/08	EBFRS		
6	Anonymous	Field Technician and Camp Safety (EBFRS)	17/06/08	EBFRS		
7	Anonymous	Field Technician (EBFRS)	19/06/08	EBFRS		
8	Anonymous	Field technician (EBFRS)	20/06/08	EBFRS		
9	Grant Gilchrist	Senior Researcher (National Wildlife Research Centre), Adjunct Professor (Carleton University) and EBFRS Project Leader	23/07/08	Ottawa	X	X
10	Anonymous	Post-doctoral Researcher (Université du Québec à Rimouski)	14/12/08	EBFRS		
11	Anonymous	Researcher (Department of Biological Sciences, Aarhus University)	10/08/08	Quebec		
12	Anonymous	Researcher (Canadian Wildlife Service)	11/08/08	Quebec		
13	Mike Emiktut	Hunter and former HTO Board Member (Coral Harbour HTO)	01/02/09	Coral Harbour	X	X
14	Johnny Nakoolak	Hunter	02/02/09	Coral Harbour	X	X
15	Bernie Matoo	Hunter and Board Member (Coral Harbour HTO)	03/02/09	Coral Harbour	X	X
16	Johnny Kataluk	Hunter	04/02/09	Coral Harbour	X	X
17	Jerry Paniyuk	Hunter and Mayor of Coral Harbour	04/02/09	Coral Harbour	X	X
18	Jimmy Eetuk	Hunter	06/02/09	Coral Harbour	X	X
19	Josiah Nakoolak	Hunter and Field Assistant (EBFRS)	06/02/09	Coral Harbour	X	X
20	Anonymous	Conservation Officer (GN DoE)	08/02/09	Coral Harbour		

21	Tommy Nakoolak	Hunter	09/02/09	Coral Harbour	X	X
22	Peter Nakoolak	Hunter	09/02/09	Coral Harbour	X	X
23	Willie Nakoolak	Former Chairperson (Coral Harbour HTO) and Board Member (NMWB)	09/02/09	Coral Harbour	X	X
24	Anonymous	Anonymous (Coral Harbour HTO)	10/02/09	Coral Harbour		
25	Jimmy Nakoolak	Hunter	10/02/09	Coral Harbour	X	X
26	Mark Panuq	Hunter	11/02/09	Coral Harbour	X	X
27	Pauloosie Nakoolak	Hunter	11/02/09	Coral Harbour	X	X
28	Susie Angootealuk	Former Board Member (Coral Harbour HTO)	12/02/09	Coral Harbour	X	X
29	Arsene Ivalu	Hunter	17/05/09	Igloolik	X	X
30	George Qulaut	Hunter	08/06/09	Igloolik	X	X
31	Herve Paniaq	Hunter	17/05/09	Igloolik	X	X
32	Abraham Umayuruluk	Hunter	18/05/09	Igloolik	X	X
33	Attuat Attiki	Hunter	18/05/09	Igloolik	X	X
34	John Arnatsiaq	Hunter	19/05/09	Igloolik	X	X
35	Levi Qaunaq	Hunter	19/05/09	Igloolik	X	X
36	Samuellie Ammaq	Hunter	19/05/09	Igloolik	X	X
37	Eugene Ipkarnak	Hunter	20/05/09	Igloolik	X	X
38	Tommy Awa	Hunter	04/06/09	Igloolik	X	X
39	Daniel Qattalik	Hunter	25/05/09	Igloolik	X	X
40	Nathan Qamanik	Hunter	25/05/09	Igloolik	X	X
41	Louis Uttaq	Hunter	25/05/09	Igloolik	X	X
42	Augustine Taqqaugaq	Hunter	26/05/09	Igloolik	X	X
43	Lydia Qaunaq	Hunter	26/05/09	Igloolik	X	X
44	Deborah Qaunaq	Hunter	26/05/09	Igloolik	X	X
45	Jobie Ulayuk	Hunter	02/06/09	Igloolik	X	X
46	Laben Kunuk	Hunter	02/06/09	Igloolik	X	X
47	David Aqqiaruq	Board Member (Igloolik HTO)	03/06/09	Igloolik	X	X
48	Gideon Taqqaugaq	Board Member (Igloolik HTO)	04/06/09	Igloolik	X	X
49	Jacob Malliki	Board Member (Igloolik HTO)	04/06/09	Igloolik	X	X
50	Micheline Ammaq	Board Member (Igloolik HTO)	04/06/09	Igloolik	X	X
51	Pitaa Awa	Board Member (Igloolik HTO)	05/06/09	Igloolik	X	X
52	Rebecca Mikki	Secretary Manager (Igloolik HTO)	05/06/09	Igloolik	X	X
53	Simonie Issigaitok	Board Member (Igloolik HTO)	05/06/09	Igloolik	X	X
54	David Irngaut	Board Member and former Chairperson (Igloolik HTO)	08/06/09	Igloolik	X	X
55	Anonymous	Anonymous (GN DoE)	08/06/09	Igloolik		
56	Francis Piugattuk	Former Polar Bear Technician (GN DoE)	05/06/09	Igloolik	X	

57	Angela Coxon	Polar Bear Technician (GN DoE)	10/06/09	Igloolik	X	
58	Moshi Kotierk	Social Scientist (GN DoE)	10/06/09	Igloolik	X	X
59	Chris Hotson	Assistant Director of Wildlife Management (GN DoE)	11/09/09	Igloolik	X	X
60	Elizabeth Peacock	Polar Bear Biologist (GN DoE)	09/06/09, 18/09/09, 03/03/09	Igloolik, Iqaluit, Kimmirut	X	X
61	Joe Tigullaraq	Former Chairperson (NMWB)	19/01/09	Iqaluit	X	X
62	James Noble	Chief Operating Officer (NMWB)	20/01/09	Iqaluit	X	
63	Adam Schneidmiller	Wildlife Administrative Biologist (NMWB)	20/01/09	Iqaluit	X	
64	Tom Demcheson	Director of Finance and Administration (NMWB)	20/01/09	Iqaluit	X	
65	Anonymous	Anonymous (NMWB)	22/01/09	Iqaluit		
66	Charlotte Sharkey	Wildlife Biologist (NMWB)	22/01/09	Iqaluit	X	
67	Mikidjuk Akavak	Chairperson (NMWB)	19/01/09	Iqaluit	X	
68	Joe Justus	Director of Wildlife (NMWB)	26/02/09	Iqaluit	X	
69	Michelle Wheatley	Former Director of Wildlife (NMWB)	20/01/09	Iqaluit	X	
70	Michael D'Eça	Legal Advisor (NMWB)	29/09/09	Iqaluit	X	
71	Kevin McCormick	Board Member (NMWB)	13/02/09	Iqaluit	X	
72	Robert Moshenko	Board Member (NMWB)	13/02/09	Iqaluit	X	
73	Pitseolak Alaingna	Board Member (NMWB)	31/03/09	Iqaluit	X	
74	Makabe Nartok	Board Member (NMWB)	28/09/09	Iqaluit	X	
75	Paul Irgaut	Communications Advisor (NTI)	30/03/09	Iqaluit	X	
76	Glenn Williams	Wildlife Policy Advisor (NTI)	23/01/09	Iqaluit	X	X
77	Anonymous	Anonymous (NTI)	11/02/09	Iqaluit		
78	Gabriel Nirlungayuk	Director of Wildlife (NTI)	27/01/09	Rankin Inlet	X	
79	Raymond Ningeocheak	2 nd Vice-President (NTI)	27/01/09	Rankin Inlet	X	X
80	Bert Dean	Senior Policy Advisor (NTI)	09/02/09	Rankin Inlet	X	X
81	Richard Connelly	Executive Director (NIWS)	17/03/09	Rankin Inlet	X	X
82	Martha Padluq	Liaison Officer (NIWS)	17/09/09	Iqaluit	X	
83	Seeglook Akeegok	Regional Manager (GN DoE)	02/03/09	Kimmirut	X	X
84	Andrew Nakashuk	Conservation Officer (GN DoE)	03/03/09	Kimmirut	X	
85	Seemeega Aqpik	Secretary Manager (Mayukalik HTO)	03/03/09	Kimmirut	X	
86	Sharina Dodsworth	Environmental Education Specialist (GN DoE)	20/01/09	Iqaluit	X	
87	Steve Pinksen	Director of Policy, Planning and Legislation (GN DoE)	20/01/09	Iqaluit	X	
88	Anonymous	Anonymous (GN DoE)	27/01/09	Iqaluit		
89	Jo-Ann Falkiner	Senior Policy Analyst (GN DoE)	27/01/09	Iqaluit	X	
90	Simon Awa	Deputy Minister (GN DoE)	28/01/09	Iqaluit	X	
91	Mathieu Dumond	Acting Manager of Wildlife Research (GN DoE)	24/03/09	Iqaluit	X	
92	Mitch Campbell	Wildlife Biologist (GN DoE)	30/09/09	Iqaluit	X	X

93	Debbie Jenkins	Baffin Regional Biologist (GN DoE)	30/09/09	Iqaluit	X	X
94	Mark Mallory	Seabird Biologist (CWS)	18/09/09	Iqaluit	X	X
95	Siu-Ling Han	Wildlife Biologist, Head of Eastern Arctic Unit (CWS)	18/09/09	Iqaluit	X	
96	Mitch Taylor	Former Polar Bear Biologist (GNWT and Nunavut)	10/09/09	Thunder Bay	X	X
97	Martha Dowsley	Social scientist (Lakehead University)	09/10/09	Thunder Bay	X	X
98	Michel Akkuardjuk	Chairperson (Chesterfield Inlet HTO)	09/04/09	Chesterfield Inlet	X	X
99	Anonymous	Board Member (Chesterfield Inlet HTO)	09/04/09	Chesterfield Inlet		
100	Anonymous	Board Member (Repulse Bay HTO)	08/04/09	Repulse Bay		
101	Anonymous	Board Member (Repulse Bay HTO)	08/04/09	Repulse Bay		
102	Mark Pimlott	Policy Analyst (GN DoE)	05/05/09	Igloolik	X	
103	Norman Ford	Secretary Manager (KHTO)	12/03/09	Rankin Inlet	X	X
104	Jack Kabvitok	Chairperson (KHTO)	12/03/09	Rankin Inlet	X	X
105	Alden Williams	Conservation Officer (GN DoE)	02/10/09	Iqaluit	X	
106	Shuvinai Mike	Director of IQ (GN, Department of Culture, Language, Elders and Youth)	21/09/09	Iqaluit	X	
107	Matthew Fredlund	Legislation and Management Technician (GN DoE)	10/09/09	Iqaluit	X	
108	Dustin Fredlund	Wildlife Manager (GN DoE)	24/03/09	Iqaluit	X	

Figure 11.2. List of research participants and their institutional affiliations

11.3. Research license

Nunavummi Qaujisaqtulirijikkut / Nunavut Research Institute
Box 1720, Iqaluit, NU X0A 0H0 phone:(867) 979-7279 fax: (867) 979-7109 e-mail: cfilion@nac.nu.ca

SCIENTIFIC RESEARCH LICENCE
LICENCE # 0501909N-A

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TEAM MEMBERS: D. Henri, Dr. A. Barry, Dr. G. Gilchrist

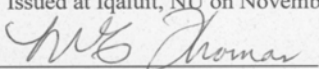
AFFILIATION: Linacre College

TITLE: Examining the role of Inuit knowledge and Western scientific expertise in contemporary wildlife management in the Nunavut Territory, Canada

OBJECTIVES OF RESEARCH:
In northern Canada, there has been a growing interest in Inuit ecological knowledge in recent years. Much of it is related to its use in land-claim processes, co-management, environmental impact assessments, resource management and cultural preservation movements. Through the creation of the Nunavut Territory in 1999, Inuit knowledge has gained an official status in wildlife and natural resource management, as well as in the general governance process within this territory. However, the meaningful contribution of Inuit knowledge and Western scientific expertise to environmental decision-making is currently posing various challenges to resource users, environmental managers and scientists in Nunavut. This is in part due to unequal power relations, as well as differences in their views and assumptions. In this context, this project aims to explore and analyze the roles played by Inuit and Western scientific knowledge in contemporary wildlife management in Nunavut. Through the use of two precise case studies, namely the case of knowing and managing the Common eider (mitiq or Somateria mollissima) and the polar bear (nanuq or Ursus maritimus), this project will explore the ways in which different types of knowledge are constructed, identified, transformed and authorised through the process of managing wildlife in Nunavut. This research seeks to contribute to the formulation of more effective and culturally sensitive wildlife management practices in the Canadian north and beyond.

DATA COLLECTION IN NU:
DATES: January 01, 2009 - September 01, 2009
LOCATION: Iqaluit, Coral Harbour, Igloolik

Scientific Research Licence : 0501909N-A expires on December 31, 2009.
Issued at Iqaluit, NU on November 17, 2008.


Mary Ellen Thomas
Science Advisor




Figure 11.3. Research license from the Nunavut Research Institute

11.4. Consent form

CONSENT FORM

Project Title: Examining the roles of Inuit knowledge and Western scientific expertise in wildlife management in the Nunavut Territory, Canada

Researcher: Dominique Henri, Oxford University Centre for the Environment,
University of Oxford, South Parks Road, Oxford, OX1 3QY, UK
The material originally presented here is not currently available in ORA

Project description

Through the creation of the Nunavut Territory in 1999, Inuit knowledge has gained an official status in wildlife and natural resource management, as well as in the general governance process within this territory. The meaningful contribution of both Inuit knowledge and scientific expertise to environmental decision-making currently poses various challenges to resource users, environmental managers and scientists in Nunavut. In this context, this project aims to explore and analyze the roles played by Inuit and scientific knowledge in contemporary wildlife management in the Nunavut Territory. This research seeks to contribute to the formulation of more effective and culturally sensitive wildlife management practices in Nunavut and beyond.

Statement of informant rights

“I have been fully informed of the objectives of the project being conducted. I understand these objectives and consent to being interviewed for the project. I understand that steps will be undertaken to ensure that this interview will remain confidential unless I consent to being identified. I also understand that, if I wish to withdraw from the study, I may do so without any repercussions.”

Interviews will be conducted face to face or by telephone and will be audio recorded. Photographs may be taken with the consent of the interviewee. Interviews conducted in Inuktitut will be held in the presence of an interpreter hired locally. Information gathered from all interviews will be analyzed and reported to northern residents, communities, regional and territorial organizations in the form of a non-technical report and summary of research findings. The information collected during interviews may be used for academic publications and educational purposes.

I consent to being identified by my name/credited in the results of the study.

I agree to have my responses attributed to me by name in the results.

Participant’s initials: _____

Participant – Printed name	Participant – Signature	Date of Consent
Witness – Printed name	Witness – Signature	Date of Consent

Figure 11.4. Consent form signed by participants