The Bear in the Thaw: Political Inheritances of Polar Bear Conservation and Management

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Abstract

In Canada and abroad, polar bears have historically been framed as imperilled beasts requiring protection from myriad anthropogenic threats. Wildlife conservation professionals, agents of the colonial state and, more recently, the popular media have advanced this discursive framing of the polar bear. However, increasingly Inuit and polar bear hunters are contesting this understanding of the bear. In this thesis, I argue that conservation practices and technologies have played a crucial role in conditioning the way that the polar bear is seen as an object that is best managed by state technocrats. I examine three technologies of polar bear management to advance this argument. These include the polar bear hunting quotas, the conservation reserve, and polar bear monitoring and deterrence programs. Through these examples, I show that the polar bear is remade through management as either a risk to be managed or a resource to be optimized. Under both of these outcomes, the polar bear management entrenches settler colonial power structures and produces arctic geographies that fulfill technocratic management schemes.

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Table of Contents

1.0 Introduction

I began work on this thesis around a decade after the United States listed the polar bear as threatened under the Endangered Species Act (ESA). The listing came on the heels of years of pressure by activists who were rightly concerned about the impacts of global warming on ecosystems and species inside the Arctic as well as beyond. They hoped that the listing could attach a politics of action on climate change to legally binding protections for an iconic species. Kassie Siegel, of the Centre for Biological Diversity, had spearheaded this campaign with the intention of forcing acknowledgement of and spurring government action on climate change (Siegel, 2018). Yet, in the press release accompanying the listing in 2008, the US Department of the Interior made it clear that the ESA would "protect the polar bear while limiting unintended harm to the society and economy of the United States" (Department of the Interior, 2008). The press release acknowledged the impact of climate change on polar bears, yet it was clear that burning fossil fuels would not cease for the sake of the polar bear.

Conservation practices, like the endangered species listing, seem to be incapable of altering the regimes of power that perpetuate structural problems like climate change. Siegel, like many other environmental activists who use the polar bear as a spring-board for their work, was acutely sensitive to the entanglements of humans and polar bears even across immense distances. Her work was targeted at fundamentally disrupting the fossil fuel economy of the U.S. What many conservationists don't perceive are the ways that conservation mechanisms target some human-animal entanglements while leaving others undisturbed. While American economies were shielded from the need to change, Inuit in Canada lost an extremely valuable source of income. After the listing, polar bear hides and trophies could no longer be imported into the U.S., leaving communities with significant polar bear sport hunting industries without an important source of income (Weber et al., 2015). Conservation tools, like the listing, often re-produce a familiar set

of power asymmetries that privilege imperial, colonial, and modern societies at the expense of the marginalized and the colonized.

I began my research with the assumption that reducing polar bear politics to the terms of crisis and climate change entailed a dangerous simplification. I posed a set of questions that attempted to re-inscribe complexity in the familiar, but reductive, narratives of polar bears as a species in peril. What I found was that historically, polar bear conservation in the Canadian north has been a series of attempts to re-map polar bear geographies in the image of modern, settler-colonial arctic. Conservation is entangled with colonialism. In the arctic, just as elsewhere, it is predominantly practiced by European colonists. It is a self-described "mission-oriented crisis discipline" that focuses on understanding and preventing declines in biological diversity (Gerber, 2010). As admirable and apolitical as this goal may seem, discourses of crisis are often used to assert political authority under the guise of technical expertise (Swyngedouw, 2010). In my research on the politics of polar bear management, I often returned to questions of authority, of whose understandings and aspirations matter and whose landscapes and lives are conserved. The crisis discourses of polar bear decline elide the fact that conservation does not merely target wildlife for management, but instead targets the nexus of humans and animals. It acts on ecology, culture, and politics equally. In this thesis, I argue that conservation produces the polar bear as an object of modern state management. To this end, the polar bear is either envisaged as a resource to be optimized or a risk to be navigated. This production is achieved through state-led practices of polar bear management and their attendant discourses that contour thinking about the polar bear. I elaborate on three technologies of polar bear management to help explain why, despite the sincerity of conservationists and environmental activists, conservation only seems to be capable of reproducing the bear's vulnerability. First, I examine the polar bear hunting quota

as a practice that was designed to promote euro-Canadian conceptualizations of nature as an optimizable economic resource. Second, I dwell on the history of conservation reserves as a means of producing spaces and polar bear bodies for the purpose of an idealized aesthetic of Arctic wilderness. Lastly, I interrogate the recent promotion of polar bear monitoring and deterrence systems and their attendant settler urbanism as a humane resolution to polar bear-human conflicts. These cases combine to demonstrate that polar bear conservation is embedded in settler colonial power structures that inform its implementation and constrict its political possibilities.

1.1 Background to Contested Polar Bear Politics

Polar bear management is a compelling topic of study because it is presently and historically contested. The history of conflict and contestation is often omitted from the future-oriented discourses of arctic climate change that animate polar bear politics today. In the current moment of ecological crisis brought on by capitalist excess, it is tempting to reduce the politics of environmental knowledge and management for the sake of concrete political action. However, interrogating narratives like the perpetually-threatened polar bear helps to identify the ways that solutions to vexing problems like climate change may only serve to re-entrench the same systems of power and oppression that created these conditions. The above anecdote about the listing of the polar bear gestures to the ways that an eager embrace of conservation fixes has unintended consequences. To stress this point, I want to elaborate on a short history of declensionist or victim narratives that generate understandings of the polar bear as an imperilled animal in need of immediate intervention and assistance.

In December of 2017 the environmental media organization SeaLegacy released a video of a starving polar bear through the website of the National Geographic Society (Gibbens, 2017).

In their film, the bear wanders listlessly across the snowless August tundra of Somerset Island in the Canadian Arctic Archipelago. To a soundtrack of solemn string music, it rummages through the inedible contents of a rusting garbage container as its saliva foams white. The video is a deliberately affective tactic, designed to elicit sympathy for the bear and to generate concern about climate change. Paul Nicklen, founder of SeaLegacy and one of the filmmakers present when this footage was shot, commented that "when scientists say bears are going extinct, I want people to realize what it looks like" (Gibbens, 2017). Cristina Mittermeier, also a member of SeaLegacy who was present during the filming, stated that the video shows "the face of climate change" (BBC News, 2017). This sort of declensionist narrative is not a new way of thinking about this animal.

In the academic literature, discourses that cast the polar bear as an iconic victim of climate change have been roundly criticized for their reinforcement of a depoliticizing binary of nature and culture. Examining 20 years (1992-2012) of polar bear photography in *National Geographic*, Born (2018) suggests that the proliferation of this mode of polar bear representation stems in part from the difficulty of visually depicting a changing climate. She argues that polar bears are typically anthropomorphized in these representations, inviting audiences to sympathize with a bear and attach a sense of pity to narratives of climate change. However, she also cautions that the consistent aesthetic placing of the polar bear in a natural and distant Arctic devoid of people effectively removes any human political connection to climate change (Born, 2018). This position picks up the threads of earlier work from Slocum (2004) who makes a similar argument that "the choice of the polar bear to represent the dangers of climate change and to stand for nonhuman life is situated within the historical binary of culture-nature" (p. 428). In another study of polar bear media, Smaill (2015) analyzes the representations of species loss in documentary

films, with a particular focus on the 2007 film *Arctic Tale*. The film constructs a biography of hardship around an individual polar bear, connecting her struggles to climate change. Smaill (2015) argues that this narrative tactic implies that the bear's individual life can stand in for the trajectory of the entire species under global climate change. The film's attempt to reify climate change for its viewers only does so by erasing the variability of polar bear experiences and contexts across the Arctic

These narratives, however, are not recent. Over a century prior to the release of SeaLegacy's video, in 1909 Ernest Thompson Seton described the polar bear as a victim of "senseless slaughter" at the hands of Arctic travellers. By 1971, the health of the bear was increasingly a fixation for anxieties over the global spread of new industrial pollutants (Nero, 1971). Over the course of the 20th Century, the narrative of the imperilled bear became a truth that could only be legitimately told with the knowledge produced by the science of wildlife conservation biology. This is a discipline that attempts to make sense of the world by modeling the relationships between quantifiable aspects of organisms and their environments.

The current narratives of polar bear extinction depend on calculations that link the metrics of polar bear bodies to the number of days a patch of Arctic ocean habitat remains free of sea ice (see for example, Peacock et al., 2011). The intake of a polar bear consists primarily of ringed seals, for which there are few alternatives that provide such an abundance of dietary fat necessary to sustain the bear through summer fasting (DeMaster and Stirling, 1981). Polar bears are only able to hunt the seals as long as there is sufficient sea ice for their peculiar and preferred hunting tactics. As the seasonal ice retreats in regions like Hudson Bay, polar bears spend longer on land, waiting and fasting. It is posited that as the ice-free season lengthens across the polar bear's range, the species will lose access to its primary food source and gradually succumb to

extinction (Derocher et al., 2004). Despite the apparent clarity and self-evidence of these claims, the status of the polar bear as a species in rapid decline has been disputed across the Canadian arctic, particularly by Inuit hunters and organizations.

In 2004, the government of Nunavut approved increases to the polar bear hunting quotas for the Baffin Bay and Western Hudson Bay subpopulations (Dowsley and Wenzel, 2008). Subpopulations are management units that attempt to divide polar bears into geographically discrete groupings based on suspected patterns of dispersal and genetic exchange (Clark et al., 2008). The decision was based on Inuit Qaujimajatuqangit: by the observations and reasoning of Inuit producers of environmental knowledge who were local to these areas. The government of Nunavut has mandated the use of Inuit Qaujimajatuqangit in community consultations and decision-making involving resource management (Nunavut Impact Review Board, 2018). The term itself is used to encompass place-based knowledges without the assumptions and limitations embedded in similar terms such as Traditional Ecological Knowledge (Nadasdy, 1999). Canadian and international polar bear conservation boards criticized the decision to raise quotas, stating that scientific knowledge of these subpopulations had indicated a decline in abundance that would merit a reduction in polar bear quotas (Dowsley and Wenzel, 2008).

Disputes between conservation biologists and the quota-setting managers of Nunavut persist. Meanwhile, recent biostatistical work has suggested that the methods used to estimate population abundance and predict population changes have consistently under-estimated the numbers of polar bears in each subpopulation (York et al., 2016). While not disputing the evidence of a relationship between individual polar bear body condition and sea ice conditions, York et al. (2016) assert that statistical biases in mark-recapture sampling and analysis are responsible for the discontinuity between predicted decline and observed stability of

subpopulations such as the contentious Western Hudson Bay group. They "do not find support for the perspective that polar bears within or shared with Canada are currently in any sort of climate crisis" (York et al., 2016, p. 2897). Even on the terms of scientific epistemologies, there seems to be some conflict over whether or not polar bears are left starving in the face of climate change.

The deeply contested character of the polar bear victim narrative has been re-performed in media representations of the animal. Several months after the release of SeaLegacy's video, in June of 2018, the original statements connecting the polar bear to climate change were quietly walked back. The original article accompanying the video posted on National Geographic now bears a note that the "earlier version of the video went too far in suggesting that climate change was responsible" (Gibbens, 2017). After the initial release of the video, SeaLegacy, along with Nicklen and Mittermeier personally, received substantial criticism from Inuit leaders. Madeleine Redfern, Mayor of Iqualuit, took particular issue with Mittermeier's claim that Inuit were financially motivated to deny the decline of polar bear populations (As It Happens, 2017b). Redfern described the polar bear hunt as a small but culturally meaningful component of Inuit life. Her reaction to the video stressed that she had no intentions of denying climate change but that there was no way to ascertain whether or not the bear's condition was a result of climate change. She noted that Inuit actively participate in research programs that evaluate the condition of polar bears across Inuit lands. Leo Ikhakhik, a polar bear monitor for the town of Arviat, indicated his lack of confidence in a climate change connection to the bear in the video (As It Happens, 2017a). His suspicion was that the bear was either sick or injured and could no longer hunt. Ikhakhik is an experienced hunter and wildlife technologist who has participated in the World Wildlife Fund-Hamlet of Arviat Human-Polar Bear Conflict Reduction Project since 2011

(WWF, 2013). Ikhakhik's situated expertise on polar bears suggests that the declensionist narratives attached to the SeaLegacy video and the knowledge of conservation biology may not be as coherent as they are made to appear.

1.2 Methodology

My analysis focuses on the practices of statecraft that comprise most of actually-existing polar bear conservation (Vongraven et al., 2018). My work examines these practices because the Canadian state has been uniquely poised to set the terms by which polar bear conservation has proceeded in the past half century in the regions commonly referred to as the Canadian territorial north. Further, there are ample archival records of the stories state bureaucrats told themselves about the purpose and objectives of polar bear management. These sources are important because they help elucidate how culturally-informed ways of thinking about the polar bear came to be understood as facts about the species. In following the historian of science Ian Hacking, anthropologist Ann Laura Stoler (2002) notes that the state "archives produced as much as they recorded the realities they ostensibly only described" (p. 103). The official state management documents not only set the parameters of conservation actions, they discursively produced what did and did not constitute polar bear conservation. While such discourses are always open to contestation and re-articulation, what my thesis shows is that state-led conservation has profoundly shaped the ways that polar bear conservation is discussed and practiced.

1.2.1 Sources

My work focused on textual records, treating archival and academic literature as source material for my analysis. This analysis was supplemented by popular media, like the SeaLegacy video, to demonstrate the consequences of the tangible and discursive work of polar bear

conservation. I visited the archives of the government of the Northwest Territories (NWT), the legislative library of the Province of Manitoba, and a collection of materials held at the Churchill Public Library. In these official repositories of information, I found foundational planning documents that form the origins of state managerial discourses on polar bear conservation. These helped elucidate the logics underpinning the three management technologies I explore in this thesis. They explicitly declared the intentions of management techniques and gestured to the often haphazard and imperfect implementation of resource governance projects. If the archives contained evidence of the interior logics of polar bear management, popular media demonstrates its exterior effects. The relationships between texts across popular media demonstrate how polar bear conservation narratives are modified and reproduced in their broader social context. Popular media adds nuance to the archival material while supplying the multiple and contradictory narratives of polar bear politics that are kept separate from the colonial archive (Stoler, 2002).

1.2.2 Analysis

In an interview on questions of method, the philosopher Michel Foucault once stated flatly that "there is no schema" (Foucault, 1991, p. 85) for his approach to analyzing discourses. Despite this coy remark, Foucault left plenty of indication as to how to conduct his particular style of inquiry and many scholars have since elaborated on these tactics. Foucauldian discourse analysis now appears as a common and structured analytical mode across the humanities (Waitt, 2016). As a historical method, the Foucauldian approach known as genealogy applies discourse analysis to historical texts to infer a history of the present. Genealogy contextualizes knowledge, identifying how some narratives are accepted as truth, and what attendant effects they have on society. Foucault's term "discourse" refers to cohesive groups of statements that share a common theme and have meaningful political effects beyond their capacity to represent that which they

describe. Further, the term discourse also implicates the knowledge structures that are produced and reinforced by such groups of statements (Waitt, 2016). Foucault reasoned that the tendency among historians to see the present as the inevitable and natural outcome of history was not only a failure to recognize the complexities of past events, but to misrepresent contemporary circumstances as something other than "merely the current episodes in a series of subjugations" (Foucault, 1977, p. 83). For Foucault, the appearance of a cohesive and singular historical narrative was only made possible through the subjugation of other possible and contingent ways of being.

> "Genealogy is, then, a sort of attempt to desubjugate historical knowledges, or in other words to enable them to oppose and struggle against the coercion of a unitary, formal, and scientific theoretical discourse. The project of these disorderly and tattered genealogies is to reactivate local knowledges." (Foucault, 1997, p. 10)

A genealogy gestures to the notion that history is multiple and frayed, as opposed to singular and linear: "Genealogy does not pretend to go back in time to restore an unbroken continuity that operates beyond the dispersion of forgotten things" (Foucault, 1977, p. 81). It works by gesturing to the multiple divergent modes of history, and the power relations that produce the appearance of coherence from this divergence. It helps elucidate context and attempts to account for the power of narratives to reinforce the authority and legitimacy of particular bodies of knowledge, ways of knowing, and inequalities within societies.

Foucault's ideas about power are key to understanding the importance of the genealogical method. Foucault's work stressed that power should not necessarily be understood as a subtractive force limits its target subjects. Instead, he insisted on a theorization of power that emphasized its productive and reifying capacities: "power produces; it produces reality; it produces domains of objects and rituals of truth. The individual and the knowledge that may be gained of him belong to this production" (Foucault, 1995, p. 194). Throughout this thesis, I refer

to this productive aspect of discourse and power. I employ phrases that imply that landscapes and subjectivities are *produced*. This is more than mere phrasing, as it is crucial to my analysis to understand that the contents of discourses do not merely describe a pre-existing reality. Discourses actively participate in the constitution of that reality by structuring our ideas of what kinds of political subjectivities people can occupy and what defines a landscape.

The following genealogy of polar bear management discourses examines their circumstances of production and the social contexts that lend an appearance of cohesion. My work focuses on the discourses produced by conservation biologists and wildlife managers because the overwhelming authority afforded to their expertise. Through genealogy, I demonstrate that the apparent authority of these technocrats is an artifact of efforts to "set limits on the cultural know-how of a particular social group" (Waitt, 2016, p. 306). Namely, Inuit and Dene who were often the target of state-administered resource and population governance programs. I also follow the effects of these discourses, showing that they did not perfectly create conditions they described, nor did they always manage to convince those who were subjected to governance of their veracity.

1.3 Chapter Outline

As stated, this thesis advances an argument based on an engagement with three interlocking case studies of polar bear management. Each chapter outlines a history of these technologies and the relevance to contemporary polar bear management politics. While they can be read on their own, the chapters are meant to build on each other conceptually. They build on the dimensions of colonialism, modernity, and conservation that become crucial to understanding the management of polar bears.

In chapter one, I explore a history of the polar bear hunting quota. The quota was first imposed in the winter of 1967-1968 and was intended to curb what was seen as excessive polar

bear kills. However, a reading of management documents indicates that the first quotas were not set on the basis of any ecological data available at the time. Instead, wildlife bureaucrats used the supposed crisis of polar bear harvest to legitimize state control of the hunt. This is a familiar event in colonial wildlife management, with the caribou crisis being perhaps the most notable example (Campbell, 2004). Inuit were required to interface with the Canadian bureaucracy to continue to hold the right to hunt polar bears. Under these conditions, wildlife managers attempted to convince Inuit hunters to see themselves as conservation hunters and to see the polar bear as a resource to be optimized.

In chapter two, I describe how the land itself is leveraged as a technology of conservation. Using the Cape Churchill Wildlife Management Area (CCWMA) in Manitoba as an example, I argue that conservation reserves produce polar bear bodies and wilderness landscapes for the performance of an aesthetic, rather than ecological, mode of conservation. The notion of reserves as productive spaces is posited in contrast to the typical understanding of places like the CCWMA as enclosures of pre-existing nature. However, I draw on historical understandings of conservation reserves to show that the notion of productivity has antecedents in the planning and implementation of these spaces.

In chapter three, I engage the politics of polar bear monitoring and deterrence systems and the ways that biosecurity privilege southern Canadian modes of arctic living. The increased presence of polar bears in and near settlements appears to be a growing threat to many arctic communities (Dickie, 2018). The fiscally-strained government of Nunavut has recommended an increase in polar bear quotas in order to mitigate the risk to humans (Brown, 2018). However, sophisticated monitoring and deterrence systems are being counter-proposed as a more humane way of dealing with the problem. The Polar Bear Alert Program (Alert) in Churchill, Manitoba is

the premier model of such systems and the basis for my case study of the politics of these programs. I suggest that while monitoring and deterrence programs may be a valuable tool, they are designed to protect a distinctly urban mode of arctic living. Their uneven application of safety privileges geographies that perpetuate colonial relationships and neglects the importance of land-based practices for Inuit culture and livelihood.

2.0 Chapter 1 – Quota

> *"Every bear that is harvested by Inuit, samples are taken from that bear, given to the wildlife officer, and that provides valuable data in the overall research of the polar bears to understand the health, their age, their condition, and so that is part of our Inuit commitment to overall polar bear research"*
>
> -Madeleine Redfern, Mayor of Iqaluit, in conversation with Carol Off (As It Happens, 2017b).

In 2018, the Government of Nunavut released a draft polar bear management plan. It suggested that the species' populations across the territory were excessively high and management may consider increasing hunting quotas (Canadian Press, 2018). Perhaps unsurprisingly, the plan generated significant controversy. Environment Canada responded by noting that the report was not supported by existing scientific evidence and analysis. Prominent polar bear biologist Andrew Derocher was critical of the misalignment between the draft plan and his own scientific studies. He also acknowledged the larger politics of polar bear management and harvest in an international context. Derocher recognized that the plan's rhetoric was indicative of Nunavummiut desire for sovereignty over their wildlife policy and management. However, he cautioned that biological and ecological science played a critical role in legitimizing the harvest and export of wildlife, especially for such a politically contested species as the polar bear. He warned "if the stated goal is to have fewer polar bears, that may be the tipping point whereby polar bear management in Canada comes under renewed scrutiny" (Canadian Press, 2018).

Derocher's statement is supported by the profound influence of international political concerns on the management of polar bears across the Arctic. Polar bear conservation began in earnest in the 1960s through a collaborative effort between the five major Arctic states. While other jurisdictions chose to ban polar bear hunting outright, Canada allowed its provinces and territories to regulate hunting. Where the majority of polar bear hunting took place, the territorial

and federal governments worked to justify the continuation of polar bear hunting through conservation science. Recently, the United States and Russia sought increased restrictions on the trade in polar bear parts under the Convention on the International Trade in Endangered Species (CITES), a move which has a direct impact on the sustainability of the polar bear hunting economy (Tyrell and Clark, 2014). Inuit Tapirit Kanatami (ITK), an organization which advocates for the rights and wellbeing of Inuit in Canada, critiqued the motion for increased restrictions (Young, 2016). The ITK response defended Canadian wildlife management practices and ITK president Terry Audla went as far as to call polar bear conservation in Canada "robust and responsive" (Nunatsiaq News, 2013).

As this chapter will show, historically, Inuit hunters and Canadian wildlife managers have shared an adversarial relationship. Therefore, it comes as a surprise that ITK would defend the Canadian management of wildlife. The polar bear quota, as a wildlife management tool, has colonial origins that were intended to displace the claims of Inuit to polar bear management. Yet, despite the quota's inheritance of colonial legacies, Inuit have chosen to come aboard the quota project in selective ways. Alongside pointing out the colonial origins of polar bear management, this chapter also aims to illustrate the changes in polar bear conservation regimes that have enabled alliances between resource managers and Inuit hunters in international political contexts.

The polar bear hunting quota emerged from several decades of state-directed polar bear management. In Canada, the first limited season for polar bear hunting was enacted in October of 1935 running until the end of May 1936 (Schweinsburg, 1981). In the 1950s, the construction of the Distant Early Warning Line and the relocation of Inuit from northern Quebec to the high Arctic brought hunters closer to both polar bears and a market for the animal's pelts (Tester and Kulchyski, 1994). This market was enhanced through the disruption of previous lifeways and the

state-sanctioned removal of Inuit families to the high Arctic to secure geostrategic objectives. It was at this time that international concern over the longevity of the species began to be expressed, though mostly by people outside of the Arctic (Burnett, 2003). In 1956, the Canadian Wildlife Service listed the polar bear as a species of special concern and began drafting plans for conservation (Kulchyski and Tester, 2007). Then, in 1965, wildlife biologists and managers met for the first International Scientific Meeting on the Polar Bear in Fairbanks Alaska. Representatives from the five Arctic countries (United States, Canada, USSR, Denmark, and Norway) discussed scientific knowledge of polar bears and possible agreements on management actions for the species (Larsen and Stirling, 2009). This meeting led directly to the *Agreement on the Conservation of Polar Bears* in 1973, after which only Canada and Denmark (Greenland) permitted the continuation of a commercial polar bear hunt (Peacock et al., 2011).

In the interim between the meeting and the agreement, Canada introduced a quota system to manage the harvest of polar bears by Inuit. The quota is a limit on the number of animals that can be killed in a given season. The first polar bear quotas in Canada were established in the winter season of 1967-1968 (Peacock et al., 2011). At the time, the actual quota numbers were justified based on an appeal to the magnitude of recorded harvest, described as an "unprecedented level of 726 bears" (Schweinsburg, 1981, p. 1). The quota was set at 375 hunting tags, with most communities being issued an allowable limit of half their previous year's harvest. However, the polar bear populations in Canada and across the Arctic still had no reliable scientific estimate (Prestrud and Stirling, 1994). There was simply no way to determine if the harvest was sustainable or not. Wildlife biologists used the imposition of the quota as an opportunity to generate estimates of the polar bear population. The early quota was an experiment in harvesting information that would be used to govern the entanglements of humans

and polar bears in the future (Schreiber, 2013). This has continued with the advent of the Nunavut Land Claims Agreement and the Inuvialuit Final Agreement, where co-management boards of Inuit hunters working with wildlife technocrats direct polar bear management (Dowsley and Wenzel, 2008). While conflicts persist about raising or lowering quotas, the quota itself remains a fixed practice in the management of polar bears.

Although the quota only came about in the 1960s and 1970s, it inherits an older set of logics that were formalized in wildlife management as it developed as a scientific practice in the first decades of the twentieth century. Wildlife management was founded on a set of agricultural metaphors that assumed natural stocks of animals behaved like cultivated crops. In his genealogy of the management term "harvest," Paul Nadasdy (2011) cites Aldo Leopold's *Game Management* as the seminal textbook of wildlife biology. Leopold (1933) understood game management as equivalent to "the other land-cropping arts" (p. 3), with the objective of "control[ling] the factors that affect the production of wildlife" (Nadasdy, 2011, p. 138). Nadasdy identifies two central assumptions of this discursive lineage. First, wildlife management requires its adherents to assume that "humans can and should control animal populations […] to maximize the wildlife crop" (Nadasdy, 2011, p. 139). Second, the quota assumed that there existed a surplus of polar bears that could be taken from the population every year without undermining their ability to reproduce. The quota attempted to optimize this surplus through a variety of techniques, detailed below. However, a maximized harvest was not an ecological principle as much as it was an expression of economic values imported by Euro-Canadians. The quota is not a technology that exclusively concerns itself with polar bears. Like other wildlife management practices implemented in Canada, it targets the relationships between humans and animals in an attempt to produce a modernist and colonial mode of polar bear natures.

The quota is a technology that was intended to supplant Inuit understandings of the polar bear with the values held by Western wildlife technocrats. The implementation of the quota required that Inuit hunters act as a class of commodity producers. As entrepreneurial subjects, Inuit were to understand themselves as clients who should seek advice for their own improvement from state managers. In many ways, this was not a very successful project, but it is one that has shaped the ways that the polar bear hunt is understood both within Inuit territories and beyond. My argument depends on the notion that the quota attempted to govern northern people and territories through the cultivation of a conservation hunter subjectivity among Inuit who harvested polar bears for both subsistence and profit.

To substantiate this claim, I present a short general history of the Canadian state's wildlife management programs in Inuit lands and their often explicit obsession with improving the discipline of Inuit hunters. I then analyze the ways that flexible quotas were used as incentives for Inuit participation in biological surveys of polar bear science. The chapter ends with a focus on an episode from the early 1990s in which biologists from the Northwest Territories (NWT) went to great lengths to secure access to the lucrative American sport hunter market for Inuit polar bear hunters and guides.

2.1 Stories of Waste, Laws of Starvation

In the early twentieth century, colonial administrators in Canada began targeting Inuit populations and Arctic wildlife as subjects of management. This managerial project assumed that Inuit resource economies were unorganized and wasteful, requiring state assistance to realize their potential. However, Inuit had been managing wildlife and participating in global economies since even before the existence of the Canadian nation (Routledge, 2011). In order to effectively govern the entanglements of Inuit and wildlife, the state relied on an understanding of Inuit as a

people whose geographic isolation made their culture inherently incompatible with modern societies (Stuhl, 2013). These ideas about Inuit emerged from stories that had been circulated by European explorers of the Arctic around the turn of the twentieth century (Cameron, 2015). The assumptions embedded in these stories influenced the production of Inuit as legal subjects whose rights were limited to local economies and traditional cultures. Further, the notion that Inuit are a singular, unchanging, and inescapably traditional people has carried forward to contemporary institutions, such as the polar bear quota, that frame the politics of wildlife management in Inuit lands.

In 1917, Canadian Parliament passed the Northwest Game Act (NGA) delimiting hunting seasons and placing limits on the numbers of muskox and caribou that could be harvested by Inuit hunters. This marked the first legal restriction placed on Inuit hunters by the Canadian state and would be proceeded by a period of intensive interventions in the lives of Inuit in the following decades (Kulchyski and Tester, 2007). In this early period of wildlife management, bureaucrats operated under the assumption that Inuit were an archaic people whose hunting practices were in danger of the corrupting influence of modern technology. Paradoxically, Inuit hunters were also believed to be endangering the wildlife of the Arctic through the "wanton slaughter" of caribou and muskox (Kulchyski and Tester, 2007, p. 28). Regulations in the first half of the twentieth century struggled to produce Inuit as self-reliant subsistence hunters, despite the lack of such precedent in Inuit history. These laws were based on the testimony of witnesses whose reliability as narrators would only begin to face scrutiny decades after their stories had already re-shaped Inuit lives and landscapes.

Near the end of the nineteenth century, Europeans returning from Arctic travels began trading stories about Inuit cultures. English author Warburton Pike recounted some of the earliest

descriptions of Inuit as indiscriminate and wasteful hunters (Sandlos, 2007). In 1908, the American Museum of Natural History sent Vilhjalmur Stefansson on an ethnographic survey of the Central Arctic (Stefansson, 1913). He relayed observations of hunting in the Mackenzie Delta near the Beaufort Sea and repeated the narrative of a wasteful hunt, claiming to witness Inuit who took whole herds of caribou. Stefansson, however, was more explorer-celebrity than dispassionate anthropologist. He is known for sensationalizing or decontextualizing his stories to suit his vision of an Arctic in need of rational, scientific exploration and management (Stuhl, 2013). Pike's work, on the other hand, was often reflective of his preoccupation with the aesthetics of sportsman-like hunting, rather than an assessment of the efficiency of resource. Still, both authors contributed to a discourse of an irresponsible Inuit hunter that would come to inform the policies of wildlife management such as the NGA.

However, the narrative of reckless waste was not the only way Inuit were described. Elsewhere in his writings, Stefansson described Inuit as prudent and noble hunters. In order to reconcile this apparent contradiction, Stefansson and other writers at the time blamed the reckless behaviour they described on an inability of Inuit to adapt to modern technologies and economies (Kulchyski and Tester, 2007). This sentiment was evident in the early polar bear quota. Managers believed that the introduction of skidoos was driving the sharp increase in polar bear harvest they observed throughout the 1960s. However, as Kulchyski and Tester (2007) demonstrate, the rise in polar bear kills was caused by myriad pressures and "the high price being offered for skins was the most significant factor accounting for any increase in the hunting of polar bears" (p. 115).

Stefansson's arrival in the Beaufort Sea coincided with the waning years of the whaling industry (Routledge, 2011). He witnessed Inuit killing caribou in order to sell meat and hide

products to whalers and other resource extraction workers in the region. When the NGA was written, bureaucrats chose to understand this moment as an aberration rather than a continuation of historical Inuit participation in global economies. The text of the NGA required Inuit to restrict their hunting to fall and winter seasons and to only take animals out of season "to prevent starvation" (quoted in Kulchyski and Tester, 2007, p. 32). If the noble, ascetic subsistence Inuit hunters were a colonial fantasy, the state was prepared to legislate them into existence.

The subsistence hunter discourses from the beginning of the twentieth century have contoured Inuit engagements with the state institutions, and by extension, encounters with the wildlife of their home landscapes. For example, Canadian recognition of the Nunatsiavut Land Claims Agreement focused heavily on subsistence hunting rights while largely neglecting the commercial dimensions of hunting (Procter, 2012). Similarly, the European Union's 2009 ban on the importation of seal products included a vague and ineffective exception for products of Inuit subsistence activities (Hossain, 2013). In both scenarios, Inuit management of wildlife was structured as a hyperlocal concern of dietary and income supplement, rather than an issue of Inuit sovereignty. In the case of the seal product ban, Inuit hunters were effectively excluded from meaningful participation in global markets. The exception that allowed seal products from "hunts traditionally conducted by Inuit and other indigenous communities and contribute to their subsistence" (Hossain, 2013, p. 156) assumes that Inuit as a people who are not interested in modern global economic exchanges. As Alethea Arnaquq-Baril documented in her film *Angry Inuk*, this exclusion is widely resented among Inuit (Arnaquq-Baril and Thompson, 2016). The seal products ban is a significant barrier to the many Inuit who aspire to develop sustainable renewable resource economies based on fish and wildlife.

Perhaps most pervasively, the construction of Inuit as a culture outside of modernity licenced the authority of scientific wildlife managers as the primary stewards of human-wildlife entanglements. Scholars from the environmental humanities have described the colonial practices of Canadian wildlife technocrats at length. In her history of Canadian conservation in the 20th century, Tina Loo (2006) argued that wildlife management imposed a set of distinctly settler colonial values on people and their understandings of nature. In his study of federal wildlife programs in the Northwest Territories, John Sandlos (2007) showed that these programs were as much about asserting state sovereignty over the people and landscapes of the north. In his ethnography of Canadian and Kluane wildlife co-managers, Paul Nadasdy (2003) concluded that more recent Indigenous inclusion in wildlife management reinforces power asymmetries that privilege Euro-Canadian actors and their discourses. Wildlife technocrats, the bureaucrats who were employed as both the producers of scientific knowledge and the managers of wildlife projects, are an interesting set of actors to study in the history of polar bear management. They have inherited an authoritative role from the history of colonial framings of northern resources. They put that inheritance into practice as they attempted to enlist Inuit hunters in their conservation and development schemes.

The stories of wanton and wasteful hunting have had long-reaching political effects. When the Arctic narratives of Stefansson and Pike were circulated in the early 1900s, there was little awareness of the sensationalized nature of their accounts, nor the ways that their European perspectives conditioned their perspective on what they had witnessed. The judgments they passed on Inuit hunters demonstrated their idealization of the aesthetics of sportsmanship, not ecological sustainability (Campbell, 2004; Stuhl, 2013). Nevertheless, their narratives influenced the numerous laws and policies that pushed Inuit out of participation in modern globalized

economic trade and licenced the colonial Canadian government to intervene in their wildlife management practices. This history gives context to the imposition of the polar bear hunting quota and the complex politics of Inuit participation in this colonial practice. The following sections pick up these historical threads and tie them to the attempts of Canadian technocrats to impress upon Inuit an improved and modern conception of wildlife: a resource to be optimized.

2.2 Hunting with Biopower: The Quota and the Conservation Hunter Subjectivity

In 1992 Mitchell Taylor, the polar bear biologist of the Wildlife Management Division of the NWT, wrote to geomorphologist and amateur historian William Barr to outline "some of our expectations of this effort [to produce] as complete an account as possible for the total harvest mortality of polar bears in Canada up to the start of our harvest program in 1975" (Taylor, 1992). This request suggests two possible things about the early administration of the polar bear hunting quota. Either the quota activities were not adequately documented, or the records had been lost in some government filing cabinet. The establishment of Yellowknife as the capital of the NWT in 1967 had, after all, required a massive transfer of personnel and resources from Ottawa to the northern Territory. In either case, wildlife managers in the early 1990s had no evidence at hand of basis for the original quota levels. Taylor explicitly stated that in "1968 harvest quotas were initiated, supposedly based on harvest records. The documentation for this exercise does not exist in our records, and I suspect it was done in a relatively arbitrary manner" (Taylor, 1992).

There is no recorded publication of Barr's findings and his report was not accounted for in the Territorial Archives. Taylor's assumption that the quota was set without any scientific justification would later enter the literature on polar bear science and policy. For example, Prestrud and Stirling (1994) are forthright about the origin of the quota:

> "In the NWT in the 1960s, there were no data on the size of any polar bear populations on which to base sustainable annual quotas. Thus, in 1968, arbitrary quotas based on the previous harvest record for each community, were introduced on an interim basis" (p. 115).

The admission that the quota operated on a "shoot-first, ask-questions-later" basis reveals much about the priorities of wildlife managers in the latter decades of the twentieth century. The quota was clearly a reactionary measure, but it was not reacting to a measured decline in polar bears. It was an expression of politicized anxieties about the future of an iconic species.

As it turned out, the polar bear could be a shared object of concern to start conversation (and hopefully lead to cooperation) among dangerously tense nation states. The first International Meeting on the Polar Bear in 1965 was a geopolitically strategic assembly of state representatives. The group met in Faribanks Alaska to discuss management direction for the species, and conspicuously included representatives from the United States, Canada, the Soviet Union, Denmark, and Norway (Peacock et al., 2011). During this period of the Cold War, environmental science had become a means through which circumpolar states could demonstrate their presence in the region. Cooperative projects, like the First International Scientific Meeting on the Polar Bear, were used to generate data and agreement on the limits of national jurisdictions in the Arctic as well as possible avenues to defuse geopolitical tensions (Doel et al., 2014). Polar bears fit nicely into this political context because they provided a site to coordinate shared sentiments on the responsibility of states to act as benevolent stewards of the environment. The desire to protect charismatic species was felt similarly across the Cold War divide. In the 1960s, anxieties about the decline of wildlife were pinned on the belief that postwar technologies of human mobility "had enabled opportunistic adventurers around the world to penetrate previously inaccessible wilderness areas" (Burnett, 2003, p. 265). However, these fears rested on an amnesia that places such as the Arctic had been long drawn into global

systems of circulation and on a colonial mentality that imagined wilderness areas as terra nullius. The Fairbanks meeting in 1965 pledged to investigate (and in essence substantiate) global concerns about the over-harvest of polar bears. The state scientists prioritized research that ensured the sustainability of polar bear harvests across the Arctic. This moment channelled the momentum of conservation politics into a formalized agreement that prioritized harvest-oriented and scientifically-informed management of the polar bear.

The 1965 meeting might have produced a different agenda for research had it included any Indigenous representatives from the Arctic. It is worth asking what kinds of politics might have been bundled in with polar bear science had it followed an Inuit-directed research program. Certainly, they would have less to do with reifying the territorial and managerial limits of a small collection of nation states than they did in 1965. Rather than providing a full answer to this question here, I think merely posing it gestures to the ways that the planning of a scientific research program is a profoundly cultural activity. The epistemological legitimacy bestowed on applied conservation research is an artefact of the values and power asymmetries that characterize knowledge production in modern (and especially colonial) bureaucratic states.

The quota emerges from and is reflective of these culturally and politically motivated desires to protect the polar bear. This is somewhat different from Taylor's judgment that the quota was arbitrary. Such a statement assumes that wildlife management decisions are guided by rational processes: the bear quota was arbitrary because the numbers and management rational was missing. The original quota numbers may appear arbitrary to a scientist, if only because they are trained to make decisions based on a defined set of data and a procedural, replicable analysis. Yet, as we can see, while the number was perhaps arbitrary, the quota itself was a practice with recognizable political and cultural antecedents. The products of wildlife science and management

do not merely flow from a rational distillation of objective data but are instead outcomes of the political and cultural structures that lend them legitimacy and authority.

2.3 Conservation Hunter Subjectivities

My argument rests on the assumption that the quota was intended to shape the ways that participants in polar bear conservation understood themselves in relation to a larger project. The quota set the conditions for what constituted legitimate and authoritative knowledge. It achieved this by instructing both bureaucrats and hunters a set of truths about themselves as polar bear conservationists. To support this logic, I return to Michel Foucault and his theories of power and government. Foucault's complementary work on the administration of a productive power can be found in his writings on governmentality (Foucault, 1991). For Foucault, governmentality refers to the regulation of individual conduct such that "techniques of the self are integrated into structures of coercion" (Burchell, 1996, p. 20). In her short essay on governmentality, Li (2007) states that governmentality functions by "educating desires and configuring habits, aspirations, and beliefs" (p. 275). This theorization of power and government is common across contemporary studies of political ecology (Baldwin, 2003; Agrawal, 2005; Lorimer, 2015).

In a particularly lucid application of Foucault's work, Rutherford (2011) analyzed instances of governmentality in environmental narratives across various ecotourism land- and media-scapes. Rutherford's deployment of Foucault's concepts prioritized acts of subject-formation as the key moments in governmentality. Subject formation, or subjection, "is the process by which the conditions and parameters are set for individuals to 'tell the truth about yourselves'" (Rutherford, 2011, p. xiii). Under this logic, governing and governmentality rely on the cultivation of individual identities that exist only in their relationship to other identities or subjectivities. Subject formation co-produces the individual and the population, asking a human

subject “who she or he is individually, but also where he or she fits in the totality” (Rutherford, 2011, p. xiii).

Not all scholars are convinced of the merits of using governmentality to think through power relations. Michael Cepek (2011) criticizes the recent proliferation of academic work invoking governmentality as the primary tool to analyze power. Speaking to anthropologists, Cepek (2011) states that they “will suffer from a political and methodological bias if we begin our research with the assumption that [a population’s] environmental positions are manifestations of governmental logics and techniques” (p. 505). He positions his work in contrast to that of Arun Agrawal (2005) and Timothy Luke (1999) who have been the most prominent figures to advance the notion that “most environmentalist movements now operate as a basic manifestation of governmentality” (Luke, 1999, p. 121). Rather than refute the validity of their work, Cepek (2011) argues for a skeptical disposition that does not readily assume that environmental and conservation projects over-determine understandings of the environment. He takes particular issue with notions of subjectivity that do not account for the relationships and understandings with and of nature that prefigure the environmental projects. In his study of the Cofàn people of the Ecuadorian Amazon, Cepek acted as a participant witness to NGO-led environmental conservation programs. The Cofàn are enlisted to conduct wildlife surveys within their forests. These surveys generate data that underwrite environmental protection policies and projects in Ecuador. The administrators of the environmental conservation programs assume that participation in technical surveys inspires a sense of technical, ecological environmental ethic in the Cofàn. However, the Cofàn have a complex and embodied theory and practice of conservation they refer to as “tsampima coiraye (caring for the forest)” (Cepek, 2011, p. 505). Tsampima coiraye is not easily supplanted by the scientific logics of ecology, leading Cepek

(2011) to conclude that the program inspires a sense of alienation amongst the Cofàn, rather than ecologically-minded subjectivity. While they may continue to undertake the census, the Cofàn see these "projects as work that they perform for the outside world" (Cepek, 2011, p. 511).

Cepek's contribution indicates that governmentality does not operate formulaically. This much is recognized by Rutherford (2011) who states that "for power to operate, there must be freedom to be otherwise" (p. xiii). As such, it is worth noting that the quota does not constitute a totalizing force over the ways Inuit understood themselves. Inuit political action for wildlife conservation is not merely an artefact of colonial institutions, and to say so would be a gross oversimplification. For the purposes of my argument, governmentality is analytically useful because it helps explain the actions of wildlife bureaucrats who were trying to establish and enforce a new management regime.

2.4 Modern Hunters and Abandoned Traditions

In Canada, fulfilling the program for polar bear science required a sustained attempt to downplay the role the Inuit might play in determining the direction and character of wildlife research and management. However, it was absolutely crucial to include Inuit in the program as subjects who could lend legitimacy to the governance of wildlife and as labour to minimize the costs of research and management. In order to effectively enrol Inuit in the position of conservation hunters, state bureaucrats needed to suppress or deny previous modes of engagement with wildlife that may interfere with the administration of a technical and scientific regime. This maneuver made Inuit dependent on services that could only be provided by the technocratic professionals who formed the public service of the Canadian state.

The extinguishment of Inuit wildlife management practices was still a work in progress twenty years after the imposition of the first polar bear hunting quotas. The official policies of

polar bear management discursively constructed Inuit knowledge of wildlife as archaic and irrelevant. The introduction to a draft Northwest Territories Polar Bear Management Plan (PBMP) from 1988 contains a perfunctory acknowledgement the cultural and material importance of polar bears to Inuit (Department of Renewable Resource, 1988). The paragraph ends with a statement that firmly positions Inuit knowledge and practices as quaint relics: "Today, many of the ancestral beliefs and traditions in polar bear hunting have been abandoned along with stone weapons, however, a deep respect and concern for the polar bear remains" (Department of Renewable Resource, 1988). Documents like the PBMP work to condition the ways that government workers understand their responsibilities and obligations. While they do not have the power of laws, they form the basis of policy thought and direction to which subsequent technical management documents and exercises must refer. Although the PBMP for all of the NWT was never finalized, it was a living document that was re-drafted several times into the early 1990s. The comments on abandoned Inuit traditions survived into a version of the document submitted to the international Polar Bear Technical Committee in 1989 (Department of Renewable Resources, 1989a). The PBMP, and its framing of Inuit, circulated and informed managerial attitudes and practices as polar bear management proceeded.

The description of Inuit knowledge and practices as ancestral and historically-outdated is recognizable as an attempt to constrict and suppress the political participation of Indigenous peoples in wildlife management. There exists a significant literature about such maneuvers in northern Canadian colonial contexts (Nadasdy, 2003; Schreiber, 2013; Cameron and Levitan, 2014; Cruikshank, 2014; Cameron, 2015). A compelling analysis of this process comes from the anthropologist Paul Nadasdy and his work on wildlife co-management between the Yukon government and the Kluane First Nation. He problematizes the description of Indigenous

knowledge as something traditional. He contends that "the idea of 'tradition' can be used by non-natives to deny the adaptability and dynamism of aboriginal culture" (Nadasdy, 1999, p. 4). Accordingly, the Plan's designation of Inuit understandings of polar bears as a set of "ancestral beliefs and traditions" (Department of Renewable Resources, 1989a, p. 1) that are comparable to archaeological artifacts like "stone weapons" (Department of Renewable Resources, 1989a, p. 1) "has the effect of assuming that cultural practice is frozen at a particular point in time (usually the distant past)" (Nadasdy, 1999, p. 4).

The PBMP doesn't simply relay information about Inuit culture. It actively produces a narrow bureaucratic understanding of Inuit culture as a curiosity that is, at best, tangential to the politics and management of polar bears. This is evident in the document's rehearsal of the claim that "polar bear hunting was associated with masculinity because of the difficulty and danger involved in killing a polar bear" (Department of Renewable Resources, 1989a, p. 2). On the one hand, this statement misunderstands hunting as an exclusively masculine activity, instead of a necessary provisioning practice regardless of gender (Desbiens, 2010). However the statement goes beyond a gendered division of labour, and entirely misrecognizes the importance of the polar bear in Inuit culture. As several anthropologists have noted, "Inuit themselves usually do not emphasize the masculinity of the bear, but [instead] its humanity" (Laugrand and Oosten, 2016, p. 180). Indeed, the polar bear is evidently a rich and complex figure in Inuit culture as "bears are said to have *isuma* (the capacity think like humans)" (Laugrand and Oosten, 2016, p. 184). Inuit stories dwell on the sentience and agency of the bear, whereas the association of the polar bear with masculinity is a connection made primarily by outsider cultures.

The point here is not to submit this ethnographic material into contest with the PBMP as a more truthful document about the polar bear in Inuit culture. It does, however, gesture to

evidence that Inuit cultural constructions of the polar bear are deeply nuanced. Such complexity was irrelevant to managers who sought to produce Inuit and their culture as singular and knowable static forms. Specifically, Inuit ideas and practices were discursively cast as inherently antiquated and traditional while simultaneously, Inuit themselves were being discursively produced as governable subjects who were ready and willing to modernize under the direction of state bureaucrats.

In Nadasdy's analysis, the confinement of Indigenous knowledge to tradition has the political effect of compartmentalizing the relevance of Indigenous contributions to management and development projects. Although Nadasdy's work focuses on the selective inclusion of Indigenous knowledge in management, his foundational assumptions apply equally to the outright dismissal of Indigenous advice, aspirations, and demands. Both cases work to authorize and legitimate state-supported scientific knowledge as the sole means of environmental decision-making. The rhetoric of the PBMP attempts to render polar bear management as a technical exercise that may be inflected with, but not determined by, political dimensions. The second goal of the PBMP necessitates that polar bear management be bracketed by the terms set by biological science: "Goal 2. To encourage the wise use of polar bears within the limits of sustainable yield" (Department of Renewable Resources, 1989a, p. 3). A related document from the same time period, the Beaufort Sea Polar Bear Management Plan, is more explicit. It expresses a goal to "ensure that polar bear populations in the Beaufort Sea are managed in accordance with sound conservation practices based on the best available scientific data." (Department of Renewable Resources, 1989b, p. 2). The management of polar bears was to be understood as a modern problem in need of modern scientific solutions.

Despite the Plan's ambitions "to encourage the active involvement of northern residents in the management of polar bears" the ultimate capitulation to scientific management has had the effect of stifling non-expert participation. In Canada, the inclusion of Indigenous people in environmental management has largely proceeded through the production of Traditional Ecological Knowledge (TEK). Through TEK, Indigenous political interventions are confined to knowledge designed to supplement scientific data (Nadasdy, 1999; Bocking, 2005). Several decades since the first drafts of the PBMP, commentators on polar bear conservation have noted that TEK has become one of a limited number of avenues for influencing state-led wildlife management: "the call for increased use of TEK by user groups may be partially a request for increased public participation in decision making" (Peacock et al., 2011, p. 379). Science has become a hegemonic force in polar bear management politics.

2.5 Red Quota: a disciplined hunt

The PBMP's framing of Inuit culture as a discarded superstition depended on a history of colonial practices that reinforced this mentality among bureaucrats. Indeed, the quota is only one part of a long history of the attempts of state actors to enrol Indigenous peoples into regional, national, and global capitalist economies. The Canadian state's "proletarianization of Indigenous populations" (Hall, 2013, p. 2) has largely depended on the false hopes offered through extractive resource economies like mining and petroleum development (Kulchyski and Bernauer, 2014). Still, partially in response to resistance against extractivism, some state actors envisaged a role for Inuit as enterprising subjects who responsibly developed (with state assistance) industries based on fish and wildlife (Loo, 2017). Bureaucrats required Inuit cooperation with their wildlife programs for two main reasons. Firstly, they depended on Inuit volunteer labour for the collection of biological materials like polar bear skulls. Secondly, they depended on Inuit

cooperation to ensure the political legitimacy of the entire project of Canadian administration of northern landscapes and resources. It was in this context that wildlife managers began to cultivate a conservation hunter subjectivity among Inuit who hunted polar bears.

A decade after the initiation of polar bear quotas, the wildlife managers of the NWT began an experimental variation on the standard quota system. In 1979, the first "red tag quotas" were issued to community Hunters and Trappers Organizations (HTOs) across the NWT (Schweinsburg, 1981). Red tags were special because, unlike regular quotas, they could be granted to or withheld from communities depending on the cooperation of hunters in polar bear research programs. Schreiber's (2013) history of polar bear management in Canada stresses that the early quota operated in a state of virtual uncertainty about the population biology of the polar bear. Statements by NWT wildlife biologists corroborate her assertion. The quota not only set restrictions on the numbers of bears harvested, it also provided a means of specimen collection.

> "In return for red tag quotas, hunters agreed to delay the opening of the hunting season (in order to protect pregnant females and family groups), to concentrate on taking large males, and to co-operate in more complete jaw returns" (Schweinsburg, 1981, p. 2)

The jaws of polar bears helped rectify the lack of demographic information for managers. It was through such biological materials that they could begin to calculate the age structure of the polar bear subpopulations (Prestrud and Stirling, 1994). When combined with aerial surveys and mark-recapture techniques, the quota produced polar bears as an optimizable resource. The negotiations over the red quota in the late 1970s marked the first time that both biologists and hunters were describing the polar bear hunt with rational concepts such as "total allowable harvest" (Dowsley and Wenzel, 2008, p. 178). This language represents the assumptions held by euro-Canadian wildlife managers that polar bears should be properly understood as resources

rather than complex beings. It makes the practice of polar bear management as a technical exercise devoid of political or cultural considerations.

The biologists described the red tag system to themselves as a rational tool that allowed management the flexibility to ensure their desired sustainable harvest of bears. In a memo from November, 1980, polar bear biologist R. E. Schweinsburg explained the red tag system as a cautionary approach:

> "no one knows at what harvest level polar bears become overhunted. Therefore red tags as opposed to regular tags, were suggested as a more readily retractable quota in the event subsequent information showed that polar bears were being overharvested" (Schweinsburg, 1980).

Through the quota, polar bear management was understood as a practice that could only be meaningfully apprehended at the level of animal population. Concepts such as "overharvest" depended on the agricultural assumptions that the species behaved like a self-renewing crop. As part of the design of the quota, hunters were expected to select polar bears for harvest based on their sex. Female polar bears were valued over male bears because biologists perceived them as providing a more crucial and indispensable role in reproducing the population. A memo from an NWT polar bear biologist in 1995 stated that "population agreements specify a 2 males to 1 female sex ratio in order to get the largest possible quota" (Taylor, 1995). However, this required a mechanistic notion of polar bear reproduction as a purely biological-material process. Schreiber (2013) notes that "Arctic and sub-Arctic hunters tend to disagree with wildlife biologists about killing only large, male animals, saying that these individuals are important for the social coherence and survival of the group" (p. 172).

Still, the red tag quota framed negotiations between the wildlife management bureaucracy and the community HTOs. Schweinsburg's correspondence from 1980 noted the dissatisfaction from the Coral Harbour HTO whose red tag allowance was suddenly retracted (Schweinsburg,

1980). A decade later, in 1990, Philip Nungaq, secretary of the Resolute Bay HTO, requested a change for the opening dates of the polar bear harvest, noting that historically the community had been careful not to harvest females in excess of the sex ratio (Nungaq, 1990). The response from Titus Allooloo, Minister of Renewable Resources, was diplomatic, deferring any change and stating that the original change of season had allowed an increase of four red tags (Allooloo, 1990). These examples on their own do not indicate that the red quota had completely reified a conservation hunter subjectivity among Inuit. However, they do show that many hunting communities were dedicating more of their time and labour to contesting polar bear management on the terms of wildlife science.

The construction of the polar bear population and its sustainable harvest, as scientific objects that could be known and manipulated, set the conditions for the cultural understanding of the bear as resource. The red quota was intended as a method of acquainting Inuit hunters with the logics of population biology, or perhaps more accurately, the consequences of not abiding by those logics.

While biologists were aware of the perverse incentives of their programs, they were less cognizant that the unintended outcomes were just as much a product of the quota as the intended goals. Managers believed that the problems produced by the quota could be mitigated by simply adjusting the details of the program. This confidence is expressed in a discussion of the ability of the red quota to enforce a desired harvest sex ratio of two males for every female. Ron Graf, Assistant Director to the Director of the Wildlife Management Division, noted his concern that the reduction in red tag allotments in years following a less desired harvest sex ratio would encourage hunters to maximize their kill regardless of sex. He reasoned that “if you are going to have your quota reduced anyways, you might as well overharvest the females and exceed your

quota" (Graf, 1995). Bas Osenbrug, Director of the Wildlife Management Division, responded by suggesting "that a statement excluding this condition be placed up front so that the algorithm Mitch has developed to determine the quota will not apply when the allowable female harvest is not realized" (Osenbrug, 1995b). It is important to remember here that the inherent logic of the quota demands that hunters maximize the harvest in a given year, lest they have their quota reduced out of a perceived lack of need. The quota produced the total allowable harvest as a desirable goal while simultaneously producing overharvest as a problem in need of expert managerial solutions.

In generating the possibility of such problems as overharvest, the quota authorized wildlife biologists and bureaucrats as the experts who were necessary to solve these challenges. The red quota was understood by managers as a tool that gave Inuit hunters the most freedom possible within an ecological reality of exhaustible polar bear populations. It also had the effect of enforcing a set of cultural assumptions that narrowly conceived of the polar bear as a biomaterial resource to be optimized. The red tag system engaged Inuit hunters in the managerial logics of wildlife populations and shifted the discourses of polar bear hunting towards technical and scientific concepts. By imposing quotas, wildlife managers made a bid to demonstrate their capacity to bring an unwieldy beast under the domesticating calculus of population biology. This secured hunter cooperation in the immediate establishment of this resource regime, and legitimated Canadian technocrats as the rightful administrators.

2.6 Polar Bespoke Hunt

As Inuit hunters were being asked to see themselves as students of wildlife science, bureaucrats were beginning to think of Inuit as clientele who needed specialized technical and political services. The specialized ecological knowledge that wildlife managers had produced

about the polar bear needed to justify its central role in polar bear management. One method of securing legitimacy was to produce a set of clients who required this expertise. This final section details an episode from the early 1990s when wildlife managers with the NWT attempted to use their scientific knowledge of polar bear populations to secure access to the American sport hunting market. The United States had banned the hunting of polar bears and the import of polar bear hides in 1973 under the Marine Mammal Protection Act. However, a significant appetite remained for hunting the animal amongst American sport hunters. Building on the ways that the quota had generated an understanding of the bear as resource, this moment demonstrates that managers wanted Inuit to realize the value of that resource as a commodity. In a way, the state envisaged Inuit as entrepreneurial commodity producers in a specialized global market. Their resource economies were to be made dependant on the data, analysis, and advocacy provided by technocrats.

While managers had always gestured to the economic importance of the polar bear, in the 1990s, discussion of the hunt was increasingly articulated in financial terms. A report on polar bear management generated by the NWT Department of Renewable resources in 1993 contains a quantification of the value of polar bears as a source of food. In considering the value of polar bears as food, it was estimated that "a conservative replacement cost for this meat would be around $150,000.00 per year" (Department of Renewable Resources, 1993, p. 3). While polar bear meat is not considered a dietary staple, it is notable that it was nevertheless calculable in the state's consideration of its own welfare obligations. In their history of wildlife management and Inuit hunting rights, Kulchyski and Tester (2007) argue that the Canadian state spent the latter half of the twentieth century navigating the effects of the decline of the fur trade on Inuit communities. Their analysis indicates that civil servants concerned themselves with weaning

Inuit off of state assistance programs by facilitating the conditions for Inuit participation in numerous resource economy schemes. The polar bear conservation hunt can be counted among these schemes. In 1992, a funding proposal for community-based management planning from the Igloolik HTO states unequivocally that "with the decline of the fur industry, it [the polar bear] is the only viable source of fur revenue" (Igloolik HTA, 1992).

The state had loftier ambitions for the polar bear economy than the mere trade in furs. In 1992, a film crew from Safari Club International requested permission film NWT wildlife technicians as they trapped and tagged polar bears. This was recognized as a unique opportunity by the NWT polar bear biologist Mitch Taylor. In a report on the planned research activities for the 1993 field season, Taylor outlined the possible benefits of accepting the request:

> "A film crew associated with Safari Club has asked to film our activities to help convince the U.S. Legislators to open the United States to importation of polar bear hides. This would greatly increase the market for polar bear hides and for American sport hunters. Their message would be that our conservation program is both sound and supported locally."

This marks the first record of the work undertaken to re-open the American sport hunting market after it was effectively undermined by the 1973 ban on hide imports. It is not surprising that Safari Club International would support such an initiative. Paulson (2014) draws a genealogy of the term "sustainable hunting" demonstrating its origins in the work of hunter's advocacy groups. In his analysis focused on Safari Club International, he notes that the organization's advocacy work produces sustainable hunting "as a commodity that pays for the conservation of animals and ecosystems effectively" (Paulson, 2012, p. 55). However, the interests of such organizations turn on the preservation of hunting as a right and are only interested in economic and ecological development as legitimizing secondary products of a sustainable hunt. Their work complimented the work of NWT's wildlife managers. The conservation of polar bears was being

made into an economically productive practice. While Taylor's actions here may have blurred the lines between biology and advocacy, they certainly demonstrated a pro-active management of the polar bear hunt.

The work to remove the ban on polar bear imports to the US continued throughout the 1990s. In 1993, Taylor commented on a letter penned by Canadian Federal Secretary of External Affairs, Perrin Beatty, regarding the possibility of amendments to the U.S. Marine Mammal Act to allow the importation of polar bears. In his commentary, he argued that the Canadian management system afforded more protection and care of the bears than the American domestic conservation legislation. He further contended that the export of hides to the U.S. "is a trade issue, not a conservation issue," wryly stating that "the number of polar bears taken in the Northwest Territories is not affected by how many are imported to any country, including the U.S." (Taylor, 1993).

Much later, in 1996, Taylor collaborated on a letter with several other biologists and managers responding to a request from the U.S. Fish and Wildlife Service to "clarify the conservation meaning of the harvest statistics provided by the Northwest Territories" (Graf, 1996). Ron Graf, Canadian Chair of the international Polar Bear Administrative Committee, eventually signed the letter, although Ian Stirling and Bas Osenbrug also provided comments. This letter is striking for two reasons. It shows that the political advocacy work undertaken by wildlife managers was not restricted to the lone actions of Taylor, but instead was an effort that required coordination across the scientific and administrative bureaucracy. It also demonstrates that the population data that governed the quota were not self-evident truths about the polar bear. Instead, they required explanation to achieve legibility, even for other wildlife managers. The population data were inextricable from the political and cultural systems in which they were

embedded. While data was required to make a case, it was by no means the only piece necessary to dispel the doubts of American biological management agencies about the effectiveness of Canadian conservation.

Still, when meeting with Inuit, wildlife biologists insisted that the scientific data produced with their expertise was necessary to bring the hunt in line with American regulations and open a new lucrative market. One such meeting was conducted in 1995 and concerned the management of Davis Strait and Southern Hudson Bay polar bear populations. In the opening remarks, Jim Noble, of the Nunavut Wildlife Management Board, "emphasized that in order to maintain opportunities for harvesting, there was a need to show other countries and jurisdictions that polar bear management in the NWT was sound" (Osenbrug, 1995a). This sentiment re-emerges in Taylor's communication regarding changes to quota allowances under the regional polar bear management agreements. In a discussion of the difficulty of permitting defense kills, he acknowledged that polar bears posed a threat to safety regardless of the time of year. However, excluding these kills from the quota posed a problem since they could disqualify a population from being designated sustainable by the U.S. Fish and Wildlife Service. He stressed that "we need quota regulations that insure [sic] the kill is within sustainable limits to protect the economic value of polar bear sport hunting."[1] Wildlife managers had always imagined themselves as working within the limits of ecological processes. Their work was convincing hunters of the need for technocrats to identify such limits.

In January of 1995, Moses Koonoo, Chairman of the Ikajutit HTO, wrote to Silas Arnga'naaq, Minister of the NWT Department of Renewable Resources. His letter responded to the cancellation of polar bear population inventories that had been planned by the Territorial government. His statement is worth repeating here at length:

> It has been explained that the population inventories for the Arctic Bay areas are not current or accurate. At the present time it is estimated that there are only 317 bears in our area and that the present quota of 19 is not within sustainable yields. As hunters we know we are not over harvesting Polar Bears in our area and that our quota could be increased and still be within sustainable yields. Our concern is that with the proposed lifting of the ban on Polar Bears to the U.S.A., we will have to show with scientific data that we are within sustainable yields. With the present scientific information we are not" (Koonoo, 1995).

His letter goes on to note the economic importance of the polar bear, stating that community could stand to gain $90 000 from the polar bear hunt. Koonoo was articulating the concerns of hunters in terms that could be understood by the state: science and economics. While he made sure to note that hunters themselves did not need population biology to tell them the condition of the bears, he was aware that science played a role in supporting the desired goal of a hunting economy. The HTO perceived that they did not have the resources to conduct their own monitoring but needed the state to finance the project and provide the necessary technical expertise to secure legitimacy. They were now compelled to ask for state assistance to realize their entrepreneurial ambitions.

2.7 Conclusion

The polar bear hunting quota was not merely about helping Inuit hunters work within the limits set by an exterior, non-human ecology. As a technology that inherited early conservation's agricultural metaphors, the logic of the quota compelled its subjects to pursue the optimization of an extractable resource. However, this optimization required the specialized expertise of a managerial class of state technocrats who worked to produce both knowledge about wildlife and a clientele for that knowledge. This further entrenched a conservation hunter subjectivity among Inuit polar bear hunters who increasingly devoted their time and labour to articulating themselves in the terms set by wildlife management. Despite this history, Inuit are using their

"de-facto authority" (Peacock et al., 2011, p. 394) over polar bear management to set their own priorities according to a balance of interests that span culture, economics, and increasingly safety.

I started this chapter with the controversy of Nunavut's proposed increases to the polar bear hunting quotas. I questioned the obviousness of a global political dimension to Nunavut's management of its wildlife resources. Yet, the history of the quota relayed here supports Derocher's claim that the proposed increases invites new rounds of international scrutiny (Canadian Press, 2018). It must also be acknowledged that wildlife managers played a role in creating the dependencies that invite such scrutiny. Wildlife managers in the NWT during the early 1990s carried on with administering the polar bear hunting quota as a means of linking Inuit to global economies. While biologists may have understood the scientific management of the quota as a program of sustainability, it introduced a logic of resource optimization to polar bear hunting. It is not surprising that this mode of relating to wildlife has taken hold in a region where hunting and fishing are seen as the only viable alternative to extractive economies. The irony is that extractive development, both within the Arctic and wherever petroleum reserves are found, is more deleterious than hunting to the continued existence of the polar bear. As of now, there is no effective equivalent to the polar bear hunting quota for fossil fuel or metals and minerals development. As a tool that is supposed to interface Arctic economies with polar bear management, the quota invites international political interventions in Inuit hunting practices. Meanwhile, no recourse exists for Inuit whose livelihoods are undermined by climate change.

3.0 Chapter 2: Conservation Reserves

Anyone who is headed from the town of Churchill to view polar bears on the coast of Hudson Bay knows when they enter official polar bear territory. Passengers in vehicles that wind eastward down the gravel road out of town will see the massive billboard announcing the boundary that demarcates the Churchill Wildlife Management Area (CWMA) from what is not quite the outskirts of Churchill and is not quite the tundra. The billboard features bright writing and imagery on plexiglass in relief against a weathered, silver backing of softwood. A polar bear with the moon behind its head (or is it a halo?) looks away from the text that declares the provincial jurisdiction over this space. Manitoba's buffalo logo sits in the lower corner, another animal iconography enlisted to frame the province's innate natural state and obscure its colonial heritage. The CWMA is a conservation reserve, one of many kinds of enclosures that purport to maintain non-human natures in stasis or to keep nature protected from the destructive force of development. It is tempting to assume that the CWMA is merely a container of nature, as evidenced by its wildlife, vegetation, and even its rocks.

Many conservation practitioners assume that reserves are a benevolent means to protect already-existing wilderness. The International Union for the Conservation of Nature (IUCN) defines conservation reserves and protected areas as geographic spaces with explicitly delineated and enforced boundaries for the "long-term conservation of nature" (Dudley, 2008, p. 8). In a special series published in the Canadian Journal of Zoology titled "Flagship species – Flagship Problems" polar bear biologists recommended increasing the number and extent of protected areas to improve management of the species (Peacock et al., 2011). While the authors acknowledged the limited efficacy of a terrestrial conservation reserve, given that climate change is a major force undermining the marine habitat of the bears, they suggested that "protected areas

could include restrictions on harvest […], industrial and tourist boat traffic, ice-breaking, and oil and gas development" (Peacock et al., 2011, p. 377). These are genuine and admirable aspirations, but they still labour under the assumption that conservation reserves can cordon off some section of polar bear natures for the benefit of the species. As climate change undermines the sea ice on which polar bears depend, their habitat cannot be disentangled from the burning of fossil fuels in far-off places.

The CWMA is justified through the ecological rationale that it provides a protective enclosure for critical habitat. The CWMA was chosen as a site to conserve polar bear natures primarily because it was identified, through biological science, as a space that produced polar bear bodies. The area is host to one of the world's largest known polar bear denning grounds (Nero, 1971). As the managers and biologists who plan and support the CWMA know, the polar bear cannot be adequately protected by putting a fence around its habitat. The bears require sea ice, which is mobile, seasonal, and most affected by the emissions of greenhouse gases far removed from the Arctic and the boundaries of the CWMA. In contrast to Peacock et al. (2011), other authors argue that climate change, which does not respect the drawn boundaries of conservation reserves, will continue to undermine polar bear habitat, making reserves ineffective (Laidre and Regehr, 2016).

Within political ecology, conservation reserves have been placed alongside national parks in histories of state-formation and Indigenous dispossession (Vaccaro et al., 2013). Brockington (2002) refers to this mode of reserve as fortress conservation, in which the nature or wilderness of enclosed spaces are reified through the displacement and dispossession of Indigenous people by colonial forces. In Canada, the national park system has been largely criticized as a project of fortress conservation. The creation of Banff, the first Canadian national park, in 1885 was used

by park administrators to exclude the Indigenous Nakoda people who had occupied the area (Binemma and Niemi, 2006). This pattern repeated itself across the national park system to include the expulsion of Keeseekoowenin Ojibway from Riding Mountain National Park in Manitoba in 1936 (Sandlos, 2008). However, polar bear conservation reserves, such as the CWMA are not as immediately implicated in histories of dispossession. They are spaces that have been enrolled in the production of state authority over territory and have been explicitly understood by their administrators as spaces that produce commodifiable wildlife.

To this end, I argue that, rather than merely encircling wilderness, the enclosure of the CWMA is a project that actively produces a selective kind of nature space that is valued by settler colonial culture. Nature in the CWMA is made to be managed by agencies of colonial governments as an infrastructure for wilderness tourism. I use the rhetoric from government planning documents as the empirical basis for my argument. I show how the protection the largest-known polar bear denning habitat became an exercise in promoting the region as a tourism destination. To underpin my claims, I draw on several overlapping histories of the conservation reserve: the early game preserves in Western Canada; the waterfowl refuges of the North American flyway system; and the Charlton Island beaver sanctuary in James Bay. In each of these origin stories, it is surprising to note that the reserve has been understood and described as a space of production, despite contemporary descriptions of the reserve's protective or exclusive dynamics. This chapter demonstrates that the rhetoric and logic of productivity informed the planning and policies of the CWMA. I assert that the CWMA produces wildlife for the purpose of satisfying a commodified demand for the aesthetics of northern wilderness, with the added benefit of demonstrating state authority over resource management.

3.1 Overflowing Basins: North American Origins of the Reserve

The concept of a conservation reserve has multiple origins. All share some common characteristics inherent to settler colonial notions of wilderness that were prevalent in the later nineteenth and early twentieth centuries. For example, all are predicated on an almost agricultural belief that the proper maintenance of land would produce wildlife. However, they differ meaningfully in this belief is brought into the world in material form, assigning powerful valuations to the kinds of nature deserving of preservation. Conservation reserves enabled the reproduction of particular cultures (and actively suppressed the persistence of others) by dictating the proper and improper ways of relating to the natures they enclosed. Simultaneously, they underpinned fields of power that made authorities of their respective custodial institutions. The genealogies I present here historicize the emergence of three authoritative stewards of conservation: the modern state; an old capitalist monopoly; and situated settler colonial communities. All originate on the North American continent, with two coming from Canadian geographies and one from the United States. I present them here because so many themes of these conservation reserves resonate in the specific histories of the Churchill Wildlife Management Area. Additionally, they provide an empirical background to anchor my claim that the conservation reserve is fundamentally about the production of authority through practices of care.

In the late nineteenth century, as Canadian settlement expanded westward, the land was brought into service as a crucial tool in the reproduction of settler cultures and economies. George Colpitts (2002) focuses on the symbolic value of wildlife to early Canadian settlers. Far from being limited to media, Colpitts (2002) argues that the presence of actual wildlife was necessary for it to achieve social meaning, and he regularly returns to the question of land

management as a means producing animals. Through his work, one can read an argument that the reserve was a product of two discourses: the myths of super-abundant wildlife in western Canada and the notion that the landscapes of North America were a garden in waiting for a patient and dedicated steward: "Upper Canadians and other colonizers believed that, through enterprise and initiative, humans could make the earth productive" (Colpitts, 2002, p. 40). After the transfer of Rupert's Land to the Dominion of Canada in 1868, the federal and newly-created provincial governments continued an agrarian approach to settling land in the West, clearing wildlands and wildlife for farming (Harris, 2008). These tactics played a role in the general decline in wildlife populations. However, it was the very presence of wildlife in these regions that was used to justify the narrative of a productive western landscape. Stories of vast herds of buffalo on the plains and forests thick with deer were taken as evidence of the capacity of the land to support any type of life. The plains and the woods were anticipated to host cattle, the more reliable and civilized corollary of wildlife. Previously, in 1857, surveyors has described the western interior as a "region so admirably prepared by nature for its development [for] herds of domestic cattle" (quoted in Harris, 2008, p. 407). Colpitts (2002) cites a government map from 1889 that showed the assumed limits of a variety of wildlife species, explicitly referring to their habitats as "arable and pasture lands" (p. 45). Although many of these areas would never be ploughed or grazed, the idea of an equivalence between wildlife and domesticated animals certainly helped make the case for the expansion of western Canadian settlement.

Shortly before the induced collapse of the buffalo in the 1880s, fur traders began to experiment with wild game alternatives to buffalo pemmican. Even without the force of agrarian clearances, "northern Manitoba communities were soon facing periodic deer scarcities" (Colpitts, 2002, p. 51). This depletion of game was a widespread phenomenon across the Canadian West.

The emptied woods opened a space for ahistorical nostalgia and many settler communities invented a former time of responsible local game-management. Old boosterist stories about the abundant West were enrolled in discourses of wildlife protection. If anything, the rapid decline of the game populations after their enrolment as foodstuffs for the fur trade indicates that they may not have been so abundant as previously stated. However, rather than associating the decline of deer or moose with a particular moment in the colonial political economy, Western Canadians blamed Indigenous people (Colpitts, 2002; Loo, 2006). Indigenous commercial and subsistence hunts were brought under the control of existing game laws. As we saw with the polar bear quota, this was made possible in part by racist arguments that the once inexhaustible reserves of animals were being undermined by wasteful Indigenous hunting practices. The push to enforce game laws and establish hunt-free game preserves was often undertaken by community clubs such as the Winnipeg Game Preservation League in Manitoba or the Fernie Game Protective Association in British Columbia. The latter of these two advocated for the establishment of the Goat Mountain and Kootenay reserves in the first decade of the twentieth century. In this lineage, game preserves were a way of producing an imagined history of natural abundance as a material landscape.

The conservation of polar bears is also decidedly nostalgic for imagined natural histories. In the early 20th century, C. Gordon Hewitt (1921) lamented that "years of excessive hunting have materially reduced the numbers of the polar bear" (p. 102). To support his claim, he cites a highly selective 9 years of fur auction records from the Hudson Bay Company. The auctions offered a maximum 170 polar bear skins in 1902 and 82 in 1911. Although a striking discrepancy in ten years' time, these numbers don't give us any appreciation of polar bear abundance in the previous century, but rather assume that the decade snapshot is part of a longer

decline. While this claim is based on suspicious statistics, it is common for authors who narrate at a distance to describe the bear with an affective pity. Such a discursive figuring has actually become more common as people have been able to safely get closer to the animal. In the latter half of the twentieth century, media representing polar bears as vulnerable and fragile animals proliferated (Archibald, 2015). Archibald (2015) argues that this latter representation was partly enabled by technologies like the rifle and the aircraft that allowed more people to safely produce imagery of the polar bear, often alone in an expansive and sublime Arctic wilderness. As will be discussed in the following section, the CCWMA supports this aesthetic production of nostalgic polar bear natures.

While individual game preserves have been established with varying intentions and outcomes across North America, it was in the United States that they were first imagined as components in a large-scale network. In signing the Migratory Bird Treaty of 1916 Canada and the United States began a cooperative management program for the waterfowl that crossed the boundary between the two countries. As part of the commitment to protection of these birds, the US went about expanding its system of "protected reservoirs from which birds could flow out over the countryside" (Wilson, 2010, p. 11). It was well understood that migratory birds traveled across the North American continent but it took a key piece of knowledge to articulate the refuges as a network of independent habitats.

In 1920, the Biological Survey recruited the ornithologist Frederick Lincoln to oversee migratory bird research and conduct a bird-banding program. Volunteer labourers with the Conservation Corps would affix individually-numbered metal tags to a bird's ankle and, once harvested, bands were returned to the Survey's research offices in Washington DC. After ten years of work, Lincoln proposed the flyway concept, which held that the migratory birds of

North America largely stayed within one of four zones of distribution. Previous to his work, biologists had assumed the birds did not return to the same seasonal grounds, but merely traveled generally north and south. Ornithology in America since the 1880s had focused on the collection and taxonomy of individual specimens. Now, the objects of study under avian science took on a distinctly biopolitical character. The flyway concept dictated that any wildlife refuges targeting migratory birds had to be understood within its framework of migratory routes. It produced new imaginaries of nature and reified their distinction in the separation of managerial tasks. "This bureaucratization of waterfowl management served to blur the distinctions between the biological flyway Lincoln described and the administrative structures constructed to manage it" (Wilson, 2010, p. 75). Though the National Wildlife Refuge system in the US had existed for several decades, it enjoyed a substantial expansion starting in the 1930s for the purpose of protecting waterfowl habitat. In his history of the refuge system, Bob Wilson (2010) describes the emergence of a mode of state-led conservation that exceeded the boundaries of previously discrete parcels of reserve land.

The fact that the flyway was only made legible through the voluntary labour of hunters is important for two reasons. First, the flyway concept directed conservation efforts towards huntable bird species. While the flyway is an elegant model of avian migration, it necessarily cannot capture the nuances of all bird movement patterns. Flyway refuges constitute a landscape of game birds who were principally harvested by sport hunters in the 1920s. If the collection of bands or banded birds had depended on a different group of outdoors enthusiasts, a different model of species movement and a different system of refuges may have been drafted. Second, as Wilson (2010) is apt to state, "the needs of hunters informed refuge managers from the earliest days of the refuge system" (p. 11). The refuge system was as much about producing wildlife as it

was about producing a particular relationship with wildlife that was valued by those who could afford to support conservation programs. As a corollary the refuges also produced authority, as the state was keen to demonstrate its capacity to support its client citizens through the efficient organization of territory at the scale of the continent.

Similar to flyways, the creation of conservation reserves for polar bears focused on protecting reproductive spaces within the larger geography of a migratory animal. Conservation writing from the early twentieth century described denning by female polar bears and cubs as a rare moment of fixity in an otherwise wandering existence (Hewitt, 1921). Most conservation reserves for polar bears are proposed for denning habitat (Durner et al., 2006). The denning habitat contained within the CCWMA is understood by managers to be its primary relevance to polar bear conservation. Interestingly, the CCWMA is also part of the waterfowl refuge system. The planning documents that guide its management make it clear that "emphasis will be placed on polar bears and geese" (Teillet, 1981, p. 31). Its role as a space for producing animal bodies intended for wider circulation is not limited to the polar bear.

Near the southern terminus of James Bay, a good meandering distance southeast from Churchill, lies Charlton Island, perhaps one of the oldest sites of origin for the conservation reserve concept. The island is located near the former Hudson's Bay Company trading post of Fort Rupert. In 1836, the HBC established a beaver sanctuary on the island (Loo, 2006). Producing a sanctuary for beaver necessitated making the island inhospitable to other species, as the company eradicated resident fauna that may have posed a threat to the beaver. It is unclear how many beaver were present on the island when the sanctuary was initiated, but rather than merely promote the resident population, the HBC actively added to the population by relocating fourteen breeding pairs of the animal from elsewhere. As an additional protection measure, the

company prohibited Indigenous trapping on the island for a decade and a half. The measures seemed to work, as in 1851, HBC Governor in Chief, George Simpson, ordered five thousand beaver to be trapped on the Charlton Island Sanctuary (Loo, 2006).

Simpson had a large role in this and other conservation programs undertaken by the HBC. His conservation attempts sought to discipline the ecologies of fur bearing mammals into a reliable stream of raw materials for the European market. As the company enrolled scientific knowledge in the design of its conservation strategies, Tina Loo (2006) notes that "the HBC's commitment to sustainability in the Northern Department was rooted in its desire to ensure profits over the long term" (p. 96). Workers at the company, be they managers or trappers, understood that wildlife could easily be depleted in an area if intensively harvested. They also perceived that fur-bearing mammals underwent population cycles that were caused by factors beyond the control of the company. Still, the HBC sponsored numerous attempts to predict and understand these cycles. Much of the actual conservation work was not as radical as Charlton Island, and most involved switching between fur regions or between species to avoid over-harvest. This logic re-imagined all of the territories of Rupert's Land as a singular mercantile ecology. The Charlton Island experiment represented a significant departure from these tactics, and instead tried to produce furs through the manipulation of the landscape.

The production of wildlife for particular culturally-desired purposes was evident in all three origins of conservation space. While the CCWMA and other polar bear conservation reserves are sites of bear production, their fur is not often the primary intended product. Polar bear hunting persists throughout much of the Arctic but the polar bears who den at the CCWMA are more often drawn into the economies of tourism. Under this mode of commodification,

viewing the bear is preferred to consuming bear parts. The next section describes this kind of aesthetic commodity production in greater detail with focus on the CWMA.

3.2 Working the Land: State Planning Exercises and the Production of Polar Bear Conservation Space

The population of polar bears living around Churchill have been studied for several decades, with the earliest records of their denning habits dating back to the 1960s. Throughout this time, biologists were increasingly convinced that in some parts of the Arctic, polar bears returned to "ancestral denning areas" (Jonkel, et al., 1972, p. 143) to give birth to and rear their young. This conceptualization of their use of space implied that polar bears were born on and are compelled to return to stable ground. Although they may require the shifting sea ice to hunt during their adult lives, denning anchored the polar bear to land. Although most polar bears do indeed make an annual retreat to land from sea ice for the summer, denning begins with the onset of winter and does not necessarily require land. The denning area concept was specifically concerned with securing spaces for the reproduction of the species, only partially overlapping with seasonal distributions of all polar bears. If denning areas could be proven to be consistent across years, then a valued and calculable part of the maternal geographies of the polar bear could be efficiently (and conveniently) enclosed through terrestrial conservation strategies.

In the Western Hudson Bay, near Churchill, polar bears have been found to den in the snow and the dirt far inland. While they are not unique in this behaviour, it is notable that elsewhere in the Arctic, bears will den in the snow of drifting sea ice (Derocher et al., 2004). Thus the conditions necessary to establish a functional terrestrial conservation reserve for polar bears near Churchill is indeed a special feature of the region. However, as with conservation reserves elsewhere, the practices that foster the reproduction of the species are less concerned

with the welfare of specific animals than they are with a demonstration of state power and the production of a small set of human-bear relations.

The Wildlife Management Areas (WMAs) of Manitoba share a direct lineage with historical formations of conservation reserves. According to the public-facing literature of the government of Manitoba, the first WMA in the province was established in 1961 (Province of Manitoba, 2016a). While technically factual, many WMAs formerly existed as Crown Game Preserves prior to their rebranding much later in 1991 under amendments to the Manitoba Wildlife Act. The game preserve concept proliferated in Manitoba at the beginning of the twentieth century, with the Province designating ten such areas by 1920 (Colpitts, 2002). In 1913, the province set aside Spruce Woods and Turtle Mountain as Game Preserves, later reclassifying them as provincial parks as interest in outdoor leisure shifted from consumptive hunting to non-consumptive recreation. In their current iteration, WMAs are managed for "the benefit of wildlife and the enjoyment of people," and are advertised as tourist destinations under Manitoba's "Watchable Wildlife" programs (Province of Manitoba, 2016a). Conservation has taken on a distinctively visual quality. The CWMA was officially legislated into existence in 1978 at a time when wilderness tourism in Churchill and across Manitoba was just taking off (Teillet, 1981).

To investigate the biopolitical intentions and tactics of polar bear conservation reserves, I draw here on archival and public texts related to the Churchill Wildlife Management Area (CWMA). Like many state-administered spaces, the CWMA exists across planning documents, research reports, and memoranda as much as it does along the shores of Hudson Bay. Some of these materials never manage to shed the red stamp of authoritative distance, remaining marked on their covers by the words "DRAFT ONLY." However, it is in these texts that the CWMA is

more readily apprehended as a manufactured technical and bureaucratic object, rather than a self-evident landscape of scientifically-defined relations. I anchor my analysis in the *Direction for the use of the Cape Churchill Wildlife Management Area* (Teillet, 1981), the document that most clearly distills the logics of technocratic administration of this wilderness space. By 1988, the document's title was updated from a "direction for use" to a "plan" without any noticeable changes in content. It would have influenced any policy discussions from the 1980s and onward. Through an analysis of the *Direction* and its related texts, I argue that the CWMA is a spatial tactic in the production of two interrelated concepts: the legitimacy of the state; and spectacular commodity nature.

The *Direction* for the CCWMA is written in a consistently biopolitical tone that exceeds a casual technical discussion of wildlife populations and demographics. The introduction to the document establishes an obsession with the responsibility of the Manitoba government "to pass on the wildlife resource to future generations in at least as vigorous a state as at present" (Teillet, 1981, p. 1). Not content with preservation, management is enrolled in a project of "enhancing the variety of forms and amounts of wildlife use opportunities for the benefit and enjoyment of Manitobans" (Teillet, 1981, p. 1). Under the section, *Management Strategies*, the document declares that the CWMA "will be managed for maximum wildlife production" (Teillet, 1981, p. 32) and programming of the space will "be designed to maintain or enhance existing wildlife stocks" (p. 32). It is difficult to overstate the document's confidence that nature and wildlife can and should be improved. However, the *Direction* does not merely rehearse a language of modernist planning; it applies the logics of wildlife production for human benefit to specific policy recommendations.

As an argument for specific wildlife management policies, the document clearly articulates technocratic ambitions for the CWMA through a set of six management goals. These are the core tenets of the *Direction* and should be understood as reflective of the culture of wildlife managerialism in Manitoba (and abroad) at the time. Like the rest of the document, they firmly position conservation as a productive practice. The goals represent a concise discursive attempt to assert that wildlife are a resource to be maintained, enhanced, allocated, and perpetually renewed by the government of Manitoba and for the vaguely defined political category of "the future generations of Manitobans" (Teillet, 1981, p. 31). The CWMA goals are stated and numbered as follows:

1) To ensure that the management area is managed within the framework of the provincial wildlife strategy.
2) To ensure that the appropriate use is made of wildlife and that the resources is passed on to future generations of Manitobans in at least as vigorous a state as it was received by our generation.
3) To maintain or enhance the variety and forms and amounts of wildlife use opportunities for the recreational benefit and enjoyment of Manitobans.
4) To provide for the subsistence and commercial use of the resource within the constraints of a defined allocation process and the capacity of the resource to withstand such exploitation.
5) To promote the use of wildlife for scientific and educations purposes.
6) To alleviate wildlife damage to people and property.
(Teillet, 1981, p. 31)

Despite being crafted for the CWMA, these goals are empty of any geographically or biologically specific content. They could apply to any wildlife management area in the province. The generalizability of the goals requires that the politics of the CWMA exist at the scale of the Province of Manitoba and naturalize the government as its custodian. Just as the flyway imagined bird migration at the scale of the nation state, the ecologies of the CWMA are expected to capitulate to the shape of its management.

The document helps produce the CWMA as a controllable space by presenting information in a way that suggests the proper management of the landscape. After the introduction and the statement of goals, the document produces an inventory of material and measurable features such as climate, landforms, vegetation, and of course, wildlife. The lists and descriptions do not merely enumerate the objects to be found within the CCWMA, but orders their relevance according to the state's concept of wildlife natures. The *Direction* states that managerial "emphasis will be placed on polar bears and geese" (Teillet, 1981, p. 31). The report nominally gestures to the importance of monitoring and protecting the caribou herd of the region. It is somewhat unsurprising to note that the CWMA plays a role in the management of migratory waterfowl for the maintenance of hunting economies and cultures. The *Direction* implies an equivalency between the valuation of bear and goose natures, which suggests an appreciation for the cultures and economies organized around polar bears in northern Manitoba. The document states a fairly passionate position on the importance of protecting of species:

> "The polar bear (Ursus maritimus) is perhaps the most spectacular animal in the region. It was partly the existence of these spectacular internationally endangered creatures which led to the creation of the W.M.A. Manitoba has five to ten percent of the world polar bear population, the majority of which den or stage in the Cape Churchill Management Area." (Teillet, 1981, p. 13)

Despite the choice of words here, the polar bear was not listed as endangered in the 1980s. The *Direction* draws on discourses of polar bear vulnerability and victimhood as justification for the CWMA project. This kind of statement anticipates the rhetoric of scarcity that would later characterize polar bears as a target of last-chance tourism (Lemelin et al., 2010). The repeated appeal to the "spectacular" characteristics of the polar bear pre-empts the economic role envisioned for the bear by its managers. The aesthetic status of polar bears as charismatic megafauna makes them default candidates for tourism. The report contains three sections under

the heading *Wildlife Use*: hunting; research; and nature tourism. The details here concern the state's obligations to provide or subsidize the infrastructure necessary to support each of these uses. Hunting is regulated under the rubric of Manitoba's game hunting areas and research is partially sponsored by the Manitoba Department of Natural Resources (now Sustainable Development). The *Direction* identifies a set of citizen clients, acknowledging that "the tourism generated by wildlife of the W.M.A. (i.e. birds and polar bears) is an important economic benefit to the town of Churchill" (Teillet, 1981, p. 25). The CWMA is quite explicitly a technology of economic development both for Churchill and for the province of Manitoba.

At the time when the *Direction* was drafted, there was little in the way of formal support for polar bear tourism in Churchill. Now, several operators offer guided wilderness tours comparable to the experiences provided by a national park. Like national parks, conservation reserves play a central role in the production and circulation of imaginaries of Canadian wilderness on which nature tourism depends. Frontiers North Adventures is a tourism operator that offers packages across the northern portions of Canada. Their 2018 catalogue details their Churchill operations, mapping their tour route through the CWMA. The brochure includes the Manitoba government logo and an inset about the work of the ministry that administers the space: Manitoba Sustainable Development.

> "Acting as stewards in trail maintenance and observing wildlife, for over 25 years Frontiers North has been working in collaboration with Manitoba Sustainable Development in the Churchill Wildlife Management Area. We currently hold the most permits to enter the Churchill WMA, an area known as having the largest congregation of polar bears. For our guests, this means having the most access to wild polar bears in Churchill" (Frontiers North, 2018, p. 8).

The role of Sustainable Development in maintaining roads and issuing permits is presented as if it is as natural as the tundra contained within the CWMA. Tourism narratives are underpinned by the aesthetics of nature produced by conservation and made accessible by state initiatives.

However, the relationship is recursive. The stories of polar bear abundance around Churchill echo some of the motivational nostalgia documented in the Canadian West by Colpitts (2002). The Frontiers North literature dwells on the size of the polar bear population in the area as much as it draws on narratives of species decline so common in last-chance tourism (Groulx et al., 2016). Despite the refrain of polar bear decline, the conservation work of the state gestures to the possibility of species persistence, but perhaps only through the proper and careful stewardship of a responsible state actor (Manitoba Sustainable Development) and its passionate industry partner (Frontiers North).

Nature tourism is not new, but the contemporary class of people interested in and able to afford wilderness excursions are now much less concerned with procuring material artefacts of the animals they encounter on tour. They prefer experience to taxidermy. The naming of conservation reserves has shifted in line with their clientele. While the game preserves were associated specifically with leisure hunting, the wildlife management areas appeal to a broader range of nature consumers that include the customers of Frontiers North. A space such as the CWMA produces wildlife, but more specifically a visible version of wilderness that reifies the logics of nature-culture dualism. The proper relationship between humans and wildlife fostered through the CWMA is one in which tourists enjoy "experiences of the natural world and an escape from their hectic day-to-day lives" (Archibald, 2017, p. 268). Much like the spectacular nature of national parks, the sublime subarctic of the CWMA could stand in for any northern landscape. In William Cronon's (1996) critique of the concept of wilderness, he traces a genealogy of the sublime as a key discourse that continues to inform bourgeois notions of natural landscapes. Cronon ascribes the sublime to the affective and religious experiences of landscape valued by the Romantic movement. Romanticism was a middle and upper class cultural and

artistic discourse that placed explicit political and moral value on emotion and aesthetics (Jasen, 1995). Romanticism's idea of worthwhile nature paired the picturesque with an emotionally-capable voyeur. The landscapes that mattered let the Romantic "glimpse the face of God" (Cronon, 1996, p. 10). This emotional encounter with North American landscapes helped lay a distinctly European spiritual claim to lands that were often still occupied by Indigenous people.

The sublime was, and continues to be, a political aesthetic of dispossession. Other scholars whose work has taken them to the CWMA have noted the aesthetic priorities of conservation in the region. Constance Lafontaine (2014) details the labour undertaken by wildlife managers to sustain an arctic "monochromatics of place" (p. 151). The undeclared expectation of the Hudson Bay Coast is that it stays within a narrow range of greys, a monotonous and fitting background for the display of white bears. The policies of the CWMA have prohibited the visual clutter of development in the region, but this aesthetic register is also actively produced for tourist spectacle by conservation labour. Polar bears invariably wander into the town of Churchill as they return to the ice, as they search for food, and as they pursue their curiosity. Labelled as nuisance or dangerous animals, these bears are often tranquilized and held in captivity until it is safe and feasible to transport them on to the ice by helicopter. Since this program began, wildlife managers have shared "their airlift launch times with tour companies, and tourists get brought in for the free show" (Lafontaine, 2014, p. 150). However, the capture of polar bears is a messy process. The bear's fur is inevitably coloured by "spray paint combined with blood stains from darting, tagging, and handling the bears" (Lafontaine, 2014, p. 150). Unsurprisingly, tourists and their guides have found the appearance of the mottled bear unpalatable and requested the wildlife technicians help make such blemishes "less apparent in photographs" (Lafontaine, 2014, p. 150). Now, prior to most relocations, biologists and

technicians clean the bear's fur, producing the white bodies expected for a sympathetic encounter with wildlife natures.

This analysis of the conservation reserve aesthetics of the CWMA resonates with the political ecology literature on national parks in North America. Historically, the CWMA overlaps significantly with the territory of what is now considered Canada's Wapusk National Park. Wapusk was carved out of over 11 thousand square kilometers of the CWMA in 1996 (Martin, 2006). The park derives its name from the Cree word for polar bear or, more literally white bear. This thesis contemplates Wapusk briefly to highlight the ways that national parks and wildlife management areas similarly frame wildlife and wild places. Both spaces cooperate in the production of the consumable aesthetics of polar bear natures. By its very adjacency, the CWMA is implicated in the production of "a mythological construction of a Nature/Culture divide" (Cronin, 2011) that permeates the national park system in Canada. In her analysis of the representational politics of Jasper National Park, J. Keri Cronin (2011) coins the term National Park Nature to refer to a discourse of nature that is "mediated by visual technologies" (p. 4) and understood as a "static entity" (p. 4) standing outside of human culture. Both the form and content of National Park Nature depend on the same trick. The production of visual evidence of nature keeps the means of media production (cameras, access roads, rendering factories) out of the frame while the discourse of external and non-human nature depends on forgetting that conservation reserves and national parks are intensively-produced spaces of culture.

The impulse to produce wildlife natures in the CWMA went beyond the maintenance of animal habitat and tourism infrastructure. The denning concept allowed managers to imagine the CWMA as a space that produced polar bear bodies for viewing pleasure, however, they were preparing to make much more significant material interventions in the landscape to create

spectacle. In the 1980s, the Manitoba Wildlife Branch began assessing the feasibility of a muskox release in the CWMA (Soprovich, 1989). Muskoxen share very little in common with polar bears except, of course, their iconic status as gregarious megafauna of the north. Historian John Sandlos posits that "federal wildlife officials thought of the muskox as both an exotic creature that was emblematic of Canada's vast northern wilderness and as a potential farm animal" (Sandlos, 2011, p. 136). In the later nineteenth and early twentieth centuries, sport hunters who had captured muskox trophies expressed concern about the sustainability and sportsmanship of the hunt. On the barrenlands, a muskox hunt was almost guaranteed to be successful with a rifle, given the animal's defensive strategy leaned towards fight rather than flight. Around the same time, the arctic explorer Vilhjalmur Stefansson wrote to federal wildlife managers about the value of muskox for Inuit subsistence. State bureaucrats began a series of muskox conservation measures in the early twentieth century, including the enclosure of the massive Thelon Game Sanctuary in the Northwest Territories. This conservation reserve lies inland of the Hudson Bay, approximately 750km north of the CWMA and would have presumably served as the source of muskox for a relocation to Churchill.

The plans to translocate muskox to the CWMA represent a significant escalation of tactics from securing and fostering the conditions of abundance for wildlife in place. This is perhaps why any mention the *Direction* bears no mention of muskox. The CWMA lies outside the known historical range of the species but was considered as a site of potential release for logistical and political reasons. The background to a report on the potential climatic effects on muskox, the authors note that the "area was selected on the basis of habitat important to muskoxen, opportunity to land large aircraft, and proximity to support services in Churchill" (Soprovich, 1989, p. 1). Further, the CWMA is uniquely valuable as "a geographic unit in which

land-use is administered by the Manitoba Wildlife Branch" (Soprovich, 1989, p. 1). The muskox re-introduction proposal expresses a confidence that the CWMA is rightly understood as a space of state-directed landscape-scale ecological experiments. There is no record of a clearly articulated reason for releasing muskoxen. It can only be inferred that the presence of the species would be of benefit to the tourism industry of Churchill. At some of the earliest discussions about the management of the CWMA in October of 1978, "species re-introduction" is listed among several "Management Techniques Available" to wildlife technocrats. The minutes of this meeting echo the goals set out in the *Direction* of maintaining or enhancing wildlife populations within the territory. If historically, the muskox was shunned as a game species, the animal's "recreational benefit and enjoyment [for] Manitobans" (Teillet, 1981, p. 31) must parallel the aesthetic opportunities seen in polar bears.

The muskox relocation to the CCWMA was never realized as a project, however, it does not need to be to influence the imaginable futures of conservation. Large-scale wildlife relocation is an idea that has emerged and retreated a number of times over the history of modern wildlife management. In fact, a 1971 document published by the Province of Manitoba about polar bears in the Churchill region suggested that, with proper management "it may even be possible to transport bears from here to replenish distant ranges" (Nero, 1971, p. 13). As Peyton (2017) details in his history of unfinished megaprojects, these managerial practices do not have to leave draft documents to contour future environmental imaginaries. As climate change compels conservation practitioners to take drastic steps to manage species such as the polar bear, it seems like extreme interventions such as wildlife relocation may be undertaken more frequently. In 2013, the International Union for the Conservation of Nature (IUCN) released the third iteration of its Guidelines for Reintroductions and Other Conservation Translocations. The

Guidelines were explicitly positioned as "a response to the present era of accelerating ecological change" (IUCN, 2013, 1) and an anticipated increase in the use of translocation to address such change.

However, the introduction of muskoxen to the CWMA is at once ecologically reckless and politically hypocritical. On Banks Island in the Northwest Territories, the population of muskox grew rapidly over the latter half of the twentieth century in tandem with a decline in the Peary caribou (Nagy, 2004). The increase in muskox is largely attributable to a hunting ban on the species imposed by the Canadian Wildlife Service on Inuvialuit who hunted in the region. The CWS and Inuvialuit both contested the cause of the decline in caribou. The wildlife agency argued that the decline was a natural result of adverse climatic events in the region, while Inuvialuit asserted that caribou and muskox were incompatible species. Mounting evidence forced the CWS to admit that Inuvialuit reasoning was indeed correct, but this admission was slow and only tentatively acknowledged in the 1980s. Nevertheless, it is likely that biologists were aware of the muskox management problems unfolding on Banks Island. Or, at least the tendency of introduced herds to increase rapidly, as evidenced by a 1970s release project near Kuujjuaq in northern Quebec (Le Hénaff and Crête, 1989). Instead of commissioning a study on the impact of snow cover in the CWMA, it would have been prudent to investigate the more pressing, albeit more complex, possibilities of interaction between muskox and caribou in the area. The muskox release imagining episode is symptomatic of the prioritization of spectacle over ecology in the environmental planning logics of the state.

3.3 Conclusion: Imperfect Containers

While conservation reserves are often understood as protective enclosures, they are historically embedded in processes of cultural production. Polar bear conservation reserves are

no exception. In a fundamental sense, they are incapable of shielding the bear from the material effects of habitat degradation as climate change undermines their sea ice habitat. Yet, they are still recommended for polar bear protection. This chapter asked if the reserve is an inadequate protection scheme, what other effects might it have? It demonstrated that polar bear reserves produce the territorial authority of state experts and the aesthetics of an imagined arctic nature.

The Churchill Wildlife Management Area facilitates an imagined capacity to manage polar bear natures at a scale that extends well beyond its boundaries. In the tradition of the flyway concept explored by Wilson (2011), it produces wildlife natures at a scale that is only manageable by the sprawling capacities of state actors. The CWMA's management plan implicitly cast the state as the logical and inherent institution to steward the space, casting aside local politics in favour of the imagined community of a wider province.

The CWMA encloses a material habitat that is important for polar bears in the west of Hudson Bay, but it also produces those polar bear bodies to lay cultural claims to northern lands. The early game preserves described by Colpitts (2002) were spaces for the production of symbols for settler identity and thus, for the naturalization of settler presence on the landscapes of Western Canada. The CWMA is still about the production of iconography and aesthetics that naturalize distinctly settler Canadian and European ideas of wilderness.

4.0 Chapter 3: Boundary Work, Polar Bear Monitoring & Deterrence Programs

Every autumn, polar bears who have waited all summer on the tundra make a tentative move for the coast of Hudson Bay, waiting for the ice to form. On the western side of the bay, the town of Churchill, Manitoba, lies in the path of many of these bears. They find themselves wandering into Churchill sometimes by coincidence of the shortest path to ice, and sometimes compelled by the scent of potential meals. In various forms since the 1960s, the town has run a polar bear monitoring and deterrence program to keep bears away from the inhabited centre of the town. The Polar Bear Alert Program (Alert) has changed significantly since a volunteer Halloween night-patrol was formalized into a state-directed array of policies and technologies. It is now considered to be a cutting-edge, world-class conservation strategy targeting human-polar bear interactions (Schmidt and Clark, 2018). Programs like Alert are gaining popularity across the Canadian Arctic as human encounters with bears have appeared to increase in recent years. However, the program is nestled uneasily within the wider politics of polar bear management. Conservation biologists present monitoring and deterrence programs as the silver bullet needed to protect both polar bears and humans from unnecessary harm (Dickie, 2018). Conversely, the fiscally-strained Government of Nunavut would prefer instead to increase hunting quotas as a means of controlling nuisance bears (Brown, 2018). Both Arctic inhabitants and outsiders agree that the polar bears pose a physical threat to the people who share space with them. However, the imperative to deter bears, rather than simply kill them, strains the resources of Arctic communities who are increasingly responsible for adapting to the myriad effects of climate change (Cameron, 2012; Ford et al., 2010). The cruel irony of this situation is that these Arctic inhabitants do not significantly contribute to the drivers of this environmental change and thus have little capacity to help mitigate it.

This tension between deterrence and lethal force within polar bear risk management strategies played out in a recent interview about the Alert program in Churchill. Wildlife biologist Andrew Derocher was quoted as saying "I think there's a reasonable chance that the last polar bear will be shot by an Inuk hunter" (Dickie, 2018). Derocher is typically a nuanced commentator on these issues, but this quote, in the context of the article, depoliticizes human-polar bear entanglements in a changing climate. It frames monitoring and deterrence as an antidote to reckless risk management policies that flirt with polar bear extinction. In doing so, it channels a growing belief among commentators that the technical expertise that devises these monitoring programs will solve the problem of vulnerability to polar bears. However, these programs are not merely a technological safety net; they are an open site of political contest over the appropriate management of wildlife and people in a rapidly changing Arctic.

In this chapter, I ask what are the implications of organizing a politics of polar bear futurity around technical projects such as the Polar Bear Alert Program? I argue that even though monitoring and deterrence may be essential survival strategies for bears and humans in a warming Arctic, these programs are incapable of confronting the structural causes of vulnerability to polar bears. Instead of thinking of vulnerability in a reactionary sense, I charge in this chapter that vulnerability to polar bear attacks faced by Arctic residents is the product of structural conditions. These conditions include a global petroleum-based energy economy that degrades the stability of Arctic ecosystems, colonial interventions in the patterns of human settlement that brought people in closer contact with bears, and the wildlife management policies that constrain the ability of Arctic communities to prepare for polar bear attacks. Structural causes of the vulnerability to polar bears are seldom discussed in the planning documents of monitoring and deterrence programs. This chapter examines these documents along with

publicly-circulated interviews with polar bear experts as the empirical basis of my analysis. My analysis shows how polar bear monitoring and deterrence has been produced as an exercise undertaken at a local scale by expert risk-managers. I will also show that this scalar and technical framing has been used to dismiss or marginalize non-expert views on polar bear risk management. Monitoring and deterrence programs have not and will never fully realize their goals of eliminating bear-human conflict. Further, when presented as a policy ultimatum, they run the risk of overdetermining the way discussions of polar bear-human entanglements are framed. Monitoring and deterrence programs reify nature-culture dualisms, emphasize climate change adaptation over mitigation, and naturalize a set of experts as the legitimate participants in discussions of polar bears.

4.1 The Production of Vulnerability

The vulnerability of communities to polar bear attacks is not a natural or inevitable phenomenon, but a condition that has been produced by social circumstances. Inuit have had to share landscapes with polar bears for millennia, with frequently deadly results. However, the settlement of sedentary communities is a recent practice that has inadvertently brought humans and bears closer and into more frequent contact.

Beginning in the middle of the twentieth century, the Canadian government began to "organize Inuit life according to Western ideas about the family, work, community and social relations" (Tester and Kulchyski, 1994, p. 3). The Canadian state was primarily interested in securing exclusive sovereignty over northern resources to ensure the development of extractive industries. Such a project necessitated the corporeal and cultural disentanglement of Inuit from their landscapes to ensure minimal resistance to extraction. It was also hoped that settled Inuit would help meet the labour demands of development (Bernauer, 2015). Inuit were viewed as

subjects of colonial administration and so their relocation and settlement into permanent communities was justified as a move to provide efficient welfare services. But the concentration of Inuit society also centralized the site of exchange for the remaining participants in land-based commercial and subsistence livelihoods. After the collapse of the fox pelt market in the 1930s, Inuit diversified their fur harvest industry and the value of polar bear products rose to a new prominence (Schreiber, 2013). At the same time, settlements produced bear attractants in the inevitable effluent of modernity and soon landfills provided the most reliable encounters with bears in the Arctic (Wilder et al., 2017). At a global scale, the waste and excess of industrial society has exacerbated this same process: climate change has altered arctic ecosystems and has likely increased the number of nutritionally-stressed bears searching for food in settlements.

4.2 Boundary Maintenance: Making Geographies of Modernity and Risk

While my explorations of the quota and the reserve were almost exclusively conducted in the archives, for this chapter I had the immense privilege of visiting the actual landscapes of monitoring and deterrence geographies in the autumn of 2018. When our group of researchers and tourists arrived from the airport at the Churchill Northern Studies Centre (CNSC), we were given a lengthy orientation of the facility. The welcoming presentation and the tour focused heavily on how to live safely in bear country. Much of the architecture and many of the rules governing our behaviour on site were designed to minimize bear-human encounters. The only doors left unlocked are at the entrance and, day or night, we only left the building after signing out, always accompanied by a colleague and a portable radio. The CNSC has a clearly defined inside and outside. The procedures and physical barriers that were introduced in our orientation all make it possible to safely conduct research or educational ecotours in the polar bear landscapes. However, while they produce a comfortable experience of subarctic space, they do

so through technologies of securitization and surveillance that are not universally benevolent in intention and effect.

In the early 1970s, polar bears in or near the town were routinely shot and killed in Churchill by game officers of the Manitoba Department of Mines and Resources. In its October and November 1972 editions, the Northport News (a local weekly pamphlet for the town of Churchill) documented the sustained community distaste for the killing of the bears. In its reporting on local polar bear politics, the news flyer tracked the formation of a citizen's group called the Churchill Wildlife Association. The Association was formed with the specific intent to protest what many considered to be the unnecessary killing of the bears. Its membership had been encouraged by Brian Davies, a representative of the International Fund for Animal Welfare (IFAW) who had organized the funding and logistics for the first polar bear relocation programs. Beginning in 1971, polar bears were airlifted from Churchill south to Kaskattama, near the Ontario-Manitoba border on Hudson Bay with the assistance of the IFAW. Although continuing through the 1970s and into the 1980s, it wasn't until 1984 that the Manitoba Department of Mines and Resources took control of the relocation program. It was given the formal designation of the Polar Bear Alert Program and much like the CNSC, Alert logically organized Churchill into an inside and outside as a means of coping with its location in polar bear lands. Mines and Resources funded the renovation of an existing military compound to hold problem bears until they could be relocated to land-fast ice formed along the coast of the bay. The polar bear compound made relocations financially feasible for the Department, whose officers had previously defended lethal bear deterrence as a matter of economic efficiency.

Although I encountered traces of this history, the Alert program is not always an obvious part of my Churchill experience. My supervisor signs us out and we leave through the main

doors of the CNSC to the parking lot. I hesitate, thinking we have forgotten the keys, but Bruce opens the door to the humanities research vehicle and starts the ignition. In Churchill, it is common to leave car doors unlocked with the keys in the console, since someone might need refuge from a bear as well as an escape plan. It helps that there are no roads out of town, making car theft a dead-end game. We leave the compound and drive down the gravel road, past the spruce trees with their south-pointing limbs.

It is barely perceptible to us, but we pass through three zones of bear risk on our way to the downtown of Churchill. The Polar Bear Alert Program reconfigures the areas surrounding Churchill into a landscape of risk management. On a planning map used by program managers, space is designated in one of three ways: a living/working area; a perimeter area; or the remote area (Kearney, 1989). The CNSC is set within an island designated as living/working at the easternmost reach of the Alert Program maps of the Churchill area. The downtown of Churchill is also cross-hatched as a living/working area and the perimeter closely sheaths the main roads out of town towards the airport, the CNSC, and the Goose Creek cottage subdivision. The cartographic rationalization also codifies a set of procedures for polar bear management. Unsurprisingly, within the boundaries of living/working areas, bears are not tolerated and are scheduled for removal. The term "removal" encompasses a range of tactics from scaring, to live-capture and release to Hudson's Bay or a zoo, to lethal dispatch. The procedures triage repeat-offenders. Bears that have been once removed from the living/working sites are subsequently targeted if found in the perimeter. Bears who are relocated from Churchill on three or more occasions are subject to "permanent removal from the population" (Kearney, 1989, p. 91). While these zones may not be explicitly demarcated by signage or fencing, the Alert Program maps its procedures and classifications on to a pre-existing material geography of urbanized and

wilderness spaces in Churchill. The Churchill region, as read through the Alert Program, constitutes a spatial argument that couples the urban with safety and wilderness with hazard.

As intensively-planned settlements, descriptions of anticipated and built northern urban projects were characterized by modernist discourses that mapped conceptual binaries on to the spaces they developed. Urbanism in the Canadian north was conceived as an optimistic futurity only through the denigration of non-urban arctic environments as hopelessly lost to history or savagery. As Farish and Lackenbauer (2009) noted "modernization affirmed [the] hostility [of northern environments] while seeking to overcome it" (p. 542). These authors applied Scott's (1998) theory of high modernism to the histories of technocratic development in Inuvik and Iqaluit. Their paper focused on the militaristic aspects of development peculiar to Canadian Cold War projects in the Arctic but their insights apply more generally to the north as "a vaguely defined but nonetheless distinct northern region [which] became a national *responsibility*" (Farish and Lackenbauer, 2009, p. 518. Emphasis in original). The Canadian urban north is an artefact of national and technical paternalism. State-led development produced a northern nature that could (and should) be externalized. In architectural drafts and political speeches, it was assumed that the Arctic environment could be kept both conceptually and materially segregated from Canadian urban futures in the north. But as William Cronon (1991) so thoroughly demonstrated in his history of Chicago, urban geographies can never be neatly confined within the city limits. The urban necessarily extends outward to affect both its adjacencies and its distant connections. The high modernist conceit that nature and civilization can be neatly delineated through careful planning underpins the Polar Bear Alert Program in Churchill.

The north is a space that has actively resisted urbanism. This resistance often came in climatic forms as the chill of winter defied ideals of outdoor public space while thawing ice

below ground undermined infrastructure. Destabilized permafrost may have washed out roads and collapsed houses, but in Churchill, northern natures quite literally walked into town to threaten the bodily security of urban Canadians. While engineers and architects were deployed against climate physiography, the threat of wildlife licenced the authority of biologists as planning technicians.

Still, no engineer or biologist could have anticipated that the timing of the polar bear migration onto the ice of Hudson Bay (through Churchill) would coincide with the western secular tradition of turning children loose in the streets at night to collect candy from neighbours. Radio transcripts from 1976 describe the annual Halloween polar bear patrol as a volunteer-led activity coordinated with the assistance of the RCMP. Over time, the state would solidify its control over polar bear monitoring and and deterrence in Churchill. In 1984, the Alert Program was fully institutionalized as a bear control project with the added benefit of formalized self-researching capacities common to management bureaucracies (Kearney, 1989). The program funded scientific research on bear behaviour with the intention of developing that knowledge into better deterrence techniques. But bears were not the only object of study: local attitudes toward the program were the subject of an annual survey (Schmidt and Clark, 2018). The goal of this survey was not to modify the program so much as assess public opinion and address complaints through educational materials. So, while the program had been initiated by local actors, their knowledge was no longer considered a valuable technical input to the management of bears. Instead, the inhabitants of Churchill were imagined as constituents whose reactions to the Alert Program could be managed much the same as the bears. This disregard for local nuance is reminiscent of Mitchell's (2002) commentary on scientists and engineers who "helped produce the effect of a world divided into human expertise on one side and nature on the other" (p. 35).

Scientists were not the only authorities who marked boundaries through polar bear management. There were the conservation officers, who were nominally trained in biology, but whose work more closely approximated the duties of policing. Conservation officers were a class of wildlife enforcement agents who inherited the position of their game manager predecessors. Their responsibilities had expanded from the enforcement of hunting laws to include a wide array of wildlife and habitat management procedures. In Churchill, conservation officers undertake the handling of unruly bears and the patrolling of the material and conceptual space between nature and civilization. In Collard's (2012) study of cougar management on Vancouver Island, she identifies conservation officers as "boundary agents" (p. 35) who actively produce (and constantly re-produce) distinctly biosecure spaces. Boundary agents give the impression that neat divisions between danger and safety, inside and outside, or nature and civilization can be easily achieved. However, in practice, the geographic instantiation of these dichotomies requires constant maintenance and still fails to prevent all trespasses. Since it is imagined to respond to a protracted series of crises, the reactive work of boundary-making licenses a permanent securitization project. Consequently, polar bear monitoring and deterrence programs are, by design, incapable of addressing the systemic drivers of polar bear-human conflict in the Arctic. As Kearney (1989) succinctly stated:

> "Under existing conditions, the actual and potential polar bear problems in the Churchill area will not abate without the complete abandonment of the townsite or permanent removal of large numbers of bears. Neither of these solutions is acceptable" (p. 91).

The existential necessity of polar bear deterrence programs combined with their inability to confront structural causes of vulnerability foster a selective amnesia in discussions of polar bear management. Monitoring and deterrence programs do not have the technical capacities to address climate change or colonial legacies, and so these drivers are left unexamined. While

responding to the immediacy of crisis, these programs enable an indefinite deferral of a discussion of the structural politics that produces vulnerability to polar bear attacks.

4.3 Polar Police: The Conservation Officer and Boundary Making

While the Polar Bear Alert Program provides some measure of bodily security to the inhabitants of Churchill, it actively creates risk for those outside the town. Bears who are caught for their first time within the living and working areas are detained in a holding facility until they can be released onto the ice of Hudson Bay. Some of the bears are airlifted, and some are trucked out in cages. Before their release, the bears are marked with a green dye in an effort to help conservation officers in Churchill identify repeat-offenders. However, since the early 2000s, green-spotted polar bears have been seen in other coastal Hudson Bay communities lying significant distances northward. Pete Ewins, a World Wildlife Fund (WWF) specialist in species conservation, observed Churchill-released bears at the waste disposal site in Arviat, Nunavut (Zerehi, 2016). He argues that the Churchill solution has only displaced the problem to other northern settlements. Such a consequence is difficult to anticipate through the binary logics of the polar bear Alert Program. Relocating bears into Arctic nature space is imagined as an act of return to the appropriate order of things, without compromising the safety of bears or people. Yet, the green bears demonstrate that the processes that produce safe urban space in Churchill are entangled with the fate of communities such as Arviat in a profoundly corporeal sense.

The inhabitants of Arviat, a community roughly 270 kilometers north of Churchill along the Hudson Bay Coast, are acutely aware of the high stakes of polar bear management. In July of 2018, Aaron Gibbons was killed by a polar bear outside of the town while collecting goose eggs with his children (Rogers, 2018). The incident occurred outside of the normal polar bear monitoring season and there was no evidence to tie the bear to Churchill. Still, Gibbons' relatives

were quick to connect the attack to what they saw as the habituation of bears to humans in Churchill. Later, the Kivalliq Wildlife Board (KWB) made a similar connection in their comments on a Nunavut polar bear management plan (KWB, 2018). In their further general comments on polar bear management, the KWB expressed a concern that "increased human interactions with polar bears may be habituating polar bears to humans" (KWB, 2018, p. 9). The comments were made in a necessarily apprehensive tone; the KWB made no definitive claims about effects of tourism or bear-relocations from Churchill on the behaviour of bears elsewhere. However, the proposal gestures to a politics of management that begins with the assumption that the lives of polar bears and humans are inextricably entangled in Arctic landscapes. The KWB's endorsement of polar bear monitoring and deterrence programs is contingent on the ability of the Government of Nunavut to provide long-term sustainable funding and resources and the relaxation of quotas for bears killed in defence of life and property. Part of their recommendation for bear deterrence includes "using seal and beluga meat, to successfully lure polar bears away from Arviat [and other communities]" (KWB, 2018, p. 6). This tactic is liable to be contested by biologists as a misguided practice that may attract more bears. Yet, this intervention does not depend on a strict logical separation of bear spaces and human spaces.

Arviat has partnered with the WWF to provide an example of an alternative polar bear safety politics based on a monitoring and deterrence platform. The Human-Polar Bear Conflict Reduction Project has been run in the town since 2010 (WWF, 2013). The project is funded by the WWF and is administered by Inuk hunter and wildlife technologist Leo Ikhakik. The project emphasizes the shared vulnerability of Arviamiut and polar bears. Bears are deterred from the townsite, ensuring inhabitants can feel protected within the town boundary, but the program is

not limited by the fantasy of an easy geographic boundary beyond which the bears can be relocated or otherwise dispensed.

The Cape Merry lookout, a site managed by Parks Canada, lies at the northern edge of town and offers a view of the Prince of Wales Fort across the Churchill River. After spending an afternoon at the Churchill library, we parked the car at the lookout and walk around the site. Since we were still in the slow early days of the tourist season, we are joined by Parks Canada interpreters and polar bear monitors with shotguns slung over their shoulder. Over our time at Cape Merry, we exchanged pleasant conversation about the history of Churchill and the highlights of their jobs. One of the monitors said "the bears were here first, we are just trying to stay out of their way" and I cannot tell if this is a palatable one-liner he uses for public outreach, or a sincere policy. Either way, it captures the logics of monitoring and deterrence programs in both its reductive binaries and its careful avoidance of fraught politics.

4.4 Idealized Nordic Urbanism: The Boundaries of Protection

In addition to an inside/outside dichotomy, the monitoring and deterrence programs extend a history of northern urban planning that has excluded Indigenous presence in future arctic geographies. The Alert maps of Churchill and its surroundings are dominated by European place names (Hudson Bay, Churchill River) and the geographic markers of the Canadian state (Fort Prince of Wales, the NRC Rocket Range) (Kearney, 1989). The only apparent marks of Indigenous presence are the labels that extend to sites along the road out of town "Akudlik" and "Dene Village." Located some miles outside of the downtown of Churchill, these two points respectively represented notable Inuit and Dene communities in the region. However, despite their toponomy and their inhabitants, these villages are attributable to a colonial geography of settlement and are not a spatial expression of Indigenous cultures.

Since as far back as the eighteenth century, colonial administrators had attempted to sequester Indigenous populations in reserve lands. In the northern section of the Canadian territory, a similar program of spatial dispossession did not begin until the post-war twentieth century. However, "instead of reservations, they [Canadian state officials] wanted 'northern suburbs.' They wanted Inuit citizens who would be self-reliant, but integrated into a broader Canadian social reality" (Tester and Kulchyski, 1994, p. 7). The relocation and resettlement projects had similar outcomes as the reserves as means of disrupting the relationship between Indigenous peoples and their lands. While some Dene and Inuit chose to pursue a sedentary life in historically relevant sites or near Euro-Canadian settlements, they were often forcibly moved by state officials.

Relocations and settlements were undertaken for two main reasons. The first was to administer welfare programs and draw Inuit into state practices of care. According to rational planning principles, "settlements would be located in areas accessible to the South rather than areas occupied in the past by Inuit" (Tester and Kulchyski, 1994, p. 7). These locations facilitated the efficient deployment of a set of development bureaucrats from the liberal welfare state to the Inuit populations that were targeted for improvement. However, welfare was costly. The second reason for relocation and settlement was to draw northern Indigenous people into modern economic networks, thus reducing their dependence on welfare while still facilitating the extractivist ambitions of the state. The Canadian state has long imagined the northern reaches of its dominion as a site of staples resource extraction. Indigenous re-settlement was not only intended to sever the connections between people, culture, and land; it was an attempt to secure labour for extractive projects and, by extension, the political legitimacy of extractive economies (Bernauer, 2015). Such reasons for settlement exist in an obvious state of tension with each other

but work sequentially as part of a project to reform Inuit into Canadian citizens. This was a process actively resisted by the people who were targeted for reformation.

In their book *Night Spirits: The Story of the Relocation of the Sayisi Dene,* Ila Bussidor and Ustun Bilgen-Reinart document the series of events leading up to the establishment of Dene Village just outside of Churchill and its eventual abandonment. It is a story of the persistent failure of the state to absorb an Indigenous people into its vision of modern northern development. Born in 1955, Bussidor grew up in Churchill as the relocation program stumbled onward. She eventually became the Chief of the Fort Churchill Sayisi Dene Band. This story of the Sayisi Dene in Churchill instantiates much of the violence and malpractice of the Canadian state's Indigenous relocation projects. It also gestures to the entanglement of such colonial maneuvers with wildlife management in the north.

In the late 1940s, A.W.F. Banfield, Chief Mammologist of the Canadian Wildlife Service, began an intensive surveying project to assess the population of barren ground caribou in the interior near the border between the provinces and territories. Using aerial surveys, Banfield claimed to observe a drop in caribou population from 668 000 to 278 900 between 1949 and 1955, concluding that the species was in a state of "crisis" (Loo, 2006, p. 132). Working with sparse evidence, Banfield and other workers at the CWS reasoned that the primary causes of caribou decline had been Indigenous hunting and predation by wolves. While checking poison baits set out for wolves in October of 1952, a group of wildlife technologists observed a significantly large kill of caribou on the shores of Nejanilini Lake (Bussidor and Bilgen-Reinhart, 2000). An information officer with the Government of Manitoba was asked to take a photograph of the scene, thinking little of the significance this image would have at the time (Kulchyski and Tester, 2008). In 1954, Banfield included the photograph in an article he

published on the "Caribou Crisis" portraying, as he described it, the "wanton slaughter" of the animal at the hands of Indigenous hunters (Campbell, 2004, p. 159). Never having consulted the Dene, nor having lived on the barren lands, the biologists and bureaucrats could not have imagined this image as a depiction of practical winter food storage in the sub-Arctic.

Citing the caribou crisis as a reason to act quickly, the state moved to relocate the Sayisi Dene from their territories near Duck Lake. R.D. Ragan, the Acting Supervisor of Indian Affairs for the region met with the Duck Lake band on July 23rd and 24th, 1956. However, he did not bring any interpreters for this meeting and most of the Dene who spoke or understood English would have been away working in Churchill. It is doubtful that the idea of a relocation was ever adequately communicated (Bussidor and Bilgen-Reinhart, 2000). Despite this obstacle, Ragan reported that the band had agreed to relocate to North River. When a crew arrived on August 17th to relocate the Sayisi Dene by air, many in the community were taken by surprise and were unsure of what possessions they could bring. Only a few chose to bring tents. The plane landed at their interim destination in Churchill an hour later without any shelter or food awaiting the relocated group. The average temperature was 6 degrees Celsius that day in Churchill. A month later, the Dene were relocated across the Churchill River to their final destination. They were provided with some building materials for log cabins, but there were no tools and there were not enough materials to house all families. There was never a survey of the feasibility of building on the braided system of North River and in the spring of 1957, most of the shelters that had been assembled were either flooded or washed away (Bussidor and Bilgen-Reinhart, 2000).

> "By the summer of 1957, about 300 Sayisi Dene had congregated in Churchill. Families who had been coming to Churchill in summer since the thirties, to work for the railway and the harbour, were living in shacks made of tar paper and discarded packing cases, and an area behind the National Harbours Board elevators." (Bussidor and Bilgen-Reinhart, 2000, p. 57)

No one in this scenario suffered more humiliation than the Sayisi Dene themselves, but residents of Churchill were embarrassed by the sight of people who they would accuse of being squatters. The community and institutional response to the presence of Dene in the urban area was an explicit program of segregation. As the Department of Indian Affairs set out once again to secure land and housing for the Dene, "the director of the Manitoba Lands Branch was of the opinion that the 'Indians be separated from white families'" (Bussidor and Bilgen-Reinhart, 2000, p. 58).

The Sayisi Dene were moved to Camp-10, a dense congregation of plywood structures that comprised a former military barracks. The facilities lacked a source of fresh water and had no garbage disposal plans. In this over-crowded space, separated from the landscapes of their culture, and with little meaningful work to do, the inhabitants of Camp-10 suffered from alcoholism and abuse (Bussidor and Bilgen-Reinhart, 2000). They carried these social maladies with them to Dene Village in the autumn of 1967. Dene Village had been planned like a southern Canadian suburb, with a boulevard and wide lawns between the houses. "The settlement had electricity, but the residents could not afford to pay hydro bills, so the gravel road winding through Dene Village was dark on moonless nights" (Bussidor and Bilgen-Reinhart, 2000, p. 89). Despite an improvement in the outward aesthetics of their settlement, the Sayisi Dene were simply placed, without any consultation, in a modernist model town. Instead of addressing the community's social and psychological trauma, Indian Affairs had expected a change in neighbourhood and architecture to spontaneously convert the Dene into suburbanites. Dene Village has since been demolished and the majority of its former inhabitants moved 230 kilometers inland to Tadoule Lake in Manitoba. The move was initiated in 1973 with the help of

a provincial bureaucrat and the work of Dene like Ronnie John Bussidor, Peter Yassie, and former Chief Alex Sandberry (Bussidor and Bilgen-Reinhart, 2000).

The final relocation of the Sayisi Dene began just two years after the initial polar bear airlifts were undertaken by IFAW. Dene village would continue to be populated for several years, but was never included within the safety perimeter of the Alert program. If Churchill is indeed the first "polar bear safe community" (Dickie, 2018), then it is worth interrogating what kinds of community the Polar Bear Alert Program is designed to protect. The managerial ideal of safe spaces from polar bears corresponds closely to European and Canadian visions for a settled north. Polar bear monitoring and deterrence programs do not merely secure pre-existing human geographies in the Arctic, but actively produce new ones. Defining territories as safe or unsafe has consequence for what does and does not constitute legitimate human presence in these spaces. Lefebvre (1991) contends "that representations of space have a practical impact, that they intervene in and modify spatial textures which are informed by effective knowledge and ideology" (p. 42). Scott's (1998) history of state-managed forests provides evidence of the impact of managerial representations on the production of space. This work describes a geography simultaneously designed by and for the needs of the forestry survey. Managerial plans were an "attempt to create, through careful seeding, planting, and cutting, a forest that was easier for state foresters to count, manipulate, measure, and assess" (Scott, 1998, p. 15). Scott's main argument here is that the survey did not merely draw the forest into regimes of state visibility, but that in doing so, it produced new geographies in its image.

When positioned as an alternative to lethal force, monitoring and deterrence programs risk criminalizing Inuit self defence and discouraging land-based cultural practices. In the summer of 2018, two Inuit were killed by polar bears. As already mentioned, Aaron Gibbons of

Arviat, died while collecting goose eggs with his children (Rogers, 2018). In August of 2018, Darryl Kaunak of Naujaat was killed on a hunting trip outside of town (Hutchins, 2019). Shortly afterwards, elders from Naujaat instructed hunters to kill an approaching polar bear, and an Inuk named Laurent Kringayark took up their orders. Kringayark was charged with the killing of a polar bear without a hunting tag and appeared in court in March 2019 where the he was let off with a warning. Despite the fact that he was relieved of prosecution, the legal implications of polar bear safety sided against him, producing dangerous ambiguities for those who have to share landscapes with polar bears. Kringayark expressed a sentiment felt by many in Naujaat: "we're captives in our own town now – because of the bears" (Hutchins, 2019).

Polar bear monitoring and deterrence programs implement biosecurity through an ideology that positions urban Canadian settlement as the proper way to inhabit the arctic. If Scott's history of the forestry survey demonstrates mapping as a means of bringing imagined geographies into lived spaces, then the spatial logics of monitoring and deterrence will potentially form or even fix the geographies of human-polar bear entanglement. The simplicity of an inside-outside binary of biosecure urban space and unsafe wild space privileges only a recent mode of arctic living that inherits the violence of a century of colonial spatial practices.

Hunting, gathering goose eggs, knowing the ice, hunting country foods and having embodied encounters with the landscape is absolutely necessary to the continuation of Inuit culture and identity. As the stories of settlements like Dene Village demonstrate, the project of northern Canadian urbanism is fraught with colonial arrangements that favour settler European modes of living. This is evident even in Arctic cities with relatively high Inuit populations. Iqaluit and Inuvik are socially and geographically structured to accommodate the suburban lifestyles imported by southern Canadian bureaucrats (Laurelle, 2019). A decolonial or unsettling

northern urbanism cannot confine culture to the boundaries of the city. In its current form, polar bear monitoring and deterrence risks re-inscribing the exclusions of the colonial urban project.

4.5 Conclusion: Bounding Possibility

It is widely accepted that polar bear attacks on humans will increase in frequency under climate change (Wilder et al., 2017). This is expected to occur in tandem with other deleterious changes in arctic social and ecological assemblages. If polar bear monitoring and deterrence programs are going to play a meaningful role in the future of arctic and Inuit communities, planners will have to confront the boundaries of their applicability. While polar bear monitoring and deterrence programs may offer a survival tool for northern communities, on their own they do not provide structural solutions to the drivers of polar bear attacks. By their design, these programs resist a deeper consideration of the entanglements of humans and bears. They depend on endlessly attempting to enforce the separation of nature and culture, they consolidate the authority of technocrats, and they neutralize the politics of climate change adaptation and mitigation. The histories of polar bear monitoring and deterrence programs illustrate why the politics of the changing Arctic must begin with the people who have the most at stake rather than with experts and technologies.

5.0 Conclusion

Throughout the writing of this thesis, stories about polar bears emerged again and again through popular media. They were all at once tempting to include in my writing as well as vexing to analyze for traces of the discursive inheritances of polar bear management. These stories range from the sensational and the absurd to the regretful and tragic. There was the abundant influx of polar bears to the Russian arctic military town of Belushya Guba in early 2019 (Bennetts, 2019). Later in the year, the municipally-run Cochrane Polar Bear Habitat in northern Ontario was forced to plan its closure after tourism revenue failed to keep the zoo-like sanctuary financially solvent (Grech, 2019). In the summer of 2018, a cruise ship guard killed a polar bear on Svalbard while a group of tourists visited the island (BBC News, 2018). That same season, two men were killed in Nunavut by polar bears (Rogers, 2018). In this latter case, I have attempted in my analysis to stress the political urgency of their fate. What I realized though, was that while climate change lurked in the background of all these stories, they were really united by the consideration of the bear as both a resource and a risk in need of management.

As demonstrated in the case of the monitoring and deterrence systems, the risks posed by polar bears are understood to be best handled by experts. Further, polar bear risk is framed as an issue of the wrong bodies being in the wrong places. In response to the "mass invasion" of polar bears in Belushya Guba, "Russian environmental authorities have deployed a team of specialists to a remote Arctic region to sedate and remove dozens of hungry polar bears" (Bennetts, 2019). Given the uniqueness of the invasion event, whatever expertise these specialists held was certainly not poised to flawlessly mitigate the situation. Further, their special technical capacity may have had the same outcome as well-armed locals: they were both considering a cull. English language media failed to follow up on the polar bears in Belushya Guba, but whatever happened,

readers are left to hope that the experts knew what to do. Similarly, in the case of the bear shot on Svalbard, Hapag-Lloyd Cruises defended the actions of its employee, alluding to the "very strict rules here as the islands are visited by many polar bears in the summer" (BBC News, 2018). The insinuation here is that human should be allowed to sojourn into polar bear territory, but only under carefully controlled conditions.

In chapter three, I noted that the Polar Bear Alert Program in Churchill has become a sophisticated technical and procedural system. This has effectively made the subject of polar bear violence an apolitical exercise in risk management to be undertaken by experts. It is undoubtedly important and valuable to have thoughtful, committed, and specialized people to intervene in moments of crises, but it is equally important to attend to the ways that solutions always reinforce some problems while creating new ones. The solutions provided by experts often lack the nuance needed for local conditions, as demonstrated by the frustrations felt in Naujaat after hunters were prosecuted for killing approaching polar bears at the instructions of an elder (Hutchins, 2019). These solutions also manage to re-structure the ways violence and crisis are felt, rather than eliminate them outright. Polar bears relocated from Churchill have become the problem of neighbouring communities, like Arviat (Zerehi, 2016). When drained of its context, technical expertise also imposes a set of political values disguised as rational and neutral structures. The fortress model of monitoring and deterrence is only designed to protect a distinctly urban southern Canadian ideal of Arctic habitation (Laurelle, 2019). The deferral of authority to outside experts still persists in the discourses that frame the risks of living with polar bears. However, it is not necessarily the case that they are any more capable of addressing the problem than Arctic inhabitants.

The closure of the Cochrane Polar Bear Habitat nicely illustrates a set of economic logics that have come to drive conservation. The facility was originally conceived as a refuge for polar bears that were deemed incapable of surviving in the wilderness on their own (Cochrane Polar Bear Habitat, 2019). Entwined with this goal, operators wanted to provide a platform for polar bear conservation education. Of course, both of these objectives depended on ensuring that the facility could be made financially sustainable through the revenue generated by tourist visitors. Just like under the quota, the polar bear was a resource to be optimized within a controlled set of limits. As much as the facility purported to be about the care of the animals and the proselytization of conservation, these ultimately capitulated to a logic of financialization.

In chapter one, I showed that the polar bear harvest quota formalized a logic of resource optimization around the polar bear hunt. This is somewhat contradictory to its stated goal of keeping the total harvest of polar bears within allowable ecological limits (Schweinsburg, 1981). The goals of the wildlife management bureaucracy in the post-war Canadian north were to supplant Indigenous (mainly Inuit and Dene) systems with those of modern science. This was evident in the early drafts of the Northwest Territories polar bear management plan that confined Inuit knowledge of the bear to an antiquated past. Concurrent with the imposition of managerial structures, bureaucrats attempted to convince Inuit hunters that they were subjects who were well-served by the administrative arrangement. In the case of polar bears, wildlife biologists and managers attempted to combine conservation with a sense of entrepreneurialism among hunters as they tried to secure hunter access to lucrative global markets. The Canadian state was meant to act as a broker for Inuit to these markets, but, as markets are fickle, this has not proven to be a very successful task.

The Cochrane Polar Bear Habitat case also gestures to the claims I made in chapter two about spatialized conservation technologies as a vehicle for the production of wilderness aesthetics. The operators of the Habitat admit that caring for the polar bears does not necessarily benefit the wild population of the species (Cochrane Polar Bear Habitat, 2019). However, their promotional imagery and the design of their enclosures attempt to simulate a natural tundra environment. In chapter two, I traced several histories of conservation reserves. In each of the histories it was explicitly understood by their proponents that the reserve was not merely an encircled and pre-existing wilderness, but an enhanced productive space. It was productive of both wildlife as objects for consumption, as was the case of the North American flyways (Wilson, 2010), and for aesthetic reinforcement of cultural expectations of natural spaces (Colpitts, 2002). In line with this thinking, the original polar bear conservation reserves targeted maternal denning areas, linking the production of polar bear bodies to sustainable populations. They morphed over time into an infrastructure for wilderness tourism, as is the case with the Cape Churchill Wildlife Management Area. Ultimately though, the designation of terrestrial reserves for polar bears will do nothing to abate the threat of climate change to its sea ice habitat. The case of the polar bear conservation reserve cautions that teasing space into performing culturally-valued expectations of wilderness should not be conflated with caring for or about the co-producers of social and natural landscapes.

I began my research with an interest in why there seemed to be such a prevalence of what I called “declensionist” narratives around the polar bear. By this, I meant that the bear was constantly cast as a slowly fading character, a victim in peril, and a species in need of human sympathy and care. Polar bear declensionist narratives continue to abound. As geographer Erik Swyngedouw cautions in his analysis of climate change rhetoric, discourses of crisis often

suspend politics in favour of action (Swyngedouw, 2010). Depicting polar bear decline under climate change as an imminent crisis risks erasing meaningful political differences across people and invites experts to prescribe and impose solutions without soliciting the consent of those affected. The histories I have told about polar bear management don't function as convenient counterpoints to the crisis of polar bear decline, but instead, as a means of decentering the declensionist narrative. The quota, the reserve, and monitoring cohere around questions of authority that link conservation and colonialism.

The production of authority gestures to the applicability of my thesis beyond the stories we tell about polar bears and their conservation. The deferral to the technical authority of state bureaucrats ultimately decides whose knowledge is values, who belongs where, and whose visions for the landscape are built. Clearly, in the case of polar bear management, authority is conferred upon settler Canadians. If we are going to responsibly confront vexing systemic issues, such as climate change, or the persistence of colonial violence, we do well to think about the ways that our plans and tools inherit politics and structures which delimit action.

The call to action of the declensionist polar bear narrative does not give us time to think about such inheritances. The history of polar bear management, from the quota, to the reserve, to monitoring and deterrence shows a series of interventions that have used crisis to remap the arctic as a space of resources and experts. My hope is that, in decentering the crisis narrative, I can help open space for other stories about the polar bear. Stories that do not compel us to impose expert rule over Inuit and their landscapes. I want to encourage people to look for those other stories, stories that are not mine, but stories that complicate the polar bear narrative.

Alethea Arnaquq Baril's documentary, Angry Inuk, stands as one adjacent example (Arnaquq-Baril and Thompson, 2016). The film's main plotline charts Inuit attempts to reverse

the European Union's seal products ban and explores the politics of anti-sealing sentiment. The setting alternates between Arnaquq-Baril's home at the southern end of Baffin Island and urban centres, like Brussels and Toronto, where sealing is often unfairly maligned. While concentrating on sealing and the seal products ban, the film is more generally a showcase of Inuit culture. The camera follows the process of sealing through the whole community. Starting with the patient hunting and harvesting, through the sharing of seal meat, to the preparing of sealskin for garments. Political advocacy for this economy, including the making of the documentary itself, becomes an extension of these practices too. Arnaquq-Baril features as a protagonist along with her friend and fellow activist, Aaju Peter. Peter, a lawyer and clothing-maker, is shown advocating for Inuit sealskin products in Europe and in her home as she turns seal pelts into gloves. The European Union's ban undermined a meaningful and sustainable economy for Inuit. In an interview about the film, Arnaquq-Baril stated that "the sealskin industry has played a huge role in transitioning from our former lives, pre-contact, into a global economy" (Wolfe, 2019, p. 284). Watching the movie, it is easy to imagine that for many Inuit, the call to protect polar bears at all costs represents just another iteration in a series of foreclosures on their hopes to build sustainable land-based economies rooted in their cultural practices.

The stories of the seal and the polar bear contain similar elements of the imposition of European will on northern people, landscapes and wildlife. If this common thread exists, then the implication is that the polar bear story has something to tell us about environment and politics more generally. The histories of the three technologies of polar bear management, and their political inheritances, their colonial legacies and colonial presence, apply to contexts well beyond the bear in the thaw. thread of outside cultures imposing their values on the arctic.

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