CLIMATE CHANGE AND ITS IMPACT ON THE IñUPIAT OF POINT LAY, ALASKA: A CASE STUDY OF RESILIENCE

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A

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Abstract

This thesis examines resilience among the Point Lay Iñupiat in the context of climate change. Resilience is manifest in the ability of community members to maintain meaningful subsistence practices and activities despite ongoing changes in weather, ice, and resource conditions. Twenty-one Point Lay Iñupiat were interviewed for this thesis. Respondents were divided into three cohorts: youths (ages 18-29), adults (ages 30-49), and elders (ages 50-70+). Respondents shared changes in weather, ice, and resource conditions. Respondents also shared community concerns, including concerns not attributable to climate change. Received responses were sorted and compared by cohort to identify trends in weather, ice, and resource conditions, as well as to identify adaptive and maladaptive strategies for coping with climate change and other stressors impacting the community. Whether the community can maintain meaningful subsistence practices and activities if local changes in weather, ice, and resource conditions remain unchanged or intensify is also questioned.
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Chapter 1  Introduction

The Study

This thesis will investigate the manner in which climate change has impacted the sociocultural dimensions of subsistence patterns as practiced by Iñupiat residents in Point Lay. More specifically, this thesis is to examine how residents of Point Lay have established resilience as climate change has affected the acquisition, utilization, and mobilization of traditional ecological knowledge (TEK) in the community. Resilience is manifest in the ability of community members to maintain meaningful cultural patterns in the face of climate change. When referencing climate change, I am referring to a recent increase in global climatic anomalies that are at least partly anthropogenic in origin and attributable to an increase in the abundance of greenhouse gases in the atmosphere.

Interviews with Point Lay residents suggest that the community has established resilience through a number of adaptive strategies. These include, but are not necessarily limited to, changes in species harvest and distribution patterns, the resumption of bowhead whaling activities (2008), and ongoing negotiations with outside entities regarding local and regional development projects. Consideration will also be given to the question of to what extent residents of Point Lay will be able to maintain their resilience if seasonal adjustments are no longer effective and a threshold is breached.

Residents of Point Lay rely on TEK for most subsistence practices. Subsistence organizes and informs many aspects of everyday life in Point Lay; hence, it is integral to sustaining relations among community members. Subsistence is also at the core of traditional Iñupiat values, and those who attain proficiency as subsistence harvesters or processors may gain considerable status in contemporary Iñupiat society. Proficiency in subsistence practices is also a mark of personal pride and an essential component of Iñupiat identity. It should therefore be recognized that any diminution in the ability of the Iñupiat to participate in subsistence practices constitutes a challenge to the continuation of Iñupiat lifeways – a challenge which the Iñupiat have addressed not only by altering their subsistence practices, but also by drawing on the collective power inherent in a number of local and regional entities and organizations.
Purpose of the Study

Rural Alaska Natives are well positioned for understanding the local effects of climate change because familiarity, intimacy, and respect for the local environment are requirements for successful subsistence harvests. The practice of engaging in subsistence on a regular basis for most of one’s life provides detailed knowledge of a specific locale which is typically more extensive and more nuanced than that which conventional science is capable of obtaining. This intimate knowledge of the environment has allowed Alaska Natives to live in a sustainable and integrative manner with their environment for many generations, and has provided a foundation of experience from which Alaska Natives may speak articulately about the effects of climate change they have witnessed in their communities.

The purpose of this study is to examine one specific instance of how climate change is affecting circumpolar communities. Given the complex range of issues circumpolar communities face today, this thesis takes a holistic view of change in Point Lay. Climate change is not the only issue affecting Point Lay residents; as will become clear later in this thesis, climate change is one of several issues that threaten to destabilize the community. In addition to climate change, Point Lay residents presently face significant threats from a high and increasing cost of subsistence, culture loss, and regional development projects. Point Lay residents have established a number of practices that have so far allowed them to remain resilient in the face of these stressors, but there are also other factors at play that militate against resilience.

In the context of this thesis, I define resilience as the ability of Point Lay residents to maintain a subsistence mode of existence which is their preferred mode of existence. As will be shown, Point Lay residents have developed a wide range of strategies for sustaining meaningful cultural patterns in their environment. Point Lay residents demonstrate resilience by maintaining a subsistence mode of existence as long as the variables that affect subsistence (e.g., subsistence harvest levels, climate conditions, cultural traditions) that affect subsistence stay within certain ranges. For example, sustained change of one variable in one direction (in this case, warming of the Arctic)
may decrease the population of one subsistence species but increase the abundance of another subsistence species. Local residents may adapt by harvesting more of the subsistence species that has grown in abundance, even though they may prefer this species less. There is a range of climate conditions that allow the subsistence mode of existence to flourish, though incremental change within the range may place increasing levels of stress on the community as it is forced to adapt to new conditions. The central question is at what point will a threshold be breached (Langdon 1995)? If, for example, the Arctic warms too much and too many key subsistence species disappear, at what point does the entire subsistence mode of existence collapse? Alternatively, if the high and increasing cost of living makes subsistence inaccessible to all but the most affluent members of the community, or if continued modernization eventually causes the mode of existence to lose its appeal for village youth, the possibility that an entire mode of existence could become untenable comes into play.

In order to capture changes in adaptive strategies over the past 30 plus years, this study is organized around three age cohorts: youth (18-29), adult (30-49), and elder (50-70+). Each cohort corresponds with a duration of observed changes (short, medium, and long term) that, taken together, provide a high level overview of observed changes spanning half a century. As will be demonstrated in this thesis, what is normal for today’s youth is often radically different from the norms that were in place when village elders were young themselves.

Furthermore, limited research exists on the effects of climate change in Point Lay, both in terms of harvest activities and in terms of sociocultural consequences. Other villages in northwestern Alaska such as Kivalina and Shishmaref have received more attention due to the serious threat of erosion these communities now face due to climate change, but existing studies have mainly focused on the challenges associated with moving these villages or protecting them from further erosion (Mason 1996, US Army Corps of Engineers 2006). Given the challenges Point Lay residents presently face, and
given the potential for offshore oil and gas development in the Chukchi Sea in the near future (USDOI MMS 2007, USDOI MMS 2008), there is a critical need for updated subsistence information in Point Lay.

Climate Change in the Far North

Today, it is widely accepted in the scientific community that climate changes over the past century have been partially, if not mostly, anthropogenic in origin. Evidence for this claim rests primarily on the observation that an increase in greenhouse gas emissions from the combustion of fossil fuels over the previous century correlate with an increase in global mean temperature over the same period. Correlation does not imply causation, but the strength of evidence supporting an increase in global mean temperature and an anthropogenic origin for this change is robust and extends across multiple disciplines (Jeffries et al. 2012).

Climate modeling suggests that the Arctic region will experience the greatest warming of any region on the planet over the course of the 21st century (Huntington and Weller 2005, Shulski and Wendler 2007). Significant impacts affecting the Arctic include not only an increase in average temperature and precipitation levels across the region, but also a decrease in sea ice thickness and extent, an increase in storm surges, and added stress to terrestrial and aquatic wildlife to the point of endangerment in some cases (Shulski and Wendler 2007). Coastal areas, already vulnerable to storms due to diminished levels of protective sea ice, may erode or become inundated as sea levels rise (Loeng et al. 2005). The Arctic is also home to some of the most vulnerable plant and animal species on the planet. The limited growing season, combined with the specialized nature of many species adapted to the Arctic environment, mean that small changes in climate can have significant effects. As the planet warms, it is possible that the tundra biome will shrink as the boreal forest creeps northward. Tundra adapted species are likely to come under increased stress, though the expansion of some biomes may increase the range of other species used for subsistence (Callaghan et al. 2005).
Alaska, because of its high latitude, has experienced some of the greatest changes in temperature and precipitation over the past century of any location in the world. Climate data show a 5°F-7°F (3°C-4°C) increase in temperature and a 30% increase in precipitation across much of the state over the last century, with the greatest fluctuations occurring in the Arctic and interior regions (Callaway 2007). Figure 1 shows the mean annual temperature departure for the period 1949 through 2013. There is a noticeable period from 1975 to 1979 where the mean yearly temperature increased by approximately 3°F; mean yearly temperatures have remained elevated since. Coastal communities in western Alaska are particularly vulnerable to climate change due to their heavy dependence on sea ice for community protection and marine mammal habitat (Callaway 1998, Sedinger et al. 1997). Loss of sea ice has exacerbated coastal erosion, reduced marine mammal habitat, increased boating hazards, increased boating costs, and reduced

![Figure 1: Mean Annual Temperature Departure for Alaska (1949-2013)](Graph courtesy of the Alaska Climate Research Center)
marine mammal harvests (Nuttall et al. 2005). These effects, in turn, have affected the ability of local residents to draw on the predictive power of TEK for safe and successful subsistence harvests (Callaway 2007, Henshaw 2009). When the residents of a community cannot engage in subsistence activities to a level sufficient to meet its needs, their ability to sustain meaningful social relationships and cultural patterns is diminished (Huntington and Weller 2005).

Within the last 15 years, researchers have undertaken a number of significant studies in Indigenous Arctic communities pertaining to climate change. These studies have generally been of two types. Either they have attempted to describe the impact of climate change on Indigenous Arctic communities, or they have looked at the ways that Indigenous perspectives and Indigenous knowledge can complement western science. The anthology “The World Is Faster Now” (Krupnik and Jolly 2002) was an early volume that included studies of both types from around the Arctic. These studies showed Arctic communities grappling with changes attributed to climate change such as more difficult travel across the land, more frequent accidents, dried up lakes and rivers, poor snow conditions, and poor vegetation growth. These and other changes have disrupted subsistence activities, and in some cases have made it difficult for communities to rely upon the TEK they have acquired over many decades of close contact with their environments (Fox 2002).

At the same time, these studies also demonstrated how TEK is adding new dimensions to climate change studies. TEK, because it is highly localized, developed over a long time, and intimately tied to local lifeways, typically focuses on a different set of variables than climate change studies that are rooted in western science. For example, one study found that Eskimo epistemologies emphasize local knowledge and specific statements rather than the global perspective of most scientists (Fox 2002). Another study found that Native observations were organized around a few factors such as wind, currents, and ice movement. Native terminology for weather conditions and local phenomena were found to be far more precise and generated superior predictions compared to western models (Krupnik 2002).
More recent studies have started to explore the natural world through the social and cultural perspectives of Indigenous people. The anthology “SIKU: Knowing Our Ice: Documenting Inuit Sea Ice Knowledge and Use” (Krupnik et al. 2010) contains several studies that document how sea ice impacts the social and internal lives of the people who encounter it daily through their customs, stories and memories. “Ellavut: Our Yup’ik World and Weather” (Fienup-Riordan and Rearden 2012) is one of the newest additions to this genre. In it, Yup’ik elders express their concern that young people do not have knowledge of ella, a term with many meanings that encompasses the natural world but also has significant spiritual and sentient dimensions as well (Fienup-Riordan and Rearden 2012). The volume is as much a guide written by elders for young people about what it means to be Yup’ik and why this is important, as it is a record of the changes Yup’ik elders have observed in their environment over their lifetimes.

Community Overview

Nearly 10,000 people, most of whom are Iñupiat Eskimo, reside in Alaska’s North Slope Borough (US Census Bureau 2011). The borough encompasses the entire Arctic coastal plain, the northern foothills of the Brooks Range, and many of its higher peaks. The population is spread across eight communities in an area slightly larger than the state of Utah. Nearly half the population resides in the administrative center Barrow, with the remainder living in one of seven villages.

The village of Point Lay is approximately 150 miles southwest of Barrow on the coast of the Chukchi Sea. The village has around 250 residents, nearly all of whom are Iñupiat Eskimos. The Iñupiat have been using the Point Lay area since before the historical period, although residency patterns have fluctuated over time. The current village site has been inhabited by a diverse, multi-family village since the 1970s.

Residents of Point Lay participate in the subsistence harvest of marine mammals such as beluga whales, bowhead whales, walruses and seals; terrestrial mammals with an

1Despite the centrality of bowhead whaling to life in North Slope coastal Iñupiat villages, residents of Point Lay have not always had access to bowhead whales in Point Lay to meet their annual subsistence needs. The Alaska Eskimo Whaling Commission granted Point Lay a bowhead whale quota in 2007 (SRB&A
emphasis on caribou; waterfowl and upland birds; several anadromous and freshwater fish species; and plants and berries (Braund and Burnham 1984; Impact Assessment 1989; Pedersen 1979; Pedersen 1987). Subsistence harvests provide residents with a renewable supply of fresh, nutritious, emotionally satisfying, culturally meaningful, and spiritually nourishing food. In addition, subsistence activities provide residents with frequent opportunities to strengthen social ties, pass on traditional knowledge to youth, sustain their relationship with the local environment, and reaffirm their identity as Iñupiat through collective hunting and harvest distribution activities. Subsistence thus forms the foundation of community life and is best understood as a mode of existence.

Like all contemporary Alaska Native villages, Point Lay has a mixed cash-subsistence economy. Residents must acquire cash, in most cases by selling their labor in the marketplace, to obtain the equipment necessary to participate in subsistence activities. Motorized aluminum skiffs, snowmachines, and the fuel to operate them, firearms and ammunition, storage containers to keep harvested foods fresh, and technologies to aid in hunting success and safety all require cash outlays for their initial purchase and for upkeep. Since few of their traditional equivalents are in use today, either because the knowledge is lost or the time inputs to create them are too great given the necessity of working to provide for basics such as housing, residents must participate in the labor market to maintain their subsistence traditions.

Organization of the Thesis

The remaining chapters of this thesis provide additional information on the community of Point Lay and its environs, a presentation of the data, and a detailed analysis of study findings.

Chapter 2 explains the theoretical underpinnings and fieldwork methods of this thesis. The chapter begins with an overview of political ecology and socioeconomic

2008) and the village harvested its first bowhead whale in 70 years in 2009. The reinstatement of bowhead whaling in 2007 has allowed Point Lay residents to reclaim the annual bowhead whale harvest and fulfill this activity so central to Iñupiat life.
systems studies, the two fields that informed the development of key thesis questions and the analysis of my results. The chapter includes an exposition on the terms “traditional ecological knowledge” and “subsistence,” and explains the rise of the mixed cash-subistence economy, the economic system that is predominant in rural Alaska today. The chapter ends with a narrative of fieldwork undertaken for the thesis, as well as a description of field and analysis methods.

Chapter 3 is an overview of Point Lay’s physical and biological environments. Beginning with a discussion of local geography, the chapter moves on to an overview of local weather, ocean, and ice conditions. The chapter also contains a section on the biological environment, with particular emphasis given to key subsistence species.

Chapter 4 is a detailed description of the community of Point Lay. The chapter opens with a summary of the community’s history and an overview of the community as it is today. The chapter moves on to a discussion of important cultural features—especially those that tie in with subsistence. Special attention is given to subsistence, including a summary of Point Lay’s seasonal subsistence round, a discussion of the important institution of whaling, and a discussion of important subsistence-based community celebrations. The chapter also includes a discussion of important community institutions and organizations and the role they play in structuring community life.

Chapters 5, 6, and 7 parallel the interview protocol included in Appendix A; responses within each section of the interview protocol are organized by cohort. Chapter 5 focuses on weather and ice conditions, both as they were when respondents were first becoming familiar with their local environment, and today. Chapter 6 provides an overview of subsistence practices, past and present, for each of the major subsistence species. The purpose of chapter 6 is to explore how subsistence patterns have changed over the past several decades in response to climate changes and other stressors. For chapter 7, respondents were asked to share any concerns they had about the long term well-being of Point Lay. Although the main topic of this thesis is climate change, other community concerns are included to make it easier to see how climate change fits into a larger nexus of stressors affecting the community.
Chapter 8 is divided into two subsections, and contains an overview of major study findings. The first section of the chapter is a synopsis of reported changes in weather, ice, and resource conditions. The next section is a summary of factors identified during the interviews that contribute to and undermine community resilience. Chapter 9 is the conclusion to this thesis, and considers the extent to which the community can support a subsistence lifestyle for most of its members if the major concerns summarized in Chapter 8 stay in place or grow in intensity.
Chapter 2  Theory and Methods

This chapter is subdivided into six sections. The first two sections, socioecological systems and political ecology, provide an overview of the orienting framework of this thesis. The next section, traditional ecological knowledge (TEK), expands on and operationalizes this key term. The section on TEK explains the importance of TEK to Alaska Native subsistence practices, and explores the link between TEK and resilience in a changing environment. There are two sections on subsistence. The first section summarizes the history of the term as it has been used in Alaska, particularly in the context of Alaska Natives’ struggles for subsistence rights, and the second section provides an overview of the mixed cash-subsistence economy. The final section is a narrative summary of this study from topic idea to finished product.

Political Ecology

The purpose of this section is to provide an overview of political ecology, which is one component of the theoretical foundation of this thesis. Political ecology is a research framework that focuses on the interplay of ecological, political, and economic influences on human populations. More specifically, political ecology seeks to understand how political institutions and their policies engage with environmental processes, and how these policies are subsequently responded to and channeled by cultural values and orientations. While not exclusive to anthropology, anthropologists have participated in the development of political ecology by drawing points of departure into its antecedents, cultural ecology and political economy.

To understand political ecology, it is first necessary to examine how it developed from cultural ecology. Cultural ecology, as the name suggests, emerged as a refinement of earlier attempts to establish a causative link between environment and culture. Before the development of cultural ecology, various forms of determinism dominated explanations of culture change, with each assuming a priori, on premises later proven to be false, that environment directly determines culture (see Harris 1966). This crude materialism, as critics later came to call it, spurred a backlash that deemphasized the
Anthropologist Julian Steward (1955) is generally regarded as the founder of cultural ecology. In *Theory of Culture Change: The Methodology of Multilinear Evolution*, Steward set forth an argument rejecting the strict environmental determinism of his predecessors while preserving a substantial role for the environment in explaining culture change. For Steward, the environment provided a set of parameters that limited or encouraged features of what he termed the “culture core” – the set of cultural features, such as basic economic arrangements, most closely aligned with adapting to local environmental conditions. Steward (1955) further argued that features less dependent on the environment (and therefore farther removed from the culture core) were more malleable and therefore more amenable to cultural innovation and differentiation.

In *Pigs for the Ancestors: Ritual in the Ecology of a New Guinea People*, Roy Rappaport (1968) retained Steward’s functionalist approach to cultural ecology but expanded on it by considering extralocal and symbolic factors in his analysis of the Tsembaga Maring’s *kaiko* ritual. According to Rappaport, the *kaiko*, a ritual involving pig sacrifice, not only represents a symbolic relationship between the Tsembaga and their environment, but also functions as a “homeostatic mechanism” that “maintain[s] the values of a number of variables within ‘goal ranges.’” For example, the *kaiko* ensures that the Tsembaga use the land in a sustainable way, it regulates warfare and trade, it redistributes local surpluses of pork, and it assures that everyone has enough protein in their diet (Rappaport 1968:224). Although Stewart’s and Rappaport’s models provided an explanation for a problem that had led to growing skepticism of determinism, namely, the existence of multiple cultural forms given a similar environment, they had multiple major shortcomings. First, they retained the materialist outlook of their antecedents by giving material circumstances primacy in their models. Humans were treated the same as other elements of the local ecosystem. Second, they failed to incorporate the time dimension in their analyses, and so missed historically significant changes that might have added depth to their studies. Third, they missed opportunities to link the local
systems they studied to regional and global systems, and so failed to consider external political and economic forces that were impacting the community at this time.

By the late 1960s, few, if any communities remained socially, politically, or economically isolated from the rest of the world. Cultural ecology came under criticism from more politically-oriented researchers for, in their view, failing to consider the diminishing isolation of communities from transnational political and economic forces. In a brief but much-cited article published in 1972, anthropologist Eric Wolf introduced the term political ecology to refer to a new synthesis of cultural ecology and political economy. Wolf’s core argument was that any analysis of culture-environment interactions must also consider external political factors. While conducting ethnographic research in a small village in the Swiss Alps, Wolf observed that villagers mediated between “two sets of ambiguous and often contradictory rules”: the political and the ecological (Wolf 1972:201). Wolf found that distant political structures or entities influenced the manner in which rural villagers used land and allocated resources. The successful villager had to not only be aware of local variations in climate and soil quality, but also attuned to who controlled the resources in the community in order to generate successful long-term strategies for survival (Wolf 1982).

Wolf’s attentiveness to political and economic factors in his analysis came at a time when Marxism was gaining prominence in cultural anthropology. Development theory had been the dominant economic theory in the previous decade, but its assumption that cultures must abandon practices that prevent their integration with the global economy before developing the capacity to ameliorate low levels of income, education, and life expectancy spurred a number of challenges. World systems theory (Wallerstein 1974), the most prominent challenge of the 1970s, examined the manner in which economically developed countries in the “core” exploit less developed areas on the “periphery.” According to world systems theory, core nations maintain their economic strength over peripheral areas by strategically deploying their large capital reserves to structure unbalanced exchange relations. Core nations use capital to gain access to areas where people have only their labor to sell while reserving more specialized, skill-
intensive, and remunerative tasks for themselves. A third region, the “semi-periphery,” consists of locations that display attributes of both the core and the periphery. These locations may be former peripheral areas on the rise or former core areas that no longer control large capital reserves. Areas in the semi-periphery act as specialized intermediaries the core has assigned politically sensitive or unpleasant tasks, thereby deflecting tension between the core and periphery to themselves (Greenberg and Park 1994, Wallerstein 1974).

World systems theory suggested only a limited ecological role in the development of core regions, and instead gave much greater weight to political and economic factors (Wallerstein 1974:349). Although world systems theory would undergo many refinements in subsequent years, its influence on political ecology was significant enough to shift the focus of political ecology toward issues of power, access, and control. As the role of the environment receded into the background, political ecologists increasingly began to examine the manner in which political and economic forces disrupt and transform human-environment relationships. This new emphasis on the political in political ecology eventually gave rise to a multiplicity of research agendas that examined issues such as land degradation, environmental access and control, conservation, and social movements – agendas which continue to be the major themes of political ecology today (Forsyth 2003, Robbins 2004).

At the same time political ecology was undergoing its initial rapid expansion, scholars aligned with two intellectual developments—critical theory and postmodernism—began to ask serious questions about the effect of power on the creation of meaning and the legitimacy of knowledge claims. Political ecologists grappling with the effects of decolonization and market expansion drew upon the emergent fields of postmodernism, critical theory and, later, postcolonialist studies to address issues of power, dominance, and control, especially as these had shaped the West’s engagement with the rest of the world. More specifically, they drew upon these fields to examine how power is mobilized to actualize capitalist objectives, and urged the social sciences to
engage with the major political issues of the day: persistent global inequality and colonialism’s legacy.

Postmodernism, a broad and sometimes imprecise term, refers to a movement that emerged out of literary criticism, art, and architecture in the 1970s and 1980s. Postmodernism began as a reaction against modernism and other contemporaneous derivations of the enlightenment project, and quickly spread to the social sciences. Leading postmodern critics such as Michel Foucault and Jacques Derrida denounced the social sciences for failing to grapple sufficiently with some of the major political issues of the day. These critics challenged the basis of western knowledge claims to a value-free, objective vantage point, particularly in the sciences, by opening the possibility that they may be built on nothing more than unchallenged assumptions and are fundamentally social constructions by those with resources and power. They also argued that the social sciences had acted as tools of repression and domination, and therefore constituted a major force instrumental in maintaining the status quo.

Critical theory started as a reaction against logical positivism. The core argument of critical theory is that knowledge and science are inseparable from the political atmosphere within which they are practiced. A critical political ecology, therefore, might consist of an examination of the politics behind environmental explanations to political ecological questions. One who pursues a critical approach to political ecology is thus likely to start from an explicitly political position that drives his or her research agenda. At the very least, critical political ecology requires the researcher to be attuned to the politics influencing his or her research. For the critical political ecologist, so-called neutral or apolitical science is either irresponsible science or disingenuous science, and may ultimately be impossible.

The French sociologist and anthropologist Pierre Bourdieu in many ways exemplified the paradigm shift in anthropology that was mostly complete by the 1990s. Bourdieu drew heavily from postmodernism when he developed his most influential ideas: practice theory and the forms of capital. The core idea of practice theory is that all of us operate in certain fields (e.g., bureaucracy, academia, organized religion, politics),
and over time we come to internalize our position in the field so deeply that it becomes our *habitus*, or typical way of acting in the field that serves to maintain our position in it without us even being conscious of what we are doing (Bourdieu 1997). Bourdieu also expanded the economic term “capital” to explore how non-economic attributes a person or a group possesses can exert a profound yet invisible influence at the economic level (Bourdieu 1986). Bourdieu believed strongly in always being aware of his own position in society when undertaking research, and this trait led him to take on activist and public intellectual roles throughout his adult life.

It is worth discussing Bourdieu’s use of the term “capital” at length because his concepts are relevant to this thesis. Bourdieu’s species of capital expands the concept of monetary capital to include three basic types: economic, social, and cultural. All three types of capital are interchangeable with one another under certain circumstances, but conversion from one type to another comes at a cost. Economic capital is best thought of as economic resources, and consists of various assets, all of which are commonly considered or easily convertible into money. Cultural capital, broadly defined, consists of mastery over certain bodies of knowledge that confer high status. Cultural capital may be embodied, i.e., manifest in one’s posture, poise, or manner of speaking such that they communicate that their bearer is educated. Objectified cultural capital consists of objects such as books, paintings, and scientific instruments, all of which the bearer must understand how to read or know how to operate to realize gains from the capital. Institutionalized cultural capital consists of formally recognized credentials that standardize and legitimize accumulated cultural capital, creating the impression in the marketplace that they are fungible and thus facilitating their exchange for economic capital. Social capital accrues from being a member of a group. The group may be simply a family or family name, it may be membership in a voluntary group, or it may be as broad as being a member of a nation. In all cases, social capital imposes rules, regulations, and obligations upon its members to foster a shared group identity. In exchange, membership in the group confers protection and prestige which individual
members can use to leverage the economic and cultural capital that they already possess (Bourdieu 1986).

At the turn of the new century, research agendas in political ecology were still firmly at the nexus of political, ecological, and economic influences on human populations, but they had grown far more ecumenical in their approach to research questions. Political ecology’s Marxist heritage now provided it with an awareness of economic inequalities. Postmodernism’s derivations and manifestations, especially those influential in feminist, critical, and postcolonialist theory, now fostered an increased awareness in political ecology of gender, ethnicity, and the ongoing legacy of colonialism. Today, there is growing recognition in political ecology of how these factors enable or limit access to resources, modify human engagement with the environment, and govern the production of both traditional and scientific ecological knowledge.

Socioecological Systems

The second component of this thesis’s orienting framework is socioecological system studies. A socioecological system can be described as a "complex adaptive structure" (Abel and Stepp 2003) that consists of the shared physical, ecological and social processes that shape a particular locale (Chapin et al. 2009). The key insight of socioecological studies is the recognition that human and natural systems are linked in such a manner that changes in one system will have effects on the other system. Humans depend on their environment to meet most of their needs, be they material, spiritual, or otherwise, and the environment responds and adapts to human activities in turn. Though humans have always been a force of change in whatever environment we have inhabited, it has only been in the last 200 years that humans have begun to modify the environment on a global scale. Humans are now an integral part of every ecosystem on the planet. This section will provide an overview of socioecological system studies as it pertains to anthropology, and then will apply the principles of socioecological system studies to this thesis.
Socioecological system studies, as the name suggests, seeks to understand human-environment patterns of interaction as systems. A system, in the most general sense, is set of interlocking components that influence one another through various means such as inputs, outputs, and feedback loops. Cybernetics and thermodynamics form the original foundation of socioecological system studies, but our understanding of how systems behave has evolved over time. Initially it was assumed that systems are self-regulating and always tend toward a single equilibrative state; the subsequent development of chaos theory and complex adaptive systems theory demonstrated that complex systems exhibit a much wider range of behavior than was initially thought. Anthropologist Conrad Kottak synthesized these new insights with parallel developments in political ecology into what he termed the “new ecological anthropology” (Kottak 1999). Core components of the new ecological anthropology included the incorporation and integration of multiple scales of analysis (including national and international scales, which had not been fully incorporated into early cultural ecological studies), an emphasis on political and economic forces, and a shift toward looking at human-environment systems as multicomponent interaction networks. This synthesis is the foundation upon which contemporary socioecological system studies is built.

Key insights of contemporary socioecological system studies include the following: first, small perturbations may have significant effects on the system as a whole. Second, the line from cause to effect is not always linear, nor is the magnitude of a single cause’s impact always the same from instance to instance. Third, there may be multiple points of stability in any given system. Fourth, a heavy shock to a system may abruptly transform its entire structure in such a way that it no longer retains its former shape. The new model recognizes that the various components of the system influence one another in varying and sometimes unpredictable ways. Even more importantly, the new model recognizes that the points of stability in the system are themselves constantly changing. The strength of this model is that it explains how a system can remain resilient in the face of significant and sustained stressors, but can also undergo abrupt and catastrophic change if a threshold is breached (Holling et al. 2002).
Two central concepts in socioecological system studies are *threshold* and *regime shift*. At a time when humanity’s impact on the planet is rapidly increasing due to global population growth, resource exploitation, and environmental degradation, there is rising concern that these changes will reach a threshold and tip one of earth’s systems out of balance in such a way that the system will not be able to recover its former state. The sustained increase in atmospheric greenhouse gases over the past century is one such input that appears to be rapidly changing many of the planet’s local climates. There is concern, for example, that a completely melted polar ice cap may lower the albedo of the Arctic Ocean to the point that sea ice will no longer form so easily in the winter, thus increasing the likelihood that the Arctic will eventually switch to being ice-free in the summers. A threshold is a point that, once breached, causes an abrupt change in the structure of the system as it rapidly tries to stabilize in a new state. This new point of stability is termed a regime shift (Chapin et al. 2009).

On a small scale, socioecological models have brought insight into how populations sustain their local environments so that resources remain available indefinitely, assuming there are no macro scale disturbances to the local socioecological system. This expertise consists of a set of social and cultural practices that protect habitat, sustain biodiversity, slow degradation, permit necessary disturbance, and allow for regeneration after disturbance (Berkes and Folke 2002). In the case of the North Slope Iñupiat, for example, this expertise is manifest in the close identification of the Iñupiat with the bowhead whale, a practice which symbolically binds both in a symbiotic relationship that ensures the stewardship of this important species. This practice and others like it form the basis of what is commonly called Traditional Ecological Knowledge (TEK), a term which will be discussed at length in the next section. TEK is also an important component of resilience, which in the context of socioecological studies means the ability to “respond to and shape change in ways that both sustain and develop the same fundamental function, structure, identity, and feedbacks” in the socioecological system (Chapin et al. 2009:5).
Socioecological systems simultaneously operate on multiple scales. The scale may be as small as a household and its immediate surroundings, or as large as the entire planet. All socioecological systems are open systems: changes at one scale typically have an impact at other scales. The research question or topic determines the scale to be used in a study, though it should be recognized that most systems also respond to processes occurring outside the scale that is chosen (Chapin et al. 2009).

For the purpose of this investigation, the socioecological system of Point Lay includes an area of the Chukchi Sea coast whose boundaries roughly correspond to the region discussed in the “Physical Environment” section of Chapter 3. This area is small enough that it shares many of the same topographical features, as well as the same climate year round. Point Lay is the only community in this area, and nearly all subsistence trips that originate in Point Lay are confined to this area. Even though it shares many of its social and cultural attributes with other North Slope villages, Point Lay's unique location near the middle of Kasegaluk Lagoon mean that land use patterns here have unique attributes that are found nowhere else on the North Slope. This area also includes the locations of the development projects that are having or are likely to have the greatest impact on the community.

Point Lay residents have significant control over the social and cultural components of this socioecological system, but only limited control over its ecological components. Climate change, for example, is a global phenomenon dependent on a complex set of variables operating at a macro scale, some of which are not yet fully understood. It is impossible for Point Lay residents to influence the trajectory of climate change at the local level; to sustain resilience, Point Lay residents must choose where to apply inputs from the social and cultural domains to adapt to environmental changes which they cannot directly control. As I will demonstrate, Point Lay residents have developed a number of strategies that optimize possible outcomes for their community given present trajectories.
Traditional Ecological Knowledge

*Traditional Ecological Knowledge* is knowledge about the local environment that is conjoined with the social and cultural setting that gave rise to it. Ecologist Fikret Berkes, a leading TEK researcher, has characterized TEK as “a cumulative body of knowledge and beliefs, evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment” (Berkes and Folke 2002:123). Unlike western science and government management regimes which typically dichotomize nature and culture, TEK tends toward a more holistic view of the local environment. For example, TEK may include narratives that transform points across the landscape into places of social memory or shared experience. TEK may also consist of place names that communicate information about good places for subsistence harvests, places of historical importance, or places of spiritual importance (Cruikshank 2005).

Advocates of TEK have pointed out that it can provide improvements to scientific research by providing additional information, more accurate information, or an entirely new framework through which to view the environment. TEK thus has the potential to provide a perspective that contrasts with the positivism and reductionism of much western science (Huntington 2000). While not all segments of the scientific community have embraced TEK as a knowledge system that is separate but equal to western science, growing recognition of TEK’s value in the scientific community has allowed some Indigenous groups to successfully contest claims exclusively derived from western science.

TEK has also gained prominence due to the perceived complementary role it plays to western science in co-management schemes. Co-management schemes are intended to strike a balance between local needs for self-determination and governmental worries that a resource is not being well managed (Pinkerton 1989). Advocates of co-management schemes claim that they empower local communities and are more responsive to local environmental conditions because they allow for the incorporation of TEK into management decisions.
One of the most successful integrations of TEK and political mobilization in Alaska was the reaction of the Iñupiat to the International Whaling Commission’s (IWC) decision to ban Iñupiat bowhead whaling in 1977. The IWC called for the ban based on estimates showing that bowhead populations were in serious decline at the same time that Iñupiat strikes and harvests were rapidly rising. The Iñupiat responded by founding the Alaska Eskimo Whaling Commission (AEWC). The Iñupiat used the AEWC to conduct their own research regarding bowhead whale populations. Their research, grounded in TEK, successfully demonstrated that the bowhead population was much higher than the IWC’s data indicated. Based on the AEWC’s data, the Iñupiat were able to develop a quota based co-management scheme with the National Oceanic and Atmospheric Association (NOAA) whereby NOAA delegated management and administrative functions to the AEWC (Huntington 1989).

TEK’s role in scientific research and co-management schemes has not without its detractors, however. Critics have pointed out that co-management schemes risk removing the context that gave rise to TEK in the first place by reducing it to just another form of technical knowledge and subsuming it into state management structures (Cruikshank 2001, Nadasdy 2005). When TEK is incorporated into scientific studies or co-management schemes, especially when it is coded into fragmented data points or translated into English, there is a danger that TEK will be reduced to just another form of data (Cruikshank 1998, 2005). Related concerns include the effect of cultural erosion, introduced scientific terminology, and the hegemony of imposed non-Indigenous languages on TEK. It must be pointed out that the term “climate change” itself has only recently entered the lexicon of the Iñupiat, and itself points to a general trend that is global in reach and may at times appear to bear little resemblance to the highly localized and specific observations of Iñupiat subsistence hunters (Marino and Schweitzer 2009).
Subsistence: Definition and Use

In Alaska, one of the most contentious and intractable political debates has been over the definition of the term “subsistence.” This section provides a brief overview of major subsistence legislation that has affected Alaska Natives over the past century, and then a discussion on what the term subsistence means from the perspective of Alaska Natives.

The first major text that regulated fish and game as natural resources statewide was the Alaska Game Act—initially passed in 1902, and amended in 1908 and 1925. The core assumption behind the act was that human populations will exploit resources to exhaustion unless regulated by an external entity, in this case the state. At the time of the first act’s passage in 1902, parts of Alaska had indeed experienced overexploitation of game, but the ultimate cause lay in the various resource rushes around the state, not in Alaska Natives’ overharvest of these resources for subsistence purposes. The law established open and closed seasons for hunting, imposed limits on how animals could be harvested, and imposed bag limits. Crucially, these laws were applied to whites and Alaska Natives alike (Mitchell 1997). Despite the obvious hardships the act imposed on Native populations, subsequent amendments did little to alleviate the hardships and actually restricted Alaska Native subsistence rights further. For example, the 1925 act in principle allowed Natives who had not adopted a “civilized” lifestyle to engage in subsistence activities when faced with extreme privation, but the definition of “civilized” was kept sufficiently broad to include Natives who had adopted western clothing or exercised their new right to vote—which by this time included a sizable proportion of all Alaska Natives, especially Natives in southeast Alaska. The effect of the 1925 modifications to the act was that few Natives qualified for the subsistence exemption (Mitchell 1997).

Throughout the first half of the twentieth century, Alaska Natives increasingly came into conflict with the encroaching power of the state over subsistence rights. These conflicts eventually compelled Alaska Natives to establish (1966) and unite under the Alaska Federation of Natives to resist further curtailment of subsistence rights. Alaska
Natives reluctantly adopted the term “subsistence” during the years of the land claims movement. Use of the term brought unity to the state’s diverse Native groups by establishing a source of shared identity and pride for a mode of existence, though it must also be recognized that Alaska Natives also felt and continue to feel that the term was imposed upon them. From a legal perspective, the term came to refer to a set of hunting and fishing rights based on economic reliance, social and cultural value and customary and traditional use (Case 1991). From the perspective of Alaska Natives, however, the term fails to encompass the complex social and cultural ties that Alaska Natives have to the harvest and use of wild foods, nor does it acknowledge the diversity of subsistence practices among different Alaska Native groups.

President Nixon signed the Alaska Native Claims Settlement Act (ANCSA) into law in 1971. ANCSA extinguished almost all Native land claims in the state, made Alaska Natives shareholders in 13 regional and approximately 200 village corporations, gave Alaska Natives title to 44 million acres and provided them with 962.5 million dollars. ANCSA also extinguished aboriginal rights to hunting and fishing. A decade later, the federal government signed ANILCA (Alaska National Interest Lands Conservation Act) into law. These two laws became the basis of federal policy regarding Alaska Native subsistence rights. ANILCA explicitly provided federal protection for subsistence hunting and fishing on federal lands, but only for rural residents. ANILCA also distinguished between Native cultural and non-Native social subsistence needs, and was a commitment by the Federal government to assure the continuation of Native subsistence hunting and fishing rights at a minimum on federal lands in Alaska. The state of Alaska had passed similar legislation two years earlier pertaining to subsistence rights, but this legislation did not distinguish between Native and non-Native residents (Chance 1990).

The difference in state and federal subsistence rights laws eventually resulted in a series of lawsuits that altered the scope of the laws. A few years after ANILCA was passed, a group of sports fisherman challenged ANILCA’s rural resident preference in state court and won. In McDowell vs. State of Alaska, the state supreme court ruled that
the rural residency criterion in ANILCA was unconstitutional on account of the “equal access” clause of the state constitution. This ruling put the State of Alaska out of compliance with ANILCA by denying the law’s rural preference clause, effectively defining all state residents as subsistence users (Case and Voluck 2002). The McDowell ruling established that all Alaskans are eligible to engage in subsistence harvests anywhere in Alaska.

In response to the 1989 McDowell ruling, management of subsistence on federal lands ultimately fell to federal agencies because the state of Alaska was no longer in compliance with ANILCA’s requirement for a rural subsistence priority. Senator Ted Stevens attempted to change the state constitution and was successful in delaying the transfer of subsistence management to the federal government for a few years, but his effort ultimately failed. The federal government did not take over management of most navigable waters, however, as rivers were left under state control. In 1994, a group of Alaska Native elders from the Copper River area, led by Katie John, challenged the state’s position that navigable waters within the state were not public lands as defined in ANILCA. A federal court ruled that its jurisdiction did not encompass the river near Batzulnetas, a traditional fishing spot on the Copper River, because it was a navigable waterway, and that management of the fisheries remained with the State of Alaska. Upon an appeal to the Ninth Circuit Court of Appeals, the court ruled that ANILCA’s ruling also applies to federal reserved navigable waters and turned jurisdiction and management of those waters over to the federal government (Case and Voluck 2002).

The ANCSA and ANILCA laws had several long term consequences for Alaska Natives. First, the corporation model is fundamentally incompatible with subsistence in one important regard. The primary goal of a corporation is to provide a return on investment for its owners or shareholders. Subsistence users seek to preserve resources from year to year so that they will be available in perpetuity. The profit motive inherent in the corporate structure does not factor into subsistence activities. One result of ANCSA was that the Native corporations initially pursued a strategy designed to
maximize profit or preserve subsistence, often generating considerable tension both within and between the Native corporations (Langdon 1986).

Second, these laws and the litigation subsequent to their passage permanently altered Alaska Natives’ relationship with the land. ANCSA left Alaska Natives with only about 10% of the land in the state. The ANCSA and ANILCA resulted in two different government subsistence policies, one state and one federal, that are at odds with one another. The imposition of external laws and the corporate model have placed an extra burden on communities that have dramatically changed over the past century. Today, most rural Alaska Natives live complexly interwoven lives. Although technological developments over the past few decades have made subsistence pursuits safer and less labor intensive, the necessity of working to obtain these technologies has forced many rural residents to choose between holding down full time employment and engaging in subsistence pursuits.

For Alaska Natives, subsistence does refer to the process of hunting and fishing to obtain food, but also includes all of the cultural practices, social obligations and economic arrangements associated with this process. Alaska Natives use the term in a specific way that bears no resemblance to its more familiar connotation as a state of privation. Although the procurement, processing, distribution, and consumption of wild foods are significant components of subsistence in Alaska Native communities, subsistence is about more than sustenance. The Alaska Federation of Natives defines the term subsistence as a “way of life” to emphasize the social and cultural dimensions of subsistence as it is lived on a daily basis (Alaska Federation of Natives 2010). Given the importance of subsistence to the vitality of Alaska Native communities, it is understandable that this term has been at the center of debates concerning control and access to certain wild foods in Alaska.
The Subsistence Economy

The development of a mixed cash-subsistence economy on the North Slope during the first half of the 20th century is worth discussing at length because it is a pattern that persists today. Cash was not readily available in most villages until after the Second World War; before this, most people in the villages still used traditional technologies and obtained the greater part of their necessities from the land itself, and so had little need for cash. With the coming of permanent settled villages, it gradually became necessary for households to obtain a steady supply of cash to meet basic needs such as housing and utility costs. Furthermore, by mid-century nearly every technology used in the village was manufactured elsewhere. Van Stone’s study of Point Hope (1960) found that villagers were most likely to seek seasonal employment outside the community during the summer when the subsistence cycle reached a natural minimum of activity. Summer was traditionally a time when villagers would leave the village for an extended period of time either to go to fish camp or to hunt caribou, so summer employment outside the community fit well with this pattern. Although villagers used some of the cash they obtained through employment to buy luxury goods, Van Stone found that the main purpose of obtaining cash was to support the subsistence lifestyle—particularly to obtain or maintain capital goods that had become necessary for subsistence (VanStone 1960). Although the number of available jobs on the North Slope expanded greatly during the later decades of the 20th century, the basic pattern of residents using cash to support a subsistence lifestyle remained the same. For example, Harry Luton’s (1986) study of Wainwright (1986) demonstrated that key features of the mixed economy such as a preference for seasonal or intermittent employment and the use of cash to support a subsistence lifestyle rather than to supplant it remained intact 25 years later. It was not uncommon for residents to quit a job or take a day off from work if subsistence conditions turned favorable, and then to resume the old job or look for a new one once conditions changed again. Today, based on casual observations in Point Lay, the researcher found that the same patterns Van Stone identified over 50 years ago remain extant today. Subsistence practices remain the central feature of community life; most
other community activities are oriented around the desire for the community to maintain traditional subsistence practices. Many community members have an employment history that is sporadic or intermittent, but this is usually a choice that reflects a greater preference for subsistence activities. It does not demonstrate a lack of capacity to engage in sustained employment, as may be misunderstood by outsiders.

As the above studies demonstrated, the most salient feature of the cash-subistence economy is that activities to obtain cash are undertaken to make the continuation of subsistence possible. Wage employment and other market-based activities today form one pillar of the subsistence economy, but may be adjusted or reduced if they interfere with traditional subsistence practices (Poppel 2010). In a seminal study, Wolfe et al. (1984) empirically demonstrated that a wage economy can be compatible with a subsistence lifestyle, provided wage activities can be adjusted to allow locals to take advantage of dynamic subsistence conditions. For example, local employment, multiple people holding the same position in the labor market and flexible scheduling allow community members to take advantage of subsistence opportunities without disrupting essential services in the community. Positions that require sustained employment for most of the year, such as teaching, are typically held by outsiders. This arrangement allows community members to work when conditions are unfavorable for subsistence, and allows them to seize opportunities on short notice when they arise. A key question, however, is the degree to which this economic arrangement can remain sustainable as external stressors impinge upon the community. If climate change intensifies, the cost of obtaining capital goods increases, or the desire of village youth to carry on the subsistence lifestyle is diminished, at what point will a threshold be breached (Langdon 1995)? The relevance of this issue to contemporary Point Lay will be addressed later in this thesis.
Fieldwork and Field Methods

The idea for this thesis developed from conversations I had with Point Lay community members while conducting subsistence interviews for my employer, Stephen R. Braund and Associates. The fieldwork I was doing at the time was part of the Chukchi Offshore Monitoring in Drilling Area (COMIDA) program sponsored by the Bureau of Ocean Energy Management (BOEM)\(^2\), and this particular study was designed to obtain baseline offshore subsistence data for Wainwright and Point Lay. The 2010 boating season had been particularly difficult for Point Lay hunters. The sea ice receded far out into the ocean in June and did not return for the rest of the summer. Long term residents told me that in years past the sea ice would linger close to shore throughout the entire open water season, providing necessary habitat for seals and walruses and keeping them in close proximity to hunters. Now, with the ice absent for almost the entire summer, hunters were telling me that they were traveling farther from shore than ever before, enduring the hazards of the open ocean without the protective buffer of sea ice, all at a time when skyrocketing energy costs were squeezing already strained household budgets. In response to what local residents were telling me, I began to ask questions about the scale of the changes over the past few decades and wondered if Point Lay had made any preparations for the changes that seemed more permanent by the year. In January of 2011, I approached my graduate committee with a thesis proposal to study the impact of these changes on Point Lay residents. My study was approved two months later, and I began the process of gaining community support for my study during my next trip to the community.

I first presented my study proposal to the Point Lay Native Village Council in March 2011. The council granted my proposal a hearing and placed it on the agenda for the following October. During the intervening period, I developed an interview form and worked with my graduate committee and my employer, Stephen Braund, to refine the document. I submitted my study proposal to Robert Suydam of the North Slope Borough wildlife department for approval at his request. I met with Chris Campbell of BOEM to

\(^2\) Formerly Minerals Management Service
provide an overview of my research plan since my thesis topic had come out of work I had done for BOEM through Stephen R. Braund & Associates. I also applied for an Alaska Experimental Program to Stimulate Competitive Research (EPSCoR) grant to help offset the cost of traveling to Point Lay to conduct interviews. The Point Lay Native Village Council passed a resolution approving my study proposal at the October meeting (Appendix A). Alaska EPSCoR awarded me a research stipend in December, to be distributed in conjunction with fieldwork now scheduled for the following spring.

After the Point Lay Native Village Council approved my study, I submitted an overview of my study, a copy of my interview form, a proposed consent form and a copy of the resolution from the Point Lay Native Village Council to the University of Alaska Anchorage Institutional Review Board (IRB) for approval. I also requested IRB approval to pay respondents a $75 honorarium upon completion of the interview. The IRB approved my study in January (Appendix B) and I scheduled a trip to Point Lay in February to field test my interview form.

My plan was to conduct 21 semi-structured interviews across several trips to Point Lay during the winter and spring of 2012. I made my first trip to Point Lay on February 25 to 28, 2012. During this trip, I selected two community members who I knew to be active subsistence hunters for participation in a field test. Both participants thought some of the questions were repetitive, and both interviews ran to two hours—double the length of time I had originally been aiming for. I cut out a section, consolidated several questions, and resubmitted my modified interview form to UAA’s IRB board for approval. UAA’s IRB board approved my modifications a few days later (Appendix C).

Appendix D contains a copy of the revised interview form. The interview form is divided into four sections. Section A contains basic demographic questions about the respondent’s age, sex, marital status, place of birth, and length of residence in Point Lay. I used the responses to the demographic questions to assign each respondent to a cohort, and to determine if a respondent had engaged in subsistence activities outside of Point Lay for an extended period of time. I reference demographic data only where relevant and where their inclusion does not jeopardize the anonymity of a respondent.
Demographic data are otherwise not included in the thesis. Section B includes questions about local wind, weather, and ice conditions, and Section C contains questions about traditional knowledge for each of the major harvest species. Sections B and C are divided into two sets of queries—one historical and one contemporary—in order to compare each respondent’s earliest subsistence experiences with more recent observations. Section D provided study participants with an opportunity to share what they thought were the major concerns facing Point Lay today. The questions emphasized community level political action and its role in addressing community concerns. Section D also contains a few questions about pending oil and gas development.

The original interview form contained two parts: a questionnaire and a semi-structured interview. The purpose of the questionnaire was to provide a uniform set of queries that would allow me to compare the same data points across the three cohorts. The purpose of the semi-structured interview was to allow each respondent a chance to share narratives of subsistence activities. Due to time constraints, the revised interview form became more of a survey instrument. I asked all respondents the same questions and provided approximately five minutes for respondents to complete Section A, 15 minutes for respondents to complete Sections B and D, and 30 minutes to an hour for respondents to complete Section C. In cases where a respondent wished to share more information than he or she was asked to provide or felt more comfortable with narration rather than direct questioning, I relaxed the questionnaire format and allowed the respondent to guide the interview for five to ten minutes at a time.

I returned to Point Lay from March 24 to April 6, 2012. My goal was to complete most of my field interviews during this trip. Before this trip, I divided prospective informants into three cohorts: youths (18-29 years), adults (30-49 years), and elders (50-70+ years). My plan was to select seven community members active in subsistence from each cohort for a total of 21 interviews. I initially selected community members for interviews based upon my prior knowledge of their active participation in subsistence activities. At the conclusion of each interview I asked each informant to provide names and contact information for respondents who they thought might be a good fit for my
study. This method, known as snowball sampling or chain referral (Bernard 2006), allowed me to locate additional community members known to be highly active in subsistence pursuits. At the end of this trip I had completed 12 additional interviews.

I began traveling to Point Lay for Stephen Braund & Associates in May to conduct field interviews for an ongoing BOEM subsistence study. Stephen Braund and Chris Campbell graciously allowed me to conduct interviews for my thesis on my own time during these trips. I interviewed five additional community members during a trip from May 23 to 25, one additional community member during a stopover on July 6, and conducted my final interview on July 27.

A total of 21 community members completed an interview (Table 1). Thirteen respondents were male and eight were female. The largest cohort was men aged 30-49; this cohort is also the group most active in subsistence hunting activities in the community. In the 50-70+ cohort, I interviewed more women than men. This was the second largest cohort, and included the respondents who had spent the longest periods of time in Point Lay.

<table>
<thead>
<tr>
<th>Age and Sex Distribution of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Youth (ages 18-29)</td>
</tr>
<tr>
<td>Adult (ages 30-49)</td>
</tr>
<tr>
<td>Elder (ages 50-70+)</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

After completing my final interview, I began the process of transcribing them. I transcribed each interview verbatim, including both my questions and each respondent’s answers, to retain the context of each interview. After I completed the transcriptions I uploaded them into NVivo, a qualitative data analysis program, and used NVivo to assign codes to sections of each interview based on the respondent’s cohort and interview
question. I then ran a series of queries on the codes that allowed me to aggregate and then export all the responses I received for each question into a single document, sorted by cohort.

The query results became the basis for all of the quotes used in this thesis. I read through the query results for each question and pared them down into useful quotes. I combined related sentences into paragraphs where possible. I also corrected major grammatical errors, but otherwise tried to alter the quotes as little as possible. The result was a series of some twenty documents, each corresponding with a small section of the interview protocol, that contained all of the responses for that section. I then read through all of the quotes again, identifying common themes and patterns, and organized the quotes to form a narrative. I also removed the names of community members from the text to protect respondents’ anonymity. I added my own text between the quotes to guide the narratives, and then combined the finished documents into what would later become Chapters 5, 6, and 7. My findings are summarized in Chapter 8.
Chapter 3  The Setting

The Physical Environment

Point Lay sits atop a small hill bounded on three sides by water. All of the buildings associated with the modern village site, plus the runway and a few remaining buildings from the mostly dismantled Distant Early Warning (DEW) line site, are along a two mile stretch of shore east of the village. The Kokolik River delta bounds the village to the north, Kasegalek Lagoon bounds the village to the east, and an unnamed cove lies adjacent to the runway in the south. The land surrounding the village is mostly low lying wet tundra, nearly all of it less than 100 feet in elevation. Several large nearby rivers flow northwest from the foothills of the Brooks Range to the coast. There are also numerous lakes less than a mile in diameter in the area. The foothills of the Brooks Range are 30 miles south of the village, and are clearly visible from the community on a clear day.

The most distinctive feature of Point Lay is Kasegaluk Lagoon, a large shallow body of water approximately 120 miles in length and no wider than five miles at any point. The lagoon is distinctive not only because of its size, but also because of the series of barrier islands separating it from the Chukchi Sea. Channels between the barrier islands have a large impact on the water level inside the lagoon. The lagoon is nine to twelve feet deep and more saline north of Icy Cape. Its depth decreases to an average of six feet southwest of Icy Cape, diminishing to a depth of only a few inches south of the Kukpawruk River delta (LGL Alaska Research Associates 1992). See Figure 2. Figure 2: Map of Point Lay and Vicinity
Figure 2: Map of Point Lay and Vicinity
(Map courtesy of Stephen R. Braund & Associates)
Water depth in Kasegalek Lagoon determines to a large extent whether or not Point Lay residents are able to take their boats onto the lagoon. Shallow conditions decrease maneuverability and may prevent residents from even launching their boats into the lagoon. The lagoon has tides, but their impact is minimal. Wind direction and velocity are far more important in determining water depth within the lagoon. South and west winds push water into the lagoon through the channels, while winds from the north and east generally push water out. A sustained wind from any direction can have quite dramatic effects (LGL Alaska Research Associates 1992). Residents generally prefer to go boating under calm or light wind conditions, particularly when water levels in the lagoon are high, and may end a trip prematurely if wind conditions become unfavorable. Since access to the barrier islands and the Chukchi Sea is through the lagoon, shallow lagoon conditions may limit access to these areas. The lagoon freezes up far earlier than the ocean in the fall, which limits access to the barrier islands and the ocean. This is in contrast to Wainwright where it is possible to access the ocean with a boat as long as the ice floes are not too dense and boating conditions are safe.

The barrier islands and the channels between them constitute another important geographic feature of the Point Lay landscape. Low elevation and instability characterize all of the islands; they are likely to change shape from one year to the next, growing or shrinking in response to seasonal storms, tidal forces and sedimentation. The channels between the islands respond to the same forces, widening and narrowing, deepening and growing shallower from year to year. This dynamism has affected Point Lay residents in several ways. Most notably, the village of Point Lay was on an island across Kasegaluk Lagoon from the modern village until the 1970s, but was moved in part due to erosion and exposure to seasonal storms (USDOI MMS 2007). Point Lay residents boating through the channels must constantly update their knowledge and disseminate it to the rest of the community as a matter of public safety.

There are five major channels in the vicinity of Point Lay. From north to south these channels are Utukok Pass, Akunik Pass, Kali Inlet, Kukpowruk Pass, and Naokok Pass. Utukok Pass is the first channel one encounters when traveling south from Icy Cape. The channel is across Kasegaluk Lagoon from the Utukok River. Akunik Pass,
better known as “eleven mile” because it is eleven miles north of Point Lay, is the next channel encountered when traveling south. Cully Inlet is directly across Kaselagak Lagoon from the village. Cully Inlet is artificial and appears to be unstable. It was nearly closed in 2010 and rarely used that year, but it opened up in 2011 after a strong winter storm swept through the area. Kukpowruk Pass sits midway between the Kukpowruk River delta and the village, and is known colloquially as “five mile” because it is five miles south of the village. Naokok Pass, twenty miles south of Point Lay, is Kaselagak Lagoon’s southernmost channel. A USGS map from 1955 shows a complex assortment of channels and islets just south of the area labeled Naokok Pass, but there are actually two channels two miles apart in the area today. The channel is 20 miles south of the village near an old seasonal use site of the same name.

The Chukchi Sea is the major body of water adjacent to the far side of the barrier islands. It is an extension of the Arctic Ocean. The Chukchi Sea near Point Lay is frozen for approximately half of the year. Freezeup on the ocean usually begins around the first of November and is complete by the end of December, though the timing of freezeup has changed considerably over the past fifty years. Leads, which are long, narrow cracks in the sea ice, may open at any time throughout the winter provided wind conditions are right. Leads are important because they allow local residents to access marine wildlife, including bowhead whales, which would otherwise be under a sheet of sea ice and thus inaccessible. Sea ice continues to build throughout the winter, reaching a peak in March or April, before rapidly melting back in May and June. In earlier times, sea ice used to linger throughout the summer; local residents now say that there are typically two to three months each year when there is no visible ice in the ocean.

The Biological Environment

Few animal species inhabit the Point Lay area year round. The area is host to dozens of migrating species throughout the year, however, most of which are subsistence resources for local residents. Table 2 lists the major subsistence species in Point Lay by their common name, their scientific name, and their Iñupiat name (MacLean 1980, Woodford 2008). Marine life is particularly abundant; cetaceans and pinnipeds are the
best known visitors to the area, but several species of large edible fish also fill the lagoon, rivers and streams in the summer. Terrestrial mammals are less abundant and less diverse. Caribou are the dominant and most visible tundra species, especially since they may come to the village during any month of the year. Brown bears and small furbearers (e.g., fox, rabbits, hares) occasionally wander into the area. Ptarmigan are also found on the land year round. Several species of waterfowl are visible from the spring through the fall. The short tundra growing season lasts just three months from June to August, but provides local residents with an abundance of berries and other plants to choose from late in the fall.

Table 2: Point Lay Major Subsistence Species

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Iñupiat Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>bowhead whale</td>
<td><em>Balaena mysticetus</em></td>
<td>aġviq</td>
</tr>
<tr>
<td>beluga whale</td>
<td><em>Delphinapterus leucas</em></td>
<td>qılalugaq</td>
</tr>
<tr>
<td>bearded seal</td>
<td><em>Erignathus barbatus</em></td>
<td>ugruk</td>
</tr>
<tr>
<td>spotted seal</td>
<td><em>Phoca largha</em></td>
<td>qasigiaq, natchiq</td>
</tr>
<tr>
<td>ringed seal</td>
<td><em>Histriophoca fasciata</em></td>
<td>qaġulik</td>
</tr>
<tr>
<td>walrus</td>
<td><em>Odobenus rosmarus</em></td>
<td>aiviq</td>
</tr>
<tr>
<td>polar bear</td>
<td><em>Ursus maritimus</em></td>
<td>nanuq</td>
</tr>
<tr>
<td>caribou</td>
<td><em>Rangifer tarandus</em></td>
<td>tuttu</td>
</tr>
<tr>
<td>arctic grayling</td>
<td><em>Thymallus Arcticus</em></td>
<td>sulukpaugaq</td>
</tr>
<tr>
<td>arctic cisco (whitefish)</td>
<td><em>Coregonus autumnalis</em></td>
<td>aanaakliq</td>
</tr>
<tr>
<td>rainbow smelt</td>
<td><em>Osmerus mordax</em></td>
<td>ilhuagniq</td>
</tr>
<tr>
<td>salmon</td>
<td><em>Oncorhynchus sp.</em></td>
<td>aqalugruaq</td>
</tr>
<tr>
<td>common eider</td>
<td><em>Somateria mollissima</em></td>
<td>amauligruaq</td>
</tr>
<tr>
<td>spectacled eider</td>
<td><em>Somateria fischeri</em></td>
<td>qavaasuk</td>
</tr>
<tr>
<td>white-fronted goose</td>
<td><em>Anser albifrons</em></td>
<td>niğliviq</td>
</tr>
<tr>
<td>brant</td>
<td><em>Branta bernicla nigricans</em></td>
<td>niğliňgaq</td>
</tr>
<tr>
<td>willow ptarmigan</td>
<td><em>Lagopus lagopus</em></td>
<td>qargiq</td>
</tr>
<tr>
<td>blueberry</td>
<td><em>Vaccinium uliginosum</em></td>
<td>asaviq</td>
</tr>
<tr>
<td>salmonberry</td>
<td><em>Rubus chamaemorus</em></td>
<td>aquip</td>
</tr>
<tr>
<td>lowbush cranberry</td>
<td><em>Vaccinium vitis-idaea</em></td>
<td>kimmigñaq</td>
</tr>
</tbody>
</table>

Point Lay residents harvest two species of cetaceans: bowhead whale and beluga whale. Bowhead whales are the most important subsistence species for the coastal Iñupiat of the North Slope, both in terms of pounds harvested and due to the close
cultural relationship the Iñupiat have with this species. Point Lay was until 2008 the only coastal North Slope village that did not hunt bowhead whales annually. Bowhead whales reach lengths of up to 60 feet and weigh upwards of 60 tons (Quakenbush 2008). They migrate north through the Chukchi Sea each spring, typically passing Point Lay in April and May, as they follow open leads along the coast on their way to the Beaufort Sea. Smaller numbers of bowhead whales migrate south past Point Lay in the fall, but are less frequent visitors to the area during this time. Residents do not harvest them in the fall. The beluga whale is a small cetacean, typically 10 to 15 feet long and weighing up to a ton (Citta and Lowry 2008b). Beluga whales found near Point Lay are part of the Eastern Chukchi beluga stock. They travel in herds called pods of several to a few dozen animals as they migrate north past Point Lay, usually in June and July. Beluga whales have historically been much more important subsistence species for Point Lay residents because the village did not harvest bowhead whales.

Point Lay is host to four species of pinnipeds during the open water season. The walrus is the largest species of pinniped to inhabit Chukchi Sea waters. Walruses are easily identified by their tusks which are in fact large canine teeth. Adult males may weigh up to two tons and adult females a ton or more (Quakenbush and Burns 2008). Walruses generally follow the edge of the sea ice as it retreats in the spring and advances in the fall. They are typically found near Point Lay throughout the spring, summer and fall, but are most visible in the spring when sea ice is abundant near the village. In recent years, they have started hauling out in groups of a thousand or more on the barrier islands as they migrate south through the area in September. It is thought that this behavior, which was rare before the last three years, is the result of a lack of autumn sea ice. In former times, walruses were harvested in larger numbers as their meat was used to feed local dog teams (Nelson 1969). Their importance as a subsistence food has declined somewhat since then.

Three seal species inhabit the Point Lay area: bearded seal, spotted seal, and ringed seal. The bearded seal is the most important pinniped to Point Lay residents, as it is for all coastal residents of the North Slope. The bearded seal is the largest species of seal to habitually enter the Point Lay area. They may grow to a length of eight feet and
weigh up to 800 pounds. They are commonly found at the southern terminus of the sea ice, but may also inhabit rivers and estuaries (Citta and Lowry 2008a). They are most visible near Point Lay in May and June when they spend large amounts of time hauled out on chunks of melting sea ice. Spotted seals and ringed seals are also quite common in the Point Lay area, but are harvested less frequently than bearded seals.

Two species of bear inhabit the Point Lay area: polar bears and brown bears. Polar bears are by far the more visible species, though both species tend to be infrequent visitors to the area. Classified as marine mammals, polar bears are well adapted to life at sea and spend most of their time hunting seals near the southern terminus of the sea ice in the summer. In the winter, polar bears enter a state of semi-dormancy; their dens may be found anywhere along the Chukchi Sea coast (Lentfer 2008). Villagers are most likely to encounter polar bears during the spring whaling season, when, attracted by the scent of food, they may wander into whaling camps. Brown, or grizzly bears, are usually seen only once or twice a year. They come down out of the Brooks Range in the summer and fall, and often find their way to the village in search of food. Residents generally do not harvest either type of bear unless they perceive them to be a safety hazard. Few residents eat either type of bear, though if a bear is taken there are enough community members, particularly elders, who will gladly enjoy the meat and ensure that the animal does not go to waste.

Caribou are the most visible terrestrial mammal in the Point Lay area. They are found across the North Slope, congregating into several distinct calving grounds for the spring birthing season, then fanning out across the entire expanse of the Arctic tundra to feed on shrubs and lichen throughout the fall and winter (Valkenburg 2008). Point Lay sits at the northern edge of the Western Arctic Herd’s range. Caribou may be found close to Point Lay during any month of the year, though population numbers are highly variable from month to month and year to year. Established reindeer camps existed at Icy Cape and Wainwright during the first half of the twentieth century, though the practice of keeping reindeer was not indigenous to the Iñupiat and quickly died out at mid-century (Impact Assessment 1989). Caribou remain an important subsistence species today, accounting for most of the pounds of meat harvested during the fall and winter.
Point Lay’s proximity to the ocean, its location at the midpoint of Kasegaluk Lagoon, and its complex network of rivers, streams, and lakes ensure that fish are an abundant resource year round. The area hosts many types of freshwater, anadromous, and marine species of fish. All of the most important subsistence species are anadromous; i.e., they migrate upriver in the summer to spawn. Because of this preference, this thesis mainly covers those anadromous species that are of greatest interest to the community. Arctic grayling, whitefish, rainbow smelt, and salmon are the most frequently harvested fish species in Point Lay. Arctic grayling, whitefish (including arctic cisco), and rainbow smelt are abundant in Kasegaluk Lagoon and the nearby rivers year round. Salmon are seasonal visitors to the area, visible only in the summer and fall when they migrate up the local rivers to spawn. In recent years, there seems to have been a shift in the relative abundance of salmon and grayling species. According to locals, grayling numbers have declined and salmon numbers are on the increase.

The same complex of topography that sustains Point Lay’s numerous fish species also provides habitat for several species of birds. Migratory waterfowl are the most important group of subsistence birds for Point Lay residents, and are abundant during the spring and fall migrations. Ducks and geese are seasonal visitors to the Arctic, following the coastline from promontory to promontory as they migrate north along the Chukchi Sea coast in the spring. All of these species come to the Arctic to nest and rear their young before heading back south in the fall. Key subsistence species include two types of sea ducks: common eider and king eider, and two types of geese: white fronted and brant. Other species such as swans and pintails are harvested less frequently. Ptarmigan are one of the few species found in the vicinity of Point Lay year round, and are taken by a sizable portion of Point Lay residents.

Numerous edible plants and berries grow in and around Point Lay. Arctic blueberries, salmonberries (cloudberries), and lowbush cranberries (lingonberries) are the most popular species for harvests. Arctic blueberries and salmonberries prefer wet or boggy tundra; both species can be found in abundance in and around Point Lay. Lowbush cranberries prefer dry tundra, and are found on higher ground south of the community. All three berry species grow quickly during the brief Arctic summer and
then ripen in August a few weeks before the first autumn snowfall. There is considerable variation in berry abundance from year to year. A dry winter will not provide enough water to the plants for them to grow berries, and a cool summer stunts their growth, limiting the amount of time available for them to ripen before the end of the growing season. A small number of community members still harvest edible plants; however, too few respondents harvested them to include them in this study.
Chapter 4  Contemporary Point Lay

Point Lay is one of the youngest permanent settlements on Alaska’s North Slope. Although a village has been located near the present site since 1930, the village as it exists today dates from 1983 (Impact Assessment 1989). Multiple factors have contributed to the development of the contemporary village; nearly all of them are direct results of the dramatic changes that came to this region after western contact began in the mid-nineteenth century. The purpose of this chapter is to provide an overview of contemporary Point Lay, with an emphasis on subsistence, ceremonies and celebrations, community organization, and community governance.

The chapter begins with a brief overview of community developments post-contact, highlighting the chief factors that have contributed to the development of the modern village. The next section provides an outline of the community subsistence round, and lists both the species harvested and the importance of these species to the continuation of Inupiat social and cultural identity. The third section covers community ceremonies and celebrations. The last section is about community governance and provides a description of governing entities in Point Lay, a brief history of each one, and an outline of their connections to regional, state, and federal entities. See Figure 3.
Figure 3: Point Lay Village
(Map courtesy of the North Slope Borough)
The History of Point Lay

The origin of Point Lay village has its roots in a short-lived settlement at Icy Cape, forty miles to the north. Icy Cape already had an established history at the beginning of the 20th century, first as a base for bowhead whaling activities and later as a trading post, but the establishment of a school there in 1906 seemed to suggest at the time that the site was expected to take on greater permanence as a village. One of the most significant developments that occurred on the North Slope was the establishment of schools at the end of the 19th century. Those communities that received schools – Point Hope, Wainwright, Barrow, and later Icy Cape – attracted Iñupiat and non-Iñupiat alike. Schools provided access to trade goods and, crucially, acted as nodes of cultural change by drawing the formerly itinerant Iñupiat into more or less permanent villages (Impact Assessment 1989). Settlements with schools also tended to attract missionaries, and the missionaries, some of whom mixed their evangelism with business interests, contributed to the development of an incipient mixed wage-subsistence economy.

Sheldon Jackson was Presbyterian missionary and General Agent for Education in Alaska at the turn of the 20th century. He was, by 1906, 16 years into a plan to train the Iñupiat as reindeer herders as part of a project sanctioned by the US government. The original impetus behind the plan had been his observation that the Iñupiat of northwestern Alaska were starving due to whaling activities in the Bering and Chukchi Seas. Jackson believed that the reindeer would be a stable source of food and income for the Iñupiat, but his personal correspondence also suggests his motives were economic development and the creation of an export industry (Jackson 1895). A surviving diary written by a young woman who attended the school at Icy Cape in 1912 and 1913 attests not only to the presence of reindeer herding in the area, but also the growing influence of the school and the US government in the region (Nashoalook 1913).

Icy Cape remained an important outpost between Wainwright and Point Hope throughout the 1910s and 1920s, but was never to become a permanently settled village. The school was temporarily closed in 1913 because a school at Wainwright, 40 miles to the north, made it difficult to justify another school in the vicinity. Reindeer herding activities continued into the 1920s. A store existed at the site during this time, and the
school reopened in 1925. Flooding at Icy Cape forced the closure of the school the following year, however, and the decision was made not to reopen the school (Impact Assessment 1989, Schneider and Bennett 1979).

The village of Point Lay dates from 1930, the year a school opened near a site the Iñupiat called Cully (Kali) (Schneider and Bennett 1979). The original village was built on a barrier island across Kasegaluk Lagoon from the modern village. The presence of the school, plus the addition of a store, began to attract locals who had formerly lived in and around Icy Cape. Icy Cape remained an important base for whaling activities throughout the 1930s, but whaling appears to have ended at Icy Cape by the beginning of the 1940s (SRB&A 2008). Point Lay’s population rapidly increased throughout the 1930s until it had more than 100 residents, but slowly began to decline, possibly due to the decline of the reindeer population, into the next decade. Reindeer herding ceased to be a viable activity by the end of the 1940s (Impact Assessment 1989, Neakok et al. 1985, USDOI MMS 2007).

Two major events occurred in the 1950s that permanently altered Point Lay. The first event was the beginning of oil exploration on the North Slope. Although oil exploration did not result in a permanent government or industry presence at this time, it marked the beginning of a development that would come to have increasing effects on the village in the coming decades. The second and far more immediate event in terms of impact was the construction of a DEW line site in 1954 and a runway in 1955. The DEW line site was on the mainland directly across Kasegaluk Lagoon from the village, close enough that contact between villagers and DEW line employees was possible. Oral accounts of this period suggest that the construction of the DEW line site brought alcohol into the community. Residents wishing to avoid the negative effects of these developments dispersed to Point Hope, Wainwright and Barrow (Impact Assessment 1989). The school closed in 1958 as the population continued to decline. By 1959, the Native population had declined to 13 residents (Foote 1959). The Native population of Point Lay continued to decline until the village was all but abandoned, a situation that did not change until 1972 (Impact Assessment 1989). There was only one Native family living year round in the community during the 1960s, while the DEW line site remained
active throughout this period (Neakok et al. 1985). Visitors from other villages occasionally came to the village, but resettlement did not begin until the passage of the Alaska Native Claims Settlement Act (ANCSA) in 1972.

In the years immediately following the passage of ANCSA, Alaska Natives were tasked with selecting land for ownership in the regional and village corporations. Given that the final settlement resulted in the transfer of only 10% of the state’s land to Alaska Natives, those on the selection committees had to be sensitive not only to present subsistence needs, but also to the needs of future generations and the possibility that some areas might contain resources that could later be brought to market (McBeath and Morehouse 1980). Under the provisions of ANCSA, the number of villages within the boundaries of each Native corporation determined the amount of land each corporation would have an ownership interest in. In the case of Point Lay, the North Slope Borough encouraged people to return to the community to provide a stronger political and economic base for the Arctic Slope Regional Corporation (ASRC). Those individuals who ultimately chose to return to Point Lay typically had grown up in the community or had parents from the area, and expressed a desire to live a more subsistence based lifestyle than what Barrow had to offer at the time (Impact Assessment 1989, US Department of the Interior 1991).

The new village of Point Lay was reestablished on an island in the Kokolik River delta in the 1970s (USDOI MMS 2007). The decision to move the village from its original site on the barrier island came about due to a lack of water, lack of adequate space to build an airstrip, and the potential for exposure to severe storms at the former site. There were three separate groups who migrated to Point Lay in the 1970s and 1980s. The first group of migrants consisted mostly of men under 40 years of age who were from Wainwright or Barrow. A few married families from Wainwright and Barrow settled in the community as well. The second group consisted of a number of siblings who moved to the community from Kotzebue somewhat later than the first group. The third group of people, all young men in the late 1980s, came from Kivalina and were relatives of the first group of migrants (Impact Assessment 1989). It should be pointed out that the non-Native population on the North Slope increased rapidly during the 1970s.
and 1980s due to oil development at Prudhoe Bay, though these workers rarely, if ever, traveled to any of the North Slope villages. Sustained non-Iñupiat immigration to North Slope villages did not begin until the development of the Capital Improvements Plan (CIP). The purpose of the CIP was to build housing and infrastructure on the North Slope. Construction brought jobs to North Slope communities, not only for residents of the villages, but also for outsiders who came temporarily to the villages to work and then left when their jobs were completed. In the case of Point Lay, non-Iñupiat migration into the community increased due to a temporary labor shortage in the community, particularly after the decision was made to move the village a second time to its present site in 1979. (Impact Assessment 1989, US Department of the Interior 1991).

Flooding and erosion at the Kokolik River site led to the decision to move the village again, this time to a hill very close to the DEW line site. This move, which was completed in 1983, brought the village to its present day location (USDOI MMS 2007). The transition to the new village site was gradual; most families chose to remain at the Kokolik River site until the buildings that could be moved were brought to the new site. A few families chose to live part or even most of the year at the original site on the barrier island. The number of non-Iñupiat workers in Point Lay peaked during this time. There was also a large influx of men from Point Hope who came to help with the construction because Tikigaq (the Point Hope village corporation) was contracted for much of the relocation. The large influx of outsiders resulted in ethnic tensions between the Iñupiat residents and non-Iñupiat workers. Alcohol availability and alcohol abuse both increased during this period, just as they had during the construction of the DEW line site. Some Point Lay residents credited the tension between the Native and non-Native populations during this period with the development of a distinct Iñupiat ethnic consciousness in the village (Impact Assessment 1989). Most of the migrant workers who came to Point Lay to help with the second village relocation eventually left; however, the population boom during this period reinforced the demographics that were in place at the end of the first migration. The village population still consisted of a large number of young males, plus a sizable number of children (Impact Assessment 1989).
Today, Point Lay is a stable established village that has developed its own identity distinct from other North Slope communities – developments that will be considered in the rest of this chapter. Though there is limited research on Point Lay from 1990 to 2005, census data show that the population of the community increased dramatically from 1990 (population 139) to 2000 (population 247), before falling somewhat to 189 in 2010 (US Census Bureau 1992, US Census Bureau 2002, US Census Bureau 2012). With a median age of 25 Point Lay’s population is still young, but the village now also includes a sizable number of people who are over fifty and who have lived in Point Lay for 30 or more years (US Census Bureau 2012). The resumption of bowhead whaling in 2008, after more than 70 years, is undoubtedly the most significant community development that has occurred in recent years. Bowhead whaling is great importance for Point Lay, as it is for all North Slope Inupiat villages, and will be considered in greater depth later in this chapter.

Subsistence in Point Lay

Most Point Lay residents participate in the harvest, processing, distribution, and consumption of wild foods. These practices, taken together, are components of subsistence (for a fuller discussion of the term “subsistence” and its use in the context of Alaska Native populations, see Chapter 2). Subsistence is best understood here not as a way of meeting certain minimum biological requirements, but as a mode of existence important to the social and cultural well-being of the community.

Point Lay residents, like residents of all other coastal North Slope Inupiat villages, harvest marine mammals (bowhead whale, beluga whale, bearded seal, spotted seal, ringed seal, walrus, and polar bear), terrestrial mammals (primarily caribou, but also brown bear, wolf, and wolverine), waterfowl (brant and eider), plants and berries. The availability and behavior of each species vary with the time of year. Point Lay residents are intimately familiar with this variability, use it to estimate when a particular resource is likely to be available, and time their harvest activities accordingly. This annual subsistence round also contributes to the timing of community events and festivities.
Today, full participation in the annual subsistence round requires a minimum investment in capital goods and ongoing variable outlays for fuel, repairs, maintenance, and upgrades. Table 3 lists the basic suite of items that are necessary for a household to participate in the full range of subsistence activities and their associated cost range in 2014 dollars\(^3\). The total cost of the standard subsistence suite for Point Lay ranged from a low of $28,900 to a high of $50,900. To have full access to both the marine and terrestrial environments at every point in the year, a household must have a boat with an outboard motor, a snowmachine and a four wheeler. A household must also have instruments that allow its members to harvest their preferred species; a standard suite would include several types of guns (e.g., rifle, shotgun, harpoon), several types of fishing instruments (e.g., rod and reel, gillnet), carts that can be attached to a snowmachine or four wheeler, as well as safety and communication equipment such as a VHF radio and a GPS unit. A household must also be able to obtain fuel for their boat, snowmachine, and four wheeler; during the time this study was underway, gasoline in Point Lay was subsidized by the North Slope Borough and cost $3.52 per gallon. Even if a household has already obtained all of these items, they still must spend a certain amount of time and money each year maintaining, upgrading, or replacing these items.

**Table 3: Point Lay Standard Subsistence Suite**

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>aluminum skiff (18’-20’)</td>
<td>$5,000 - $10,000</td>
</tr>
<tr>
<td>outboard motor</td>
<td>$6,400 - $13,000</td>
</tr>
<tr>
<td>snowmachine</td>
<td>$8,000 - $12,000</td>
</tr>
<tr>
<td>four wheeler</td>
<td>$6,500 - $10,500</td>
</tr>
<tr>
<td>trailer</td>
<td>$1,000 - $2,000</td>
</tr>
<tr>
<td>guns (rifle, shotgun, harpoon)</td>
<td>$1,500 - $2,500</td>
</tr>
<tr>
<td>fishing gear (rod and reel, gillnet)</td>
<td>$200 - $400</td>
</tr>
<tr>
<td>VHF Radio/communication equipment</td>
<td>$100 - $200</td>
</tr>
<tr>
<td>GPS</td>
<td>$200 - $300</td>
</tr>
</tbody>
</table>

\(^3\) The ranges listed in Table 3 reflect not only the variance in the cost of each item, but also the different methods of bringing these goods into the community. Snowmachines are typically driven from Point Lay to Barrow. Occasionally, boats are driven from Barrow to Point Lay. All other goods are shipped in either by plane or by barge. In 2014, the cost of freight for bringing oversized items from Barrow to Point Lay was $2.54 per pound.
Although the cost of the standard subsistence suite is high, there is considerable variation in the cost of individual subsistence activities. Furthermore, prevailing weather, ice, and resource conditions impact the cost of individual subsistence activities across time. Bowhead whaling is the most expensive subsistence activity in Point Lay. For an umialiq, the annual cost of an entire whaling season, excluding capital goods, may easily run to over $10,000. An umialiq must obtain enough supplies to provision his crew, set up a whaling camp for several weeks, and maintain a well-stocked boat in good working order for the duration of the whaling season. If successful, the umialiq must host a Nalukataq for the entire community at considerable time and expense. On the other hand, the cost of entering the subsistence round at certain points is quite low provided conditions are favorable or one has access to the necessary equipment through sharing. Caribou, waterfowl, and berries may be harvested close to town at low expense, provided they are abundant. Though a boat is typically necessary to reach ideal fishing spots, fish may be harvested within a few miles of the village. A household with limited access to cash may have difficulty obtaining the capital goods necessary to fully participate in the more expensive marine mammal subsistence activities, but is not shut out of subsistence altogether.

Point Lay residents who have lived in the community more than 20 years have reported that the timing of the annual subsistence round has changed. In some cases this means that a species that was formerly available at one time of the year is arriving earlier or later, and in other cases this means that harvest activities that were once possible at a given time in the cycle are no longer possible due to unfavorable snow or ice conditions. There is some evidence that the relative contribution of different resources to the total annual harvest has also changed, though this is partially due to changes in hunting strategies (e.g., the 2008 resumption of the annual bowhead whale hunt) that are unrelated to climate change.

What follows is a generalized subsistence round aggregated from data collected before 1990. There are two reasons for choosing 1990 as a benchmark date. First, Point Lay’s last major ethnographic study was completed in 1989 (Impact Assessment 1989).
There are insufficient data after 1990 to construct a full updated seasonal round. Second, by using 1990 as a benchmark date, it will be possible to compare the timing of subsistence activities as reported in 2012 to data collected before 1990. The following subsistence round is based on subsistence data from multiple published sources (ADF&G 1987, Braund and Burnham 1984, Impact Assessment 1989, Schneider and Bennett 1979, US Department of the Interior 1991), as well as from numerous conversations the researcher had with Point Lay residents over a two year period.

Point Lay Seasonal Round

Point Lay residents harvest subsistence species year round. The composition of targeted species follows a cyclical pattern from year to year; this pattern is termed the annual subsistence round or the seasonal round. Though the abundance of each species and thus the success of Point Lay hunters in harvesting each species may vary from year to year, the general pattern of the seasonal round holds across longer periods of time. Table 4 contains a summary of Point Lay’s most commonly targeted subsistence species by month and is based on conversations the researcher had with Point Lay residents, both during fieldwork for this study and as a research assistant for Stephen R. Braund & Associates (see SRB&A 2013). The text that follows contains a more elaborate summary of the annual subsistence round, including its relation to shifting weather and ice patterns throughout the year.

Table 4: Point Lay Seasonal Round

<table>
<thead>
<tr>
<th>Month</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>Spotted Seal</td>
</tr>
<tr>
<td>February</td>
<td>Small Furbearers</td>
</tr>
<tr>
<td>March</td>
<td>Small Furbearers</td>
</tr>
<tr>
<td>April</td>
<td>Bowhead Whale, Migratory Waterfowl</td>
</tr>
<tr>
<td>May</td>
<td>Bowhead Whale, Ringed Seal, Migratory Waterfowl</td>
</tr>
<tr>
<td>June</td>
<td>Bearded Seal, Ringed Seal, Walrus, Migratory Waterfowl</td>
</tr>
<tr>
<td>July</td>
<td>Beluga Whale, Bearded Seal, Spotted Seal, Walrus, Fish</td>
</tr>
<tr>
<td>August</td>
<td>Caribou, Berries, Fish</td>
</tr>
<tr>
<td>September</td>
<td>Bowhead Whale, Caribou, Fish</td>
</tr>
<tr>
<td>October</td>
<td>Bowhead Whale, Caribou, Fish</td>
</tr>
<tr>
<td>November</td>
<td>Caribou, Fish</td>
</tr>
<tr>
<td>December</td>
<td>Caribou</td>
</tr>
</tbody>
</table>
Spring in Point Lay usually begins in April, and is characterized by long days and warming temperatures. Point Lay did not engage in bowhead whaling activities before 2009; however, it was not uncommon for residents with ties to Point Hope, Wainwright or Barrow to go spring whaling in these other villages during this time. Migratory birds such as brants, eiders, geese, and loons return to the area in late April, and are harvested along with their eggs as they travel north along the river systems or from point to point along the coast. Residents also occasionally harvest bearded seals in May while they are hauled out on ice floes near the village.

Summer is the most intense hunting period of the year. Not only do Point Lay residents harvest most of their subsistence resources by weight during this period, the brief season – usually not more than 10 weeks – means that they have a limited amount of time to harvest and store most of what they will need until the following spring. Tundra travel becomes progressively difficult and dangerous throughout the spring until it is no longer possible, usually at some point in June. It is still possible, under certain circumstances, to travel inland via four wheeler after the snow has melted, but a hunter’s range is restricted by the numerous lakes and bogs that overlay much of the tundra. By July, most of the sea ice is gone from Kasegaluk Lagoon and from the ocean adjacent to the barrier islands within a few miles of the shore. The result of these developments is that summer hunting activities are mostly oriented toward the marine environment.

Sealing activities may take place any month of the year, but typically pick up in June when residents begin hunting bearded and spotted seals on ice floes near the village. Point Lay conducts an annual beluga hunt that usually takes place during the first or second week of July. It is the only communal hunting activity and contributed over 60% of the annual harvest in terms of usable pounds in 1987 (ADF&G 1987). Walrus hunting typically peaks in July when the walruses migrate north past the village. In former times, walrus meat was used as food for dog teams, but since few residents now keep dogs, walrus hunting has been on the decline in recent years (Luton 1986). Moose and grizzly bears occasionally come north out of the Brooks Range (the foothills of this range are visible from Point Lay), but this is a rare occurrence and residents hardly ever take these
animals. Some fishing also occurs in July – mostly salmon fishing with rod and reel in Kasegaluk Lagoon – though most fish are taken in the fall.

Point Lay residents turn their attention inland in the fall. I classify August and September as fall due to the terrestrial orientation of this period. Berries cover the tundra by August. Salmonberries and blueberries are abundant near the village in good years, and residents need not travel more than a few miles to find them. Residents also harvest various roots and greens during this time.

Point Lay lies at the northern edge of the Western Arctic Caribou Herd’s range. Caribou may be harvested any time of year, but residents usually harvest them in August and September after they have had several months of easy grazing on the tundra. Since caribou range over very large areas and since their population density is constantly in flux, residents may be able to harvest them from town one year, only to travel many miles from the village to harvest them the following year. In years when caribou are far from the village, residents may take their boats up the local streams and rivers in search of them, or they may follow the riverbanks upstream with their four wheelers.

Fishing activities usually begin in July and continue through October, with August and September being the peak fishing months. Residents harvest grayling in the Utukok and Kukpowruk Rivers; Pacific herring, arctic char, whitefish and flounder may be taken as well.

The transition between fall and winter occurs quickly. The tundra is awash with color for a week in early September, and then turns to a uniform brown. Temperatures drop rapidly and silence falls over the land. River inflows to Kasegaluk Lagoon slow rapidly, lowering the water table and increasing the likelihood that the lagoon will freeze if temperatures drop too low. Boating becomes hazardous and then impossible. Freezeup on Kasegaluk lagoon typically marks the beginning of winter, as it effectively cuts residents off from the entire marine and much of the terrestrial environment (due to lack of river access). There is usually a brief period where there is too little snow for residents to use their snowmachines inland, but too little ice for residents to safely travel inland or offshore. This was traditionally a period of heightened safety and food concerns, and even today most harvest activities cease until enough ice has accumulated
on the lagoon and local rivers, and enough snow on the tundra, for residents to safety travel by snowmachine. Snow accumulation is usually good enough in October to permit snowmachine travel, with some older residents reporting favorable conditions in past years as early as late August.

Winter is the dominant season in Point Lay, lasting from October to March. Subsistence activities slow markedly during this period, but by no means stop altogether. Caribou hunting continues into the winter, though at a less intense pace than in the fall. Some residents also jig for fish during the early part of the winter. Residents may harvest spotted seals through the ice at the mouths of the local rivers in mid-winter. Residents may hunt and trap small furbearers such as foxes, wolves and wolverines in mid to late winter. Polar bears used to be harvested for meat during the winter, but contributed little to the annual subsistence harvest by the late 1980s. Subsistence hunting activities continue to slow as the winter progresses, almost stopping for a time during the short and bitterly cold days of mid-winter. The return of the sun in February and March brings light back to the community, but harvest amounts will not pick up again until spring returns in April. This was also traditionally the time of year when spring whaling preparations would begin.

Coastal Iñupiat communities traditionally put a portion of the spring bowhead harvest in ice cellars for use at the end of the following winter, which was another period of heightened safety and food concerns. This was traditionally the time of year when the fewest subsistence resources were available and the threat of starvation was highest. The practice of storing a portion of the spring bowhead harvest in ice cellars is still done today. Even today, if the community has exhausted its supply of stored bowhead meat and has not harvested enough subsistence foods to make it through the winter, this is when supplies are most likely to run low. Today, however, the community can supplement a lack of subsistence foods with store-bought foods, though these foods are expensive, less preferred, and in limited supply.
Whaling in Point Lay

Point Lay, like all coastal Iñupiat communities, is a whaling community. Point Lay’s annual beluga hunt is the most important subsistence event of the year. Point Lay resumed bowhead whaling in 2008, and bowhead whaling is quickly taking on a level of significance for the community similar to that found in neighboring villages. This is because the most important role in all coastal Iñupiat communities is that of the umialiq, or whaling captain. The role of umialiq is an important source of cultural capital for those who have achieved it as well as for the community at large, as it is a high status position originating in Iñupiat rather than American tradition. The institution of whaling is also a source of social capital due to the social relationships and community cohesion it fosters in the community. The following section provides a summary of Point Lay’s annual beluga hunt and a more general discussion of bowhead whaling among the North Slope Iñupiat (general because the Point Lay bowhead hunt is still in its formative stage).

Point Lay has held an annual beluga hunt at least since the 1970s. The hunt has changed little in the intervening years, though harvest amounts have varied from a low of three to highs near 100 (USDOI MMS 2007). Toward the end of June, when Kasegaluk Lagoon is free or nearly free of ice, scouting crews begin to make trips south through the lagoon to see if beluga pods have moved into the area. Omalik Lagoon, located a few miles south of Kasegaluk Lagoon’s southern terminus, is a favored beluga feeding and resting ground. Scouting crews occasionally spot beluga at Omalik Lagoon, but it is more common to first see them as they enter Kasegaluk Lagoon. One Point Lay elder said that the beluga used to migrate through Kasegaluk Lagoon, eventually passing in front of the village. Today it is more common for beluga pods to migrate on the ocean side of the barrier islands that separate Kasegaluk Lagoon from the Chukchi Sea. The custom is to allow the first pod to pass unharmed; this is done because the first pod provides navigational guidance for subsequent pods. When a scout identifies a suitable pod for the harvest, he or she radios ahead to the village. Everyone who has access to a boat, whether through ownership or as part of a crew, is expected to participate in the hunt. The boats travel south to meet up with the scouts, and then drive the pod through Naokak or Kukpowruk Pass into Kasegaluk Lagoon. The crews surround the pod, and
then beat the sides of their aluminum skiffs to push the pod toward the village. Once the crews have brought the pod to Point Lay, they harvest the belugas and then beach them on the barrier island near the original village site as quickly as possible to prevent them from sinking into the lagoon. Crew members then join with waiting community members who stayed behind (mostly women and children) to cut the meat and maktak from the belugas, carefully placing the harvest into as many equal piles as there are separate households. Each household is allotted a share regardless of how many members from that household participated in the hunt. Unclaimed shares are distributed to other villages.

Bowhead whale hunting, by contrast, is still a fairly new activity in Point Lay. This is not to say that Point Lay residents are unfamiliar with bowhead whaling. Before 2008, it was common for Point Lay residents with an interest in bowhead whaling to travel to Barrow, Wainwright, Point Hope, or Kivalina if they wished to participate in the hunt (Braund 2008). These visits meant that there was already a group of experienced whalers in Point Lay when the AEWC granted the village a bowhead whaling quota, and no doubt contributed to the success of the village in landing a whale the following year after the hunt was reinstated.

Historic bowhead whale hunts – that is, bowhead whale hunts that occurred before 1940 – usually took place at Icy Cape. Icy Cape is a piece of lowland that juts approximately 15 miles into the Chukchi Sea. The cape itself is actually composed of a small barrier island that separates Kasegaluk Lagoon at one of its narrowest points from the mainland. Icy Cape is an ideal place for whaling because the shape of the land ensures that migrating bowhead whales will be forced close to shore as they round the cape, but it is 40 miles from the modern village of Point Lay. Point Lay whalers traveled to Icy Cape the first year of the hunt, but have preferred to stay much closer to the village since then.

Spring whaling preparations usually begin in March. The umialiq, or whaling captain, is usually among the first community members to prepare for spring whaling, if only because an umialiq is required to lead and outfit his crew. Point Lay’s two whaling captains soon begin to hold meetings with their crews and with each other to ensure that
preparatory activities are well coordinated and adjusted according to local environmental conditions. Crew members usually share kinship ties with their captain, and are responsible for many of the day to day preparations for whaling. Crews typically start breaking trail in late March or early April. The purpose of trail breaking is to establish a snowmachine route out to a lead so that a campsite can be established there. Crew members are responsible for setting up the camp and supplying it with fresh meat. Bowhead whaling typically begins in mid-April and runs through mid-May. Both the captain and his crew share in the hunt. When conditions become favorable, which is to say there is little to no wind and an open lead with little danger of closing, whalers launch aluminum skiffs into the lead to search for whales. If a whale is landed, it is brought back to the edge of the lead and butchered on the ice. Traditionally, the first boat to strike a whale would receive a majority of the whale and the rest was distributed through the community depending on which crew struck the whale second, third, and so forth through to the eighth crew (Langdon 2002). If an umialiq has had a successful whaling season, he and his wife are required to hold a Nalukatuq (or whale feast) at end of season, during which the whales are thanked for giving themselves to the community (Burch 2006).

Ceremonies and Celebrations

The Iñupiat maintain a number of ceremonies and celebrations that have their origin in traditional practices dating from pre-contact days. Ceremonies and celebrations are also sources of social capital for the communities that host them. The most important of these ceremonies today, and the ones most relevant to this thesis, are Kivgiq (Messenger Feast) and Nalukataq. Nalukataq maintains and fosters intercommunity ties at the close of each spring whaling season, and Kivgiq maintains and fosters intracommunity ties between the many Iñupiat communities that converge during this bi- or triennial event.

The Messenger Feast, also known as Kivgiq among the North Slope Iñupiat, in its original form was a celebration where an umialiq from one group invited another group to his home community for gift-giving, dancing, feasting and games (Langdon 2002). As originally practiced, the Messenger Feast also served other functions: it provided both
groups with an opportunity to establish and solidify political alliances, it provided more distant relations with a way of redistributing food and other resources, and also allowed individuals to build their prestige in the community (Fair 2000). Messenger Feasts declined after missionaries and educators discouraged the practice, especially its more spiritual dimensions. Barrow revived the Messenger Feast in 1988 as a blend of Iñupiat and Western traditions; the first Kivgiq included dancing and games, but also Christian prayers in Iñupiat and Boy Scouts activities (Fair 2000). Today, Messenger Feasts on the North Slope continue to be held in Barrow every two to three years.

The Nalukataq, a celebration marking the close of the spring whaling season, is little changed today from the way it was practiced in pre-contact days. In the past, Nalukataq was held in the spring, usually in June, at the close of the whaling season. All of the successful whaling captains and their crews congregated in an open area where they invited the community to celebrate and redistribute portions of their catch (Langdon 2002). Today, each successful umialiq chooses a day after the close of the whaling season for his Nalukataq. On the chosen day, the umialiq, his wife and his crew invite the entire community to an open spot at the center of town. There, they give thanks for their successful harvest, provide food to the attendees, and redistribute subsistence foods to the community. Afterwards, all who are gathered take turns participating in the blanket toss.

Community Organization and Governance

There are numerous social and political entities active in Point Lay today. Political developments on the North Slope over the past century have left Point Lay with a complex, overlapping set of institutions. A range of entities represent these institutions in the community. The following section serves two purposes. First, it compares some modern American institutions to Iñupiat social organization, and points out instances where the Iñupiat have economic structures in place that have enabled them to easily adapt American institutions to Iñupiat society. Second, it provides a brief discussion of some of the more active entities in the community. Each description includes a summary of its origin, its organization and its role in the community today.
As previously mentioned, Iñupiat social organization is centered on bowhead whaling and the harvest of large marine mammals. Large marine mammal hunting is by necessity communal because it requires the mobilization of a large amount of coordinated labor. Whaling is the central economic activity of traditional coastal Iñupiat communities, and the ritualized exchange of subsistence goods provides much of the structure in Iñupiat society. Iñupiat society is strongly kin-oriented, and most individuals spend a lot of time reinforcing their various kin relations through trade. This was true in the traditional Iñupiat society where most everyone was related to a large number of other people through blood, marriage or adoption (Burch 2006), and is still true today where certain roles centered on exchange, such as the umialiq, have taken on new forms of significance.

It is worth discussing the role of the umialiq at length because it has taken on additional importance in the context of local governing institutions. An umialiq is required to maintain a boat, procure whaling equipment, provide food and equipment for a crew, and host a Nalukataq after a successful hunt. The role of umialiq was originally an achieved one, came from demonstrated ability, and largely remains so today. An umialiq was expected to look after less fortunate members of the community by redistributing a portion of his wealth. The position of the umialiq also depended on the will of the community. An umialiq who failed to look after less fortunate members of the community would quickly lose his status and prestige (Burch 2006). The amount of planning and labor involved means that the position of umialiq is commonly a joint role shared by a husband and his wife, and is best understood as a partnership (Bodenhorn 2005). At least one member of the umialiq partnership is almost always someone who is integrated to some extent in American society, if only because whaling requires a steady income and substantial capital outlays (Braund and Moorehead 1995).

The remainder of this section provides a summary of governing entities in Point Lay. Local and regional entities are considered insofar as they play a role in local community governance. In some instances, an entity may no longer play an active role in community governance; these entities are included to the extent that they played a significant role at some point in the past.
The most important entity in Point Lay, and the de facto governing body of the village, is the Native Village Council because its membership is based on current community residence. It is the only Indian Reorganization Act (IRA) council on the North Slope, and stands in place of what would otherwise be the city government since Point Lay is not incorporated under state law. By maintaining the IRA form of government, Point Lay residents have found a way to unify a community whose residents have multiple origins. A sizable portion of Cully Corporation shareholders do not live in Point Lay. There is also a large group of Point Lay residents who are not Cully Corporation shareholders. The IRA council allows all of the Iñupiat residents of Point Lay to have a voice in village affairs (Impact Assessment 1989).

Continuity between the traditional and the contemporary role of the umialiq in Point Lay is most visible through the workings of the village council. The Point Lay Native Village Council has seven elected members at any one time, all of whom are volunteers. Several of these positions are offices, which is to say there is a president, a vice president, and so forth. The appointment of positions on the village council offer an example of institutional cultural capital derived from the position of umialiq, as both of Point Lay’s two whaling captains in 2012 sat on the village council. One was president of the Native Village Council as well as Point Lay’s commissioner at the AEWC, and the other was vice president. In a pattern that mirrors political institutions throughout the North Slope Borough, the presence of these individuals on the council also grants it a large measure of legitimacy since these individuals are also the leaders of the most important Iñupiat cultural tradition, bowhead whaling.

As an IRA council, the Native Village Council has more legitimacy among the resident village population than the various governing structures put into place by ANCSA. The IRA form of governance places an emphasis on consensus and is seen as a model closer to traditional Iñupiat governing models (Impact Assessment 1990). The Native Village President may be a position of authority, but much like the umialiq, it is a
position which maintains its authority insofar as the person occupying the position places the interests of the community in front of personal interests.

**Cully Corporation**

Cully Corporation was formed in 1971 as one of approximately 200 village corporations mandated by the provisions of ANCSA. Iñupiat with ties to Point Lay who wished to be Cully Corporation shareholders were allotted 100 shares in the village corporation at the time of the village resettlement. As a village corporation, Cully Corporation owns the surface rights to the land for which it owns the title (McBeath and Morehouse 1980). The corporation has a board of directors composed of seven shareholders and is headquartered in Anchorage. Most of its economic activities center on providing services to the village. The corporation runs Cully Camp, staffs the Post Office, operates the washeteria and employs the local airline company representative (Cully Corporation 2012). As a corporation, one of Cully Corporation’s mandates is to produce a profit for its shareholders. Cully corporation has not pursued this strategy, however, because to do so would require a certain degree of independence from the Native Village Council. Since the Native Village Council represents the interests of all Iñupiat residing in Point Lay, and Cully Corporation represents only the interests of its shareholders (many of whom do not even live in Point Lay), Cully Corporation defers to the Native Village Council to the extent that it is able to do so (Impact Assessment 1989). Today Cully Corporation has 116 shareholders, of which only 28 presently live in Point Lay. The corporation has never expanded its shareholder base. The current CEO does not live in Point Lay, but she makes frequent trips to the community. Her mother was born in Point Lay (Cully Corporation 2014, personal communication).

**North Slope Borough (NSB)**

The NSB was founded in 1969 as a way to maximize local autonomy, build infrastructure, and provide public services to North Slope villages (Chance 1990, McBeath and Morehouse 1980). The borough was formed against fierce opposition from oil companies and the state of Alaska, and its existence was challenged all the way to the US Supreme Court. The borough has taxing authority and has used its tax revenue to fund numerous development projects on the North Slope. These development projects
have allowed the borough to build modern housing units, schools and infrastructure (Jorgenson 1990). The borough is also one of the largest employers on the North Slope, and currently provides a large fraction of the jobs in Point Lay.

In addition to having the largest day to day impact of all outside entities on Point Lay, the NSB is politically active in the community through two positions: Point Lay’s borough coordinator, and Point Lay’s borough assembly representative. Each village on the North Slope has a borough coordinator. The borough coordinator acts as a link between each city council (in the case of Point Lay the link is between the Point Lay Native Village Council and the NSB mayor’s office). Point Lay chooses a coordinator to represent the village at the borough level. The mayor of the borough in turn approves the nominee and then he or she becomes a part of the mayor’s staff. The borough coordinator is the main point of contact between the borough and the village council, and thus has a certain degree of informal power because he or she controls the flow of information between the borough and the village council (Impact Assessment 1990). The position of borough representative has a less direct impact on Point Lay simply because the borough assembly makes decisions that affect not just Point Lay, but management of the entire NSB.

**Iñupiat Community of the Arctic Slope (ICAS)**

ICAS was founded in 1971. The Bureau of Indian Affairs (BIA) provided ICAS with funds after the passage of the US Indian Self-Determination and Education Assistance Act. ICAS is a regional IRA tribal government and in theory is supposed to provide another avenue of representation for all North Slope Iñupiat separate from the NSB. The original purpose of ICAS was to protect Native lands, as well as to provide welfare assistance programs and expanded health services. It was also used as a base for those Alaska Natives who saw sovereignty as the major issue for Alaska Natives (Chance 1990, Impact Assessment 1990). Today ICAS is most active in Point Lay as a provider of a limited range of social services. It plays only a minimal role in Point Lay governance.
Arctic Slope Regional Corporation (ASRC)

ASRC is one of 13 for-profit corporations created after ANCSA was signed into law in 1971. ASRC manages the surface and subsurface rights to the land it owns. It is also involved in numerous industries, most notably petroleum refining and marketing, government services, energy services and construction. It currently has annual revenues in excess of $2 billion (ASRC 2012). ASRC plays almost no role in community governance today, but the dividends it distributes and jobs it supports provide a sizable amount of income to community residents each year. ASRC also played a pivotal role in the resettlement of Point Lay, as the addition of a village to allowed ASRC to increase the amount of land it was eligible to select under the provisions of ANCSA (Impact Assessment 1989)

Alaska Eskimo Whaling Commission (AEWC)

The AEWC was created in 1976 to contest a possible prohibition against bowhead whale harvests by the International Whaling Commission (IWC), an international organization to which the United States is a signatory nation. Reports at the time showed that the bowhead whale population was critically low, and a prohibition against bowhead whaling was put into force in 1977. The Iñupiat used the AEWC to conduct their own research regarding bowhead whale populations. Their own study, completed in 1978, suggested that the bowhead whale population numbered 10,000-12,000 rather than 1,000 (Chance 1990). Prohibition remained in force through 1979 subject to a quota on the number of strikes the AEWC takes, and then the US delegated its authority to manage the bowhead hunt through a memorandum of agreement between the Department of Commerce and the AEWC.

The AEWC is linked to the IWC, as it is the IWC that grants the AEWC an annual quota of whales (Braund and Moorehead 1995). Local whaling captains’ associations elect representatives to the AEWC. The AEWC is responsible for allocating, monitoring, regulating and enforcing bowhead whaling quotas to each of the villages under its jurisdiction including Point Lay.
Chapter 5  Climate Change Impacts: Weather and Ice Conditions

The next three chapters of this thesis contain the responses I received from respondents during the interview sessions. Chapter 5 focuses exclusively on the physical environment, with an emphasis on weather and ice conditions. Point Lay community members who are active in subsistence pursuits must continually monitor weather and ice conditions to look for potential opportunities and scout for possible hazards. Safety is of paramount concern. The responses included in this chapter show that there have been several major changes to prevailing weather and ice conditions, all of which have made it more difficult for community members to rely on the TEK they have built up from decades of experience to safely navigate their environment. At the same time, the importance of knowing how to safely navigate has increased because sea ice is thinner, there is less snow on the tundra, and weather and ice conditions are increasingly unpredictable.

At the beginning of each interview, respondents were asked to recall their earliest memories of local weather conditions, and then to compare their memories with conditions today. Special emphasis was given to the timing of freezeup and breakup. Freezeup and breakup are significant because they correspond to the brief Arctic fall and spring, and mark the transition between the community’s focus on marine subsistence activities and terrestrial subsistence activities. Breakup, defined as the several week long period during which local rivers start to flow and Kasegaluk Lagoon becomes progressively open to watercraft, is an especially productive period that corresponds with the start of spring whaling. Freezeup tends to be abrupt, starting when ice makes Kasegaluk Lagoon unnavigable, and marks the cessation of all water based subsistence activities. Respondents were encouraged to share traditional Inupiat terms for different types of sea ice, and to note any changes in composition over their lifetimes. Special consideration was given to sea ice safety because the ability to safely navigate sea ice, both by boat and on foot, is a highly specialized activity that requires intimate knowledge of local climate patterns and terrain. At the end of this section of the interview,
respondents were asked to note any general changes in their subsistence practices that they thought were related to changes in weather and ice conditions.

Youth Cohort (ages 18-29)

Respondents in the youngest cohort had up to fifteen years of solid experience traveling on the land or the sea. Most of these respondents were still gaining proficiency in navigating the local terrain without supervision, so their most formative memories were only a few years in the past. As a result, the researcher received few comments concerning changes in climate conditions from these respondents.

In general, young respondents said that breakup today occurs in mid to late May, typically at the end of the spring waterfowl migration. As one youth said, “Usually breakup we’d have at least three weeks to hunt geese before breakup and that’s the beginning of May. We would start hunting geese and then it would break up about the third week of May.”

Small ponds and lakes are the first bodies of water to freeze, and if conditions are right they may freeze as early as August. Kasegaluk Lagoon starts to freeze in September; this period is marked by a steep drop in water based subsistence activities because the presence of ice in the lagoon limits access to the ocean. One youth said that the lagoon may start to get some ice at the end of August, but it amounts to little more than a thin layer at this point: “[The lagoon] freezes up faster than the ocean. It’s like when it starts freezing up, you know, when the ponds start freezing it started getting glaze out there. That’d be about the end of August.” Another youth said that September is when the lagoon really starts to freeze: “Usually it would freeze before, in September. That’s what I remember. It would be frozen in September. About the middle part of September.” The ocean does not freeze until November or December, but community members do not go into the ocean during these months because conditions are typically rough. As one youth said, “Usually about November or December it would start freezing up out there in the ocean.”

One youth shared his knowledge of sea ice types. This respondent said that he was taught that the major division is between fresh water ice and salt water ice. Fresh water ice, which is in fact sea ice that has been in existence long enough for the salt to
have drained out of it, is a source of drinking water at sea. This respondent also provided an Inupiat term for a type of thin ice that is unsafe to walk on.

*Well like the fresh water ice and the salt water ice, that’s what I’ve been taught. I’m beginning to learn how to tell what’s thin ice, what’s salt water ice or fresh water ice so we can get our drinking water. Well there’s fresh water ice and salt water ice, but then there’s also, you know we’ve got the main ice which is the solid ice that’s frozen that’s pretty much anchored to the shore, and then there’s what we call the siquak. It’s not safe to be on.*

Study participants were asked to explain what they do to stay safe if they are traveling on the ice. Several young respondents said that they carry a tool called an *unaaq* with them. The *unaaq* is essentially a long pole that is sharpened on one end and has a hook on the other. When walking across the ice, a hunter will poke the ice with the sharpened end of the *unaaq* to test the thickness of the ice. The hook is used to catch the hunter should he fall into the ice. One young person explained the importance of having this tool in hand by sharing an incident that nearly resulted in the loss of a life.

*We use a stick or a harpoon. Not a harpoon but an unaaq. I’m willing to make some for the crew members, you know, because that first whale back in ’09 that we caught we almost lost a life out there due to lack of realization out there. We had one person working on the whale and there was a hole that we didn’t even know was out there—slush and water and cracks. He tried to see if it would hold him and he almost went down there. The ice may seem frozen but the only way to actually know it’s frozen or not is you do something to it before you walk over it.*

When traveling in groups across the ice, respondents said that they typically also carry a rope with them. A rope is an especially useful device when pulling a seal out of an ice hole. As one young man said, “*Well if you’ve got a second guy you’ve got a rope. You walk behind him, you know, to pull the seal out. You just hold onto the rope and walk.*” The rope also serves an important safety function. Each person in the party holds the rope, so that should any of them fall through the ice it will be far easier for the others to rescue him. This young man continued, “*It’s always be safe to have a rope with*
somebody if you're walking and to be prepared. You're never alone, you know. You never walk alone. I mean actually I've seen [name withheld] do it before but I don't go alone.”

Respondents were asked to share their earliest memories of traveling on the ice, and then to compare these early experiences with ice conditions today. Two youths said that their close kin took them out as children, and a third youth didn’t recall his age when he first traveled on the ice but said that he must have been very young. These respondents did not remember much about ice conditions from their earliest trips, but did share the following memories during the interviews.

*My dad would bring me out hunting all the time, and like my sister just said, my grandfather was the first one to try to bring me out hunting. My dad's first cousin, he'd always bring me out. I don't remember hunting with him though because I was so young, but I remember going out with my dad.*

*I first went out on the ice* when I was five. I've been going out for a long time. Wherever my dad took me. Yeah, *[I learned to travel on the ice] from my dad. Stretched out people all around, you know, offered to take me out. It was multiple people. Whoever wanted to take you out, if you work good and hard, you know.*

Yeah, they did take us out a lot, but I don’t really remember my younger years. Mmm I’d say probably about nine [years old when I first traveled on the ice]. *I believe it was berry picking at first. I'm not too sure. I don’t remember too much of this.*

Nevertheless, all of these respondents reported that they had noticed changes in the abundance and composition of sea ice and snow during their lifetimes. One youth said that the spring breakup seems to happen faster now than it did when he was growing up:

“...the ice conditions, it breaks up much faster. You know, the snow gets softer faster on big rivers.” Another youth said that there is less multiyear ice on the ocean than there
used to be. She said, “Yeah, we took boat trips out [on the ice] every now and then. I remember seeing a lot of icebergs out there. Not like how it is now. I don’t really see as many as I used to.” Another youth, commenting on wind and ice conditions during the spring whaling season, said that warmer temperatures, combined with drifting snow, have made walking on the ice more unpredictable and thus more hazardous.

We have strong winds sometimes and it's hard for us to go out there. The snow piles up on trails and we've got to find a different trail. So the wind is one of the main ones. It's changing. It's warmer, it's getting colder off and on. Also you need to be careful. Some of the ice, it may seem frozen but it's not.

Lastly, respondents were asked about the inland travel habits. Though respondents may travel inland during any month of the year, the main season of inland travel begins in October and continues until April or May depending on snow conditions. One youth, speaking about his childhood, said that his father took him on inland trips for caribou, skins, and occasionally, for ice fishing. He said, “My dad would bring me out caribou hunting between October and I'd say April...mostly for caribou or for skins, wolverine or wolf. Our main plan was to go out there and get caribou. Once in a while we'd do ice fishing.” Respondents in this cohort also reported traveling inland for ducks and geese in the spring.

Inland snow and ice conditions have also changed in recent years. One youth noticed that the ice moves out of the rivers faster than it did a few years ago, indicating that the ice is not as thick as it used to be. This person said, “The ice seems like it's been blowing away a lot more quickly than most years. Yeah blowing away a lot more quickly than the years in the past. Maybe not cold enough to keep it together.”

The permafrost is also melting, which is changing the land by creating new depressions on the tundra. With the land changing so fast, villagers traveling by four wheeler or snowmachine across the tundra need to be alert to avoid hazards that may not have been present in the same location the year before. One young man said that new ditches and pools of water have made travel much more dangerous than it used to be. He said, “There's a lot of water out there that's changing our land; we get a lot of puddles
and our permafrost is melting. Yeah, and it's creating a lot of ditches out there. It can make it dangerous.”

**Adult Cohort (Ages 30-49)**

Most respondents in the adult cohort had between 25 and 40 years of experience traveling on the land, waterways and ocean, as well as observing weather and ice conditions in and around Point Lay. Nearly everyone in this age group reported witnessing changes in the speed of the spring breakup and the timing of the autumn freeze; these changes have increased the risks associated with traveling during the already hazardous breakup and freezeup periods.

Respondents in the adult cohort reported that breakup began in mid-May during their formative subsistence years. As one adult remembered,

*It must have been about May, mid-May is what I’m thinking because when we would go out for our beluga hunt and it was, by the time the ice was kind of—the ice was gone about mid-June, early to mid-June, so that’s when we would have our beluga hunt, about mid-June.*

Since respondents in the youth cohort also reported that breakup begins, on average, in mid-May today, this suggests that breakup today occurs at approximately the same time as it did 20 to 30 years in the past. The noteworthy change has been in the speed of breakup. In the past, sea ice lingered for a much longer period of time and inland lakes remained at least partially frozen for 11 months of the year. As one adult said, “Frozen year round (laughing). Actually the ice in the ponds used to hang around until July. They'd be, by the time July passed they'd refreeze in August, late August. We always freeze later and later now.” Some respondents in the middle cohort even remembered a time when parts of the land near Point Lay were frozen for nearly the entire year.

Today, breakup occurs over a shorter period of time than it did when these respondents were very young. One respondent said that the rapid breakup has limited the amount of time available for the waterfowl harvest, and another respondent said that the sea ice then melts so quickly that it makes it difficult to harvest walruses on the ice.

*Yeah our breakup is pretty quick the last four or five years. It’s been happening real rapid. Our hunting season in the spring kind of shortened*
so we would go out geese hunting, and we would be out there for a good
two weeks when the geese come and between when the geese came to the
North Slope and the rivers started flowing, so we’d be out there until the
river started flowing, and then we’d make our way home. Yes, it used to
take a good—we used to be hunting a good two to three weeks with my
grandparents, my uncles.

Yeah, you know to me I thought it was normal when I was a kid, but as I
get older I notice, because each year as I get older I spend more time
going out there and I notice the climate changes. It’s really changing. I
noticed this past four or five years the ice goes out faster. We’ve hardly
been catching any walruses on the ice these past few years due to ice
conditions going out too fast.

One respondent explained that breakup happens more quickly today because the Kokolik
River melts and flows into Kasegaluk Lagoon much faster than it used to. The extra
water from the river melts the ice in the lagoon, which in turn opens the passages from
the lagoon to the ocean.

*In the past two years our river here, the one that ends near Point Lay, this
one’s been breaking up and flowing kind of before the other rivers. Yes,
and that would provide our faster thaw for our lagoon to our inlet. The
flowing water would eat away at the ice. I know in the last, between about
ten years and five years, between ten years ago and five years ago we had
the other rivers south of us, nine miles south and 20 miles north. They
would break up before this one and all the water would flow out of them,
all the main water flow. It would cause our inlet out here to just remain
closed and shallow.*

Freezeup, however, began much earlier than it does today. According to a respondent
who traveled on the lagoon as a child in the early 1980s, Kasegaluk Lagoon would freeze
as early as the end of August and was frozen enough to travel on with a snowmachine by
the first week of October. Today, the lagoon may have open water as late as December.
So in ‘84, that August, I started school, we’d snowmachine for school. Back and forth. Just my grandmother and I think my uncle or my great uncle, but my grandmother was the only permanent one there (at the old village site on the barrier island). Everybody had already moved over here. I was so young I never really paid attention to the ocean or anything like that, but it was frozen in probably September, October because we would go back and forth. Well, October was when it really froze, froze, froze. So September you were still able to use a boat and kind of go back and forth, but there was a period of time where you couldn’t do anything because it was too frozen to travel in yet not frozen enough to travel on. That was probably late September, early October. It’s taking a little bit later to freeze. Like journeys the first week of October you were able to, everything was frozen except for the very middle of the lagoon. It’s taking the lagoon a lot longer to freeze. I think it was open all the way up until December this year. Yeah, there was still water on the lagoon. It wasn’t quite as safe as a journey, but inland it was frozen.

The most significant change has been in the timing of freezeup. In recent years, respondents said that they’ve been able to take a boat into Kasegaluk lagoon as late as mid-October. One adult, remembering the fall of 2011, said, “Within the last few years it’s been late, very late. Last year I was boating in my boat in the lagoon until I believe it was October 13.” Another adult said that boating in October is a new activity for Point Lay residents.

Freezeup? Now? Late. Late October now. Freezeup is happening later because we went boating in October and we never do that. We never go boating in October and we were boating in October. We were looking at each other and saying, "Can you believe it? We're boating in October! I'm supposed to be upriver ice fishing. Can you believe we're boating?" It's wild and crazy weather.

This change represents about a six-week delay in the onset of winter. The warmer conditions allow the community a longer period of access to the lagoon and the rivers
that feed into it, but also shorten the period of time the tundra is accessible by snowmachine.

The topic of ice safety brought forth multiple comments concerning observed changes in sea ice conditions. Respondents were also keen to share some of the tools and techniques they use to stay safe on the ice. All of these techniques have been used for at least several generations, and all of them are still used today. Several respondents said that their parents and grandparents told them not to travel on the ice without an *unaaq* or another object they can use that serves the same purpose. As the following two respondents made clear, the *unaaq* is an essential tool for ice travel as well as an important source of objectified cultural capital. The *unaaq* is still in widespread use across the community:

*Just a, what you call it, unaaq. Rifle and an unaaq. Check the ice. Yeah well actually I take an ice pick now. My dad's still got an unaaq he's used. He's got a homemade unaaq. It's got a hook on it. He would always say, "Take your unaaq." Or an oar, that'll work.*

*I was taught by my parents and relatives that whenever you go out on the ice you need to carry an unaaq. That’s a stick with a hook on one end and a pick on the other. [It is used] to test the ice, to make sure it’s safe to walk on and travel on. It is still being used today. I feel safe carrying it on the ice in case I break through. The unaaq is a good ten feet long at least and it will stop you from going all the way in the water. You use it to pull yourself out.*

Ocean currents present another major hazard for sea ice travel. There is always the danger that a change in the ocean currents will either build pressure ridges under one’s feet or will carry one out to sea. Both situations have proved lethal in the past, so it is essential for anyone out on the ice to constantly monitor his or her speed and direction so as to avoid a collision or being pulled out to sea. One adult shared a simple but effective technique for monitoring the ice when stationary for long periods of time. She said,
We would set up binoculars and if there was an open piece of water out there we would go next to the water and we would find a mark: either a big tall piece of ice or some other distinctive sighting out there, and we would put our binoculars on the ice and we would look at it. Okay it’s looking at that ice so if the ice does move when we look in the binoculars say three, four hours later, if that piece was out of sight something would be happening with the ice.

All of the adults who commented on ice safety agreed that the ice safety lessons they learned as children are still in widespread use today. If anything, the importance of knowing how to safely travel on sea ice has increased in recent years because the average thickness of the sea ice has been decreasing. There has also been a decrease in what community members call multiyear ice (ice that has been in existence for more than a year). In addition to being a source of fresh water at sea, multiyear ice tends to be stronger than newly formed ice and is thus safer to walk on. One adult shared his observations on recent changes in ice conditions as follows:

A lot of things that I learned growing up are what are on my mind when I go out on the ice…Our ice thickness is almost two feet thinner than it was when I was growing up and going on the ice. The way we would tell is when the ice piles up and the whole big chunks pile up, you know, they kind of stand up and you could tell by one piece that’s kind of standing up how thick the ice is. Within these past few years, these six seven eight years, this ice has been thin like two to three feet. It used to be about four or five feet. When I was younger we didn’t really worry about breaking up so quick and having unsafe melted ice out there, but these recent years it’s been so thin and I’ve been going on the ice for almost all my life. I’ve been going out there every year and the ice has just been getting thinner. We get less second and third year ice so the ice that comes to shore, a lot of it is first year ice where it’ll just be about two feet thick. We barely get any of the third year ice anymore, the ice that stays frozen and kind of makes its way back to shore. It’s a lot more hazardous now. I mean with
this first year ice it’s real easy to crack and break and make a lead open into the water, whereas this multiyear ice will just stick kind of together. This first year ice, it doesn’t take much pressure to crack it into pieces.

Two adults shared Inupiat terms for various types of sea ice. Both respondents referenced sikuq, which is a word denoting new ice that is too brittle to walk on. One adult said that he was taught to recognize sikuq as ice that “…just freezes right on top of the water.” Piqaluyak is a term denoting freshwater ice that is typically found on top of pressure ridges. The other adult defined the two types of ice as follows: “Oh the sikuq, young ice. Yeah, and then there's piqaluyak. That's the fresh ice that's been sitting on top of the pressure ridges. The salt is already gone. That's where we get our fresh ice from.”

Most inland subsistence trips occur when Kasegaluk Lagoon is frozen and the ocean is inaccessible by boat. Respondents were asked to share their earliest memories traveling inland by four wheeler or snowmachine. They were also asked to compare their earliest memories with current conditions and to note any changes over the intervening period, particularly as these relate to local climate conditions.

When asked to indicate the earliest time of year they remembered it being safe to travel inland, the consensus in this cohort was that it was generally safe to do so for the first time in early October. One adult said, “It was about, I would want to say, the first week of October is when I was growing up (when it was first safe to travel inland). That’s when we pretty much decided that the ice was thick enough.” Ice fishing is usually the first inland subsistence activity following the fall freezeup. One adult remembered that it was possible for her family to make their first ice fishing trips as early as the first week of October. She said, “Yeah I went to fish camp from the age of eleven, and we always went the very first part of October.”

Respondents were also asked to indicate the latest time of year that they remember it being safe to travel inland by snowmachine. Waterfowl hunting is usually the last inland subsistence activity that occurs before spring breakup. One respondent said that waterfowl season used to begin in April and continue through the start of breakup, which begins in mid-May. As previously mentioned, breakup begins at
approximately the same time today as it did twenty or thirty years ago. The major changes have been in the speed and duration of breakup.

We would go out, let’s see we would be, towards April we would be on the ice. In about May, early May it would—early to mid-May is when we would be out there. It did kind of change. It’s a little earlier. The land is thawing a lot quicker than the ocean and the lagoon stays kind of ice frozen but our land has thawed out very quickly. It does thaw out a lot quicker than it did back when I was growing up.

Respondents reported that the time when it is first safe to travel inland by snowmachine is approximately two weeks later than it was 20 to 30 years ago. Freezeup occurs several weeks later than it used to, and snow accumulates more slowly on the tundra than it used to. Two adults shared the following comments about freezeup:

Just these later years of going on to the ice fishing, see I haven’t gone…I mean I’ve gone these last three years, but before then it was at least two to three years that I haven’t, but I have noticed that it’s moved to late October. Yeah, I mean it’s a big time shift when you’re waiting to go out there and, you know, you want to catch fish. If there’s two more weeks to wait, that’s a long time.

I’m seeing less and less snow out there on the tundra. When I was growing up it used to be just mostly snow. You’d hardly see the tundra, but this year I was seeing a lot of ground before spring. Yeah I think not much snow, and we get a lot of blizzards and the blizzards just blow it right off.

If enough snow fails to accumulate on the tundra by March and April, the lack of snow will hasten the spring breakup. One respondent said that he has observed a drop in the amount of accumulated snowfall on the tundra that began about six years ago and has not abated since.

The only thing I could really notice is that nowadays we’re getting less snow on our tundra. It’s melting faster each year. Probably the last six to
ten years, maybe. Six years. It’s just an estimate. There’s not as much
snow. When I was a younger boy there was a lot more snow and it took a
lot longer to melt. I notice each year before spring, I notice when I drive
to the mountains, I can see when I’m traveling out there—oh man, there’s
hardly any snow on this tundra. It’s going to be a fast spring. This is like
in March…April when I go ride out there to look for some wolves and
wolverines.

Lack of snow also makes snowmachine travel on the tundra hazardous in the spring. As
one respondent said, there is a danger of getting stuck or stranded if there’s too little
snow on the tundra.

Probably middle of May is a pretty dangerous time where the snow turns
to slush and there’s a lot of water around. If you’re out there with a
snowmachine, you’re hunting and there’s a lot of slush, there’s not too
much time to react when you’re traveling and you just see it, you know,
fifteen feet in front of you. So it’s kind of dangerous when it comes that
time.

Elder Cohort (Ages 50-70+)

When the researcher asked respondents in the oldest cohort about the timing of
breakup and freezeup, their observations were generally in agreement with those received
from younger respondents. Respondents in the oldest cohort said that breakup begins
slightly earlier than it did when they were young. The major change, however, has been
in the duration of breakup. Based on the comments received, there appear to be two
major reasons behind the rapid breakups in recent years: first, a decrease in the volume of
accumulated sea ice each spring, and second, warmer weather conditions overall. For
example, one elder said that he doesn’t see multiyear ice anymore in the spring:
“Nowadays it will break up real easy I think. In the old days, I remember, they used to
know what the old ice was right away. Nowadays I kind of forgot what old ice looks
like.” Another elder observed that leads are opening up closer to the shore than they did
in the past. This elder said,

The lead opens up closer to the shore. When I first moved out here I went
out in the spring out, straight out, with my son and his cousin and we went
out like fifteen miles and we hadn’t even seen the lead. I told them too
that we weren’t going to go any further because we were fifteen miles on
the odometer. It’s starting to open up closer and we have less ice buildup.
[The lead has been about] nine miles [from shore].

While a lead close to Point Lay cuts down on the distance whaling crews have to travel to
and from whaling camps, it also indicates that the shorefast ice is not as thick as
extensive as it used to be. Shorefast ice must also be well anchored to the coast if it is to
be protected against offshore winds that will blow it far out to sea.

Warmer conditions increase the speed of breakup because sea ice melts faster if
the temperature is higher. One elder said that 2012 was the first year that she
remembered breakup occurring early, but she added that the waterfowl have started
migrating several weeks earlier in the year than they did when she was growing up. This
elder offered the following comments on breakup:

  It always happens around the same time. This year it seemed like
everything happened two weeks earlier and maybe a month earlier. You
can’t really say about…you can’t really read the weather anymore like
you did because you don’t know.

  Two weeks earlier to a month. Yeah, even our hunting seasons. They all
shifted earlier in the year. You don’t know the exact—like growing up you
always know certain time, you know, the weather about the ducks flying,
and then one winter my sister and I were sitting down there and the ducks
weren’t even supposed to flying and they were flying. It was so warm.
They got so confused that they were flying up here when they’re not
supposed to.

If the sea ice is too thin and too brittle at the start of spring, it will quickly disintegrate
once warmer temperatures come to the Arctic. The ice may simply blow out to sea and
never return, taking the marine wildlife with it. As one elder said, “The first big winds
take big portions out. Nowadays it goes quickly. Like last year—man, when the
Another elder shared some of the effects the lack of sea ice in the early part of the summer is having on subsistence hunting:

Not only that, the ice from the ocean leaves early. It used to be easy for him to catch ugruk out there. Fourth of July sometimes we’re out there to go look. First part of July there’s almost hardly—you have to go up to Icy Cape or to Omalik Lagoon which is down south to find ice. Honestly he never catch ugruk for like four years, the past four years until last year. He finally caught ugruk. It takes all the animals. Once we get west wind the animals, there will be more animals with the ice coming back. Almost history now.

Respondents in the oldest cohort also said that the timing of freezeup is now much later than it was when they were young. For these elders, the timing of freezeup has shifted by as much as six weeks. The lagoon and other shallow bodies of water used to start freezing up at the end of August, which would quickly make travel by boat impossible. One elder recalled the following about what the fall freeze used to be like:

I remember the freezeups. It isolated us from everything else. It was September. End of August, September, and then we’d go fishing. I remember that because it was in those times the lagoon would freeze up.

Any place close to shallow water. Yeah, end of August.

Although the lagoon would start freezing as early as August, the ocean would typically retain pockets of open water into November, and would be frozen solid by December. As one elder said, “By December we used to be frozen. November was the freezing time. Early November. You couldn’t put your boats out. The spray would freeze.”

Older respondents noted two changes in freezeup over their lifetimes. First, freezeup begins, on average, six weeks later than it did when these respondents were children. The most noteworthy change is that Kasegaluk Lagoon now regularly remains navigable into October. For example, one elder remarked that it had recently been possible to go boating in Kasegaluk Lagoon until the end of October: “I think [freezeup is] later because we were boating in October one time. It was late, late October. Right
now when it's summer time starting to get winter it's late. Long time ago it used to freeze up.”

The second change in freezeup is that the ice does not freeze as solidly as it used to. One elder said that it is far more common today for the ocean to freeze and thaw several times in the fall, rather than freeze once and stay frozen for the rest of the winter. This weakens the ice, especially if a thaw occurs late in the year, which makes it more likely that the ice will melt quickly or blow out to sea in the spring.

*Seems like the ice, it’s a different kind of ice. It’s a different kind of freeze. When you were younger you could always depend on the ice freezing solid. Right now it’s changed so much. The weather gets warm when it’s not supposed to be that warm, then after it starts freezing, then all of a sudden two months after freezing we start getting the warm weather when it’s not supposed to be warm.*

On the topic of sea ice safety, elders were in agreement that it is more dangerous to walk on the ice today than it was when they were children. Not only is the ice thinner, weather conditions have become increasingly erratic. As a result, long term residents are finding it increasingly difficult to use the traditional knowledge they learned as children to stay safe on the ice.

*The ice is different. It’s not freezing like it should. It’s more dangerous. I think there’s some stuff happening in the ice that we don’t know about. You know like we did a long time ago we know when it’s going to be frozen solid, and we know when it’s going to be safe to go out there, but it seems like the last five years it’s been, maybe more than that, just changing. Well, you know you could try to translate the weather but you can’t anymore. We grew up translating the weather, like, you see that grey area? You know it’s going to rain or snow, but the whole weather is changing. It seems like the warm weather is coming to our area. When you go out hunting, you have to read the weather to go home before it gets really rough, or when you go 40 miles down south to Neakok’s cabin you have to know the channels and how to come with a boat. It’s not the same.*
The most frequently reported method of staying safe on the ice is use of the unaaq. The unaaq is still in widespread use, as younger respondents attested, and is an indispensable tool for walking on the ice. One elder shared the following series of comments about using an unaaq to stay safe on the ice:

Unaaq, with a pick and a hook on the other end. [It’s used for] testing the ice and if you fall down…you could hook it [on the ice]…They always tell us when you’re beachcombing and find a nice straight piece of tree because those don’t break like two by fours. They bend. They don’t break dropping. I do [see locals making unaaqs]. I made a couple more of them but ours nowadays aren’t really made to last. They’re seasonal. You could kind of walk into Wal-Mart nowadays and buy one. Change it a little bit so that it becomes one. Same function.

During the sea ice safety section of the interview, respondents were also encouraged to share any Inupiat terms they knew for types of sea ice. Respondents in this cohort introduced two additional terms for types of sea ice that younger respondents did not mention. The first, suğaŋnuŋruaq, designates an extensive buildup (miles long) of multiyear ice, and it is possible that none of the younger respondents shared this term because they had not witnessed this phenomenon. The second term, ivu, simply means pressure ridge. One elder used the term ivu when describing the recent absence of large icebergs (chunks of multiyear ice) in the pressure ridges. He said,

Icebergs. The big icebergs. That’s the big change. They were tall man. And huge icebergs that stick way out. They’re gone. Ivu is pressure ridges. I mean when they’re floating, you don’t see any more of those giant icebergs that come floating by or out there, you know, when we go out. We used to boat by them. Go on top. First we look at it. Those big icebergs used to be handy.

Respondents were asked to share their earliest memories of subsistence trips, both inland and offshore. Respondents were also asked to compare their earliest memories with current conditions and to note any changes, particularly as these relate to local climate conditions.
One elder remembered taking small skin boats into open leads during the spring and fall to hunt marine mammals for the sled dogs. This practice has died out today because nobody in the community uses sled dogs anymore. This elder said, “We used to hunt for the dogs. My dad used to take us out there. See we had these little skin boats, you know, so we could hunt out in the open leads.”

According to respondents in the oldest cohort, it used to be possible to travel inland by snowmachine as early as August. Today, community members usually do not attempt to travel inland by snowmachine until the second half of October.

Back then we used to go August. Yeah. We would stay in between the rivers, you know, just until we know that the ice is about so thick.

Nowadays it's like—I went out this last October with him. I didn't want to dare go out there again because there was so much open water. It looked like somebody almost went into that river. But usually back then August and nowadays it's late October, November.

Snowfall is the most important factor governing inland travel. Without sufficient snowpack, it is not possible to travel inland any great distance unless one travels up the local rivers by boat. One elder recalled a time when it was possible to travel inland by snowmachine as late as June.

I did travel inland quite a bit when I was younger, but...Usually second week of October. It’s changed. About the third week now seem to be traveling. It depends on the snowfall too, so...Well when I first traveling around here we’d travel into June. When I first came here and it was in May, around May 25, it was all blizzard, storm, snow. I mean lot of snow, and it was like 20 below.

Today, however, the snow is melting much faster in the spring than it did when these respondents were young. One elder said that spring is coming to the tundra about three weeks earlier than it used to: “Until early June [I could go inland with a snowmachine]. Pretty much but nowadays you know like we said it's beginning to come two, three weeks earlier.”
Chapter 6  Climate Change: Subsistence

Bowhead Whale

Bowhead whaling has a long but fragmented history in Point Lay. Studies show that Point Lay harvested bowhead whales on an intermittent basis until at least the 1940s (Braund 2008). The Alaska Eskimo Whaling Commission awarded Point Lay a bowhead quota in 2008 nearly 30 years after the present system for managing bowhead whale harvests was established, and the village held its first whale hunt in 2008. Due to the short duration of the period, there is not enough history to track changes in whaling practices or success rates as they relate to environmental changes. This section is included, however, because Point Lay’s whaling events have had important social and cultural consequences for the village. Bowhead whaling acts as a conduit for the transmission of traditional values, provides community members with pride, and is also an important source of food in years when the community successfully harvests a whale.

Youth Cohort (ages 18-29)

Respondents in the youth cohort would have been no older than 25 when Point Lay resumed bowhead whaling. A few youths reported that they had traveled to other villages to whale before Point Lay’s resumption of bowhead whaling. Most youths, however, reported that they had gained most of their whaling experience in Point Lay. All youths reported that they had trained under one or both of the village’s two whaling captains.

A common theme among youths was that Point Lay’s resumption of bowhead whaling had provided them with a new type of subsistence experience that they had not had before 2008. When asked what others in the community had taught them about whaling, two youths listed specific skills that they had acquired by participating in bowhead whaling activities.

*I've learned how to approach a whale. I've learned where to hit the whale with the darting gun, and with the shoulder gun where to shoot the whale, and I've learned how to hook up a tow line to the tail, cut off the flukes. I've learned how to butcher a whale. I've learned how they migrate, sort*
of. The smaller whales will pass through first and all the bigger ones will pass through last. They generally do not travel alone. They usually travel in big groups.

[I] make the food and stuff like that. Like I help them make the mikigaq and cut up the maktak and the meat. That’s fermented meat (mikigaq). They cut strips of the meat into two by four, five inches. They cut it into little slices and they stick it all in a bucket, and then after—that’s all the meat, and they’ll cut up little pieces of maktak, and they’ll pour all the blood from cutting up or whatever is collected, because they stick them in buckets to make the mikigaq and the blood that’s collected, they’re always moving because there’s big chunks in the buckets, right. That’s how they collect the blood and then we’ll take it out piece by piece cutting them up into a new bucket, and well pour the blood into the cut up bucket with the maktak and the meat, and then they let it sit and they stir it and let it sort of ferment like that for like a couple of days, for like a week maybe, a week and a half maybe. In the past maybe ten years I’ve gotten into that. I haven’t really learned it really. I mean I know how to make it, but I haven’t really.

Several youths provided examples of traditional whaling methods currently in use within the community. These youths made statements that suggest that they had a keen interest not only in learning traditional whaling methods, but also resurrecting traditional whaling tactics that had fallen into disuse due to technological advances.

Back in the day I was told they used to have a thin metal rod and they’d use that to kill the whale instead of using another bomb on it. That’s what I’ve been trying to get my captain to get us into. In Barrow I think [they use those]. I think they do in Barrow and in Point Hope. That’s not as safe. Well it is safer because you’re not shooting a bomb into the whale, but you have to go up to the whale and poke it. Usually they poke it in the heart to make sure that it’s dead.
Every year we paint our boat white and try to make it camouflage with the ice because we don’t use skin boats yet and we usually wear qatignisi which is all white covering over our parka and white ski pants. We try to keep camouflage as much as we can. That's for camouflage. We try to stay as quiet as we can when we're at the edge of the ice so that in case, because we don't know when the whale's going to come up, if it's going to come around the corner of the ice as far as we can see we want to be as quiet as we can and we want to have a clear mind and be thinking straight. You don't want anything to be distracting you. When we approach a whale we're always going to be on the right side of it, or the left side of the whale. The whale will always be on the right side. When we land or approach a whale. We do that because we run our float line from the harpoon on the right side of the whale and then the buoy is in the back of the boat. After the person throws the harpoon they'll throw the buoy out and the float line will be attached to the boat.

Point Lay’s recent resumption of bowhead whaling also appeared to provide an additional conduit for the transmission of traditional Inupiat values to the community’s younger members. Respondents in the youth cohort made statements demonstrating that they were in the process of acquiring and internalizing traditional Inupiat values while learning from experienced whalers in the community—values that included respect for the whale for giving itself to the community, sharing, and gratitude for the harvest regardless of its size. These youths said:

We’re working on how to keep our area clean and the ice clean. Trying to respect nature as much as we could, we put all our trash away. A lot of it is out of respect. If there's a whale you're not going to go get it. The whale will give itself to you. That's how we’re being taught.

Well we share the meat and the maktak with the other crew and the rest of the village, and we'll share with other villages, the remaining communities
like if Point Hope didn’t meet their quota we’ll send them some of our maktak and meat for some of their families there. They divide it into I believe three groups. One group is for the whaling captain and his crew, the second group is for all the people who are helping out there, and then the third group is for the elders and the community.

We pretty much use all of the whale except for the bones. We usually just put the bones back in the water for whatever like krill will eat on them. There’s animals in the ocean that will eat on them. We use as much of it as possible. It’s out of respect for the animal for giving itself to us.

You behave to the land and the land will behave to you all depending on how you treat the land. Keep it clean. You respect it, it respects you. It’s a connection that stays with us. If we don’t honor it or keep it clean it will take away our animals out there.

Adult Cohort (Ages 30-49)

All respondents in the adult cohort were adults when Point Lay resumed bowhead whaling in 2008. Most adults who reported that they had participated in bowhead whaling said that they had done so in a neighboring community before Point Lay’s resumption of bowhead whaling. All adults who reported that they were now bowhead whaling in Point Lay said that they were training under or affiliated with one of the community’s two whaling captains. Thus, at the time of the interviews, there were no truly inexperienced bowhead whalers in this cohort. Two respondents shared the following formative bowhead whaling experiences, both of which occurred in Barrow:

Yeah we used to go to Barrow just to go whaling. Me and my dad used to travel machines just to go whaling in Barrow. I’d say I first started going out maybe 10 to 12 years old. Somewhere around there. I don’t really know my exact age, but that was in Barrow. But I wasn’t going every year. I was going every so often because of school. It would be mainly my
dad and his brothers and my grandpa. I go to Barrow, but you know not for whaling. Yeah we just do it here [now that we have the quota].

Oh yeah, since I was able I was whaling every year in Barrow with this crew. That’s my step-father’s and his brother’s, and I got my first snowmachine when I was 12 years old and by the time I hit 13 which was the spring and I was out on the ice learning, you know, to do the little things like set up ice blocks on the edge to hide our camp and our equipment, and I would travel back to the trail and we would find glacier ice (multiyear ice used as a fresh water source). So we would be chopping up glacier ice and bringing it back to the whale camp.

There were, however, no respondents in this cohort with extensive experience hunting bowhead whales at Point Lay, nor were there any respondents in this cohort who were old enough to have witnessed whaling activities in Point Lay. For members in this cohort, bowhead whaling in Point Lay was a constant process of discovery. These respondents were actively developing new TEK based on empirical observations and direct experience, subject to revision from season to season while they recognized patterns in weather and ice conditions and established methods for successful whaling.

One adult captured some of the excitement and newness of Point Lay’s bowhead hunt through an account of the community’s close ties to Wainwright in the days before Point Lay had a quota. These close ties allowed the community to obtain bowhead meat and maktak from Wainwright in exchange for beluga. While this arrangement no doubt strengthened ties between the two communities, the reinstatement of Point Lay’s bowhead hunt allowed this adult to feel a closer tie to his own ancestors and his own community. He said,

Oh man it’s a huge impact [whaling has had a huge impact on Point Lay]. I mean everybody in this town had heard of our past elders and past residents that they did go out and whale and they caught a bowhead whale. My grandma used to tell me that the last whale they caught was at Icy Cape and this is back in the late 60s. She told me stories that they
were still using dog teams, so she was transporting the whale, a sled load of whale with dog team from Icy Cape to here which took three days to get here and two days to get back over. She would pick up another load and bring it back and go bring it into the ice cellar that we had across the...Yeah it is a real big deal because we—everybody heard of the story of Point Lay getting whale. We caught beluga whales, but when it came to it our one, because we’re a community we were so to say allotted a quota of one for bowhead whale, but we’re so small of a community and nobody really put their foot into it to try to get our whaling, bowhead whaling here, so what we did was we would meet Wainwright halfway between here and Wainwright. We would bring a couple sledloads of beluga and they would bring a couple sledloads of bowhead. So they would, you know, we would get a hold of each other on the telephone, or whoever is traveling between here and there, and it was usually in about November, late November. Before Thanksgiving we would have that communication and we would go meet them with our beluga and they would come meet us with their bowhead. So we would switch sleds and bring the maktak and meat back here, and they would bring the beluga to Wainwright. We had that going on ever since I can remember. So that’s how we got our bowhead here. It was, because when we had our community events like Thanksgiving and Christmas, we would have bowhead whale even though we didn’t hunt it, we didn’t catch it. Yeah we would call Wainwright and ask, you know, do you guys have a successful year? Can we get some whale, bowhead whale maktak and stuff. I’m sure they would, you know, trade for beluga.

A second adult shared a personal anecdote on how one resident of Point Lay, a native of Barrow, had fought for Point Lay’s right to whale after he moved to the community and was unable to whale as he had when he was growing up. This respondent drew upon the embodied cultural capital he had gained through his experiences in Barrow as the son of a whaling captain to lead the push for a bowhead
whale quota from the AEWC. Once the community won a quota, this resident drew upon his family connections in Barrow to help Point Lay restart its whaling tradition.

He took over his father’s whaling crew in Barrow so he, you know, he had the experience and he already had a whaling crew and equipment. When he moved here when his father passed away he was just unable to do it, so he brought all of his whaling equipment here. He started to try to fight for our rights to get bowhead whaling back. When they finally did start negotiations on it, [Point Lay’s other whaling captain] created his whaling crew with the local residents here, but me with the experience of growing up doing this whaling I was already, you know, in the front lines sort of thing. [He] had brought his brothers, his nephews down for whaling or they would come here and go whaling with him, so I went out with [Point Lay’s other whaling captain] because he didn’t have very much experience. I mean he did have experienced whalers but, you know, it wasn’t as much as [name withheld].

One adult from this cohort also pointed out that the entire community was using technology to assist with the bowhead hunt. He said that one of the town’s whaling captains was using GPS technology to establish baseline bowhead whale harvest data for the community. His comments suggested that the community, in turn, was using this information to refine its whaling strategies—strategies that, in the aggregate, were contributing to a new set of TEK for the community’s youngest generation.

Last year my dad’s whale was eleven miles up north, but to the open lead it’s about nine miles from here to the open lead and then we’ve got to go another eleven miles up north, probably like three to five miles out more. And then that’s where [name withheld] got his whale this year, because [he] had it marked on where we caught the whale last year. We were trying to ask him for the coordinates on where he’s catching the whales so we could go help him tow it, and he’s like yeah we got it right where you guys caught it last year. And then we were like oh man, we don’t have
that GPS where we had our waypoint where we caught that whale. We’ve got a different one.

During interviews, respondents were also asked to share their knowledge of harvest locations and animal behavior. Several adults said that the overwhelming majority of Point Lay’s whaling activity since 2008 had taken place within 15 miles of the community, and all of it has occurred in the springtime. One adult was aware that Point Lay’s previous bowhead whale hunts used to occur near Icy Cape. This adult said, Oh here, back then we used to travel fifty miles north of us. That’s where the safe ice was, better hunting grounds. [Today right out front]. Last five south of us and eleven miles out. Right now they’re breaking trail. If not today than tomorrow. End of March beginning of April for trail.

Elder Cohort (Ages 50-70+)

Point Lay’s experienced hunters and elders provided the foundation upon which much of the community’s whaling edifice was built. Although a few respondents in the oldest cohort had known elders familiar with Point Lay as it was before the cessation of bowhead whaling at midcentury, most of the respondents in this cohort had their first whaling experiences as young men and women living in Point Hope, Wainwright or Barrow. Point Lay’s most experienced whaling captain was a member of this group. Point Lay also had several female elders with knowledge of supporting roles such as sewing for the crew, cooking for the crew, and logistical support. Respondents in this group were just as active building a new set of TEK as the younger members of the community, but their most noticeable contributions to Point Lay’s whaling was their combined knowledge, their experience, and their collective leadership.

Three elders shared memories of their earliest whaling experiences in neighboring communities. A common theme across these memories was the collectivist and community oriented nature of whaling activities. Every able bodied person was expected to contribute. Youths were also expected to learn from the community’s whaling captains. Three men shared their early bowhead whaling experiences as follows:
We did [go to other communities to hunt bowhead whale]. I used to help when I was in Point Hope a long time ago, fifties, with my grandpa and his crews, but that was my only experience. When I came up here it was the belugas. I was part of the crews. We were all part of the crews.

Yeah, I went to...we go to Nalukataq, or just to go to a blanket toss so you could get some maktak. Went to Wainwright and then they caught a whale there, and it was the first time I ever saw anybody or heard anybody get a whale, and that was a big experience for me because everybody was hollering and yelling, get on the CB, and I was just completely in awe because I had never seen it before. I was in boarding school all my life. I don’t know. [I was] maybe about sixteen. Fifteen or sixteen, yeah. That was just the first time when I actually got to go down and experience it all because there was no whaling here. Everybody was taught to help out. Everybody was taught. If you’re not helping with the cutting you’re helping with the children or you’re watching out.

[I learned to whale] in Barrow. When I first started going out I went out to butcher whales. That’s where I learned, you know, the vital spots to strike a whale, and then my first whaling captain was [name withheld] in 1976 was the first time I went out. We took a whale that year. The first time I went out to butcher a whale was when I was 12 and this was 1972.

A woman from this cohort remembered an important lesson she had learned from her parents and grandparents as a child. Her elders stressed the importance of cutting and sewing skins correctly in preparation for covering an umiaq frame for whaling. She said that she was now teaching this important lesson to the young people in the community.

Our parents and grandparents sewed for us a lot. We used to help with the tanning, and they’d teach us how to carefully butcher and handle skins because there’s certain ways that they put them together, you know. Finished product, you can’t ruin a good skin. Yeah that used to be a no
no: don’t ruin the skins. Don’t cut the sinews. There’s a certain way you have to. That was for, yeah, the young people. You have to teach the young people because they’ll cut…yeah, they’ll cut wrong and then you’ll get—oh no, you’ve got to get another one. I’d rather show them first and then they can do it because that’s how I was taught. My grandparents let me watch until they’re done.

For community elders, Point Lay’s modern whaling activities provided an opportunity to apply and pass on the knowledge they had learned as youths in neighboring communities. For example, one elder who was also a whaling captain explained how Point Lay had been allocating bowhead shares since 2008. This respondent had used the knowledge he had learned as a young whaler in Barrow to reestablish traditional patterns of sharing in Point Lay. When asked about sharing practices in Point Lay this elder said,

Well there’s two crews [here in Point Lay]. The sharing is exactly the same as Barrow. We call the uati from the belly, from the center of the belly if it’s a female or the belly button, it’s way down here if it’s male, so we go forward and make the tavsi. The uati is from the belly on down to the fluke. It’s whoever struck the whale first. The uati [goes to whomever made the first strike]. That’s for the Nalukataq, Thanksgiving and Christmas. Some is saved for Easter. Well [name withheld] did it different this year because it was his whale, and the third share he distributed to all the homes. When I took the last two whales I did it the way it’s done in Barrow. And then we put one [share] aside for the elders.

It should be noted that the researcher heard youths from the youngest cohort incorporating the aforementioned Iñupiat terms into their responses. When asked where they had learned these terms, these youths told the researcher that they had learned the terms by listening to the community’s whaling captains.

Two women shared some of the support activities they engage in during the whaling season. These elders told the researcher that they had been taught to help out in
whatever way they could with the hunt as children, and said that they were continuing to use whatever talents and resources they had to help the crews today.

*We help them out with coffee, donuts, maybe a pot of soup. We cut blades for them and design tools, fix their gear for them. Or if they need a tent, we’ll give them a tent. Make sure they bring it back. But other than that, they know what to do. Let them do it.*

*I cook. I’m a cook for [the whaling crews]. I cook, I bake, I sew. I sewed their outer white stuff for [whaling crew] last year. I sewed about maybe five covers because [the whaling captain’s] wife doesn’t sew. You just volunteer. Yeah, you help out whatever you could, whatever kind of talent you have. You use your talent. You help out. They’re just lucky I know how to cook and sew together because [name withheld] don’t sew at all. If I have money I give them money for gas. It don’t have to be a lot, you know, but they’re just happy that somebody could help out. We don’t expect anything back.*

One elder reported that Point Lay’s resumption of bowhead whaling had changed its trading practices with Wainwright. Point Lay used to trade beluga meat and *maktak* with Wainwright for bowhead meat and *maktak* during the winter holiday season. This respondent said that the exchange had ebbed in recent years, though the two communities still retained close ties as evidenced by the number of respondents who made trips to Wainwright or maintained family contacts there. This elder said,

*Yeah, actually during Christmas and Thanksgiving people from Wainwright would haul in whale for our feasts because we were wanting whale, but now they don’t have that as much. Yeah, volunteers. Overnight, just come here sometimes. Bring it and go right back up.*

**Beluga Whale**

Point Lay’s annual beluga hunt is the community’s most important subsistence activity of the year. The hunt has occurred each year for at least forty years and involves
a significant portion of the community’s residents. In any given year, approximately 50 community members participate in the hunt. For two or three intense days, most of the community moves across Kasegaluk Lagoon to help butcher and divide the catch on the barrier island directly across from Point Lay. In former times, Point Lay used part of the beluga harvest to barter with neighboring communities for bowhead meat and maktak. Beluga remains an important source of food today even though the community now also hunts bowhead whales. As the most communal subsistence activity in Point Lay, it is an important source of social capital as well as a mark of community identity and pride.

Point Lay is a member of the Alaska Beluga Whale Committee, a statewide co-management organization formed in 1988 committed to monitoring beluga health and numbers, conserving beluga stocks and regulating harvests. The organization is comprised of representatives from 28 villages, plus representatives from the North Slope Borough, the Alaska Department of Fish and Game, and the NOAA Northwest Marine Fisheries Service (North Slope Borough 2014). The most accurate population estimate of the Eastern Chukchi beluga stock is from aerial studies conducted from 1989-1991, and yielded a population estimate of 3,170 (Allen and Angliss 2011).

Youth Cohort (ages 18-29)

Most youths were familiar with the beluga hunt because most had grown up with the hunt a part of their lives. Youths said that beluga season usually begins in June. One or several community members, acting as advance scouts, travel south through Kasegaluk Lagoon in search of migrating beluga pods. Once a pod is spotted, the scout notifies the village and anyone with a working boat travels south to meet the herd. The hunters drive the herd north to Point Lay with their boats and then harvest as many belugas as they can in front of the village. Few youths reported any changes in the hunt or harvest over the course of their lifetimes, but several youths did say that they wished the harvests were larger.

Most youths were still learning to hunt and process beluga whales, so few offered a retrospective narrative when asked about their earliest memories of the beluga hunt. Instead, when asked about their earliest experiences hunting and processing beluga whale, most youths provided an overview of the contemporary Point Lay beluga hunt.
One youth shared a particularly detailed account of Point Lay’s beluga hunt as it is done today; his quote is included in its entirety here:

*Nowadays they send, before the beluga even come they’ll send scouts down south to the last inlet, Kasegaluk Inlet. Some of the scouts, some people will stay down there and camp out, but usually they just come back that same day. They’re trying to get it to where they bring them in through the five mile inlet every time. That’s what they want to do because it’s closer to the village. When we’re herding them through the lagoon they get so tired some of them beach themselves. Yeah, and I think that’s just because that inlet is closer. Our Cully Inlet we haven’t been able to get into. It was closed for many many years. It’s finally been opened.*

When we first spot them we try to avoid them as much as we can. We’ll contact the village, you know, and tell them we found a pod of beluga and the leader of the hunt will tell us if we’re going to go for that pod or not. He’ll ask questions on how many beluga there are, how many babies do you see with the beluga, and then we usually try to avoid them, just observe them on which direction they’re going. Sometimes they can be two, three miles offshore and then they come to the edge [of the shore]. Well, we’ll wait for the leader of the hunt after he’s decided if we’re going to go after this pod of belugas or not. If we are then we will wait right there where we're watching them until all the rest of the boats get there. I’ve heard of it being done with two boats. I’ve heard of them herding them into the lagoon by themselves before. I’ve heard of that happening just because it was late in the season and they didn’t catch beluga that year. My grandfather and my dad and my uncle were out there looking for caribou along the ridge. They ran into belugas and they were right out in front of Kali so they just herded them in the lagoon and our boats got ready and caught them right there.
We make a harpoon and we connect the harpoon to a float line and a float. Every time we’ll harpoon the beluga first and then we’ll shoot it with either a 30-30 caliber or higher. It has to be a 30-30 caliber or higher. We’ll follow the float until it comes up and then we’ll shoot it because after we kill it we usually use up all our floats. We don’t harpoon and then go and harpoon another one. We’ll harpoon and kill that beluga, and then go and catch another one and harpoon and kill it. And then after that or after you’ve used all your floats, you’ll start a total of all the belugas, one by one.

I didn’t get to cut. I was so young, you know. I wasn’t a cutter; I would just carry the meat and make it into piles. As many households as there is in the village, that’s how many piles that we’ll make and they’ll all be equal. We’ll start off one piece here, one piece of maktak one piece of meat, and another piece until every pile…we have a leader in the hunt. We designate one person to be the leader and then we designate another person to be like a captain and co-captain of the whole hunt. The leader will usually be in the front of the herd when we’re herding them and the co-captain will be in the back and all the boats will communicate with each other. The captain and the co-captain will usually make all the decisions about how fast we’re going, if we need to slow down, if we need to stop and give the belugas a break, a rest. [We harvest them] out here in front of Kali (Cully, the village of Point Lay), right below the hill. We’ve always done it there. That hasn’t changed at all.

The same respondent also shared how he was taught to interact with beluga whales, both during the hunt and after the harvest. He said,

The first thing that’s done when we cut them up is we cut off the head. We see it as a spiritual thing to release the spirit. We usually don’t use any part of the head unless people want to go back and use the teeth, like the
teeth are ivory. You can use the ear drums for whatever design. Just cut it off and put it back in the water. We use everything else except for the insides. It's always been done. It can also be done with the bowhead whale too. It hasn't changed at all.

It's put into piles for just the community mostly, but if the piles are too big for the community then we'll make separate piles for the other communities. We'll share with Point Hope or Wainwright. Yeah we call the village and say, "We're sending you guys a bunch of maktak." They'll pay for it. They'll pay for the freight. Usually a lot of the time the airlines will do it for free. They'll help us out like that.

Just like with the bowhead we try to keep a clear mind, don't think bad about anybody or anything. Respect the animal as much as we could. We do it out of respect for the animal. Everything we hunt.

Another respondent provided additional details about how the beluga meat and maktak are partitioned after the harvest. This respondent said,

Every household gets one share. They try to equal it out. What they do is they get pieces of paper of people on the house, households, and they would put one on every pile all the way until all of them have one or two on there, and then they would go back and get some more. Equal amounts. Equal. There's people that don't even get their shares too. If they don't claim it we send it out. A lot of them—I'm not too sure. [Name withheld] and them have been sending them out to the elders.

Opinion in this cohort was divided as to whether the community is able to harvest enough beluga whales to meet its needs. One respondent, however, summed up a common theme across the community when he said the following about the beluga harvest: “Point Lay is able enough to get belugas. What we get is what we get. [I view it as] what was given to us.”
Adult Cohort (Ages 30-49)

All respondents in the adult cohort, both male and female, reported that they had started hunting belugas at a relatively young age. Adults were between 10 and 20 years old when more experienced hunters in the community took them out on their first beluga hunts. All but one adult learned to hunt belugas in Point Lay by participating in the village beluga hunt. Close relatives such as parents, uncles, and grandparents were the most commonly reported mentors for this group. A common theme across the responses was the strong communal nature of the hunt, both past and present.

Adults said that the beluga hunt used to be smaller and involved fewer boats with smaller motors. They added, however, that the basic structure of the hunt remains unchanged today, with only minor modifications due to technological advances and changes in beluga behavior. Excerpts from two retrospective narratives are below:

I must have been ten eleven years old when [my grandparents] finally put me in the boat with them and we would go herding. This is back when they had the aluminum boats and they only had 20 horse, 25 horse motors on them, so it would take a long time to herd them into town. I grew up doing that and my grandparents would bring me out everywhere they went because every time I came back to Point Lay from Barrow, you know, I lived with them so…They would be in the same area mostly by Omalik Lagoon, and we would travel up and down, south and north along the coast, and wherever we found them we herded them in and brought them to Point Lay.

Growing up there were far fewer boats and it was still a team effort back then. They would only bring guys that had experience so I never got to participate in the hunt until I got older and listened to their stories. I was not even…my high school days. My last year of high school. My father, my uncle [taught me how to hunt for beluga]. Just by watching them and helping out while they process the whale. They tell us what’s right and
what’s wrong…just by listening to them. Usually we’d travel south from here and herd them up the coast into the lagoon.

When asked if the beluga hunt had changed between the time of their formative experiences and the present, most respondents said that it had. The most frequently reported change was in the quantity of belugas harvested per year. It was common for respondents to say that the community had consistently caught at least 50 belugas annually more than five years ago, with even higher numbers reported for the 1990s, but lower numbers even farther back because the community was much smaller at that point. The total annual harvest for 2010 was 22 belugas, for 2011 it was 23 belugas, and for 2012 it was 14 belugas. There was less of a consensus on the reason for the recent decline in harvest numbers, though one adult said that the elders who had the greatest expertise in leading and coordinating the hunt had died off in recent years. This respondent said,

When I was younger it wasn’t a lot of them. We would get between 20 and 30 of them to maintain our community, but I mean our community wasn’t so big back when I was growing up here. Yeah they weren’t, but maybe in the past ten years our numbers would be a little higher. We would get about 40, 50. One year I remember it must’ve been, it must have been in about ‘95 or ‘96 that we caught like 78 of them. It has gone up quite a bit in number. Yeah, the last two years, two or three years it’s just been…I’m not very sure why it’s been so low. No, there’s still a lot of beluga coming around. What I think, and I might be wrong, it’s our older generation is getting a little too old to be out there hunting for long periods of time, and we’re kind of in a shift to a younger group to, you know, my age, 30, you know 20 to 35, about 40, and where the older guys are 40 to 60. They’re getting older so they’re not really able to be out there for the long periods of time. A lot of our elders have passed on, so we use the older guys that are in their 50s, they’re trying to catch up and teach the younger generation because the younger generation like my age, there’s a lot of us
and there’s a lot of them that know and learn from their parents or their aunts and uncles, but I think we’re in a shift of generation.

Another adult agreed that the harvest numbers were way down, but said that the decline could be due to a lack of ice in Kasegaluk Lagoon. According to this adult, the presence of ice floes make it easier to steer and corral the beluga herd while driving them through the lagoon to Point Lay.

Actually I noticed we used to have lots of ice, chunky ice that would hang around on the shore ice. It used to hang around. It used to be easy to manipulate to herd the beluga in because there were ice floes in the water so you could just herd them real easy and steer them real easy, but now that there's hardly any ice it's kind of hard to steer the beluga. We have to kind of be way more patient and let them swim on their own without having to push so hard on them. There's no ice. No it's pretty much still the same (the timing of when we harvest them). June. July. It hasn’t changed at all. One thing they do is a couple times they tend to take off, they tend to leave their feeding area and just zoom on by. We had to go catch them up and herd them back.

A third reason given for the decline in harvests was a corresponding increase in rules and regulations governing the harvest. One adult said that an existing regulation requires each boat to harpoon a beluga before it is killed. According to this adult, the regulation was put in force to decrease the number of belugas sunk and lost during the hunt but has had unintended consequences. This adult pointed out that not every boat has a harpoon, and he suggested a link between the regulation and the decline in harvest numbers.

With all these rules coming out we’re catching less. Back in the day we used to just hunt them and nowadays we’ve got to harpoon them and then kill them. I have no idea [who makes the rules]. I wouldn’t know. I think it has to do with the…I don’t know if it was the marine biology or the beluga biologists or whoever like the beluga commission. I don’t know but I noticed every since they changed it—we used to just hunt them, herd
them into our lagoon and then harvest them. Nowadays we’ve got to
harpoon them and then kill them, and everybody doesn’t have many
harpoons in their boats. Because when I first started coming here we
would average easily over 50 a year. Now we’re getting less than that. I
would say the most I’ve seen that was caught was 75. [Before] we’d just
shoot them there and tow them over to the land, but nowadays—I guess
they were saying that too many of them were sinking, and then when the
tide would get low we’d start to see dead belugas wash up. So a lot of
them we wouldn’t see dead laying there.

A second adult cited a regulation limiting the quantity of belugas harvested by any one
boat to four as another obstacle preventing the high harvest numbers of past years.

To sustain them, no (we don’t harvest enough belugas). Not enough. I
think it might be the way we hunt. We’ve changed it. Just a little bit. That
might affect it too. We’ve got to set a quota, like one boat has got to catch
four belugas. Anywhere from ten to twenty boats. You’ve got to decide
how many boats show up. It’s just not enough. We’re already out,
already. We’re lucky this year the caribou hung around (we harvest
caribou to make up for a poor beluga harvest). [Name withheld] did most
of the hunting this year.

Despite the decline in harvest numbers, these respondents agreed that the belugas
were healthy. Their behavior, however, had changed, in some cases quite dramatically,
making them unpredictable and more difficult to harvest. All respondents in this cohort
said that the belugas were migrating past the village up to a full month late. No clear
consensus emerged, however, on why the timing of the beluga migration had changed.
Respondents made the following comments regarding beluga behavior:

Now it’s early July to mid July. About a month later. That’s when they
used to come. Early. They’re coming later. Just they’re opportunistic
animals just like us. You follow your food. They’re just like people. They
have young; they want to make sure their young are growing up to travel
with them. So it seems like they’re giving birth later in the season and that’s why they come around later in the season.

They still do [come around] but it’s getting later. That’s the reason why [the North Slope Borough biologists] are tagging them, they’re monitoring them, they’re putting collars on them. To this day we can’t figure out why they have to go clear on the other side of the world and come back. It’s hard. Where’s our beluga going? They will follow a different herd or a different pod or either adapt or they’re shit out of luck. There are different marine mammals, our belugas. Like the caribous. There’s the Porcupine Herd. Same thing out here in the ocean. We don’t know where our belugas are going.

Nothing really has changed except for the timing of them. It does seem like they’re a couple weeks later. I’m not sure why or why not, but they tell me the stock of belugas we hunt from just come from the open ocean and come near our shore every year. Yes [that’s what the biologists are saying]. Because I asked them about the beluga that pass by in the spring time when we’re hunting the bowhead whale out here, because there’s a lot of beluga that swim by too with the bowhead whales along the shore, along the ice and I asked them about it and they said, oh no that’s a whole different stock of belugas that you hunt. They kind of come from the open ocean, Russian side, kind of up little north between…yeah they just come; I think it’s along the coast where they have their babies in the shallow area.

As the most communal subsistence activity in Point Lay, the harvest and distribution of beluga meat and maktak provide the community with a chance to share the bounty of the harvest with every household in the village, even if those living in the household are unable to directly contribute to the harvest due to pregnancy, illness, or
old age. Two respondents provided succinct summaries of the values that govern the distribution of the harvest:

*We were taught to* just work together. Just communicate and work together. Whoever comes from out of town will help to hunt and cut up, they get their own share too. Everybody in this village gets a share. Each household will get an equal share.

Every household in Point Lay, whether they be there or not they'll always get a share. Every household in all of Point Lay, whether they be there or not they'll always get a share.

Despite the changes cited above, all respondents agreed that the hunt is still traditional and the values that govern it are still in place. As one respondent said, *The hunt is* very traditional. They say it hasn’t changed a lot besides the caliber of gun and more boats.

**Elder Cohort (Ages 50-70+)**

Respondents in the elder cohort generally fell into one of two groups depending on when they came to settle in Point Lay. The first group consisted of elders who had spent all or nearly all of their life in Point Lay. These elders were descendants of the very small number of settlers who lived in the community throughout the 1940s and 1950s or else had long standing ties to the community and had come to Point Lay as children. These elders had learned to harvest beluga at a time when the hunt was much smaller than it is today. The second group consisted of long term residents who had moved to Point Lay as young adults after the beluga hunt had already taken on its modern form.

One elder who came to Point Lay as a child described how his uncles used sailboats or Yankee style wooden whaling skiffs with low power motors for the hunt. According to this respondent, the beluga used to migrate through Kasegaluk Lagoon and would swim right past the community so there was no need to herd them. The hunt was much smaller at the time because the community contained far fewer residents, but far more important for survival because the community had less access to outside goods than
it does today. This respondent shared some of the preparations the community would take when anticipating the arrival of the beluga herds:

"We wait for the beluga. We used to clean ourselves, and everybody would get generous all of a sudden. Don’t have to save too long. Going to replenish. I imagine when I first became useful. Not in the way so much. I don’t remember any other way (in reference to the length of time Point Lay has hunted belugas). My grandpa [taught me]. And my uncles used to take me because I was useful and I didn’t complain. [The hunt took place] the same way, except we didn’t have motors. Today it’s a little different. Except today they have to go out there and bring them in. When we first came to Point Lay I remember my uncles. We used to stay at home, be quiet, because they knew they were coming. They knew, and they’d let them come. We didn’t have to go out there and [herd them]. We didn’t have the speed boats either. If we had our 40 horse and Lund, man we would have been super fast. Twenty five horse [back then]. We had twelve horse Eldridge or sailboats. We had those old whaling, Boston whaling type black and white boats.

Oh they come up. They never mistake. Right up through here. Right through. In those days we used to let them come in and we’d all camp. They’d come and we’d just be quiet. Don’t drop an oar. And we only had like four, five boats back then. The last time I remember it was ’64. Bigger population [of belugas], and a different type of Eskimo. We were subsistence subsistence. We didn’t have store bought luxuries too much. We had a small store, but that was a yearly, year round, or once a year supply, that was it.

Another elder recalled a year where her parents were the only Iñupiat adults living in the community (there was a nearby DEW line site, actively staffed by government employees, at this time). Her parents simply harvested what was needed and put the surplus into storage."
My mom and dad were the only ones here and they harvested six of them. Four of them, big ones yeah, but it was because the DEW line was here and they could send it to other relatives. So I remember one year, a couple years from high school...yeah they [harvested belugas] by themselves, and then I’d go and finish up, drop all the meat and maktak in the cellar. I did that. I was the only one here to help them.

Point Lay’s rapid population increase in the early 1970s changed beluga hunting from a family centered activity to a community centered activity. At that time, Point Lay had an abundance of children and adolescents, relatively few adults, and almost no community elders. One elder who had lived her entire life in Point Lay offered some interesting commentary on the contribution of Point Lay’s youth to the hunt.

Well the way they used to do it [in Point Lay] was they had the kids on the beach, and when the belugas came near the shore they would start throwing rocks over them, making noise on the other side and pushing them up closer to the shore and that’s how they used to take the belugas in the past before they had outboards. Amos was the one that told me the story that they used to get the kids with, you know, have them follow the belugas onshore and throw rocks over them on the other side of the belugas, you know, to spook them closer to the shoreline. When the belugas got near the shore [the adults would] be ready to shoot them, and then they had hooks.

The most frequently reported change in the beluga hunt was the necessity of herding them to the village today. Several elders said that beluga no longer migrated through Kasegaluk Lagoon unless forced to do so but none were able to provide what they considered to be a satisfactory explanation for the change in beluga behavior. One elder who had lived in the area his entire life suggested that the beluga might have grown familiar enough with the annual hunt to change their migration pattern to avoid the community. He said,

*It wouldn’t be crews it would be the whole village [that would hunt the belugas]. Whoever had boats. We would go down to Omalik Lagoon or*
by chance we’d see them coming and we’d get them right out here. They used to wait for them because they used to come through the lagoon on their own. We’d have people camping out. I have no idea [why their behavior changed]. Maybe they just got smart. Yeah because I’m sure that we’ve got some of the old [ones], the ones that remember. Like our uncles.

Another elder said simply that the beluga used to come in by themselves but no longer behaved this way today.

*After we moved up here from down there we got, we used to get them—they always go in by themselves. We have to herd them in now. They used to wait for them to come in by themselves. Now they have to go out there and force them in...they used to come by themselves. We used to never have to go out there and bring them. They used to come to us and we used to just go to the channel and block off the channel and get what we need.*

Respondents in the elder cohort were less likely than respondents in the adult cohort to report a decline in beluga harvest numbers. Those who did report a decline were also less likely to attribute recent declines in beluga harvest numbers to external factors such as environmental conditions or rules and regulations, preferring instead to look at factors within the community that might be contributing to the decline. One respondent cited poor communication and impatience as factors contributing to recent harvest declines, and suggested that younger members of the community would need to learn patience and respect before harvest numbers would improve.

*Nobody is communicating like they used to—like our uncles—because they were strong leaders. It's communication (why we had a poor harvest). Well, what they taught us not to push them. Let them go their own swimming pace and not rush them. They always told us let the first pod leave, go by. These young guys here they're still learning that because they've always known that the first pod [is not harvested] because they're the young ones with their mothers. I guess probably too they, you know, follow their scent trails or something. Sort of like caribou. Also try and*
keep a safe distance not to make them scatter. If these young people would learn. If these young people would be quiet. But they can’t. They can’t. They have to...They have gas, they have money, eighty ninety horse boats. They're impatient. We learned to be patient from our uncles. I learned from my uncles. Plus we could choose kind of which ones we could harvest, but nowadays it's first flocks.

A second elder who echoed many of the concerns stated above, also said that poor weather might have contributed to the poor harvest in 2011.

I think it was changed last year to my understanding. I don't think they even let the first pod go by. I think this was that first one. There were a lot of young ones in this last year's harvest. And they don’t—you know our elders taught us let the young ones go by. They're mothers, you know. Let them go. They need to grow. It's not that often they want to catch other ones. Probably, and plus the weather wasn't very cooperative either. Lot of west wind. I guess that's why we caught less than over the years.

When asked about beluga health and numbers, the general consensus among the elders was that the belugas remain healthy today and their numbers are strong. One elder said that the sea ice doesn’t last as long in Kasegaluk Lagoon as it did in the past; however, no elders in this cohort said the decline in sea ice was affecting the beluga in any way. One elder did say that the beluga migration was coming two weeks earlier, a claim that, if correct, contradicts the general consensus among respondents in the adult cohort.

Seals

Seals are an important subsistence species for Point Lay residents. Bearded seals (ugruk) and spotted seals (natchiq) are the most numerous seal species near Point Lay, though ringed seals are also present in lower numbers. On average, respondents reported that they sought and harvested bearded seals more than any other seal species. Spotted seals were harvested less often than bearded seals, and only a few respondents reported hunting or harvesting ringed seals on a regular basis.
Though the researcher tried to keep discussions about the different seal species separate for clarity, there were some instances where it is not clear from the quote what species a respondent meant when using the word “sea l”. In nearly all cases where a respondent spoke about seals, it should be understood that the respondent was referring to bearded seals unless otherwise indicated. Respondents almost always meant “bearded seal” when using the word seal, and typically indicated when they were referring to another seal species by referencing the type of seal or by using an Iñupiat term (e.g., natchiq).

Youth Cohort (ages 18-29)

Seals were the most widely harvested marine species among respondents in this cohort. Seals are plentiful when ice is abundant and they pose little danger to hunters. Respondents typically said that they learned to hunt, harvest and process seals from close kin relatives. Sealing is usually done in small groups of two to three hunters, and any seals that are caught are shared widely through extensive networks.

One young woman told the researcher that her earliest memory of sealing was of her father taking her sister and a brother-in-law out in a boat during the spring. She was very young, at most ten years old, the first time she went sealing in a boat. She learned to process their catch by watching and learning from her older sisters.

I was probably eight years old, maybe ten years old. I went out with my dad, my sister and my brother-in-law. It was always spring time. End of May. [That’s the earliest experience] that I can remember. My sister and my dad [taught me how to harvest]. They’re all my older sisters. I have no younger sisters. [They taught me] how to cut it up, how to take all the fat off the skin, how to cut up the meat, what we can salvage from it as much as we could. Usually the only thing we don’t use is the head and the intestines. Some people, a lot of people do use the intestines, but I mean like the stomach and stuff like that.

Another young woman who grew up at the old village site long after the rest of the local families had moved to the mainland talked about her experience living a traditional lifestyle at a time when most people had abandoned that lifestyle. She told the researcher
that her family harvested seals right on the beach. She was the only respondent in the study who reported harvesting seals in this way.

_Growing up we lived in this sod house across here. We used to hunt right off the beach because we lived right by the ocean. Mom and dad [taught me]. We would go walk right on the beach and harvest them, you know. Right from the beach. [My parents taught me] how to cut it up. Just how to cut it up. Basically how to take care of your meat, what’s good, what’s not. Basically everything is good on a seal. Even the intestines. They showed us how flush it out, how to braid it and boil it. Me and mom you know, mom would show me how to cut. Not only dad—mom would show me what, how to save your hide, how to stretch them out._

Another youth said that he learned the art of sealing from his father and the skill of processing his catch from both his parents. He also shared a few words on how his family likes to enjoy the seal meat after the harvest.

_My dad [taught me to hunt the seals]. My dad and my mom [taught me to process the seals]. My mom likes to make jerky. We boil them, eat them, cut up little blocks to boil. That’s all that I really know of. We make the oil. My mom really likes to dry them though, and then after she dries them she likes to stick them in the oil and eat them like that. Pull them out whenever._

Seals of all kinds are typically harvested early in the summer when sea ice is plentiful and the seals have not yet started to rut. Sea ice provides important habitat for seals, allowing them a place to haul out when they wish to rest. Sea ice also makes it easier for a hunter to successfully harvest a seal because a seal that is shot in the water may sink before the hunter has a chance to retrieve it. Seals may be found anywhere in the open ocean, but typically prefer the channels between the barrier islands and are commonly harvested there. Two respondents shared their observations on the conditions most preferred for seal hunting:

_Yeah basically five mile [is where we hunt seals during the spring harvest]. You go out this inlet and then we would go find our way through_
the ice to go to five mile. I mean the seals aren't hard to find. You've got your trail out there. If you can make it out and there's open water, you can get out to the real open water, you'll find seals, but once that ice goes you have to—basically by the inlet is where they hang out. So if we normally go to the inlet, find them there or inside the inlet.

What I was told is that they're out there all year round. We try to get them at the beginning of the year any time we go out traveling on the ice and get the females, because the males will be in the rut. If you get a male when it's in its rut when you cut it open it will smell like kerosene. It's no good to eat.

During discussions of seal harvests, it was common for respondents to say that declining sea ice has been and continues to be a factor affecting seal harvests. Although seals have remained plentiful and healthy, declines in sea ice have altered the timing of seal harvests. Comments received concerning contemporary harvest times and locations for the various seal species indicated that harvest amounts are not threatened, but suggested that levels of sea ice are definitely on the decline. For example, one youth said,

We go anywhere where there's open water on the ocean. Not really [it hasn't changed]. Usually we'll get first open waters right by the inlets. They're always just right there as soon as we get on the ocean side. End of May, beginning of June. That's still the same. Until all the ice is gone and that's usually about the middle of June. Yeah, well the ice it used to stay longer. I remember the ice used to stay out there until the fourth of July. You'd still see ice out there. Now these past maybe five to ten years by the fourth of July all the ice is gone. It's open water.

Sealing is not limited to the summer; residents may look for seals at any time of the year, though only one youth reported hunting for seals outside of the open water season. This youth said that an older community member was mentoring him, showing him how to look for seals on the frozen ocean in January: “I wasn't really taught by my
dad and my grandfather to go out there in the winter time, but then like [name withheld] was the first person to bring me out winter time to hunt seals out there. It's in January.”

Most youths said that seals were plentiful and healthy, though none provided more detail than this. Only one youth suggested a reason for a possible increase in the seal population: a corresponding decline in polar bear numbers. This youth said, “No I think they've grown, actually. I think the numbers have grown since the lack of polar bears. There’s not as much polar bear. Yeah and they play a big factor in the number of seals.”

When asked what they were learning from older family members and community elders about sealing, youths were expressive about the efforts they were making to maintain their values and traditions. Multiple youths stressed the importance of sharing their catch with the community and especially with local elders who were no longer able to provide subsistence foods for themselves. One youth said that a child’s first catch is always shared with the elders, regardless of species.

*Our first catch we would share it with the elders, our first catch, the seals, the bearded seals, like geese and everything else. Just the beluga and the bowhead, it's pretty much done all at once. After that we provide for our family. Then once we think that it's on our nature that once you get your first catch and you give it away, you respect the animal, God will provide you with more.*

Two youths said that they always offer some of their catch to community elders and others without the ability or means to provide for themselves. Once these community members have been offered a share, family are provided for.

*Every time I catch something I give some away. I don’t keep it all to myself. [I give some to] people that need it. And I would go out like for, like there was this one guy like two and a half weeks ago, three weeks ago, he had no job for a long time and I decided to go give him caribou. He was happy because had no transportation or nothing, no guns. I went out and got one and brought it back and skinned it, brought it over. I’ve done that over the years.*
Yeah we share it with our family members, whoever needs it. If there’s a sick one out there we’ll give it to them, but the first thing we do when we catch an animal is we give it to the elders, any elder that’s in the community. We treat it with respect. We honor it. We pray to God about it. They would feed it, you know. They would help it feed or drink up if it’s sick or not, hungry.

**Adult Cohort (Ages 30-49)**

Respondents in the adult cohort reported that they had their first sealing experience as young as ten. These respondents usually reported that they learned subsistence activities from close kin—parents, aunts, uncles, or grandparents. For example, one young woman said that nearly all of her senior relatives had contributed to teaching her what she needed to know from a young age. This respondent shared some of what she has been taught while growing up.

*Yes, first time I caught a seal [I was] 10 years old. [I learned] from my – I’m trying to think – from my grandfather’s brothers so my great-grandmother, my great aunt, our two great aunts and an aunt so I had four ladies teaching me. And they’re the older generation ladies. They’re not even alive anymore. Both me and my sister, I have an older sister and we learned at the same time. They taught us how to cut it, skin it, make oil, make dried meat, how to cut the bones off, everything.*

Another adult shared how he used to go hunting with a cousin to provide seal meat for their grandparents. He said,

*When I was in high school, this must’ve been a good fifteen years ago, I have a cousin [name withheld] and we used to go to Icy Cape and go hunt seals every year. We were both living with our grandparents; we were providing for them too so we would—the ice would be gone by the time our lagoon was thawed out enough to get out in a boat, so it would be kind of ice free so we would travel all the way to Icy Cape and go hunt seals up there*
Most adults said that hunting conditions had changed considerably since the days when they were first learning to hunt and process seals. Sea ice melts faster each spring than it did when these respondents were adolescents, and multiyear ice is increasingly rare. Sea ice is important seal habitat as it provides a place for denning, as well as a place for seals to haul out and rest. As one adult said, sea ice also provides a platform for harvesting seals.

There’s always ice around when we’re hunting these animals, and we go to the ice. We put them on the ice. We cut them on the ice. Yeah, we’ll cut it up right there—and there’s some people don’t do that, they usually just bring it home and harvest at home, but that’s the way me and my dad do it: we harvest on the ice so we can get more in the boat load.

If the ice recedes too quickly in the spring, however, it will take the seals with it, making it more difficult for hunters to find and harvest them. Two adults commented on the impact changing ice conditions are having on their sealing practices as follows:

Spotted seals. Yeah I’d go to five mile inlet, eleven-mile inlet. There’s fresh water there. You can get them right now. Well their numbers never, it don’t seem like they change—the change is getting to them spring time. Sometimes the ice is so rotten that it’s just lots of them. It’s a haven for them because you can’t get to them. They sure can go on; there’s a lot of them. It used to be we get to walk up to them, harvest them and shoot them, but now you have to decide now. We’re changing some of our hunting ways change with the ice conditions. Now we have to make some noise, shoot around towards them and hope when they all go diving down that they come up over here by us at the edge of the ice.

The ice conditions. It never used to be like that a long time ago. It used to be where you could just get off your boat, park next to a piece of ice and go run to a high pressure and then you can pick one out and shoot one and grab it and take it back to the boat without big potholes of ice but nowadays there’s potholes of ice. Some of them are big, man. You can’t
pull your bearded seal through that once it goes in that deep water. Sometimes they can't float.

When the researcher asked about the health and abundance of the seal population near Point Lay, respondents offered a mixed assessment. Most respondents in the adult cohort said that seal numbers had declined overall, but this perception was not a unanimous one. One adult contrasted the ease of harvesting them in his youth with conditions today. He said,

[The seals were] so abundant you can pick which one you want. If it's too big you don't want it and if it's too small you don't want it. If it's between you want it. Bearded seal would be so abundant you could choose, and today you see a bearded seal you're going to get it because they're hard to come by. You don't see as much anymore.

Two factors were cited for the decline in availability of seals close to Point Lay. First, respondents said that the recent decrease in sea ice has made seals more difficult to harvest. Seals follow sea ice, and if the ice melts away from the shore it will take the seals with it. One adult specifically cited sea ice loss as a contributing cause to declining seal harvests.

The ice, the conditions are horrible. Thinner ice means you might get bearded seal and you might not because the ice, like I said, it was here one day, gone the next, and it never came back. Nobody gets a seal [if there’s no ice]. They're all on the ice and they took off. That ice took them all away. Now we're looking for seals in the open water and they're rare. Once in a while you will find them. You can lose them because it's open water. You can get them and still bring them to shore, but there's nowhere for them to escape to. They can't hide. There's no ice for them to hide into or onto or whatever because that ice is already gone.

Second, a sickness of unknown origin afflicted the seals in 2011, depressing their numbers somewhat. Although one adult linked the seal sickness to retreating sea ice, at the time of writing there was insufficient evidence to verify this claim. This adult said,
Well I think a lot of [the reason why they’ve been sick] is that the ice has retreated so far up north that they don’t even have the option to be on the ice anymore, but Point Lay has always been known for spotted seals. Always. We’ve always had spotted seals here by the hundreds. Yes we do [still see them].

One adult, however, offered a different observation specifically regarding the spotted seals. This respondent said that seals continue to be abundant and their numbers may have even increased in recent years. This respondent said,

Yeah actually this is the most I’ve ever seen (this past year). Thousands.
It was hundreds. Before it was in the hundreds but now it's thousands. It was these beautiful seals. Beautiful skins. I got three of them right behind [name withheld] right now. Their skins are fantastically white but spotted. Beautiful. White as this can. If I had a video camera I’d tape every day of my hunting experience and all the animals that we see. It's like a documentary or something almost if you think about it. It's hard to put into words. Just look at the picture, let the picture speak for itself.

Another adult who shared observations from the previous fall said that the seals still numbered in the thousands even as the lagoon was freezing and snow was beginning to accumulate.

At that channel, Utukok is one place. I mean there's thousands and thousands of seals last year. It was icing up, just starting to ice up over there. This is in September. Thousands—I mean you could hear them, and I'm beachcombing, you know. There's snow on the ground. This is September and we're walking and walking. I could see ice; there's this thin ice maybe an inch and a half, two inches thick, on the lagoon. The farther we walked I could just see seals, thousands and thousands. You could just shoot them with any kind of gun. You could shoot them with a 50 BMG and they will not sink.

Two adults said that seal harvests had grown poor in recent years. One of these adults said that harvest numbers were down because community members were not
adhering to traditional hunting methods. This respondent said that seals are best harvested early in the spring before the seals begin to rut, but few people do this because harvesting them at this time of year would require them to hunt on foot rather than by boat. This adult said,

*I think a lot of it is that the people don't follow the traditional hunting ways like they used to (rather than the ice affecting the seal hunt). Like now would be the time to go seal hunting and nobody practices that anymore. As my dad says, the best time to catch them is right now just before they start a rut. I think convenience and lost traditions and there's a generational gap where the older ones aren't around anymore to practice it and some of them are too old that they can't go out anymore. A lot of the men just don't hunt that way. They take the easy way, go in a boat. Because if you go now you'll have to walk.*

The other adult who commented on harvest numbers shared a more personal observation on declining seal harvests. He said that the cost of living is so high it forces him to work, which in turn prevents him from hunting as much as he would like.

*No [I don't catch as much as I need] because today the cost of living has gone up so much that I feel I'm forced to work and I'm driven away from hunting. It's too expensive as much as I want to. It's like a trade-off. In earlier days you hunt more you work less, but today you work more and hunt less. I mean it's just—I want to say—the facts of life. It's just, how come it turned out that way? The cost of living is crazy up here. One will struggle if they don't have a job.*

Despite the difficulties respondents in the adult cohort reported with harvesting seals, they gave a unanimous affirmative response when asked if they still share their catch with the rest of the community. A few of the responses provided to the researcher are included below:

*Yeah we share [the meat] to some family in the community. We send some out. Yeah we always share. We mostly get it for us and stock it for our*
own freezer, but we get a lot and just give out to our family members and whoever wants. Give out to the elders for sure.

[We shared our catch with] the whole village. With everybody. Everybody that, you know, to this day I still share the way I was taught. Share and, you know, whoever needs the meat. Pass it out to the elders first, and then to whoever needs meat next.

[I shared] all the time. Yes the community elders, less fortunate families and families from out of town. I still do that today. It’s just right. It's only right, I mean any person in their right mind should do that.

**Elder Cohort (Ages 50-70+)**

A common theme among elders was the absolute necessity of the seal harvest before the arrival of modern technology. For example, one elder said that he learned to hunt seals before Point Lay had access to snowmachines. The cash economy was only beginning to penetrate the village, which meant that community members had to rely almost entirely on subsistence to meet their daily needs as well as that of their dog teams. This elder shared some memories and observations from a time when the community had to be more self-reliant.

Right spring time [for bearded seals]. Yeah. Yeah spotted seals, they’re real smart. They’re fast. They’re real fast. All the seals we hunt year round. We had to support our dogs. You know, there was no sitting around and not thinking. When opportunity came we usually took it. No, the snowmachines came, and our ability to cash economy came. See we didn’t have any cash in those days. The cash economy came to us, and so it became the iron dog. More convenient; it left more time for you to pay your taxes. We do it even after breakup. We still hunt out there. We’ll chase the seals. When we see a seal we’ll chase it because we…our Lund. Same places.
Diligence and hard work were necessities at a time when it was essential to store food for the winter. As one elder said,

*We tried to make dried meat and the oil for the winter, summertime, and put it away. Take care of it and dry it. It’s hard work because of the bugs. Right now is the perfect time to dry caribou or whatever you could because there’s no bugs. We just learn how to take care of them. If there’s bugs the eggs, take the eggs out, and let them dry. You’ve got to bring them in when it starts raining. I do, anyway. My grandparents and parents [taught me]. We learned from them to dry meat for the winter, and oil. Mm hmm [I taught this to my children]; that’s part of our staple food.*

Community elders mostly took a long view when the researcher asked them about seal abundance, health, and harvest numbers. Several respondents reported that they had noticed a slight decline in seal health and seal numbers in the past several years; however, none of these respondents said that they thought the changes were outside of the normal year to year variation they had seen most of their lives. One respondent said that ice conditions might have been responsible for difficult hunting conditions the previous year, but this didn’t affect her husband’s ability to harvest what the family needed for the year.

*Last year [we didn’t see too many]. Well, not really. Just the pressure ridges are so huge and it was pretty rough out there. So last year was his best season because they caught eight altogether, and I was so busy. Well we were busy out there too. Not only that we had just taken care of the whale so you can imagine how tired I felt. I learned I can’t complain. I have to get it done. Sometimes me and my uncles we’d cut them out there or my brother-in-laws, go out there, cut them out there. They did the last ones. They knew I’d be too busy. You know, taking the guts out and stuff. Yeah, so it won’t be so heavy.*

Another elder said that he had simply replaced seal meat with beluga meat in his diet since there were good beluga harvests in the years when there were poor seal harvests. He said, *“Just those four years [my seal hunting has not been good]. That was so good*
because we had good catch up belugas. We were able to barter with them. Exchange beluga for ugruk.”

When the researcher asked community elders about the health of the seals, three of them said that they had noticed an increase in sick seals during the past year. The increase in sick seals did not appear to be affecting harvest numbers, but these elders did say that the sickness was making them more cautious about the seals they were choosing to harvest.

You’re supposed to watch out for any sick animals and I know that they have. I don’t think it’s a lifelong sickness. It’s something they were saying on the radio; seems like there are no new [sick] seals that they are finding. They seem to have just that one batch or whatever, whatever happens with them. I think so (they’re getting healthier), yeah. I would be real cautious if I get any kind of animals, you know, that don’t look right.

Yes [we’re still able to get what we need]. We harvested three ugruks. I didn’t take any natchiqs. I wanted to wait until, you know the…they’ve been getting sick. Last year was a really high number mortality rate on the sick seals, and they haven’t found out what’s causing them to get sick…but if I see a normal looking seal, healthy looking seal, I’ll take it. The ugruks this year are healthy. I haven’t seen any lesions or hair loss. I don’t think anybody’s reported any.

Respondents in this cohort also said that they were concerned about the transmission of traditional knowledge necessary to keep the subsistence culture alive—especially the transmission of the culture to their children and grandchildren. Two respondents said that a lot of young people in the community lacked the knowledge necessary to harvest and process seal meat, and in some cases no longer ate traditional foods at all. They said,

[We share our meat with] everybody. Yeah, everybody who wants it. A lot of the children nowadays won’t take it. They do [eat it] but they won’t store it. They don’t cook it. You know, we do. We have to. They won’t
cook a pot of meat or duck or...They go to the store and get Hot Pockets and stick it in the microwave.

I think I get enough. We don’t eat that much anymore. [The young people] don’t eat it. They don’t get introduced to that. I introduced that to my grandchildren so they love it. You have to teach them while they’re growing up or they won’t...I have one grandchild that absolutely would not eat Native food. He wants pizza. He won’t eat nothing but processed food now--stuff that they can cook, because his mom and dad really never gave him that much Native food. It has to be like, you know when you’re raising a family, what you feed them is what they’re going to be growing up with.

Walrus

Walrus is one of the less important subsistence species in Point Lay. In earlier times, the meat was an important source of dog food for dog teams (Luton 1986). Older residents still harvest walruses and use the meat for food; however, walrus harvests have declined in recent years because few young residents eat the meat. Safety concerns have also made walrus hunting a specialized activity practiced by only the most skilled and experienced hunters. Younger community members said they generally try to avoid walruses when hunting for other species such as bearded seal.

Walruses are now considered threatened, and their behavior in the Point Lay area has changed dramatically in only a few years. Within the last five years, thousands of walruses have begun to haul out on the barrier islands separating Kasegaluk Lagoon from the Chukchi Sea. These haul outs typically occur in August and September, and it is thought that these large haul outs may be due to a recent decrease in late summer sea ice since walruses prefer to haul out on floating pieces of ice. The magnitude of the recent change has brought Point Lay state and national attention several times in recent years (Feidt 2010; Joling 2011). Local residents prefer to harvest walruses in the ocean because it is easy to keep sand out of the meat and there is no risk of a stampede, so this
change in walrus behavior appears to have actually made it more difficult and dangerous for residents to harvest walruses in some cases.

Point Lay is a member community of the Eskimo Walrus Commission. Founded in 1978 by Kawerak, Inc., the Bering Straits regional non-profit corporation, the Eskimo Walrus Commission represents the subsistence interests of 19 coastal Eskimo villages. The commission works with the US Fish and Wildlife Service on co-management issues including walrus harvests and conservation (Kawerak Inc. 2014).

**Youth Cohort (ages 18-29)**

Respondents in the youth cohort either said that they had never been walrus hunting or were only now learning to harvest walruses. Those youths who said that they had hunted walrus also said that their parents would not allow them to go hunting as children or adolescents because of the danger involved. For example, one youth said that he preferred to avoid them because he did not want them to attack his boat.

*I haven't really spent much time doing that (hunting walrus), but I've been out there bearded seal hunting with my dad and came across a walrus. I've seen him trying to get it. Yeah, well I haven't really gone out after walrus much but I've noticed when I do go out people are always telling me if there's a lot of them you usually try to avoid them. Try not to get too close because they will, if you're in a boat they can take your boat down. I've never harvested a walrus before.*

Another respondent said that she had never gone walrus hunting until the walruses started hauling out close to Point Lay. Rather than confront the walruses while thousands of them were hauled out together, she and her companions tried waiting until most of the herd had moved on to look for them but were ultimately unsuccessful.

*I've never gone out [for walruses]. Well, we try to this past year after the [major fall haul out]. Yeah, after they had left we tried to go out and see if we could see some still roaming around, but we didn’t see anything. So that would have been my first time to go out hunting for them. We weren’t really active in it when we were younger.*
Adult Cohort (Ages 30-49)

Most respondents in the adult cohort had at least some experience hunting and harvesting walruses in and around Point Lay. As with respondents in the youth cohort, adults stressed the hazards involved with walrus hunting when asked about their earliest and most memorable encounters with the species. One adult shared a story that had been passed down to him from his uncle about the potential hazards associated with walrus hunting. He said,

Yeah I caught one last year actually, but when we did hunt walrus it was mostly the older people when I was growing up because there’s a danger, a higher danger level when hunting the walrus compared to bearded seal, whale and stuff. My uncle, my mom’s brother told me that they went out one time and he had brought his family out there and they actually shot, got a walrus. They were coming home and their boat couldn’t travel so fast, you know, a little 20 horse, 30 horse with a full load. These walruses came up and they hooked his boat with their tusks and they were trying to capsize the boat. He said he pulled out his gun and shot it in the head and their boat was starting to take on water, so he had to jump out of the other side and hold on to, try to rock it and pull it back up so it’s not helping water in. That’s the level of danger of hunting walruses; it’s very high. If you don’t know what you’re doing they’ll poke holes in your boat; they’ll hook your boat and try to flip you over just because they see you as a danger to them, whereas a bearded seal or seal, they’re going to run, they’re going to try to get away.

Yet, the most frequent topic of conversation surrounding the walruses was the appearance of very large haul outs near the village beginning in 2008. All adults in this cohort said that large haul outs had not occurred before 2008. It was not uncommon for respondents to suggest that there might be a causal link between a recent decrease in summer sea ice and the massive haul outs near the village. Respondents from the adult cohort said,
I think the ice is having something to do with it. I think the ice receding too fast out there because they have to follow the ice. Besides the ones, they can't find any more food at the edge over there. I can't remember. That place is cold so long and there's no sunlight through that water. Yep [when the ice recedes it takes the walruses with it]. When we can we go fish. ...see as much walrus this year. It's about the same this year.

And then the walrus...that's new. All the years that I've been here I've never seen a mass haul-out like that before, ever, and I've been here since I was three and a half years old and we lived on the other side. I've never seen the mass migration like we've had the past five years has it been? There was one year they didn't show up and the year before they were here. There was a year that they didn't show. Thousands and thousands and thousands.

One adult said that the change in walrus behavior was starting to affect his ability to successfully harvest them.

Straight out. We just go straight out. They’re mainly out on the ice sleeping. That’s when we notice them-when they’re on the ice. But with all this ice melting so fast in the fall time we’re starting to see more and more every year on the beach. You could just hear them right out in the ocean. It’s the first time we’re starting to get some on our beach. [We don’t hunt them] when they’re bunched up. We usually, there’s people that go out and hunt them before the haul out comes, because we try to hunt them when there’s thousands of them, they’re going to lose a lot of the calves [to a] stampede. If we shoot, a lot of them will stampede to the water. A lot of the young ones will.

Most adults, however, said that they had not changed the timing of their walrus harvest because they prefer to harvest them in the spring when there’s still ample sea ice and their meat is more palatable. Two adults said,
We still get them in the spring. I think that’s when they prefer to get them: in the spring time. It’s to a point where when we see them, you know, we want to go get them. How I did mine last year is there were kind of far and few. It was early August, probably in the first week of August when, you know, a few of them started showing up on shore. So I went out there, and sure enough there was one on the shore. You know, there was maybe four or five out in the ocean, but there was just this one on the shore. Yeah, so I harvested it and I must have put 90% of it in the boat. I think they only require like 20% or something of the harvest and bringing it back. I must’ve brought, geez, almost all of it back. I caught it in the fall before the whole main group showed up. About a week and a half later the main group showed up.

And my dad says the best time to hunt them is in the spring for the walrus. He says the fall ones taste kind of...What did he say? The blubber’s not as fat. That’s what he says. They try to get them in the spring time. They do try to get them when they’re coming up through the migration. With the haul-out they did try to catch some this year but the blubber wasn’t as fat. The meat was pretty good. I actually like walrus meat. I eat it all.

Not all respondents were concerned exclusively about the walrus haul outs. One respondent said that older community members were forced to work to make a living so there was less time for subsistence, which in turn required them to obtain high priced convenience foods from the local store to feed their families. As a result, younger members of the community had less of an interest in harvesting and eating Native foods because they had not had a chance to develop a taste for them.

Not as many [walruses are harvested] today because, sorry to say, it seems like the younger generation doesn't care much for nigipiaq. They want to go to the store and buy store food. Nigipiaq—real food. Native food, yes. Native food. What you harvest. Because today parents are forced to work just to be. It's a struggle like I was saying earlier. It's a
struggle for anyone who’s not employed. We still can it’s just not as much because you’re out there with family. You’re with family and you’re out there and you go through the cycle every year.

**Elder Cohort (Ages 50-70+)**

Commentary received from community elders indicates that walrus has declined in importance as a subsistence species over the past fifty years. All respondents in this group had hunted, harvested, or consumed this species as children but not all still did so as adults. Remarkably, nearly all respondents in this cohort—both men and women—reported that they had hunted walrus at some point in their lives, with most having their first experience before adolescence. One woman vividly recalled the excitement of going out walrus hunting for the first time with one of the community elders which she described as follows:

*You know that when I was a young girl maybe twelve years old this elder Mickey Tooruk, he took us out in his big whaling boat maybe about the size from right here to the kitchen, about the size of a big whaling—you know them big whaling boats they had they used to have a sail, and he took my cousin out to the ocean to go hunt. That was really something I remember. They always talked about the walrus know how to attack your boat. After they shoot they go around the little baby, little calves, you know protect them like that, they’re all around. They’re very protective of them, their young ones. Yeah I was in the boat [when they harvested the walruses]. I guess just seeing them is the thing I remember the most. I don’t remember going back to the village. I guess it was so thrilling I can’t even remember how long it took to go out in the ocean and to come back. The highlight was to see the walruses, you know, and you’re so scared because you hear so many stories about them but they’re on the ice. You get ready to shoot everybody decides which ones they’re going to shoot, and you want to have something, the walrus shot on the stable ice, you know…because you try to cut the walrus right there.*

Another elder said that his parents harvested walruses as a child because they
used the oil to preserve meat for future use. Even though modern technologies allow locals to store their harvest by freezing it, this respondent said that some community members still use the walrus oil to preserve meat.

Yeah, [walrus was] part of the staples that they had because they didn’t have freezers like we did. You would use the oil to put dry meat in and put away, and that’s how you [preserve it]. Not the walrus, the seal...or the ugruk. We still do that.

When asked if their experience with the walruses had changed from the time they were children, respondents in this cohort either said that they no longer hunted walruses or they said that their harvest numbers were down. The most frequently cited reason for the decline in harvest numbers was an increased difficulty harvesting them on the ice. One respondent explained why harvesting and butchering walruses on the ice was preferable to harvesting them on the beach.

We don’t get as much as we used to. I’d rather take them on ice than on the gravel. Running out of teeth. Yeah we’re having a harder time taking them on the ice than when we used to, you know. It’s so much cleaner when you take them on the ice. You don’t have to deal with gravel in the meat.

Another elder said that it is now necessary to harvest them on the beach even though this is not ideal.

Usually we get them in April. April, May. Somewhere around there. I mean we used to get them, that’s when we usually hunt them: when there’s ice but now we’re hunting them when they're coming back in August September. When they're hauling out. That's the only time we ever get them now, but usually before that we used to get them right when there's ice out there when we go hunt.

The most frequently cited change, however, was the massive walrus haul outs on the barrier islands on the far side of Kasegaluk Lagoon from Point Lay. Respondents who had lived in Point Lay for 30 years or more said that the massive haul outs had only started appearing with regularity within the past five years. For example in 2011, as
many as 20,000 walruses hauled out on the barrier island directly opposite Point Lay. Many of these walruses had lesions of an undetermined origin on their bodies, and it is thought that the lack of ice may be putting additional stress on the walruses that is making them more susceptible to diseases (Garlich-Miller et al. 2011). When asked if large walrus haul outs had occurred at any other times in the more distant past, one elder said that the last time he remembered a large haul out on the beach was back in the eighties. He said, “Probably only one time back in the eighties [they hauled out on the islands]. After that until 2009 they changed. Holy cow.” Another elder said that the large haul outs have only happened within the last few years. This elder said, “They’re starting to haul out on the barrier islands. I mean I didn’t start seeing that until about five or six years ago.” Respondents in this cohort who offered an explanation for the haul outs usually said they were due to a decline in sea ice just as respondents in the 30-49 cohort did. One respondent who said the walrus numbers were healthy added that they were now to be found on the beaches during their fall migration rather than on floating pieces of ice.

No [they’re still around]; they’re all on the beach now. That, but they’ve gotten very numerous now on the beach. I guess on the ice before they used to go up and float on the ice. Took all the way to where the current carries them to the north. Probably out to the Beaufort Sea. No ice. No ice, yeah. They used to go by in big floats. Thousands of walrus.

In addition to the problems associated with harvesting walruses on the land, respondents also cited the high price of gas and government regulations as other factors impeding the community’s ability to harvest walruses. One respondent expressed skepticism toward the US Fish and Wildlife Service’s policing of walrus harvests in the community, and said that the regulations were having a direct impact on community wide harvests.

It’s become too complicated. And the punishment is so severe.
Ridiculous. And we always seem to lose any case. We can’t defend ourselves against accusations of waste, wanton waste like that, because if you get caught butchering a sick mad cow and distributing it, you get
punished. We don’t want to get into that kind of situation. We don’t want to get into that kind of situation. They say, “You want to step over here.” “Is that your only bag?” Yeah, it’s the same way. They start looking in our boat, you know. So we’re aware of that kind of fish and game policy that the Federal Government has. Regulations that…We’d probably end up with bigger freezers. Right now we don’t want to get in deeper trouble.

Polar Bear

Polar bears are rarely taken in Point Lay. They are infrequent visitors to the community, though most years they may be spotted close to the community during winter and spring when there is an abundance of sea ice close to shore. During the spring whaling season they may present a hazard to crews stationed at whaling camps. A bear that continuously threatens a whaling camp is likely to be taken and its meat distributed among the small number of people who eat it in the community. A few respondents said that they specifically target polar bears during hunting trips, but they were only a small minority of all respondents.

Polar bears are currently listed as a threatened species. Polar bears are especially vulnerable to changing ice conditions, and there is evidence that recent declines in sea ice have pushed polar bears to shore in search of food (US Geological Survey 2014). Most respondents said that polar bear numbers and polar bear harvests have been down in recent years.

Youth Cohort (ages 18-29)

Three youths offered comments in response to queries about polar bear hunting, harvesting, distribution and health. One youth, who said his father had only recently started to teach him how to hunt polar bear, said that he was unable to learn due to recent declines in polar bear numbers. Polar bears are a difficult, dangerous species to harvest, and require hunters to take extra precautions to stay safe. This youth shared the following comment about low polar bear numbers:

The lack of polar bear…I think I'm pretty sure all the hunters are concerned about it. I don't know if it'd be the same reason. I think it
would be because they like the younger generations to learn how to harvest the polar bear. I'd like to learn that some day. They're not around. I would like to catch one but right now I think they're an endangered species. I've seen my dad catch a polar bear when I was younger.

This youth also said that the community had decided to restrict polar bear harvests pending a rebound in their numbers.

*Lack of polar bear, I think people aren't going to catch any. I think that's been decided as a community (to prevent further population declines). I think nobody will catch one unless they try to come into town. I think the borough had something to do with it because there's a map at the community or the teleconference [building] that shows a wide range of where we've been seeing the polar bears. All along the spit, and that's a no-hunt zone.*

Environmental stress on the polar bears causes another problem: hungry bears entering the village in search of food. Skinny bears are much more hazardous than well fed bears because they are much more aggressive. They are more likely to wander into the village or a whaling camp in search of food, and are therefore likely to be taken out of self-defense even though this only puts further stress on polar bear numbers. As one youth said,

*Well we know if they’re healthy because of the fat. The way it looks, the way we see it, if it’s fat it’s OK, but if it’s skinny, if we see a small skinny bear we know it’s going to do something to get food into it. If it gets out of control for us we put it down.*

**Adult Cohort (Ages 30-49)**

Respondents in the adult cohort also offered few comments when asked about their earliest experiences hunting or sharing their catch from polar bear harvests. Most adults reported that they had hunted polar bears at some point in their lives, whether for meat or for self-defense, though only a few said that they go polar bear hunting on a
regular basis. More typical was one adult’s comment stating that he only hunts them in self-defense, and only when absolutely necessary.

*I don’t really go out and hunt them, but when it becomes a nuisance, you know, around the camp or around…Yeah that’s my hunt for polar bear, you know, if they come and bother me. I don’t mind one time, if they come around one time, you know, I usually just scare them off. If they come around two and a third time, you know, I say okay, this is the same bear. It’s going to come back again and again and again until something bad happens, so we do that.*

Adults who said they did hunt polar bear also said that only a few community members actually have any interest in the meat. As one adult said, “*Point Lay hardly ever hunts polar bear. There’s only me and a handful of people that would love to hunt bears. Nothing big. Just people who want them will get them.*”

Another adult said that he didn’t quite feel comfortable hunting polar bears after witnessing the aftermath of a mauling that occurred in the community many years ago.

*Once in a while [I’ll hunt them]. Not something I like to do. I’m not saying I’m scared of it; it’s something I got over. I don’t like that polar bear after that mauling we had that one year. They’re really dangerous animals. Very rare, but last year we were seeing lots whaling time. I was 15 or 16 when that happened. My dad gave me a big gun and a flashlight. They’re trying to look for a wounded person. I could not sleep after I saw the body. After that happened I never did care for them. They do monitor the village when it starts getting bright and warm. If they start smelling carcasses or the dump. I saw them out here in the old village.*

Most adults, whether they hunted and shared polar bear meat or not, had noticed that bear numbers in and around Point Lay had declined in recent years. One respondent said numbers were way down, though she suggested that they might simply be at sea following the ice.
Less. There’s less of them. You always constantly heard of polar bears left and right around here. Well I know also they’ve spent more time on the ice because of the bowhead whaling, but it’s not uncommon to get a polar bear in August.

Another adult said that the bears he is seeing today are smaller than bears he used to see in the past, though they’re still healthy in his estimation. He said, “Seems like they’re getting smaller. The size of the bear is getting smaller. In earlier days, man, they’re so much bigger. Today they’re just like they’re shrinking. They do look healthy.”

**Elder Cohort (Ages 50-70+)**

Elders were much more likely than adults or youths to report that they were taught various polar bear subsistence activities as adolescents or young adults. Elders reported that they learned to harvest polar bear either from older kin or from their spouse. Overall, polar bear hunts were infrequent activities for elders as they were for respondents in the other two cohorts.

One elder reported that he had started hunting polar bears on a regular basis as a teenager and had caught his first one at the age of 17. This elder said,

*When I first started polar bear hunting I would go out every weekend when I was a teenager and I never saw a polar bear. I never took a polar bear until I was 17…and it was during whaling too. It was an eight footer but it was a fat polar bear.*

Polar bear hunting does not appear to have been an exclusively male activity in the past; one community elder, a woman, still reported that she looks for them on subsistence trips. This woman said that her husband had taught her how to hunt polar bears many years ago. When a bear is harvested, news of the harvest is broadcast across the village CB radio system and anyone who wants a share is welcome to come and take what they need.

*I look for polar bears when I used to hunt. My husband [taught me to hunt polar bears]! He and I used to be hunting together. Mm hmm [I still look for polar bears], but if I see it’s sick I won’t, but I could shoot it and bury it or give it to whoever wants to learn how he get sick. Everybody*
always go on the air: "Whoever want to have a polar bear meat come over and get some! Help yourself. They all cut up here."

Another community elder said that she realized she had forgotten how to process polar bear meat after her husband harvested one and brought it home to her. She opted to send the bear to Point Hope.

I grew up eating polar bear. Yeah, and my husband got one too and then he cleaned up the skin for me and I sent it to Point Hope because I didn’t know what to do anymore. I figured they could use it when they go whaling but I asked them to take care of it.

When asked if community members still engage in polar bear subsistence activities today, elders said that polar bear harvests were infrequent. Harvests do not occur every year, and those that do occur are often done only after a bear has become a threat to the safety of village residents. Only a small number of community residents go out of their way to hunt polar bears for food, and only a small number of community residents still eat polar bear meat. Today, most residents who consume the meat are older than 40.

One elder said that hunting for polar bears is usually done as a defensive measure though he welcomes the meat from these hunts because he likes the taste.

Only [hunt them] when we can’t get away or avoid them. We do [eat them]. We always cook. Some of them can’t. Some of the people can’t eat them. I do. I like to boil polar bear and eat. Pork type. I like it. Plus I’ll still, every chance I get I’ll still have some.

Another elder said that she thought a lot of younger people don’t eat the meat because they didn’t grow up eating it.

Yeah, yeah, around here yeah [people still hunt it]. [Name withheld] was the last one that got a polar bear, right? He always share to everybody, whoever wants to have polar bear go get it. [Names withheld are the only ones that] know how to eat the polar bear. Dad’s mom used to like to have polar bear but now they’re gone. Never eat the polar bear before like that. Yeah really good once you start eating them.Tender with the fat.
They just weren't raised on them like we were. They don't eat them here, just the only ones we know how to eat them before. We love them. My kids know how to eat Inupiat food. Everything I taught them they eat. They would cry for the seal when my husband always go hunting.

Elders also reported that polar bear numbers seemed to be on the decline—statements which were echoed by their younger neighbors. Bears were now lean and not healthy, if they were even visible at all. One elder said that the polar bears that were recently taken were lean: “This year I don’t know if anybody took a polar bear, but last year we did. My son got one, I got one, but the animals were very lean. Hardly any fat on them, and those two were males.” Another elder commenting on the low polar bear numbers close to Point Lay said,

We’ve never seen any since…This year we didn’t see any. Last year too. Nothing, I mean since—every since we came to Point Lay, we’ve never seen. One year I saw sixteen of them here, but that was because there was a whale. Oh yeah, one year. And that was it. After that, they were never here. Mostly in Barrow we hear about them. Yeah we hear Barrow.

One community elder, however, pointed out an important reason that she thought was contributing to the decline in polar bear harvests. She said that if young people in the community aren’t exposed to the species from an early age, they will see no reason to carry on the subsistence tradition as an adult. This, in her view, was a contributing factor to the community wide decline in polar bear harvests. She said,

The people that, when it stops, it’s the ones that don’t teach their younger children to do that or the need of it. If you don’t teach them how to eat it, they won’t go hunting. It’s going to die out.

Caribou

Caribou are the most important terrestrial subsistence species to the community of Point Lay. Caribou are typically harvested in the fall and winter when most community subsistence trips are oriented toward the land rather than the sea. Nearly every respondent had some experience to hunting and processing caribou.
Caribou population numbers in the Point Lay area are highly variable from year to year. Caribou numbers in northwest Alaska, home to the Western Arctic Herd, have fluctuated from a peak of 500,000 animals to a low of 200,000 over the past 30 years. The most recent population estimate of 325,000 sits close to the midpoint of this range; however, caribou numbers have been declining recently and this is the lowest population reading within the last five years (Western Arctic Caribou Herd Working Group 2012). Possible reasons for recent declines include low rates of calf survival, a decrease in lichen and an increase in grasses and shrubs over the herd’s range, and an increase in predators such as wolves and brown bears (Dau 2013).

In good years, caribou are often found close to the community and may even be visible from town. This makes them easy for residents to harvest; hence, caribou hunting is accessible to most people in the community because it costs less to harvest caribou on the land close to town than it does to hunt marine mammals offshore. Caribou numbers vary widely from year to year, however, which can make them inaccessible to all but the most active and determined hunters in bad years.

**Youth Cohort (ages 18-29)**

Respondents in the youngest cohort were still in the process of learning to hunt caribou or had only recently learned to hunt caribou. As caribou hunting is a relatively safe activity that most community residents participate in on some level, youths typically reported that they were learning to hunt or had learned to hunt from many different members of the community—not just their close kin. One youth said the following about some of the variability in caribou numbers he has seen:

> [We look for caribou] just anywhere out on the land. Yeah anywhere out of here, on the outskirts of Point Lay pretty much. We'd go climb a big hill, see a caribou. Last year we had a huge lack of number of caribou during the winter. We had like pretty much no caribou that last year winter. I traveled to Wainwright and stayed there hunting caribou and bring them back, bring all the meat back...The caribou come from up north by Wainwright, come down the coast and travel into the mountains.
Caribou season begins in late summer and continues through mid-winter. In summer and fall, caribou hunting may be either a marine or a terrestrial activity because caribou are commonly found along the many shallow rivers draining into Kasegaluk Lagoon. In the winter, caribou do not seek out the coast as they do in the summer so hunting is exclusively a land based activity. Two youths said the following about the timing of their caribou hunting activities:

[We harvest caribou] between July and October. In the winter time we’d use our snowmachines and a [unintelligible] sized caliber rifle like a .243. We’d also bring our sled and tarp. Summer time it’s with a boat or Honda (four wheeler).

This time of the year [late winter] you’d use a snowmachine. Fall time is the best time to go out and get caribou. When they get fat, you know. Fat caribou. Yeah, and then I think it was in October they start rutting, and that’s when we always get the females.

Caribou migrate across long distances but not always in the same place or time from year to year. Caribou are sensitive to disturbances such as low flying aircraft and vehicular traffic. A common complaint from respondents was that human activities were affecting the caribou migration route and driving them away from the village, though this problem may have diminished after a coal mine 30 miles south of the village closed several years ago. As one youth said, “We’re starting to get a lot more caribou after the coal mine shut down. A lot more.” Another youth said that helicopter traffic was diverting the caribou away from Point Lay toward the mountains to the south.

The helicopters, those helicopters that kept coming here, they kept going too low and scaring them away from the way that they usually always come. They usually always come by thousands this way. A couple years ago they just never…they went through a different route, went back to the mountains.

Not only do most of the youth of Point Lay still hunt caribou, they also continue to adhere to traditional values such as sharing and respect for elders. When asked who he
shared his catch with, one young man said that he provides for his family first and then gives away any excess meat to whomever needs it. He said, “Like my second catch usually I’ll provide for the family, and then as I catch more people will come by and ask me, you know, if you have extra meat. Families that can’t provide caribou for themselves.”

Adult Cohort (Ages 30-49)

Respondents in the adult cohort reported that they had learned to hunt and process caribou from older close kin. Most adults said that they had their most memorable early hunting experiences as adolescents, which means that most of them had one or two decades of experience with this species at the time of the interview. One adult said that his father frequently took him on long subsistence trips, sometimes for weeks at a time, during which time they would harvest caribou if they came across any. He said,

I’d always be on the hunts but I didn’t catch my first caribou until I was probably about, about seven years ago...but I was always out on hunts always helping to cut. My dad [taught me]. We would go out on the hunt with him because every summer we went camping to get whatever—fish, berries—whatever we can harvest for the year, and caribou, so any time you come across caribou you go after it. So we’re always on the hunts and we’d help my dad hold the legs or we’d carry the meat back to the boat.

One adult recounted how his most memorable experience was eating a caribou kidney immediately after a successful hunt with his father and grandfather:

My grandfather and my dad. They taught me together, you know. How to skin them, what's salvageable. Everything, basically. [I was] thirteen, fourteen years old. Eating the kidney is the first thing I remember. It tastes like antler, actually. Velvety, you know, when you cut off the tips. It tastes just like that. The kidney tastes just like the antler.

Another adult told the interviewer how his uncle used to take him out caribou hunting, and how as a somewhat overeager and inexperienced youth, he harvested too many caribou which he then had to help haul back to the village.
It was mostly my uncles [who taught me]. Yeah, I have a favorite [name withheld] that took me out caribou hunting a lot. We would go up and down the coast. When it’s real nice with no wind, you know, all the mosquitoes would be out. Yeah, so the caribou would come running like crazy to the coast, but when it’s not, you know, we have a nice breeze and the caribou are inland, we would a lot of times we would go Utukok because my uncle, he would go up that river a lot. I can remember one time where I almost caught too many. We were in the big willows. These willows were a good six feet, and there was a lot and we were just in a big willow area. We could see this herd of caribou coming down the bluff, and they cross the river, they go into the willows, and my uncle says—he’s got a semiautomatic, a mini 14—and he said okay there you go, just catch the ones with the antlers. Okay, there’s a lot walking by in the willows with the antlers. Phuphu, pshew, pshew, pshewpshew. I’m shooting the ones with antlers. He says wait wait, stop, what are you doing? I said I’m catching the ones with antlers. Not that many! I ended up catching eight of them. Yeah, so we put them in the boat and we hit a shallow and we had to unload the whole boat, get the boat out of the shallow, and go walk back and get the load and put it back in the boat. So it was my uncles that pretty much taught me.

When the interviewer asked if caribou hunting and processing activities had changed in their lifetime, respondents in the adult cohort repeatedly said that caribou no longer came close to the village as they had when they were younger. One adult who noticed this change also said that he had no idea why the caribou were no longer coming near the village.

Oh yeah, [I go caribou hunting] every year. We go all along the south in the lagoon or up north or we go in the rivers, but it seems like these past couple years, two or three years, we had to go all the way to Icy Cape just to hunt caribou. And that’s halfway just from here to Wainwright. We don’t know what’s going on, you know. We go out and look. We go south,
there's nothing. We go upriver, nothing. Up this river, nothing. They're just way too far inland. Too far inland, yeah. This past couple years each time we go to Icy Cape we're going to catch, guaranteed. Yeah not as much (they're not coming around). We used to see thousands of them just migrate right through there. It'd be late 90s, early 2000s. Yeah and then about, maybe up to about 2006. I used to just look and see a whole bunch of them just migrating up north. Nowadays you can't even see them in the summer. Early summer we'd see a lot go by. I have no idea [why their numbers are down]. I just know they're not around anymore.

Another adult said that the caribou have been shrinking and their numbers declining. As a result, he said he had traveled almost as far as Wainwright, 70 miles away, to harvest them.

Like the last two years there's nothing in town. Nothing anywhere near the beach. I would have to travel 30 plus miles just to reach caribou, almost halfway to Wainwright. There were days when I could see Wainwright from where I harvested caribou and it seems like I would be closer to Wainwright than I was to Point Lay. Few here, few there, a bunch there. There are fewer. Just like the polar bear they're shrinking. They're getting smaller. I don't know. The ones that—younger caribou hang out, they get left behind or they get chased off by other animals and then get separated from the main herd. That's my guess. I don't know for sure. I just know they're getting smaller and far fewer. I want to harvest as much as I can in the fall time. Even more, as much as I could, because it's the best time.

The most frequently cited reason for the recent decline in caribou numbers was possible disturbance from a coal mine approximately 30 miles south of Point Lay. The mine was no longer in operation at the time of these interviews, but some respondents felt that the mine was still having lingering effects on the local caribou population. Two respondents said the following about the possible effect of the coal mine on caribou behavior:
I think part of [their low numbers] had to do with the exploration. Like they had the coal mine running every year, and I think maybe disease got them one year. I think it was almost the same year as all those caribou in Point Hope. We were finding caribou up here as well. Yeah it is closed [now]. It was just so much traffic and the animals feel the vibrations in the earth. Well what are they doing? They’re blowing up the earth, aren’t they? I mean I’m not sure how they get their coal, but... I’m not sure [if they’re planning to reopen the mine]. I’m not on council so I couldn’t give you a good—but I know the quality of the coal is the best in the world. I mean it’s the best in the world, but so there’s that conflict between subsistence and exploration.

I kind of blame the coal mine. They were holding off our caribou somewhere. Lot of chopper traffic and now there’s no more choppers. Now they’re back here. They’re abundant now. I guess, yeah, but before there used to be hundreds of thousands out there. One landmass. It’s amazing. I’m sure they’re up there somewhere. Porcupine herd, they did their count. They’re really spread out right now, the reindeer and caribou together.

Another adult said that he thought the caribou were coming back now that the mine was shut down. He said, “Now today it’s getting easier because they’re coming back. We blame that coal mine project [and] the choppers.”

One other reason offered for the caribou decline was the impact of predators on the species. Only one respondent from this cohort mentioned predators as a reason for the caribou decline. This respondent said that the caribou migration route had changed so there were fewer caribou coming close to the village. With more predators (presumably wolves) preying on a smaller number of caribou, there were fewer caribou to harvest from an already diminished population. Despite the decline in caribou numbers, this respondent said that the past year was good for caribou hunting.
I think a lot of [the decline] has to do with predators. There's a lot of predators. Like this year they were really close to the village this year. Same with the other villages too because I'm hearing the same from other villages that caribou are really close to the villages this year. That means there's a lot of predators, but their migration, you can't really rely on the migration because it changes all the time. I mean they do pass by, but they may pass by further inland whereas sometimes you'll get hundreds and hundreds of them passing by or sometimes you'll only get one. So like the migration's kind of changed up a little bit, because I remember them, I remember as a kid watching them from a river from this road to the dredge--thousands of caribou just running by the village, just thousands. [I haven’t seen them] in such a large number as a long time ago. Now you get more smaller, smaller groups. You don't have the big large groups much anymore, although this year they had very good fall. The big, big bulls they were catching so that was kind of a little bit different. That's like the best year of caribou hunting we had was last year. For a long time for everybody to get the big bulls like that, because usually you only get females.

As previously mentioned, caribou hunting is widely practiced among the residents of Point Lay. Despite recent declines in caribou numbers, no adult reported that the recent caribou shortage prevented community members from freely sharing their harvest or passing on the tradition of caribou hunting to the youngest generation. One woman who recently celebrated her son’s first caribou harvest said the following: “My eleven year old caught his first caribou this year. He actually caught two of them. Big bulls so that was a new experience for him.” Another respondent said that he freely gives his surplus catch away to whomever needs the extra meat. He said, “So far I got like 54 of them, I know that. All that went to the whole village. I spread it out to the whole village, whoever needed it.”
Only one community member from this cohort reported a threat to caribou subsistence. This respondent chastised the younger adults in the community for not putting in the necessary time and effort to successfully harvest caribou. He said,

*It's just, it's sad to see how people have become lazy. I mean they run a better snowmachine than I do today and they have a better sled and they can go out and get their own. It's just, I don't know why they don't do it. Maybe they're too cold, they can't take the cold. Maybe somebody needs to show them how to hunt caribou when it's 65 below wind chill factor. It can be done.*

**Elder Cohort (Ages 50-70+)**

Elders reported very different early experiences than respondents in the adult and youth cohorts. Most of these respondents were old enough to have heard stories from their parents and grandparents about the reindeer herds that were kept at Point Lay and Icy Cape into the 1940s. A few respondents were old enough to have actually remembered the end of the reindeer herding era. These respondents’ early memories described a time of abundance when reindeer were always in close proximity to the village. As one elder said, “*When we were growing up we used to have stampedes of thousands and thousands and thousands stampeding. You don’t see that anymore. Yep, yep, they’d stampede. Thousands and thousands.*”

Elders also shared stories they had heard from their elders when they were young about the twilight years of the reindeer herding era. One elder said that remnants of the corrals are still visible close to the village, and suggested that the caribou herd’s collective memory of the corrals might be a reason why they migrate so close to the village.

*To my understanding my grandparents told us that we had a reindeer corral out here. I believe that they just know that they had herding out here because reindeers are back. You could see part of the fencing just by the dredge. There's some more out that way too. I believe that's why they come back and come so close, you know.*
One elder, who grew up in Wainwright and Barrow, came from a family that still kept reindeer when she was a child. She shared a story about her family losing some of their reindeer during a bad storm.

Reindeers. Even to my step-father, he used to take care of them. After my mom pass on he used to take care of the reindeer at Wainwright. And when the big storm come they—him and [name withheld], before he get married he was a young man, and they start getting ready and they go look for the reindeers. They couldn’t come, and then all of a sudden it starts to get stormy. It really gets stormy. Can’t see nothing. One time it was so stormy, I was like five years old and our roof, me and my apa were on the bed. It took all the roof away. Stormy. I was young, I was like five years old. Me and my apa go in our blankets another five minutes and then Ira chop-chop and them go get us and he took us right across to her house. We lived right across from them in Barrow. And that big two story house, it was standing right there all right and it almost go on top—I mean turn over. Good thing the gas, gas...never explode while they were sleeping in Barrow. When it gets stormy it gets stormy. That time they can’t find the reindeers. Can’t find them no more.

Caribou hunting was not an activity exclusive to men. Women can and did participate in caribou harvests, just as men often processed and distributed their own catch. One community elder learned to hunt caribou as a young woman living in Wainwright and carried her knowledge with her when she moved to Point Lay.

When we used to be in Utukok way up there between here and Point Lay and Wainwright, they always go camping where the animals are. That's the way they used to go camping or to go get food. I just look and watch. Here, look, watch. That's what I learned. My parents never showed me how because they died when I was a little girl. I learned before [I moved here]. Yeah, at Wainwright. I used to go out hunting. Wainwright's got five rivers going up. You could go any way you want to go which way you want to go.
When asked if subsistence had changed from when they were children, the most frequent response was that there had been a slight to moderate decline in the caribou population. Some elders no longer went caribou hunting (all had at one point or another). All elders continued to participate in caribou related subsistence activities, however, such as processing catch from family members or sharing with friends and family.

A few elders reported seeing recent caribou deaths in the winter due to starvation. Starvation may occur when warm winter temperatures cause precipitation to fall as sleet or freezing rain on the tundra. The resulting ice prevents caribou from feeding on the grass underneath, and can cause large numbers of deaths. Two elders said:

*I think a lot of them froze this winter because maybe they were, maybe rain in the middle of the winter. They didn’t move into a different feeding area, so we lost a few of them but nothing like thousands of them.*

*No, more like fall time when it snows and then it rains and then it freezes.*  
*We had two episodes. They can't eat, go through the ice layer. About three, four years ago we had that same thing happen and everywhere I went out I saw caribou curled up.*

Another reported possible cause of population decline was a change in caribou migration patterns. Although natural environmental change was cited as a reason for the decline, most elders attributed the decline in caribou numbers close to the village to human activities.

*Well we haven’t seen high numbers. Normally we see them about this time of the year coming out of Kukpawruk and coming up this way for insect relief, and then fall time in October coming from the north. They’re heading south. We’re not seeing them like we normally used to see them. Their migration route seems to have changed. I don’t know if it’s due to the food or…but it is, we did have some problems with helicopters in the past.*

Helicopter traffic was the most frequently reported disturbance among respondents in the youth and adult cohorts, and the elder cohort was no different.
Although helicopters from many different sources use the airspace near Point Lay, most elders said that helicopter traffic from the old coal mine south of the village had been the major source of air traffic disturbances in recent years. As one elder said,

A couple years we haven’t had any [caribou] close. There’s lack of caribou all over. I know they still hang around a lot in Wainwright. I think that’s where they’re coming from, that way. We had to complain about the choppers too that were coming here during the coal mine and trying to tell them that it scares them too even though they say it don’t, but I know this one hunter was 30 miles away and he could still hear the chopper, you know, and they had to put a stop to that.

Elders had observed more government and industry related development projects than respondents in the other two cohorts. As a result, elders frequently mentioned the cumulative impact of multiple development projects dating back as far as 50 years. Two elders said the following about the impact of development projects on the local caribou population:

I think that Red Dog mine’s got something to do with it because I know that’s about the time our migration slowly starts changing, and I know the pipeline had something to do with it also. They’re talking about another pipeline but not in my lifetime probably. Last year when I told them about the coal mine the Canadian people came, BHP Exploration to check our coal, I told them I don’t know how else to say it, I just told them I don’t know how else to say it but I hope you flunk. I love my country so much, my land. I don’t know how else to say it, I hope you flunk. That’s all I could tell him. I didn’t want to see it in my lifetime, you know. It’s going to be in somebody’s lifetime but not in my lifetime. Got to go up the river or got to go more, got to go out more. They used to be [easy to get] but not right now, not while...when they start coming down is when the mosquitoes start coming up. They’re going to start going toward the water.
Yeah but we used to have thousands and thousands migrate through here.  
Before BHP came around. Before BHP, before DEW Lines.  But there were thousands through here.  This point right here used to be filled up to Utukok.  The mud flats, they’d come to the mud flats and stand.

Despite the decline in caribou numbers these elders had experienced over their lifetimes, none of them reported that the decline had prevented them from harvesting what they needed. The lack of caribou near the village did cause elders to spend more time looking for caribou and more money on fuel, but as one elder said, the availability of modern conveniences has mostly obviated the necessity of harvesting caribou for survival. As this elder’s commentary suggests, however, convenience has been met with a degree of skepticism by older residents who see caribou hunting as more than a source of food for the community.

Yeah [we’re able to harvest enough of them]. We make jerky, us, spring time lots, and fall time fat ones before we stick them in the poke. We used to have big seal skin boats. Mountain eggs. Caribou. Ugruk. Mikigaq like that, but nowadays the school is full of soda pop. They do yeah (young people harvest caribou), but it’s not really out of survival necessity anymore. It’s changed from…you have to “Let’s go hunt, I’ve got time off.” But to us, we have to get it for our security for the winter. We still have to get it. We cook a lot of our meat. If we don’t catch caribou we can still manage with choice beef from Japan, prime beef from Texas, Houston’s best. Bourbon whiskey from Kentucky. Now we have a grinder. Go catch a tuttu right now. Make our own hamburger.

Fish

Fishing, like caribou, is a subsistence activity that requires only a modest investment of money and time. Fish are available and abundant close to the village all year. Some fishing locations require a boat to reach in the summer, but prime fishing spots can be found no more than a few miles from town. Fishing is also a gender
egalitarian activity, which is to say that both men and women fish, process the catch, and share their catch with others in the community.

Arctic grayling, whitefish, rainbow smelt, and salmon are the most frequently harvested fish species in Point Lay. The typical seasonal round is as follows: salmon fishing in the summer, grayling in the fall, and smelt in the winter. Most fishing trips take place within a few miles of town, and involve short trips across Kasegaluk lagoon or to the mouths of the nearby rivers; this is true for both gillnet and rod and reel fishing in the summer, and ice fishing in the fall and winter.

**Youth Cohort (ages 18-29)**

The youngest study respondents all reported that they had extensive experience fishing by the time they reached adulthood. Youths had vivid memories of winter trips up the local rivers in search of grayling and smelt. In recent years, salmon have also started coming to the rivers near Point Lay; as this is a fairly recent phenomenon, youths did not perceive the arrival of salmon in large numbers to be a major change as older respondents did. The Kukpowruk River, the Kokilik River, and the various channels to Kasegaluk Lagoon were popular spots for fall fishing and for winter fish camps. Two youths said:

*I remember we used to always go out and there would be a lot of fish every time we'd go fishing at Kukpowruk during fall time right after freezeup. Kukpowruk, or even the beginning of the year in January we usually go smelt fishing at five mile inlet. [We harvest] a lot of smelts when we go there. Smelt, grayling and salmon.*

*I went out with my dad...for how many years I remember going out with my dad. He taught me make sure your fishing hook is clean and shiny so it can attract the fish. Make sure the ice is nice and thick, good condition. Make sure there's a current. That's pretty much it. We can also go smelt fishing on pretty much any other river around. Not smelt but grayling. Grayling. Even trout. I forgot that. We catch trout too. We catch those summer time and winter time.*
I noticed my dad he used to bring me up this river, the Kokolik, a lot. We’d go fishing up here. We’d always catch fish at this river, and I’ve noticed ever since I haven’t been fishing with my dad in probably ten years we’ve always gone to Kukpowruk. We usually let them freeze on the ice, put them in a gunny sack, bring them home, and usually cook them whole. The local rivers are the most popular fishing spots because this is where most of the fish are to be found. One youth said, 

_I was taught that during winter time, during the fall season, they're going up the rivers most of the time. Like the grayling, the salmon, the trout._

_But the smelts, they usually stay on the ocean side or in the lagoon right near the inlets where there's a current._

The researcher asked if the fish harvest had changed in any way since the days of their earliest memories. All respondents in this cohort said they were still able to harvest what they needed, so long as they put in the necessary effort. One youth said that fish numbers in the rivers seemed to be down, possibly due to seals feeding on them in the rivers.

_We used to get some up here but it's been kind of slow the last couple years. I think it's because these seals make their way up there and eat all our fish where we're fishing. We used to get quite a bit up here, but then the seals have been going upriver. It's kind of a bummer for us. We'd see one here and there, you know, but it seems like I've been seeing them, up this one anyway, quite a few times._

Another youth said that fishing had been slow because so many locals were using the same ice fishing location for their harvest. He said, “_We've been getting fish but it's been kind of slow though, you know. A lot of people—there used to not really be a lot of people, but nowadays you see at least 10 to 15 people out on the ice now._” A young woman said that the previous winter’s warm conditions had left only a thin layer of surface ice on some of the local rivers. The lack of ice on the rivers did not
appear to be impacting fish numbers, but it left an impression on her because this was the first time she had seen so little ice on the rivers long after winter’s arrival.

*Last year was really weird. I was always going out with [a friend]; I was always out with him, and he always went out ice fishing too so we were out there all the time, and it was different. I don’t know if it was different or if it was just... but we went out there with a four wheeler, and the river had about two inches of water and you could see through the ice. We went out like the beginning of January or something. I remember that it was really odd because we went out there with a four wheeler and I don’t even remember when it was, what month it was exactly because we went out with a four wheeler and we were going out ice fishing, but almost the whole river was like that. It had about two inches of water and you could see through the ice. It’s safe I guess. I mean we went out and fished and caught some fish. I don’t know if that’s—that was just something that always catches my mind because the other years it wasn’t like that.*

Despite the changes reported above, no youths reported any difficulty obtaining fish. Youths said they were harvesting enough to meet their needs, and were proud to report that they were able to share their surplus catch with the community. Two youths said the following about some of their recent harvests:

*We’ll give away [anything we don’t need]. We give to the families that can’t go out there and go fishing, people that don’t have a snowmachine and can’t make it out there.*

*Yeah [I share my catch with] whoever comes along. Usually when we go out and we come back with fish we freeze it. We’ll just be out visiting or something and they’ll ask if we had any more fish.*

During one of the interviews, the researcher asked a young mother if she was passing on what she had learned as a child to her own children. She replied that she had been taking her son on fishing trips now for several years. At the time of the interview
her son was six years old. She said she had been about his age when her parents first took her out.

*I took my son. About a couple years ago now or about a year ago I took him out. Just took him fishing so far. He's going to be six on the first of next month.* [I started learning] about that time—five or six. *When I was nine years old I shot a twelve gauge and 270, when I started shooting anyway, but that's a high powered rifle. I was shooting a 22 when I was younger.*

**Adult Cohort (Ages 30-49)**

Respondents in the adult cohort all learned to fish at an early age. Typically a parent, a grandparent, or another close relative took the respondent as a child on fishing trips. As fishing is a relatively safe but also time consuming activity, several adults said that they spent long periods of time as children away with relatives at fish camp. One respondent, for example, said that he used to go with his family to a fish camp up the Kukpowruk River. He said that this is an activity he continues to this day.

*Grayling every year. That's from the time I was eleven years old, but those are the fish you catch upriver because they're fresh water fish along with trout. I always went up the Kukpowruk River. There's a fish camp up Kukpowruk. I do [that today]. Whenever I get the chance.*

It is common for a fishing spot to be kept within a family through the generations. A son or daughter, for example, would report going to the same spot as he or she went as a child. One adult said that some of her in-laws had “taken over” her father’s spot after he stopped fishing.

*Oh yeah, fishing, my family, the trailer across over there, we would go maybe a hundred feet to the north and set out a net every year. Actually my brother-in-laws took it over this year because my dad doesn't really do any fishing anymore. He just happened to have his net over there so he did catch...silver, dog salmon, flounders, I know what is a humpback? Humpies. I think Coho. I don't think we've ever caught any king.*
Another adult who learned how to ice fish from trips with his grandparents, said that he still uses the same camps today to harvest the same species he harvested as a child.

My grandparents [taught me ice fishing]. I’ve been going ice fishing with them every single year. I’d go fishing and...yeah I kind of lived about half my life with my grandparents. In the Kukpawruk River they have a cabin there about five, six miles inland, and then there’s another cabin. We call it the school cabin. It’s right next to the mountains up there, and we would go all the way up there to do fishing too. Yeah [we still go up there]. Same cabins, same fish.

When asked if fishing practices or harvest success had changed since they were children, three adults reported declines in both fish numbers and fish harvests. One adult said that recent harvests had been poor overall, though she did not know why this was the case. She said,

Yeah we do a lot of fishing. These past couple years we’ve been getting less in our fishnet. These past few years in March we go ice fishing for smelt...and ice fishing in October. We’re starting to get less. Last year, I mean this year we barely got any.

Yeah we’re hardly getting any smelts. Couple years ago we did good on ice fishing for grayling but last year we barely got any. I have no [idea why]—people might be saying the grayling might have went up early upriver or...I don’t know. Same thing with the fishnet summertime. The numbers went down. We still catch but not as much as we used to.

The second adult who reported an overall decline in the fish population speculated that recent erosion in a nearby river might be partly to blame for his smaller harvests. He said that erosion had altered his fishing spot in such a way that he is no longer able to harvest anything there.

It’s kind of slowed down a little bit. I don't see as much. It could be the river changed. I’ve thought of that before. They could have moved to the deepest place or to a deeper place. You see a lot of erosion up the river.
That’ll make you think the river has something to do with it. Like one place up there where we used to fish the river used to just drop off, like about 10, 15 feet deep. Used to be a lot of fish right there but now after erosion happened and the gravel just piled up it made a smooth downturn right there on that bend of the river. No, hardly any more fish right there.

The third adult simply said that his harvests seemed to have declined over the years. When the researcher asked this adult what he did to make up for a poor harvest, he said that his parents trade with other villages.

Yeah we’re still able to get, but it just seems to be getting less. There’s no way we can make up. The season is done and over with. There’s no way of making it up. Yeah we get people; my parents get people to send it in. We trade, you know.

The most unusual observed change was a sharp increase in the salmon population over the same period. Salmon have always come to the streams and rivers near Point Lay, but their numbers have historically been modest. Several respondents in this cohort mentioned the salmon increase. Salmon have also been observed in the rivers late into the fall. As one respondent said, “We got salmon in October. That was weird. The seasons are weird.” Local residents are opportunists, however, and will harvest salmon if grayling or smelt are not available:

Those guys when they went to the end of the river they were catching grayling, humpies, salmon, Dolly Varden, trout, they were catching six maybe seven different fish in the same area which never normally happens. This was late, right in the middle of October, almost end of October when these guys were up there. They were coming up with loaded salmon in the fall time! Last year was different because my cousin gave me a couple of them. They were big salmon.

Just this last year it’s the first I hear they catch salmon. In late October, early November. First time getting it that late. My cousins, they went up into the mountains, following the river into the mountains, and they were
catching trout and salmon and grayling, but kind of the first I heard them catching salmon so late. Early November. Probably the first week of November.

Another adult who noticed the dramatic increase in the local salmon population said that grayling had been the dominant fish species the previous year. This respondent didn’t think the increase in salmon signified a long term trend, but he did say that their presence in such large numbers was unusual.

Same kinds yes, actually no. This year they caught, or this last time—I didn’t get to go this year—but they were pulling out salmon. Hundreds of salmon which is very unusual. During the year I’ll just get one or two throughout the whole season, and for the whole week all we were pulling out were salmon. Well I mean I know they hit all the rivers and the creeks, but that concentration of salmon, so many of them, that there wasn’t a lot of grayling this year. The year before? Lot of grayling. And then we get both Dolly Varden and brown trout every year.

One adult said that he does not fish as much as he used to because the cost of fuel is much more expensive now than it was when he was a young man. This adult said that the cost of fuel, more than anything else, is the limiting factor in what he is now able to harvest.

[I used to fish] a lot more than I do today. Just the time I have. In earlier days you stay out as long as you want, and today it's both ways. The longer you stay out the more fuel you'll burn up and today fuel costs so much you’re only allowed to bring so much. It's sad; I mean I feel real sad. The longer you stay out the more fish you can catch, but you come back and, you know, you start struggling because you spent too much time out there. It's a tradeoff.

**Elder Cohort (Ages 50-70+)**

Elders shared many of the same early fishing experiences as younger members of the community. Typically an older close relative such as a parent, a grandparent, or an
uncle took elders to fish camp when they were children. One elder recalled spending summers with her uncles catching smelt near the old village site. She said,

We used to dip net for, what are those, hooligans? I remember when I was growing up they used to let us roll our pants up and use some kind of net. About July. During the summer. Man it used to be fun, and now we don’t do it anymore. But yeah we [don’t fish for them anymore] maybe because we don’t live down there at the old site anymore. I miss that. I wouldn’t mind teaching my grandchildren. I wouldn’t mind teaching [my kids] because they were really nutritious. I remember growing up and eating them with my uncles because they’re the ones that taught us, and they used to be very delicious I remember. They used to fry them and boil them, any way they could feed us.

Several elders no longer fished, so respondents in this cohort overall had less to say when asked about fish harvests today. As with respondents in the adult cohort, however, the most significant reported change was in the composition of the local fish population. One long term resident said that salmon had actually come to dominate some of the local rivers even though they barely had a presence near Point Lay when she was a child.

We used to hunt, we used to fish for grayling, but nowadays big fish have taken over. Salmon. Silver. Humpbacks. That’s what we always hunt (the graylings). We were getting mostly grayling. Now it’s…whitefish too. October [name withheld] came home with just silvers. A few graylings. Now we don’t know where to go look, you know. Maybe we’ve got to go farther in or closer.

Community members have changed their harvest patterns to match what is abundant in any given year. Community members now regularly harvest salmon, even though this is a more popular with younger members of the community, and send the surplus to other villages along the North Slope. One elder said,

[I fish] for salmon. I don’t have my net out yet. I used to put a net out at the mouth over here in August and get some Cisco. Lot of pinks. One
year I took over 170 in three days of Coho and had no more room. I was sending them up to Barrow, Wainwright, Point Hope. [I set a net out] about straight out from the hangar on the inside of the barrier island.

When asked if he thought that young people in the community had taken up the fishing traditions he learned as a child, a community elder said that, yes, most of the young people in the community knew how to fish but were mostly fishing for sport. This elder said he was still able to harvest enough fish to meet his needs. His comments suggested that the bigger problem facing the community was outside influence—specifically, the ease of obtaining preprocessed foods from outside the community. This elder shared the following comments:

Yeah we catch enough. Nowadays Kodiak will send you a bunch of fish already filleted. And then you don’t have to scold your kids because they’re not helping you…Yeah [the young people know how to fish] mostly. They’re doing it mostly for sport. This is too small; I’m getting a bigger one. You just threw my lunch in! Oh, this is the wrong kind of fish. Well why don’t you tell the river! Come on you guys. Get with it.

Waterfowl

Point Lay residents harvest waterfowl\(^4\) during the short Arctic spring. Multiple species of ducks and geese migrate north along the coast as continuous daylight returns to the Arctic and cracks begin to appear in the sea ice. Most hunting is done during the short Arctic spring – April and May – from locations close to the community. It is advantageous to local residents that waterfowl may be harvested close to town during this time of year, as this is the start of the whaling season and residents need to be available on short notice if whales are spotted. Typical harvests include eiders and geese; other species of waterfowl, as well as smaller birds such as ptarmigan, are harvested less often.

\(^4\) Due to time limitations, the researcher chose to focus on waterfowl as a group rather than as individual species unless a respondent offered commentary specific to a particular species. Unlike fish, nearly all waterfowl migrate at approximately the same time; they are thus all harvested at about the same time, usually from the same locations.
The hunting of waterfowl requires only a minimal investment of capital. Waterfowl are also some of the safest animals to harvest while alone: they may be harvested close to Point Lay, and they do not pose a threat to humans. Given these conditions, it is easy for residents to make many short hunting trips during the few weeks when the migrating birds are easily available.

**Youth Cohort (ages 18-29)**

Every respondent in the youth cohort reported that one or both of their parents took them on their first duck hunting trips. Overland trips or trips up the nearby Kokolik River were common; rarely did a single trip last more than a day. Three youths said:

*My dad would bring me out a lot. We’d always build a snow blind always every time. We would bring camping gear. We wouldn’t camp out there most of the time but he’d always keep his camping gear with us. My dad, we’d usually just go up this Kokolik River. Stay pretty much right along the edge of the river in the willows or something.*

*My mom [taught me]. Well she’s taught me probably about two years now, but I haven’t really gone out hunting until—well, I’ve been going out duck hunting for the past three years, and I finally caught some last year. I know how to cut them up. I know how to shoot a gun. I just haven’t caught any until last season. I’m always going out and I’m always active, you know, in going out duck hunting. I know what it takes to be out there duck hunting.*

*I learned from my father and then I get more experience from the family or the community. They teach us where to go and where’s a good spot, where they fly. I get good experience. Whoever is willing to go out, you know, we take them. We go where, you know, where there’s dry land.*

Youths were asked to list the species they became familiar with as children, and then to compare their early experiences to current subsistence patterns. One youth said that the Kukpawruk and Kokolik Rivers remain favorite waterfowl hunting spots today.
Yes, we [still] hunt them up the Kokolik River. At the beginning of the season people will travel the Kukpowruk River because that's where they'll come together in big numbers because that's where it will be melting. There will be more ground melt south by the mountains.

Youths also reported that they harvest a wide variety of waterfowl. White-fronted geese and common eiders were referenced more than any other species, as two youths said, they will take other species when they are available.

[I harvest] White-fronted geese, common eider, king eider, swan. Once in a while we'll get a swan. When I was growing up I was taught to usually try not to catch a swan. They were an endangered species for quite a while when I was younger, but now that their numbers are up I don't think they're on the endangered species list anymore.

White-fronted geese I guess. Brants. Normally white-fronted geese and we get brants once in a while. I used to get brants all the time for my aka and apa because that's what they liked. Yeah [I harvest brants] here and there but not for the past couple years though. I've been slacking off. We just go out to the Kukpowruk River and wait for them.

Overall, youths said that the waterfowl were healthy and abundant. There were only a few reports of poor or declining harvests. Only one youth said that he had noticed a change in the overall bird population. He said that he thought there were fewer birds than there were when he was a child, though he was only able to conjecture as to the reason for the decline: “I don't think there's as many coming up the coast now. I noticed that usually, I remember when I was a little kid with my dad, we used to see thousands and thousands of geese every time we went out.”

Another respondent said that regulations limit harvests. Local residents must purchase a duck stamp to harvest geese, and are not allowed to harvest them after they have started nesting. He said, “It's almost like a duck stamp I guess. You've got to have a duck stamp to go out and get geese. After they start nesting you can't get them.”
Waterfowl, once harvested, are freely shared across the community. As is customary with all subsistence species, a hunter will give his first catch to elders or local residents who are unable to provide for themselves. Self and family come next, and then any surplus is freely shared with others in the community. As one youth said, “I try to give my first catch to the elders and then provide for my family and then I provide for the community with what’s left over.”

One young man who was very active at the time of the interview said that he always brought his catch to his mother immediately following the harvest. His mother did not hunt for herself, but she was a skilled cook and would happily process his catch since he did not cook for himself. He said,

*Oh I always bring it to my mom's and she takes care of them all. She cooks the food. She takes care of it, you know. I don't really cook food—that kind around here. I always go to my mom's if I want that. I say, "Yeah, you want to cook some of that up? I'm coming over." And then go over.*

**Adult Cohort (Ages 30-49)**

Respondents in the adult cohort told a slightly different story about the waterfowl than respondents in the youngest cohort did. The waterfowl migration has changed, they said, prolonging the overall migration by as much as a few weeks. Although no respondents in this cohort talked at length about their early waterfowl subsistence experiences, their greater experience gave them a keen eye for detail that allowed them to see what had remained constant and what had changed over their lifetimes. As with the youth cohort, those respondents that shared memories from their childhood said that one or both of their parents instructed them in the importance of waterfowl in the annual subsistence round.

Adults harvested a wide range of ducks and geese. White-fronted geese and common eider were the most popular species to hunt. Most of these respondents also said that they harvested bird eggs—an activity the youngest cohort hardly mentioned at all. The quotes below are a sample of current subsistence practices from this cohort:
We take [our son] out geese hunting a lot [for] white-fronted [geese], brant, common eider and then egg. Any kind of eggs. I've gotten swan eggs, ptarmigan eggs, tern eggs. Most of the time you can just go for a walk out there, but a lot of the years we go in the boat and hit the islands in the lagoon. There's islands in the lagoon that the birds will nest on, so north and south, so like you go out this way you can go up north and you hit islands and you go can go down south and hit islands as well, and that's where we generally, and then the barrier islands between the inlets. I was also taught as a little girl. That's something we always did every year.

Oh yeah, I hunt a lot. When spring time rolls around I’m out there hunting geese. I want to say common, but they’re...yeah, the common eider, but it’s the geese, the white-fronted geese. [I’m mostly getting] white-fronted geese. I do get brants. They run a little later than the geese, but I do usually get brants. About late April early May [is when the geese start showing up]. Maybe first and second weeks of May.

Yeah [I harvest ducks and geese]. I just got through getting some. It’s usually around this time of the year, yeah, early May. Early May. Every year [we do this]. Geese, snow geese, brants, eider ducks. Those are mainly what I hunt.

I love seagull eggs. I don't like the birds themselves but the eggs, they're big and they're—as long as they're fresh they're really good. They're way better. They are way better than store eggs, I’ll tell you what.

Nearby creeks and rivers are popular waterfowl hunting spots, as are the numerous small lakes within a few miles of Point Lay. All of these locations are easy to reach, and provide ample access to migrating birds in the spring and eggs in the summer. One adult said,
There’s a lot of places to hunt them, you know. There’s numerous rivers to go to, so…Yeah [we just go up the rivers]. Like now you could see the rivers. We call it soupy when it breaks up. Soupy: that means the river is flowing. Breakup. And then we just hunt right out there.

Each species of waterfowl returns at a slightly different time. According to one respondent, the exact pattern of each year’s migration is tied to local weather and ice conditions. The differences are subtle, but easily identifiable to anyone with a keen eye.

Three adults said that the timing of the spring migration had changed since they were children. These adults did not agree on how the timing of the migration had changed, however. Two adults said that the birds were coming earlier.

About May June [we go hunting]. Like right when they come up for their migration. Real close, almost back to back (all the waterfowl return at almost the same time). Ducks generally first because they're on the, they migrate up first, and [then] seagulls. That's how you always tell the water’s here because you start seeing seagulls...and geese. That was a big one is geese. I’ve noticed that there, yeah it takes them a little bit, actually they've been coming up a little bit quicker I think but leaving later, because one year we saw a few dead ducks in October.

The migration hasn’t changed. They come through here every year, but it seems it is getting a little earlier up into late April is when they’re coming, and we have a real quick thaw.

A third adult said that the migration seemed to be starting later. He also said that waterfowl numbers appeared to be on the decline.

The numbers have gone way down and they show up later in the season. They come...I see geese show up first, and then common eider, king eider ducks will show up, brants come last. They're all coming later and far less. I remember when we used to live across the river from here. There'd be so much it was just like mosquitoes in the sky. Lots and lots, and today they're spread out and they're smaller flocks. The migration lasts longer.
[They're coming later] just like same as the seasons. Thirty days’
difference from when I was...There are far less and the migration lasts
longer. It's lots to do with the weather too.

All of these respondents agreed, however, that the spring migration is more drawn
out than it used to be. This change did not appear to be having either a net negative or a
net positive impact on subsistence. When asked if their harvests were adequate to meet
their needs and the needs of the community at large, most adults said that the birds were
still coming, even if the timing of their arrival was not the same as it used to be. As one
adult said, “No [changes in the birds or the eggs]. It's keeping like the same. It varies
year to year but I've never seen a drop or an increase. Inland, upriver, whatever. Up
and down the lagoon.” Another adult said that his harvests are still adequate, despite the
changes in the spring migration. He said, “Yeah I would say [I’m able to get enough
ducks and geese]. It just depends on how many times you go out and whether you set up
a camp, but yeah I would say it’s adequate.”

The major concern for adults was the cost of engaging in subsistence activities.
The necessity of holding down a job and the cost of fuel were the most pressing concerns,
despite the fact that the North Slope Borough subsidizes the cost of fuel in Point Lay so it
is comparable to Anchorage prices. Even though waterfowl hunting and processing is
less capital intensive than other subsistence activities, the supplies are still moderately
expensive and cannot easily be obtained without trading labor and time in the
marketplace. When asked if they were still able to harvest what they needed despite the
changes in waterfowl behavior, one respondent said that his harvests were adequate but
added that he saw a fundamental incompatibility between modernization and the
traditional subsistence lifestyle. He said,

Yes [I’m still able to harvest what I need]. We have to spend more time
out there away from, well, growing up you...our values changed. You
want to go out and harvest what you can I mean because that's just the
way life is, and you work less. Today you have to work and you hunt less.
You harvest less. Just like we're being modernized too fast, too sudden.
It's gotten to a point where one will work his regular hours and then head
out right out after work. Just be ready to go. You get ready at night, be ready to go because you're out there a few hours at a time. You have to come back and take care of your harvest and get ready for work the next day. It's just sad.

Elder Cohort (Ages 50-70+)

Based on comments received during interviews with the community’s oldest residents, many aspects of the annual waterfowl harvest appear to have changed significantly over the past thirty years. The duration and location of hunting trips—day trips to nearby lakes or up local rivers—remain largely the same, as does the important cultural practice of freely sharing the harvest with those who are unable to provide for themselves. These surface continuities hide a multitude of changes that these respondents have witnessed over their lifetimes, however. The composition of species in the migration, the timing of the annual harvest, and the composition of targeted and harvested species have all changed. For example, one elder said that he used to access hunting and egg harvesting locations by foot; no respondents in the younger cohorts reported that they accessed their hunting grounds in this way. Several elders made it clear that changes in local weather and ice conditions have been the driving force behind at least some of the changes they referenced during their interviews.

Elders reported harvesting the widest variety of species among the three groups. The following quotes provide a sample of the types of waterfowl respondents in this cohort harvest or have harvested over the past thirty years:

Growing up we harvested] mostly Eider ducks and geese, regular geese.
Eider ducks, brants and the regular geese we have. Niqliq. I don’t even know how to tell you what’s known as that. That’s why I call them the regular goose.

All the way from the seagull to the owl to the king loon, loons.
Amauligruaqs, the pintails, kurugaqs, niqliq, and then we have a big area up north where the brants molt. The geese right now [are really important to us]. And the eider ducks.
While some of this variety is attributable to a few of these respondents having origins in other North Slope communities, several comments made it clear that the composition of waterfowl during the spring and fall migrations has changed. Some subsistence species that were once common are now scarce. There were also reports of new, never before seen species moving into the area.

We used to go right over here to what we call Onaruk and get amber geese. Nowadays it’s all white snow geese. Nothing but white. Nothing but snow geese. It changed. See it’s one of those phenomena where it’s hard to pinpoint anything. It just changed our eggs, you know…from Grade A to Grade AA.

Even when we get the Indian winds we get different kind of birds. We never, like the other birds, we never hear of we never see before. Or the robins now that the robins are coming up, you know. We never had those growing up.

Long term climate change was the most frequently given reason for the aforementioned changes in migration patterns. A community elder and his wife said that changes in the timing of the seasons had caused him to miss the waterfowl migration several times. They both said that their parents and grandparents had taught them correctly, but that the increasingly unpredictable weather patterns had diminished the usefulness of the traditional knowledge they had learned as children.

Nowadays, yeah, we [harvest waterfowl] only for our meals. We don’t store any because we’re either too late or not on time. [The migration was] late last two summers. Yeah, or they [are coming] early. My brother was telling me too, because when he came by last week he said, “Wow, maybe they’re out there nesting and we’re sitting here.” … It’s not that our parents and grandparents were lousy teachers. They were good, but it’s they never saw anything like this. Quite a bit more [unpredictable]. It kind of leaves a funny feeling in you, you know. They showed us how to get and hunt. Now the time is a little bit changed. We
have to be aware of that [and] teach that to our children because it'll be like that for the next couple of decades maybe.

Another respondent said that she had observed migrating ducks after the fall freezeup. She suspected that unseasonably warm conditions throughout the fall and into the winter had caused a lot of the waterfowl to delay their southward migration.

*I told you earlier about the warm seas and there was ducks flying when they’re not supposed to be around. Am I seeing stuff or what? My sister and I were sitting around and they were flying on the...look at that, they’re not even supposed to be here, a flock coming, and then about three or four days later my uncle Benny and he started seeing ducks going down that way and I guess they got so warm they make mistakes. After it was frozen [we saw that]. After it start freezing up because there was snow all over. They’re actually not even supposed to be up here and there was a flock flying. They’re not even supposed to be here. I think they’re mixed up with the weather. Confused, yeah.*

The changes outlined above suggest that climate changes over the past thirty plus years have made it more challenging for the community’s longest residents to harvest waterfowl. One community elder said that, like the youth of the community who are learning how to live off the land for the first time, he is also learning new ways of providing for himself and his community as the environment changes around him.

*Like today, you know, our kids are learning today. Today they’ve got to go hunting. They still have that urge. They’re just learning. It’s important. The climate makes us react now like that too. We’ve been in the land so long. We’re children of the land. Like the animals’ cycles. We closely watch that all the time because it affects us.*

Berries and Plants

Berries are an important but easily overlooked part of Point Lay’s annual subsistence round. Berries are widespread, easily accessible, and are safe to harvest.
Most harvests take place within a few miles of town or along a narrow strip of coastline bordering Kasegaluk Lagoon. Berries are usually harvested in August.

At the end of the subsistence portion of the interview, the researcher asked each respondent an abbreviated set of subsistence questions to ascertain whether any of the changes outlined above had also affected berry harvests. Respondents were asked if they had any notable memories of picking berries at a young age. Respondents were also asked to share notable observations on berry picking and plant harvesting practices today.

**Youth Cohort (ages 18-29)**

Two youths reported that they harvested blueberries and salmonberries on an annual basis. Common harvest locations were a few miles inland from town (but far enough to avoid any pollution, as one youth pointed out), or else south of town along the coast. These youths shared the following about their berry harvesting practices:

*We last year went out just along the dump hill. Just along out here. Just right out here. There’s a lot of berries out there...well a lot of them also go boating to the cabin out there. Neakok’s cabin, so that’s like 15 miles down south or something.*

*There’s the blueberries and just the blueberries and the salmonberries. I guess they said there are blueberries more down south. I haven’t really heard anybody getting them just for the blueberries. Everybody usually goes for the salmonberries.*

*Yeah we do berry picking. I prefer going inland because of the heat. The temperature we have in the village, the dust, the pollution of the dump or gas or any exhaust, it can spread onto the perimeter of our village. It spread to certain parts of the land around our village. I prefer going farther inland.*

The researcher also asked if there had been any changes in the health or abundance of the berries, or any changes in berry harvesting practices. Neither youth who commented noted any significant changes. One youth did say, however, that the
presence of the berries each fall indicates that the tundra is still healthy: “If we don’t have berries it’d be hard to know that we have healthy tundra out there. When we see flowers or any berries out there we know it’s healthy out there.”

**Adult Cohort (Ages 30-49)**

Four adults reported that they picked berries annually. Typical harvest locations were either inland tundra areas within a few miles of town, or else coastal areas anywhere from ten to thirty miles south of town along Kasegaluk Lagoon. Adults shared the following comments about berry harvesting practices, past and present:

*Every year [we go berry picking], and that’s just right up here at the dumps. A lot of times we just drive the Honda up there. I mean the whole village goes up there. It’s not just my family. That’s the traditional place to get berries for the whole village, but sometimes you’ll go out in a boat and go way down south. The farther up north you go the less there is. I don’t know if it’s colder or something. I don’t know. So if you go down south you can get more and they’re bigger, plumper, juicier, good.*

*Oh yeah, I’m required to [go berry picking] by my girlfriend. That’s one of her favorites. I mean I’ve done it every time I’m here in that season, and it’s about that season right now, so I’ve gone with my parents, my grandparents, my aunts and uncles. My grandfather’s brother has a cabin along the shore about 25 miles south of here, and that’s a really good area to pick berries.*

*It was either to the cabin or past our landfill on that hill and the next hill, and there’s a hill next to the river over here. It’s only like two miles out. We would either go there or we would take a family trip down to the cabin. I’m thinking there might be some on the other side of the snow fence even. Every once in a while we have a good rain, warm year, and there would be a whole bunch of them just on the other side of this snow fence. The whole community would, you know, go out there. Yeah August.*
Adults noted two recent changes in the berries. First, the quantity of berries at the traditional picking locations close to town has declined. Three adults thought the decline was due to over-picking since these are the easiest and least time-consuming locations to reach. These adults said:

There's not as many at the traditional places we pick. I don't know if that's behind over-picking which is probably the case, so basically you're just walking around looking for them.

You have to go farther and farther out [to find them]. It depends on the weather. If we have a good rainy summer you know there's going to be plenty, and if we have like a cold snap you know you're not going to find as much. Like if it gets cold enough to snow in mid-June you know it's going to be unripe ones. They'll be there. They won't ripen or they won't mature in time. You have to go farther out. There's lots of people. Population's growing and the younger generation is getting lazy. Just like myself, I hate to admit, I can't go without a snowmachine; I can't go without a four wheeler or a boat and motor. It can be done. It's just more work.

So the past five, the past six years we've been traveling a little further south. It's not because the berries aren't there at the cabin. It's just there's a lot of people that go to the cabin and they pick all they can. I figure if we go farther south we'll find our own bunch, and it's been that way. I take my family and we go about, it's between 30 and 32 miles south about six seven miles further than the cabin.

Second, warmer conditions in recent years have made the berries accessible for a longer period of time than they were in the past. Longer summers don't necessarily improve the seasonal harvest because a dry season can ruin the harvest, but they do allow the community more opportunities to harvest the berries provided the conditions are right.
The only thing is they're lasting a little bit longer because it's not freezing right away. A lot of it depends on the sunshine and the rain, so if you have a dry year you don't have a good berry season. If you have too wet of a year your season is shortened because they've all ripened already, but if you have a good balance between the rain and the sun it can last a whole month, the berry picking. So a lot of it depends on the environment. One summer was cloudy the whole, we didn't get a lot of berries that year because they were still hard because they didn't have the sunshine they needed. I've noticed we have to go out a little bit farther to find them and they're not as big around here. The farther south you go the bigger they are.

**Elder Cohort (Ages 50-70+)**

Three elders reported that they harvest berries annually. Salmonberries, blueberries and cranberries were the favored species. Harvest patterns mirrored those reported by the community’s younger residents. Inland trips close to town or up the nearly rivers were preferred:

> [We look for them] any place it's warm. Salmonberries and blueberries. What are those called? Red berries. Cranberries. Back in the rivers on the hillsides we pick blueberries from willows before they hug the ground, you know, in the vines. Those are the best. It’s a jungle under there, you know. Really. Everything is alive. And they’re a little bigger too than the original size. Juicy.

Yeah past the dump [is where we pick here]. Past the dump you go with a four wheeler behind one hill or behind the other hill or behind the water lake…or down to Neakok’s cabin because usually it clears too. And I know toward Tunaaq there’s lots of cranberries. If somebody went and picked them they sure would pick a lot but nobody ever goes up that way. Tunaaq—you can go there, there’s lots of cranberries.
Berry harvests south of town also occurred during caribou trips.

Everybody goes for berries. Yeah, they [say], “Oh, I’m going caribou hunting.” I say, “What did you do?” “We just laid out in the tundra. We found a batch of berries.”’ You sit in one place and…Just pick.

None of the elders said that they had witnessed significant changes in the berries or changes to berry harvesting and distribution practices over their lifetime. Respondents in this cohort were the only ones to report harvesting any type of plant besides berries, however. One respondent said that she harvests plants around the same time as peak berry season. When asked why so few people harvest these plants when they are so abundant, this respondent said that the families in town with roots in Kotzebue are not aware of them.

Yeah and I do go out [for] the green leaves also. The ituks. You could just go along the bluff, get them end of July or August. The ituks, the green leaves. One year I pick a gallon bag and just throw them in the freezer. [They’re used] as a beet. Along the bluff, so you pick them. Yeah, green leaves. We grew up with then. [Locals] don’t really know about them. Most of them people are from Kotzebue.
Chapter 7  The Future: Issues and Concerns

During the last segment of the interview, each respondent was asked to name what he or she considered to be the major issues facing Point Lay today (Table 5). Each respondent was also asked what, if anything, the community is doing to address these concerns, and if he or she is personally involved in any of these efforts.

Table 5: Community Concerns

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<th>Group</th>
<th>Climate Change</th>
<th>Development Projects</th>
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<td>Youths</td>
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<td>• oil spill concerns</td>
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<td>• effects on local wildlife population</td>
<td>• effects on local wildlife population</td>
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<tr>
<td>Adults</td>
<td>• timing of animal migrations</td>
<td>• oil spill concerns</td>
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<td>• community infrastructure impacts</td>
<td>• effects on local wildlife population</td>
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<td>• community infrastructure impacts</td>
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<td>• altered hunting patterns</td>
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<td>• lack of cash among lower income residents</td>
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<td>• couples having children too young</td>
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<td>• changing aspirations among youth</td>
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<td>Elders</td>
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Climate change, including its various effects on subsistence and community infrastructure, was among the most frequently referenced concerns. Other frequently referenced concerns include the high cost of engaging in subsistence activities, the
potential impact of various development projects (coal, oil and gas) on subsistence activities, and the loss of traditional Inupiat culture across generations. The interview questionnaire included a separate section addressing pending oil and gas development in the Chukchi Sea; responses to these questions are also included in this chapter.

**Youth Cohort (ages 18-29)**

Climate change and the potential effects of pending development projects were the most frequently reported concerns of respondents in this cohort. These respondents said that although they had not witnessed many changes in local weather and ocean conditions over their lifetimes, climate change was a major topic of conversation among the community’s older members. One young woman started by telling the researcher some of what she had heard from more experienced members of the community:

> I’ve heard a lot of people talk about how different it is than it was before. When I’ve gone out duck hunting, the guys have sort of talked about how when it’s been...I’ve noticed that a lot of the people I go out with, they notice that there’s some changes with the weather. It’s usually like this during this time of the season...like my mom, she’ll even notice too how the lagoon melts and freezes, and the ocean, they notice that there’s different, during the different part of the months, or part of the year it’s supposed to be this way or it’s supposed to be that way. Even the younger guys around here too, I guess they noticed it too from the other people that they’ve learned from. They mention the difference in the weather or how it all melts.

This same woman then went on to describe some of the recent changes she had seen in weather and ice conditions, and how they had affected her ability to safely harvest fish from the rivers close to the community.

> This past fishing season, from October, whenever we start going out fishing—I haven’t gone out fishing that much. I’ve gone out a couple of times, but not as much as the other year. I really wanted to go out fishing, but due to the weather and due to the ice I don’t think it’s safe.
Two youths said that climate change is a frequent topic of conversation at community meetings. These respondents also pointed out that there’s little the community can do about climate change except adapt to it. As one respondent said, “I don’t think that they can help the melting permafrost.”

Pending oil and gas development was this cohort’s other major concern. The consensus among these respondents was that the risks associated with offshore drilling in the Chukchi Sea are too high when weighed against their subsistence lifestyle. One youth feared that drilling would disrupt the migration patterns of the marine mammals, making it more difficult for him to harvest whales and seals.

*I think it will impact our whaling and our harvest, the seals and bearded seals. I think it will have an impact on those. Our spring hunting. I think it will disturb them. I think if they do that oil drilling between Wainwright and Point Lay I think that will change the migration of the whales. They’ll travel farther out in the ocean most likely. If the seal numbers are down then I think it will impact the polar bears. They’ll have to travel farther for food. They’ll have to change their diet probably.*

The other reported concern was that the conditions in the Chukchi Sea would make it difficult to contain a spill should one occur. As one youth said, the ships the oil companies bring to the Chukchi Sea need to be robust enough to be able to withstand high winds, rough seas, and sea ice.

*It gets pretty rough out there. I hope it’s like a big giant barge ship or something that can hold the fort down, you know, because if something happens when it’s rough out there, how in the heck are you going to keep your oil contained? That’s going to be so hard. It’s just going to be a hard thing to deal with if it’s rough out there and you have a leak; if it’s rough, it’s just going to be a disaster.*

When asked what could be done to address the concerns cited above, one youth suggested that the oil companies could do a subsistence study to learn what harvest patterns were like when the community elders were young men and women. These data
could be added to the data from the COMIDA study, and then used as a baseline to compare against subsistence patterns after drilling in the Chukchi Sea begins.

*I think they should, I think what the oil companies should do is talk to the communities and with the elders and have them do an observation like what you're doing with the hunting, how it was back in the day, where we hunted and how we're hunting nowadays and compare them. If they do start oil drilling they can do another observation to see how the wildlife has changed. How it will be in the future.*

There was widespread recognition, however, that the oil industry is going to start drilling in the Chukchi Sea at some point in the near future, especially since the preliminary part of the process is already well underway. One youth said that the community needs to adapt and take action so that their collective voice is heard, even if they don’t like what’s happening. This youth said,

*That’s I think something that this town’s just going to have to deal with because it’s already in the process of happening. I believe people are getting into contact with the people out there that’s doing all this. At the last meeting that we had with Statoil, it seemed like they were going to start stepping up and taking action about it. I’m really upset about it. I don’t know how to deal with it. I mean I guess I can voice up and say something…I mean, I really don’t know how that’s going to go over with the oil showing up here. We’ll see how it goes I guess.*

**Adult Cohort (Ages 30-49)**

Respondents in the adult cohort had the most concerns of everyone who participated in the study. Climate change was the most significant concern for adults not only because most of them were old enough to have witnessed major changes during their lifetimes, but also because they still had several decades as active subsistence participants ahead of them. All of the adults agreed that the climate has warmed overall during their lifetimes, but their major concern was an increase in the unpredictability of weather, ocean, and ice conditions. Two adults said the following about increasing climate unpredictability:
Well you can tell [climate change is] impacting some animals and it's helping others because you see more uncommon species up here that are not normal. The weather, it changes every year. It does change every year. One year it could be real straightforward [and] freeze right on time while the next year it's off. I noticed the ice melts quicker. It flows out a lot quicker and I think it's made more of an impact on the marine mammals than it really has made on the land mammals because they depend on the ice.

Well as a hunter every day is different so it's not as consistent as it used to be. Whereas that's March, very cold time, I mean it's still cold but it's not as cold as it was. October, that's ice fishing time, where that's coming just a little bit later in the month sometimes where you're actually going into November and still ice fishing. The consistency has been, from the last fifteen years it's not as regular...because some years you have really good ice, some years you have thin ice, some years it's really stormy, some years it's real calm. There hasn't been a consistency in the seasons. Every year it kind of jumps, the past fifteen years, whereas I remember being eleven years old—every October you went out the first week of October fishing, whereas now generally you always wait until the second week of October so it's kind of later in the year. Like one year we were real dry. All the puddles dried up. The year before was flooded. I don't know how much of an impact it is from global warming or if it's just the weather how it is up here. But I know the water has kind of warmed up some because the ice melts a lot faster. I guess that's a concern for anybody but part of it up here is adapting. You just have to adapt day by day.

Respondents listed two major concerns as potential consequences of climate change. First, climate change has impacted animal behavior. Point Lay is an important habitat area for many migratory species. Few animals are found in Point Lay year round,
which means that community members must rely on their knowledge of when species
arrive and depart the area if they are to be successful in their harvests. Climate change
has not only altered the timing of many species’ migrations, it has also altered their
numbers making some species more abundant and others less so.

[It’s] harder to harvest the animals. All of them. Actually the whales still
pass by. Bearded seals and the seals and the walrus and the beluga. The
bowhead too all right. If there’s no ice these guys can’t camp out.

We’re noticing that it thaws out faster, it takes a longer time. We’re kind
of in the phase of just adapting with the changes here. It’s not hard for us
to adapt, but it’s just hard to predict when the animals are going to come,
if they’re coming later or they’re coming earlier, but we are noticing. I
notice that we’re having real short springs and our summer seems to be
longer and our ice conditions, our ice is coming in late and it’s freezing
late, so it is a big change and it is something that concerns me.

The second major concern concerned the impact of climate change on community
infrastructure. In its early history, Point Lay was forced to move twice due to erosion.
Melting permafrost has already caused breaks in the village water and sewer lines, and
has caused structural damage to a number of buildings in town. There is a concern that
the village may have to move a third time if melting permafrost starts to cause substantial
damage to community infrastructure. Two adults commented on Point Lay’s
infrastructure problems. The first adult said that water and sewer lines have ruptured on
several occasions, melting the already warmed permafrost under the village. He said,

*It’s a combination of permafrost melting from the heat and the sewer lines
with the heat trace generating too much heat through the pipes and
melting the permafrost on them. Starting water breakups and sewer
breakups. Point Lay is starting to have a lot of caverns now. When that
water line or sewer line breaks 20 feet under all it does is build a big
cavern and melt all the permafrost—melts it all out and then you have a
big hollow. [We need to] stop this water and sewer and go above ground.*
It’s either that—move Point Lay, deal with the sewer problem or we’re going to go back to honeybuckets, I guarantee it. Man, we’re going to go back to honeybuckets. If you don’t adapt with the climate change—you have to adapt or you get the fuck out.

The second adult said that melting permafrost is eroding the coastline between Point Lay and Kasegaluk Lagoon, and is threatening to drain a nearby lake that the community uses for its water supply.

[I’ve] noticed our ground is sinking. The climate is changing. We’re trying to preserve the bluff from sinking any more. They’re putting concrete out here to keep it from sliding into the lagoon. They had to make a man-made dam to keep us from losing our water lake because every year breakup it gets too close to our water lake.

When asked what the community is doing to mitigate the effects of climate change, respondents in this cohort were unanimous in saying that the only thing Point Lay can do is adapt to the changes. There was a sense among these respondents that the combined voices of the village aren’t being heard by the wider world. Moreover, as one resident said, the community is forced to bear the impacts of climate change far out of proportion to what it contributed to the problem. Climate change was seen as something now inevitable. As one adult said,

I mean yeah, I could see how maybe you know like pollutants and stuff like that maybe but like how that affects the climate, but a lot of it is not our doing up here. I mean, you can only control so much of your community, you cannot...as opposed to the whole world. I think [we have to adapt to the changes], regardless of what we do or say. And for a village so small like this that the impact on the environment is so small, but you have to adapt, you know. Be cautious, be aware, look for the changes. I mean what else can you do? You sit there and you lobby and tell them no and no and no and they still won’t listen because you always have somebody saying yeah, yeah, yeah because they need that resource. What else can you do? I mean honestly what else can you do? The downfall is already;
it's already too late I think with the climate and the environment. I don’t
think anything we do now will improve it anymore.

Despite the seeming inevitability of climate change and the frustration of village
members who feel their voices aren’t being heard, community members also displayed a
remarkable resilience. The following are a sample of comments the researcher received
when he asked respondents what the village should do to address climate change:

You’ve got to adapt. Just got to adapt. Don’t run the world, man.

Nothing you can do about [climate change].

Yeah the issue, the issue to climate change is to adapt to it. You have to
adapt. You have to help everybody adapt to it. You have to help somehow
some way whether it’s either moving a house or moving the whole village.
I think everywhere is going to have to or we’re going to have to move
towns and displace people and move them. They’ll have to build new
houses. Keep moving.

You basically adapt to it, you know. What else can you do but adapt? It's
who we are.

Two adults said that the cost of subsistence has increased to a point where it has
affected community hunting patterns. One adult said that the cost of subsistence has
forced him to be more strategic and economical when he goes out hunting.

You need your basic things for a hunt. You need your bullets, you need
your gas, you need your grub. That doesn’t include the maintenance for
your machine. The price has gone up. Gas isn’t too bad because they’ve
been able to maintain a steady balance on that, but the bullets have gone
up. Grub has gone up. Your oils and your spark plugs, the price has gone
up on everything. So yeah it is more expensive, whereas twenty years ago
you could buy two boxes of shells for the price of one, you know. You
know you have to conserve your bullets so you have to make your trip
worthwhile in the sense that when you go out you’re going to catch
something and you don’t waste it. You make your shot count. And you
don’t go out as far as you used to. It's kind of limiting where you're going
to be at behind the price of stuff.

Another adult said that the high cost of subsistence has limited the ability of lower
income community members to participate in subsistence activities that require travel
away from the village.

The gasoline, oil. Yeah it’s the spark plugs. You know it’s a lot of stuff
that involves hunting. There’s the food, you know all the grub, so it costs
a lot of money just to get what we need—especially the ammunition too, so
that’s what’s hurting us nowadays. There’s a lot of people willing to go
out and hunt these things but they’ve got no income to get the gas and the
oil and the grub and whatnot. It takes gas to go a long way.

Several adults were also concerned about the loss of traditional Inupiat culture
across the generations. Two adults commented at length on the reasons they believed the
subsistence lifestyle was threatened, and provided a complex picture of the pressures
facing youth today who wish to continue on the traditions of their ancestors.

The first respondent provided a detailed summary of the issues he thought were
threatening the subsistence culture of Point Lay. The quote below, reproduced in its
entirety, touches on many of the reasons for the decline in subsistence participation.
First, many parents are so young today that they often haven’t acquired the expertise
necessary to be skilled at subsistence, nor are they as economically secure as older
parents who have had time to establish themselves. Second, it is increasingly necessary
for community residents to work for wages to support a family, even though jobs take up
a lot of time, limit the ability of community members to participate in subsistence
activities (and thus push them to acquire outside foods from the local store) and are
scarce in the village. Third, changing expectations about what it means to be successful
have pushed aspirations among the youth of the village to be more in line with American
norms. In the past, a community member gained status by becoming skilled at
subsistence activities; today, young people believe that they must leave the community
and obtain a college education to gain status and be successful. This adult said,
There’s some older generations who would travel, you know, by dog team and they lived in the old villages. I’m trying to think of who else would be a good…it seems like we’re in a generation switch where our younger generation has to step up, you know, where the older generation has to start teaching my age group to teach us how to do certain things that are real helpful to my generation. My generation doesn’t know, they haven’t learned yet certain things, so we’re kind of in a jump between generations. That’s what I’ve noticed, because when I was growing up it just seemed like everybody knew what to do. Everybody knew, you know, the certain things that…I mean [traditional knowledge] is getting passed on but not at the level of where I was growing up. You see all these kids here, they have a lot of young parents and the parents their main focus is to get a job and provide for their [families], but back when I was growing up there wasn’t so many young parents. The parents were older, you know, 25, 30 when the parents nowadays are 18, 20 years old and they have two, three kids. I noticed the difference because when I was growing up I was always going out hunting as I was always involved in subsistence. Nowadays it’s changing to where we always need to get a job to support our family. When I was young growing up, most of our support came from hunting and just providing food and having food to eat. I think that’s a big issue with them because our older generation, my uncles, when they were growing up they were on dog teams, they had to hunt to survive. It wasn’t you have to go to work and be warm. They were required to follow the food and hunt, and that generation is kind of passing it down to the next generation because they know how to do it. Then with this new generation of 20 to 30 year olds, they’ve learned that they have to go to school, go to college and get a job to provide life for their family. I feel like I’m kind of in the middle of the gap where I grew up hunting and [have participated in a] subsistence lifestyle all my life where the older generation they had to hunt, they had to provide, they had to go hunting and they had to know
how to do it. It seems like the generation under me, you know ten years younger than me, their mindset is go to school, go to college, get a job, provide for your family. That’s how it has to be done in this time period of change, whereas about my age we could kind of support our family with working here and there and going hunting, mostly hunting and just working here and there to pay our heating bills or whatever, electricity. Now I think that shift, it’s shifted from the importance of hunting to keeping your family in a well state, to where it’s changing to you have to go to work to keep your family in a well state. But I don’t think our subsistence is going to stop. I think it’s just the difficulty of it is because the older generation, they didn’t have to go to work and they didn’t have to go to the store and buy stuff. There wasn’t no store to go to; there wasn’t any money. So between the generation that was older than me, 20 years older than me, and the generation that’s 10 years younger than me, there’s a big difference of, you know, they had to hunt here whereas this generation has to go to work. I was kind of in the middle. I grew up in the middle of it where I, you know, there was still times where I had to go out there and go hunt to full up our fridge and freezer, and there was times where had I had to go apply for a job and get a job to pay our electricity. Nowadays it really changed too where you have to work, whereas the generation above us, the older folks, 50, 60 years old, I mean they grew up in a world [where they] didn’t depend on anybody else but themselves to keep themselves. If they’re hungry they go hunt and they eat, but this generation that’s growing now, they’re hungry, they have to go to work, they have to go get money to buy from the store. There’s a big shift that’s going on. It’s not really noticed by many people because they didn’t understand back in the 60s, 70s, you have to go out there and hunt and travel with the food and follow the food to eat. Before the 60s and 70s, before that, that’s what they had to do but nowadays, you know, 80s, 90s, 2000s, you know we’re in the time of our life that it’s shifting from going
out to go catch our food to going to go buy it from the store. All this stuff we have to pay electricity and we have to pay for our water and pay, you know...that’s what it came to. You have to have some sort of money, income of money to survive now, where back in the 40s, 50s, 60s, they didn’t need money. They didn’t have to go work for somebody else. They depended on themselves. Now we’re moving into depending on the job. If there aren’t any jobs opening then how are you supposed to...that’s our community, we don’t have jobs for everybody. When it comes down to subsistence everybody knows that everybody doesn’t have a job, so if you have a job you go help. You help people who don’t have [a job], so if their freezer is running low, you know, if you go out there we catch...a lot of them will be willing to come with you to help you to go hunt and catch food to fill up their fridge and freezer. When it comes to the people who don’t go hunting, either they’re too old or they haven’t learned, we still help them. We have community, we have geese, we have communication with--they’re going through a hard time and they you know they, they open up and they go and bring them some Native food. They’ll eat it. It’s not a problem. It’s just everybody helps out one another. I see that’s just the way it’s got to be for this time period of either living off the land hunting or living an eight to five job. It’s hard. When I really think about it and put it in my mind it’s hard on me. It kind of makes me feel bad sometimes. I grew up a subsistence way of life where I grew up year round. Nowadays I have a family and now you have to have money to make your world go round. It’s not a problem to me but it’s a little harder to live. It’s hard living, but I’m pretty sure everybody will adapt. Everybody’s taken care of up here.

The second adult said that laws and regulations imposed from outside were limiting the community’s access to the land around Point Lay and restricting their harvests. This respondent felt that these laws and regulations were making it more difficult for him to
obtain Native foods, but added that the necessity of having a job for income was also making it difficult to obtain alternative foods from the store.

*You can’t go back to—well you can how you used to live back then. Now today [there are people that want to go back]. Forget you ever met white man. They’re giving us laws, regulations how we should live off the land [and] how we use the land. You’ve got buy stamps; you’ve got to update your permit. I love to hunt and live off the land. They keep an eye on this stuff when you’re tagging your ivory and polar bear skin. You’re only limited to bagging so much. That’s not right. They’re taking our hunting privileges. That back then that’s our hunting ground. You can’t take that from us. You know you create jobs nowadays you’ve got to have a diploma. You don’t have that how are you going to have income, how are you going to work? You’re going to live off of white man food if you can’t hunt. You need to wake up, smell the coffee. It’s really changing my friend, it really is.*

Pending oil and gas development was the last major concern adults reported. The possibility of offshore drilling in the Chukchi Sea elicited a wide range of concerns from village residents. The most frequently reported concern was the possibility of an oil spill in the Chukchi Sea and its possible consequences for the local ecosystem. Three adults voiced their concerns about a possible disaster as follows:

*The biggest concern I have right now is the exploration they're going to do in the Chukchi Sea, because if they find oil which they're going to that's a given, that if there's a spill it's going to affect the whole ecosystem of my village...because where they want to is like seventy miles away from Icy Cape. Right at Icy Cape there's an inlet, so that current comes in, it goes in that inlet it will hit all the way down. This whole coast ecosystem will be wiped out. That's a worry that I have.*

*Well because of the potential for disasters it's going to affect the whole western coast. Point Lay has a very unique ecosystem, the lagoon. It's*
going to affect hundreds of species of animals from the smallest bug to the biggest whale, because the whole migration passes that way every year. All marine mammals every year, they all pass by that way. So I guess, yeah, it's a concern because there's the potential of a big disaster.

Don't drill out there. Why don't they use what resources we have on land before they try to drill out here? That's that's our garden. It could ruin everything. It could be the next Exxon Valdez. It will screw everything up. The smelt, the bowhead, the beluga, the bearded seals. Everything. Everything from Kasegaluk, the ringed seals, the birds, their nesting areas. It's going to affect everything. They have no way of how to clean it up. It's going to be impossible. It's ice, I mean you see oil it seeps everywhere. It will just spread everywhere. The current, it will poison, basically poison everything. My concern is they should use what they can off the land before they try to go [offshore]. The only thing that we'll probably get is the caribou.

The potential effect of development on local wildlife was another major concern. Oil drilling in the Chukchi Sea, even if it is far offshore, will increase the amount of boat traffic in the sea and may increase air traffic in the villages. Most animals found in and around Point Lay are migratory, which means that there is a greater potential for development activities far from the village to affect their health or behavior. As one adult pointed out, the coal mine that one existed 40 miles south of the village had an impact on local caribou population levels even though it was far from the village.

When it comes to it we’re the closest community to where they want to drill. We’re a good fifty miles closer than any other village even. See Wainwright is about 120 miles away from where they want to drill, where Point Lay is only 70 miles so we’re real concerned about this oil development is what they’ve got going on. This coal mine, we weren’t very concerned. We kind of thought, okay, they’re far enough. They
shouldn’t really disturb us, but as a year, two years went by, I mean we started noticing the caribou, you know, they change their patterns.

Another adult said that she was worried about the impact an increase in barge traffic might have on local animal populations.

I’m really afraid for the oil industry to come and start exploring offshore. Not only that, I’m really afraid of the shipping companies start using the Arctic Ocean traveling to and from where they're going. It's going to really affect the animals that have been there since day one. I think everyone in Point Lay has the same concerns.

The researcher asked respondents who had voiced concerns what, if anything, the community was doing to address these concerns. One adult who sits on the Native Village Council said that the community has been voicing their concerns at community meetings and working with industry plus the various North Slope entities to ensure that the collective voice of the village is being heard.

We are voicing our concerns. We are communicating with the industries, and we’re letting the industry know that hey, we're here too so we're going to be watching you. You do something wrong you're going to get in trouble. We're coming together like it used to be in the older days. We team up and work together. The community is coming together and the slope is coming together and they're teaming up. I am [personally involved in these efforts]. I am a member [of] the Native Village of Point Lay. We are watching and listening and putting them on paper in writing. Watching the oil industry, just kind of like policing the ocean and land. The oil company and wildlife people, whatever they do, we’re watching them. We watch them. If they make a mistake they're going to know about it. We have impacted the oil companies. We let them know that, hey, we're still here and we’re still going to be here before, during and after you've done your deed, whatever you're doing out there.

One adult, however, said that she were concerned that industry was not hearing Point Lay’s concerns. This adult said that because the villages along the Chukchi Sea were not
unified in their view of oil development in the Chukchi Sea, it was making it more difficult for all of the villages to share their concerns with industry.

Yeah [we’re sharing our local TK with industry] but you know how that goes. You can talk all you want but still…well you’ve got Wainwright that’s proactive and then you’ve got Point Hope that’s totally no, no, no, and then you’ve got Point Lay that’s kind of split. Some want it, some don’t. You have to consider the risks and rewards, you know. We’re one of the world’s last explored places to the potential to find something huge is a very big possibility.

**Elder Cohort (Ages 50-70+)**

Climate change and culture loss were the major concerns for community elders. This is perhaps to be expected since these respondents had lived in Point Lay the longest and had seen the greatest range of changes. Some elders lived in Point Lay during the 1970s when the village had to be moved twice due to coastal erosion, and know that erosion and melting permafrost could make it necessary to move the village again. According to one elder, melting permafrost under Point Lay is already costing the borough millions of dollars in repair costs.

We’re careful where we build now. Especially when we had to relocate Point Lay. We’re on a big ol’ block of ice. If you walk a little ways out here you’ll see it. You’ll see over on the outsider where it’s dropped. My wall over on the other side is cracked. Just like our house. I used to be able to go under my house like this. Now I can stand. Oh yeah, our ground has settled. That’s why I told you about this block of ice we’re sitting in that’s melting. We’ll probably have to relocate someplace. Our water sewage doesn’t work worth a darn. It works good but it breaks. Every year. Next to our house, our barrow, it broke just like that about that far. We’re spending millions of dollars to the North Slope Borough water and sewage.
Whereas respondents in the adult cohort were most concerned about the effects of climate change on wildlife, elders were most concerned about the threat a warming climate posted to the integrity of community infrastructure. Respondents said that the village had lost several ice cellars due to collapse or flooding. Furthermore, warmer surface temperatures have made it more difficult to keep the cellars at a cool temperature, which in turn has increased the risk of food spoilage. As one elder said,

*Everywhere you go eroding because of the weather change...and the ice cellars, it’s hitting them. They filled with water. Yeah...and one time too, even over here, [name withheld]’s new cellar got so warm it stink up the meat. They still gave it out but I gave it all to my dogs. You couldn’t eat it. It was so badly stinking.*

One elder adopted the solution of storing her subsistence foods in a freezer inside her house, but this method of storing food is less efficient, more expensive, and requires supplies from outside the village.

*One of the concerns is our ice cellars. That’s really important to us. Now we’ve got to depend on these electrical stuff we have. I use freezers. I took care of it all; I took care of it. That’s what I’ve been working on and that’s why I almost collapsed. I’ll show you how I do it (respondent showed interviewer her freezer full of subsistence foods). I don’t know about everybody else [puts food in their freezers]. I do...Yeah it’s a lot of work...how many of them, three of them. I did it by food saver but I ran out. I did only two packages. I wish I had some more but I already ran out.*

Melting permafrost has also damaged some of the buildings in Point Lay. Two long term residents told the researcher that the tundra beneath their homes had sunk several feet since the time when they first moved into their houses. Settling has also caused walls and windows to crack, and has deepened the gullies between houses and streets in the village. Elders said the following about the effects of melting permafrost on community infrastructure:
I mean look at the principal’s house. That house is ready to fall over, the brown house on the other side. I mean the pilings are coming up. When I first moved into my house I had to stoop down and walk under the house. Now I can just walk under the house. I’ve noticed the gullies between the houses, these gullies are getting deeper. You know, once they’d freeze up they’d be only like this high. Now when you’re walking in between they’re getting deeper.

We’re seeing a lot of, you know, when I put the skirting around my house I put it as close as I could to the bottom to retain coldness underneath for the pilings, but when you leave from here you’ll see some parts of it...permafrost melting. We never used to have some of the big valleys that we see just on the other side of the church.

Well I hear concerns about this permafrost with the houses, because you know we’re getting shiftings and a lot of complaints lately about their qanitchats, their sheds getting off stable or splitting. Unstable or separating from the walls. There’s a lot of homes here back in the 800 block, they’re complaining about their housing units because of the settling of the ground. One of them, right down the center it’s almost split. [The borough] tried to come and fix that.

Other reported concerns include increasingly shallow rivers, warmer and more humid winters, and a changing prevailing wind. All of these changes are concerns because they limit the ability of villagers to access areas used for subsistence. The shallower a river becomes, for example, the more difficult it is to take a boat into it. Villagers who attempt to enter a river when it is shallow run the risk of damaging their motor or getting stranded. Two elders said:

[I’m concerned that] our rivers seem to be getting shallower. Getting into the river is getting harder and harder. Same with Utukok. Our grayling is, you know, getting harder to find. We normally fish Kokolik, this one,
and Kukpowruk is our normal fishing areas for grayling. We’ve been catching them in low numbers lately.

Well going up river with me and my brother in law, we see things a bit different than the year before. Not only that, the river is hard to get into anymore. Especially Kukpowruk and Utukok. It’s like they’re drying out.

The prevailing wind in Point Lay is out of the northeast. Winds from the south and west do come occasionally, and are favorable for boating provided they do not become too high. As one elder said, however, not only is the prevailing wind increasingly from the south and west, the wind speeds are high enough to make boating in the lagoon unsafe.

Our prevailing wind is slowly changing. That’s one thing that’s really going to affect our tides. Well you can travel when you’ve got south southeast winds and west winds you can travel in it no problem, but you know it’s just that the wind is blowing longer from those directions. [The direction of the wind] doesn’t affect our travel. It’s the high winds that affect our travel. You just can’t travel in the lagoon. It’s so choppy.

Yeah, dangerous to travel in.

Another elder said that the change in the prevailing wind has been a frequent topic of conversation at village council meetings.

We can only voice our concerns about climate change to each committee like wildlife committee, AEWC, beluga committee. We’re hearing the same thing. We’re hearing the same thing; our prevailing wind is slowly changing. I think we’re being heard mostly through our committees and commissions.

When asked what the community was doing to address the changes brought about through climate change, one elder said that the village has been supporting outside researchers by allowing them to undertake studies in the village. The community benefits by gaining access to the study results, and also by having its collective voice heard by a wider range of people.
All the time (we talk about climate change at village council meetings).
All the time. Yes, all of our governments and all of our departments.
Climate change affects everything. We try to help with the researchers
(when asked what the community is doing about it). Uh huh, because we
can’t go gung-ho by ourselves.

One elder paraphrased an elder who has since passed on when asked how the
community could adapt to the challenges summarized above. The elder said that the
community had no choice but to adapt to the changes, even if this meant moving the
village to a higher, dryer spot in the future.

_I don’t think [anything can be done about the melting permafrost]. My
uncle told me, this was a year before he passed, he goes...we were kind of
talking about the issue of the permafrost in the village and how unstable it
is for a lot of these homes. He’s like, well if they would agree to move us
to Malaktuqa we wouldn’t have a problem. Malaktuqa is like solid rock.
All rock area. About 18 miles southeast, south southeast. He knows it
would because it’s pretty much solid._

Loss of traditional Íñupiat culture was the other major concern of respondents in
this cohort. The oldest of these respondents grew up speaking Íñupiat as their first
language. Subsistence was not only a way of life, it was a necessity at a time when
outside goods were scarce, if not absent altogether from the small communities of the
North Slope. A community elder offered a brief retrospective of what village life was
like when he was very young.

_When we first came to Point Lay I remember using one dog with a sled.
The only persons that had a snowmachine was [names withheld], and they
were stingy of their snowmachines. We either had to go with them or
walk...but it was OK. No grudge about it. They used to come back with a
lot of caribou like that. Yeah, lots. So nobody complained. We were
blessed back them. No complaints. I mean, even my brothers and sisters.
We never missed candy or we never had pop around us. That was our
healthy choice. Nowadays we have to have it._
During their lifetimes, elders watched their language die out and experienced the shift from a subsistence-based to a mixed cash and subsistence economy. Given these changes, it is understandable that elders would be concerned about the transmission of traditional Iñupiat culture to the youth of the village. Elders provided a mixed assessment of the prospects for the continuation of traditional Iñupiat culture. On the one hand, many young people are deeply interested in their cultural traditions. They hunt, they fish, they process their own catch, and they share it with the less fortunate and less able in the community. On the other hand, a sizable portion of young people in the community barely participate in subsistence activities at all. American culture exerts a strong pull for these youths. Television, other communication technologies and pre-packaged food all make it easy to obtain the food and entertainment that were much harder to obtain for their ancestors. When combined with the increasing necessity of working for a living, young people today are left with little time to learn the traditions that sustained their ancestors—and as some younger respondents pointed out, also left them wondering what the role of traditional knowledge is in a world very different from that of their ancestors.

Elders also pointed out, however, that young people in the village can’t learn to hunt, process, or appreciate Native foods if their parents don’t teach them. Two elders thought that parental responsibility was an important part of passing on traditional Iñupiat culture to village youth. They said:

*People, they don’t eat Native food nowadays. They just want to eat ready made [meals]. Their parents raise them like that nowadays… Parents don’t teach their children to go out hunting. They’re teaching them how to find a rich husband or stuff like that. My sister’s teaching that now. I said you should teach them what mom and dad taught you—how to live off the land. They keep looking for the money nowadays. They could buy food from store, easy way, but if they don’t graduate or what not they can’t work. How are they going to survive? How are they going to eat?*
I wish more people would learn how to go hunting, but they can’t learn if they weren’t raised doing it…because [my son] was taught when he was five years old like that little boy. They were never brought out (which is why they don’t go out).

Despite the challenges cited above, most elders were optimistic about the future of Point Lay, its youth, and the continuation of traditional Iñupiat culture. As one elder said, teaching youth has a self-perpetuating aspect to it. Once children start to learn they are encouraged by what they soon accomplish, and older community members encourage the youth through their positive affirmations.

If you go out with these young kids you’ll see it. They stick to it no matter what. And then when they realize what they’ve done, when they caught a whale they suddenly realize what they’ve done. The enormity of it didn’t sink in for a while. Now any time they travel with other Natives, hey, got a whale, then it starts all over again. It’s encouraging because it’s lots of reinforcement, positive reinforcement from our people. And the excitement they get too from our elders. I guess the adrenaline is hard to let go of when you’re in that kind of a situation. It’s probably the same thing as skydiving when you jump out of a perfectly good flying airplane.

Another elder shared how she taught her children when they were very young, and was proud to report that they still knew and were using what she taught them.

I showed them before ahead of time when they were here. You’ve got to learn how to cut from ptarmigan, brant, ducks. I showed them how.

Pluck, pluck, pluck, pluck, pluck. Cut it up. I let them watch me cut it up. You see the joint? You see it moving? That’s where you’re going to cut it. Right there. You can’t just chop it. That’s no way to make it. You’ve got to do it all the way through the joint. If you are just chopping, when you start to feed people with soup, duck soup…bone, piece of bone, they’ll choke on it. That’s why don’t chop it like that. You cut it where there’s no bone fragment. That’s what they show us. That’s how I showed them. They were sure proud of my grandchildren last time when they first get
them. "Your two granddaughters know how to do everything!" They know how to make donuts too down there. I raised them like that and they know. Nowadays, even my children. Thank God for that.

One elder summed up his view by saying that the Inupiat had been through a lot during the past several hundred years. Despite the enormous challenges faced during this period, this elder said that he believed the Inupiat would continue to survive encounters with the wider world.

*I think our culture is pretty much going to hang on just like many of the other cultures in the world that have survived massive changes. Like right now we’re surviving another massive change in the last 400 years from our way of existence, so we’ll survive the numbers that, you know, when the first travelers came up, the Russians, they realized that there were many of us. There were many of us until we were decimated by contact with the outside world. It’s not because of evil and stuff like that, but because of mankind. We’re wired that way somehow. White folks, black folks, Indians. It’s just man. Homo sapiens.*

Oil and gas development was not the major concern for elders that it was for middle aged and young respondents. Several elders commented briefly on the pending development projects in the area; the consensus among respondents was that resource development is going to occur at some point in the future regardless of whether the community wants it or not. One elder who voiced his concerns about the impact of proposed oil development projects in the Chukchi Sea said,

*I know it’s going to happen. I don’t want it to happen because we try to protect our water, you know, because we live off the land. This area is a big migratory base to up north and down south. This whole area’s migration path is everything is in—it would damage the feeding area and, you know, affect the land, affect the sea water stuff, and even the simple flies that fly around and the bugs that fly that we need. It will be affected too. Everything will be affected. Even the birds, the migration.*
Chapter 8  Analysis and Discussion

The remainder of this thesis contains a summary, analysis, and a discussion of the quotations from the three preceding chapters. This chapter is divided into two sections. The first section summarizes the major changes in weather, ice conditions, and animal behavior that respondents identified during the interviews. The second section identifies the strategies that respondents have developed to adapt to the changes summarized in the second section—strategies that have helped community members maintain a subsistence lifestyle. The second section also identifies behaviors and attitudes that may undermine the continuation of the subsistence lifestyle.

Indicators: Changes in Weather, Ice, and Resource Conditions

The conditions an individual experiences during his or her formative years (approximately age 15 to 25) provide a benchmark range for a set of variables that, in the aggregate, constitute one component of an individual’s acquired TEK. These variables may include the timing of events such as freezeup and breakup, the abundance, behavior timing and location of subsistence species throughout the year, and harvest practices. The benchmark ranges for each of these variables define what the individual considers to be normal for the remainder of his or her life. Deviations from this range are noticed, responded to and then drawn upon to adjust each individual’s store of TEK.

Respondents in all three cohorts reported changes in weather, ice, and resource conditions, but at different frequencies (Table 6). Many of the respondents in the youngest cohort were still in their formative years at the time of the interviews. Although youths occasionally reported changes in weather, ice, and resource conditions, they typically saw conditions as normal that respondents from the two older cohorts saw as anomalous. Adults reported the largest number of changes in weather, ice, and resource conditions of the three cohorts. Adults were also the most likely to report changes that had occurred within the past five years. Adults had the most obligations of the three cohorts, as they were the most likely to be raising a family and holding down a full time job. Family and work obligations meant that this group experienced greater constraints.
on money and time than respondents in the other two cohorts, so their subsistence practices may be more sensitive to changes in weather, ice, and resource conditions than those of the respondents in the other two cohorts. Elders reported a smaller range of changes in weather, ice, and resource conditions than adults but a larger range of changes than youths. Even though elders experienced a much wider range of social, cultural, and environmental disruptions than adults and youths did during their formative years, including the experience of being removed from the community for boarding school, the abrupt regime shift in weather conditions from cool to warm conditions during the late 1970s, and the relocation of the village to the mainland, elders also appear to have adjusted the ranges of what they understand to be normal based upon their wide range of experiences. Furthermore, elders also appeared to possess the greatest number of strategies and resources for coping with weather, ice, and resource changes. One concern elders frequently expressed during interviews was that younger people in the community lack the necessary mindset to persevere when subsistence conditions are not optimal.
### Table 6: Changes in Weather and Ice Conditions

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Changes</th>
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</table>
| **YOUTHS (18-29)** | - Speed of breakup is faster  
  “...the ice conditions, it breaks up much faster. You know, the snow gets softer faster on big rivers.”  
- Less ice on the ocean during the boating season  
  “Yeah, we took boat trips out [on the ice] every now and then. I remember seeing a lot of icebergs out there. Not like how it is now. I don’t really see as many as I used to.”  
- Ice is unsafe to travel/walk across  
  “It’s changing. It’s warmer, it’s getting colder off and on. Also you need to be careful. Some of the ice, it may seem frozen but it’s not.” |
| **ADULTS (30-49)** | - Speed of breakup is faster  
  “I noticed this past four or five years the ice goes out faster. We’ve hardly been catching any walruses on the ice these past few years due to ice conditions going out too fast.”  
- Speed of freezeup is slower  
  “It’s taking the lagoon a lot longer to freeze. I think it was open all the way up until December this year.”  
  “I have noticed that it’s moved to late October. Yeah, I mean it’s a big time shift when you’re waiting to go out there and, you know, you want to catch fish. If there’s two more weeks to wait, that’s a long time.”  
- Ice is unsafe to travel/walk across  
  “It’s a lot more hazardous now.”  
- Less snow on the tundra  
  “I’m seeing less and less snow out there on the tundra. When I was growing up it used to be just mostly snow. You’d hardly see the tundra, but this year I was seeing a lot of ground before spring.” |
| **ELDERS (50+)** | - Can no longer read/interpret weather conditions  
  “You can’t really say about...you can’t really read the weather anymore like you did because you don’t know.”  
  “We grew up translating the weather, like, you see that grey area? You know it’s going to rain or snow, but the whole weather is changing. It seems like the warm weather is coming to our area.”  
  “Seems like the ice, it’s a different kind of ice. It’s a different kind of freeze.”  
- Timing of seasons has shifted  
  “Two weeks earlier to a month. Yeah, even our hunting seasons. They all shifted earlier in the year. You don’t know the exact—like growing up you always know certain time, you know, the weather about the ducks flying, and then one winter my sister and I were sitting down there and the ducks weren’t even supposed to flying and they were flying. It was so warm. They got so confused that they were flying up here when they’re not supposed to.” |
Youths reported an increase in the speed of spring breakup and a decrease in the amount of sea ice on the ocean during the boating season (May through October). Youths also reported that the sea and lagoon ice is increasingly unsafe to walk on because it is not as solidly frozen as it used to be. Adults reported that the spring breakup is faster than it used to be and the fall freezeup is slower and consequently later than it used to be. Adults reported that the sea and lagoon ice is more hazardous to travel on now than in the past. Adults also said that the amount of snow that accumulates on the tundra is declining from year to year. Elders reported that they have been unable to read or interpret observed weather conditions in recent years. Elders also said that the timing of the seasons has shifted during their lifetime: spring comes several weeks earlier and fall comes several weeks later.

All of these changes corroborate climate studies that show the Arctic is rapidly warming. Spring is arriving earlier, fall is coming later, and the quantity of sea ice near Point Lay is declining. Respondents of all ages have noticed these changes, but elders were far more likely than adults or youths to say that the changes they had observed made it difficult for them to make sense of the environment they had known for most or all of their lives. In some cases, a deviation may be so significant that it causes alarm or distress. Respondents may feel as though they can no longer “read” or interpret the land, or may feel as though the landscape has become alien to them. These comments suggest that for some respondents and some variables, a threshold has been breached where portions of the TEK they acquired as youth no longer correspond to the environment that gave rise to them.

Table 7 shows a summary of reported changes in resource conditions by species. Reported changes fall into five categories: species abundance, species behavior, species distribution, timing of species arrival or departure, and harvest practices. The table also indicates what cohorts reported each change, and includes quotes where relevant.
<table>
<thead>
<tr>
<th>Table 7: Changes in Resource Conditions</th>
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<table>
<thead>
<tr>
<th>BELUGA</th>
<th>Abundance</th>
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<tbody>
<tr>
<td>• Smaller beluga population today compared to 50 years ago (Elders)</td>
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<tr>
<td>“Plus we could choose kind of which ones we could harvest, but nowadays it’s first flocks.”</td>
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<thead>
<tr>
<th>Behavior</th>
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<tbody>
<tr>
<td>• Beluga whales no longer enter Kasegaluk Lagoon without being herded in (Adults, Elders)</td>
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<tr>
<td>“We don’t know where our belugas are going.”</td>
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<thead>
<tr>
<th>Timing</th>
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<tr>
<td>• Beluga migration is a month later than expected (Adults)</td>
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<thead>
<tr>
<th>Practices</th>
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<tbody>
<tr>
<td>• Lack of ice floes makes it more difficult to corral and herd belugas (Adults)</td>
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<tr>
<td>• Change in regulations: belugas must first be harpooned before they are killed (Adults)</td>
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<tr>
<td>• Lack of communication and coordination (Adults, Elders)</td>
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<tr>
<td>“Nobody is communicating like they used to—like our uncles—because they were strong leaders. It’s communication (why we had a poor harvest). Well, what they taught us not to push them. Let them go their own swimming pace and not rush them. They always told us let the first pod leave, go by.”</td>
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<tr>
<td>• Different cognitive approach to hunting (Elders)</td>
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<tr>
<td>“We used to stay at home, be quiet, because they knew they were coming. They knew, and they’d let them come. We didn’t have to go out there and [herd them].”</td>
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<tr>
<td>“Bigger population [of belugas], and a different type of Eskimo.”</td>
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<table>
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<tr>
<th>SEAL</th>
<th>Abundance</th>
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<tr>
<td>• Lack of sea ice near Point Lay has decreased the local bearded seal population (Adults)</td>
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<tr>
<td>“Bearded seal would be so abundant you could choose, and today you see a bearded seal you’re going to get it because they’re hard to come by. You don’t see as much anymore.”</td>
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<thead>
<tr>
<th>Practices</th>
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<tbody>
<tr>
<td>• Lack of sea ice has increased the difficulty of accessing seals to harvest (Adults)</td>
</tr>
<tr>
<td>• Traditional hunting practices are no longer followed (Adults)</td>
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<tr>
<td>“I think a lot of it is that the people don’t follow the traditional hunting ways like they used to. Like now would be the time to go seal hunting and nobody practices that anymore…They take the easy way, go in a boat. Because if you go now you’ll have to walk.”</td>
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</table>
Table 7: Changes in Resource Conditions (continued)

<table>
<thead>
<tr>
<th>Resource</th>
<th>Behavior</th>
<th>Practices</th>
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</table>
| WALRUS   | • Sudden and recent appearance (since 2008) of very large walrus haul outs on the barrier islands near Point Lay (Adults)  
“*All the years that I’ve been here I’ve never seen a mass haul-out like that before, ever, and I’ve been here since I was three and a half years old and we lived on the other side.*” | • Shift among some community members to harvesting walruses in the fall (Adults, Elders) |
| POLAR BEAR | Abundance | • The local polar bear population is declining (Youths, Adults, Elders) |
| CARIBOU  | Abundance | • The local caribou population is stressed (Adults, Elders)  
“No, more like fall time when it snows and then it rains and then it freezes. We had two episodes. They can’t eat, go through the ice layer. About three, four years ago we had that same thing happen and everywhere I went out I saw caribou curled up.” | Distribution  
• Caribou no longer migrate near Point Lay (Adults, Elders)  
“We’re not seeing them like we normally used to see them. Their migration route seems to have changed.” |
| FISH     | Abundance | • Overall fish numbers and harvests have declined (Youths, Adults)  
• The composition of fish species has changed. Salmon numbers are increasing (Adults, Elders)  
“*Those guys when they went to the end of the river they were catching grayling, humpies, salmon, Dolly Varden, trout, they were catching six maybe seven different fish in the same area which never normally happens. This was late, right I the middle of October, almost end of October when these guys were up there. They were coming up with loaded salmon in the fall time!*”  
“We used to hunt, we used to fish for grayling, but nowadays big fish have taken over. Salmon. Silver. Humpbacks.*” | Timing  
• Within the last year, salmon have been caught as late as November (Adults)  
“*Just this last year it’s the first I hear they catch salmon. In late October, early November. First time getting it that late. My cousins, they went up into the mountains, following the river into the mountains, and they were catching trout and salmon and grayling, but kind of the first I heard them catching salmon so late.*” |
Table 7: Changes in Resource Conditions (continued)

<table>
<thead>
<tr>
<th>WATERFOWL</th>
<th>Abundance</th>
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<tbody>
<tr>
<td></td>
<td>Overall waterfowl numbers are declining (Adults)</td>
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<tr>
<td></td>
<td>The composition of waterfowl species has changed (Elders)</td>
<td></td>
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<tr>
<td>Timing</td>
<td>The spring waterfowl migration is several weeks longer today than it was 20 years ago (Adults)</td>
<td>“The migration lasts longer. [They’re coming later] just like same as the seasons. Thirty days’ difference from when I was...There are far less and the migration lasts longer. It’s lots to do with the weather too.”</td>
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<tr>
<td></td>
<td>The fall waterfowl migration is starting later (Adults)</td>
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<tr>
<td>Practices</td>
<td>Hunting and egg harvesting locations are no longer accessed by foot (Elders)</td>
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<tr>
<th>BERRIES</th>
<th>Abundance</th>
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<tbody>
<tr>
<td></td>
<td>Traditional berry picking spots close to town are overpicked (Adults)</td>
<td>“There’s not as many at the traditional places we pick.”</td>
</tr>
<tr>
<td>Practices</td>
<td>Community members less likely to travel long distances from Point Lay to obtain berries (Adults)</td>
<td>“Population’s growing and the younger generation is getting lazy. Just like myself, I hate to admit, I can't go without a snowmachine; I can't go without a four wheeler or a boat and motor. It can be done. It's just more work.”</td>
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</tbody>
</table>

The most frequently reported change was in species abundance; respondents reported a decline in abundance for every species category except walrus. Respondents’ comments suggest that sea ice conditions are mostly responsible for the decline in the local seal populations. Respondents’ comments regarding declines in beluga, polar bear, caribou, fish, and waterfowl populations suggest that population declines in these species are partly related to changes in weather and sea ice conditions as well. The one notable exception to this trend was a sharp increase in the number of salmon in the local streams and rivers.

Respondents reported behavior changes in beluga whales and walruses. Long term Point Lay residents reported that beluga whales used to migrate through Kasegaluk lagoon past Point Lay but no longer do so, though it is not clear why. Community members now must herd the belugas through Kasegaluk Lagoon to Point Lay. Walruses
are more conspicuous in Point Lay than they were before 2008, particularly in the fall when they haul out on the barrier islands near the community. Although their abundance in the fall may have actually increased, it is thought that their recent behavior is due to an absence of sea ice for them to haul out on.

The timing of the beluga migration, the timing of the waterfowl migration (both spring and fall), and the timing of certain fish migrations have shifted. Multiple respondents, all of them adults, said that the beluga migration is up to a month later now than it was when they were in their formative years. No clear consensus emerged on why the timing of the beluga migration has changed. The timing of both the spring and the fall waterfowl migrations has also shifted. The spring waterfowl migration is beginning earlier and lasting longer, and the fall migration is starting later. The consensus among respondents was that the timing of the waterfowl migration has changed because spring weather is arriving earlier and fall weather is arriving later. A few respondents also said that salmon have recently been seen for the first time in the local streams and rivers as late as November.

Adults and elders said that the distribution of caribou has changed in recent years: caribou no longer migrate close to Point Lay. The most frequently cited reason for the change in distribution was that a coal mine 30 miles south of the village disrupted the caribou migration while it was in operation. The coal mine closed two years before the commencement of this study. A few respondents did report that caribou have started to return to the Point Lay area.

Respondents indicated that hunting and harvesting practices had changed for beluga whales, seals, walruses, waterfowl, and berries. Respondents said that beluga whales must now be herded through Kasegaluk Lagoon to bring them to Point Lay. Beluga whales no longer migrate past Point Lay of their own volition; no clear consensus emerged on why this change has occurred. Seals were traditionally harvested on sea ice, but there is too little sea ice today for community members to regularly harvest seals on ice. Within the past five years there has been a shift to harvesting walruses in the fall rather than the spring. Respondents said that walruses harvested in the spring are more palatable, but added that walruses have become increasingly difficult to harvest in the
spring because there is less sea ice available to harvest them on. One elder said that younger people in the community no longer harvest eggs by foot; this change does not appear to be related to climate change, but rather to a change in hunting practices among youths in the community. Adults said that berry picking locations close to town are overpicked, so community members are now traveling farther from town to harvest berries.

Harvest data from the Alaska Department of Fish and Game support respondents’ claims that the total annual harvest of subsistence food has declined over the past few decades. The Native population of Point Lay was estimated to be 113 in 1990 and 167 in 2010\(^5\) (ADF&G 2012). Using 1987 and 2012 harvest figures, and matching them to the two closest years for which demographic data are available (1990 and 2010), estimated pounds harvested per Native person in Point Lay decreased from 950 to 764, a 19% decline, between 1987 and 2012 (ADF&G 1987, ADF&G 2012). The largest declines in estimated pounds harvested per Native person from 1987 to 2012 were beluga whale at 91% and walrus at 28%. Bird and egg harvests fell slightly by 7% over this period. The largest increases in estimated pounds harvested per Native person from 1987 to 2012 were fish at 248% and caribou at 78%. The most significant factor driving the increase in fish harvests was the addition of salmon to the harvest; residents harvested an estimated 425 lbs. of salmon in 1987 and an estimated 8,479 lbs. of salmon in 2012. The composition of the seal harvest changed during this period. In 1987, residents harvested an estimated 13 bearded seals, 49 ringed seals and 53 spotted seals. In 2012, residents harvested an estimated 55 bearded seals, 51 ringed seals and 8 spotted seals. The total number of seals harvested was estimated to be 116, or 1.03 seals per Native person in 1987, and 114, or 0.68 seal per Native person in 2012 (ADF&G 1987, ADF&G 2012, Kerry Feldman, Personal Communication, May 7, 2014).

\(^5\) Figures based on a total population of 139 in 1990 and 189 in 2010 (US Census Bureau 1992; US Census Bureau 2012), and an estimate of percent Native of Point Lay population of 81.3% in 1990 and 88.4% in 2010 (ADF&G 2012).
Bowhead whale was not harvested in 1987 because the community did not have a bowhead quota from the AEWC at that time. Point Lay harvested one bowhead whale in 2012. The addition of this whale added an estimated 13,267 lbs. to the total community harvest for the year.

Community Resilience

During interviews, Point Lay community members shared strategies that they have developed to adapt to changes in weather, ice, and resource conditions (Table 8). These adaptations form a key component of community resilience as defined in the introduction to this thesis. Most of the behaviors and practices that support resilience do so through the acquisition and deployment of what Bourdieu (1986) called social and cultural capital (Table 9). Behaviors and practices that oppose resilience have a more varied set of causes. Community members demonstrate resilience when they are able to maintain a subsistence mode of existence despite the challenges facing the community today. Although climate change is the focus of this thesis, other reported community challenges are the high cost of subsistence, culture loss, and the potential impact of development projects on subsistence.
Table 8: Resilience - Supporting and Opposing Factors

<table>
<thead>
<tr>
<th>SUPPORTING FACTORS</th>
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<tbody>
<tr>
<td>• Resumption of bowhead whaling</td>
<td>• Transmission of TEK to younger generations</td>
<td>• Use of the unaaq</td>
<td>• Subsistence stories passed down from older to younger generations</td>
</tr>
<tr>
<td>• Optimism (we can adapt); lack of fatalism</td>
<td>• Substitution of one subsistence species for another when harvests are poor</td>
<td>• Direct instruction of youth in subsistence practices</td>
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</tr>
<tr>
<td>• Changes to the timing of subsistence activities to match altered seasonal round</td>
<td>• Sharing within the community; trade with neighboring villages</td>
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<td></td>
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<tr>
<td>• Opportunism</td>
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<table>
<thead>
<tr>
<th>OPPOSING FACTORS</th>
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<tbody>
<tr>
<td>• Lack of appropriate mindset necessary for subsistence</td>
<td>• Necessity of working has decreased the amount of time available for subsistence</td>
<td>• Lack of species availability means younger generations don’t have opportunities to hunt certain species</td>
<td>• TEK is difficult to apply due to the magnitude of changes in some weather, ice, and resource conditions</td>
</tr>
<tr>
<td>“If these young people would learn. If these young people would be quiet. But they can’t. They can’t. They have to…They have gas, they have money, eighty ninety horse boats. They’re impatient. We learned to be patient from our uncles. I learned from my uncles.”</td>
<td>“No [I don’t catch as much as I need] because today the cost of living has gone up so much that I feel I’m forced to work and I’m driven away from hunting. It’s too expensive as much as I want to. It’s like a trade-off.”</td>
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<tr>
<td>“Yeah [the young people know how to fish] mostly. They’re doing it mostly for sport. This is too small; I’m getting a bigger one. You just threw my lunch in! Oh, this is the wrong kind of fish. Well why don’t you tell the river! Come on you guys. Get with it.”</td>
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Table 9: Sources of Social and Cultural Capital

<table>
<thead>
<tr>
<th>Social Capital</th>
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<tbody>
<tr>
<td>• Bowhead whaling</td>
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<tr>
<td>• Annual beluga hunt</td>
</tr>
<tr>
<td>• Ceremonies and celebrations (e.g., Nalukataq and Kivgiq)</td>
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<tr>
<td>• Sharing practices</td>
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<table>
<thead>
<tr>
<th>Cultural Capital</th>
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<tbody>
<tr>
<td>• Role of the umialiq</td>
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<tr>
<td>− Source of respected experience and expertise</td>
</tr>
<tr>
<td>(embodied cultural capital)</td>
</tr>
<tr>
<td>− Feeds into other community leadership positions</td>
</tr>
<tr>
<td>(institutionalized cultural capital)</td>
</tr>
<tr>
<td>• TEK (objectified cultural capital)</td>
</tr>
<tr>
<td>• New technologies (objectified cultural capital)</td>
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</table>

The most significant factor supporting resilience has arguably been the resumption of bowhead whaling. The institution of whaling is an important source of social and cultural capital for the coastal Iñupiat—perhaps the most important source of these resources. Since Point Lay resumed bowhead whaling, the position of umialiq has become one of the most important sources of cultural capital in the community. One can become an umialiq only after acquiring considerable experience and expertise as a subsistence hunter. Once achieved, an umialiq can leverage his position to gain institutional cultural capital in the form of community leadership positions. Bowhead whaling thus provides older community members who have acquired considerable skill with a chance to assume a position of leadership (i.e., umialiq) through which to mentor younger community members and direct community affairs, and it provides younger community residents with a culturally relevant position of status to aspire to. Whaling also acts as an important source of social capital. Whaling provides strength and unity to the community through the shared experience of the hunt and harvest, and through the celebration of Nalukataq at the close of the spring whaling season. Bowhead whaling also provides the community members with an additional source of subsistence food that was not available except through trade before 2008.

As the most communal activity of the annual subsistence round, Point Lay’s beluga hunt is another source of resilience. The beluga hunt has occurred annually since the modern village was established. Thirty to fifty people participate in the hunt on
average, and at least twice that many help to process and distribute the catch. The community’s catch is shared with every household in the village, and any surplus is flown out to neighboring villages. Every household in the village has an opportunity to be involved in the beluga hunt, so it is another important source of social capital. The beluga hunt forms a substantial part of the village’s identity, and also provides an opportunity for the village to strengthen ties with its neighboring villages.

Resilience is also manifest in the transmission of TEK from older to younger generations through other means. Every youth who participated in the study had acquired knowledge and skills from older community members through direct experience or through stories passed down from close kin. Through these experiences, youths acquired what Bourdieu called objectified cultural capital⁶ (Bourdieu 1986)—tools and technologies, as well as the knowledge necessary to use these tools and technologies, to be successful in subsistence pursuits. For example, most youths and adults were familiar with the unaaq, and knew how to use it to safely walk on sea ice. All of these respondents had learned the practice of safely walking on the ice from older, more experienced community members, and were using what they learned to continue this practice. This skill is especially important today since sea ice is increasingly unsafe to walk on.

Many respondents shared comments demonstrating that they do not possess a fatalistic attitude despite the challenges the community is facing. Although respondents were aware that they could not directly impact any of the root causes of climate change, they nevertheless said that they have adapted to climate changes in the past and will adapt to any changes in the future. Optimism, expressed as confidence in the ability of the community to adapt to changing circumstances to obtain what is needed, acts as a psychological buffer when conditions are poor for subsistence. A positive attitude prevents community members from getting discouraged during difficult periods and

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⁶ New technologies and the knowledge necessary to use them are an additional source of objectified cultural capital, though they do not support resilience to the same degree as TEK does. New technologies (i.e., the standard subsistence suite listed in Table 3) support resilience in that they make hunting safer and more efficient, but they also require cash and cash is in short supply. As will be discussed momentarily, these technologies could undermine resilience if the cost of subsistence becomes too high.
allows them to see alternate ways forward that they might not otherwise see with a more fatalistic attitude.

The last major factor undergirding community resilience is opportunism. In most cases, respondents said that changes in the timing of species arrivals and departures had no impact on their ability to harvest what they needed. Community members simply change the timing of their harvests, the location of their harvests, or their hunting strategies to match the new conditions. If a species is not available at all or the community has a poor harvest, respondents said that they substitute a species that is abundant for the one that is scarce. If there are no abundant species to augment a poor harvest with, or a subsistence food is needed for a ceremony or celebration, the community may barter with people in neighboring villages to obtain what is needed.

Respondents also identified a number of attitudes and practices that undermine resilience. The most frequently reported opposing factor came from elders and some older members of the adult cohort; these respondents said that the community’s younger members lack the necessary mindset for subsistence. Common concerns were that younger community members have not developed the patience, observational skills, and listening skills to cope with normal perturbations in harvest conditions. Ultimately, their comments suggest that some younger community members are unaware of the role their own behavior plays in the success or failure of subsistence endeavors.

Another frequently reported concern, especially among members of the adult cohort, was the necessity of holding down a job—not only to meet basic household expenses, but also to obtain the equipment and fuel necessary to engage in subsistence activities. As the cost of living goes up and subsistence resources become increasingly scarce, community members are faced with the necessities of traveling farther to harvest what they need and of working more to obtain the fuel necessary to reach these harvest locations.

A few youths said that low numbers or poor harvest conditions had precluded them from learning to hunt polar bears and walruses. Polar bear numbers are now so low that no youths in the study reported ever harvesting any. Lack of sea ice during the five years leading up to this study have made it difficult for even experienced hunters to
harvest them from the ocean. Youths have tried to hunt them from the land—a method that is new and potentially dangerous—but with little success so far. Although neither species is among the most significant in the Point Lay subsistence round, if the skill sets necessary to harvest these species is not transmitted to these youths then its loss will decrease the number of resources available to them should harvest conditions for other, more important subsistence species become poor.

Lastly, some middle aged and older respondents shared instances where they could no longer apply the TEK they had acquired during their formative years to present conditions because the changes to weather, ice, and resource conditions have been so great. Reports of erratic weather conditions, thin or unsafe ice, confused animals, and strange animal behavior were common. While older respondents were more likely than younger respondents to report that their own knowledge had become unreliable, they also appeared to have more coping mechanisms for adapting to change. It is possible that one successful adaptation to the problem of TEK continuity between generations in the future might be the simultaneous transference of successful adaptations from youths to elders and the transference of coping mechanisms from elders to youths.
Chapter 9 Conclusion

Climate change is a global phenomenon with many varying local effects. At the present time, there does not appear to be any single trigger that can reverse, stop, or even slow climate change; thus, communities faced with significant climate related disruptions must develop strategies that allow them to adapt to conditions that they cannot reverse. This is the situation Point Lay faces today. Even if the community’s concerns are heard at the national level and the government takes steps to address the causes of anthropogenic climate change, international coordination will be necessary if these steps are to have much of an impact. Furthermore, assuming swift and coordinated action is taken at the international level, greenhouse gases are likely to remain in the atmosphere at their present levels or higher for centuries to come, if not millennia.

If Point Lay cannot direct the environmental effects of climate change, what steps can the community take as a whole to maintain resilient as these effects continue? Resilient behaviors identified from this research fall into two broad categories: changes in harvest behaviors, and accumulated social and cultural capital. Changes in harvest behaviors include modifications to hunting patterns and species substitution. Activities that are sources of social and cultural capital include the institution of whaling, the transmission of TEK from generation to generation, optimism/lack of fatalism, ceremonies, celebrations, and trade. Each of these resilient strategies, however, is threatened by one or more of the concerns identified in Chapter 7. Changes in harvest behaviors are limited by the cost of subsistence, and to a lesser extent by culture loss among the community’s younger members. Likewise, the accumulated social and cultural capital of the community is an important source of resilience, but because it is largely derived from subsistence activities, it will only continue to be a source of resilience as long as climate change does not breach a threshold that damages the structural integrity of the local ecosystem.

Even if Point Lay’s resilient strategies are successful in allowing the community to maintain a subsistence mode of existence, there is one other set of factors that the community has a limited ability to influence but must contend with, and that is the political and economic forces originating outside the community (see Table 10). Some of
these forces, such as the potential for offshore oil development, are topics of frequent meetings and intense debate within the community. Even if community members sometimes said that they thought offshore oil development is inevitable, they were nevertheless well versed on the projects currently under consideration and their possible impact on community well-being. Other forces, such as the community’s near total dependence on outside tools and technologies, are less discussed perhaps because they are part of a trend that has been in place for several generations. The common thread linking all of these forces, however, is that the origin of each one falls mostly or entirely outside of the community.

<table>
<thead>
<tr>
<th>Table 10: External Political and Economic Forces Impacting Point Lay</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Potential for offshore oil development</td>
</tr>
<tr>
<td>• Limited employment opportunities; near total dependence on</td>
</tr>
<tr>
<td>government (local and borough) for jobs</td>
</tr>
<tr>
<td>• High cost of living due to remoteness</td>
</tr>
<tr>
<td>• State and federal government are a constant and visible</td>
</tr>
<tr>
<td>force impacting life in the community</td>
</tr>
<tr>
<td>• The harvest of most major subsistence species is regulated</td>
</tr>
<tr>
<td>through various co-management schemes</td>
</tr>
<tr>
<td>• Near total dependence on outside tools and technologies</td>
</tr>
<tr>
<td>• Language and culture loss</td>
</tr>
</tbody>
</table>

All of the forces listed in Table 10 are directly attributable to the arrival of modernity on the North Slope beginning with the movement of Yankee whalers into the area during the 19th century and continuing through to the present day. The Iñupiat were pulled into the cash economy through trade with whalers, missionaries, and various government agents, state and federal government structures were superimposed on Indigenous systems of political and economic organization, youths were forcibly removed from their villages for western style education, and parts of the North Slope were opened to oil and gas exploration and development. The most profound changes have been the near total loss of the Iñupiat language, the limiting of Iñupiat self-determination due to the imposition of state and federal government regulations and laws,
and the adoption of tools and technologies that require cash and thus wage employment. The cumulative result of these forces is that North Slope communities are no longer fully autonomous or self-sustaining. They are heavily constrained by external political and economic forces. While some changes have indeed brought benefits—the Inupiat are eager adapters of new technologies, many of which have indeed made subsistence safer—these technologies cannot be obtained without cash and so perpetuate the local dependency on cash that is one of the factors opposing resilience.

Although the political, economic, and ecological challenges the community faces today have their origin outside of the community, it does not mean that the community has no agency in determining its future. It is clear from the quotations included in this thesis that community members are aware of the threat that climate change poses to them and are taking steps to mitigate as many of its deleterious effects as they can. Respondents also made it clear that climate change alone is not going to stop the community from engaging in subsistence practices. My research suggests that a significant level of stress at one point in Point Lay’s socioecological system will not necessarily threaten the integrity of the entire system. What did became apparent during the interviews, however, was that the combined impact of climate change and the other major stressors facing the community is synergistic. If, for example, sea ice levels continue to fall it is likely that polar bears will disappear entirely from the area, walruses and seals will become more difficult to harvest close to shore, and the community will be forced to travel farther to harvest marine species and will need to rely upon terrestrial species that are less sensitive to ice perturbations to meet their needs. These changes will be very disruptive, but assuming there are no other stressors impacting the community, community members can draw upon some of the strategies for resilience identified in the previous section to maintain a subsistence mode of existence. If, however, the cost of subsistence continues to rise, there is an accident that causes regional environmental degradation, or young people do not develop the necessary skills to successfully and meaningfully engage in subsistence pursuits, the likelihood that the subsistence lifestyle will become untenable rises substantially. In the context of socioecological system studies, even moderate levels of stress at three or four points in the system may breach a
threshold that causes a regime shift—in this case, a dramatic reduction in the subsistence activities and practices of Point Lay residents, and the possibility of an end to subsistence as the foundation of community life in Point Lay.
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Luton, Harry H.

MacLean, Edna Ahgeak

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Marino, Elizabeth and Peter Schweitzer  

Mason, Owen  

McBeath, Gerald A. and Thomas A. Morehouse  

Mitchell, Donald Craig  

Nadasdy, Paul  

Nashoalook, Alva  


Nelson, Richard K.  

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North Slope Borough School District  
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Pedersen, Sverre

Pinkerton, Evelyn

Poppel, Birger

Quakenbush, Lori

Quakenbush, Lori, and John J. Burns

Rappaport, Roy A.

Robbins, Paul

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Schneider, William and Ralph Bennett

Sedinger, James S., Thomas Newberry, Kevin Jardine, Bruce Molnia, Senka Paul, Craig Ely, Barbara Bodenhorn, Noel Broadbent, George Divoky, Mary Ann Larson, Michael Pedersen and Gleb Raygorodetsky

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Wolf, Eric R.


Woodford, Riley, ed.
Appendix A

Point Lay Native Village Resolution

Native Village of Point Lay IRA Council
P.O. Box 59631
Point Lay, Alaska 99759

RESOLUTION No. 2011-14

WHEREAS: the Native Village of Point Lay (Hereinafter NVPL) is a Federally Recognized Tribe; and

WHEREAS: the NVPL is the governing body of the people; and

WHEREAS: Alain Béauptalant is a master’s degree candidate in the University of Alaska Anchorage’s anthropology program; and

WHEREAS: Alain Béauptalant is required to complete and defend a thesis on a topic of his own choosing to fulfill the requirements necessary to obtain a master of arts degree in anthropology at the University of Alaska Anchorage; and

WHEREAS: Alain Béauptalant is seeking the support of the NVPL to do interviews within Point Lay which will document sociocultural change in Point Lay due to the effects of climate change.

AND: The NVPL recognizes the importance of this work which will provide updated sociocultural information for the community, provide community members with an opportunity to discuss the implications of climate change, provide information for how traditional ecological knowledge can aid in mitigating potential impacts to community lifeways due to climate change, and provide information for how traditional ecological knowledge, if it is to be used, can aid in mitigating potential impacts to community lifeways due to future oil and gas development activities.

NOW THEREFORE BE IT FURTHER RESOLVED: that we authorize Alain Béauptalant, under the guidance of the University of Alaska Anchorage’s anthropology department, to come to Point Lay to do interviews to document sociocultural change in the community.

Daily Introduced this 2nd day of October, 2011 and passed by a vote of 5-0 For, 0 Against, of the Native Village of Point Lay IRA Council.

[Signatures]

President

Secretary
Appendix B
IRB Approval Letter

DATE: January 22, 2012
TO: Alain Beauparlant
FROM: University of Alaska Anchorage IRB
PROJECT TITLE: [277263-9] The Socio-cultural Effects of Climate Change in Point Lay, Alaska
SUBMISSION TYPE: Revision
ACTION: APPROVED
DECISION DATE: January 22, 2012
REVIEW TYPE: Expedited Review
REVIEW CATEGORY: Expedited review category

Your proposal received an expedited review and was granted approval with the minor revision. Thank you for a copy of the revision.

Therefore, in keeping with the usual policies and procedures of the UAA Institutional Review Board, your proposal is judged as fully satisfying the U.S. Department of Health and Human Services requirements for the protection of human research subjects (45 CFR 46 as amended/revised). This constitutes approval for you to conduct the study.

This approval is in effect for one year. If the study extends beyond a year from the date of this submission, you are required to submit a progress report and request continuing approval of your project from the Board. At the conclusion of your research, submit the required final report to the IRB. These report forms are available on IRBNet.

Please report promptly proposed changes in the research protocol for IRB review and approval. Also, report to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

On behalf of the Board, I wish to extend my best wishes for success in accomplishing your objectives.

Sincerely,

Dianne Toebbe, PhD
Co-Chair, Institutional Review Board
Appendix C

IRB Approval of Modifications Letter

DATE: March 8, 2012

TO: Alain Beauparlant
FROM: University of Alaska Anchorage IRB

PROJECT TITLE: [277283-4] The Sociocultural Effects of Climate Change in Point Lay, Alaska

SUBMISSION TYPE: Amendment/Modification

ACTION: EXPEDITED APPROVAL

DECISION DATE: March 7, 2012

This letter is in response to your request for Institutional Review Board (IRB) approval of minor modifications to your currently approved proposal. Your request is hereby granted.

On behalf of the entire Board, I wish you continued success with your study.

Sincerely,

Dianne M. Toebe, PhD

Co-Chair, Institutional Review Board
<table>
<thead>
<tr>
<th>A. Demographic Information</th>
<th>Interviewee Code Number _____ Date of Interview ____________</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>18-29 _____  30-49 _____  50+ _____</td>
</tr>
<tr>
<td>Marital Status</td>
<td>(circle one) S  D  M  W(idowed)</td>
</tr>
<tr>
<td>Residence at Birth</td>
<td>Self_______________________   Spouse_______________________</td>
</tr>
<tr>
<td>Parents' Residence at Birth</td>
<td>Father_____________________   Mother_______________________ (or adoptive parents)</td>
</tr>
<tr>
<td>Years in Study Community</td>
<td></td>
</tr>
<tr>
<td>Employment and Occupation Status</td>
<td></td>
</tr>
<tr>
<td>Number of Children</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B. Wind, Weather and Ice Conditions</th>
<th>Place of Residence ________________________________</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. First/Formative Experiences and Observations</td>
<td></td>
</tr>
<tr>
<td>When did freezeup and breakup occur?</td>
<td></td>
</tr>
<tr>
<td>When and how long was it safe to go out on the ice? Did you go out? If so, how/from whom did you learn this skill? What did you take with you when you went out? Is this knowledge still useful today; if not, why not?</td>
<td></td>
</tr>
<tr>
<td>Tell me the kinds of ice you remember from these early trips. (Prompt for Iñupiat terms) Have these kinds of ice changed since then? Please explain.</td>
<td></td>
</tr>
<tr>
<td>Did you do any subsistence activities while on the ice? If so, what? With whom usually?</td>
<td></td>
</tr>
<tr>
<td>Did you travel inland? What time of year was it first safe to do so? When did this period usually end?</td>
<td></td>
</tr>
</tbody>
</table>
2. Contemporary Experiences and Observations

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>When does freezeup occur today? Breakup occur?</td>
<td></td>
</tr>
<tr>
<td>Do you go out on the ice today? When is it safe to do so? What do you take with you when you go out?</td>
<td></td>
</tr>
<tr>
<td>What kinds of ice is it common to see today?</td>
<td></td>
</tr>
<tr>
<td>Do you do any subsistence activities while on the ice? If so, what? With whom usually?</td>
<td></td>
</tr>
<tr>
<td>Did you travel inland? What time of year is it first safe to do so? When does this period usually end?</td>
<td></td>
</tr>
</tbody>
</table>

C. Harvest Information

1. First/Formative Experiences and Observations

<table>
<thead>
<tr>
<th>What species were you taught to harvest/process?</th>
<th>Bowhead Whale</th>
<th>Beluga Whale</th>
<th>Bearded/Spotted Seal</th>
<th>Other Marine Mammals</th>
<th>Fish</th>
<th>Land Mammals</th>
<th>Migratory Waterfowl</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>What can you remember from your earliest experiences with this species?</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Can you tell me who taught you to harvest/process? What did they teach you?</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If you harvested this species, where did you go? Have you had to change where you go to hunt? If so, why? If you processed this species, where did you engage in this activity? Was anyone usually with you? If so, who?</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>What time of year did you harvest this species? Under what conditions?</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>How were you taught to interact or engage with this species (thoughts, behavior, dress, disposal)</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
of remains etc.)? Which thoughts/behaviors were you taught to avoid?

Did you share any of your catch? With whom usually?

2. Contemporary Experiences and Observations

Do you still harvest this species? If not, why not?

Have your experiences with this species changed (If a new species, why do you harvest this species now?) If you harvest more or less of this resource, why?

Where do you currently go to harvest this species? If you currently process this species, where do you go? Is anyone usually with you? If so, who?

What time of year do you harvest this species today? Under what conditions?

Has the cost of participating in subsistence activities changed?

Do you usually share any of your catch? With whom and why?

Are subsistence harvests sufficient to satisfy the needs (need as defined by what subsistence provides) of Point Lay residents? If not, what is lacking? Have you found a way to replace what is lacking?

Additional comments:
## D. Contemporary Subsistence Experiences

### 1. Community Concerns and Potential Solutions

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are there other topics of major concern facing the community today? Do you have any other concerns you wish to share related to the changes you cited earlier?</td>
<td></td>
</tr>
<tr>
<td>Do other people in the community share the concerns you cited above?</td>
<td></td>
</tr>
<tr>
<td>What is currently being done in Point Lay to address these concerns? Are there any plans for the future that would address these concerns?</td>
<td></td>
</tr>
<tr>
<td>Are you personally involved in any of these efforts?</td>
<td></td>
</tr>
<tr>
<td>Can you tell me what (other) individuals/organizations/entities are involved? (note whether the entity/organization is local, regional, statewide, etc.)</td>
<td></td>
</tr>
<tr>
<td>Are these efforts working in your view? What do you think should be done? Who should take the lead in these efforts?</td>
<td></td>
</tr>
</tbody>
</table>

### 2. Pending Oil and gas development

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>How do you think oil and gas activities will or might alter the concerns you outlined above?</td>
<td></td>
</tr>
<tr>
<td>What role, if any, should your traditional knowledge about the local environment play in informing any development activities in the Chukchi Sea?</td>
<td></td>
</tr>
</tbody>
</table>
Appendix E

Glossary of Iñupiat Terms

This glossary includes all of the Iñupiat terms referenced in the interview quotes for which a matching reference in one or more of the major Iñupiat-English dictionaries could be found. During interviews, respondents were encouraged to define Iñupiat terms in their own words. During the transcription process, I confirmed the definitions respondents provided to me by referencing them against several Iñupiat dictionaries. In most cases, the definitions I received from respondents and the definitions in the Iñupiat dictionaries I used matched or were very close. Most of the orthography and definitions listed below are derived from the work of Dr. Edna Ahgeak MacLean, including the Abridged Iñupiat and English Dictionary (Fortescue et al. 1994, MacLean 1980), the book Whaling Standards: Barrow and Wainwright published by the North Slope Borough School District (2002), and the Iñupiat Word of the Day app developed by the North Slope Borough Division on Iñupiat History, Language and Culture. Some terms were also referenced against the Comparative Eskimo Dictionary (Fortescue et al. 1994).

Amauligruaq – common eider
Ivu – to form pressure ridges of ice
Kivgiq – also known as a Messenger Feast, a celebration where an umialiq from one group invited another group to his home community for gift-giving, dancing, feasting and games
Kurugaq – pintail duck
Maktak – whale skin with blubber
Mikigaq – mixture of fermented whale meat, tongue and maktak
Nalukataq – a spring whaling festival held in the spring. Each successful umialiq is required to host a naluqataq after the successful harvest of a bowhead whale.
Natchiq – spotted seal
Niğliq – goose
Niqipiaq – Native food
Piqaluyak – multiyear freshwater ice, also known as glacier ice
Qanitchat – Arctic entryway, cold porch; tunnel, entrance passageway
Qatignisi – all white covering over a parka and white ski pants; worn during whaling
Qiḷalugaq – beluga whale
Sikuaq – thin ice on a body of water
Suġaiñŋuرغuaq – designates an extensive buildup (miles long) of multiyear ice
Tuttu – caribou
Tavsi – center or “belt” portion of a bowhead whale; term also means belt
Uati – portion of a bowhead whale that is from the belly down to the fluke. It is served at feasts.
Ugruk – bearded seal
Umialiq – whaling captain
Umiaq – skin boat
Unaaq – a pole with an ice pick on one end and a hook on the other end