

DINJIK ENJIT NERRZHRII (WE ARE HUNTING FOR MOOSE): AN EVALUATION  
OF TRIBAL CO-MANAGEMENT IN THE YUKON FLATS, INTERIOR ALASKA

By

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## ABSTRACT

### DINJIK ENJIT NERRZHRII (WE ARE HUNTING FOR MOOSE): AN EVALUATION OF TRIBAL CO-MANAGEMENT IN THE YUKON FLATS, INTERIOR ALASKA

Kelda Britton

Gwich'in People of Interior Alaska have historically exercised self-governance in the Yukon Flats to protect traditional and customary use practices. A number of factors have challenged Gwich'in self-governance: land ownership in rural Alaska being under multiple jurisdictions, which has created complicated parameters for management of fish and wildlife; and the legal history of the Alaska Native Claims Settlement Act (ANCSA), which has created an arbitrary and fragmented management system. Despite these challenges, Alaska Native communities have been working to reassert their self-governance over important lands and resources. One example is the co-management arrangement between the Council of Athabascan Tribal Governments (CATG) and U.S. Fish and Wildlife Service in the Yukon Flats. CATG is a consortium of Gwich'in and Koyukon Athabascan tribes located throughout the Yukon Flats. CATG and the Yukon Flats National Wildlife Refuge negotiated an Annual Funding Agreement (AFA) since 2004, performing activities related to moose management in the Yukon Flats National Wildlife Refuge in Interior Alaska. The Agreement provides for the CATG to perform

certain programs, services, functions and activities for the Yukon Flats National Wildlife Refuge.

This thesis aims to assess the strengths and weaknesses of the co-management arrangement between CATG and USFWS related to the management of moose in the Yukon Flats. Through my research, I illustrate the importance and need for a better system of communication and understanding of regulation for Alaska Native People and their environment. This research advances knowledge about co-management for natural resource managers and adds to the growing body of regional work to promote Indigenous knowledge practice and sustainable management.

Methods utilized include semi-structured interviews, document analysis, and participant observation to understand attributes important to co-management success in the context of moose management in interior Alaska. Success is analyzed through the adaptive co-management (ACM) framework developed by Armitage et al. (2009) to evaluate the CATG co-management arrangement with regards to moose management.

My research findings show that of the 10 design principles, 3 have been met, 1 was not met, and 6 have only partially been met. This analysis reveals that the co-management arrangement as it was developed offers significant potential for success. However, the majority of the principles remain partially met rather than fully met, indicating that there is a lot more that the parties – particularly the USFWS – must do to maintain the agreement and develop true co-management. The ability of secure and consistent is critical to continue the implementation of the co-management arrangement in the Yukon Flats.

## ACKNOWLEDGEMENTS

My ancestors endured great sacrifice for my existence and I would like to think of educational journey as a token of appreciation and a way to give back to my community. Survival ignites fire and creates a well-lit path that helps guide Indigenous researchers back to their communities.

I extend a special thank you to my family, in particular my mother; who continuously provided encouragement to me throughout this process. I would like to acknowledge my grandmother, who was a firm believer in education and always gave me the love and support to keep a humble heart and never forget where I came from. My committee members Dr. Joseph Brewer and Dr. Jessica Black; for paving the way forward in American Indian Education and for being the best role models, thank you for believing in my journey. For my committee chair, Laurie Richmond for her direction and guidance to help me finish my thesis. My dear friends in the Environment and Community Program, who inspired me and also commiserated with me through this process. I could not have done this without you-the special few, you know who you are. N-shong-shaa-nul-lah (good for me, you did). Living in the Yukon Flats assisted me in expanding my horizons and keeping me on my path of seeking wisdom from many places in the world. Immense gratitude to my friends who became family in Alaska, for encouraging me to stay. For welcoming me into your homes, sitting around campfires sharing stories and laughter. And lastly, the elders and ancestors in the Yukon Flats, thank you for having the vision and leadership for the next generations.

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## CHAPTER 1: INTRODUCTION

*There was a movement started by Clarence Alexander and Paul Williams Sr., in Beaver. They always tell the story of the two of them meeting at Paul's house in Beaver, and Paul pulling out a muskrat from his freezer and sitting down and talking. They talked about how the Yukon Flats was separated since people had been put in villages. The People weren't really communicating all the time. They didn't feel that they had any control over what was happening to them, so they talked about getting together. They were seeking a way that they could have more control over their destiny, their lives. So that to me is really the beginning. (Personal Communication, July 2017)*

In the excerpt above, Pat Stanley, former director of the Council of Athabaskan Tribal Governments (CATG) describes the origins of the groundbreaking grassroots movement that would ultimately culminate in the creation of CATG. The Gwich'in name for CATG is T'ee teraan'in, which means "this is how we help ourselves" as explained to by one of my interview participants (personal communication, 2017). CATG is a tribal consortium founded in 1985 on the principals of tribal self-governance. Tribal leadership that shaped CATG in the Yukon Flats had a clear vision: self-sufficient economies built upon self-governance. This governance system brought together the voices from ten remote villages of Gwich'in and Koyukon people.

One goal in the formation of the CATG was to provide an avenue for tribes to have more of a voice in and control over the management of natural resources that were important culturally, spiritually, economically, and as a source of sustenance. Due to a complicated colonial history, the lands near to the CATG represent a patchwork of tribal,



private, state, and federal ownership. Perhaps most significantly, the tribes are all adjacent to the federally-owned and managed Yukon Flats National Wildlife Refuge. The refuge, along with 16 other national monuments was designated in 1978 as a part of the Alaska National Interest Lands Conservation Act (ANILCA).

Moose (*alces*) or dinjik (Gwich'in word for moose) are an important source of food for Gwich'in and Koyukon people in the Yukon Flats. Since these villages are so remote, it is not an easy trip to Fairbanks to substitute moose meat with other food sources. The people of the Yukon Flats, the Gwich'in and Koyukon Athabaskan people, rely almost exclusively upon nature's resources to feed their families. With the extremely high cost of food in the Yukon Flats, residents need to supplement purchased food with wild food. In *Subsistence in Alaska: A Year 2012 Update*, it is estimated that the annual wild food harvest is 320 pounds per person in Interior Alaska (CATG SEEDS Grant, 2017). The term commonly used for such a lifestyle is known as "subsistence," defined as the customary and traditional use of wild resources for food, clothing, fuel, transportation, construction, art, crafts, sharing, and customary trade (Survival Denied Report, 2013). The word subsistence was defined in ANILCA, "though many Alaska Native people do not believe that the word accurately describes their livelihoods, which not only includes traditional and customary use practices, but also aspects of physical sustenance, spiritual connection, cultural values and communal and reciprocal sharing" (Black, 2017 p. 14).

Long before Alaska came into statehood in 1959, Alaska Native People, including those that live near the Yukon Flats, have been living a traditional way of life and have

had their own forms of governance. Indigenous occupancy of what is now Alaska began well over 11,000 years ago (Anderson, 2016). Since time immemorial, the Tribes have lived in reciprocity with this landscape. That relationship has consisted of stewardship of moose for spiritual and traditional customary use practices. In the report *Bridging Yesterday with Tomorrow* (2016), findings indicate that “tribal people, tribal governments and tribal consortia’s can effectively manage ecosystems using traditional principles as a practical foundation, however these results have yet to be implemented” (p. 23).

Overtime, Indigenous forms of resource stewardship began to be replaced by management from federal and state entities that approach the landscape with different values and goals. These shifts in management approaches had important implications for the resources and the Tribal members who relied on their harvest. In the Interior of Alaska, wildlife is managed by agencies of the federal or state government. Individual families have been removed from living off the land by policies such as forced schooling, changes in land title, restrictive environmental regulations and oppressive fish and game rules (Hoffman, 1993). Legislation such as the Alaska Native Claims Settlement Act (ANSCA), which distributed forty-four million 21 acres of federal lands in Alaska to newly established Alaska Native Corporations (ANCs) in the Yukon Flats, some of the land such as the Yukon Flats Wildlife Refuge and the Arctic National Wildlife Refuge, were put into conservation under the Alaska National Interest Lands Conservation Act (ANILCA) of 1980, which was a law that established more than 100 million acres of federal land in Alaska into conservation system units (CSUs) (Gallagher, 1988). In recent years, the moose populations in the Yukon Flats have started to show unprecedented

declines. In an attempt to gain better control over the management of important resources in the Yukon Flats, the CATG negotiated to gain more involved in the management of the federal lands that encompass their ancestral territories.

CATG currently operates under two Annual Funding Agreements, one with the Yukon Flats National Wildlife Refuge and one with the Bureau of Land Management Alaska Fire Service. An Annual Funding Agreement (AFA), is a legally and mutually enforceable written agreement negotiated annually between a Self-Governance Tribe and the Bureau of Indian Affairs. AFA agreements are typically associated to funding and terms and conditions under which the Tribe or Consortium will assume a program, or portion of a program. For the purposes of my research, only the AFA with the Yukon Flats National Wildlife Refuge will be analyzed and I will focus specifically on moose management. Moose Populations in the Yukon Flats are in decline according to state and federal biologists (ADF&G Division of Wildlife Conservation, 2002). The low moose population on the Yukon Flats continues to be of great concern to local residents. Low numbers of moose prompted the formation of the Yukon Flats Moose Management Committee, who developed the Yukon Flats Cooperative Moose Management Plan (ADF&G Division of Wildlife Conservation, 2002). The Yukon Flats Moose Management Plan (YFMMP) is a collaborative document that was created with participation from the state, federal, and tribal partners and the overall goal of the plan is to increase moose population and the number of moose available for human harvesting. The purpose is to “protect, maintain and enhance the Yukon Flats moose population and habitat, maintain traditional lifestyles” (YFMMP, p. 4). As part of the agreement, the

CATG would partner with the Refuge on a moose management and public outreach education. Under the plan, CATG receives funding to host a biannual meeting related to moose management in the region. The Moose management project focuses specifically on benefitting the moose population, while allowing traditional and customary harvest of moose on the Yukon Flats.

The YFMMP and its implementation marked one of the first attempts in the Yukon Flats region to develop a co-management strategy that brought together federal government and tribal partners. So far, there has not been much research into this co-management arrangement to see if it is working. For the purposes of this research, I focus my analysis on the nature of this co-management agreement between the Council of Athabaskan Tribal Governments (CATG) and the National Wildlife Refuge, considering how CATG works with the US Government to manage resources.

### Adaptive Co-Management Framework

In the past thirty years, there have been many conversations and much scholarship on co-management and what makes a successful co-management arrangement. This thesis draws from some of those frameworks in order to evaluate the co-management arrangement between CATG and the Yukon Flats National Wildlife Refuge related to moose management. I am particularly interested in how these agreements are developed for tribal organizations and federal agencies. Is the nature of these agreements true co-management? Is it what the tribes had hoped for? Does it include a true sharing of power,

responsibility, and worldviews? Will the region see a successful moose population rebound based upon the theory of co-management?

The purpose of this thesis is to examine the process through which the Council of Athabascan Governments (CATG) and the Tribes in the Yukon Flats dynamically worked to build and enact a co-management model with Yukon Flats Fish and Wildlife Service (FWS) in their traditional homelands. CATG was the first tribal organization in the United States to build such agreements with the USFWS. of which Yukon Flats National Wildlife Refuge is a part. The Yukon Flats National Wildlife Refuge is a significant part of the co-management arrangement based on its sheer size and immediate vicinity to the villages (see maps on page 8 & 55).

### Research Questions

Throughout co-management literature, there have been claims examining benefits and precautions of co-management I examine how moose management is being implemented in the Yukon Flats and to what extent the nature of these agreements reflects true co-management.

My research questions are as follows:

1. How is co-management of moose being implemented in the Yukon Flats?
2. To what extent does the co-management arrangement between the Council of Athabascan Tribal Governments and the Yukon Flats National Wildlife Refuge

for the management of moose, conform to frameworks for successful co-management that are detailed in the literature?

3. What is the role for Tribal self-governance in the co-management arrangement in the Yukon Flats?

The adaptive co-management framework was applied to assess the effectiveness of the co-management arrangement. Adaptive co-management is an emerging discourse that provides flexibility for collaboratively examining complex socio-ecological systems and facilitates effective governance without regulation from existing institutions and policy (Armitage et al., 2009; Lockwood, 2010). Vision and leadership are applied by to collaboratively respond to change, with co-operation and partnering required between diverse stakeholders (Pahl-Wostl et al., 2007). Before we can understand the dynamics underlying the relationships between federal, state, and tribal entities in interior Alaska, it is crucial to understand the history of land tenure in the Yukon Flats region and of the CATG.

## CHAPTER 2: BACKGROUND AND SETTING

### CATG and the Setting of the Yukon Flats

CATG was formed in 1985. The Tribal Governments that comprise CATG are: Arctic Village, Beaver, Birch Creek, Canyon Village, Chalkyitsik, Circle, Fort Yukon, Rampart, Stevens Village, and Venetie. Members of these tribes live near or within the Yukon Flats National Wildlife Refuge. Figures 1-2 featured below show the CATG villages within the Yukon Flats National Wildlife and Arctic Refuge.

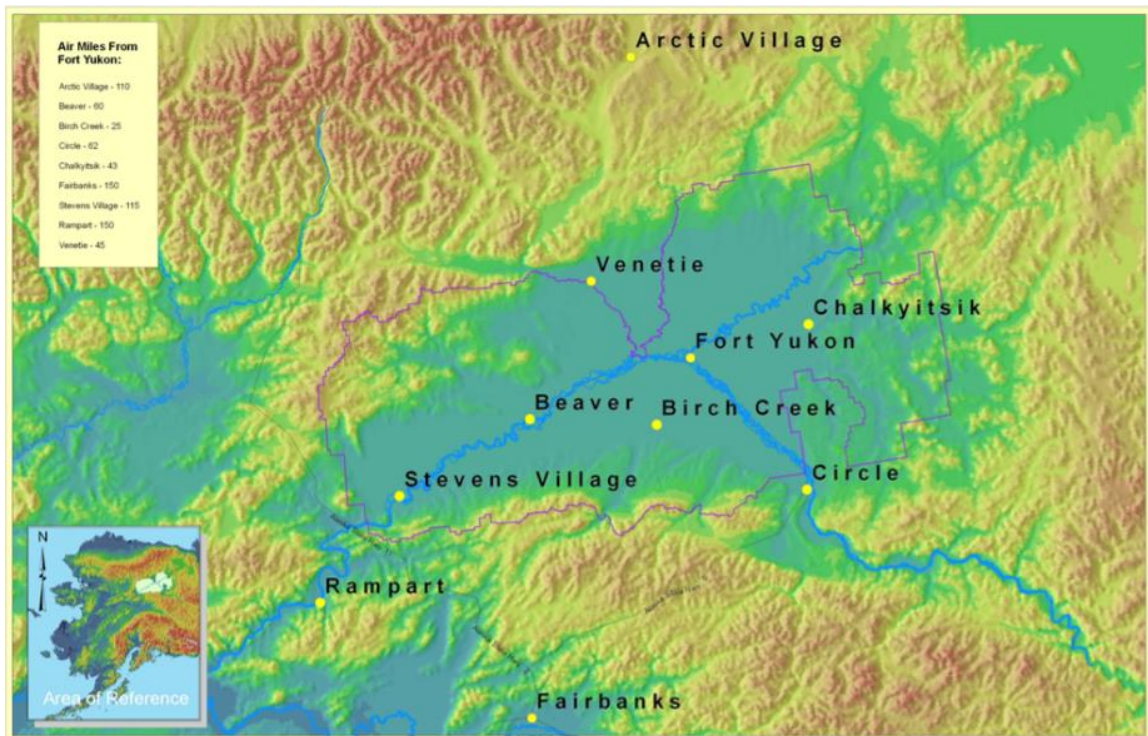
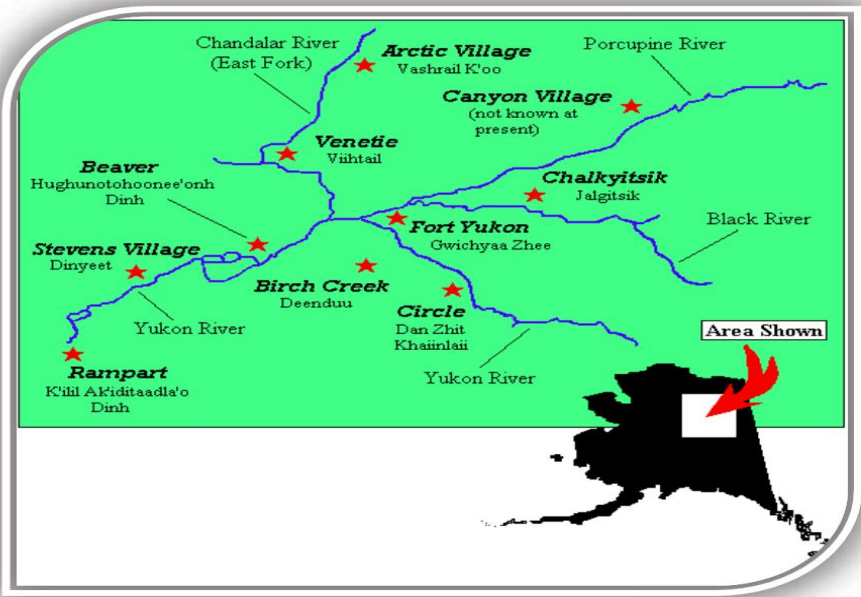


Figure 1. Yukon Flats National Wildlife Border Map and CATG Villages

Of the ten-member villages, only one is accessible by road; access to the other nine villages is limited to air and river travel. The Gwich'in and Koyukon Athabascan People call The Yukon Flats home. It is a remote area, where only water and land connect the interior villages. This remoteness of the region poses significant social and economic development challenge (see fig 2. below).

Figure 2. CATG Villages in the Yukon Flats



In 1985, there was a tribal gathering in Fort Yukon (Gwichyaa Zee) Alaska. The intent was to repatriate the late traditional Chief Ezias Loola who had passed of tuberculosis and was buried in Seattle. As text on the CATG website indicates, “Chief Loola was properly honored with song, speech, dance and ceremony. During the days, the people discussed the problems they faced and sought solutions for them” (CATG,



2018). The gathering was significant because it started the conversation and mobilized leadership in the flats that would later be instrumental in the creation of CATG.

According to the CATG website:

*In the Yukon Flats, those whose memories reach back far enough speak of a time before others drew lines across the map of their ancient homeland. They recall a strong, self-sufficient people who, by their own hard work, intelligence, cooperation and sense of community, provided decent livings for their families. They speak of Elders knowledgeable in the traditions of the people, the ways of the animals, and the nature of the land, Elders who joined with strong chiefs to provide guidance and leadership. (CATG, 2018)*

Tribal leadership during that time wanted to ensure decisions were being made in favor of the next generation of children who would be born in the Yukon Flats. Thus, the grassroots nonprofit organization was formed. The goal of CATG, according to its constitution, is “to conserve and protect tribal land and other resources; to encourage and support the exercise of tribal powers of self-government; to aid and support economic development; to promote the general welfare of each member tribe and its respective individual members; to preserve and maintain justice for all” (CATG Strategy Session, 2014). The vision statement embodies a future of self-sufficient communities with a shared commitment to promoting common goals and taking responsibility for a culturally integrated economy based on customary and traditional values in a contemporary setting.

Working closely with CATG’s Natural Resources department, the tribes conduct their own surveys regarding the local harvest of fish and game. CATG has hired its own biologists. Information gathered is digitized, entered into a Geographical Information System and output in maps that are vital to the management of traditional resources.

Much of the traditional land of the CATG village's lies within the Yukon Flats National Wildlife Refuge, which encompasses 8.5 million acres of federal lands and 2.7 million acres of selected and conveyed lands. Citing the appropriate federal regulations, CATG has entered negotiations with the Yukon Flats National Wildlife Refuge. This agreement was made possible because the village of Birch Creek agreed to sign on, since CATG is an umbrella of tribes. The goal of the funding agreement has always been to empower the Tribes in the CATG region to have more responsibility and governance within their traditional territories. The overall goal of the co-management agreement is to allow for both the tribes and the federal agencies to have an equal sharing of management authority on the refuge. Figure 3. Illustrates the organization of the CATG Natural Resource Department, which serves an important role in the co-management agreement.

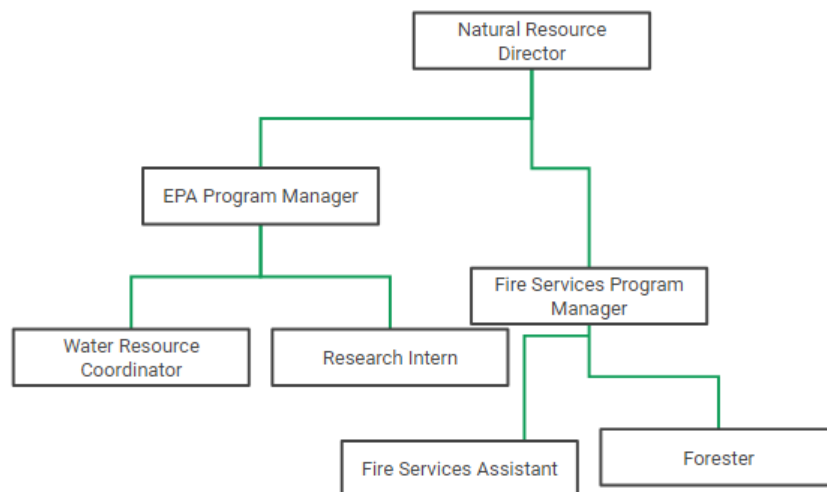


Figure 3. CATG Natural Resource Department Organizational Chart

CATG has a strong history of advocating on behalf of Yukon Flats communities at the regional, state and national level. The organization has submitted testimony supporting the ability of Alaska Native tribes to put land into trusts, contract support funding, and other efforts to inform policy development. Self-governance is a founding principle for CATG, is deeply embedded in the founding documents and underpins all the work done as an organization. Within the Natural Resources Department, the concept of self-governance is used as the cornerstone for all the work that is done. The goal of the work is to empower the people of the Yukon Flats with skills and tools to execute self-governance over the resources that sustain their traditional and customary use (TCU) practices.

### Governance and Land Tenure in the Yukon Flats

Alaska Native groups from interior Alaska have been engaged in the stewardship of lands and resources in the Yukon Flats since time immemorial. Archeological evidence suggests that humans have inhabited the Yukon Flats for at least 11,000 years (USFWS, 2008). In the early 1970s, the remains of 46 caribou fences of Gwich'in origin were found in Alaska and Yukon Territory, providing insight to the pre-contact land-use patterns of the Upper Porcupine Gwich'in (Warbelow et al. 1975; Caulfield 1983).

The CATG website details this history:

In the Yukon Flats, those whose memories reach back far enough, speak of a time before others drew lines across the map of their ancient homeland. They recall a strong, self-sufficient people who, by their own hard work, intelligence,

cooperation and sense of community, provided decent livings for their families. They speak of Elders knowledgeable in the traditions of the people, the ways of the animals, and the nature of the land, Elders who joined with strong chiefs to provide guidance and leadership. “Being an original nomad who came from this region,” recalls Clarence Alexander, “we were pretty much independent people. We worked for what we needed. We knew how to survive on the land. But things changed. Our people were going through a transition without even knowing it.” (CATG 2018)

The “change” discussed in the above quote refers to the shifts in land ownership and control that occurred through the process of double colonialism by first Russia and later the United States. A series of policy decisions by colonial entities operating in the Alaska region, left the lands of the Yukon Flats a literal patchwork of federal, state, tribal, and private ownership. The structures of the policies and land decisions put in place meant that by the 1980s, Alaska Native groups were left with almost no input of management of traditional lands in the Yukon Flats region.

During the late 1700’s was the first the first contact Alaskan Natives had with non-Natives, according to written records, when Russian explorers landed on the western coast of Alaska, both in the Aleutians and on Little Diomedede (Graburn & Strong, 1973).

According to Black 2017:

The Russians maintained exclusive control of trade until Alaska was purchased by the United States in 1867. This purchase is referred to as the Treaty of Cession. While some Alaska Native peoples such as the Unungan (Aleut) were severely impacted, other Alaska Native groups were unaware of Russian rule, or the Treaty of Cession.

The treaty did not resolve Native claims in the State of Alaska, and for the most part Native people continued to live as they had for hundreds of years: hunting, fishing, and gathering food and materials from the land. After oil discovery in the North Slope of

Alaska, the U.S. federal government brought forth legislation called the Alaska Native Claims Settlement Act that would forever change the land tenure for Indigenous tribes in Alaska. ANSCA resulted in the following: (1) disseminated forty-four million acres of land into newly established Alaska Native corporations (2) Of the forty-four million acres, twenty-two million acres was distributed to more than 200 village corporations (3) the remaining acres of land was circulated amongst thirteen regional corporations including Doyon Limited, which is the largest Alaska Native Corporation landholder and the corporation that owns land in Interior, Alaska including land in the Yukon Flats (Black, 2017). Village corporations owned surface rights to their lands and subsurface rights were deeded to regional corporations under ANSCA (Black, 2017).

The Alaska Native Interest Lands and Conservation Act ANILCA (1980) established more than 100 million acres of federal land in Alaska into conservation system units, thus creating the fragmented checker boarded land ownership that we see today. The goals were primarily twofold: “to protect and safeguard Alaska’s exceptional ecological and natural resources for the national public interest and to protect them for subsistence use by Alaska Natives” (Black 2017 p. 21).

In addition, ANILCA:

Effectively completed the carving up of Alaska land into a complex mosaic of federal, state, and Native ownerships. Alaska Natives became owners of relatively small enclaves surrounded by relatively large blocks of public land. These public lands are managed by the state of Alaska or by one of several federal agencies. Each management entity has different management goals that guide substantially different land management programs. These programs may alter the amount of access to resources on public land, and they may determine how Native people can use their private lands (Gallagher, 1988, p. 92).

On federal lands, the federal government has authority under the ANILCA law. For state and private lands, such as ANCSA and tribal lands, Alaska Natives are subject to State of Alaska regulations and management. Essentially, the management system in place today does not allow for Alaska Native governance over traditional Alaska Native lands or a hunting and fishing priority, even on lands traditionally used by Alaska Native people. Consequently, these laws all serve to disenfranchise Alaska Natives from decision-making. A complex mosaic of corporate, federal, state and Native land ownership describes the situation of land tenure in the Yukon Flats, with complex set of laws governing each land base and also the specific species one is hunting and fishing (Figure 4).

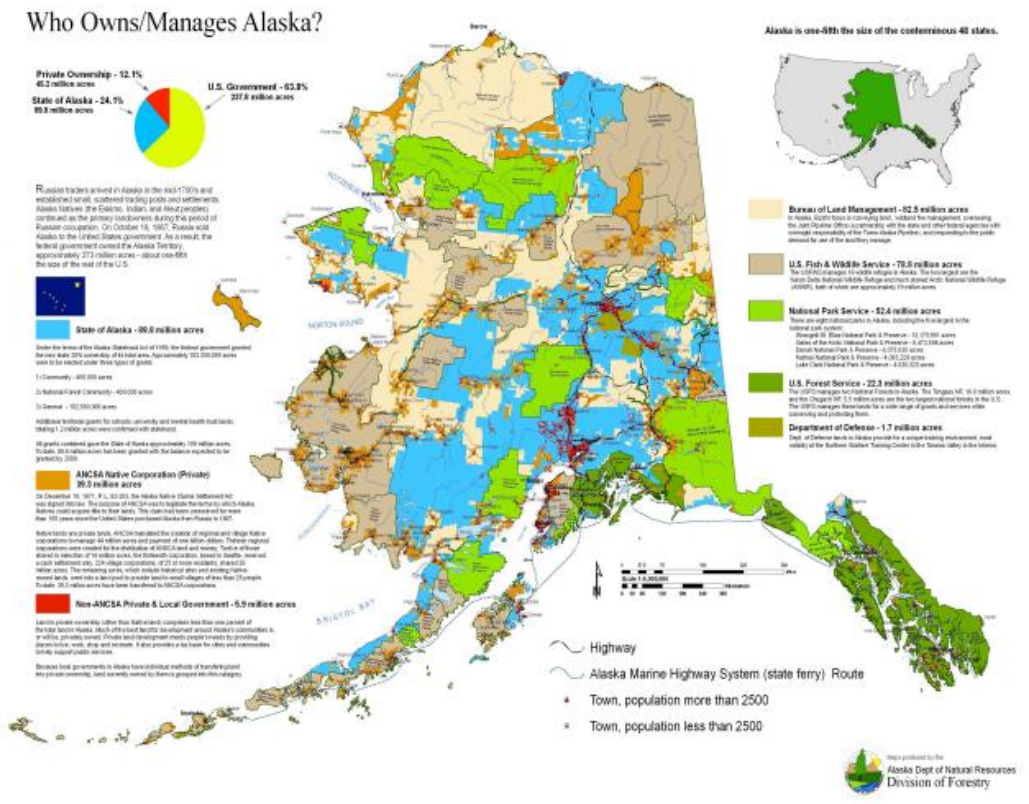


Figure 4. Land Ownership in Alaska

Although there have always been traditional forms of governance in the Yukon Flats, the Indian Education Self-Determination and Education Assistance Act of 1975 (ISDEAA) planted the seeds of opportunity that would allow Tribes in the Yukon Flats region to strengthen their governing capacity and self-organize to create CATG to be more involved in resource management. The ISDEAA authorized the Secretary of the Interior, the Secretary of Health, Education, and Welfare, and several other government agencies to enter into contracts with, and make grants directly to, federally

recognized Indian tribes. This was critical for health care in the Yukon Flats and was also important for the tribes because it strengthened federal policies supporting tribal self-determination and self-governance. This was significant for CATG because it was largely concerned with strengthening tribal governments and tribal organizations on Indian reservations by emphasizing tribal administration of federal Indian programs, services, functions, and activities, as well as associated funds.

In 2004, CATG negotiated its first Annual Funding Agreement (AFA) with the Yukon Flats National Wildlife Refuge. CATG operates under two AFA's, one with the Yukon Flats National Wildlife Refuge and one with the Bureau of Land Management Alaska Fire Service. For the purposes of my research, only the AFA with the Yukon Flats National Wildlife Refuge will be analyzed and I will focus specifically on moose management. The AFA set precedent in tribal self-governance across the nation. The ISDEAA is a foundation of modern federal Indian policy that is critically important for self-governance in the Yukon Flats. Through exercising their self-governance, the tribes in the Yukon Flats were able to build a co-management model with the Yukon Flats National Wildlife Refuge that continues to be implemented. This model was not something that was foreseen or given to the Tribes in the relationship with the United States government; in fact, it took an extensive amount of perseverance on behalf of tribal leadership. Leadership in the Yukon Flats worked diligently to ensure that they were building a platform to elevate the voices of tribal concerns.



### CHAPTER 3: LITERATURE REVIEW

The goal of this research is to assess the strengths and weaknesses of a co-management arrangement in the Yukon Flats between a tribal organization and a federal agency. This will include a review of a large body of co-management literature outlining various claims of benefits and precautions associated with co-management. To contextualize and situate my research questions, I have investigated how scholars have defined co-management through the literature. Next, I discuss implications for co-management arrangements that include Indigenous partners. Finally, I present an adaptive co-management framework and explore what the literature presents as a successful co-management institution.

My research analyzes co-management effectiveness and seeks to bridge a gap in our understanding of how co-management processes with Indigenous people can evolve to build greater equity in natural resource management. Equitable agreements provide a cross-cultural communication strategy for Indigenous communities to reclaim more responsibility over governing their resources (Armitage, Berkes, and Doubleday, 2010). Scholars have argued that involving Indigenous people and traditional knowledge in natural resource management produces positive results in wildlife co-management agreements (Ross et al., 2016). Incorporating local and traditional knowledge into resource management decisions can facilitate approaches that are more culturally and ecologically relevant, in many cases contributing to increased compliance by resource users (King and Faasili 1999; Crawford et al, 2004). Co-management agreements among

Indigenous people, state agencies, and other stakeholders offer substantial promise as a way of dealing with natural resource conflicts in a participatory and equitable manner (Castro and Nielson, 2001).

### Co-management Definitions and Concepts

Descriptions of co-management vary both in the literature and in practice (Castro and Nielson 2001). According to Berkes et al (1991), co-management refers to the sharing of management power and responsibility between government agencies and local people, typically through a formal agreement (Berkes et al, 1991; Berkes and Turner, 2006). Through a lens applicable to Alaska, the authors Hobbs and Straus et al, successful co-management as a “term defining systems and opportunities that provide an adequate and meaningful role for Alaska Natives in management of traditional resources and refers to a system where those relying upon the resources have a substantial role in making decisions about management” (Hobbs, Straus, Dean & Walker, 2015, page #33).

The concept of co-management has evolved over time. Early co-management literature in the 1980’s and 1990’s pressed bureaucratic resource managers to incorporate local knowledge with conventional science and recognize the contribution to understanding resource dynamics made by non-corporate and non-commercial resource users (Berkes, 1991). Therefore, decision-making is strengthened by the integration of non-scientific knowledge systems, i.e. local, indigenous, and scientific and social science knowledge systems (Berkes, 1991). According to Ross et al. (2016), co-management is a

constantly negotiated process between stakeholders in an area, especially among park managers and the area's traditional land users. Ideally, co-management should lead to a partnership among stakeholders with shared and equal responsibility for management (Berkes, 2009). Berkes (2009) also implies that co-management may involve negotiation around terms and practices of sharing of decision-making power with nontraditional actors in the processes of resource management. Indigenous scholars uphold that co-management creates opportunity for "recognizing a role for both Indigenous knowledge and Indigenous people to be involved in natural resources decision-making" (Ross et al., 2016 p. 191).

### Meaningful Agreements, Adaptive Approaches

True co-management recognizes Indigenous people's rights to have a say in environmental and resource management, to be involved in decisions about resource use to benefit the environment as well as the people's social, economic, and cultural requirements (Carlsson and Berkes 2005; Robinson, Ross, and Hockings 2006; Stevenson 2006). Across many bodies of literature, key measurements of co-management success are tied to transparency in data collection, decision-making, and program implementation. If Indigenous resources and stewardship knowledge are limited by Western knowledge systems and Western governance structures, then true co-management has not been achieved. According to Armitage and Berkes et al. (2010) in the past, co-management narratives have been primarily concerned with user

participation in decision-making and with the linkage of communities and government managers, whereas adaptive co-management has been primarily about learning by doing in a scientific way to deal with uncertainty. Stevenson (2006) argues that co-management must critically examine current management policies and practices to develop innovative approaches that will create the space required for the meaningful and equitable inclusion of Indigenous people, and that decisions take into account respect of their lands and resources. Schwarber (1992) considers four main factors to be most important for the emergence of co-management initiatives in certain regions: (1) Long-term leadership commitment towards subsistence issues; (2) a high degree of per capita subsistence resource use, regardless of resource type; (3) cultural homogeneity in association with a predominantly Native population; and (4) the presence of extensive federal lands. Elinor Ostrom's design principles (2015), regarding local common pool resource management provide a solid framework for addressing how natural resource management and co-management opportunities could provide opportunity for legal framework within which tribes could exercise their right to self-determination and govern resources within their traditional territories in the Yukon Flats.

## Review of Co-Management Principles

Table 1. Summary of Key Co-Management Principles by Different Scholars

Author & Date	Article & Title	Listed Co-Management Principles
Grabenstein R. (2016)	Applications and lessons of co-management between federal agencies and Native American Tribes	<p>Dominant governments must permit, not prohibit, indigenous use of traditional resources by default. Any exceptions to this rule should be narrow, clearly defined, and enacted in consultation with affected communities.</p> <p>The power granted to indigenous groups in co-management agreements must be more than simply advisory and should include some measure of binding decision-making authority.</p>
Goldstein, N. R. (2013)	Key attributes to successful co-management	<ul style="list-style-type: none"> <li>◆ Clear legal framework</li> <li>◆ Organized stakeholder group, with leadership.</li> <li>◆ Clear roles for partners and stakeholders</li> <li>◆ Clear goals</li> <li>◆ Buy-in of partners and stakeholders</li> </ul>
Berkes et al (2009)	Evolution of co-management	<ul style="list-style-type: none"> <li>◆ Knowledge generation/production</li> <li>◆ Bridging organizations</li> <li>◆ Social learning</li> <li>◆ Adaptive management</li> </ul>
Castro and Nielson (2001)	Faces of co-management	<ul style="list-style-type: none"> <li>◆ Power sharing</li> <li>◆ Institution building</li> <li>◆ Trust/social capital,</li> <li>◆ Problem solving,</li> <li>◆ Governance (as opposed to government)</li> </ul>
George Innes and Ross (2004)	Systemic barriers of co-management	<ul style="list-style-type: none"> <li>◆ Timeframes for management</li> <li>◆ Funding</li> <li>◆ Differing goals and objectives for management</li> </ul>

Author & Date	Article & Title	Listed Co-Management Principles
Elinor Ostrom (1990) Ostrom (2005)	Design principles how can these principles be incorporated into environmental/ Indigenous governance systems?	<ul style="list-style-type: none"> <li>◆ Define clear group boundaries</li> <li>◆ Match rules governing use of common goods to local needs</li> <li>◆ Ensure people affected by the rules can participate in changing the rules</li> <li>◆ Ensure outside authorities respect the communities' rulemaking rights</li> <li>◆ Develop a system for monitoring member's behavior carried out by members themselves</li> <li>◆ Use graduated sanctions for rule violations</li> <li>◆ Provide accessible, low cost means to resolve disputes</li> <li>◆ Build mutual responsibility for governing the common resources as "nested" tiers from the lowest, smallest, most local level group to an entire interconnected resource governance system</li> </ul>

Systemic barriers to co-management based in common misunderstandings often include differing or incompatible goals and objectives for management, as well as differing timeframes for management, and different emphasis on the importance of funding for management activities (Ross, 2011). Despite good intentions that may come with the negotiation and implementation of co-management agreements, most purported co-management outcomes privilege Western knowledge and bureaucratic structures (Berkes 2009: 1693; George, Innes, and Ross 2004: 5) which also carry the authority of

entrenched administrative, legal, and regulatory requirements. In co-management principles, there is need for continual learning and adaptive management approaches (Sayer et al., 2013), and the importance of long-term relationships between partners, built on trust and frequent communication (Redpath et al., 2013).

### Adaptive Co-management Framework

In my research, I use the Armitage et al., (2009) framework to access a co-management case with Indigenous groups in the Yukon Flats. The framework is useful to identify strengths and weaknesses of the co-management arrangement as well as to consider areas for improvement. Adaptive co-management (ACM) is an emergent governance approach for complex social–ecological systems (Berkes, 2009). The most widely used definition of adaptive co-management is “a process by which institutional arrangements and ecological knowledge are tested and revised in a dynamic, ongoing, self-organized process of learning by doing” (Folke et al., 2002, Armitage et al., 2007). Ultimately, ACM “creates an ‘adaptive dance’ between resilience and change with the potential to sustain complex social–ecological systems” (Olsson et al., 2004:87; see also Folke et al., 2005, Berkes et al., 2007, Schultz 2009). The ongoing process of ACM allows stakeholders to share responsibility within a system where they can explore their objectives, find common ground, learn from their institutions and practices, and adapt and modify them for subsequent cycles, allowing for inclusion of local and traditional knowledge, formal scientific knowledge and the sharing of rights, responsibilities and power among the diverse range of relevant stakeholders (Ruitenbeek and Cartier 2001).

Adaptive co-management involves interdisciplinary approaches that can build trust through collaboration, institutional development and social learning to enhance efforts to foster ecosystem management and resolve multi-scale society-environment dilemmas (Armitage et al., 2009). The table below outlines the ACM framework that I will be utilizing to employ my analysis section.

Table 2. List of 10 Adaptive Co-Management Conditions for Success

Adaptive Co-Management Framework Conditions for Success:
1. Well defined resource system
2. Small-scale resource use contexts
3. Clear set of social entities with shared interests
4. Well defined resource system
5. Access to adaptable portfolio of management measures
6. Commitment to long-term institution building process
7. Provisions of training, capacity building, and resources for local-regional- and national-level stakeholders
8. Key Leaders or individuals prepared to champion the process
9. Openness of participants to share and draw upon a plurality of knowledge systems and sources
10. National/ Regional Policy Supportive of Collaborative Management



## Co-managing and Participation with Indigenous People

Stevenson (2006) argues that a critical examination of co-management requires evaluation of current management policies and practices to develop innovative approaches. Ideally, these approaches will create the space necessary for meaningful and equitable inclusion of Indigenous People, thereby advancing decisions that consider the importance of respecting tribal lands and resources. As an example, Dr. Seafa Ramos discusses a successful management framework utilized by the Nuwivi People and federal partners. The Nuwivi People are of the Northern Mojave Desert and their ancestral lands are primarily under federal jurisdiction. The Nuwvi People and federal partners had collaborated and developed agreed-upon mutual management goals. Federal agencies noted that “this approach had improved communication and built rapport between tribal communities and agencies” (Ramos, 2018 p. 363).

### Power Sharing: Traversing Landscapes and Regulations in Co-Management

Castro and Nielson (2001) give examples of co-management regimes in Northern Canada, Joint Forest Management in India, and the Social Forestry Project in Bangladesh. All of these cases of co-management regimes must address ongoing conflict between the national government, Indigenous People and other stakeholders over access to and use of natural resources. Castro and Neilson (2001) address interests and motives of state agencies in planning and implementing co-management arrangements,

highlighting the cultural, political, and legal obstacles encountered by Indigenous People and other communities trying to negotiate these agreements (Castro and Nielson, 2001). Such a tactic has the effect of implying that power sharing is the result, and not the starting point, of the process. Sharing power and making decisions across jurisdictions and cultures is challenging, and a diverse academic literature articulates key lessons learned and effective approaches, including the importance of bridging organizations and social learning (Berkes, 2009). Effective communication and strong leadership are crucial components of trust building tools between federal agencies and tribes. Such tools are beneficial in developing arguments for co-management of state and federal natural resources by Indigenous people.

#### Recognizing and Respecting Worldviews in the Realm of Co-management

Scholars from various fields have written about the multidimensional relationship between First Nations people and the land, and most agree that it is through the practice and sharing of Indigenous knowledge – or the cultural traditions, values, and belief systems – that many generations of First Nation people have been able to practice and maintain nourishing, healthful relationships with the land in the form of harvesting food and medicines, plants and animals and with one another. (Parlee et al., 2005; Cajete, 1999; Ermine et al., 2005).

Berkes defines traditional knowledge as:

holistic in outlook and adaptive by nature, gathered over generations by observers whose lives depended on this information and its use. It often accumulates incrementally, tested by trial-and-error and transmitted to future generations orally or by shared practical experiences” (Berkes, et al., 2000 p. 1252).

By incorporating local knowledge and accounting for community knowledge, Cinner (2012) argues that co-management has been found to produce desirable outcomes, such as “reduced harvest pressure and increased regulatory compliance, alongside benefits for local livelihoods.” Natcher et al., (2005) explore whether cultural differences either enhance or hinder the working-group effectiveness. The work of Natcher et al., (2005) takes place in the Yukon Territory and analyzes resource co-management boards established under Canada’s comprehensive land claims process. Conclusions drawn from the body of co-management research generally agree that cultural diversity can enhance the pool of human resources from which management decisions are drawn (Natcher et al., 2005). The authors identify some of the conflicts that can occur when culturally diverse groups, with fundamentally different value systems and colonial histories, attempt to work together in a coordinated resource management process. Scholars have emphasized the potential for co-management to shift norms and transform environmental policy (Carlsson and Berkes 2005). Another challenge for co-management regimes are differing worldviews amongst co-management participants (Levine and Richmond, 2014).

## Ladders of Participation Knowledge Production and Co-Management

Much like resource management, research involving Indigenous communities has a controversial history tied to colonial practices of Indigenous land and resource dispossession, cultural assimilation, and rights violation. While colonial relations arguably underwrite all Arctic research (Cameron, 2011), many scholars are increasingly mindful of the harmful effects of doing research on Indigenous Peoples (Smith, 1999). Taiepa et al., (1997) argues that “Indigenous relationships with state-based resource management institutions are embedded with colonial systems that have historically excluded Indigenous communities from land and resource management decisions” (Taiepa, 1997., p. 238). Uneven power relations can become problematic in co-management arrangements, even despite best efforts, because “bureaucratic structures privilege state positions and dominant knowledge systems often exclude Indigenous worldviews (Deloria and Lytle, 1984). Involvement of Indigenous peoples and Indigenous knowledge in natural resource management produces more advantageous outcomes for both wildlife and Indigenous communities in wildlife co-management agreements. According to Kendrick and Manseau (2008), Indigenous hunters utilize unique observation methods within the environment. Watson and Huntington (2008) took a unique approach. They argue that there is a direct spiritual relationship that occurs when hunting for moose, that it’s not just about the practice of hunting moose; but about the spaces that inform such practice, the epistemic spaces that constitute contemporary Indigenous Knowledge (2008).

According to Huntington (2008):

the Koyukon believe that hunters do not ‘take’ anything; instead, animals choose to give themselves to the hunter. The ‘gift’ is made as a result of the ‘luck’ of the hunter, and a hunter has luck when he has been respectful. Respect is the act of following strict rules that guide one’s behavior and actions toward or away from the animal and all other living and non-living things (see also Nelson 1986).

The Koyukon is not the only tribe to conceptualize equal agency for hunter and prey; anthropologists studying with the Gwich’in and the Cree and some Inuit peoples have also documented the understanding of success in hunting not as an achievement to be proud of, but as a ‘gift’ to the respectful (Berkes 1999; Brower 2004; Feit 2004; Scott 1996; Wishart 2004).

In many Indigenous societies, the elders manage cross-generational information feedbacks, and make sense of unusual observations and resource intervention outcomes (Kendrick and Manseau, 2008). Elders and stewards provide leadership, carry and transmit knowledge, and sometimes reinterpret new information to help redesign management systems (Berkes, 2012). Equitable agreements could support a cross-cultural communication strategy for indigenous communities to reclaim more responsibility over governing their resources (Armitage, Berkes, and Doubleday, 2010). Effective conservation efforts must include an understanding of human institutions and cannot separate people from their environments.

There have been wildlife co-management systems in the United States that have been in place for numerous years. A well-known example is in Pacific Northwest, where the Pacific Fishery Management Council (PFMC) is “recognized for improving regional understanding of fisheries dynamics—in part by creating new monitoring systems and coordinating decision-making among nested institutions” (Diver 2012; Pinkerton 1989, 1992). For the purpose of this literature review, I focused primarily on wildlife co-

management agreements. The table below by Cain (2014) gives a brief snapshot of the structure, strengths and representation of seven co-management examples, including the YFMMP.

Table 3. Indigenous Co-Management Regimes in North America

Co-Management Arrangement:	Structure:	Representation:	Strengths:
<b>Alaska Whaling Commission</b>	Incorporated Non-profit with G2G cooperative agreement with NOAA, recognized in the Whaling Act of 1949, Marine Mammal Protection Act and Endangered Species Act.	Whaling captains elect 10 commissioners	Establishes quota with international whaling combines science with traditional knowledge; State of Alaska has no jurisdiction; AEWCM manages traditional Bowhead Whale hunt, research, sets and enforces regulations. Unifies state regulations on all lands in a way acceptable to local residents. Uses existing advisory committee structure to develop a moose management plan. Plan adopted by regulatory bodies Alaska BOG and FSB.
<b>Togiak Moose Management Plan</b>	Informal Working Group	Togiak AC; Nushagak AC; Bristol Bay RAC	Uses existing advisory committee structure to develop a moose management plan. Plan adopted by regulatory bodies Alaska Board of Game and Federal Subsistence Board
<b>Yukon-Innoko Moose Management Plan</b>	Informal working group	Grayling, Anvik, Shageluk, Holy Cross AC;	Worked through difficult issues on increased competition. Recommendations were

Co-Management Arrangement:	Structure:	Representation:	Strengths:
		Lower Yukon AC; Western Interior RAC; Yukon-Kuskokwim RAC	adopted by regulatory bodies Alaska Board of Game and Federal Subsistence Board
<b>Yukon Flats Cooperative Moose Management Plan</b>	Yukon Flats Planning committee	Representatives from 10 recognized tribes, technical representatives from CATG, ADF&G and YFNWR	Solid plan to address intensive moose management. Plan adopted by both Board of Game and Federal Subsistence Board. Goal to double moose population in 10 years.
<b>Native Village of Eyak Tribal Sea Otter Management Program</b>	Federally Recognized Tribe in Alaska	5-member Tribal Council and informal sea otter hunter's council	Regulations set by Tribe recognized by USFWS and State of Alaska enforcement officers work informally with the regulations when asked. Traditional knowledge and research are combined. Group recognized for excellence in management, data and research.
<b>Western Arctic Caribou Herd Cooperative Management Plan</b>	Stakeholder group	Interested users & stakeholders	Developed non-prescriptive guidelines for policies to adopt in times of high, medium and low caribou populations
<b>Confederated Salish and Kootenai Tribes-State-Tribal Fish and</b>	Treaty Tribe with Reservation. Formal cooperative agreement with	Flathead Indian Reservation Fish and Wildlife Advisory	Tribal and state regulations and enforcement recognized by both the state and tribe. Split representation shares

Co-Management Arrangement:	Structure:	Representation:	Strengths:
<b>Wildlife Agreement</b>	Tribe and State of Montana.	Board. 3 appointed by Tribe, 3 by the State and 1 by USFWS.	power and is a venue to discuss and resolve issues.

Wildlife management in the State of Alaska is mainly a public activity conducted by federal or state governments. In Alaska, with the language in ANCSA and the State of Alaska failing to address subsistence, co-management is viewed as a way to increase tribal rights on wildlife management issues (Anderson, 2016).

#### Co-management and Implications of Tribal Sovereignty

The Alaska Native Interest and Lands Conservation Act, or ANILCA (Title VIII), started out as Indian legislation to protect subsistence resources for Alaska Natives. As it exists today, many Alaska Native People are living in a broken system. Alaska Native People in Alaska occupy a unique position in regard to their hunting and fishing rights. The federal government has not managed fishing and hunting in any other state for over two hundred years but had to in Alaska, this was out of necessity because the state refused to comply with federal law (Hobbs et al., 2015). The Department of the Interior reported to Congress that Alaska's legal duty to protect subsistence has been a failure (Hobbs et al., 2015). Solutions, therefore, should not come from outside groups or the



government, but from local communities "working together toward resource stewardship with shared responsibility of resource needs" (Hobbs et al., 2015 p. 5).

Subsistence rights of tribes have been the subject of many protests and litigation. Co-management arrangements between tribes and agencies should have a respectful emphasis and understanding of traditional and customary use practices. Co-management expands opportunities, strategically distributes resources and allows for shared positive outcomes and responsibility (Pinkham, 2015). The organization of CATG created a unique model for tribal organization in Alaska and created opportunity for legal framework within which tribes could exercise their right to self-determination and self-governance (Strommer & Osborne, 2015). Organization of the Tribes in the Yukon Flats created opportunity for CATG to enter into a co-management arrangement with the Yukon Flats National Wildlife Refuge under the Indian Self Determination Education and Assistance Act (Strommer and Osbourne, 2015). Tribal Self Governance Agreements (TSGA) are a useful tool for both tribes and federal agencies. The TSGA acknowledges the effect that land management by federal agencies has had on tribal sovereignty, and it provides a vehicle for tribal participation in federal land management. The creation of public land base has had devastating implications for tribes, their members, and tribal sovereignty. Federal land management has often led to the loss or direct expropriation of tribal land and resources, jurisdiction, and control (Wilkinson, 1980). The TSGA represents a significant step toward federal acceptance of such tribal assertiveness and congressional recognition that federal public land management can both undermine and diminish tribal sovereignty.

## CHAPTER 4: RESEARCH METHODOLOGY AND METHODS

In this chapter, I illustrate the rationale for the selection of the guiding research paradigms and provide an explanation for my research design and approach. My research employs a mixed-methods approach that draws from three key methods: semi-structured interviews, literature and document analysis, as well as participant observation. The research combines an analysis of documents and policies with a series of semi-structured interviews. This chapter includes a detailed overview of the methodological process of participant observation in the villages, analyzing public archival documents, and obtaining access to specific documents from the CATG office in Fort Yukon. Additionally, I explain my approach to semi-structured interviews, conversations with local elders, and triangulation of the collected data and information in regard to participant observation during my time living, working and conducting my thesis research in the Yukon Flats.

### Spiderweb Conceptual Framework

*“In a remote time, Spider Grandmother thought outward into space; she spun a web. She thought and breathed and sang and spun the world into existence. She was a storyteller.”*

*--Hopi Songs of the Fourth World*

While conducting this research, it was important for me to be mindful of the Spiderweb Conceptual framework which is an Indigenous research model developed by Dr. Lori Lambert (2014). This conceptual research paradigm consists of nine components

encompassing respectful ethics of conducting research in Indigenous Communities. At the heart of the model are two main elements designed to position the researcher in the foundation for their investigation. These two main elements are: 1) Indigenous, or being from a place, your place, using your heart and your voice; 2) Your connection to the research. The model is grounded in Indigenous ways of knowing, and stems from the researcher's passion and reasons for conducting research by being tribally and culturally specific as well as using their voice in the process (Lambert, 2014). While I did not strictly follow each of the nine components during my research process, I was motivated to follow it as much as possible after learning about the model in 2016 at a First Alaskans Institute Workshop focused on Indigenous research. For a full list of the framework, see figure 5 below. Model developed by Lori Lambert, Ph.D.

It is my intent that following some of the components of the Spiderweb conceptual framework in my research will demonstrate respect for Gwich'in and Koyukon People, their way of life, and the environment that has shaped their experiences and observations. The 16 distinct Indigenous knowledge and language systems that continue to survive in villages throughout Alaska have a rich cultural history that governs much of everyday life in those communities (Barnhardt, R. 2005). Indigenous methodologies tend to approach cultural protocols, values and behaviors as integral parts of methodology (Smith, 2013). I am also inspired by the work of Dr. Linda Tuhiwai Smith whose work equips researchers from Indigenous communities with concepts and

worldviews for conducting research from an indigenous perspective (Hall, 2010).

## Indigenous Research Paradigm: A Conceptual Model

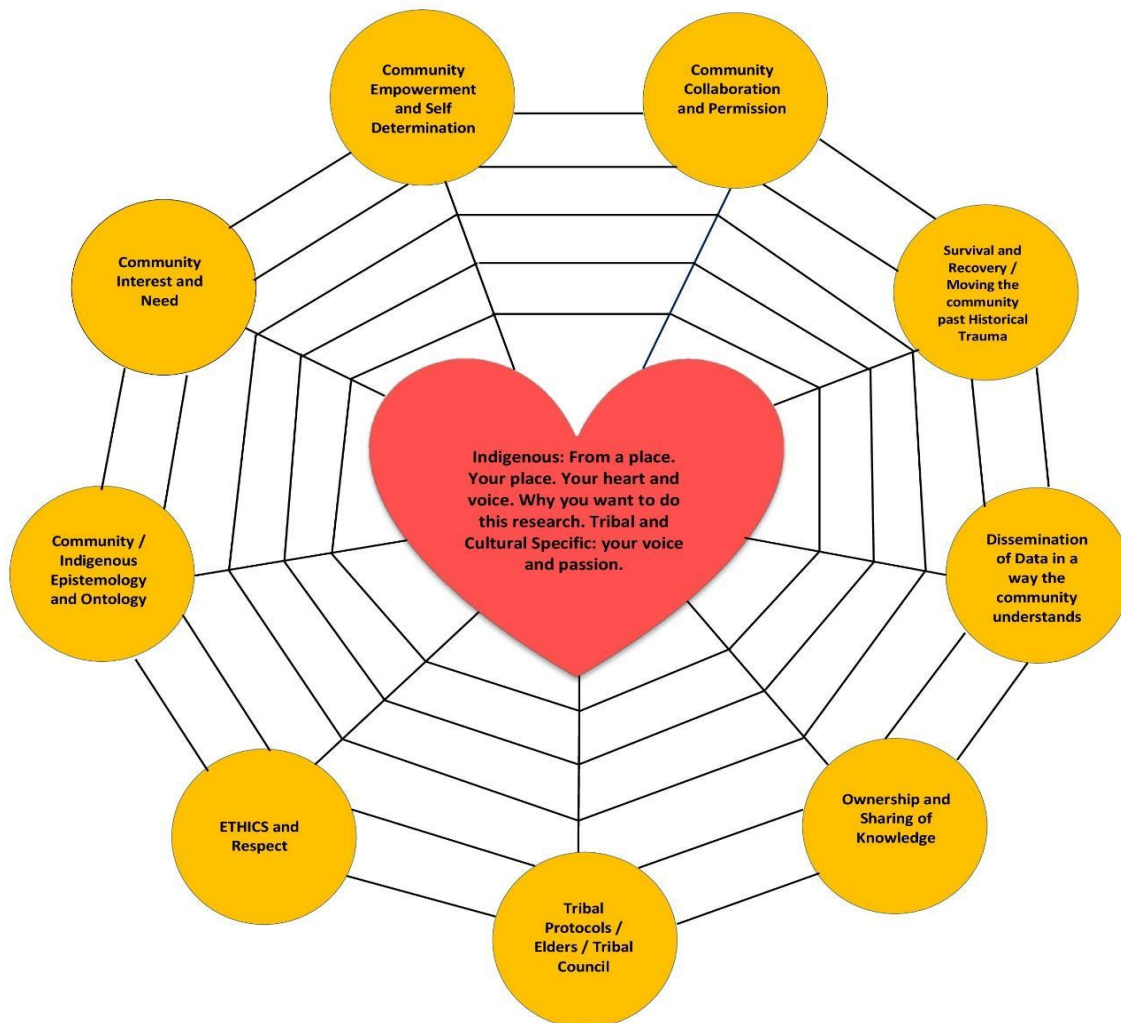


Figure 5. Spiderweb Conceptual Framework

### Self-location and Reflection

Growing up on the Round Valley Indian Reservation and being an enrolled member of the Round Valley Indian Tribes, located in a rural town in Mendocino County, has positioned me well for moving to a rural village in Interior Alaska. Having the honor to live and work in the village of Gwichyaa Zhee, Fort Yukon Alaska from 2013 to 2016 gave me a unique understanding of the issues that Gwich'in and Koyukon Athabascan People experience on a regular basis. While I moved home to California for graduate school, it was important for me to continue my research in Alaska. I feel as though my experience living in the Yukon Flats enriched my life so much that perhaps my research could be some small way of giving back. Returning to conduct my interviews reminded me of the strength and resilience of the people living in this landscape, the importance of community and working together for the protection of this sacred way of life.

Within Indigenous Research, self-location means cultural identification and it manifests itself in many ways (Kovach, 2010). Identifying yourself in your research in this way shows respect to the ancestors and allows community to locate us. This is about being congruent with a knowledge system that tells us that we can only interpret the world from the place of our experience (Kovach 2010).

## Methods

### Semi-structured interviews

Qualitative semi-structured interviews were conducted in June and July 2017, in the form of open-ended questions or Indigenous methodologies (Kovach, 2010).

Semi-structured interviews are typically interviews guided by an unfixed list of open-ended questions, allowing for flexibility in phrasing and follow-up questions (Newing, 2010). I conducted a total of 12 interviews. Three of my interview participants were elders who are well-known leaders throughout Interior Alaska, knowledgeable about the formation of CATG, and who have lived a traditional and customary lifestyle. Purposive sampling was utilized to for the careful selection of elder interview participants, as I knew their contributions to my research would be vital. I traveled to Fort Yukon in May 2017 for a week, working on a separate project for CATG. During this time, I started thinking about whom I would ask to participate in my research, and had conversations with community members and CATG employees about my proposed work.

Conversational methods were particularly appropriate for my work with the elders.

Margaret Kovach discusses the importance of relational responsibility, which implies knowledge and action:

Relational responsibilities exist between the indigenous researcher and the indigenous community; the indigenous community and the researcher; the indigenous researcher and the indigenous academic community; non-indigenous researchers and in the indigenous community, and between the academic community and Indigenous methodologies (Kovach, 2010).

When I returned to the village in July 2017 to conduct interviews for this project, I stayed a total of six weeks. The interview questions can be found in Appendice A.

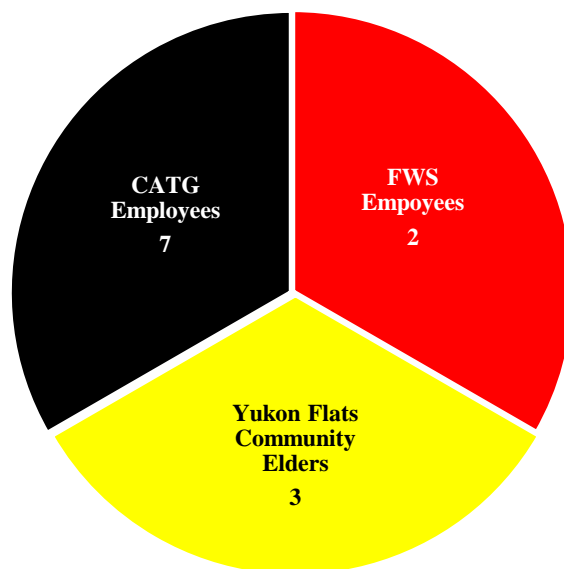


Figure 6. Interview Participant Table

My interview participants were CATG employee community members (n=7), US Fish and Wildlife Agency employees (n=2) and community elders (n=3). It was important for me to allow conversations to happen naturally, and to be respectful of the time and energy of my elder interview participants. Interviewees participated from the comfort of their homes, on the banks of the Yukon River and in their offices in the village. When I traveled to Arctic Village, I was able to stay with an elder and his wife. We started our interview and spent about 30 minutes recording. I could tell that he was tired. Something that I have learned is that this work takes special time and energy. I spent the next several days visiting and asking questions. Spending time like this made

me feel like I was part of the community. Upon leaving, an elder made me earrings and a keychain made from caribou hooves and horns. I also had the pleasure of frying bread with an elder and his wife. Two of the elder participants shared their time with me inviting me into their home. This allowed time for connecting and learning about each other. I traveled “up the mountain” in Arctic Village, where tribal community members were hosting a youth cultural camp, and I ate delicious moose soup. During my time I was able to attend the cultural youth camp and two young boys killed their first moose to feed the camp. In order to celebrate this honor, there was a big celebration on Potlatch with dancing and fiddle music. I was gifted smoked moose meat. My third elder participant met me at the plane and sent me to Fort Yukon with a bag full of caribou meat for her friend. I followed up with her for an over-the-phone interview, she reminded me to share my research with her and to always keep their communities in mind. I have worked previously with each of the FWS Refuge employees and found conversational methods to be useful while interviewing them as well. Overall, interviews conducted here were more conversational and informal, which seemed to be very useful in guiding my research.

### Literature and Document Analysis

The documents I analyzed consisted of historic documents such as the court case of Judge Wickersham in 1915, which provides context for the historical timeframe of the policies that were being forced upon the Alaska Native community in the 1900’s. Secondary data were utilized in the first CATG meeting minutes from 1986, which



provide background about the formation of the Organization. Finally, Tribal Self-Governance Annual Funding Agreements (AFA's) were reviewed to access the co-management strengths and weaknesses.

### Participant Observation

In April 2017, I traveled to Fairbanks for the Alaska Native Studies Conference as well as the Hunting and Fishing Wellness and Advocacy training where I had the opportunity to network with many Alaska Native leaders, elders and educators all working together on common goals. I used this as an opportunity to begin developing my research and interview questions. Then, during summer and fall, I worked for the Council (CATG) as a graduate intern, where I was able to utilize participant observation as an engagement tool. As part of my research process, I documented what I learned and experienced during this time for recommendations for my research. This will give nuance to the self-governance knowledge of the individuals but will also lead us to larger questions about particular management practices (Adams 2008). During this time the King (Chinook) Salmon were running, or Yukon Gold as villagers call them. I spent a great deal of time checking fish nets, fish wheels, cutting, smoking, drying, jarring and eating salmon.

## CHAPTER 5: RESULTS & DISCUSSION

### Compliance with Design Principles

The goal of the following sections is to examine the long-term implementation of a co-management arrangement between the Council of Athabascan Tribal Governments (CATG) and the Yukon Flats National Wildlife Refuge (YFNWR) as outlined in the Annual Funding Agreement (AFA). Armitage et al. (2009) suggest that while “adaptive co-management should not be considered a governance panacea, an adaptive co-management process can help many different groups articulate the full range of values and assumptions shaping successful governance outcomes” (Armitage, Plummer, Berkes, et al 2008, p. 101). Ostrom (2007) also acknowledges that there can be no cure-all solution to complex problems. The challenge, then, is to analyze how co-management projects and the interactions between central government and local communities are organized (Ostrom, 2007).

For this analysis, I will only be focusing on one project under the AFA, titled “Moose Management Public Outreach and Education on the Yukon Flats National Wildlife Refuge.” To assess this agreement, I applied the adaptive co-management (ACM) framework developed by Armitage et al. (2009). The framework outlines 10 specific design principles that the authors believe are essential for the long-term success of co-management institutions. Ungulates in Alaska are considered common pool resources. In this research I focus only on moose (*Moose alces*) in the context of common-pool

resources. Common-pool resources can be determined by: 1) Whether or not individuals can be excluded from the benefit of a good, and 2) Whether the use of said resource will take away from other individuals. According to Levine and Richmond (2012), successful management of common-pool resources can be very challenging due to opposing individual and group interests.

According to the 2002 Yukon Flats Moose Management Plan, moose are the “most desired and sought after large mammal for all Upper-Yukon Porcupine River Communities” (YFMMP). Increasing moose populations in the Yukon Flats is a shared goal of management agencies and subsistence users. In interior Alaska, moose are the primary terrestrial subsistence resource (Scott et al. 2001, Nelson et al. 2008). Moose populations within the Yukon Flats are at some of the lowest densities in the world (Gasaway et al., 1992; Lake, Bertram, Guldager, Caikoski, & Stephenson, 2013). According to a 2008 technical report, although Yukon Flats residents have traditionally hunted moose year-round, or whenever the need arose, most residents focused their efforts from late summer to early fall (Osgood 1936; Nelson 1973; Caulfield 1983; Sumida and Alexander 1985; Sumida 1988; Sumida 1989).

The following sections examine to what extent the Yukon Flats Annual Funding Co-Management Agreement between the Yukon Flats National Wildlife Refuge and CATG satisfy the conditions for the criteria of the design principles of the Adaptive Co-Management (ACM) framework. For each of the ten design principles I will (1) define the factor and describe why it is important for the success of co-management frameworks; (2) describe the conditions in the Yukon Flats co-management arrangement

related to the principle; (3) present an overall finding of whether the co-management arrangement does or does not comply with the design principle and what that means for the co-management arrangement as a whole.

1. Well defined resource systems -traversing landscapes and regulations in rural Alaska

- 1.1 Definition:

Well-defined resource systems in Adaptive Co-management (ACM) should be categorized by less-mobile resource stocks that are not highly migratory or transboundary (Armitage et al., 2009). This principle is important for effective co-management because smaller well-defined resource stocks will warrant fewer institutional challenges and conflicts according to Armitage's (2009) framework for success. If there is less conflict in a co-management agreement, then there will be a greater opportunity for a learning environment. For a better understanding of a well-defined resource system, the following subsection outlines land ownership in the Yukon Flats, discusses moose migration patterns, and addresses complications of boundary lines and management challenges.

- 1.2 Analysis of Conditions:

Located in the eastern interior of Alaska, the Yukon Flats is bordered by the Brooks Range to the north and the White Mountains to the south. Alaska's landscape in the interior is characterized by lakes, streams, lakes, sloughs, open spruce forests and shrubs.



Figure 7. Boreal Forest and Moose Habitat

Athabascan people of the Alaskan interior were organized into semi-nomadic family groups that carried out seasonal patterns of migration often alternating between summer and winter camps. The map of the Yukon Flats provided below (Figure 8) illustrates land ownership in the Yukon Flats.

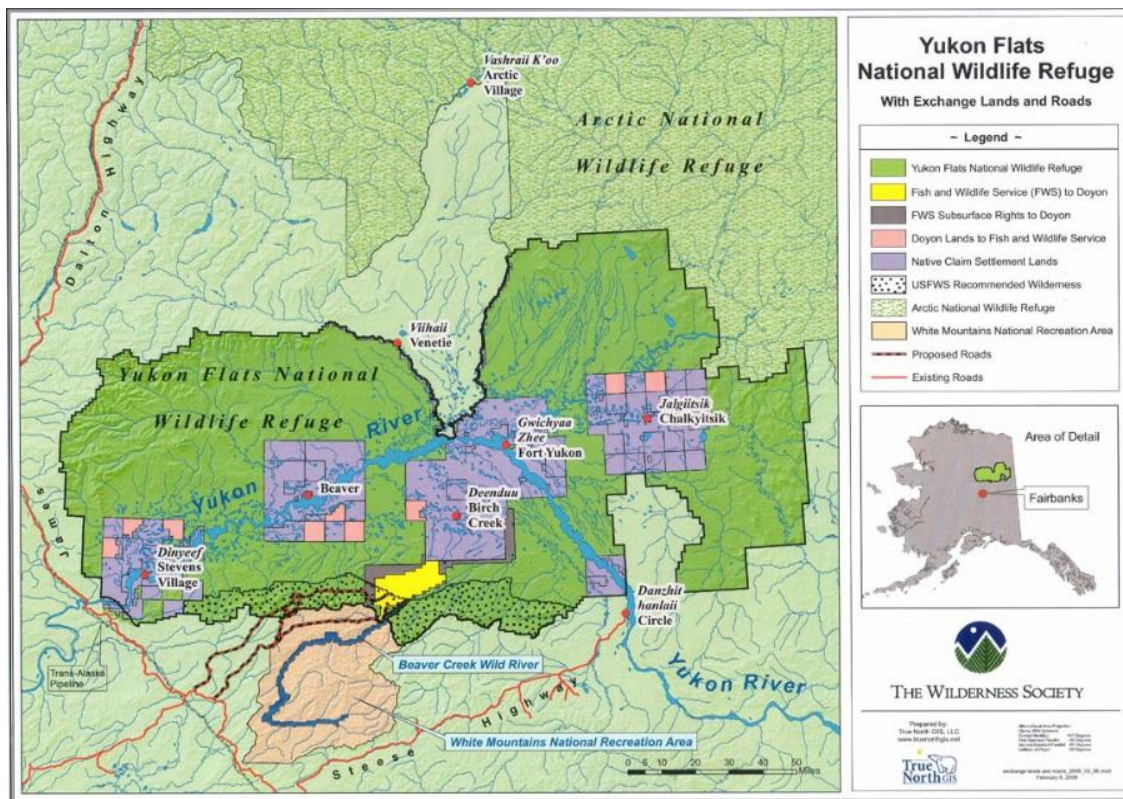


Figure 8. Yukon Flats Land Boundary Map

Land ownership in the Flats is a complicated checkerboard pattern of private, state, and federal lands. Within the total access area, 40% of land is owned by native corporations and 44% is managed by the U.S. Fish and Wildlife Service (USFWS). The State of Alaska, Bureau of Land Management, National Park Service, and Department of Defense manage the remaining 16% of land (Johnson, Brinkman et al 2016). These different entities can implement measures (further discussed in sect. 4.) that end up affecting moose populations of significance to the CATG and the refuge. Therefore, while the moose co-management arrangement is between CATG and USFWS, actions by

other landholders in the region can affect the populations of interest and potentially increase or decrease moose populations.

The Yukon Flats is a prime location for moose habitat as it provides a rich diversity of tundra, shrub, and forest vegetation. There is a great variety of wildlife in the area including muskrats, beaver, ducks, geese, swans, loons, and many other birds, caribou, bears, wolves, wolverines, and moose. Since the area is so large, there are plenty of lakes and meadows for moose. The Yukon River serves as a river highway for hunters to travel and hunt moose. They also travel on lakes and sloughs in search of moose. Moose can be encountered almost anywhere; but willow stands, meadows, and islands provide prime moose habitat, and they can often be found in these locations (CATG Technical Report No. 01-12., 2011).

According to the Yukon Flats Moose Management Plan (YFMMP), prior to the mid 1900's, moose were scarce in the Yukon Flats. Aerial surveys are conducted by the Alaska Department of Fish and Game in collaboration with the Yukon Flats National Wildlife Refuge to observe moose populations. Fall and spring aerial population surveys are conducted to provide managers with data on moose numbers. Fall surveys are preferred, and according to Yukon Flats wildlife biologist Mark Bertram, the best time to conduct them is in November after hunting season and before the Bull Moose shed their antlers (Yukon Flats Moose Mgmt. Planning mtg, 2015). If funding is not available, however, it is not uncommon to conduct surveys in the spring permitting weather conditions and sight ability.

Data from these population surveys are then used in making harvest decisions and contribute to understanding on the quantity and quality of moose. The Yukon Flats National Wildlife Refuge is legally mandated to provide the opportunity for continued subsistence use by local residents. Research shows that the migratory and movement patterns of moose populations are quite complex. Some moose are year-round residents of one area and may live and die within an area of five square miles. Others are migratory, moving up to 100 miles between seasonal ranges. In some areas of the Western Interior, moose migrate from mountainous habitats down to lowland rutting areas in the fall (CATG Technical Report No. 01-12., 2011).

Refuge visitors and staff noticed that moose came into the mountain valleys in each fall, and then the moose disappeared again each spring (Mauer 1995). Refuge staff have conducted several of their own research projects to assess the migratory patterns of moose that reside in the Refuge. They worked with the Vuntut Gwitchin in Canada and discovered a new wildlife migration between the Arctic Refuge in Alaska, and the Indians' land in the Old Crow Flats area (Mauer, 1995). In 1995, a study was initiated by Fran Mauer, a biologist with the Arctic Refuge, to try to find out where the moose in the eastern portion of the Refuge were going each summer. They found that 75% of the moose collared in the Arctic National Wildlife Refuge migrated to Old Crow Flats in Canada. Most moose remained in Old Crow Flats during the summer. This study suggests that moose are a migratory species. Since moose do not always obey particular boundaries and are highly mobile, management can be very difficult. In a 2008 study conducted by ADF&G and CATG, interview respondents from participating communities



in the Yukon Flats expressed a belief that moose population itself had not changed, rather the distribution of moose across the landscape had changed suggesting that moose are migratory and hunting efforts could have impacts on where they travel to (CATG Technical Report, 2008).

### 1.3 Findings and Considerations:

While the moose populations currently remain at low levels, moose management in the Yukon Flats does partially meet the criteria for a well-defined resource system. While there are institutional challenges and conflict in the management of Fish and Wildlife in Alaska, the AFA offers an opportunity for the Tribes and Agencies to work together to build mutual ground by encouraging local community engagement in moose management. As previously noted, moose are highly migratory and can be transboundary, creating complex management limitations within Yukon Flats. Moose move among jurisdictions, but follow similar recognizable patterns that puts them somewhere in between. This contributes to difficulty in management, but not as difficult as the management of highly migratory fish. Even though moose are migratory and cross boundaries, they are not considered highly migratory and the land included in the agreement covers a solid portion of their range, I would consider this principle partially but not completely met in this case. There certainly is the possibility that this co-management arrangement could address at least some of the management concerns surrounding moose populations.

## 2. Small-scale resource use

### 2.1 Definition:

Armitage et al. (2009) argue that co-management arrangements are more likely to be successful in small-scale systems because small scale systems are less complex and more easily managed, “smaller-scale resource contexts will reduce the number of competing interests, institutional complexities, and layers of organization.” (page 101). Whereas, larger complex systems like transboundary fish stocks can be more difficult from a management perspective.

### 2.2 Analysis of Conditions:

Geographically, villages in the Yukon Flats are located off the road system with the exception of Circle. This type of isolation can create management challenges in the Yukon Flats. According to demographics data available from 2009-2013 American Community Survey 5-Year Estimates table 4. Yukon Flats Village Population, illustrates a total of 1,554 residents in the Yukon Flats Villages, with Fort Yukon being the largest populated village.

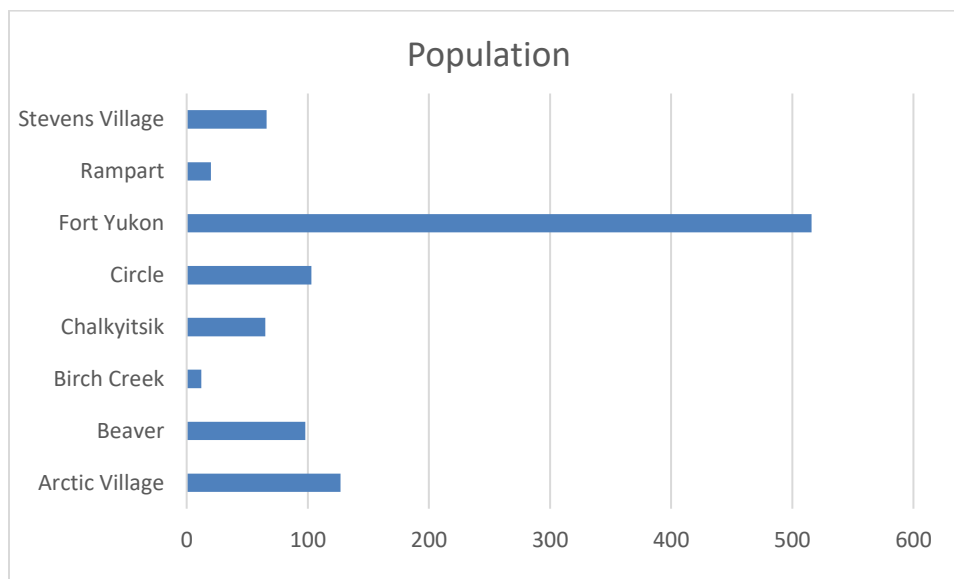


Figure 9. Yukon Flats Village Population

In the Yukon Flats there are organizations with layers of complexities that exist, in the following subsection there is a breakdown of stakeholders of competing interests. The CATG Region is comprised of roughly 37 million acres of traditional use lands known today as the Yukon Flats Wildlife Refuge, the Arctic Wildlife Refuge, the Yukon Flats watershed, and the reservation lands of Venetie and Arctic Village (approximately 2 million acres outside of Yukon Flats and both refuges). The two National Refuges have occupied much of the traditional land use base since enactment of the 1980 Alaska National Lands Conservation Act. (ANILCA). The Yukon Flats boundaries (Figure 8) demonstrates the village and regional corporation land ownership to give a visual about the complexity in land ownership amongst tribal, federal and state land ownership.

Figure 10. Village and Regional Corporation Land Ownership

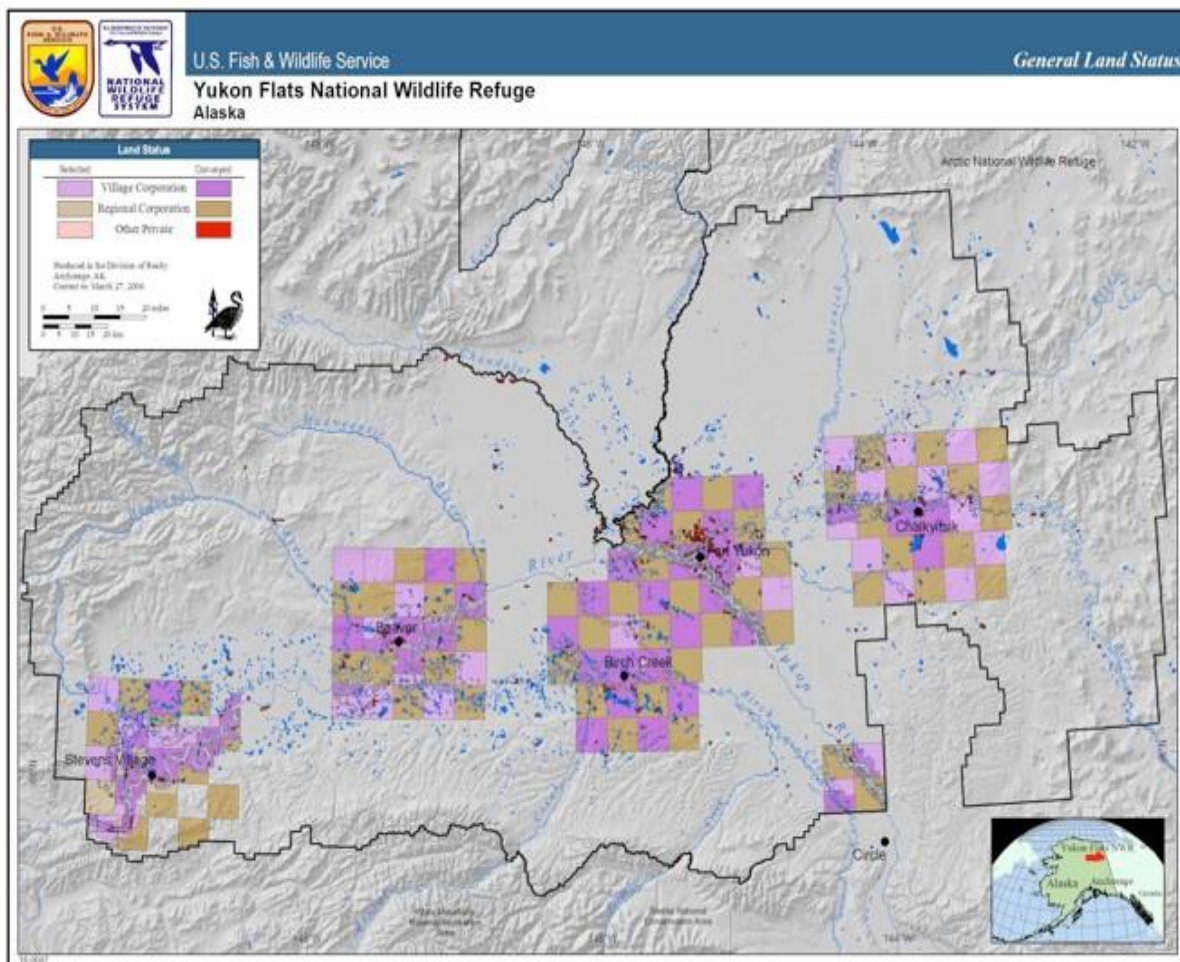
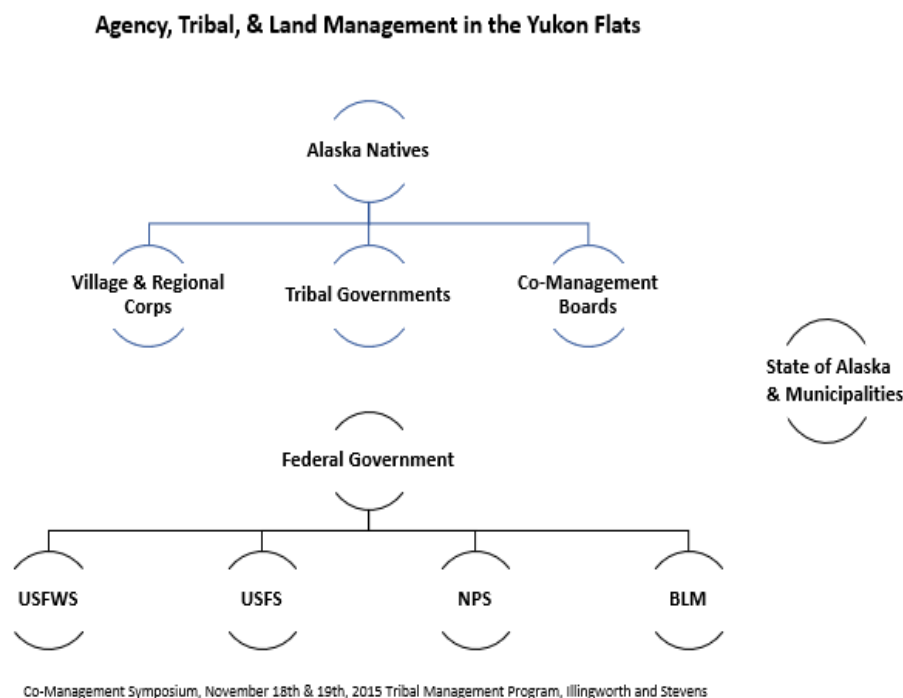


Figure 11. Tribal, Federal, and State Management Entities



### 2.3 Findings and Consideration

Throughout this section of analysis, there are many different entities involved in the management of Federal, State, and Tribal land management in Alaska. While these conditions of different land ownership exist, the following quote provides optimism from YFNWR Staff about community participation and management challenges: “Often times we get into resource management in the Yukon Flats...there’s a whole alphabet soup of agencies” (USFWS Agency Employee Interview, 2017). With the management of various agencies, there are competing interests and institutional complexities that can complicate small-scale resource systems. In Yukon Flats, Alaska, there are numerous management entities across a large geographic area. This can create complexity for moose

management, resulting in the criterion for small-scale resource use context in ACM being only partially met.

### 3. Social groups with shared interests

#### 3.1 Definition:

Successful ACM systems bring together social groups with shared interest. ACM systems are flexible and community-based which creates opportunity for resource management to be tailored to specific places and situations supported by various organizations at different levels. In adaptive co management, building linkages and trust are an important element of this design principle. According to Armitage et al. (2009), effective co-management can be challenging when not all stakeholder groups share the same values and “connection to place” (p. 101). Armitage et al. (2009) argues that having no connection to place creates barriers for stakeholders.

My analysis of this design principle addresses similarities and differing value systems amongst CATG and the Federal Refuge System, highlighting the importance of trust. In order for social entities to be clearly defined, mission statements from both entities will be included, followed by the current legal and institutional framework for subsistence hunting and fishing in Alaska. Adaptive co-management is an ongoing learning process where stakeholders and managers must work together (Berkes, 2008).

#### 3.2 Analysis of Conditions:

CATG’s vision statement embodies a future of self-sufficient communities with

shared commitment to promoting common goals and taking responsibility for a culturally integrated economy based on customary and traditional values in contemporary setting (CATG Strategy Session 2014). Traditional territories of the Gwich'in and Koyukon Athabaskan People lie within the heart of two National Wildlife Refuges, which has taken a great deal of effort on behalf of the Tribes in the Yukon Flats to band together to unify their voices in management:

Like I said before about co-management, everybody's got to be willing to work together...if everybody can recognize that...we'll all be winners... then the ultimate winner is the resource. -- USFWS Agency Employee Interview, 2017

In Alaska, the federal government sets the rules and regulations for subsistence hunting on federal lands, as required under the Alaska National Interest Lands Conservation Act (July 2010). Non-subsistence hunting is guided by the terms of the State of Alaska for both federal and non-federal lands, therefore the State's actions and policies have a significant impact on federal lands (July 2010). The State has an intensive management plan whose statute is to maintain, restore, or increase game populations, moose, caribou and deer for human consumption (Jolly, 2010). Fish and Wildlife Service recognize that there are various interests and user groups in the Yukon Flats.

From a refuge management perspective, it becomes a balancing act. We have a large audience that we cater to and that's the American public. There's a lot of interests out there... We have to balance national resources with local user groups and their desires of what they need to live out there. --USFWS Agency Employee Interview, 2017

As you can see in the language above, both the State and the Feds refer to traditional and customary users as "local user groups." Federal subsistence legislation employs the verb

“to take” to describe hunting: “fish and wildlife resources taken for personal or family consumption” (US Fish and Wildlife Service, 2006). This is complicated because it implies that all rural subsistence users are on the same playing field with the same set of priorities for hunting and fishing. The Mission of the National Wildlife Refuge System is to “administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans” (USWS Mission and Guiding Principles 2017). The difference in management priorities between the State, the feds, and the tribes creates tension because they do not always share the same values when it comes to managing moose, not to mention hunting seasons in association with jurisdiction.

In a 2016 study where elders and traditional hunters and fishermen were interviewed in the Yukon Flats, interview participants discussed a great frustration with the current system of Western management. While wanting to be as respectful as possible, they all spoke of their dissatisfaction with how physically and spiritually disconnected managers are from the land and the people who live in the Yukon Flats (Bridging Yesterday with Tomorrow Report, 2016). In this report, they each discussed the lack of understanding and knowledge current managers have of the Yukon Flats ecosystem and of the Gwich'in and Koyukon people. Elders, hunters and fisherman referenced the fact that managers live in urban centers, rely on Western/college education for their decision-making, and only minimally take into account traditional knowledge held in the region. One



elder specifically pointed out the inability of managers to drive a boat on the Yukon River as an example of this disconnect between managers and the landscapes they manage.

Today it appears to me that it is under new management and people who are managing the land for all people in the United States, this is Fish and Wildlife managers...and I don't think they know how to manage... They are not living on the land, they get their food from Safeway... -- Yukon Flats Elder Interview, 2016

This sentiment makes apparent the stark division between Western management principles that are based on Western Sciences, and traditional management principles that are based on a unique subsistence relationship. All participants noted how different indigenous values are from Western values which do not consider whose traditional lands one is hunting and fishing on and only take into account seasonal openings and legality of location and animals hunted in an area and at a time that is not natural to their own proven regulatory laws and values. Subsistence uses are often discounted and need to be recognized that they are important uses of the land. Subsistence, in this case, could include cultural, educational, and spiritual values. A Yukon Flats Elder shared his perspective about the history of Athabascan people in the Yukon Flats and their survival in harsh landscapes.

Our people have our own law, that's Athabascan Law. It's very important for us to remember. There are a lot of things that we can handle our own way and we feel much better working together...-CATG Elder Participant, 2017

Many of my interview participants spoke about this feeling of kinship amongst each other, even those who reside in different villages. A Yukon Flats elder

described the importance of working together and Athabascan value systems. One of the core values of Athabascan law is to not take more than you need. Since time immemorial, tribes in the Yukon Flats have lived in reciprocity with the landscape and the animals in the Flats (Bridging Yesterday with Tomorrow Report, 2016). The Athabascan people of the Yukon Flats lived according to rules established by their sovereign governments. When Alaska assumed statehood in 1959, the federal and state government assumed jurisdiction over their affairs, including rights to manage lands, waters and traditional and customary resources (Bridging Yesterday with Tomorrow Report, 2016).

### 3.3 Findings and Consideration:

The Yukon Flats Cooperative Moose Management Plan has created a shared goal of increasing moose populations and numbers of moose available for human harvest (YFMMP, page 6). Though communication has considerably improved between CATG and the Refuge since the inception of this AFA, there has been a great deal of challenges on both ends to manage resources in the Yukon Flats. A lack of trust on both sides has been a very challenging barrier to the relationship with CATG and the Refuge. The Tribe expanded outreach efforts and started to invite the refuge manager to CATG annual meetings. CATG and Fish and Wildlife have many of the same goals, ensuring sustainability of salmon and other important species for future generations. While there is overlap in the management goals between the state and federal agencies and the Tribes in the

Yukon Flats, the commonality that they all share are knowledge. The distinct difference in values and priorities illustrate challenges of building linkages and trust in the Yukon Flats. Therefore, this design principle partially meets the ACM framework. Throughout the years, transparency and trust has improved amongst agency managers and CATG. Understanding the shared values and efficient communication will be critical to continue building linkages.

#### 4. Clearly Defined Property Rights

##### 4.1 Definition:

The ACM Framework suggests that having clear property rights to the resource of interest can increase the potential for success of a co-management arrangement. Authors Schlagger and Ostrom (1992) express that property rights give authority to undertake particular actions related to a specific resource and for every right an individual holds, rules exist that authorize or require particular actions in exercising those property rights. Access and withdrawal rights are relevant to Common-pool resources, as “access” is the right to enter a defined physical property and “withdrawal” is the right to obtain the products of a resource (p. 250). When property rights to resource use are clearly defined, it is understood who has access or ownership to the resources and why is this important for ACM success. Therefore, property rights are of great significance in establishing adaptive co management systems as “they determine whether resource users will possess management rights” (Armitage et al, 2009 p.101).

#### 4.2 Analysis of Conditions:

The Alaska Native Claims Settlement Act (ANCSA) left Alaska tribes with limited opportunities to manage traditional hunting and fishing practices. ANCSA snuffed aboriginal hunting and fishing rights. In 1980, an attempt was made to shield “subsistence use” under Title VIII the Alaska National Interest Lands Conservation Act (ANILCA). Only as ‘rural residents’ Alaska Natives are legally given “subsistence priority” or the right to hunt and fish above sport, personal, and commercial users when wildlife populations are too low to support all consumption. The clause for rural “subsistence priority,” the attempt to protect the resources and lifestyle of rural Alaskans, was deemed unconstitutional by the State of Alaska. Therefore, the ANILCA Title VIII rural priority only applies to federal lands within Alaska. ANILCA included policies that attempted to provide some subsistence rights to those who had traditionally depended on this way of life (Strong, 2013). ANILCA now applies to most federal public lands including wildlife refuges. The original intent of ANILCA was that management of ANILCA lands would be conducted by the State of Alaska through the Alaska Department of Fish and Game. However, the Alaska Supreme Court ruled that the rural preference established under ANILCA violated the Alaska constitution and left Alaskans with a dual management system (Nockels, 1996).

This design principle raises the question: who has the right to harvest moose and who has control over it? Tribes do not have the right to solely manage moose populations on their own lands in Alaska since they are not reservation like tribes in the lower 48 of

the U.S. Preferences and priorities under federal and state law determine legal authority for Alaska Native users to hunt and fish. Therefore, state and federal regulations dictate Alaska Natives are not legally given “subsistence priority” as “rural residents.”

Essentially, all rural residents have the same hunting and fishing subsistence rights whether they are members of a federally recognized tribe or not. Therefore, a non-tribal member from another state can move to rural Alaska, maintain residency for one year, and have the same subsistence rights as tribal members. This allows subsistence users the right to hunt and fish when wildlife populations are too low to support all consumption. When asked about the implementation of the rural determination process, a USFWS employee stated,

My understanding is that the state of Alaska didn't recognize or make a distinction between rural residents who moved in, versus Native people who were already here. So they had a rural preference but not a Native preference. So the Feds, through ANSCA, identified that Natives are 'traditional users' who have the connection and longer history and greater need and justification for the subsistence uses or subsistence rights. And we (the refuge) have tried to recognize that and be more supportive of the Native People in that respect. --USFWS Agency Employee Interview, 2017

The four land management agencies in Alaska, including Fish and Wildlife Service, Forest Service, National Park Service and Bureau of Land Management maintain the ability to issue regulations based in various statutes that govern public lands in Alaska, such that hunting, and fishing regulations differ depending in the land manager and the status of the land. At the state level, Alaska's Board of Game (BOG) regulates hunting seasons, limits, and methods. The BOG has divided Alaska into 26 game units and issued hunting regulations specific to each unit. Fragmented land ownership creates challenges

for moose management as moose and hunters alike do not always obey borders. In 2009, refuge Officer Michael Hinkes USFWS was quoted as saying about the Yukon Flats region, “I have worked all across the state of Alaska enforcing Fish and Wildlife Regulations, and nowhere else in the state have I seen such a regulatory nightmare” (Co Management Symposium Presentation, 2015). In another study conducted in the Yukon Flats, a local community interview participant expressed his frustrations with the idea of borders.

I’ve been out here for a long time and I know every lake, meadow...tree damn near, you know, out here, but I don’t know where the borders are for land. To me, it’s all just the Yukon Flats, its home and I grew up without borders. I still live that way without borders...” (NWBLLC Report, 2016)

Along with game population size and seasonal distribution, a hunter’s ability to access land controls the availability of the resource for harvest (Brinkman, Kofinas, Hansen, Chapin, & Rupp, 2013; Gratson & Whitman, 2000a; Millspaugh, Brundige, Gitzen, & Raedeke, 2000).

#### 4.3 Findings and consideration of design principle:

While this ACM framework is applicable to the Yukon Flats, the design principle does not meet the criteria because property rights, access, and ownership of land and resources in the Yukon Flats continues to be debated. The USFWS and the Federal Subsistence Board have government-to-government tribal consultation policies that require federally recognized tribes be consulted early in the decision-making process for any policy that will significantly or uniquely affect the tribes (FSB Tribal Consultation

Policy, 2012). This protection, however, falls short of ensuring the freedoms it was intended to provide, as the policies are weak, the recommendations of the Tribal Governments are only advisory, and the government-to-government discussions are non-binding. As such, Alaska Natives do not enjoy the freedom of rights to manage wildlife on their lands. Furthermore, the State of Alaska does not recognize Tribal Governments or their authorities, providing them no formal seat at decision-making tables.

## 5. Access to adaptable portfolio of management measures

### 5.1 Definition:

Having access to adaptable portfolio management measures means that participants in co-management agreements must have flexibility to test and apply a diversity of management measures (Armitage et al 2009). Having adaptive portfolios are important for co-management agreements because the degree of collaboration can occur with continuous involvement which can also vary during different phases of the adaptive management cycle (Ruitenbeek and Cartier 2001). In order for an accessible portfolio of management measures to be met, a diversity of management tools is needed to achieve desired outcomes (Armitage et al 2009). According to Armitage et al. (2009), “economic, regulatory and collaborative tools should all be available” (p. 101). For example, quota setting, hunting licensing, regulations or technological adjustments like gear size.

### 5.2 Analysis of Conditions:

Evidence indicates that overtime the CATG and USFWS drew from an array of management measures and techniques in the co-management of moose. CATG has been promoting increased participation in wildlife management by local users and tribal governments since the early 1990's (Thomas and Fleener 2003; Thomas 2004; Thomas and Fleener 2005; Thomas and Fleener 2007; Thomas 2008). Since 1993, CATG's Natural Resources Department, in partnership with ADF&G and USFWS, has been administering a household survey designed to assess annual harvest levels of moose, caribou, black bears, and brown bears by Yukon Flats communities. Since 2003, CATG has published harvest data reports based upon the results of these household surveys (Thomas and Fleener 2003; Thomas 2004; Thomas and Fleener 2005; Thomas and Fleener 2007; Thomas 2008). Harvest surveys are an example of an adaptive portfolio as they are used for management considerations.

The Yukon Flats Moose Management Plan shows some of the measures that the group has drawn from to manage the Yukon Flats moose populations. The goal of the management plan is to "protect, maintain and enhance the Yukon Flats moose population and habitat, maintain traditional lifestyle and provide opportunities for use of the moose resource" (Yukon Flats Cooperative Moose Management Plan, 2002). The YFCMMP is designed to promote an increase of the Yukon Flats Moose Population in the following ways:

- (1) to improve moose harvest reporting for better documentation of subsistence needs to improve management.



- (2) To reduce predation on moose by increasing the harvest of bears and wolves, minimize harvesting of cow moose, and reduce harvest of cows for ceremonial purposes to increase moose population.
- (3) Inform hunters and others about low moose populations and ways people can help the effort to increase moose numbers.
- (4) To use both scientific information and traditional knowledge to help make wise management decisions (YFMMP, 2002).

The above information reveals different management measures that could be used to affect moose populations: from improved harvest reporting to predator management to greater outreach and use of diverse knowledge types.

#### 5.2.1 Management considerations

State laws in Alaska involve a priority for subsistence use of fish and game and an intensive management law that sets criteria for restoring moose populations to achieve human consumptive use goals adopted by the Board of Game (YFMMP 2002). The CATG Natural Resource office in Fort Yukon issues harvest tickets and hunting licenses to convenience hunters in the village who cannot make it to Fairbanks.

In 2010, Moose hunting season opened in late August in parts of the Yukon Flats; August 25<sup>th</sup> - September 25<sup>th</sup> and December 1<sup>st</sup>- 10<sup>th</sup> in Unit 25(A), in Unit 25(D) East the season opens August 25<sup>th</sup> – September 25<sup>th</sup> and in Unit 25 (D) West from August 25<sup>th</sup> - February 28<sup>th</sup> by permit only with a harvest quota of 60 bulls. The season allows for hunters to harvest one Bull Moose and local hunters generally hunt with

riverboats, canoes, and ATV's. There is no open season on cow moose, however a cow moose can be harvested for a ceremonial purpose (CATG Technical Document 05-01).

Harvest surveys are used as a management measure tool in the Yukon Flats. Harvest surveys provide a means for measuring hunter effort through the average amount of hunter time required to harvest each moose. In a study conducted in 2010-2011 by CATG Participants were asked how many people in their household participated in moose hunting and how many days each of those individuals spent hunting for moose. Each day an individual spends in the field hunting for moose is defined as one hunter day. Increasing hunter time, or effort per harvested moose, is an index of a low moose density which, when dispersed, causes hunters to spend more time to harvest similar numbers of moose. The overall decrease in moose population and density from 1999-2010 in the Yukon Flats is documented and summarized in Figure 9. (Lake, 2010).

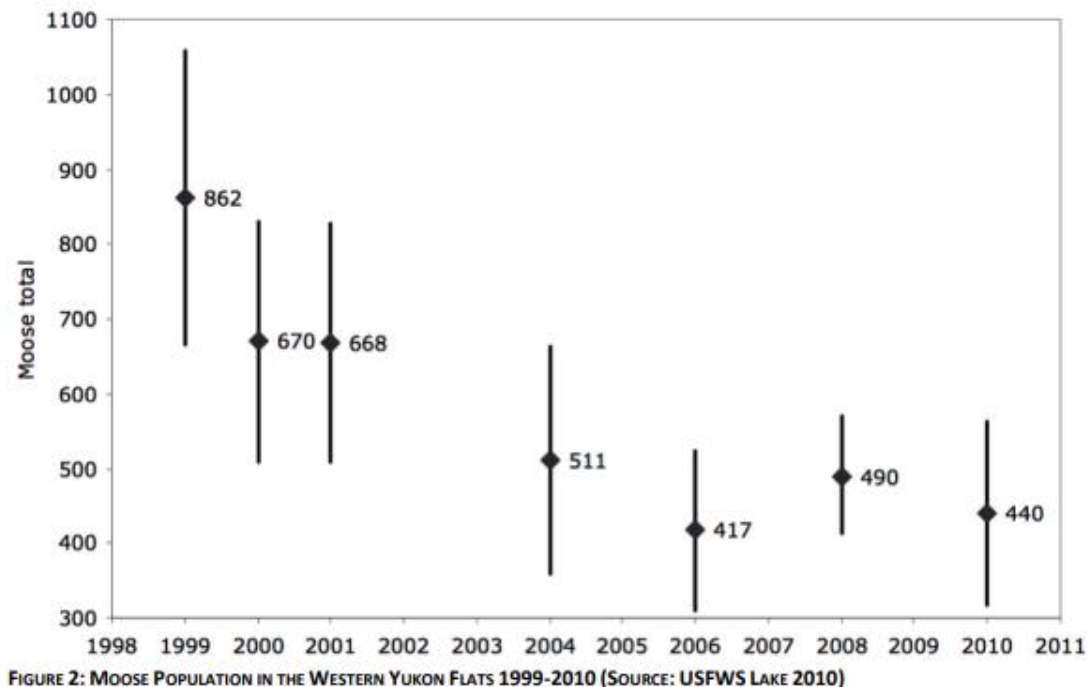


Figure 12. Moose Populations in the Yukon Flats

Survey findings also demonstrate that strong food sharing networks continue to operate as an essential part of the subsistence economies in these communities, with only 20% of households reporting harvesting moose, 32% receiving moose, and 59% giving moose (Traditional and Customary Harvest Report, 2011). These survey findings are important because it demonstrates the significance of sharing and subsistence.

Unfortunately, it is not measured by FWS in this way so it brings up a discussion of true co-management.

Tribes in the Yukon Flats are very knowledgeable about measures needed to keep the moose populations in check, but there is a lack of trust by the FWS that prohibits them from taking control over management. Lack of trust continues to be an issue amongst agencies and the tribes in the Yukon Flats. In the 2013 CATG report *Survival Denied*, there are stories from Alaska Natives demonstrating the impact that current management practices and regulations have on their lives. “It’s like we’re constantly being watched. We have to have all kinds of licenses, and you never know whether you’re on federal or state lands. It makes us feel like criminals” (p.12). Testimonials in this report reveal a complex system that denies Alaska Natives their rights to traditional foods and ways of life; illustrating the need for a revised system that provides them a greater influence in land management, hunting, and fishing; a system that ensures their religious, physical and cultural survival.

#### 5.2.2 Flexibility and lack of flexibility in terms of management tools

Alaska game regulations authorize the taking of moose for use as food in customary and traditional Alaska Native funerary or mortuary religious ceremonies (YFCMMP 2002). Under this circumstance, moose can be harvested outside of the normal seasons and bag limit restrictions without a written permit. Regulations do require that notification be made to the agency within 20 days of the moose harvest (YFMMP 2002).

Harvesting a moose for Potlatch is an important ceremonial purpose of Athabascan People and the Chalkyitsik Community Harvest Program. In March 2000, the

Alaska Board of Game (BOG) established a community subsistence hunt for the village of Chalkyitsik to allow individuals in the community to pool their individual harvest tickets so that one hunter may harvest more than one moose every year for distribution around the community (ADF&G 2002). The program requires a community member to act as a hunt coordinator. The hunt coordinator is responsible for signing up participants and reporting harvests to ADF&G. On federal lands, federally qualified subsistence users are allowed to designate another federally qualified subsistence user to harvest moose on their behalf, providing that the designator is not a member of a community operating under a state community subsistence hunt program. The designated hunter must obtain a designated hunter permit and must return a completed harvest report.

### 5.3 Findings and Consideration:

The Yukon Flats Cooperative Moose Management Plan meets the criteria for the framework as participants in ACM must have flexibility to test and apply a diversity of management measures to achieve desired outcomes. The YFCMMP has a special focus on hunter outreach and education. Participants in ACM must have flexibility to test and apply a diversity of management measures or tools to achieve desired outcomes. The YFCMMP has allowed for flexibility in the plan and takes into account traditional and customary use practices exercised by local users. The YFCMMP has demonstrated cultural flexibility too in terms of allowing a hunter to get a moose for family or community. However, overall, the refuge has been slow to implement management practices that are more accommodating of Alaska Native practices and values. While,

some great steps have been made, there is still room for improvement. Federal managers lack of trust in Alaska Native knowledge and stewardship continues to prevent the refuge for permitting more Alaska Native involvement in the development and implementation of management tools.

## 6. Support for a long-term institution building process

### 6.1 Definition:

According to Armitage et al. (2009) framework, a co-management arrangement will be more “successful when stakeholders accept the long-term nature of the co-management process” and work on building the co-management institution over a long timeframe. As stated by Armitage et al. (2009), undertakings of this type can “provide a degree of stability in the context of numerous changes and stresses from within and outside of the system” (101). Having individuals invested in the long haul, both from an agency standpoint and leadership role is important for this principle because it substantiates the long term investment of managing a resource and commitment to the agreement.

### 6.2 Analysis of Conditions:

During my interviews, it was apparent that the CATG communities, and their visions for leadership, are invested for the long haul. Tribal leadership in the Yukon Flats was able to come together to form a vision for the changes that they wanted to see in their villages. With help from that group of leaders, CATG has taken great strides in ensuring the commitment and patience that it takes for strengthened self-determination efforts in the

Yukon Flats. The quote below is a reflection of CATG's vision from one of my participants.

So tribal leadership started coming together and talking about what they would like to see changed and they came up with a vision. There was very little money to pay them, but people realized it was time to start doing it themselves--CATG Employee Interview, 2017

In the following subsections, I outline both CATG and the YFNWR long-term commitment and investment to the co management agreement. Many of the CATG local village interview participants spoke about long-term visions of not only CATG, but of their commitments to community. Participants in this study have expressed that the work they do in their villages is “for all the people of the Yukon Flats and all of the work that CATG is doing is for the People” (CATG Community Member Interview, 2017). Community interview participants spoke of the importance of continuing to protect the land and resources in the Yukon Flats for the next generation. Advocacy efforts on behalf of the tribes have occurred well over the last thirty years in Alaska.

The current partnership between CATG and the YFNWR began in the late 1990's with Section 809 Agreements. Section 809 of ANILCA” authorizes the Secretaries of the Interior and Agriculture, to enter into cooperative agreements or otherwise cooperate with other Federal agencies, the State of Alaska (State), Native Corporations, other appropriate persons and organizations to effectuate the purposes and policies of Title VIII” (PUBLIC LAW 96-487 DNR 1980). Cooperative Agreements provide resources to Tribes interested in entering Self-Governance and to existing Tribes interested in expanding their PSFAs (Ahtna Department of Interior MOA, 2016). The agreement is important to

the Yukon Flats National Wildlife Refuge as well. A USFWS employee stated, “ultimately we like to see success, if the AFA succeeds both CATG and the Refuge succeed” (USFWS Agency Employee Interview, 2017).

In an interview with a Yukon Flats Agency Employee, they expressed the budgetary confinements that create challenges for long-term success of the AFA. Funding has been a constant challenge with the USFWS funding agreement. USFWS employees have commented on tight budgetary restrictions and shortfalls that have resulted in reduction of AFA funds for CATG. It takes effort just to make sure paperwork moves along and signatures are in the right place. In 1993, CATG began contracting funding for 809 agreements with the refuge. The table below illustrates the funding history of partnership. There has been turnover in staff both within CATG and within the Refuge, which makes partnership difficult. As new people come on board, it takes more time to educate them about the AFA processes. Both the current Refuge Manager of the Yukon Flats and the Arctic National Wildlife Refuge have worked with CATG on negotiation and implementation of the AFA, which has been beneficial to the AFA. The partnership has also evolved to allow for a position to be housed in Fort Yukon. It is beneficial to CATG because it provides employment for a local person. The Refuge Information Technician conducts migratory bird harvest surveys in the communities. The information collected from these surveys helps managers understand how much hunting effort and harvest occurs by subsistence hunters in the spring, summer, and fall. The Refuge benefits having a local person on board who is familiar with the communities, the issues



and the land. As you can see in the timeline below (Fig. 10), funding levels throughout the years have fluctuated since the inception of the agreement between CATG and YFNWR. The Refuge benefits from having a local person on board who is familiar with the different communities' issues and the landscape. However, since the agreement between CATG and YFNWR began in Stevens Village in 1992, funding levels throughout the years have fluctuated (10). Static funding from 2004 to 2011 has hindered success and growth of the AFA. In addition, this has created a lack of funding for CATG staff to spend time on carrying out duties assigned in the AFA (CATG NR Self Governance Brief, 2012).

Table 4. CATG History of Partnership &amp; Funding

Partnership Program	Year and Funding Level	
USFWS 809 Agreements with Office of Self-Governance Activities: ✓ Harvest Data Collection	1993	\$66,108
	1994	\$112,964
	94-95	\$160,747
	96-97	\$149,500
	97-98	\$197,377
✓ Moose Harvest & Population Data	2001-2003	\$93,851
USFWS AFA Activities:	Amounts	
✓ Harvest Data Collection, Moose Population Surveys, Environmental Education/ Outreach, Hunter Education/ Outreach, Moose Management Outreach, logistics	2004-2011	\$60,000
✓ Technical Report Writing/Data Analysis, Moose Management Outreach	2012	\$20,000
✓ <b>AFA not funded</b>	<b>2013</b>	<b>\$0</b>
✓ Moose Management Outreach	2014/15	\$74,000
✓ Moose Management Outreach	2016-2017	\$121,000
✓ Moose Management Outreach	2018-2019	\$82,000 w/Addendum

Static funding from 2004 to 2011 has hindered success and growth of the AFA. This created a lack of funding for CATG staff to spend time on carrying out duties assigned in the AFA (CATG NR Self Governance Brief, 2012). Since 2012, when this

was brought to the attention of the USFWS, the agreement has been in jeopardy and funding levels and scopes of work have greatly diminished (CATG NR Self Governance Brief, 2012). The AFA scope and funding became minimal, and as a result, CATG began to focus on improving the relationship, the communication, and the accountability of the Refuge to the people during negotiation in 2013. CATG requested that the Refuge staff notify the local tribe when they were going to be present in the village and to attend Chiefs meetings and share projects and budgets. CATG felt that the expenses for completing the work in the PSFA exceeded the funding levels available. Therefore, CATG and the Refuge could not come to an agreement, and the AFA was not funded in 2013. A modification was added to the 2011 Annual Funding Agreement to complete previously underfunded work (Figure 10).

### 6.3 Findings and Consideration:

In order for the AFA to remain funded, there has to be a great level of commitment from federal, state, and Alaska Native leaders to continue putting in the work necessary to ensure long-term commitment. Long-term capacity building can be difficult at every level. This fact being repeatedly brought up during my interviews demonstrates its significance to building a long-term co-management agreement. Additionally, agreements are expensive and time consuming, meaning that there has to be a great level of commitment on both sides. Long-term budgets from the federal government to fund the AFA are often uncertain, which creates frustration on both sides of the agreement. For example, when there is no funding available to conduct moose

harvest surveys, significant management challenges often arise from unpleasant feelings between agency managers and locals. Funding commitment is a necessary for the continuation of this agreement, and without constant support of that, this design principle can only be partially met. The design principle is partially met because the AFA continues to operate which shows that there is commitment on both sides.

## 7. Provisions of training, building capacity at all levels

### 7.1 Definition:

Successful ACM requires an emphasis on capacity building and training. It is suggested that stakeholder groups will possess limited resources that are necessary in ACM (Armitage et al 2009). This framework implies that resources are needed at the local level that will “facilitate collaboration and effective sharing of decision making power” (Armitage et al 2008).

### 7.2 Analysis of Conditions:

Evidence shows that capacity building has been an important process with the AFA. For example, an interview participant explained that Tribal leadership has to be involved every step of the way.

Building capacity is like actually doing it. There’s a real fear about moving forward...but you have to start somewhere, and you have to learn as you go. There’s nothing else besides experience that works, in my humble opinion. You just have to do it... you have to put your toe in the water...that’s the jumping off point. --CATG Community Member Interview, 2017

Education is another example of capacity building approaches. In 2015, the University of Alaska Fairbanks hosted a two-day meeting titled *Co-Management Symposium- Weaving Together Two Worlds*. The symposium brought together about 200 state, tribal and federal wildlife managers at the University of Fairbanks, and provided a forum to build relationships, understanding and knowledge for advancing the co-management of Alaskan fish and wildlife resources (co-management symposium memo, 2015). At this meeting, it was discussed that Tribes in the Yukon Flats had vastly improved harvest reporting by using village outreach to gather information to complete the harvest reports—this meant visiting individuals in their homes instead of sending out surveys (co-management symposium memo, 2015). This success allowed for the tribe to expand outreach efforts, and so the tribe began inviting the refuge manager to CATG annual meetings. This symposium was monumental in that it created a sharing space for the Tribes and the Feds to come together and discuss issues in a safe space. Chief Rhonda Pitka from Beaver, Alaska spoke about the CATG co-management agreement and the relationship with the Yukon Flats National Wildlife Refuge. She stated that CATG and the Refuge “realized they had the same goals, ensuring sustainability of salmon for future generations” (co-management symposium memo, 2015). She said future goals of CATG include capacity building through education, writing, and tribal reporting and studies (co-management symposium memo, 2015.) The Yukon Flats Refuge Manager at the same meeting discussed the sixteen wildlife refuges in Alaska and his current work on a moose management project as well as his desire to continue working collaboratively with tribes in the region (co-management symposium memo, 2015.)

There have been efforts by USFWS to train local villagers in wildlife technician positions, as well as efforts from the University of Alaska Fairbanks to provide classes and certifications through the Tribal Management Program. In October of 2015 while I was working for CATG, I had the opportunity to attend the *Eastern Interior Regional Advisory Council* (EIRAC) meeting in Fairbanks, Alaska. This was a good opportunity for me to listen to proposals and discussions regarding Traditional and Customary Use areas in the Flats. The decision-making process is very dynamic and there was representation from all of the villages that had sent representatives to gather information at this meeting.

In 2017, the University of Alaska Fairbanks offered advocacy classes, sponsored by CATG, to provide culturally grounded knowledge and give students information about the History of Federal Indian Law and the Framework of fish and wildlife management in Alaska today (Tribal Management Class Flier, 2017). The federal government has a unique and distinctive political relationship with federally recognized Indian Tribes. The U.S. Fish and Wildlife Service, as a bureau of the Department of the Interior, has a mandated obligation to ensure that the federal Indian trust responsibility is fulfilled.

In 2016, the Federal Government updated the *Native American Policy* document, which provides a framework for government-to-government relationships. The U.S. Fish and Wildlife Service and representatives from tribes across the country worked together to update the policy. The policy articulates the principles for interactions between the Service and tribal governments as they relate to shared interests in the conservation of

fish, wildlife, and their habitats, which include Service lands and the protection of cultural resources that exist on USFWS lands. According to the *Native American Policy*,

We support the rights of tribal governments as they exercise their sovereign authorities to manage, co-manage, or collaboratively manage fish and wildlife resources. We support opportunities for the Service and tribes to collaborate to protect, conserve, use, enhance, or restore natural and cultural resources. This may include working together with tribal governments to monitor fish and wildlife resources, particularly when it involves evaluating trends in species and environmental conditions (Native American Policy, 2016).

This document is important because it provides the framework for the working relationship of Tribes and Federal Agency Managers throughout the United States.

### 7.3 Findings and Consideration:

While there have been ample opportunities for training and capacity building amongst all stakeholders in the Yukon Flats, there is room for improvement. The co-management symposium was a great step in the right direction, however, there may be room for improvement on the training of federal employees about cultural resource management and Alaska Native Knowledge. The University is taking strides in educating Tribal members about Federal Policies, and there is training available for tribal members to learn about Western management regimes. Of course, the learning has to be a two-way street for the success of ACM. Therefore, the framework is partially met.

## 8. Key Leaders or individuals prepared to champion the process

### 8.1 Definition:

Armitage et al (2009) suggests that key leaders in ACM will have “a long-term connection to place and the resource, or within a bureaucracy to policy and its

implementation” (p.101). In ACM systems, “key individuals are critical for maintaining a focus on collaboration and the creation of opportunities for reflection and learning” (Armitage et al 2009). In terms of co-management, these individuals are critical because they hold the vision for longevity of the partnership. They can also be regarded as effective mediators in resolving conflict (Armitage et al 2009).

## 8.2 Analysis of Conditions:

According to one of my elder interview participants, the most powerful thing to do is to speak out from the tribal level (CATG Community Member Interview, 2017) To further analyze this design principle, it is necessary to explore the leadership both at the tribal and agency level. The AFA success on CATG’s side is attributed to team expertise and organizational capacity to follow through with the AFA. Throughout the years, CATG has had strong leadership through the Chiefs and at the department level with CATG staff, many of which maintained employment by CATG for well over ten years. CATG has maintained a consistent negotiation team. Envisioning long-term success is an important role for key leaders who may have to champion the process. One of my interview participants spoke about the strength in action coming from the Tribes.

The Tribes have issues and plans they want to work on. I think ultimately it has to come from the Tribes and strengthening each individual tribe and that would make them stronger in CATG as well. So, the strength has to come from the Tribes. --CATG Community Interview, 2017

As identified in the quote above, the leadership and strength of the Tribes in the Yukon Flats determine the power and determination of the work that CATG does. When asked



about the effort of the Yukon Flats National Wildlife Refuge, an employee gave the following statement:

From our standpoint, it takes effort to just make sure paperwork moves along and signatures are in the right place and all the I's are dotted and T's are crossed. Ultimately, we like to see the partnership succeed. –Yukon Flats Wildlife Refuge Agency Employee

These quotes demonstrate that there is leadership on both sides of the coin that want to see the partnership amongst tribes and agencies succeed. A great part of consistency of this group is attributed to leadership from the CATG Chiefs. Often times, village leadership has turnover that complicates the longevity of a vision—in this case, the co-management agreement. Short tenured tribal council terms often do not allow enough time for people to see the bigger picture of their work. There have been several CATG Chiefs who have been reelected and their continued work has proven to be good for the AFA.

On the Refuge side, staff turnover is also inevitable. Turnover in staff has been an issue for both CATG and USFWS agency employees. The past and current Yukon Flats Refuge Manager have been influential in maintaining the AFA. During one of my interviews with an YFNWF agency employee I asked if they thought that the AFA was true co-management arrangement, the employee stated:

I'm not saying it's not possible to do (true co-management), in fact I think the co-management is kind of working now as it is. Sure, there are bumps in the road here and there... and there's issues that arise from time to time but I think that's the process that's in place ...-- USFWS Agency Employee

This perspective shows while good efforts are being put forth, there is still work to be done to improve the co-management arrangement. Another interview participant spoke

about a management team within USFWS and the importance of working more closely with agency partners to start coming up with solutions, as opposed to saying “this is what we are going to put in writing, and you have to follow it. It’s a lot easier to work with people” (CATG Community Interview, 2017).

### 8.3 Findings and Consideration:

As iterated throughout this section, key leaders to champion the process are critical for the success of ACM. The success of this factor is achieved by effective leadership from CATG and the YFNWR. Continuous training will be needed as turnover happens, but so long as there is leadership who carries the torch, the design principle is met. As CATG elders and leaders journey on, there is always transition in the leadership. CATG has maintained a strong vision for more than 30 years and I believe they will maintain a solid partnership with the Yukon Flats National Wildlife Refuge.

## 9. Plurality of Knowledge Systems

### 9.1 Definition:

Folke et al (2002) define adaptive co-management as a process by which institutional arrangements and ecological knowledge are tested and revised in a dynamic, ongoing, self-organized process of learning-by-doing. According to the framework proposed by Armitage et al., ACM success happens when participants “share and draw upon a plurality of knowledge systems and sources” (2009 p. 101). In this framework, both expert and non-expert knowledge play important roles in problem identification,

framing and analysis of resource management (Armitage, 2009). The bridging of organizations provides a forum for the interaction of different kinds of knowledge.

Incorporating different knowledge systems into resource management is important for recognizing and respecting diversity of worldviews and allowing room for differences. Sharing of knowledge systems can occur by specialists together at appropriate times to address important resource problems (Ross et al. 2011). Feit (1994) and Nadasdy (1999) argue that the ritual and political nature of Indigenous knowledge is central to the successful sharing of knowledge between Indigenous peoples, scientists and resource managers. In this capacity, a two-way learning environment must take priority in order to ensure stakeholders and managers are working together for the common good of local resources. It is important to recognize that this design principle is about more than knowledge or science; it recognizes that there are different value systems or worldviews that must be taken into consideration when dealing with co-management arrangements.

## 9.2 Analysis of conditions:

When analyzing this agreement, it is imperative to be mindful of differing value systems and worldviews. The harvesting of Potlach Moose is one example of incorporating Traditional Knowledge into the YFCMMP. Gwich'in and Koyukon hunters in the Yukon Flats have been harvesting moose for survival—for food, tools, weapons, material, and for potlatches—for thousands of years. Moose hunting, as a means of survival, is a tradition passed down from generation to generation.

A potlatch moose is generally harvested when there are large community gatherings such as funerals, holidays, when a new chief is elected, or during other significant community events. There are two regulations that apply to potlatch moose in the Yukon Flats. First, a statewide regulation allows the harvest of wildlife outside of established seasons or harvest limits for food in traditional religious ceremonies, which are part of a funerary or mortuary cycle, including memorial potlatches. If the event is a Koyukon or Gwich'in potlatch ceremony, prior notification by the hunter is not required. The other regulation is specific to Unit 25. This regulation allows for the harvest of Bull Moose for memorial potlatches and traditional cultural events in Unit 25(D) West. Therefore, for traditional cultural events other than funerary or mortuary potlatches, and outside of Unit 25(D) West, a special action request is needed to harvest moose or any other wildlife outside the regular season (CATG Technical Document 05-01).

The *2015 UAF Co-Management Symposium* in Fairbanks Alaska, titled “*Weaving Together Two Worlds*” is another example of attempts to bridge Traditional Knowledge from Tribal perspectives. This symposium created space for Agency representatives to share their ideas and perceptions. In his 2015 keynote address at the *UAF Co-Management Symposium*, former TCC president Jerry Isaac pointed out that identity, wellbeing and self-respect were very prevalent prior to Western contact and that these values were almost always abundant when Native people are involved in subsistence management. “These were the sacred laws that used to govern the relationship between man and animals. This is the spirituality of fish and game management- actions are

sacred” (Hobbs, Straus, Dean and Walker, 2015 P. 13). As an example of Traditional Knowledge, Isaac spoke of harvesting moose and the interconnectedness of human and animal spirits.

When a moose was harvested they would leave a piece of its heart where it died to tether them to mother earth. The spirit of the Native person is related to the moose spirit, all of these things are interconnected to hunting and game management (Jerry Isaac, Keynote Address, UAF Co-Management Symposium).

Of key importance is that in this concept of hunting, animals control the hunt (Berkes 1999: 80). In other words, the animal has agency in the process of hunting. The Koyukon is not the only tribe to conceptualize equal agency for hunter and prey; anthropologists studying with the Gwich'in and the Cree and some Inuit peoples have also documented the understanding of success in hunting not as an achievement to be proud of, but as a 'gift' to the respectful (Berkes 1999; Brower 2004; Feit 2004; Scott 1996; Wishart 2004).

Non-natives most often employ the verb 'to take' to describe hunting; this is the verb employed in Federal subsistence legislation: 'fish and wildlife resources taken for personal or family consumption' (US Fish and Wildlife Service (USFWS) 2006). But the Koyukon believe that hunters do not 'take' anything; instead, animals choose to give themselves to the hunter. The 'gift' is made as a result of the 'luck' of the hunter, and a hunter has luck when he has been respectful (Watson and Hunington, 2008).

Gwich'in and Koyukon Athabascan People of the Yukon Flats live in an isolated area of the United States where their Indigenous hunting and fishing practices, including the harvesting and sharing of fish and game, other resources, and the ceremonies which accompany these practices, provide for the physical, social, cultural, spiritual, and economic wellbeing and survival for healthy people and communities.

In the book *Keeper of the Animals*, authors Caduto, M. J., & Bruchac, J. (1997) illustrate how human and animal hunting relationships were between moose and man were conceptualized by the Cree-Subarctic People.

### How the People Hunted the Moose

(Cree-Subarctic)

One night, a family of moose was sitting in the lodge. As they sat around the fire, a strange thing happened. A pipe came floating in through the door. Sweet-smelling smoke came from the long pipe and it circled the lodge, passing close to each of the moose people. The old bull moose saw the pipe but said nothing, and it passed him by. The cow moose said nothing and it passed her by also. So it passed by each of the Moose People until it reached the youngest of the young bull moose near the door of the lodge.

“You have come to me,” he said to the pipe. Then he reached out and took the pipe and started to smoke it.

“My son,” said the old moose, “you have killed us. This is a pipe from the human beings. They are smoking this pipe now and asking for success on their hunt. Now, tomorrow, they will find us. Now, because you smoked their pipe, they will be able to get us.”

“I am not afraid,” said the young bull moose. “I can run faster than any of those people. They cannot catch me.”

But the old bull moose said nothing more.

When the morning came, the Moose People left their lodge. They went across the land, looking for food. But as soon as they reached the end of the forest, they caught the scent of the hunters. It was the time of year when there is a thin crust on the snow and moose found it's hard to move quickly.

“These human hunters will catch us,” said the old cow moose. “Their feet are feathered like those of the grouse. They can walk on top of the snow.”

Then the Moose People began to run as the hunters followed them. The young bull moose who had taken the pipe ran off from the others. He was still sure he could outrun the hunters. But the hunters were on snowshoes, and the young moose's feet sank into the snow. They followed him until he tired, and then they killed him. After they killed him, they thanked him for smoking their pipe and giving himself so they could survive. They treated his body with care, and they soothed his spirit.

That night, the young bull moose woke up in his lodge among his people. Next to his bed was a present given to him by the human hunters. He showed it to all of the others.

“You see,” he said. It's not a bad thing for me to accept the long pipe the human people sent to us. Those hunters treated me with respect, it is right for us to allow the human beings to catch us.”

And so it is to this day. Those hunters who show respect to the moose are always the ones who are successful when they hunt. The story of Hunter and Moose signifies there is a deeper connection and relationship between hunter and pray than merely killing

moose for subsistence purposes. A deeper relationship has always existed and has been documented in oral traditions and stories such the one above.

The Yukon Flats Cooperative Moose Management Plan recognizes the use of both Western scientific methods and traditional knowledge in assisting with management of moose populations in the Yukon Flats. Improved harvest reporting and monitoring are an important part of this plan.

Predator control has a long and controversial history in Alaska. The YFCMMP has a strategy to “increase the harvest of black bears and wolves to help increase moose survival rates while maintaining viable populations of predators” (YFCMMP, 2002 p. 16). Any predator control effort in Alaska must comply with applicable state and federal laws. This can create controversy when the Tribes want to increase predator control, but Federal Policies prohibit the Feds and the State in doing so. During one of my interviews, an elder discussed predator control from a tribal perspective as maintaining a healthy balance.

If you have a lot of predators that kill moose and caribou calves, those predators like black and brown bear, grizzlies and wolves. Wolf and bear denning was used as a predator management tool. Some people consider that to be cruel, but for their survival they had to do it. When they hunt black bears, it maintains a healthy population. If the bears don't get enough food some will starve. So, they used this management tool back and forth and they knew how to maintain a healthy population” --CATG Interview, 2017

The participant felt that there are many advantages of predator control, and this is what our people have done for years. They knew how to maintain (animal) populations.

When I spoke to USFWS personnel about this, their position seemed to differ, as they are responsible for a larger management scale of public interest. The purpose of



Alaska's refuges is to support balanced, healthy wildlife populations and their habitat. Even animals that some may see as inconvenient, like large carnivores, must be protected because they have a natural place in the ecosystem. For example, wolves, brown bears and other carnivores play a critical role in the ecosystem. They keep populations of other species healthy, and they help prevent problems like overgrazing and disease in regard to herds of wild deer, moose and caribou. These differing views are not always balanced in the co-management process because of contrasting priorities amongst wildlife users and managers.

The plan recognizes that the most effective way to gather relevant and accurate data on local harvest is through organizations such as CATG or tribal councils (YFCMMP, 2002). One of the major goals of the YFCMMP plan is to integrate scientific and traditional ecological knowledge and to develop programs to fill information needs. In previous years, CATG has coauthored several publications and technical reports that reflect the work of CATG in collecting harvest data on the refuge. The actions, guidelines and methods for the YFCMMP are as follows:

Table 5. Action Guidelines for the Yukon Flats Moose Management Plan

1. Develop an inventory of existing sources and scientific and traditional knowledge.
2. Develop an inventory of existing sources and scientific and traditional knowledge.
3. Use existing forums such as the Yukon Flats Fish and Game Advisory Committee and the Eastern Interior Regional Subsistence Advisory Council to promote consideration of scientific and traditional knowledge in management decision-making.
4. Use existing forums such as the Yukon Flats Fish and Game Advisory Committee and the Eastern Interior Regional Subsistence Advisory Council

to promote consideration of scientific and traditional knowledge in management decision-making.
5. Increase the use of trend count areas to monitor moose populations in key hunting areas near local communities.
6. Increase the use of trend count areas to monitor moose populations in key hunting areas near local communities.
7. Conduct a workshop on traditional ecological knowledge on the Yukon Flats.

### 9.3 Findings and Consideration:

CATG feels that community based research of harvest estimates are one of the most critical pieces of information available to agencies and organizations in developing management strategies for an area and animal population (CATG Traditional and Customary Harvest Technical Report, 2011). There have been successful attempts in the Yukon Flats to bridge the knowledge gap amongst the Tribes and Agencies, and to provide ample room for knowledge production. Ultimately, though, there continues to be room for improvement as far as this design principle being met.

## 10. National and Regional Policy Support for Collaborative Management Efforts

### 10.1 Definition:

Within this design principle, explicit support is needed for collaborative processes (Armitage et al., 2009). This can be expressed through state and federal legislation or land claim agreements (Armitage et al., 2009). Also, according Armitage et al. (2009), “consistent support across policy sectors will enhance the likelihood of success, encourage clear objectives, provision of resources, and the devolution of real power to

local actors and user groups” (pg. 101). Having support from National and Regional Policy is important for this design principle to ensure success in working partnerships.

#### 10.2 Analysis of Conditions:

In 2016, The U.S. Fish and Wildlife Service and representatives from Tribes across the country worked together to update the *Native American Policy* document which essentially provides a framework for government-to-government relationships and the United States’ trust responsibility to federally recognized Tribes. According to the U.S. Fish and Wildlife Service *Native American Policy* (2016):

The policy articulates the principles for interactions between the Service and tribal governments as they relate to shared interests in the conservation of fish, wildlife, and their habitats, which include Service lands and the protection of cultural resources that exist on Service lands.

The U.S. Government’s legal and trust relationship with tribal governments has set forth in the Constitution, treaties, statutes and court decisions serving as a foundation for interaction with the Tribes. Federal Indian Trust Responsibility is a legal obligation under which the United States “has charged itself with moral obligations of the highest responsibility and trust” toward Indian tribes (*Seminole Nation V. United States*, 1942). During an interview with me, a USFWS employee stated:

FWS recognizes the importance of the fish, wildlife, and other natural resources in the lives and cultures of Alaska Native people(s) and rural residents, and in the lives of all Alaskans, and we continue to recognize the subsistence uses of fish and wildlife and other renewable resources as a priority consumptive use on Federal lands in Alaska, which includes all National Wildlife Refuges in Alaska.  
--USFWS Agency Employee Interview, 2017.

Recognizing the significance of traditional and customary uses is critical for the continuation of this co-management agreement. That being said, one critical component of this design principle involves funding to carry forth the agreement.

### 10.3 Findings and Consideration:

There is room for growth within this design principle. As political and tribal leaders change, the funding to support co-management objectives can also be subject to change. Until funding becomes more secured and guaranteed for the co-management arrangement in the Yukon Flats, this design principle will remain only partially met.

### The Missing Principle: Respect for Sovereignty

In this section, I will focus on the importance of sovereignty and stewardship arrangements with Indigenous communities. What does sovereignty really mean for meaningful arrangements between indigenous groups and colonial governments?

Although I did not specifically bring up the term “sovereignty” in my interviews, some of my interview participants spoke about the concept at great length, demonstrating the importance of taking care of the land and animal relatives.

Sovereign is a hidden word that only exists when you take the action. Just do it. Self-government existed because of our smarter intelligent people and leaders. They realized what was taking place, what we needed, and to take back control over our unity. --CATG Elder Interview, 2017

One of my elder participants explained to me why Natural Resource Management is so important to Indian people. She explained this by telling me:

We respect that life and we practice that life, we honor that life. We are proud to be Gwich'in. For that reason, we take care of the environment and our relatives (Personal Communication, 2017).

She also explained to me the meaning of CATG's Gwich'in name, T'ee teraan'in (this is how we help ourselves), and later on I helped with the Indian name, T'ee teraan'in, meaning subsistence, or how we help ourselves. Future research could include a further in-depth discussion of how sovereignty impacts co-management. For thousands of years, Athabascan people in the Yukon Flats based their societies around relationships developing their own laws and stewardship practices. These traditional practices created intellectual and practical space for inclusion and adaptation, traditional practices matured over millennia through trial and error (CATG Bridging Yesterday with Tomorrow Report, 2016).

Effective co-management agreements amongst Tribal nations and agencies must include reverence for sovereignty. Sovereignty is important for co-management arrangements because it lays the foundation for how Tribes should be working with states and the federal government. The co-management framework that Armitage puts forward looks at two entities attempting to share power over management and often the entities are community-based groups. Successful co-management involving indigenous groups should look at the historical context and provide a path for was of reinstating sovereignty and self-determination. In the case of the co-management arrangement between CATG and FWS, it is a great start but clearly is not enough for the tribes to be able to accomplish true co-management or control. While the agreement does allow some room

for tribal participation and influence, ultimately the federal government maintains the control and it does not include a real framework for Alaska Native self-determination. Moving forward, CATG and the villages will need to decide how they are going to comply with FWS or work with or without FWS, how they are going to set their table, not simply hope for a seat at the table.

## CHAPTER 6: CONCLUSION

In Table 5, I have outlined a summary of the various ACM design principles and the degree to which they are met in the co-management arrangement for moose between CATG and USFWS. This includes funding levels. I selected the Armitage framework for my analysis as I felt it would be best suited for this particular case. The ten design principles are a good guideline for looking at positive co-management relationships. After my analysis however, I feel as though there are some major flaws within the framework. For example, the Armitage framework portrays co-management with a view that sharing of power and collaborating in management is a good thing, but to the Tribes co-management is already a compromise to their inherent sovereignty.

Co-management has been viewed from other perspectives for example, in his work Paul Nadasdy regards co-management as a farce (Nadasdy, 2004). Nadasdy argues that co-management always begins with a Western frame of reference so that Tribes must do the work to convert their ideas and visions into that Western format. As a result, Westerns entities maintain the ultimate power. Nadasdy (2004) argues that co-management arrangements focus on the idea of knowledge and property from Western constructs which is incompatible with Indigenous beliefs and practices regarding human-animal-land relations (p. 123). This creates complications because no matter how you think about co-management or adaptive management, it's a Western construct so it's always in the favor of the colonial agenda, whether conscious or sub-consciously.

Tribes believe that they should be the sole manager of moose on their lands and history shows that they were better stewards than the Western outsiders who did not know the region well. Tribes are not a stakeholder or other community entity, they are a sovereign nation, and the co-management discussion needs to move further to better accommodate Indigenous perspectives and rights.

The table shows that of the 10 design principles, 3 have been met, 1 has not been met, and 6 have only partially been met. This analysis reveals that the co-management arrangement as it was developed offers a lot of potential for success. Conversations with those involved reveal that the arrangement has had a number of successes over the years including: regulations that allow taking of moose for ceremonial Potlatch and community involvement in data collection. However, the majority of the principles remain partially met rather than fully met. This indicates that there is a lot more that the parties – particularly the FWS – must do to maintain the agreement and develop true co-management.

In many of the areas where the principle is partially met, it is the Tribes and CATG who have made the extra effort to achieve aspects of the principle whereas the USFWS and refuge staff has fallen short. For example, in relation to the provision of training and capacity building (7) and the openness to draw on a plurality of knowledge systems (9) CATG has made large strides. They have engaged in training activities related to Western Science and management and have worked to assist with scientific data collection for moose. They have accepted Western Science as a form of knowledge that is useful to moose management. On the other side, the USFWS has made fewer



gains. They have not sponsored trainings for their staff related to understanding Indigenous ways of knowing or Indigenous interests. They have, in some cases, incorporated Indigenous values into management regulations and frameworks, but their efforts to integrate diverse knowledge's and world-views could be improved.

The CATG has shown more effort in terms of building up commitment to a long-term institutional process (6) and including key leaders prepared to champion the process (8) in comparison to their federal agency counterparts. Uncertain funding and staff turnover with USFWS has been an issue with the AFA that creates great challenge. It should be noted that this framework should not be considered as definitive text on how to work with tribal communities, likewise with Federal and State Agency managers.

#### Summary Table of Armitage Design Principles and Findings

Table 6. Summary of Armitage Design Principles

Armitage Design Principle	Met? Y/N Partially	Description
<b>(1) well-defined resource systems</b>	<i>Partially Met</i>	<i>traversing landscapes and moose management regulations in rural Alaska</i> While the moose populations remain at low levels, moose management in the Yukon Flats does partially meet the criteria for a well-defined resource system. The AFA offers an opportunity for the Tribes and Agencies to work together to build mutual ground by encouraging local community engagement in moose management.
<b>(2)</b>		<i>alphabet soup: complexity of the resource and the systems</i>

Armitage Design Principle	Met? Y/N Partially	Description
<b>small-scale resource use</b>	<i>Partially Met</i>	In the Yukon Flats Alaska, there are numerous management entities across a large geographic area. With competing interests and institutional complexities that can complicate small-scale resource systems. This can create complexity for moose management, therefore the design principle is only partially met.
<b>(3) clear and identifiable set of social entities with shared interests</b>	<i>Partially Met</i>	<i>having no connection to place creates barriers for stakeholders</i> The distinct difference in values and priorities illustrate challenges of building linkages and trust in the Yukon Flats. Therefore, this design principle partially meets the ACM framework.
<b>(4) reasonably clear property rights</b>	<i>Not Met</i>	<i>bundles of rights, clearly defined property rights</i> While this ACM framework is applicable to the Yukon Flats, the design principle does not meet the criteria because property rights, access, and ownership of land and resources in the Yukon Flats continues to be debated.
<b>(5) adaptable portfolio of management measures</b>	<i>Met</i>	<i>adaptability of management measures</i> The design principle is met for the adaptability of management measures. The YFCMMP Plan has a special focus on hunter outreach and education. Participants in ACM must have flexibility to test and apply a diversity of management measures or tools to achieve desired outcomes.
<b>(6) commitment to a long-term</b>	<i>Partially Met</i>	<i>building bridges: in for the long haul</i> The design principle for the commitment of long term commitment is met. Interview participants demonstrated their significance of commitment to building a long term co management agreement in

Armitage Design Principle	Met? Y/N Partially	Description
<b>institutional process</b>		the Yukon Flats however funding remains uncertain leaving room for uncertainty.
<b>(7) Provision of training, capacity building</b>	<i>Partially Met</i>	<i>building capacity at all levels</i> There is room for improvement on the training of federal employees about cultural resource management and Alaska Native Knowledge. Discussed further in sect 9.
<b>(8) key leaders-individuals prepared to champion the process</b>	<i>Met</i>	<i>recognizing diversity in worldviews: making room for differences</i> As iterated throughout this section, key leaders to champion the process are critical for the success of ACM. This factor is achieved by leadership from CATG and the YFNWR. Continuous training will be needed as turnover happens, so long as there is leadership who carries the torch the design principle is met.
<b>(9) openness of participants to share and draw upon a plurality of knowledge systems and sources</b>	<i>Met</i>	<i>plurality of knowledge systems</i> There have been good attempts in the Yukon Flats to bridge the knowledge gap amongst the Tribes and Agencies to provide ample room for knowledge production, though there is still room for improvement this design principle is met.
<b>(10) collaborative management efforts</b>	<i>Partially Met</i>	<i>creating unity: collaborative in a good way</i> Until funding becomes more secured and guaranteed for the co-management arrangement in the Yukon Flats, this design principle will remain partially met.

Through my research it is apparent that the Athabascan people in the Yukon Flats continue to exercise their self-determination efforts for the protection of traditional and customary use practices. Indigenous populations in Alaska, or better known as Alaska Natives are under federal, state, corporation, and tribal jurisdictions that complicate management and co-management among these entities.

In this regard, harvesting subsistence foods not only provides nutritional, spiritual and cultural sustenance, economically it is also less expensive for many people. Documenting the knowledge held by elders who participated in the formation of the model was critical for understanding the vision of CATG in its inception. Such advocacy efforts are a strong expression of tribal sovereignty, though many complications still exist for Alaska Native People. While there is still a significant amount of improvement that could be done to improve the co-management relationship, it is important to keep in mind that these agreements are constantly changing and being negotiated so there could be room for reforms that improve the arrangement (Ross et. al, 2016).

The Armitage framework was useful in illustrating where there is room for improvement within the agreement. It is also important to keep a critical lens on this framework itself. The framework and the very goal of co-management can end up privileging a Western system – where Indigenous or community groups need to conform their knowledge and practices to Western standards. Until the Tribes in Alaska have full control to assert stewardship over their lands, true co-management is not met.

## Recommendations for Consideration

### Climate change and other future threats

This framework does not address climate change, which should be considered for future planning of the co-management agreement. To prepare for future climate-related threats, CATG and their federal agency partners should seek ways to anticipate the possible consequences of climate change on Alaska Native subsistence cultures and consider possible actions to manage those effects as possible. Doing so will require considerable adaptability on the part of Alaska Natives relative to their way of life.

### Strengthened education and outreach efforts

To strengthen support for and participation in co-management, CATG and their federal agency partners should continue to develop education and outreach projects related to traditional and customary use practices, TEK, and co-management. Such projects should focus on youth from grade school through college, hunters, their communities, scientists, and the general public. Although this is happening on a small scale, research suggests that:

use of culturally sensitive social science methodologies and exploration of language with communities might strengthen relationships and alleviate some of the challenges in the interdisciplinary nature of TEK studies, as well as cultural exchanges with Indigenous communities (Ramos, 2018).

There should also be education and training for federal agency employees who conduct work on the refuge.

### Traditional Ecological Knowledge

To enhance co-management efforts, CATG and their federal agency partners should continue utilizing and integrating TEK into all aspects of co-management (e.g., harvest monitoring, research, education and outreach) as appropriate. There have been great efforts of this in the past. Stevenson (1996) suggests that TEK studies should include ethics, belief and history about Indigenous peoples for wildlife management.

### Funding and support from the federal government

A 2013 report by Delgado, Beane, D'Arcy, Macy and White stated, "Lack of organizational capacity to effectively seek and secure funding is a significant problem, along with the general lack of understanding in foundations about Native issues and peoples" (page 7). The report also highlights that there are other issues that revolve around lack of adequate funding for Native peoples, such as: small population compared to other racial/ethnic groups and lack of data to make the case for funding. The lack of adequate funding and the corresponding low organizational capacity present the most pressing challenges, followed by community politics, historical trauma, expansive geographical areas that, in some cases, lack adequate road infrastructure, and a lack of meaningful data about the issues (NVR, 2013). Training support from the Federal Government could look like financial support to create a position of tribal community liaison. Essentially this position could be responsible for training federal and state employees who work in the refuges about the history of the place and Indigenous values

and worldviews. This would create space for listen and learning about Native communities, including issues, needs, and aspirations.

the Tribe when they have a direct relationship with a federal agency like that, it's what creates the power for a tribe. I keep telling the young leadership that, you continue to do that (work together) even with the projects that they bring to the village, take a sponsorship and you can make the decision of who can do it. – CATG Interview, 2017

As Tribal and federal agency leadership continues to evolve and grow in Interior Alaska, It is critical for continuation of working together to build capacity for the next generation of co-managers and stewards of the Yukon Flats.

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## APPENDIX

## Interview Questions:

*Semi Structured Interview Questions for CATG Employee/Community & Elder Participants*

- 1) Tell me what you know about the history of CATG
  - a. Why do you think CATG was formed?
  - b. What was your involvement?
- 2) What do you think the significance is of the formation of CATG?
- 3) What are some of the accomplishments of CATG?
- 4) What areas do you think CATG could continue to improve?
- 5) Why do you think CATG makes Natural Resource Management a priority?  
How does CATG approach Natural Res. Mgmt.
- 6) What do you know about the annual funding agreement with CATG and USFWS?  
Each year CATG negotiates with USFWS to compact services for the USFWS?
- 8) Why is the AFA important?  
How could it be improved?

*Semi Structured Interview Questions for USFWS Agency Participants*

- 1) How long have you lived and worked in Alaska for the National Wildlife Refuge?
- 2) What is the regulatory process land management in Interior Alaska?

3) FWS negotiates with CATG to compact services for the USFWS

What do you know about the annual funding agreement with CATG and FWS?

4) How is the agreement working?

- a. Why is the AFA important?
- b. How could it be improved?
- c. What are the accomplishments?

5) Do you think co-management between Gwich'in and State/Federal can work?

- a. Why or why not
- b. How would that relationship work?

6) What are some past and present management challenges?

- a. What has been successful?