A Case Study of Polar Bear Co-Management in Alaska

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Abstract

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The Marine Mammal Protection Act (MMPA) guides an institutional and structure and process for conservation and acknowledges Alaskan Natives' subsistence on marine mammals. The United States Fish and Wildlife Service (USFWS) and Alaska Nanuuq Commission (ANC) co-management of polar bears is important for the conservation of the species and resilience of Alaska Native communities. Polar bears and Alaska Native food security are becoming increasingly vulnerable to change on many fronts. The purpose of this case study is to analyze how polar bear co-management is conducted and assess participation by the parties involved. Past assessments of polar bear co-management are analyzed and laws and regulations that apply

to polar bear conservation are identified. This research interviewed key informants in polar bear conservation and co-management using a snowball approach and flexible open-ended structure. In 2015-2016 polar bear co-management meetings were directly observed. Documented reports from past polar co-management meetings and meetings on polar bear conservation were analyzed. This research recommends that (1) the institutional structure and process of polar bear conservation and co-management should ensure implementation of management and conservation measures that mirrors agreed upon plans. (2) Co-managers and participants may want to consider an approach to the process of conservation with an ecosystem based management framework in mind that includes people and strategies across scales and drivers that are in line with the institution structure given the need for built in flexibility. (3) The creation of a monitoring tool to monitor the progress of meeting agreed upon areas of improvement and recommendations.

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Chapter 1. INTRODUCTION

There are a many successful conservation initiatives being done with Indigenous Peoples that benefit both nature and Indigenous Peoples. The United States Fish and Wildlife Service (USFWS) and Alaska Natives within the range of polar bears conduct polar bear co-management in Alaska. This co-management setup is critical to the conservation of polar bears because the distinct knowledge systems both parties share with each other is a necessity to comprehend how these marine mammals live in the remote Arctic environment. Polar bears are an integral part of the Arctic environment and the culture of the Alaska Natives that subsist off and live with them. It has been learned over time that conservation can also marginalize Indigenous Peoples and that to prevent marginalization they should participate in the process of conservation. This case study analyzes an approach to conserve polar bears with Alaska Natives.

1.1 The Concept of Conservation and Indigenous Peoples

The concept of conservation is recognized as dynamic in definition but is first defined and understood as way of "preserving and enhancing" an ecosystem and as "a way of living" by such luminaries as John Muir and Aldo Leopold respectively (Borgerhoff-Mulder and Coppolillo 2005, 19). Dowie and others make the argument that those who define conservation as a concept inherently have privilege given there are no words similar to the term conservation for Indigenous groups and denotes a difference in relationships to nature from conservationists and Indigenous Peoples (Dowie 2009, 342, 441). The concept of conservation has a colonial history that needs to be acknowledged in environmental management that involves Indigenous Peoples. This history begins with the concept of property and derives from the perspective on land ownership. The establishment of land rights and denial of land rights to Indigenous Peoples that

is derived from the Papal Bull of 1455 and in America, the "Doctrine of Discovery" set up the system and institutional structure on which conservation is based (The Bull Romanus Pontifex, 1455). One example of this "exclusionary model" is the establishment of national parks that were a form of conservation that evicted Indigenous Peoples from areas (Colchester 2004). Indigenous Peoples that live in "harsh environments" like the Arctic and are often the best conservationists but may not be recognized as "conservationists" per se and this may not serve their interests in how to conserve (Borgerhoff-Mulder and Coppolillo 2005, 116). Dispossession in conservation of Indigenous Peoples with and without land is recognized in the United Nations Declaration of Indigenous Peoples (UNDRIP) and International Land Coalition (ILC) (Dowie 2009, 90). The IUCN recognizes that Indigenous Peoples have been marginalized by conservation policies and recently created resolutions to improve Indigenous Peoples participation in conservation (IUCN Web 2016; IUCN 22 September 2014). These measures support UNDRIP.

Most conservation areas and goals are in places where Indigenous Peoples reside but where "Indigenous Peoples agendas go far beyond conservation" (Alcorn April 2010). Indigenous Peoples observe that conservation of an ecosystem is never completed after meeting certain goals but is a continual process. In addition, it is crucial to acknowledge cultural barriers and lessons learned, such as those acknowledged by World Wildlife Fund (WWF) about conservation where Indigenous Peoples live. It is necessary to move away from a concept of conservation that disproportionately marginalizes these peoples especially given direct observations of climate change (Alcorn April 2010). New models of conservation that move beyond exclusion in conservation have been developed. However, being merely recognized as

stakeholders in the process of conservation management is not sufficient for Indigenous Peoples because of the competition with others for a "voice" (Colchester 2004).

Biodiversity conservation efforts like polar bear co-management by Alaska Natives and the federal government require "restructuring" research and policies (Borgerhoff-Mulder and Coppolillo 2005, 104). This type of conservation must go a "technological fix" to promote Indigenous Knowledge of a subsistence animal like the polar bear and therefore improve polar bear conservation efforts (Borgerhoff-Mulder and Coppolillo 2005, 104). Former USFWS Regional Director for Alaska, Geoffrey Haskett, states, "One thing everyone can agree on is that polar bears should be conserved, the question is 'how'" (Medeiros 2014)? Wenzel argues that the most difficult "adaptation challenge" of climate change is not the environment; it may be "non-Inuit attitudes about wildlife conservation and environmental management" (Wenzel 2009, 97).

1.2 PROBLEM

The problem identified in this thesis is the need to assess interactions of Alaska Native Organizations (ANOs) and the United States Fish and Wildlife Service (USFWS) to create plans, policies, and regulations regarding the authorized roles to co-manage subsistence and conserve polar bears as described in the Marine Mammal Protection Act (MMPA 16 USC 31 1972). The research question for this case study is: how is polar bear co-management being conducted between the United States Fish and Wildlife Service (USFWS) and the Alaska Nanuuq Commission (ANC)? An ancillary question is how is the outcome of co-management respected in the US policy setting under international agreements for polar bears. It is key for utility of co-management to co-develop plans that are reflected in policy and at different levels of governance.

1.3 OBJECTIVES

The goal of this research is to provide an assessment and recommendations on the effectiveness of the polar bear co-management institutional structure and process. This goal is examined with respect to the following three objectives:

1. To analyze the dynamics and structure of the social system of polar bear co-management and how it affects the ecological system and Alaska Native communities within these systems.
2. To examine how co-management may be improved to conserve polar bears and to examine best practices that provide opportunity for Alaska Natives to participate in the process.
3. To develop recommendations for capacity building within the polar bear co-management structure.

Chapter 2. BACKGROUND

This chapter briefly describes the status of the population of polar bears in the Alaska region based on best available information. I discuss the categorization status of polar bears in the United States and internationally. I examine a history of the intent of Alaska Native co-management of the polar bear under the MMPA. Figures provide visuals of the institutional structure of the organizations involved and the agreements, both binding and non-binding, for polar bear conservation in Alaska. I examine as well the process defined for polar bear co-management in the United States and how it comports with Canada and Russia.

2.1 POLAR BEARS

Chukchi Sea and Southern Beaufort Sea Subpopulations

There are nineteen subpopulations or management units of polar bears in the Arctic recognized by the IUCN Polar Bear Specialist Group (IUCN PBSG) (IUCN 2015). Two of the nineteen polar bear subpopulations are present in Alaska. The Chukchi Sea (CS) subpopulation is present both in the United States and Russia and the Southern Beaufort Sea (SBS) subpopulation crosses the US-Canada boundary.

The CS population is also known as the "Alaska-Chukotka population" and has a "western boundary near Chauskaya Bay, Russia and Eastern boundary is set at Icy Cape" with some overlap with the SBS between Icy Cape and the Beaufort Sea (Schliebe et al. 2006, 41). It is noted in the 2010 reports on the status of the CS stock that twenty-five percent of the SBS stock spends time in the NE Chukchi Sea and six percent of the CS spends time in the Beaufort. It is suggested that they may be managed separately due to "site fidelity" (USFWS CS 2010, 1).

The population estimates as of 2006 were based on aerial and den surveys but are not valuable for management purposes (Schliebe et al. 2006, 42). Reports from the den surveys were reported at about 2,000 noting, "reliable estimates do not exist" for the Chukchi subpopulation (Schlibe et al. 2006, 42). The SBS subpopulation, approximately 1,500 and twenty-six polar bears, is shared with Canada and has a western boundary of Icy Cape, Alaska and Eastern boundary of Pearce Point NWT, Canada (Schliebe et al 2006, 43; USFWS SBS 2010). Climate change is the primary concern for both the SBS and CS populations. Other concerns are human activity such as industrial development, transport, and "possible overharvest of a stressed or declining population" (Schliebe et al. 2006, 43).

2.2 Conservation of Polar Bears

2.2.1 International

Cooperation among States and Arctic Indigenous Peoples is looked upon globally as a leading example of positive relationships. Indigenous peoples have helped to shape the Arctic as a place for cooperation. International law and policy influences the laws and policies towards Indigenous Peoples across scales (global, State, and local) to an extent depending on the State (Koivurova and Steipen 2011).

1973 Agreement on the Conservation of Polar Bears

The 1973 Agreement on the Conservation of Polar Bears is the first international legally binding agreement in the Arctic that the U.S. and all other Arctic states have signed and ratified (Geesthacht, Helmholtz-Zentrum 2011, 115). (See Figure 2 for the level of governance of the 1973 Agreement). Article III of the agreement prohibits the take of polar bears without a permit with the exception that allows the take of polar bears by local people who are exercising their traditional rights and abide by the laws of the State (1973 Agreement 27 UST 3918 1973).

Article II of the 1973 Agreement also states that the States should use the best available scientific data and "take appropriate action to protect the ecosystem" with attention to habitat "in accordance with sound conservation practices" (1973 Agreement 27 UST 3918 1973).

1973 Agreement and Response to Climate Change

The 2009 meeting of the parties, or Range States, of the 1973 Agreement mentioned, "The most important threat to polar bears is the impact of climate change and sea ice loss (The Directorate for Nature Mgmt. 2009, 14). The perspective is that climate change is the primary threat but the focus is on minimizing impacts where possible through the significant progress in mitigating bear-human interactions, designating critical habitat, creating incidental take and deterrence regulations, and conducting coastal community polar bear patrols (ANC Annual Report 2011). The Range States "agree to adaptive management in response to climate change" and that the "primary adaption strategy will be to manage and reduce other stresses on polar bears and their ecosystem, such as habitat destruction, harvesting, pollution, and anthropogenic disturbance" (The Directorate for Nature Mgmt. 2009, 14).

Application of the 1973 Agreement by the U.S.

The United States abides by the 1973 Agreement with the implementation of the Marine Mammal Protection Act (MMPA) within the U.S. (Schliebe et al. 2006, 130). The 2009 meeting called for a need for "proactive and comprehensive management strategies for resilience" (The Directorate for Nature Mgmt. 2009, 14). The 2009 meeting of the 1973 Agreement Parties notes that key approaches include an approach at the national level, climate monitoring, use of traditional ecological knowledge (TEK), and habitat and harvest management (The Directorate for Nature Mgmt. 2009, 19). USFWS reported that the United States conservation of polar bears should be instrumental in the conservation plan with respect to climate change being created by

the 1973 Agreement and should be ready for the 1973 agreement meeting that was held in 2015 (Medeiros 2014).

Other International Organizations to Which the US is Party

The United States is a member to the International Union for Conservation of Nature (IUCN) and its Polar Bear Specialist Group (PBSG) that helps meet the requirements for research programs in States party to the 1973 Agreement (Schlibe 2006, 132). The IUCN PBSG has the polar bear listed under its Red list as a vulnerable species (Schliebe 2006, 132). In 2005 the IUCN PBSG passed a resolution regarding the implementation of the US-Russia Bilateral Agreement that recognized the right of Indigenous Peoples to hunt polar bears, the need for scientifically useful population estimates, and recommended that the US and Russia "immediately enact and enforce the terms" (IUCN 20-24 June 2005). The United States is also party to the Conservation on International Trade in Endangered Species of Wild Fauna and Flora (CITES) that protects species at risk from international trade. CITES lists polar bears under Appendix II meaning that they are "not necessarily threatened" but trade should be controlled (Schliebe et al. 2006, 136).

2.2.2 U.S. Domestic

Marine Mammal Protection Act

The United States House of Representatives committee on Merchant Marine and Fisheries submitted a bill (United States H.R. 10420) that later became the MMPA (United States 4144 1971), The committee stated that the purpose of the bill was to "take a strong position to protect" and "prohibit" take of marine mammals without a permit and to use permits as a way of "flexible" and "closely controlled" authority (United States 4144 1971). The committee introducing the bill outlined the reasoning of the proposal with the history of "man's"

treatment of marine mammals as one ranging from "malign neglect to virtual genocide" due to "interests of profit or recreation" (United States 4144 1971). During the bill consideration in 1971 the discussion included the perspective that the "civilized world" did not view marine mammals with high regard at the time (United States 4144 1971). One of the fundamental objectives of the bill was to provide "reasonable protection of Alaska Native take," where the primary purpose is not commercial sale" while creating "adequate tools" "to prevent abuse of these privileges or to limit taking in order to protect endangered or depleted stocks" (United States 4144 1971). Senator Stevens of Alaska introduced an amendment to the MMPA to "preserve the right of Alaska Natives to manufacture and sell in interstate commerce handmade Native arts, crafts, and clothing" (USFWS 2013).

Polar Bear Status under the ESA and MMPA

The Center for Biological Diversity filed a petition to list polar bears as threatened under the Endangered Species Act on February 16, 2005 (Schliebe et al. 2006, 5). The 2008 final rule proclaims the polar bear as threatened under the ESA and subsequently changed the status of the polar bear to depleted under the MMPA (United States 50 CFR 17 2008). The listing of the polar bear species under the MMPA as depleted and under the Endangered Species Act (ESA) as threatened was due to sea ice loss predicted in the Intergovernmental Panel on Climate Change (IPCC) report from 2001 and the Arctic Climate Impact Assessment (ACIA) 2005 (Schliebe et al. 2006, 60; Geesthacht Helmholtz-Zentrum 2011, 83). The demographic analysis of Southern Beaufort Sea polar bears that evaluated the impacts of climate change conducted by Hunter et al. made projections pivotal in listing the polar bear as a threatened (Hunter et al. 2010, 1). This study itself was motivated by the petition to list the polar bear under the ESA and need for an assessment of population viability; this study recognizes that decision-making is often made with

uncertainty (Hunter et al. 2010, 2). The SBS demographic assessment of the SBS subpopulation had implications for management of the SBS and also affects decision making for the Chukchi subpopulation. Hunter et al. recognize that policy can influence and "dictate direction" of demographic analysis (Hunter et al. 2010, 3).

Under the MMPA the FWS has a responsibility for (1) protecting polar bears by enforcing the moratorium on taking marine mammals, such as managing incidental takes by oil and gas industry, (2) conducting research to better understand the status and biology of polar bears, (3) entering into cooperative Agreements with the State and Native user groups, (4) participating in international and management meetings, and (5) consulting with the Marine Mammal Commission (MMC) (USFWS 1994). The use of the PBR (potential biological removal) level is also required by the MMPA. The U.S. Polar Bear Conservation Program is reviewed by the Alaska Scientific Review Group (ASRG) and consults with the Secretary of Interior (USFWS 1994). Section 117 of the MMPA required stock assessment reports (SARs) to be developed "by August 1, 1994 and for populations designated as depleted or listed under the ESA the SAR is supposed to be updated annually (USFWS 1994). For other stocks of marine mammals, the SARs are to be updated every three years.

The Alaska Scientific Review Group (ASRG) was set up under Section 117 of the MMPA that includes Alaska Native organizations and Indian tribes among other entities and takes a balanced approach by trying to achieve a diverse array of viewpoints on the committee (MMPA 16 USC 1386). (See Figure 1 for the position of ASRG in the institutional structure of co-management and conservation in the United States.) The ASRG duties are to advise USFWS and the National Marine Fisheries Service (NMFS) on: stock assessments, addressing uncertainty and assessing the status of stocks, research, habitat related issues, and other issues as appropriate

(NOAA Fisheries 2016). In the 2006 report of the ASRG discussing the petition to list the polar bear it is stated that "the only evidence" that the Chukchi stock "population is decreasing" "is that the Alaska Native harvest has declined fifty percent since 1992" (AKSRG January 2006).

Harvest Evidence and the MMPA

The MMPA also requires the United States Fish and Wildlife Service (USFWS) to calculate the sustainable human caused mortality or potential biological removal (PBR) level for marine mammals (Schliebe et al. 2006, 109). The "take" of polar bears is primarily from harvest and other sources of take have been determined unimportant (Schliebe et al. 2006, 108). This brings up the question of how the United States is conducting adaptive management in response to climate change with a resilience framework and all-inclusive approach as directed by the 1973 Agreement Meeting of the Parties in 2009 if the approach to management has a focus on harvest management (Directorate for Nature Mgmt. 2009, 2).

The Range Wide Status Review of polar bears reported that Alaska Native harvest "declined about 50% in the 1980s and 1990s and remains low" in western Alaska (Schlibe et al. 2006, 42). The "factor of greatest direct relevance" for this decline is probably illegal harvest in Chukotka probably for this decline (Schlibe et al. 2006, 42). The 2006 Range wide status review was written to assess the "best available science and commercial data" on the status of the polar bear required by the ESA when there is a petition filed to list a species (Schliebe et al. 2006, 5). In the management of the SBS stock the I-I Agreement quota takes precedence over the potential biological removal estimate (USFWS SBS 2010). The I-I Agreement was evaluated and is considered successful in ensuring sustainable harvest (Schliebe et al. 2006). The management is conducted under the Inuvialuit-Inupiat Polar Bear Management Agreement for the Southern Beaufort Sea between the Inuvialuit Game Council (IGC) and the North Slope Borough (NSB).

MMPA and Alaska Natives

The MMPA recognizes subsistence by Alaska Natives in section 101(B) of the MMPA (MMPA 16 USC 31 1972). It was amended to allow the Secretary of the Department of Interior and Commerce to enter into cooperative agreements with Alaska Native Organizations under Section 119 of the MMPA (MMPA 16 USC 31 1972). Section 119 of the MMPA communicates that cooperating with Alaska Natives will better achieve the goal of conservation (MMC Co-management 2016). The primary objective of the MMPA is to preserve the ecosystem by keeping marine mammals a "functioning" part of the ecosystem (MMC 2008). The MMC is the independent agency created by the MMPA that advises Congress and oversees, with the use of science, primarily the implementation of the MMPA and domestic and international policies (MMC 2008). MMPA Section 119 creates and guides co-management authority without altering precedent jurisdictions of fish and wildlife or the rights of Alaska Natives (MMPA 16 USC 31 1972). Further, MMPA Section 101(B) outlines that subsistence "shall not be affected" except if the status of the marine species is considered "depleted," then "individual agreements" may be made to implement regulations (Environmental Law Institute 4; MMPA 16 USC 1371).

The 2006 reauthorization of the MMPA included a Memorandum of Agreement for Negotiation of MMPA Section 119 among the United Stated Departments of Commerce and Interior and Indigenous People's Council for Marine Mammals (IPCOMM) that resulted in the Umbrella Agreement (United States Umbrella Agreement 2006). The purpose of the Umbrella Agreement signed on October 30, 2006, is to centralize and guide ANOs and co-management and promote continued health of marine mammals (United States Umbrella Agreement 2006). The guiding principles of this agreement are to provide full and equal participation by Alaska Natives "to the maximum extent allowable" on decisions affecting subsistence management

given the long history of self regulation of Alaska Natives and in order to abide by Section 119 and Section 101(b) of the MMPA (United States Umbrella Agreement 2006, 4). The Umbrella Agreement has an objective to promote information sharing between ANOs, the US Government, and affected nations and ensure use of best available science and TEK in decision making in a forum that promotes equality, respect, and consensus building in co-management (United States Umbrella Agreement 2006, 4).

Southern Beaufort Sea and Chukchi Sea Polar Bear Conservation Occurs at All Levels of Governance

The status of the Chukchi and Southern Beaufort Sea subpopulations in the United States are considered depleted under the MMPA because of sea ice loss. The MMPA is the way the United States abides by the 1973 Agreement on the Conservation of polar bears and has specifications for how to manage a depleted species. The MMPA makes an exception to the moratorium for Alaska Native subsistence because of the importance of this species to their culture. Under Section 119 of the MMPA federal agencies may enter into cooperative agreements with Alaska Native Organizations (ANOs) to co-manage marine mammals. In the following chapter I will outline the co-management structure for polar bears under the MMPA.

Figure 1: Organizations involved in Conservation of Polar Bears

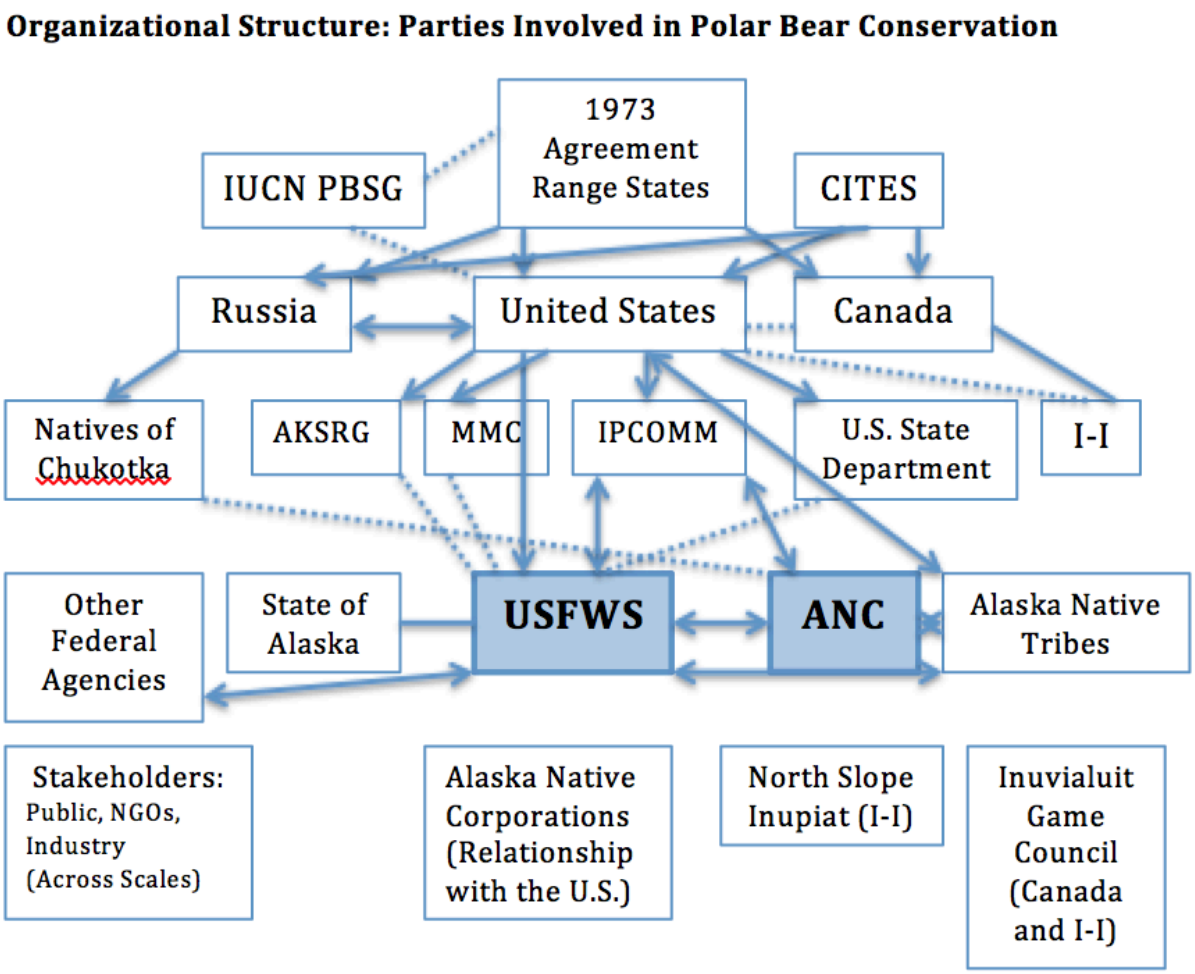
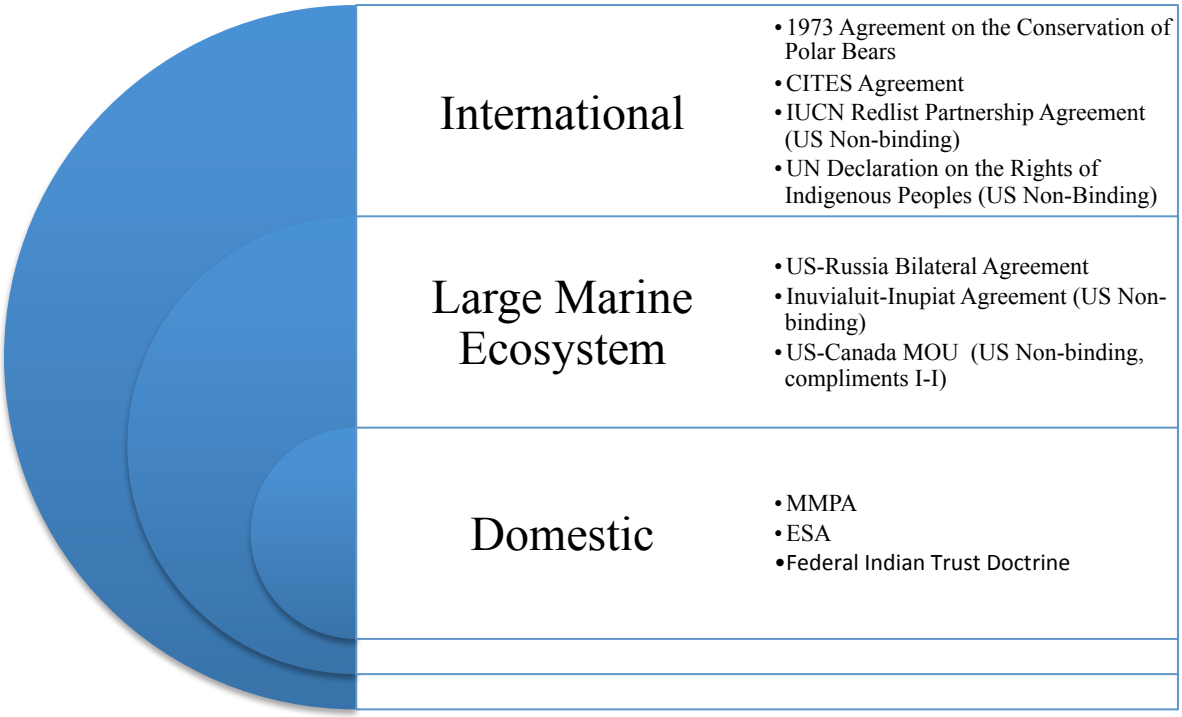


Figure 2: Polar Bear Conservation and Co-Management with Alaska Natives Across Scales: Agreements (Both U.S. binding and non-binding) to Consider at Each Level



Chapter 3. CO-MANAGEMENT

In this chapter co-management is defined and the co-management setting with Alaska Natives is described. Polar bear conservation initiatives in the United States are described given the status obligations and requirements as a threatened and depleted species. An overview of the institutional framework and organizations involved in management of Alaska Native subsistence of polar bears is provided and goals and objectives of each organization toward polar bear conservation are identified. A brief introduction to tribal consultation is provided.

3.1 CO-MANAGEMENT

The concept of management is based on having "rights to regulate internal use patterns and transform the resource by making improvements." (Ostrom and Schlager 1996, 131 in Carlsson and Berkes 2005, 66). The definition of co-management is often perceived as the right to share power or the governance system utilized for decision-making "between government and local resource users" (Carlsson and Berkes 2005). Even though this definition is agreed upon and accepted by many organizations globally, but the IUCN defines co-management in which the State is a stakeholder along with the local users rather than the primary manager that has to work with other stakeholders (Carlsson and Berkes 2005). Underpinning the two definitions is a difference in understanding the rights stakeholders have and the power difference of the State. Berkes describes co-management as having "many faces" including viewing the concept as "power sharing," "institution building," "trust and social capital," a "process," "problem solving, " and as "governance" (Berkes 2009, 1694).

Metcalf et al. use a human-ecological systems framework analysis with a case study on the Pacific walrus co-management institution to elaborate in a holistic way that the Native

community may understand better rather than the specific concentration on population estimates of walrus that USFWS perceives as the basis of management (Metcalf et al. 2008, S148). The leading author is involved in the Alaska Native - USFWS walrus co-management and the second author is a biologist. The article finds the need to require an interdisciplinary approach such as the social-ecological-systems approach to analyze co-management (Metcalf et al. 2008, S154). Co-management research with Indigenous communities is moving toward more holistic and interdisciplinary approach to capture Indigenous systems and social, political, and economic factors in co-management. Meek argues that there is a "disconnect between old policies and new problems" because the ESA and other relevant policies governing marine mammals "may not fit" new problems for Arctic marine mammals that are cross scalar (Meek 2011).

Co-management as a term was first used in the "Boldt Decision" with the Washington State tribes and the term wildlife co-management was first used in Northern Canada and Alaska (Berkes 2009, 1693). The practice of co-management has expanded globally and has taken many forms. Cash et al. elaborates, cross-scale governance is vital and co-management may be a solution to cross-scale interactions that is needed for effective management (Cash et al. 2006, 8). The success of wildlife co-management that occurs in the Arctic now is important and vital to the Arctic ecosystem because of the increase pressures in a rapidly changing Arctic.

3.2 Conservation Initiatives Under the ESA and MMPA

The polar bear is one of the most sensitive Arctic marine mammal species to climate change (Laidre 2008). As a threatened species the United States Fish and Wildlife Service (USFWS) under its ESA mandate designated polar bear critical habitat and has proposed a draft conservation management plan. The critical habitat area proposed in 2010 was remanded by the U.S. Ninth District Court in 2013 but has since been approved by the U.S. Ninth Circuit Court in

February 2016 (Alaska Oil and Gas Association v. Sally Jewell 2016). The conservation management plan is intended to be a "practical guide to implementation of polar bear conservation" and to set the guidelines on the conditions under which polar bears may not need the protection of the Endangered Species Act (ESA) (USFWS 2015). The primary threat to polar bears is the decline of sea ice due to climate change but according to the USFWS, there is an "inadequacy of existing regulatory mechanisms to address climate change" (USFWS 2015). The USFWS perceives that the actions the USFWS and its partners can take "while the global community works to address" climate change is to manage "human-bear conflicts, collaboratively manage subsistence harvest, protect denning habitat, minimize risk of contamination from spills, and conduct strategic monitoring and research" (USFWS 2015).

Reduction of "Other Stresses" Strategy (The Directorate for Nature Mgmt. 2009, 14)

The proposed conservation and action items proposed by the Recovery Team [thus a Recovery Plan] above are local and regional initiatives that do not directly address the major impact of climate change but may have serious consequences for the Alaska Native communities. While it is legal under the MMPA for agencies to regulate Alaska Native subsistence harvest for depleted species, it may be a problem if this is the primary form of conservation. In a report by the United States to the IUCN in 2001 in the Alaska Harvest Summary it was noted that "there continues to be a significant downward trend in Alaska harvest" mainly from the Chukchi region (IUCN 20-24 June 2005). The public perceives the polar bear as a symbol of the Arctic (Marine Mammal Management 2013). To Alaska Native Communities, polar bears are a resource that is "essential to maintain the dietary, cultural and economic base" of the communities and a resource, if not given opportunity for harvest there will be significant cultural loss (IGC and NSB-FGMC 2000; ANC n.d).

The drafting of conservation plans for polar bears into the future will impact the communities that share the same habitat. Under the MMPA and if listed under the ESA it is the duty of the USFWS to conserve and manage the species and to "implement, enforce, and administer the provisions of the Agreement" and shall consult with ANC "on matters involving the implementation" (MMPA 16 USC 31 1972, 98).

> *"Conservation and management means the collection and application of biological information for the purposes of increasing and maintaining the number of animals with species and populations of marine mammals at their optimum sustainable population." (MMPA 16 USC 31 1972, 6).*

The nature of consultation and polar bear co-management between the Alaska Native Organizations and USFWS determines the steps the United States takes to conserve polar bears and allow for the continuation of a culture and livelihood for its Alaska Native People. The right for Alaska Natives to harvest polar bears for subsistence and participation in decision making derive from historical relations. While U.S./Alaska Native co-management of polar bears has been conducted since the 1994 amendment to the MMPA, crucial polar bear decisions and plans are being made now because it is an ESA threatened species. The quality of co-management by the USFWS and Alaska Natives for polar bears and other marine species may determine the success of conservation of polar bears and ability for Alaska Natives to continue to harvest marine mammals under the Marine Mammal Protection Act (MMPA) (USFWS 2015).

The way co-management occurs for this species will influence how future co-management is conducted not just for polar bears but for all species Alaska Natives depend on for subsistence. Co-management is a form and way to exercise sovereignty rights and self-determination (UNDRIP 2008). The dynamics of the co-management group and effectiveness of

communication among co-managers determine what is produced, the outcomes, and the quality of the process. The process of co-management has future implications and impact polices toward Indigenous peoples and the Arctic.

3.3 Co-management with Alaska Natives

3.3.1 Alaska Nanuuq Commission – Co-management Partner under MMPA

Alaska Native (who are at least "one fourth Alaska Native" based on blood quantum and "coastal dwelling") subsistence take for both the Chukchi Sea (CS) and Southern Beaufort Sea (SBS) subpopulations is legal under the MMPA (ANC 2014). Legal requirements prohibit the take of a female with cubs for CS polar bears, harassment, and the tagging of the hide and skull of harvested bears (ANC 2014). Edible parts may be "given or sold in Alaska Native villages" (ANC 2014). Hunters need to report the catch within 30 days and handicrafts made from the harvest must be "significantly altered" (ANC 2014). The co-management organizations and stakeholders are developing a harvest management plan and multiyear quota that is creating significant changes in management as they prepare for the implementation of the US-Russia Bilateral Treaty.

Chukchi - Bering Sea

In 1994, the Alaska Nanuuq Commission (ANC) was formed to represent fifteen villages in Northern and Western Alaska. However, it is not until 1997 that the Fish and Wildlife Service cooperative agreements under Section 119 begin with ANC (MMC 2001). Russia, the United States, and the Natives of Chukotka and Alaska signed the "U.S. -Russia Bilateral Agreement" in 2000 for better collaboration to conserve polar bears and "safeguard" the Native traditions party to the agreement (Marine Mammals Management 2013). The Alaska Nanuuq Commission is the

organization that is a part of the U.S - Russia Bilateral Agreement for the Chukchi/Bering Sea polar bears.

US - Russia Bilateral Agreement

The ANC and USFWS agree that the primary purpose of the treaty is to support co-management given outside group interests in management and to have ANC involvement in setting quotas, monitoring, and having traditional knowledge an integral part in setting harvest regulations. There were concerns at the time for sufficient funding to make this happen (2010 ANC Annual Meeting Report). The goal of the 2012 Bilateral Agreement meeting was to implement the treaty (USFWS Treaty Meeting 2012). The US-Russia Bilateral Agreement (US-Russia Bilateral) set up a multiyear quota system to share harvest quota between the United States and Russia (USFWS 2012). In their 2015 report to IPCOMM the chair of the Alaska Nanuuq Commission (ANC) reported on negotiations being conducted with federal agencies on implementation of the Bilateral Agreement and USFWS reported an upcoming "Alaska Native Relations Policy" to support co-management (IPCOMM 2015, 3-4).

3.3.2 Inuvialuit-Inupiat Polar Bear Commission

Southern Beaufort Sea

Alaska Native communities subsist in part on polar bears of the Southern Beaufort Sea. While all polar bear co-management affairs under the MMPA are conducted with the ANC, as the official ANO, there was another agreement in existence prior to the co-management under the MMPA. The Inuvialuit-Inupiat Agreement (I-I Agreement) between the Inuvialuit Game Council (IGC) of Canada and the North Slope Fish and Game Council (NSB-FGMC) was signed in 2000 and represents nine total villages in the region. The Inuvialuit and Inupiat Polar

Bear Commission (I-I PBC) is a joint commission of the Indigenous communities in both Canada and Alaska formed from the Inuvialuit-Inupiat Agreement in 2000. Inuvialuit and Inupiat formed the original Native-to-Native agreement in 1986 to co-manage the Southern Beaufort Sea subpopulation that they share. This agreement was "superseded" by the 2000 I-I Agreement (Office of Ocean and Polar Affairs n.d). At the initial meeting the NSB-FGMC and the IGC agreed not to shoot cubs or mothers with young (USFWS 1994). There were no restrictions for subsistence hunt under the MMPA at this time of this self-regulated rule. Inupiat of the North Slope, Alaska represented in this agreement do not represent the United States but represent North Slope Inupiat to "further the consultation, management, and information exchange goals" of the 1973 Agreement (IGC and NSB-FGMC 2000). (See Figure 3 for summary of goals and objectives). The I-I provides reports regarding management changes to the USFWS and provides input on research but "formal regulations" do not exist in Alaska as they do in Canada (Brower et al. 2002). The US Report to the IUCN in 2005 states that "this agreement has been effective at maintain[ing] harvest at or below the sustainable harvest levels" (IUCN 20-24 June 2005). The USFWS attends, reports, and participates in the I-I PBC. Further, the United States Department of Interior (DOI) has a Memorandum of Understanding (MOU) with Environment Canada signed in 2008 to conserve the shared polar bear subpopulation (Office of Ocean and Polar Affairs n.d.).

3.3.3 Tribal Consultation and Conservation under the ESA

The Secretary of the Department of Interior issued a Secretarial Order in 1997 to clarify the trust responsibilities of agencies within the Departments of Interior and Commerce to Native American tribes with regard to the Endangered Species Act (ESA) (USFWS S.O. 3206, 1997). The Secretarial Order tries to balance responsibilities of the ESA and trust responsibility to tribes

to ensure that conservation of the species does not place a "disproportionate burden" on tribes and avoids conflict (USFWS S.O. 3206, 1997). This Secretarial Order frames this directive to agencies with three principles to follow including (1) to work directly with tribes to "promote healthy ecosystems," (2) clarify that tribal lands "are not subject to the same controls as federal public lands," and (3) and create programs so "conservation restrictions are unnecessary" (USFWS S.O. 3206, 1997). Secretarial Order 3225 issued in 2001 is a supplement to Secretarial Order 3206 specifically for Alaska to address the consultation framework for Alaska Natives subsistence rights (USFWS S.O. 3225, 2001). Secretarial Order 3225 emphasizes "full and meaningful participation" to the "maximum extent practicable" (USFWS S.O. 3225, 2001). Cooperative agreements should be initiated if ESA listings cause negative impacts to subsistence take, and the Department should provide technical, financial, or other assistance as appropriate and as possible (USFWS S.O. 3225, 2001).

The 2016 update of the USFWS Native American Policy was a result of the Presidential Memorandum by President Obama in 2009 to direct agencies to implement Secretarial Order 13175 created in 2000 (Presidential Memorandum 2009). NOAA created a new policy in 2013 and USFWS finalized its updated policy in 2016. The Native American Policy helps USFWS and the Department of Interior to meet the "trust responsibility" the United States has to Native American and Alaska Native tribes (USFWS Native Policy 2016). The updated 2016 USFWS Native American Policy emphasizes "healthy communication" for conservation, notes that the relationship should "adapt" within the bounds of federal policy, and supports "sovereignty and self determination" (USFWS Native Policy 2016). This policy addresses Alaska Natives but another chapter is forthcoming and will be made to further elaborate on how it applies for Alaska Native tribes and corporations (USFWS Native Policy 2016). The main points highlighted in this

policy are the need to “improve communication and cooperation,” provide “technical expertise and training assistance,” “respect diverse understandings of ecosystem and cultural resources and consider TEK and perspective of Natives” (USFWS Native American Policy 2016).

Chapter 4. METHODS

In this single case study I analyze the co-management institution and processes of co-management of the two sub-populations of polar bears in Alaska with a "descriptive framework" and an "explanation building" technique (Yin 2014, 139, 147). I analyze the institution by using the current framework of co-management with the Chukchi-Bering Subpopulation/ U.S. Russia Bilateral Agreement and the Southern Beaufort Sea (SBS)/ Inuvialuit-Inupiat Polar Bear Management Agreement. The institution is situated under the "Marine Mammal Protection Act (MMPA) of 1972" and the "1973 Agreement on the Conservation of Polar Bears." The co-managers in the co-management agreement under the MMPA are the United States Fish and Wildlife Service (USFWS) and the Alaska Nanuuq Commission (ANC).

Incorporation of the "problem-solving process approach allows this research to "clarify the participants" in polar bear co-management and the "related problem solving processes," "analyze linkages, " and "map the essential management tasks and problems" (Carlsson and Berkes 2005, 65, 73-74). Evaluation of the "function of co-management," "capacity-building needs at various levels," and ability to make recommendations is possible with the methodological steps outlined by Carlsson and Berkes (Carlsson and Berkes 2005, 73-74). For this case study, I examine a "diverse array of evidence" (Yin 2014, 135).

This research begins with first reviewing and gaining an understanding of co-management with Indigenous organizations, management of marine mammals, and the historical relationships of the federal government with Alaska Natives to understand the background of polar bear co-management. Secondly, I analyze key informant interviews of the participants in the polar bear co-management institution. I directly observed co-management and polar bear

conservation meetings in 2015 and 2016. Documented reports from past polar co-management meetings and meetings on polar bear conservation were also analyzed.

Specifically, I conduct twelve interviews using the snowball method with the people involved in polar bear co-management. The key informant open-ended interviews were conducted by using six guiding questions and a flexible structure to provide the opportunity to delve into particular topics more deeply. Interviews were conducted primarily by phone interviews but four were conducted in person. ANC Meeting Minute Reports were analyzed from 1999 to 2015. I directly observed the 2015 ANC Meeting, the 2015 Inuvialuit-Inupiat Polar Bear Commission Meeting, and the 2016 Marine Mammal Commission (MMC) listening session in Anchorage, AK via teleconference. MMC Reviews of co-management and consultation with Alaska Natives that were conducted by MMC over time were also reviewed (MMC 2016 Web).

Figure 3: Goals and Objectives of Polar Bear Conservation of ANC, USFWS, I-I Commission, & MMC

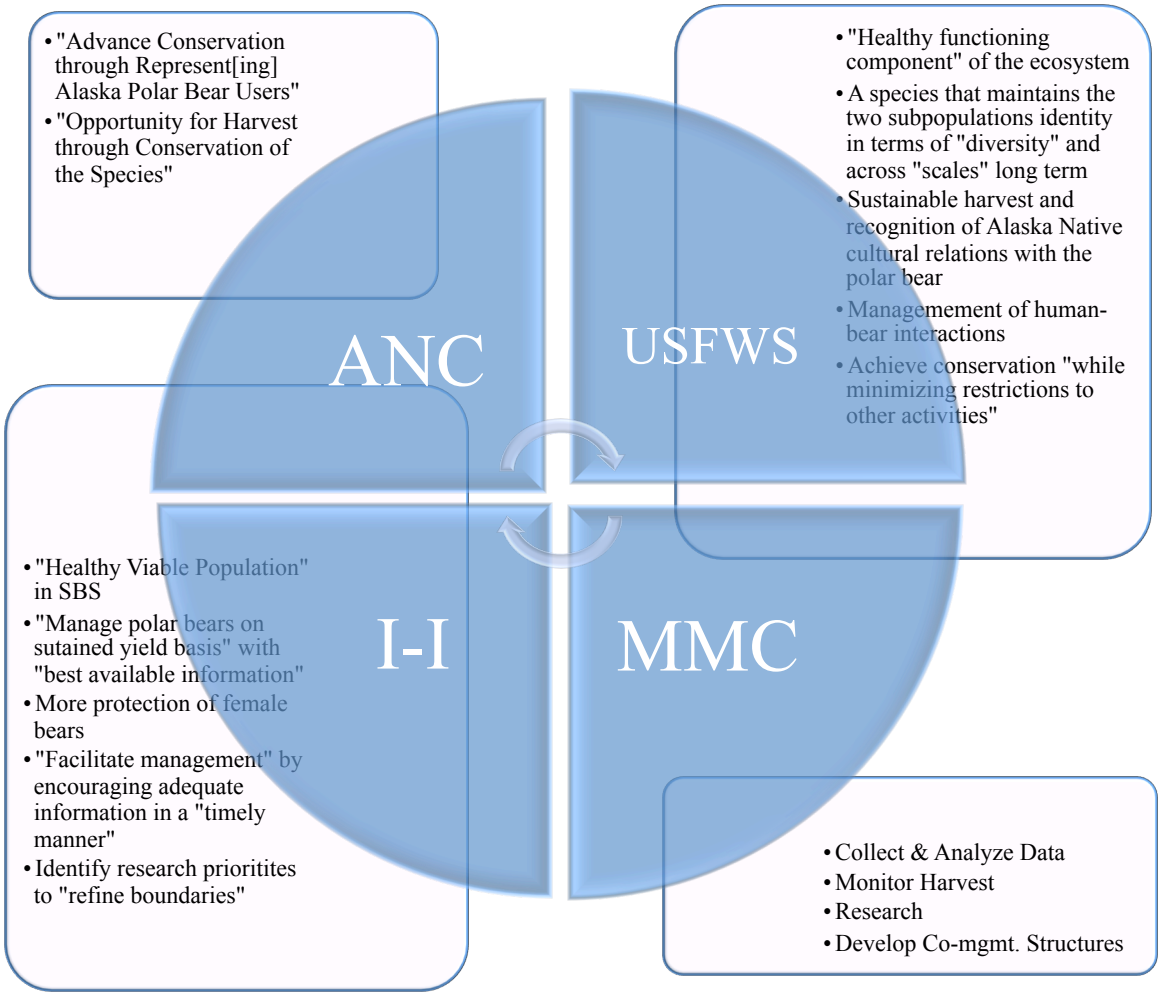


Figure 3: ANC: (ANC 2016) website USFWS: (U.S. FWS 2015) PBRT Recovery Plan; I-I: (IGC & NSB-FGMC 2000) I-I Agreement; MMC: (MMC 2016) website.

Chapter 5. DISCUSSION OF ISSUES WITH CO-MANAGEMENT

The MMC assessments of co-management discussed issues with the implementation of the concept of co-management and provided recommendations on how to improve co-management with Indigenous Peoples. Areas of concern discussed in the MMC assessments include differences in ideologies and ways of thinking about the environment, use of science and traditional knowledge, and methods of communication and consultation. Indigenous rights, rather than privileges, are at stake given climate change and the changes in the process of co-management. This chapter reviews interactions with regard to marine mammal co-management with Alaska Natives over time. This provides discussion of issues of concern noted above with respect to: 1. co-management, 2. consultation, 3. communication and adaptation, 4. TEK, science and co-management, climate change as well as past reviews of co-management by the MMC and IPCOMM.

5.1 CO-MANAGEMENT

Co-management with Indigenous peoples in the Arctic is critical due to climate change and improves success of conservation efforts. The "1973 Agreement on the Conservation of Polar Bears" first outlines polar bear management and conservation goals. In this Agreement, climate change and loss of sea ice are considered the most important threat and the primary adaptation strategy is to "manage and reduce the other stresses on polar bears and their ecosystems" (Directorate for Nature Management 2008). The majority of scientific research on polar bears that support the listing of polar bears as threatened in 2008 indicated that the loss of sea ice effects on bears were the largest concern and were the basis for the listing.

Managers need to recognize marine mammals as species that are connected to the people who harvest and live with them (Laidre et al. 2015). Food security is the top priority of the Inuit Circumpolar Council (ICC), the Alaska Federation of Natives (AFN), and the Alaska Arctic Policy Commission (AAPC) discusses its importance in two of its top four "lines of efforts" (AAPC 2015.) Polar bear co-management is a "wicked problem" that has "social, ecological, and political dimensions" across scales of the social-ecological system (Clark 2010). Wildlife management as a concept disagrees with Inuit viewpoints on wildlife because "management implies control" and there is an understanding among Inuit that "it is not possible to have control over animals in the wilderness (McDonald et al. 1997). Barriers to implementation of co-management across scales need to be considered.

Application of Traditional Ecological Knowledge

Traditional ecological knowledge (TEK) is often a requirement in researching and managing polar bears but is often conducted in culturally inappropriate ways. Research by Meek et al. 2011, analyzes the "human dimensions" of marine mammal management and finds problems with integrating TEK with international interest as a constraint in integration (Meek 2011). Inuit knowledge and scientific knowledge differences increase this uncertainty due to communication barriers. Dowsley and Wenzel analyze the issues within polar bear co-management and recommend the "individual nature" (meaning individual observations by Inuit) of Inuit knowledge should be accommodated and co-management and that there should be a process that recognizes the importance of trust in the governance structure (Dowsley et al. 2008). Research by Laidre et al. on Arctic marine mammals recommends that in the Arctic specifically, monitoring programs need clear goals and there needs to be recognition of limits to legislation regarding marine mammals (Laidre et al. 2015). Fundamentally, it is important to understand

co-management as an issue that has strong linkages between human - social and natural - ecological aspects of the system (Berkes et al. 2000).

Consultation

In January 2016 the "Handbook: Model Alaska Native Consultation Procedures" was published by the Environmental Law Institute (ELI) in partnership with IPCOMM and support from the MMC. This handbook was encouraged by the MMC workshop that reviewed Alaska Native co-management in 2012 (ELI 2016, 5). The handbook distinguishes between consultation and co-management as "two separate processes and mechanisms" of collaboration, highlights "meaningful and timely" consultation, and recommends that the definition should be broad for flexibility (ELI 2016, 5). However, ANOs that conduct co-management may facilitate tribal-U.S. consultation and ANOs with tribal authorization to consult may actually have a responsibility to conduct consultation (ELI 2016, 4). A best practice is to have points of contact within the agency and tribal liaisons (ELI 2016, 4). The federal government should follow-up if tribes do not respond "within twenty-one days" and there should be continual communication and sharing of information with ANOs and tribes (ELI 2016, 5). Consultation meetings should be held in the communities being consulted "when practicable" and consultation plan of Memorandum of Understanding (MOU) should be undertaken for "complex consultation processes (ELI 2016, 18). The handbook refers to Executive Order 13175 in emphasizing the need for an "accountable process" of consultation and the responsibility of the agency for recordkeeping and reporting (ELI 2016, 19).

Addressing Communication: Adaptive Cross-scalar Approaches

There needs to be communication across conservation efforts including legal issues, management, and cultural significance that may decrease conflicts due to varying perspectives at

different levels (Peacock et al 2010). Increasing the effectiveness of co-management communication may be accomplished by "depoliticizing knowledge," increasing participation, and recognizing a need to support sustainable management initiatives (Peacock et al. 2010). Meek et al. argues that the solutions to this "wicked" problem and complex challenge is the improvement of cross-scale capacity and finds that balancing power of stakeholders are a multi-scale governance issues (Meek et al. 2011). Adaptive governance of marine mammals includes resilience as a component that seems "impossible to govern" and is a framework that considers climate change and the human-environment system (Moore and Huntington 2008). Adaptive management of marine mammals given uncertainty is critical and should be precautionary by monitoring and evaluating through modeling at different scales to assess risk (Laidre et al. 2015).

At the International level the Arctic Council declares the polar bear is a poster child of the Arctic (Vongraven and Peacock 2011). There is tension between marine mammal polices at the international scale that work in the Arctic (Meek et al. 2011). Climate change impacts on the polar bear and their recent threatened status draws the international scientific and conservation community to "exert considerable pressure" on the hunting of polar bears in a "cross-scale" system that "tends to marginalize aboriginal interests" (Clark et al. 2008, 350). Article three of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) has a "cornerstone principle" for self-determination and delineates ways Indigenous people may influence law and policy that work towards this with respect to States that includes "international embarrassment, lobbying, public awareness, and persuasion (Koivurova and Steipen 2011).

Conservation of the polar bear needs to be supported by an understanding of the drivers that impact the species (Vongraven and Peacock 2011). The Conservation of Arctic Flora and

Fauna (CAFF) Working Group of the Arctic Council specifically recognizes that strictly biological subpopulations may not be "real populations" if there are not significant genetic differences (Vongraven and Peacock 2011). CAFF argues that this framing is not the most effective approach to monitoring and recommends cross-scales monitoring alternatives (Vongraven and Peacock 2011).

Critical Habitat Example

The federal agencies reported that critical habitat final rule would be effective in January 2011 and that there are three areas critical for polar bears including barrier islands, terrestrial and denning habitat and sea ice (Evans et al. 2011, 10). However, in 2011 there was a legal challenge to this critical habitat designation by the State of Alaska, Alaska Oil and Gas Association, North Slope Borough, Arctic Slope Regional Corporation, and other Alaska Native Corporations (Evans et al. 2011, 10). Many of these organizations that challenged this designation also participate as stakeholders and are tribal organizations and often work with USFWS. The US Ninth Circuit reaffirmed critical habitat designation in 2016 with some slight modification after critical habitat was remanded to the agency by the U.S. District Court in 2013.

Best Available Information – Science and TEK

The idea of best available information should include both quantitative and qualitative information to successfully co-manage polar bears and mitigate effects of management decisions on resource users (York 2014). The implementation of traditional knowledge depends on seven factors (coordination, awareness, collaboration, promotion, support, resources, and accountability) (Lepine n.d.). Application of Indigenous Knowledge as a research tool depends on power and resources available (Metcalf and Robards 2008). The governance of marine mammals as natural resources and common property is complex because science depends on

government support. Further, the recognition of the polar bear as an iconic species is not a reality of Inuit and how they perceive polar bears as an integral part of their culture (York 2014). The level of recognition and trust in traditional knowledge needs to be improved so co-managers may listen to each other because differences in power across scales may undermine this trust (Metcalf and Robards 2008).

Examples of Collaborative Effectual Co-management

ANC expressed interest in reducing human polar bear conflict given the success of polar bear patrols on the North Slope with the North Slope Borough in 2013 (ANC Annual Report 2013). This interest is an example of the value of co-management and collaboration. Another major project in 2014 was the partnership with zoos to promote education and outreach and improvements to the tagging and reporting program (ANC Annual Report 2014-2015). The initiative of the St. Louis Zoo to first contact and partner with ANC to communicate to the public through an exhibit and social media in a holistic way that communicates information on the polar bear sets a precedence that co-managers should look to expand on.

Need for Follow-up Process and Tool to Oversee Research Requirements under MMPA

Improving science and research on marine mammals is a major objective of the MMPA. It is required under the 1973 Agreement and the MMPA that polar bear conservation decisions are based on the best available science. The process of conducting polar bear research needs more support and areas of research needs identified should be scoped out and tracked so not to over concentrate on certain areas application of science to management. Specifically, “resilience scenarios” for Arctic marine mammals is a framework that may contribute greatly to the governance of marine mammals in a responsible manner (Moore and Huntington 2008). Monitoring and evaluating the efficiency of the approach to conserve Arctic marine mammals

that is interlinked with problems deriving from the human system require decision-making to consider where these problems derive from when imposing regulations (Stem et al. 2005).

The primary concentration of research the USFWS-ANC parties report to the ASRG has been on the monitoring of subsistence harvest despite the recommendations given by the ASRG. The ASRG recommended a reevaluation of the stock structure in Alaska in 1995 (AKSRG 1995). At that time the ASRG came to the consensus with the USFWS to split the population of polar bears in Alaska into two subpopulations and use the existing Stock Assessment Reports [from 1986] (AKSRG 1995). This stock assessment initially used from 1986 was based on information that "suggested that the number of polar bears in Alaska in 1956 and 1984 were similar" and noted the population likely declined between these years because of aircraft sport hunts in the "late 1960s and early 1970s" (USFWS 1994). In addition to the recommendation to update the stock assessment the ASRG also revised the methods of conducting stock assessments on marine mammals and suggested that FWS use "average harvest level for evaluating whether the stock is strategic" (AKSRG 1995).

The ASRG continued to recommend that a new stock assessment be conducted multiple times over the years since 1995 with no new information or updates on this recommendation. In 1999 the USFWS reviewed the process for creating new stock assessment in the context of identifying the scientific information required to adequately assess the stocks (AKSRG 1999). In 2006 the FWS reported an uncertain population status of the Chukchi stock because of insufficient data. They concluded that the population was strategic and that the Beaufort Sea stock population estimate would be used for the Chukchi Sea stock (AKSRG 2006). In a 2008 report during the process of listing of the polar bear as threatened under the ESA, the FWS stated that "human-caused mortality is low" in marine mammals and there was a need to detect declines

without human-caused mortality but "it was poor at detecting declines due to factors such as habitat change/degradation or disease" (AKSRG 2008). Finally in 2009 the first stock assessment for polar bears was performed since the inception of the MMPA and after listing of the polar bear under the ESA. The USFWS is the scientific agency, the co-management agency, and the regulation-making agency that makes the final decisions in management and implementation of rules and regulations in the federal government. A strategy to differentiate and balance conservation initiatives given these roles is important. The process of meeting research requirements under the MMPA in order for best available science to be useful in management may want to be reviewed.

5.2 Review of Past Assessments of Co-management and Consultation in Alaska

Marine Mammal Commission

To assess the co-management process I review co-management assessments produced over time to evaluate issues. This subsection describes the main concerns and areas to work on in the USFWS-ANC co-management relationship. Figure 4 summarizes primary recommendations from the MMC.

The Marine Mammal Commission (MMC) indicates on the MMC website (http://www.mmc.gov) that one of the priority topics for the Commission as an oversight organization is the Arctic and the sub-topic of co-management and Alaska Native consultation. The MMC has reviewed co-management with respect to marine mammals in Alaska and has made recommendations on consultation procedures and issues of importance such as "meaningful and timely" consultation and how actions affect the quality of co-management and communities (MMC Co-management Topic 2016). The MMC has conducted formal reviews of

co-management with Alaska Natives of marine mammals in 2001, 2008, and reviewed consultation and co-management in 2012. In February 2016 the Commission went to rural Alaska communities for the first time to hold listening sessions regarding climate change and Alaska Native subsistence.

The MMC reviews co-management with Alaska Natives with respect to meeting the MMPA goals and objectives. Specified objectives in the MMPA include the opportunity for grants to ANOs to support (1) the collection and to analyze data on marine mammals, (2) monitor harvest, (3) participation in research by stakeholders (4) and develop co-management structures (MMC Co-management Topic 2016).

In the 2012 meetings the MMC hosted an Alaska Native consultation and co-management review with the federal agencies, ANOs and tribes, and involved organizations with an intention to improve federal-Alaska Native consultation (MMC 2012). Some main topics of discussion during the three day meeting were the differences between consultation and co-management, the required elements for consultation to effectively function as a framework, the role of IPCOMM under the MMPA, and authority and process of delegation of management to ANOs (MMC 2012). The meeting report from this evaluation brings attention to key issues with consultation including lack of clarity on what is considered formal and where and how much consultation occurs and if consultation is "timely and meaningful," and issues with capacity building, funding and climate change planning (MMC 2012).

Co-management reviews have recommended areas requiring improvement, assessed the process, and developed best practices and recommendations of how to improve co-management with Alaska Natives. The IUCN report from the United States it notes the specific co-management accomplishments from 2001-2004 include the (1) creation of IPCOMM, (2) holding

a meeting with US Congress on the reauthorization of the MMPA, (3) creation of a Native-to-Native Agreement, and (4) co-developing priorities (IUCN 20-24 June 2005). The MMC assessed the progress of MMPA goals to improve conservation of marine mammals and the opportunity for Alaska Native subsistence in 2008 (MMC 2008, iii). MMC found that there has been significant progress in co-management since the 1994 reauthorization of the MMPA pointing out that co-management integrate Traditional Ecological Knowledge (TEK), the use of Native harvest samples are provided for scientific purposes, and outreach and hunter training of bio sampling has occurred (MMC 2008, iii). The structure of co-management was examined and the MMC and it addressed three specifics including the "region v. species based approach" of management, IPCOMMs role, and funding of ANOs (MMC 2008, iii). Four themes were revealed from the MMC 2008 assessment including the importance of trust and lack of it, need for capacity building, issues of funding with accountability, and "enormous threats from climate change" to Alaska Native subsistence cultures (MMC 2008, iv). The MMC recommendations in 2008 included the need for more progress to achieve the objectives of cooperative agreements, to create a "joint management funding proposal to ensure funding stability," to review IPCOMM, "develop protocols and time lines for conflict resolution," and improve harvest monitoring and research collaboration (MMC 2008, v). Education and outreach, "infusing TEK in co-management" and considering the future threats of climate change and "considerable adaptability" required by Alaska Natives "relative to their way of life" were also recommended (MMPA16 USC 31 1972, vi). (See Figure 4 for Summary of MMC Reviews over time).

IPCOMM Review

The 2008 IPCOMM review of co-management outlined goals and objectives, benefits, and discussed the future direction of co-management efforts (ANC Annual Report 2009). This

research and review determined that the goals of co-management efforts include to sustain Alaska Native traditions, conserving marine mammals, investing and empowering local communities to be engaged in marine mammal conservation, and better population estimates (ANC Annual Report 2009). Benefits of co-management delineated in the 2008 review are: (1) build trust (2) increase membership (3) share information (4) support from local communities (5) and more efficient conservation (ANC 2009).

Accomplishments recognized in this review include the co-management structure itself, monitoring harvests, research, and education and outreach (ANC Annual Report 2009). Advice for ways to move forward included the need for increase staff capacity need for a specific communication tool or mechanism with consistent points of contacts (ANC Annual Report 2009). The specific criteria for resource management of co-management efforts in the IPCOMM letter co-management funding proposal include contribution to population estimates, harvest data, harvest management plans and compliance, and conservation efforts that use traditional knowledge (ANC Annual Report 2009). Identified challenges and needs in 2008 consisted of addressing climate change given the scope of polar bear conservation, financial support, capacity building, communication, traditional knowledge, and trust (ANC Annual Report 2009).

There is a redundancy in issues brought up and recommendations provided over time. Reviewing and assessing the process of co-management under the MMPA is helpful to delineate the quality of co-management. Co-management as a process and as an institution that has responsibilities for fulfilling responsibilities under the MMPA should be assessed but the usefulness of these assessments depends on the effectiveness of the changes made in the process to improve areas of concern.

Figure 4: Co-management Recommendations from MMC Reviews Over Time

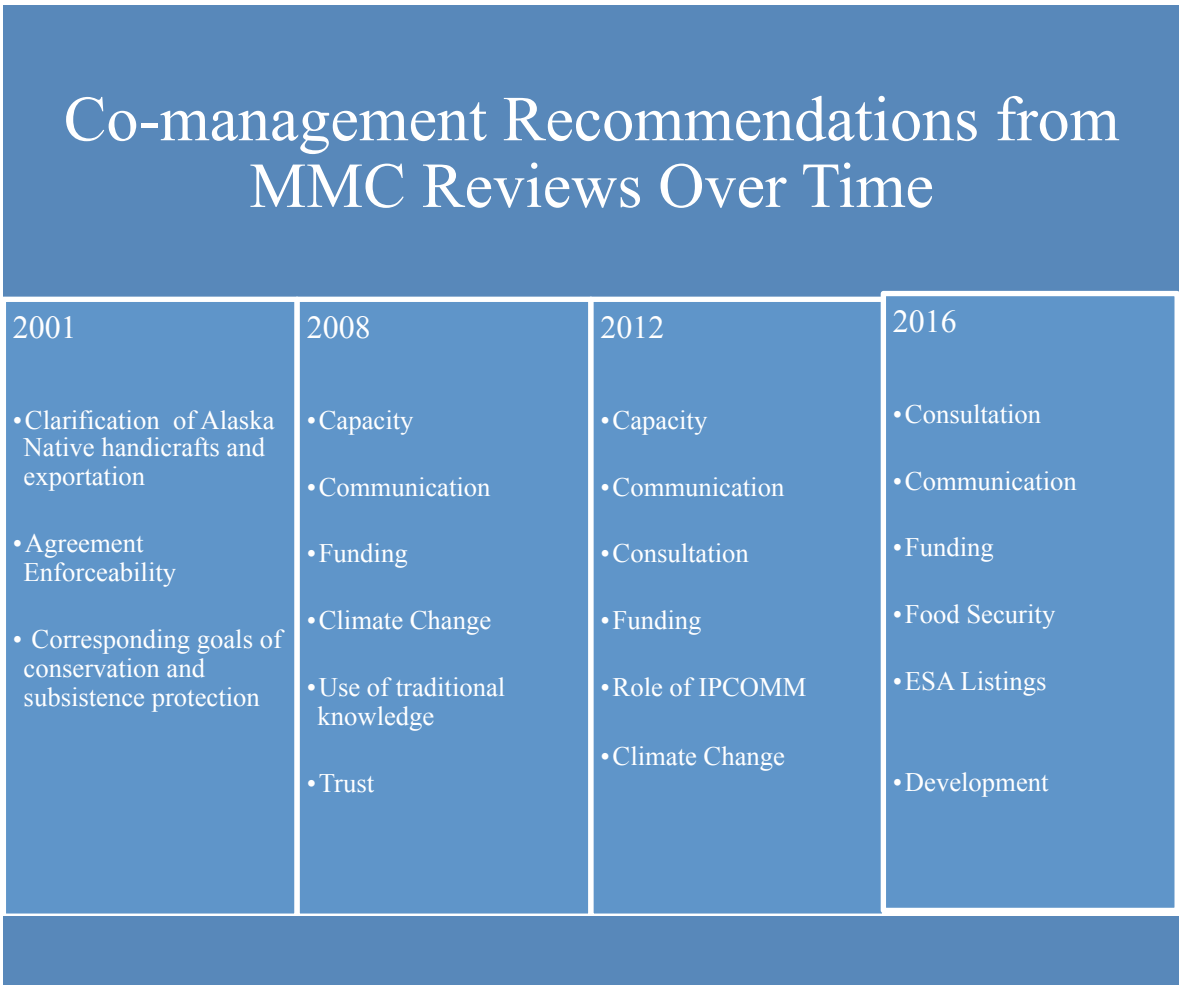


Figure 4: Sources by Section: 2001 (MMC 2001); 2008 (MMC 2008); 2012 (MMC 2012); 2016 (MMC Public Meeting in Anchorage, AK 2016).

Chapter 6. POLAR BEAR CO-MANAGEMENT INSTITUTIONS AND PROCESSES

This chapter describes the results of interviews with participants on the understanding of the current institutional structure and processes of Alaska Native and USFWS co-management and conservation of polar bears in the Alaskan Arctic. A table of the top priorities over time of the ANC-FWS co-management institution provides a picture of changes in co-management over time. (See Table 1). Besides interviews, co-management reports were reviewed and this chapter provides pertinent issues discussed in ANC-USFWS polar bear co-management, measures taken, and the process and interpretation of legislation.

6.1 Participant Input

This section summarizes discussions from key informant interviews. The people involved in polar bear co-management are important actors in meeting policy objectives set under the1973 Agreement, MMPA, and Executive Order 13175. To better understand the institution and the corresponding process of co-management it is important to identify the network of participants and roles and responsibilities (Carlsson and Berkes 2005). While the institution, or the "what," lays out clear duties and responsibilities of the conservation of polar bears and co-management and consultation with Alaska Natives, the managers are ones that determine implementation, or "how" this being done.

(1) Question: What are the similarities and differences in the relationships between the USFWS and the Alaska Nanuuq Commission and the USFWS and the Inuvialuit-Inupiat Commission?

Co-Management Framework

ANC - Chukchi

People involved in the polar bear co-management process generally understand that the Alaska Nanuuq Commission (ANC) is the co-management partner with the United States Fish and Wildlife Service (USFWS) for polar bears across Alaska. ANC receives authorization from tribes to represent them in polar bear co-management under the MMPA. The ANC has tended to focus on the Chukchi subpopulation of polar bears because of the effectiveness of the Inuvialuit-Inupiat (I-I) Commission. The ANC has been concentrating on the U.S.-Russia Bilateral Agreement with Russia since the agreement was made. There are pending regulations and management proposed for early 2017. Thus 2016 is a critical time as plans and consultation occurs for harvest quota for twenty-nine bears, which has never been in place for polar bears but is enforceable under United States law and by Russia.

I-I – Southern Beaufort

The Inuvialuit-Inupiat Agreement (I-I Agreement) is considered a successful voluntary agreement. The I-I Agreement is between the Inupiat of the North Slope and the Inuvialuit of the Inuvialuit Settlement Region of northwestern Canada and focuses on the conservation and management of the Southern Beaufort Sea stock of polar bears. The North Slope Borough (NSB) and the Inuvialuit Game Council (IGC) are co-leaders. Polar bear co-managers think this is an important Native-to-Native agreement and agencies value the capacity of the co-leaders. There has been a Memorandum of Agreement (MOA) between the United States and Canada

governments since 2008, but this MOA is more of a framework than an active document. The United States report to the Meeting of the Parties mentioned that the US-Canada MOA is "not to supersede contributions by the I-I Agreement but to "encourage facilitation of cooperation" (ANC Annual Report 2009). The FWS and Environment Canada, its Canadian counterpart, are scientific advisors to the I-I Agreement for the US provides scientific and technical advice to the commission. Both the ANC and the FWS have respected the I-I Commission management of the Southern Beaufort Sea (SBS) subpopulation of polar bears.

The I-I Commission implemented a quota on the harvest of SBS polar bears. In Alaska the quota is voluntary while in the IGC, the quota is enforceable. Regulations are in place and are monitored by the NSB and the IGC. The I-I Agreement is interesting in that it is a Native-to-Native Agreement that the Inuit created, established, and exercise authority as co-managers to manage the polar bears in the regional environment they share. This Agreement is unique in that this organization acts as the authority rather than expecting others to have the authority and "give" some responsibility to them. However, the authority of this institution may be at risk the USFWS contemplates taking a more dominant role in management of the Southern Beaufort Sea polar bears.

Institutional Structure Discussion

The international relations and management systems of both Canada and Russia for polar bear management impacts the capacity and experience of the U.S. managers involved. The Inuvialuit Game Council and the North Slope Borough have more management capacity than the Chukotka Natives and the ANC. The strength of the structure in Canada is discussed by co-managers as one that may exhibit truer co-management because of the recognition within Canadian mandates that there is equity in authority and capacity of the co-managers (i.e. Native

organizations and the Federal government). However, there are different weaknesses and strengths in the Canadian co-management system. It differs from the United States co-management system and it is important to be aware and learn from strengths and weaknesses in both systems.

Some informants suggested that a potential structure for polar bear co-management could be modeled after the AEWC framework. The AEWC model has a well-developed communication mechanism with a grasp of functional coordination systems for communities and the coupled quality of traditional knowledge and scientific information from which polar bear co-management could benefit to support the framework. This model is exemplary because of the capacity it has and the value framework marrying Indigenous and scientific approaches to management. There is concern however, because of the limited capacity for this structure within the ANC. Further, the type and extent of involvement of different stakeholders and different agencies in polar bear co-management has to be assessed. For example, the communication methods and process between USGS that does a great amount of the scientific research on polar bears and the co-managers, both ANC and USFWS, may need to be clarified to inform the marriage of science, policy, and community relations.

(2) Are there any conflicts or disagreements with how co-management should occur of which you are aware?

Co-managers Discussion on the Process of Co-management

The co-managers in Alaska should be careful in assessing what processes and institutions that are considered successful. This is especially necessary if there is a need to develop and change approaches to management or in making recommendations. Those involved in co-

management in Alaska stress that within the Alaska co-management institution there is a lack of capacity in terms of human, legal, and financial capacity. This limitation hinders the co-management process to meet its goals and responsibilities for co-management and conservation of polar bears. Abrupt changes to agreed-upon plans make it difficult for co-managers who do not have the capacity to rapidly adapt to changes in these plans and processes.

The quality of relationships and willingness of the responsible people involved in communicating and cooperating in polar bear conservation and management in Alaska strongly determines the quality of co-management. Guiding laws and policies create a relaxed structure and flexibility. Further, the approach and details on how to accomplish the shared goals of ANC and USFWS to conserve and manage polar bears is vital to meet these goals. Trust in the relationship is important for success and the lack of trust beyond the agreement and legal obligation is a concern and hinders success. Building relationships across cultures was emphasized as being a challenge.

Perspectives on Approaches to Co-management and Governance

Co-managers generally understand that they need each other to effectively conserve polar bears. The relationship has generally been collaborative. The parties involved have resolved issues by working through them through different approaches with the guidance of the MMPA. This process is not without shortcomings and co-managers express that it is difficult at times given the diversity of interpretations of how to achieve the agreed upon purpose. For example, the current preparations to enforce a quota have created considerable disagreements on the approach to enforcement with stakeholders at all levels on the approach to enforcement. Disagreements involve positions on boundaries between the polar bear stocks, methods of reporting, and timescales of implementation of regulations. The co-managers believe that

everyone, including polar bear hunting communities, is needed for the conservation of polar bears. Communities within the range of polar bears may also have the most interest in ensuring conservation and supporting science.

(3) In addition to the Section 119 of the Marine Mammal Protection Act how does the USFWS policy toward Native Americans and consultation with Native Americans play a role or influence the relationship?

Alaska Native Consultation – USFWS Policy Toward Native Americans

While there is awareness of consultation and there is the USFWS policy towards Native Americans, the implementation of this policy is unclear and there are ambiguous perspectives on how it is applied to many involved in polar bear co-management. Most of the people I interviewed were aware of the policy, but co-management and consultation and application of the USFWS policy toward Native American and Alaska Natives is perceived as generally separate from co-management of polar bears. It assumed that others facilitate this role, or that there is little implementation of consultation. Further, other agencies involved in conservation of polar bears, but who are not co-managers, may not see that consultation and trust responsibilities apply to their agencies. There are examples of the co-management parties holding workshops and community meetings that they consider consultation but they do not meet the threshold definition of consultation. The setup of meetings considered by many as consultation includes contact prior to the meeting with the tribes and various stakeholder organizations within the communities. Commissioners of the ANC are representatives of the communities and may have a role in consultation and input to meet certain aspects of the policy. The role of this policy in the relationship between the USFWS and communities is broad and overarching but there are no

clear mechanisms or explicit roles within the co-management framework. Thus, some co-managers believe it does not necessarily apply to the specific work they are conducting.

It is understood that consultation with tribes is an overall guiding framework wit flexible implementation. This flexibility has many benefits. Consultation takes place through a wide and diverse range of avenues with many informal and very occasional formal processes. Polar bear hunting community meetings on the polar bear conservation plan and deterrence workshops are two examples. When the process of co-management is not going as planned or as agreed upon in these meetings given uncertainty and changes in management and conservation methods it may create problems that jeopardizes the identified objectives of co-management under the MMPA and as agreed upon by the parties. The MMC reviews of co-management have pointed out the concern for the lack of definition of consultation as seen in figure 4. Follow-up on consultation is important, whether it is more informal or formal. The follow-up needs clear expectations and lines of communication of what was discussed even though the results of consultation are not enforceable, but the requirement to consult is legally binding.

(4) To what extent does the international bi-lateral agreement with Russia and MOU with Canada influence US co-management with Alaska Natives within Alaska?

US-Russia Bilateral Agreement

Co-managers perceive that international activity and organizations do not have a great deal of direct influence on co-management in Alaska. Some aspects of international relations may also improve domestic relations because of the need for more communication between the co-managers. Moreover, unity is needed between the co-managers when interacting with other States and international entities. However, because there are international affairs with respect to

polar bears, other international activities may put pressure or reduce control of polar bear co-management in certain ways, e.g., wanting to meet other unrelated objectives. International relations and attention regarding this species in particular are heightened because of its celebrity status. One does not generally see an international conservation agreement for other mammals, whether land or sea, like the 1973 Agreement on Polar Bears. Further, international agreements like the US-Russia Agreement and I-I Agreement create a framework for conservation and management and are or can be influential on co-management within Alaska.

The perception that the 1973 does not have direct influence but provides the framework for co-management in Alaska is surprising given the focus on passing and implementing the Agreement in the outlined priorities agreed upon by the co-management parties as described in figure 4. The perception that international relations may improve domestic relationships probably has changed over time and according to the discussion in the meeting reports below, may be currently hurting domestic affairs given the polar bear conservation and subsistence issues in Chukotka that initially prompted creating and implementing the agreement.

(5) To what extent do international conservation efforts or international conservation organizations play a role or influence USFWS decision-making on the conservation of polar bears?

International Affairs

With respect to international forums that the United States are involved in there is the understanding that those forums may be separate than domestic management and co-management within Alaska. The 1973 Agreement and work with the Range States on the Circumpolar Action plan sets up a framework but within direct actions taking place within US

domestic management. For research, the IUCN Polar Bear Specialist Group sets research priorities.

The role of international non-governmental organizations (NGOs) influences co-management indirectly through influence outside of Alaska but it depends on the organization. NGOs have a larger role in the international arena with initiatives like CITES. The influence of NGOs on the USFWS to promote up-listing of polar bears within CITES may indirectly affect management and conservation initiatives within the US. There are a wide range of NGO positions on polar bears. The different perspectives on approaches to conservation and are helpful to understand but endorsing these perspectives should be done carefully and create opportunities to learn. Co-management partners may partner with NGOs to assist in projects such as polar bear patrols. One area of improvement and possible role for NGOs is to be more effective with communication and outreach to the public on Indigenous and Arctic community relationships with the polar bear for better context of polar bears and its environment. Further, it may be the role of co-managers to communicate the process of conservation and co-management in Alaska effectively to the public for better understanding.

The polar bear is the charismatic mega fauna of the Arctic and it receives international and public attention. The 1973 Agreement on the Conservation of Polar Bears Range States, CITES, and the IUCN PBSG are international polar bear conservation organizations that involve the United States. Further, there are other international affairs focusing on the Arctic and international organizations focusing on marine mammals. At the 2009 Meeting of the Parties the discussion on harvest management recognizes the importance of the polar bear to Native peoples and describes that sustainable harvest will result from “bilateral coordinating mechanisms” due to the shared Chukchi subpopulation challenges (ANC Annual Report 2009). There is discussion

on co-management with ANC and Alaska Native harvest management at these international meetings. For example, in the second meeting of the US-Russia Polar Bear Commission in 2010 it was presented that the 1973 agreement suggests quotas are for all "human-caused mortalities" including but not limited to subsistence hunting (Second Meeting of the US-Russia Commission in 2010 ANC Annual Report).

These international organizations may influence polar bear conservation and it is important to continue be aware of this. For example, in the 2009 US-Russia Bilateral Meeting minutes it was mentioned that there are "outside groups who want to see how we manage the treaty" and a commissioner suggested that it might be important for NGOs and government to work together more closely (ANC Annual Report 2010).

(6) Is there anything else you would like to share?

National Affairs

There is involvement of a variety of entities at certain times at the national level that influences critical decisions rather than on a day-to-day basis. The national level involvement and intervention in this way is a concern given the unfamiliarity and lack of continual communication on how communities and co-managers are meeting management and conservation objectives. There are national management and co-management initiatives broader than the polar bear co-management relationship between ANC and USFWS in Alaska. It is the duty of ANC and USFWS to conserve and co-manage polar bears with each other in Alaska.

In terms of overall conservation and management of polar bears, given broader affairs and relations regarding polar bears, it is important to assess the context of the specific relationship of ANC and USFWS. Continued evaluation of the process of management and

conservation balanced between co-managers and input from stakeholders may be valuable. For example, it is a requirement in the creation of a Conservation Management Plan to include the input of a spectrum of stakeholders. Further, direction in the conservation plan from the national level on how and what may be included may need to take into account the co-management relationship and MMPA recognition of Alaska Native subsistence on marine mammals. The unique co-management structure in Alaska creates a unique dynamic of involvement. Considerations of how participation and input of the two co-management parties, given the lack of capacity, may be improved and be more than that of stakeholder participation is needed.

Table 1. ANC Top Priorities: 1999-2015 (ANC Annual Reports 1999-2015)
(ANC and USFWS agree upon goals and priorities in Cooperative Agreements.)

1999	▪ TEK Project ▪ Finalize language of US-Russia Bilateral Treaty	Agreements with USFWS since 1997 (MMC 2001)
2001	▪ US-Russia Bilateral ▪ Co-management Operations ▪ Reauthorization of the MMPA	
2004	▪ Co-management Operations ▪ Implementation of US-Russia Bilateral ▪ Reauthorization of MMPA ▪ TEK Project	Includes 2002-2003 Priorities
2005	▪ Co-management Operations ▪ US-Russia Bilateral with funding for ANC for travel to villages	
2006	▪ Reauthorization of MMPA	
2007	▪ Population Assessment Report ▪ Harvest Data Collection and Tissue Samples ▪ US – Russia Bilateral	
2009	▪ MMPA Issues ▪ Address Limited Funding ▪ Co-management Operations ▪ US-Russia Bilateral	Includes 2008 Priorities
2010	▪ Co-management Operations ▪ US-Russia Bilateral travel to villages ▪ Polar bear human avoidance ▪ Collaboration with IPCOMM on MMPA Reauthorization	
2011	▪ Budget Accountability Employee Hire	Includes 2012 Priority
2013	▪ Co-management Operations ▪ Implementation of US-Russia Bilateral ▪ Deterrence ▪ TEK Report	
2014	▪ Funding, Audits, Presentation as “legitimate agency” (2014-2015 ANC Annual Report) ▪ Discussion on Need for Strategic Plan	Includes 2015 Priority

6.2 Co-management Reports

Carlsson and Berkes emphasize the usefulness of analyzing cases of co-management over time to understand the dynamics, linkages, and evolvement of the institution (Carlsson and Berkes 2005). This section discusses the major deliberations, issues, and priorities over time by analyzing co-management reports from annual co-management meetings over time from 1999 to 2014-2015 and the attending the 2015-2016 co-management meeting to directly observe USFWS-ANC co-management. It is important to analyze co-management over time to assess the process of co-management and how management is shared "to the maximum extent allowable" as stated in the Umbrella Agreement (United States Umbrella Agreement 2006).

Conservation Measures

Conservation

Both parties to co-management reaffirmed the position of having a "conservation ethic" in the management of polar bears (ANC Annual Report 2014-2015). A specific area of focus of conservation for the co-management parties over time is harvest management.

Harvest Management

What does having a conservation ethic entail?

ANC's perspective in 2000 was that there is a need for "management before depletion" rather than only after polar bears were depleted or endangered (ANC Annual Report 2001). The ANC looked up to the I-I Agreement that has take restrictions on the ratio of take of female to male polar bears because of the rising age of the SBS subpopulation (ANC Annual Report 2001). The perspective by co-managers in 2001 is that there should be tribal or ANC created enforcement mechanisms implemented by ANC or USFWS but that there is a need to increase

funds for the Native-to-Native Agreement (ANC Annual Report 2001). The proactive approach by both the I-I Agreement and the Native-to-Native Agreement demonstrates that independent of the section under the MMPA that allows harvest restrictions of depleted marine mammal stocks. There is a conservation ethic by Alaska Natives that is proactive rather than reactive and goes beyond the requirements under the MMPA (ANC Annual Report 2010). The Native-to-Native Agreement declared a need for regulating harvest prior to the MMPA and ESA listing and during the creation of the 1973 Agreement and subsequent MMPA, the I-I Agreement in 1986 set voluntary regulations that went beyond the 1984 regulations and tools to regulate Alaska Native Harvest. With respect to "conservation ethic," the question is what does this ethic entail? For Alaska Natives management and conservation initiatives seem to be important regardless of the "status" under the MMPA and this ethic goes back to the nature of the relationship of Alaska Natives with the polar bear.

Co-management Institution-Process Mismatch?

Co-management of subsistence as developed by the I-I Commission and as expressed in plans for regulations under the US-Russia Bilateral and Native-to-Native Agreement emphasize the need for culturally appropriate management and regulation. In the 2001 when the Agreement was initially being discussed, the June 2010 Executive Summary report on the workshop with Native subsistence hunters emphasized the importance of TEK in harvest regulations and providing sufficient resources to implement these regulations (ANC Annual Report 2010). The discussions in 2015-2016 co-management meeting and concerns raised by Alaska Native communities in the MMC hearings that were first introduced to hearing about this regulation and the implementation given the actions by USFWS to put the agreed upon quotas on harvest into effect brings up the question of the process of co-management and regulation of harvest. Further

the concerns of boundaries covered by this quota being Barrow rather than as discussed in co-management meetings as being Point Hope where "stock overlap occurs" brings up the issue of the lack of policies being created mirroring co-developed plans (ANC Annual Report 2005, 50).

Collaboration Across Scales

Collaboration of the USFWS and the ANC at the regional level seem to be working well with good understandings of each other and a common goal for co-management. However, pressures at other levels create problems and resistance in plans and viewpoints on regulations (ANC Annual Report 2013). There needs to be better forms of communication with involved participants in polar bear conservation because these pressures affect USFWS-ANC co-management under the MMPA. For example, it was expressed in the 2013 Annual Meeting that there were difficulties explaining co-management affairs to the tribes, a lack of guarantee for co-management funding from the federal government despite the fact that the Bilateral Agreement was a mechanism to provide funding, an emphasis of prioritizing the US-Russia Bilateral Implementation because of public pressure, and opposition from other organizations in how enforcement is being planned via quotas (ANC Annual Report 2013). Taking action on the harvest management plans was pointed out in the 2011 ANC Annual Meeting Report. Collaboration in these actions across scales is as important as collaboration with each other and may be key to co-management for improving collaboration with each other especially in light of pressures from outside organizations.

More examples of co-management processes being affected by lack of collaboration across scales over time creating issues when implementation is taking is being planned to take effect are displayed in the tensions of the 2014-2015 ANC Annual Meeting. In 2014-2015 the ANC and USFWS came to agreement on the five-year plan with conditions of co-management in

enforcement of quotas although with differences in interpretations of the MMPA and pressures from different levels on this co-management relationship (ANC Annual Report 2014-2015). Further issues with different organizations in opposition to quotas as a mechanism to manage and disagreements on the scientific reasoning given uncertainty created tension in the co-management of polar bears and different "competing interests" (ANC Annual Report 2014-2015). The meeting proceeded with information on the decision that seem to have taken place without collaboration is a quota limit at twenty nine bears from Icy Cape south and synopsis of the visit to Point Hope (ANC Annual Report 2014-2015). It may be useful to learn from successful collaboration with participating entities besides the co-management parties like the collaboration of USFWS conducting research with USGS. The 2011 report to the I-I Agreement emphasized the importance of harvest information for management and the collaboration of USGS and USFWS survey research (Evans et al. 2011, 2).

The network of participants may change different aspects of the process of co-management and change agreed upon plans and co-developed agreements in terms of how these parties meet the agreed upon laws. Further questions on management included how "liberal" regulations may be. The USFWS stated that they "Can't be less restrictive than the federal regulations" while the ANC recognized the tribal authority that ANC is given and argued for a less restrictive quota (ANC Annual Meeting 2016). Tension on the issue of regulations and from where they are derived from and how set up was is a main concern of co-management (ANC Annual Meeting 2016). ANC contracted with Solstice Consulting Firm to look at an application to improve reporting harvests requirements with hopes that USFWS would consider this work (ANC Annual Meeting 2016).

US-Russia Bilateral Agreement Development Process

The top priority of polar bear co-management by the Alaska Nanuuq Commission (ANC) and the U.S. Fish and Wildlife Service (USFWS) is the US-Russia Bilateral Agreement as indicated by co-management reports. (See Table 1.) As a primary focus of the co-management relationship it is important to analyze how this priority and has progressed over time. This binding agreement and the Native-to-Native agreement is a way to share power between the States and the resource users that are at different levels of organization (Carlsson and Berkes 2005, 73). The US-Russia Bilateral Agreement is analyzed as "a means to create the political space" where the parties involved (United States, Russia, Alaska Nanuuq Commission, and the Natives of Chukotka) for "collaborative problem-solving" (Carlsson and Berkes 2005, 73). This subsection is used to analyze how this agreement operates to identify capacity building needs by using this legal framework to understand participation in this institutional arrangement because it is prioritized at all levels (Carlsson and Berkes 2005, 73).

Initial Plans for the Use of this Agreement: Background

It was understood when entering into this US-Russia Bilateral Treaty that the joint commission would operate on a consensus basis with the Native-to-Native Agreement and with an awareness that there are still lingering questions on how the agreement would be enforced, how quotas would be set, boundaries, and how research priorities would be determined (ANC Annual Report 2001). It was communicated in a letter in 2001 that this treaty "brings true co-management by the participation on the joint commission as equals" (ANC Annual Report 2001). The "purpose of the treaty is to allow Natives of Chukotka to legally harvest polar bears" while it recognizes traditional ecological knowledge (TEK), the value of subsistence, right to

hunt, and sets up some restrictions on the take of polar bears by Natives (December 2000 Letter to Commission in ANC Annual Report 2001). In the letter it states,

> "Essentially we are giving up the right to hunt without limits as along as polar bear are not depleted or endangered for a seat on the commission [US Russia Bilateral] with practical veto power." (ANC Annual Report 2001).

The letter further stated, "in other words: we will participate in setting any limits ourselves" and the treaty would provide for equal participation, promote Native to Native cooperation, establish half annual take to the Alaska and Chukotka Natives, and "allows for a Native to Native Agreement to implement the treaty" (ANC Annual Report 2001).

Consensus-Building

The initial US-Russia Bilateral Agreement is created and discussions around the Agreement are framed as a tool to begin a process of consensus building. At the initial meetings it is not clear where boundaries would be, how the agreement would be enforced, or even how research priorities would be determined but were questions to address with the creation of this space to co-develop and co-address them. A discussion on funding is an example of a continued need to develop the criteria and outcomes of the agreement. It is stated, "assurances made that funding would be addressed with the ratification of the treaty" (ANC Annual Report 2001). This agreement was not intended to be an end of a process that set but the beginning of one that set specific affirmative rules.

The 5th Meeting of the US-Russia Polar Bear Agreement Commission consisted of the interest of the United States in having a legal harvest in Chukotka, an update on the progress by the USFWS and ANC on implementation of the agreement, and a discussion on sustainable harvest levels (ANC Annual Report 2013). In the 2013 meeting the draft conservation plan and

quota implementation plans were highlighted and put as a priority by USFWS with a request for a timeline by ANC and emphasis that it is crucial for this development to have education and outreach as a part of it (ANC Annual Report 2013). Rather than co-creating plans first on the implementation of the quota the decision to implement is decided before discussions on how implementation is going to happen. This planning process may not be the right approach given that there were big questions in the initial signing of the agreement.

When actions began to take place disagreements begin to arise and a lack of co-development of plans seems to begin. ANC and USFWS discuss the implementation of the US-Russia Bilateral Agreement but not with the same consensus that occurred with the initial development of the Agreement. Further, the plans to co-address the questions that were still in the air during the creation of the Agreement become an area of tension. Domestically, In the 2014-2015 co-management meeting 2013 was expressed as "a difficult year" (ANC Annual Report 2014-2015). Tribes did not agree with the way implementation of the shared harvest management plan and terms of enforcement were being conducted (ANC Annual Report 2014-2015). Negotiations were also being made with the United States State Department on representation on the US-Russia Bilateral commission with lack of involvement by Native groups in decision-making and proposals for the United States position that was significantly different from agreements between the two co-management parties (ANC Annual Report 2014-2015). Specifically, the timeline and process of implementation was disagreed upon and created tension to the point where parties mentioned potential legal actions and letters were sent to political representatives (ANC Annual Report 2014-2015). When actions are developed they may not mirror the co-developed plans or execution process intended and co-managers seem to fall short of the same quality of consensus building.

Chukotka Natives and Russia Capacity Building

As a capacity building need it states in initial discussions that this agreement is made to address the capacity building needs of the Natives of Chukotka as a reason for entering this agreement. However, this agreement is moving forward in the United States without it being moved forward in Russia. Because this agreement is a tool to work with Russia to address problems in Chukotka as well, the process of implementation in Alaska needs to be discussed given the initial questions and uncertainties on how the rules would apply. Because there is a change in management on the sides of both parties since the agreement was institutionalized this may not be clear to the co-managers in the process.

For example, a response to an article published by the Russian Government in 2010 printed in the ANC report states that the expert commentary mischaracterizes the reasoning for the US-Russia Bilateral Agreement and that the Agreement actually "gives the Native people the right to harvest polar bears" and the "decision was approved by Native peoples" and the need for active participation when illegal harvest as indicated in international studies that demonstrate it is more effective (ANC Annual Report 2010). The rights of Alaska Natives to hunt polar bears were recognized already in the MMPA. If the cooperation is with a State that does not recognize the rights of Chukotka Natives to hunt polar bears the progress in the agreement could be limiting the progress the USFWS-Alaska Native co-managers. As the co-managers top priority in the domestic co-management priorities they co-develop as described in co-management reports it may be useful to consider how much effort is being put in and how much of a benefit this is domestically.

For the Bilateral Agreement the expression by a commissioner is concern given the "hunt in Russia (is) not legal" and clarification of what it does for ANC (ANC Annual Report 2013). A

different perspective by another commissioner is that ANC is to "lead by example" in this agreement and the benefit expressed is to "support studies" (ANC Annual Report 2013). During this time there was awareness that involvement of the ANC in the creation of the management plan for polar bears and implementation of the Bilateral Agreement was critical and needed to be done carefully (ANC Annual Report 2013). The difference in concerns and questions raised is a good thing but a closer look and elaboration on this discussion and the clear identification of the costs and benefits would be helpful to meet the recommendations on better co-management and to better meet the goals of co-management.

The US-Russia Bilateral Agreement update in 2016 consisted of the recognition of a legal commitment by the United States to implement and it was recognized that commitment "does not state that US need parallel with Russia" and has to "comply with agreement" (ANC Annual Meeting 2016). There was also a question raised of while there are four chairmen with equal representation, if the meetings reflect equity in representation (ANC Annual Meeting 2016). Questions raised during this meeting on the agreement by ANC are if there is a "change in intent" and if the federal government is "carving out the structure" (ANC Annual Meeting 2016). In the administration of the agreement there were debates on if the terms "cooperative management" and "co-management" were different (ANC Annual Meeting 2016). Language of the regulations, timelines, communication, outreach, and "turnover" were identified as problems of the process of implementation of the Agreement (ANC Annual Meeting 2016). Looking at the legal requirements and the interpretations of the Agreement as it stands without considering this Agreement and the Commission as a forum for problem solving may be hindering the relationships domestically as observed in the 2016 meeting.

Boundaries Issue

In the Bilateral Agreement there were questions on boundaries and implementation of the management plan "for the Alaska side" (ANC Annual Report 2013). There were thoughts on including an I-I Agreement representative in the executive committee to "sensitize the two agreements" and representation of the villages north of Point Hope (ANC Annual Report 2013). This conversation is pertinent to conversations today on boundaries and understanding of boundaries and who and what determines are considered when these decisions are being made such as formal policies and or past meeting interpretations.

The United States national report at the 2011 Meeting of the Parties of the 1973 Agreement alluded to the fact that "bears do not recognize international boundaries" (ANC Annual Report 2011). The IUCN boundary is described by the United States at this meeting for the Southern Beaufort population as Icy Cape, Alaska to Paulatuk NT, Canada and the Chukchi population has the geographic area of Barrow to the Bering Sea with boundary refinement based on science and TEK and "as necessary" under Article II of the Native to Native Agreement between Natives of Chukotka and Alaska (ANC Annual Report 2009). Under Article III of the Native-to-Native Agreement of the Meeting of the Parties it is stated that sustained yield should not exceed recruitment and changes in boundaries may adjust allocation for users (ANC Annual Report 2009).

Science Input

The July follow-up ANC meeting to the May 2009 meeting stated that there is a critical need for more data on the polar bear populations in Alaska. In the July 2009 report included the US-Russia process discussion on the role of the scientific advisory group purpose "to provide

insight to the US-Russia Bilateral Commission on sustainable harvest" and created guidelines for the advisory group (ANC Annual Report 2009). How science in used in management is important to consider. The report by the USFWS on the Chukchi population stated there is no good estimate but indicated that a 2008-2014 project is in place to determine how polar bears are affected by sea ice loss to "develop information on environmental assessments and develop planning" (ANC Annual Report 2010). Better population data for harvest management is the purpose for projects and direction of what is going to be done with the scientific information. Research priorities recognize the lack of a good population estimate and the scientific advisory group concentrates on looking into sea ice loss impacts on polar bears (ANC Annual Report 2010). Polar bear research focus is on habitat, population dynamics, and climate change effects on polar bears given the population status is still "unknown" and "data deficient" (ANC Annual Meeting 2016). Managers should consider the approach to the use of science in decision-making such as reflecting on the guidelines in the initial discussion of the Bilateral Agreement, given a wicked problem such as polar bear conservation and consider that it may not be best to rely exclusively on science to address human-management decisions.

Traditional Ecological Knowledge Input

A point is made in the Meeting of the Parties that "TEK should be in concert with western science" (ANC Annual Report 2009) It is outlined that in 2005 the Chukchi population is "data deficient and no risk estimate" and that the Southern Beaufort population is in a decline with no risk estimate (ANC Annual Report 2009). The commissioner comments in 1999 encompassed comments on importance to "protect marine mammals for future generations" and to "solve problems ourselves to protect way of life" as well as polar bear observations, there is a need for more funds, and polar bear patrols on the North Slope (ANC Annual Report 2001). An

update of the local ecological knowledge in the Bering Straits project was given in 2011 (ANC Annual Report 2011). The "village reports" by the commissioners consisted of traditional knowledge observation of polar bears and requests for polar bear patrols (ANC Annual Report 2013). In terms of traditional knowledge there were questions on if the TEK study conducted was used in "formal management" and the reply was that the TEK study and research seem to be "consistent with research" and that the parties are "always looking for ways to do better" (ANC Annual Meeting 2016).

Capacity

The fifth step to assess the process of co-management is to look at capacity building needs to improve the capabilities of the institution and co-managers involved (Carlsson and Berkes 2005). Capacity building is a discussion and need expressed in co-management minutes over time. Capacity of co-managers varies depending on the type of knowledge and scale and co-management is a mechanism to gather a diversity of expertise needed and disperse duties (Carlsson and Berkes 2005). This subsection lays out issues with capacity.

Capacity within the ANC-USFWS co-management and within the ANC organization has been voiced as an issue of concern throughout many of the years documented in the meeting minutes since at least 2004. Developing and enforcing policies, clarifying roles of staff and commissioners, allocation of funding, and communication to Native villages was a topic of assessment for ANC (ANC Annual Meeting 2013). These are areas that are identified as capacity building needs in 2016 (ANC Annual Meeting 2016). There is a need to understand the capacity to address the reoccurring recommendations by oversight groups like the MMC, IPCOMM, and ASRG. These capacities should be looked at across scales.

The capacity of individual co-managers has a great amount of influence on both the one-on-one relationship and the role of this institution in the broader polar bear conservation institution. It is noted that ANC and USFWS program has had a long term close relationships with integral and key people developing those relations at that time (ANC Annual Report 2010). During the ANC meeting the executive director emphasized the need to change operations of the committee to be more efficient (ANC Annual Report 2010). Further, transparency and trust were a talking point with a view by the USFWS that the system can only be "flexible" with "good reporting" in the 2011 ANC meeting (ANC Annual Report 2011). Transparency, trust, accountability, and capacity needs, of both parties are all primary recommendations for better co-management to occur but there is a lack of cooperation in addressing these recommendations in scenarios and more directives on how and what each party would like to see occur.

Funding

Financial resources of the parties are a factor that influences the "legitimacy" of the parties to each other (Carlsson and Berkes 2005, 67). This subsection analyzes the discussions surrounding funding and its role in co-management relations. Funding in polar bear co-management is an area that is a source that affects how co-management is conducted.

Major concerns that are reflected in discussions on funding as expressed by one counterpart as "not a guarantee" and "not a requirement" points to the lack of balance in the partnership (ANC Annual Report 2013). The dependence, risk and the mere point of emphasizing this possibility of no security in funding are a concern. Funding uncertainty create other issues in the quality of the relationship.

Funding for both parties depends on the funding approved by Congress. Funding for the ANC primarily is through the USFWS. It is outlined in the funding discussion that in 1994 there

was established stable funding split between three marine mammal commissions including ANC, Eskimo Walrus Commission, and Sea Otter Commission of $250,000 annually (ANC Annual Report May 2009). This amount was increased in 2002 to $450,000 for each commission and this amount was stable until 2007 when it was reduced back to $250,000 split between the three and the USFWS committed to contributed $195,000 for the "period of performance" until 2010 (May 2009 ANC Annual Report). Included in the funding to ANC are "payment provisions" that specifically outline identified projects and time periods the funding may be used and requires USFWS approval if any changes are made between "cost categories" and return of funds if not used for the period of performance (ANC Annual Report May 2009). Outside funding sources may reduce this dependence but is not easy to find because of interests of funders. One example is the successful partnership with the World Wildlife Fund (WWF) in polar bear patrol and deterrence (ANC Annual Report 2013).

In the analysis of co-management reports over time the major deliberations, issues, and priorities to address over time have been regarding conservation approaches across scales with specific attention to harvest management and consensus building in the US-Russia Bilateral Agreement with disagreements in plans on implementation. Other areas of concern to consider when working to improve co-management and build capacity includes funding and knowledge use.

Chapter 7. CONCLUSION

Co-management in the Arctic is highly looked upon and is an exemplary example of collaboration with Indigenous Peoples across the globe. Simply being able to co-develop priorities is considered a success. The polar bear co-management structure and the set up of the institution are comprehensive and the perceptions of the institution are common. The process of co-management and scope of roles across scales is where issues arise to meet co-developed goals and objectives. Actions should mirror plans that were co-developed.

Polar bear co-management in Alaska between the US Fish and Wildlife Service (USFWS) and the Alaska Nanuuq Commission (ANC) as initiated with Section 119 of the Marine Mammal Protection Act (MMPA) is critical for the conservation of polar bears. The incorporation of different knowledge systems, work and linkages across different levels, and the diverse array of parties involved in polar bear conservation support the goal to conserve the Arctic ecosystem. Both of the parties in this one-on-one relationship are dependent on each other to move across scales. ANC does not have the capacity to make an agreement with the government of Russia or have its rights recognized by the IUCN PBSG alone and the USFWS does not have the capacity to collect quality genetic information on polar bears or achieve its duties to monitor subsistence harvest in the large state of Alaska.

The use of co-management as a process to share governance and as a forum for continual collaboration moves beyond the history of exclusion of Indigenous Peoples in conservation. Co-management is a learning process and should be assessed over time to improve upon practices in meeting the goals and objects it is trying to achieve even when the parties consider operations are

overall satisfactory. The heightened attention on the Arctic and vulnerability of the Arctic ecosystem due to climate change creates challenges for polar bear conservation and the effectiveness of this co-management setup.

This research finds that disagreements occur often but have not yet escalated to a level that would jeopardize the cooperative agreement under the MMPA. The purpose of the MMPA to take a strong stance to protect marine mammals and their environment and provide reasonable protection of Alaska Native take is furthered by co-management. The MMPA has been adaptable and an amendable law to abide by the 1973 Agreement.

This research confirms that there is a disconnection of co-management and consultation as pointed out by the Marine Mammal Commission over time. Co-management and consultation are separate but co-management may need to facilitate consultation. Polar bear co-managers are familiar with consultation but are not directly familiar with the Native American Policy and consultation processes are unclear. The ability to direct one to those familiar with the policy like the individual tribes themselves or individual points of contact is not adequate if the trust responsibilities to Native American and Alaska Native tribes is an overarching principle and framework. For example, to be able to consider traditional knowledge as recognized in the Native American Policy and the 1973 Agreement co-managers need to know the appropriate way to share this information (through co-management of polar bears or consultation). Further, the IPCOMM Umbrella Agreement under the MMPA emphasizes maximizing participation in co-management by Alaska Natives. Given co-management and consultation are acknowledged as separate, the parties may not know when and what triggers the need for consultations at the "appropriate level" with respect to marine mammals if their duties are to conduct co-

management and have only a sense of direction of who to contact to consult (USFWS Native American Policy 2016).

This research finds that while oversight is built into the MMPA, there is no follow up mechanism or monitoring of how recommendations are used. For example the creation of IPCOMM to coordinate ANOs and address capacity issues has little to no direct relationship with ANC. While funding may always be a problem for any organization, a subsection in the MMPA specifically addresses the need for funding and the US-Russia Bilateral Agreement was created as discussed in plans between the parties to be a tool for funding but co-management funding has been decreasing over the years. Further, in meetings there are threats that funding is not guaranteed and this may be impacting trust issues between the partners. A third example is that the ASRG has been recommending stock assessment repetitively since 1995, stock assessment are difficult to conduct but stock assessments were not updated until 2009, after the listing of polar bears. The lack of stock assessments creates tensions in the relationship. Interviews and co-management minutes indicate that implementation disagreement of the US-Russia Bilateral Agreement and MMPA regulations derive from issues with research on polar bears, the lack of capacity and communication that IPCOMM was created to address, and funding that a subsection of the MMPA and the Bi-lateral Agreement were planned to support.

The MMPA was passed with an understating that there is high uncertainty when developing the conservation approach. While it is built into the MMPA, this uncertainty and the lack of scientific information create issues for the ability of the two parties to co-manage. For example, in 2006, in a report to ASRG the only evidence of a stock decline was a decline in Alaska Native Harvest of more than fifty percent. When the climate change approach primarily

addresses harvest as one of its focuses to reduce it may create a burden of conservation that the United States recognizes in Secretarial Order 3225 as a possibility of occurring with the ESA.

Management systems at the regional level and international level cannot be perceived as mutually exclusive because polar bears are recognized and valued across scales. Pressure on management systems derives from many sources that are not within Alaska and outside those involved in co-management both among the ANC-USFWS and international cross boundary co-management of shared polar bear populations. Considering cross-scalar impacts and using the framework of ecosystem-based management may refocus priorities in polar bear conservation that help fill in the gaps or address the issues in management. For example, the "village reports" discussion in meetings may need to be restructured or reframed to communicate the knowledge of the commission members. Beyond concerns and statements being brought up by the executive director and chair, there was a lack of questions or discussion by the commissioners recorded in the minutes. Further, presentations on research rather than dialogue on co-management occupy a great portion of meeting minutes. Communication across scales is cited as an issue in interviews, minutes, and assessments over time. Making more linkages in the co-management network across scales through roles of individual participants is key because participants are the actors in the process (Carlsson and Berkes 2005).

7.1 RECOMMENDATIONS & LIMITATIONS

In the 2008 ASRG meeting a member of the ASRG gave a presentation on the polar bear listing based on the threat of climate change to Arctic marine mammals and posed the question: "How many others [marine mammals] will have to be listed (AKSG 2008)?" Addressing polar bear conservation in the face of climate change is complex because of sea ice loss and the vulnerability of the entire ecosystem. There are many avenues to address the issue of climate change overall with a balanced approach. It is critical to keep in mind the role of the MMPA as a tool with multiple objectives and duties to address marine mammal conservation when framing the approach of polar bear conservation.

7.1.1 Recommendations

This research makes three broad recommendations for USFWS-ANC polar bear co-management and conservation:

(1) The institution and process of polar bear conservation and co-management should ensure implementation of management and conservation measures mirror agreed upon plans.

This research encourages the USFWS-ANC co-management organization to implement plans that were co-developed and agreed upon. Co-management is a process and agreements are laws but also create a forum for collaboration. For example, when the initial US-Russia Bilateral Agreement was signed, there was a lot of uncertainty in the criteria that were set, such as boundaries and how enforcement would take place, and it was planned by co-managers that these criteria would likely change with more information rather than hard rules. With changes in co-managers over time it is important to look at the process and plans for the forum that were co-developed when taking actions. What is co-developed in plans and discussions is vital for this

co-management setup to function correctly. Co-managers need to know what was how conservation of polar bears was planned if the requirements of consultation with tribes are conducted through workshops, community meetings, and one-on-one informal conversations.

(2) Co-managers and participants may want to consider an approach to the process of conservation with an ecosystem based management framework in mind. When co-developing priorities drivers and relationships across scales should be taken into account.

ANC and USFWS should consider other participants and how they impact their direct one-on-one co-management relationship. For example the political relationship with Canada and Russia may impact the relationship and progress of co-management domestically. Considering dynamics across scales may be helpful to create balance in meeting all the objectives and goals of co-management and conservation of polar bears. There is a redundancy in top priorities each year. If co-managers consider the dynamics across scales priorities may change. For example, it may be valuable to address the lack of a relationship with IPCOMM as priority to address that may further support the goals of the US-Russia Bilateral Agreement. The ANC and USFWS discuss in meeting reports that Russia is not upholding or is behind in meeting its side of the Agreement and focusing on IPCOMM may improve capacity building and access to funding to better implement the US-Russia Bilateral and general domestic co-management.

(3) The creation of a monitoring tool to monitor the progress of meeting agreed upon areas of improvement and recommendations and to follow intended plans could be a way forward.

A monitoring tool created by the parties for the parties will be useful to help guide co-management to improve upon areas that could benefit from improvement. While there are oversight agencies (ASRG, MMC, IPCOMM) that provide recommendations, there needs to be follow-up and monitoring of the system. There have been approaches to address these recommendations but it is important to address the effectiveness of these solutions.

Perspectives on how to go about conservation may need to be evaluated and communicated given the history and differing frameworks to meet the goals of both parties and act on the recommendations to improve co-management. It is clearly expressed by all co-managers of the need for conservation but the approach should be agreed upon before taking actions and parties should follow through with the agreed upon approach. The balance of subsistence and conservation of bears and outside entities pressure from multiple angles and coupled with the factor of climate change pressure is expressed by a commissioner as an "Issue with climate change affects Indigenous peoples. We have outside influences that say can't do that, were are Alaska Native, were going to have to adapt, let go of the polar bear… let go of marine mammals… I have seen organizations try to work on health of communities and they don't work with us" (ANC Annual Report 2014-2015). Having to let go of the polar bear should not happen if conservation of the polar bear means conservation of the ecosystem.

Within the direct co-management relationship there needs to be more dialogue among the entire commission. This research finds that there is a need to develop a system that strengthen inclusivity to promote capacity building that is a reoccurring recommendation by MMC. Conservation of polar bears that threatened by indirect sources should consider the balance of the ESA obligations and trust responsibilities as directed by US Executive Order 3225 through the

management of polar bears with the MMPA. Guidelines for reporting activities and communication strategy may need to be developed to promote the value of these reports and for more elaboration in co-management.

In terms of future research a topic that co-managers may want to address is the scope of the purpose for this co-management in terms of addressing local conservation efforts in communities or broader conservation goals. During the 2005 ANC meeting there was interest in producing factual media by a commissioner, discussion on the establishment of the ANC website, and a need for educational materials. For example, if a polar bear cub is sent to a zoo, the co-managers may want to consider creating protocols for educational tools that communicating the importance of conservation for the polar bear and the people that live in the same environment with the polar bear. Co-management conservation initiatives may benefit by reaching beyond the direct habitat if the primary impact derives beyond the direct habitat.

7.1.2 Limitations

The approach to this research triangulated data in a case study. Follow-up with co-managers after direct observation of meetings and interviews would have been ideal to evaluate the process of co-management. Completing all interviews in person would have been a better approach to conducting interviews than through the phone. Five people recommended as key informants were contacted but did not reply after at least two attempts to contact or declined an interview. An analysis of financial information over time to address the financial issue recognized in meetings, with interviewees, and in MMC reviews would have improved the analysis of co-management (Carlsson and Berkes 2005).

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7.3 APPENDIX A

Interview Questions

(1) What are the similarities and differences in the relationships between the USFWS and the Alaska Nanuuq Commission and the USFWS and the Inuvialuit-Inupiat Commission?

(2) Are there any conflicts or disagreements with how co-management should occur of which you are aware?

(3) In addition to the Section 119 of the Marine Mammal Protection Act how does the USFWS policy toward Native Americans and consultation with Native Americans play a role or influence the relationship?

(4) To what extent does the international bi-lateral agreement with Russia and MOU with Canada influence US co-management with Alaska Natives within Alaska?

(5) To what extent do international conservation efforts or international conservation organizations play a role or influence USFWS decision-making on the conservation of polar bears?

(6) Is there anything else you would like to share?

7.4 APPENDIX B

Directly Observed Meetings

Alaska Nanuuq Commission. 17-18 December 2015. Annual Meeting Report. Anchorage, Alaska. Annual Meeting.

Inuvialuit-Inupiat Polar Bear Commission. 25 August 2015. Polar Bear and Beluga Co-management Meetings. Anchorage, Alaska. Annual Meeting.

Marine Mammal Commission. 11 February 2016. “Alaska Listening Sessions.” Teleconference Call in observation. Anchorage, AK. Public Meeting.

7.5 POSITIONALITY

It is important that I disclose that I am Inupiaq from the Barrow, Alaska community who as Alaska Native, traditionally subsist on marine mammals including the polar bear for food security. I have worked for and interned with the North Slope Borough Department of Wildlife Management who is involved with the marine mammal co-management of polar bears. Also in high school I interned with USFWS in the field to observe and count Stellar's and spectacled eiders. I have experience with co-management and have attended polar bear co-management meetings on behalf of the North Slope Borough prior to the decision to conduct this research among other Alaska Native subsistence co-management meetings. I have an interdisciplinary and liberal arts educational background wit an Environmental Studies degree and minor in Native American Studies bachelor's degree from Dartmouth College.