

“We’re always going back and forth”

***Kigiqtaamiut* Subsistence Land Use and Occupancy
For the Community of Shishmaref**



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Project Summary

This study explores contemporary subsistence land use by residents of one village, Shishmaref, in the Bering Strait region of Alaska. Research consisted of participatory land-use mapping, informal and semi-structured interviews, and participant observation. This research explores four primary research questions: (1) What is the relationship between contemporary Shishmaref land use and traditional Bering Strait territorial boundaries, (2) What is the relationship between locally generated knowledge, “traditional ecological knowledge” of traditional lands and effective harvesting of local subsistence resources, (3) How do the intersections of place and subsistence contribute to a sense of identity, and (4) What will the potential impacts of community relocation to Nome or Kotzebue have on Shishmaref people in relation to subsistence activities?

Individual land use biographies were digitized using ARC GIS (Geographic Information Systems) software and used to create a composite picture of community land use patterns. GIS analysis demonstrated that while contemporary land use in Shishmaref is dynamic, most land use continues to take place within Shishmaref’s traditional territory. Traditional ecological knowledge of this territory equips Shishmaref subsistence hunters with the information necessary to successfully participate in a mixed subsistence economy. Subsistence practices on lands within Shishmaref’s traditionally occupied territory form the personal identity for many Shishmaref residents.

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1. Introduction

Subsistence hunting and fishing present a variety of obstacles for Bering Strait Iñupiat. Large fluctuations in animal populations, changing climate conditions, difficult travel conditions at different times during the annual cycle, and preservation of wild resources for later consumption all represent issues Iñupiat people have dealt with effectively for centuries. Wild resource harvesting cycles have become increasingly complicated with the establishment of permanently settled communities. Before the present, people throughout the Bering Strait and Northwest Alaska were semi-nomadic and moved throughout the landscape via a network of different camps and trails, which served as bases from which they harvested various wild resources.

With the establishment of Shishmaref as a permanent community on Sarichef Island (*Kigiqtaq* or *Qikiqtaq*), people began living year round at a site that previously had only been occupied for parts of the year (see map 1). Shishmaref or *Kigiqtaq* was but one of several winter communities that included *Ikpek*, *Qividluaq*, and *Agugvik* along the coast in *Tapqagmuit* territory (Ray 1975, Burch 1998). Dorothy Jean Ray, writing of early to mid century communities in Bering Strait said that Shishmaref was noted for its good bearded seal hunting nearby and “contained possibly 80 persons” (Ray 1975:111).

Settling into more permanent communities in the years following the establishment of schools changed hunting strategies throughout Northwest Alaska. By living in a permanent or fixed community, people are less able to adapt to ecological changes that influence changes in animal migrations. As such people have become increasingly reliant on more localized resources, which fluctuate more than populations spread across a broader geographic area. For example, people may wait for animals to pass through their area rather than travel great distances in response to changes in migration patterns. This should in no way imply that people do not invest sizable amounts of labor in traveling on the land. It is not uncommon for seal and walrus hunters to travel 40 to 50 miles off the coast and to be gone for several days at a time, or for caribou hunters to make 100-mile trips in search of them (Nelson 1965, 1981; Sobleman 1985; Wisniewski 2004 field notes). Contemporary Iñupiaq hunters, as do hunters throughout Alaska and the North, rely on outboard motors and snow machines. These technologies have, in essence, enhanced mobility, which has enabled hunters to traverse large areas relatively

quickly. Thus, while people live in more permanently occupied village settings, they are still able to access traditional hunting areas.

New forms of travel and harvesting of resources only represent changes in methods; the function of harvesting wild resources remains the same. Native people throughout the North continue to prefer the harvesting of wild resources and the native foods they provide.

Permanent settlement has brought about an increase in the importance of the storage of seasonally available wild foods. As in the past, the major reason for food preservation is to prepare for seasons when a given resource will not be available or harvesting will be more difficult. Shishmaref is known throughout Bering Strait and Northwest Alaska for the quality of their wild foods, and seal oil from Shishmaref is considered a special treat in communities throughout Northwest Alaska.

This study describes the contemporary subsistence land-use patterns for the community of Shishmaref. Additionally, it explores some of the cultural, social, and economic dimensions of locally harvested subsistence resources and the relationship between effective resource harvesting and locally generated knowledge of lands surrounding their community. The purpose of this study is to provide information on the significance of wild resource use by Shishmaref residents and the role place-specific knowledge of traditional lands contributes towards successful participation in the Bering Strait contemporary subsistence economy. This study examines some of the potential impacts that relocating the community to a regional hub such as Nome or Kotzebue or assisting the residents to move to a community selected site on the nearby mainland may have on subsistence hunting.

Report Organization

Throughout this report I refer to a variety of maps. For ease of reproduction, all the maps are presented together in one section. These maps and their associated text serve to complement and expand rather than to repeat or replace one another. The purpose of the maps is to provide a geographic representation of local subsistence practices. In viewing these maps and their associated text, it is important to note that subsistence land use is dynamic; therefore, the land-use maps provide a snapshot of an active reflexive and ever changing set of practices.

Study Goals and Objectives

This study seeks to explore four primary research questions.

1. To what extent does contemporary subsistence land use by Shishmaref hunters take place within the historically identified *Tapqagmiut* territorial boundary?
2. What is the relationship between locally generated knowledge (traditional ecological knowledge) of traditional lands and effective harvesting of local subsistence resources?
3. How do the intersections of place and subsistence contribute to local identity?
4. What will be the potential impacts to subsistence activities of the Shishmaref people with community relocation to Nome of Kotzebue

To answer these questions I relied on a wide range of data from formal and semi-structured interviews with 15 community-identified key informants and active participation in local subsistence activities with Shishmaref hunters. Additionally, published information on historic and contemporary Iñupiaq social organization and land tenure practices provided further context for analysis of data generated through fieldwork. This study should in no way be viewed as the sum of the collective Traditional Ecological Knowledge of subsistence land use of Shishmaref residents. Rather, it is a preliminary inquiry into local land use with regard to harvesting wild resources and some of the natural and cultural features that define Shishmaref's traditional territorial boundary.

Research Methodologies

I made an initial trip to Shishmaref in April 2004 to meet with community members to discuss documenting subsistence land use for the purposes of this study, to identify community concerns about appropriate methods, and to discuss when a good time to return to Shishmaref would be. It was recommended that I return near the end of June when marine mammal hunting would be slowing down and people would not yet be moving out to fish camps. The initial period of fieldwork was carried out over 3 weeks

starting near the end of June and into the first part of July 2004. Subsequent trips to the field included a 2-week trip in August followed by a 25-day trip during February/March 2005 to go over previous work as well as to discuss cultural components related to spring marine mammal hunting and lagoon and sea ice dynamics.

Prior to traveling to the field I reviewed published and unpublished material from the region as it pertained to hunting in northern Alaska, subsistence, and territoriality as well as a review of literature relevant to participatory mapping research. A variety of informal discussions with personnel from both the National Park Service and the Alaska Department of Fish and Game Subsistence Division helped further develop research questions.

During the fieldwork portion of this project, I relied primarily on participatory mapping research, semi-structured interviews, and participant observation (participation in subsistence activities) to obtain information relevant to this undertaking. Participant observation proved to be the most crucial methodology in that it allowed me to develop some first hand experiences with places, modes of travel, hunting techniques, and local classifications. For example, through active participation in subsistence activities I learned that people have two, sometimes three, different names for bearded seals. Therefore, if one wanted to learn about bearded seals and consistently referred to them as *ugruk* (Iñupiaq word for mature bearded seal), the person would obtain information only about mature bearded seals and would not learn about young adult bearded seals or juvenile ones, which are both actively hunted, have distinct names, and are viewed as unique forms of bearded seals. Participant observation provided an important opportunity to understand local practices and therefore to frame questions in a way relevant to local practices.

The mapping and interviewing methods follow those described by Freeman 1976, Huntington 1996, and Tobias 2000. Milton Freeman's 1976 work formed the foundation upon which these land use biographies were based (see Appendix 2 interview script). Huntington's 1996 work demonstrated methods for working under short time constraints, while Tobias' 2000 work highlighted methods for ensuring accuracy and integrating map biographies into a Geographic Information System (GIS). The methods of collecting and verifying data as outlined in these earlier works, coupled with recommendations by community members, guided me in designing the methods for this project.

To have a representative sample of households, primary household hunters were sought out for interviews. However, this was not always possible. In lieu of that, I sought out individuals (key informants) who were locally considered experts on community land use or on land use in particular geographic areas. The use of key informants provided the opportunity to use a “snowball” sampling technique, where the researcher is led to different key informants through the interviewing process. Recent literature has challenged the idea that a broad representative sample needs to be used for accurate mapping of community land use. Anau et al. (2003) write that it may be more important to ensure that mappers are accountable to communities than to seek broad participation when mapping. That is to say, seeking out individuals who are especially knowledgeable of community land use can provide more accurate descriptions of local land use than a broad representative sample of community residents, many of whom may not be qualified to provide accurate detailed descriptions of land use. This methodological approach fit well with the use of key informant and snowball sampling methods. Additionally, many hunters preferred to defer to older or more knowledgeable individuals, which served to highlight the significance of the use of key informants.

Prior to interviewing a key was established so that interview maps would be consistent. Thus, for example, when a hunter was asked to describe spring and fall seal hunting areas, purple was used universally during all interviews. Kill sites for different seals were also coded using the color associated with the resource category and by using the initials of the common name of the animal. For example BS was used for bearded seal. Most of the hunters I worked with had previously participated in similar research, so the methods were not unfamiliar to them. Maps served as reference base, and hunting areas and cultural resources were marked on maps and described by active hunters and knowledgeable elders.

Eight major wild resource categories were identified before fieldwork began (see table 1), and when possible, an attempt was made to obtain information regarding all resource types, including harvest areas, the importance of the resource, and the time of year when the resource was sought. In general, this technique was successful. The level of detail in mapping interviews varied based on the interviewee and the style they were most comfortable with. While some hunters provided very specific harvest information in terms of kill sites and numbers of animals taken, others were more comfortable speaking

and mapping their hunting areas in more general terms. Both styles, however, provide mutually supportive data.

Land use mapping involved using four 1:250,000 USGS topographical maps—Shishmaref, Teller, Bendeleben, and Kotzebue—over which clear mylar sheets were laid. Hunters were asked to describe hunting areas and sites where kills had been made in recent years. I (with much coaching and correcting) would then mark these areas on the map. Interviews loosely followed the structure of seasonal hunting in Shishmaref, beginning with spring marine mammal hunting and progressing through the year to winter activities. Upon returning to Anchorage I used Geographic Information System Arc GIS 8.2 to digitize the individual map biographies of different hunters, which when overlaid on top of each other were used as the basis for describing general community land use. Upon completing the digitizing process, maps were sent to community members to obtain their comments and to make appropriate corrections. Information collected from interviews was also recorded into a written section of this report.

Table 1. Wild Resource Categories

Wild Resource Category	Major Resource Included
Spring and fall seals	ringed, ribbon, bearded seals (both young and adult and spotted seal)
Winter seals	Ringed seal (common seal)
Fish	Herring; tom cod; whitefish; grayling; arctic char; flounder; salmon, bullheads
Waterfowl	Ducks, geese,
Large terrestrial animals	Moose, caribou, Musk ox
Plants	Berries, greens, roots, grasses
Other Marine Mammals	Walrus, Polar Bear
Small terrestrial animals/fur bearer trapping	White and red fox, wolverine, mink, lynx, squirrel, arctic hare ptarmigan, grouse
Reindeer	Reindeer

Traditional Ecological Knowledge

Through the accumulation of generations of orally transmitted experiences, indigenous hunters in Shishmaref and throughout the North have developed a complex and practical understanding of how ecological systems interrelate. Traditional ecological knowledge is a collective body of knowledge, practices, and beliefs that are developed

through long-term observation and response to ecological change (Berkes, 1998:8). Knowledge about the relationship of living beings (including humans) with one another and their environment is handed down through generations by teaching subsistence practices on the land and through accumulated knowledge of older hunters. Berkes (1998:8) writes that traditional ecological knowledge, in addition to being cumulative and dynamic based on individual and collective community experiences, is an attribute of societies with a historical continuity of resource use on a *particular land*. The relationship between traditional ecological knowledge and a specific or known landscape is discussed throughout this report.

Effective subsistence hunting and gathering of wild resources requires extensive knowledge of the land, of how to move through it effectively, and detailed knowledge of animals and how they respond to changing ecological conditions. Thus, while a hunter in Shishmaref may be very knowledgeable of ice conditions in Bering Strait, he would likely be less confident in the ability of his knowledge to equip himself to travel and hunt in a new area. When asked about what he thought about hunting on the ocean around Nome, one Shishmaref hunter replied “We know about the ice and animals around here, but down around Nome there are different currents; it’s different down there, we don’t know it” (Wisniewski 2004 field notes).

Bielawski (1992) writing of Inuit knowledge stated that information does not necessarily reside in what people say. It is expressed in how they say things and what they do. In Shishmaref the land, the weather, and hunting are regular subjects of discussion. In this way knowledge is constantly being generated and dispersed throughout the community. While descriptions of hunting and weather conditions can sound ambiguous to an outsider, to hunters with lifetimes of experience on the land and a thorough knowledge of specific places, such descriptions provide a wealth of information. For example, Shishmaref people generally refer to traveling “up” when heading north along the coast towards Cape Espenberg or “down” when traveling southwest along the coast towards Wales. “Going up” can also refer to heading up a river. Depending on the time of year and the resources that are available in different areas, the statement “we went down” could refer to reindeer herding, moose hunting, duck hunting, fishing, or berry picking. A statement like “we went down” accompanied with a place name description such as “*Nuluk*” and followed by the adjective “lots”

provides hunters with information about what resources are currently available in the area, some ideas about the quantity of resources, and gives them a range of meaningful information. Combined with other locally generated knowledge, a hunter can then decide if it is worth the investment to head down the coast to *Nuluk* to look for ducks or up the coast to hunt caribou.

To the outsider without place specific knowledge, much of the Seward Peninsula may appear as empty tundra. To an experienced subsistence hunter the land functions as a *text* (Fair 1997:468), which can be read and, in turn, equips hunters with the information needed to both manage and harvest wild resources. Numerous places across the landscape have important associations with hunting experiences and animal observations. As hunters move through the country, recalling these names and associations provides useful information for finding animals. These place names serve as a vehicle for both the storage and transmission of place-specific knowledge, and Shishmaref hunters contribute to and maintain this place-based knowledge system by both knowing names and associations and through their experiences on the land. Map 3 displays some place names that in part define Shishmaref's cultural landscape.

Traditional ecological knowledge is not hearsay. Numerous studies exist that document how it has been incorporated in state and federal natural resource management plans (see Cruikshank 1998; Freeman 1989; 1992, Nadasdy 2003). One of the better-documented cases of traditional ecological knowledge being used as the basis for natural resource management occurred in the Beaufort Sea. Scientific studies indicated that bowhead whale stocks were depleted with only 800 whales surviving (Freeman 1992:11). Area hunters challenged the scientist's assumptions, stating that the whale population was around 7,000 animals (Freeman 1992:11). Native hunters believed that whales traveled offshore under the ice and therefore visual survey methods were flawed. Out of these criticisms more sophisticated survey techniques were developed that confirmed local hunters estimates and *conservatively* estimated the bowhead whale population at 8,000 animals. This case study demonstrates the importance of recognizing the validity of traditional ecological knowledge as both a crucial element for effective harvesting of subsistence resources and an important knowledge resource for testing and challenging scientific assumptions.

Setting

Shishmaref is on Sarichef Island (*Kigiqtaq*), which is surrounded by the Chukchi Sea to the north and Shishmaref Inlet to the south (see map 1). Several rivers empty into Shishmaref Inlet. The Serpentine River with its multiple channels winds inland towards Serpentine Hot Springs near the Continental Divide. Other rivers such as the Arctic and Sanaguich also provide important corridors inland. Heller and Scott (n.d.:21) stated the original village of Shishmaref was inland along the Arctic River, though the village had moved to the island before European explorers entered the region. The Shishmaref region is on the northwest portion of the Seward Peninsula, a vast coastal plain crisscrossed by numerous small rivers and lakes and situated in a transitional environmental zone between both tundra and maritime environments. Local hunters effectively take advantage of both environments throughout the year. Caribou and moose are hunted and wild plants are harvested on the mainland, while seal and walrus are hunted in the sea. Shishmaref's island location with its cool temperatures and steady summer breezes provides excellent conditions for traditional preservation techniques such as air drying food and using underground storage pits.

Shishmaref's high latitude location and relatively low annual temperatures contribute to the region's short growing season. Despite these limiting environmental factors, a wide array of plant communities are found throughout the area, and sedges, mosses, and small shrubs cover the ground. Salmon berries, cranberries, crowberries, and blueberries proliferate throughout the region. Shishmaref residents harvest the berries, beach grasses, and tubers, though their short period of availability and spatial distribution limit their incorporation into resource collecting activities.

The maritime environment is a dominating feature of the landscape and is significant in terms of the resources it provides to the people of Shishmaref. The waters around Shishmaref host a variety of marine animals that include polar bear, walrus, and ringed spotted, ribbon and bearded seals. Marine fishes include flounder, herring, and cod. Ice conditions have a huge influence on the use and availability of marine resources (Nelson 1969, Sobleman 1985). Ice generally begins to form in the rivers and spreads across Shishmaref inlet beginning in September, and the Chukchi Sea generally freezes up around mid November with sea ice break up in June (Sobleman 1985:27). Ice has, in general, been forming later in the fall and is notably less thick than it has been in the past.

This was the first year in memory where people were still using boats in the ocean into December, and some hunters were pulling their boats across the shorefast ice to open water as early as April. Many people commented that due to changing climatic conditions they are worried about the sustainability of their subsistence hunting. Others commented that hunting always revolves around the presence of animals, weather, and travel conditions, and that changing techniques and strategies is a constant and on-going adaptation. Changing ice conditions has already brought substantial changes to how people hunt. While winter seal hunting has declined, in part, because of peoples concerns over the safety of travel on sea ice, the frozen environment continues to provide a variety of hunting opportunities. Hunters still travel onto sea ice to hunt in leads that open up in the ice. Additionally, people cut holes in the ice to fish with hooks and lines, and to set nets for both fish and seals.

Historic/Cultural Context

Iñupiat means “the authentic people” (Burch 1975:1) and is a self-designating term that in general refers to speakers of the Iñupiaq language as well as describing linguistic cultural and geographic scapes. The Iñupiat lived in Northwest Alaska well before Europeans and Americans began exploring and settling in Alaska. The lives of Bering Strait Iñupait revolved not only around a broad seasonal round of hunting and gathering activities but also around a rich ceremonial life as well, with festivals and feasts involving participants from many communities (messenger feasts) and extensive trading both through out Northwest and Interior Alaska and across the Bering Strait.

Nineteenth century Iñupiat society was organized primarily along kin relations. Burch (1975, 1998) provides the most detailed analysis of Iñupiat society and describes three levels of social organization:

- Domestic families
- Local families
- Nations

The domestic family as identified by Burch (1975:237) is “a family organization whose members occupy a single dwelling.” The domestic family generally consisted of a husband and wife, children, and also included parents, grandchildren, siblings, and spouses of siblings. Local families were structured similarly to domestic families but

were larger with members being distributed among two or more households instead of being concentrated into one. Burch (1975:240) writes that typical local families consisted of 14 to 21 individuals living in a single location. Burch (1975:421) goes on to write that local families were the major organizational factor of traditional Iñupiat societies in Northwest Alaska. This is important in relation to subsistence food production and the pooling of resources for subsistence practices, as local families formed the social unit that carried out these activities. Magdanz et al. (2002) examined the role local families continue to play in contemporary subsistence food collecting, writing:

Not only do the Iñupiat of Northwest Alaska continue to depend primarily upon wild foods for their sustenance, they produce and distribute these foods within extended family structures very similar to those of their ancestors (Magdanz et al. 2002:122-3).

There are two points that are important to clarify in this regard: one is continued reliance on local wild resources in Iñupiat communities throughout Northwest Alaska, and the other is traditional social mechanisms (local families, extended family networks and detailed traditional ecological knowledge, in part stemming from continued occupancy and use of lands within traditional territories) that continue to form the foundation of the harvesting and redistribution of wild foods.

Territoriality

In discussions of subsistence land use in the Bering Strait region, it is important to explore the presence of historical national boundaries as the basis for contemporary land tenure systems and recognized community territories that predate western influences in the area. Iñupiaq societies or *nations* (Burch 1998) of Bering Strait and Northwest Alaska were divided into distinct geographically bounded socio-territorial groups. Burch (1980:263) writes that these socio-territorial groups or nations were made up of bilaterally extended families, linked to each other through kinship ties, and until the middle of the 19th century, Iñupiat societies throughout Northwest Alaska and the Bering Strait region were essentially economically and socially self-sufficient nations. Groups of local families were referred to as *nunaqatigiitch* “people related to each other through possession of the land” (Burch 1998a:14).

Citizens of these nations operated primarily but not entirely within their national boundaries and co-existed more or less peacefully with their fellow citizens. Citizens of a particular nation were recognizably distinct in their physical appearance, clothing and language or dialect. Nations were socially and economically self sufficient, depending primarily on the resources within their national boundaries, and trading with citizens of other nations for resources not locally available (Magdanz et al. 2002:20).

Dorothy Jean Ray (1967, 1975) and Earnest Burch (1994, 1998), both of whom worked with elders whose memories extended back to before 1880, identified between 12 and 14 distinct territories between Kotzebue and Norton Sound (see map 2). Shishmaref lies within the use boundary area of the *Tapqagmiut* (people along the sandy shore). *Kigiqtaqmiut* (people of the island) is a self-designating term that refers to the people of Shishmaref (Fred O. Tocktoo personal communication). The *Tapqagmiut* region generally refers to the lands from Cape Espenberg going down the coast to about 20 miles north of Wales and extending from the coast back towards Serpentine Hot Springs (Ray 1967, Sobelman 1985, Burch 1998). This land tenure system extended beyond the recognition of territorial political boundaries and included and still includes family owned lands within the socio-territory where one was a relative “citizen.”

Claims were established at the mouth of almost every large tributary of large rivers, on various sections of productive streams...and in certain coastal areas. Some had been in the same families for many generations and were usually patrilineally inherited. Once they were abandoned they could be claimed by others (Ray 1967:383)

Use of lands or water belonging to another family typically required permission and some type of payment. Ray provides the following insight into land use and payment:

Women of the family gave permission to gather eggs, roots, greens, and berries, especially salmonberries. The more plentiful cranberries and blueberries found on hillsides and hilltops were usually not included within a fishing site. Permission to fish was accompanied by a payment of a certain percentage of fish caught. On the other hand if a man or woman asked to help with fishing (or possibly had been asked to help) he would also be paid with fish (Ray 1967:384)

The presence of family owned fishing and berry-picking lands continues into the present and demonstrates the continuity of Iñupiat land tenure and resource management by Shishmaref residents within their traditionally occupied territory. Along the coast

south of Shishmaref to Cape Espenberg and up the Serpentine River, allotments owned by Native families demonstrate the integration of contemporary land management systems into the Bering Strait Iñupiat land tenure system. Many families have their allotments spread out across the *Tapqagmiut* landscape in order to maximize their ability to access their traditional wild resources harvest areas. Very often these allotments are also the location of important cultural sites that have been used by family members for many generations. Allotments generally are on traditional berry picking areas, productive fishing areas, and spring hunting camps. Thus, not only do people continue to use lands they historically occupied, many families have considerable monetary investment in camps and cabins throughout their historically identified region. Map 4 shows some of the allotments and camps within Shishmaref's long-established territorial boundaries. The use of lands and resources within other community territories are usually based on relations between individuals or extended family networks through which "permission" or "payment" is made or obtained in the form of distribution of the resource or others forms of compensation. This is another demonstration of the viability of local land tenure and resource management practices.

Sandra Sobelman (1985:153) outlines four broad adaptive strategies Shishmaref hunters utilized in the 1980s that were key for successful resource harvesting in the 1980's:

- Community-wide networks for resource distribution
- Flexibility in resource activities
- Transmission of knowledge about a defined geographical area
- Efficiency in patterns of procurement and processing

The transmission of knowledge about a defined geographic area is of crucial importance, and Sobelman (1985:163) writes that identification with a home territory was strong in Shishmaref as recently as the 1980s. Land use mapping interviews conducted by Sobelman revealed that most of the land use at that time took place within the traditionally recognized *Tapqagmiut* territory.

In order to effectively exploit the local environment, a detailed body of specialized knowledge has evolved which focuses on local terrain and natural history of the area. This knowledge includes details regarding the intricacies of animal behavior and plant requirements (Sobelman 1985:165).

While formal defense of territories is not a contemporary practice, hunting, fishing and berry picking generally take place within *Tapqagmiut* lands, and Shishmaref residents generally identify themselves with this historic territory. Even when people from Shishmaref move to Nome or Anchorage, they still generally return to Shishmaref to hunt with family members for subsistence hunting or they rely on wild foods harvested from this area. Citing archeological evidence of cultural continuity from the 19th century to the Birnirk period, Burch (1998a:316) writes that the *nunaqatigiitch* territorial and land management system date back to more than 1,000 years ago. Thus, while historical processes disrupted and destroyed the political autonomy of Iñupaiq nations, traditional territories still play an important role in terms of defining community land-use patterns and assume the existence of traditional ecological knowledge in a specific geographically bounded area. This is discussed in more detail in the final section of this report.

Historic Annual Round of Subsistence Activities

This description of a seasonal round of subsistence harvesting describes some of the traditional or historic resource collecting activities that *Kigiqtaq/Tapqagmiut* engaged in. This section naturally generalizes some elements of a “typical” annual round. It is important to understand historic resource use in terms of painting the context for contemporary resource use and the values associated with maintaining this way of being.

This section begins with a description of early spring activities based on a synthesis of Ellanna and Sherrod 2004, Eisler 1978, and my own interview notes and observations. In early spring, leads began to form in the frozen Chukchi Sea, and families would leave their winter settlements and travel overland with dog teams to spring sealing camps, often camping on the sea ice. In the early part of the spring, while the ice was thick, men would hunt using kayaks in open water or “potholes” (open water surrounded by ice on all sides). Bearded seals, *ugruk*, were the primary seal hunted during this time of year. Bearded seals provided families with necessary oil, as well as meat, and raw materials. Stomachs and intestines were used for making raincoats and skylights in semi-subterranean houses. Skins were used for covering kayaks, for soles of boots and for making rawhide rope. Smaller spotted seals, such as spotted and ringed, provided food, skin for clothing, lamp oil, and storage pokes.

As spring progressed and ice conditions deteriorated, families would move off shorefast ice and reestablish their camps along the coast, while men would continue to travel across the shorefast ice to hunt in leads until ice conditions were too dangerous. During the period when it was unsafe to travel across the ice, families would collect eggs, and hunt migrating waterfowl. After the shorefast ice moved off shore, crews would continue to hunt from *umiak* for bearded seal, walrus, and other seals.

After the pack ice moved out of the area, families would turn their focus towards setting nets for whitefish and salmon as well as conducting communal drives for molting ducks. These waterfowl drives typically involved the whole community and were carried out under the supervision of community leaders. Communal caribou hunts were also carried out during summer. Caribou were driven into lakes where hunters in kayaks dispatched them. Following some of these communal hunts, families would move to summer fishing camps where they would set nets for salmon and whitefish.

Eisler (1978) reported that communal Beluga hunts took place at this time. Hunters would drive beluga entering the Serpentine River into shallow waters where they could be killed with spears. Willow leaves and other greens were collected during the summer months to be mixed with seal oil and stored in skin pokes. Along with greens, salmon berries, blueberries cranberries, and blackberries were picked and often mixed with seal oil or caribou fat and stored in pokes for later use. With the approaching cooler days of fall, families would set nets at the mouth of the Serpentine River for tomcod and herring. At the same time hunters would also hunt southward migrating spotted seals and young bearded seals that would enter Shishmaref Inlet to feed on herring and other fish. Some families would remain at the head of the inlet until freeze up, when they would travel to the winter community by dog team. Others would return to the coast for setting seal nets and blackberry picking along barrier islands and for hunting southward migrating waterfowl in area lakes.

Following freeze up seal nets would continue to be set under the ice once it grew solid enough to cross by foot or sled. In the meantime area residents would begin jigging through the ice for tomcod and smelt. As the ice thickened enough to make travel safe, men would hunt seals at leads and hunt polar bear as they were available. Others might choose to travel inland in search of caribou. As the shortest days of the year approached, a season of feasting and recreating would take place. Families would host and travel to

messenger feasts as well as play football and hold dances. As winter progressed and days began to lengthen once more, hunters would travel inland in search of fur bearing animals; wolf, wolverine, foxes and hares provided welcome sources of fresh meat or valuable material for clothing.

During the last part of winter families might hold communal drives for ptarmigan and for arctic hares, as well as hunt arctic ground squirrels which were used for parkas. As days became longer and the shadows on the bottom sides of clouds revealed opening leads in the sea ice, families would once again move out to spring sealing camps.

2. Contemporary Subsistence Land Use

The Iñupiat people of the Seward Peninsula engage in a wide array of subsistence hunting activities. Three subsistence patterns were historically practiced throughout the Seward Peninsula and, depending in part on a groups' location, they are still practiced today (Ray 1964:62). The whaling subsistence pattern practiced primarily at Wales consisted of hunting whale, walrus, seal, and fishing; the small sea mammal subsistence pattern pursued in Shishmaref consisted of hunting seal and beluga along with fishing and caribou hunting. The caribou subsistence pattern of interior Seward Peninsula focused primarily on hunting caribou, fishing, and seal and beluga hunting. These generalized descriptions should not be viewed as static or closed systems, but rather a flexible adaptive practice of utilizing seasonally available resources.

The cycle of harvesting wild resources in the Shishmaref area revolves around a multitude of complex factors. Weather, ice conditions, and natural fluctuations in animal populations are just some of the intrinsically related factors that must be taken into account when deciding when and where to hunt. The following section summarizes the hunting way of life as practiced by Shishmaref residents. Figure 1 shows the seasonal round of activities that Shishmaref residents participate in today.

It is important to clarify that this is a general account of contemporary resource use and that a huge quantity of detailed information has been left out. This was due to both the limited fieldwork time and the scope of work. This report should not be looked at as the sum total of Shishmaref hunters' knowledge or use of wild resources. This section is a brief overview of the range of seasonal activities followed by a more detailed description of different living resources used in the Shishmaref region. These sections vary in length and detail according to their local importance and the amount of information collected during fieldwork.

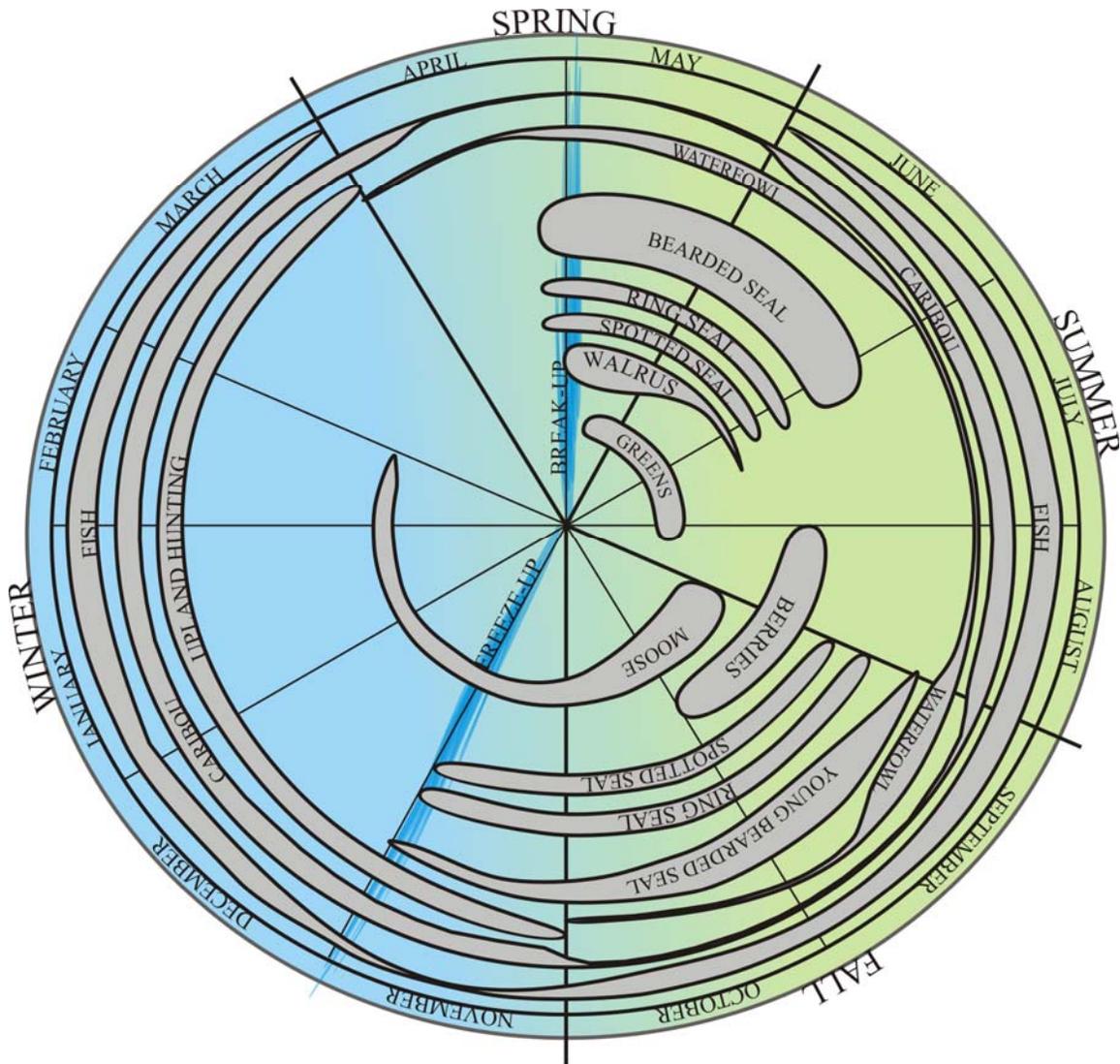
Spring: Marine mammal hunting dominates life during this part of the year, as hunting crews are constantly leaving and returning to Shishmaref, and families set up camps and drying racks to process animals and render oil. People travel great distances in search of animals. As ice begins to move farther north and sea mammal hunting becomes less productive, people also begin to hunt caribou along the coast in late spring.

Summer: In late spring and early summer people harvest greens, which can be mixed with seal oil. As summer progresses people continue to focus on caribou hunting and fishing. Many families head to fish camps along the Serpentine River where they have allotments with cabins or wall tents. Later in the summer people shift their focus to berry picking, starting with the area around the Serpentine River. From there families move to traditionally used camps along the coast and on barrier islands to gather black berries.

Fall: Fall is time for waterfowl hunting both along the coast and up local rivers like Arctic and Tin Creek. Herring begin to come into the inlet in the fall and people set gill nets for them at *Ipnarak* and *Igloot* near the mouth of the Serpentine River. Moose hunting begins around this time of year, and some people travel up towards Cape Espenberg for berry picking, moose hunting, and fall seal hunting. Marine mammal hunting begins to increase at this time of year as young bearded seals and ringed seals move in to the inlet to feed on herring. Some hunters begin to set seal nets at this time

Winter: Once the inlet and ocean are frozen and people can safely travel on the ice with snow machines, they head up to places like Grayling Creek and Nuluk to jig for trout and grayling near headwaters. Nets are set for herring and tomcod near the mouth of the Serpentine River, and farther up river for whitefish. People also make extensive trips inland to hunt caribou and other game like wolf, fox, and wolverine. Some hunters, especially those maintaining dog teams, continue to hunt ringed seals at leads in the sea ice. Hunters who have drawn musk ox permits may hunt them at this time.

Figure 1. Annual Round of Subsistence Activities—Shishmaref



Marine Mammal Resources

Ugruk (Bearded Seal; Erignathus barbatus) (Map 6)

The subsistence year in Shishmaref begins with bearded seal hunting, which begins in early spring when ice leads open up that allow for northward migrating marine mammals to pass by Shishmaref. One of the keys towards a successful hunt is being in the right place at the right time, and many elder hunters grew up traveling out to camps along the coast during spring hunting.

My dad, he used to take setting up spring camp real serious. Every year he would travel up and down the coast with his dog team studying the ice to see where it would go out and where we should set up camp. It was always important to be in a good place so when the sea ice moved out we could get our *umiak* in the water (Wisniewski 2004 field notes).

In the recent past spring hunting typically began with hunters traveling to opening leads to hunt bearded seals at their edges. In the past bearded seal hunting would begin with hunters traveling across the shorefast ice (*tuaq*) on snow machines to hunt at “potholes.” Potholes are leads that are surrounded by ice on all sides. Unlike other seals that migrate through open leads and require open water, Shishmaref hunters report that bearded seals will swim under the ice and can be hunted before leads open enough to allow for boat hunting. Spring hunting techniques are being adapted to recent changes in weather patterns. The weather has become noticeably less predictable than in the past. These changes in weather have also affected ice, and the ice conditions are less predictable than in the past; therefore, due in part to safety considerations, pothole hunting is not as common as it once was.

Once the shore fast ice and sea ice separate, boats can be put into the water to hunt in the open leads. Shishmaref boats generally range from 20 to 28 feet long with a beam of 6 to 8 feet and are powered by 90 to 150 horsepower, two-cycle and four-cycle outboard motors. Most boats have fore decks and a small windshield that helps keep the driver somewhat protected from the weather. In 2004 about 12 crews with four to five crewmembers each participated in spring bearded seal hunting. When many animals are passing through and the hunting is good, crews may be up for more than 24 hours. Map 5 shows recent bearded seal hunting taking place generally between Cape Espenberg and Ikpek Lagoon. The hunting area displayed in the map is not static; additionally, it

generally corresponds to bearded seal migration and feeding patterns as well as shore fast ice conditions. Hunting crews usually stay in groups and monitor the activity of other crews with VHF radios. If one or two crews are in a particularly productive area, they alert other crews hunting close by. Along with the use of VHF radios, hand held GPS units (global positioning systems) are in hunting kits of most residents. Hunters often travel 30 to 60 miles away from Shishmaref, and GPS's have become a crucial navigation tool when conditions become foggy. Geographic features are also used for navigation, the most prominent of which is Ear Mountain *Inigagik*

We use Ear Mountain to predict the weather. Lots of people always just listen to the weather radio, but you can tell what is going on by paying attention. We also use it to navigate by. When you're way out on the ocean you can see it even far out sometimes just as big as your thumb, and with that you can get home (Wisniewski 2004 Shishmaref notes)

While perhaps not as popular as it once was, many elders recalled boating up the coast to look for "floaters" after the ice went out. Floaters could be bearded seal or another marine mammal that had been killed or died naturally and could be found floating out at sea. Many elders claim the meat from these salvaged carcasses proved to be some of the tastiest of the "stink foods" (fermented and aged foods).

Bearded seals are arguably the most highly sought marine mammal in Shishmaref, both for its blubber and meat and for its social and cultural significance. The first bearded seal of the year brought into town is distributed to the elders, and bearded seal products are among the most widely distributed (Wisniewski 2004, Sobleman 1985). The first bearded seal a young hunter gets is also given away, generally to an elder relative. For many hunters successful hunting requires the maintenance of a close relationship with animals. Sharing bearded seals and other wild resources are important local practices through which hunters show their respect for animals. Based on these displays of respect the hunter will continue to have successful hunts. A successful subsistence hunter is therefore not necessarily defined by how much they harvest but by how they redistribute what they get.

The quantity of bearded seal put up in a year generally helps families gauge the quantity of other resources that will be needed to supplement it. Hunters typically require four to five bearded seals for their immediate family. Most hunters, however, attempt to harvest beyond what their immediate families needs are and hunt for elderly or more

distant family members who are not able to participate in the hunt for financial reasons or because they are not currently living in Shishmaref. Thus, a hunter may take nine animals annually to meet the needs of all the members of his distribution network. Families typically need to put up 50 gallons of seal oil annually to get through the year (Wisniewski 2004 field notes). Boat captains are in charge of the distribution among the crew. Even if a hunter does not shoot anything during a hunt, he is guaranteed a portion of what is taken by his participation in the hunt. Additionally, there is considerable distribution between hunting crews. A crew that has an especially successful day may share a portion of their take with another crew. They in turn will redistribute their take.

While bearded seals are usually the first animals hunted during the spring, people continually reported that they hunt whatever is there. One knowledgeable hunter explained the significance of spring hunting as: “If we find walrus then we hunt them, or spotted seals or whatever. We aren’t just hunting *ugruk*, we’re hunting what is given and what’s available (Wisniewski 2004 field notes).

Shishmaref is famous throughout Northwest Alaska for the quality of their seal oil *ugriñgaq*. Other food products produced from *ugruk* include blubber meat hung on racks and dried meat called *panaqluk*. Other parts like flippers and choice pieces of skin with blubber are fermented for delicacies like *ushuk*. All parts of bearded seals are used: intestines are dried and put in with oil, and skins are cleaned and stretched. This work is carried out at camps a short distance from town. People will spend close to 2 months processing and preparing bearded seal food products for the winter. Although processing requires a substantial investment in labor, it is also a fun time as families stay out at camps and enjoy their fresh foods and the warming weather. The experience of participating in the hunt and processing is equally as important as the economic and nutritional significance of the foods produced.

Anmiaq (Young bearded seals) (Map 7)

Anmiaq are hunted both in spring and fall and are categorized by Shishmaref hunters as being distinct from mature bearded seals. Many hunters reported, for example, having harvested five bearded seals or *ugruk* and two *anmiaq* during a given season. *Anmiaq* are also different in that they are hunted both in the fall and spring. During spring hunting they are hunted along with bearded and other seals. During the fall, however, *anmiaq*

travel separate from the main herd and come in to Shishmaref Inlet to feed on herring. In the fall they are hunted both in Shishmaref Inlet and in the channels to the east and west of Sarichef Island. Two strategies are utilized for *anmiaq* hunting: The most common method is to hunt them from boats. The second technique involves setting nets. At least three hunters interviewed reported having taken *anmiaq* in this fashion. Elders especially prize seals taken in this way because of their distinct taste, which people attribute to the fact that the seals do not bleed out as they do when shot. Seal nets are set in the channels to the east and west of Sarichef Island as well as in front of the island.

Qasigaq (Spotted Seal; Phoca largha) (Map 7)

Spotted seals are hunted during both the spring and fall. They are sought more in the spring once families have hunted their annual supply of bearded seals. During the spring spotted seals are hunted as they migrate north following the retreating sea ice. While many families primarily get all the meat they need from bearded seal products many enjoy spotted seals for variety. Also, those families that continue to maintain dog teams invest more energy into spotted seal hunting. Spotted seals are often used to make “pokes” (containers for berries, herring, sourdock, and other local delicacies).

Spotted seals are also hunted in the fall, and families may travel up towards Cape Espenberg to hunt around the islands. At least one hunter reported traveling to the Nugnugaluktuk River. Fall hunting is important as seals are fat from summer feeding and hides are in good condition. Many of the spotted seals hunted in the fall are taken both for food and for the skins, which are tanned locally and used by local sewers for making hunting equipment such as hats, boots, shell bags, and other products for both local use and sale. The making and selling of products is also an important source of income for many families. Fall seal hunting trips often correspond with waterfowl hunting, late season black berry picking, and fishing. Place names associated with spotted seal hunting include *Nuluk*, *Sinrazat* and *Agulaasaat*. Other fall seal hunting areas include but are not limited to: Shishmaref Inlet, east and west channels, and after the inlet freezes, in the Chukchi Sea north of Sarichef Island. They are also taken with nets during the fall in the ocean in front of Shishmaref.

Qaibulik (Ringed Seal; Phoca hispida)

Ringed seals are the only seals available during the winter. Some hunting occurs when leads open up close to Sarichef Island; however, concern over the unpredictability of the sea ice environment has, in some instances, lowered harvest levels. They are an important source of fresh meat during the winter and are also an important resource for families supporting dog teams. They are commonly taken in nets during the fall.

***Iuguaq (Pacific Walrus; Odobenus rosmarus rosmarus)*
*Isavgaq (young Pacific Walrus) (Map 8)***

Walrus hunting has been more difficult during recent years due, in part, to the fact they have been passing by Shishmaref farther out to sea and their timing is less predictable than in the past. Sobelman (1985) reported walrus hunting took place during June and July. Currently, however, walrus hunting is taking place much earlier in the year during May and April in response to changing ice conditions. Recently, walrus have been observed giving birth farther north than they have in the past. Walrus are generally hunted when they are hauled out on ice flows and typically travel in herds. Lone walrus are occasionally found swimming in ice free water and are commonly referred to as “water boys.” Walrus are typically hunted a little later in the year, after bearded seals, and like bearded seals, people travel along the coast looking for floaters from which good meat can be salvaged. Some of the local delicacies include *kauk* (walrus skin meat and blubber) and, *usrravak* (fermented walrus hide blubber and meat). *Usrravak* and other walrus meat is stored in underground cellars to help keep it cool through the summer months while it ages. It is typically eaten during the winter and is well-shared food. When eating *usrravak* people typically invite other people over to share, making it an important social food as well as a tasty one.

Due to changes in migration routes and timing, Shishmaref hunters are traveling increasingly farther out to sea to look for walrus (see map 8). It is not uncommon for hunters to travel 60 to 90 miles from Shishmaref in search of walrus. Some hunters in recent years have traveled as far as King Island in the south and Kivalina to the north. The distances people are willing to travel and the costs associated with such trips are testimony to the both the significance of walrus hunting as a cultural practice and their value as a food. Despite the difficulty and financial requirements involved in hunting

walrus, it remains an important marine resource. Walrus hunting, like other forms of hunting, is dynamic and fluctuates annually based on ice and weather conditions.

Nanuuq (Polar Bear; Ursus maritimus)

Polar bear hunting is practiced opportunistically. While some hunters invest considerable time and effort in searching for a bear, other hunters hunt them when they have chance encounters. Some hunters in Shishmaref are regional legends for their success in hunting these animals. Hunters travel from *Ikpik* to Cape Espenberg in search of bears. Polar bears may not have as important an economic role in relation to foods as they have had in the past; however, they remain both culturally and economically significant. The products made from a polar bear hide include hats, parka ruffs, boots (*mukluks*) and heavy snow machining mittens. In the recent past bringing a polar bear back to the community would be followed by traditional dancing by the hunter. Gifts were also given to the hunter. Hunting one's first polar bear and other large toothed animals were and are important events in the life of a hunter. It is still a local custom to give one's first polar bear away to a family member. Polar bear meat is also popular among many residents. Many elders, especially those from *Ikpik*, an area with strong historic use of polar bear, particularly enjoy the meat. "Is it Fat?" is a commonly asked question by "polar bear eaters" when one is brought back to town. Polar bear paws are a special delicacy.

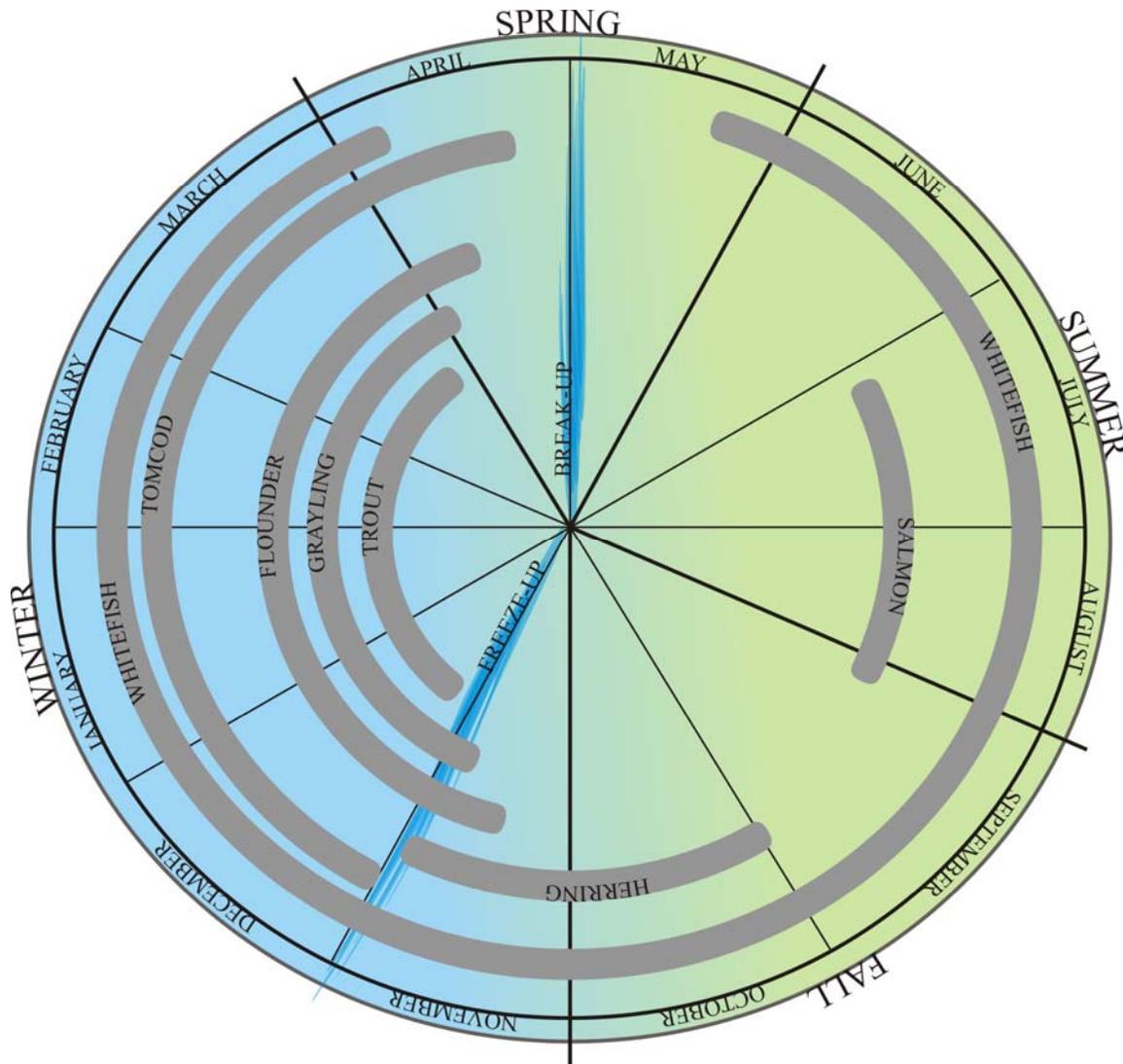
Fish Resources

Before going into a more detailed discussion on different fish resources, it is important to highlight their importance. While the relative pounds provided may appear less significant when compared with bearded seals or walrus, they are important for a variety of reasons. Fishing is a year-round activity except during breakup and when the lagoon is not yet frozen enough for safe travel. Figure 2 shows the annual round of fishing activities practiced by Shishmaref residents. Indeed, almost all subsistence activities include fishing. When caribou hunting or reindeer herding, setting a net is generally one of the first activities involved in setting up camp. Nets are set before heading upriver (up) to look for animals. Map 9 describes fishing in terms of both general fishing areas as well as harvesting sites. While the scale of the map was not

conducive to displaying different species, the data is coded to provide more detailed information.

Little financial investment in terms of equipment or labor is necessary to jig for tomcod *Boreogadus saida* behind Sarichef Island. Thus, fishing is a subsistence activity that a wide range of residents, from elders no longer going on longer hunts to young children, can participate in. Fishing is less financially and physically taxing than caribou or seal hunting. This is important as fishing is often one of the first subsistence practices a child learns and, as such, it is an important mechanism for transferring traditional knowledge and cultural values that revolve around the context of engaging in subsistence practices.

Figure 2: Annual Round of Fishing Activities--Shishmaref



Qalupiat (Whitefish; Coregonidae)

Whitefish is one of the most important fish in the Shishmaref seasonal round. It is the fish most commonly netted on spring and summer hunting trips and is a traditional breakfast food. Whitefish are prepared by boiling them, and they are often served with sourdough hotcakes. Elder hunters report that the broth, which is good to drink, is an important traditional food. Whitefish inhabit both freshwater and brackish lagoon waters. Small gill nets are commonly set for them in both lagoons and inlets as well as in rivers.

Nets are typically 2 fathoms deep and 30 to 40 feet in length. They consist of a cork line running along the top of the net to provide flotation and a lead line running across the bottom to hold the net vertically in the water. Nets are set in creeks by attaching one end of a line to a stake driven in the ground. The net is pulled out perpendicularly from the bank. A couple hours of fishing in the right spot can yield several 1 to 2-pound fish.

Knowing where to set nets requires intimate knowledge of local rivers, and hunters typically set nets in very specific locations within rivers. While to one unfamiliar with a given river, one bend may not look any different from another, many Shishmaref hunters have detailed knowledge of where one can set a net and how far out it needs to be for effective fishing. Some of the common places people set nets for whitefish include *Agugvik* (Arctic River) *Kuugraq*, and *Kuugaagzruk*.

Iqalugruaq (Pacific Salmon; *Oncorhynchus* sp.)

Salmon nets are set beginning in July after spring marine mammal hunting has slowed down. Four species of salmon spawn in the Serpentine River; however, only a summary of salmon fishing is provided and not a detailed description of distinct salmon forms. People set nets both in front of and behind Shishmaref. Some people fish with rods and reels in the channels. People often set gill nets in front of their drying racks located just west of town. After the Fourth of July, families head up to fish camps along the Serpentine River. *Igloot* and *Ipnauraq* are historic camps that are still used near the entrance to the north fork of the Serpentine River. Many families camp on allotment lands or have cabins built on allotments up and down the various forks of the river. Salmon fishing continues through July and into August. Other places where people travel for salmon fishing include *Ikpik* and *Cuupok* (Cowpack Inlet), both of which are known salmon fishing areas.

Uqsruqtuuq (Herring; *Coregonus sardinella*)

Least cisco (locally referred to as herring) are netted throughout the fall and during the first part of the winter. Herring arrive approximately when snow first appears on Ear Mountain. Herring nets are set in channels to the east and west of Sarichef Island, at *Igloot*, *Ipnauraq*, and at *Agugvik* (Arctic River). After freezeup people continue to set nets under the ice. Herring stored in seal pokes are considered a local delicacy.

The fish resources covered in this next section are obtained primarily through ice fishing. Ice fishing, or jigging, takes place throughout the winter from the time when Shishmaref Inlet freezes until breakup (around April/May).

Uugaq (Tom Cod; Boreogadus saida)

People begin jigging for arctic cod, locally classified as tom cod soon after freeze-up, and several primary harvesting areas are close to town. Once the ocean in front of the lagoon freezes over, tom cod move into the lagoon. Jigging requires minimal equipment and is one of the least expensive subsistence activities residents can engage in. Most people have a collection of jigging lures of brightly colored beads and hooks that people make tied to monofilament fishing line or seine twine. Jigging sticks are generally 18 to 20 inches in length. Tom cod are also taken with nets set under the ice. During winter 2004 ice was late in forming on the ocean and netting tom cods in the lagoon proved much more effective than jigging for them.

While tom cod are available year round, they are eaten mostly during the winter when they are viewed as the tastiest or as many residents reported “winter is when we get hungry for them” (Wisniewski 2004 field notes). East and west channels are both productive fishing areas, as is the inlet behind Sarichef Island. Several area rivers are noted as tom cod areas, most notably near the mouths of the Serpentine and Arctic rivers.

Titaaliq (Burbot; Lota lota)

Burbot are caught by jigging in area rivers. Serpentine and Grayling are productive rivers for burbot. The most productive fishing area is upper Grayling creek. The best time to fish for them is during the night of a full moon during early winter, and one evening of fishing can often produce a sled load of fish. Grayling Creek burbot migrate up stream and spend the winter in lakes that feed in to upper Grayling Creek. The community also maintains a shelter cabin along upper Grayling Creek.

Nataabna (Flounder)

Most flounder fishing (floundering) takes place during winter behind Sarichef Island in Shishmaref Inlet as well as in the channels east and west of Shishmaref. Floundering takes place in shallow water and usually involves using a hook with bait to

lure fish and then skewering them with spears. People also fish for flounder while camping along barrier islands during winter.

Suluppaugaq (Arctic Grayling; *Thymalus arctius*)

Grayling are occasionally caught in gillnets during spring and summer fishing. Most often they are procured in the fall and winter by jigging and by setting nets under the ice. *Nuluk* and Grayling Creek are both popular places to go for grayling during the fall and early winter.

Iqalukpik (Dolly Varden; *Salvelinus malma*)

Dolly Varden (trout) are caught in area rivers. *Nuluk* is an important winter trout fishing area. Many people make regular trips there with snow machines once Shishmaref Inlet and the lagoons freeze up. People catch them by jigging through the ice and by setting nets for them under the ice.

Ivixuq (Clams)

Although clams have not been harvested as much in recent years, many older hunters report that Sarichef Island is a good place to get clams. Other important clam harvesting areas include across the channel to the west of Sarichef Island and around Cape Espenberg. Clams are harvested in the fall by collecting them after they have been washed ashore after a storm. The stomachs of bearded seals are another source of clams, which can be eaten raw and provide a tasty treat when hunting in the spring.

Putyuun (crab)

Fishing trips for crab require making a snow machine trip up the coast to the mouth of the Kitluk River in late winter or early spring before spring sea mammal hunting begins. Families often set up camps on the ice. In the past, some families that owned airplanes flew up the coast and landed on the ice and set up camps. Crab fishing requires intimate knowledge of the area, as crabs tend to concentrate in small areas. Effective fishing requires detailed knowledge of where crabs concentrate and the ability to locate those concentrated areas when they are covered with ice. Crabs are most often caught by jigging. Typically, a piece of fish is tied to a string that is lowered through a hole cut in

the ice. The fisher then lure crabs to the bait, and when a crab grabs on to the line, it must be carefully pulled up with out putting any slack in the tension or the crab will let go.

Waterfowl Resources

This section presents a general overview of some of the areas Shishmaref residents use to harvest waterfowl. Time constraints prevented a more complete analysis of the variety of birds hunted and their spatial distribution. There is a rich and varied amount of local knowledge regarding the wide variety of bird resources that frequent the area. While it is not possible to provide a detailed discussion at this point because of limited data, there are some general observations regarding waterfowl harvesting that are important to note.

Waterfowl hunting is not random; people generally set out to look for specific resources at specific harvesting areas (see map 10). What is equally important is the strong ethical constraints that are displayed when waterfowl hunting. Only certain birds are harvested at specific times, although other birds may also be present. This corresponds strongly to a general principle to minimize waste. During a spring hunting trip when I accompanied two older hunters and a younger hunter, the younger hunter would ask if other species we saw should be hunted. The older hunter instructed him why those birds were to be avoided at that time. This avoidance of waste and limiting hunting to specific resources is one mechanism that has contributed to the development of strong traditional ecological knowledge of birds.

People look for different birds during spring hunting and fall hunting. Spring waterfowl hunting generally takes place on mainland lakes as they begin to melt and along open areas of rivers. Fall hunting for geese takes place along barrier islands and up the Serpentine, Arctic and other area rivers and lakes. While waterfowl is not currently a primary resource, many older hunters report they grew up living off ducks and fish. Thus while they currently supplement other resources, they have in the past been a vital food source. Map 10 provides an overview of some of the areas used for waterfowl hunting.

Upland Resources

For the purposes of this study upland resources include foxes, wolves, wolverines, hares, and ptarmigan. Bear hunting is not discussed in this report. For a recent report of

traditional ecological knowledge of bears, see Georgette 2000. While trapping is not pursued as it was in the past, upland hunting is still practiced by residents, and winter hunting and traveling remains an important activity. The tannery in Shishmaref provides some opportunity for people both to sell and have hides tanned for local use.

Additionally, many products, such as wolf and wolverine skins, are important for making ruffs on parka hoods. Taking one's first large toothed animal is an important event in the life of a young hunter, and it is customary for one's first wolverine to be given away. As was described with polar bears, it is customary to bring gifts for the hunter, a custom that continues to be practiced by many residents. Like the redistribution of marine mammal products, giving away one's first animal is important in terms of building a relationship of respect with animas so they will continue to make themselves available to hunters. Ptarmigan and arctic hare are both important sources of fresh meat during winter. Older people who grew up when big game animals were less common are often particularly fond of these foods. Hunting and sharing these foods with elders is an important practice.

In addition to the food, clothing, and important cultural practices associated with hunting furbearing animals, people gain a deep sense of satisfaction getting out in winter and traveling even when there is no game. For many, traveling in winter provides them an important opportunity to travel throughout their traditional territory and maintain their connection with the land. Winter snow machining also provides an important occasion to visit *Iyat* (cooking pot), a Shishmaref traditional cultural property (see Michele Curran 2003). *Iyat*, also known as Serpentine Hot Springs, provides an opportunity for a therapeutic soak in the warm waters. Map 11 shows some areas where upland resources are harvested and some important place names.

Large Land Mammals

This section discusses four major resources: caribou, moose, musk ox, and reindeer. Both the state and federal governments regulate musk ox hunting. Because hunting musk ox is by permit only on specified lands, musk ox hunting areas were not mapped although hunting them is discussed. Bears are not discussed in sufficient length to include sections on them at this time. Caribou, moose and reindeer are significant as sources of meat and for their symbolic value. This section begins by discussing contemporary uses of caribou.

Tuttu (Caribou; Rangifer arcticus) (Map 12)

Caribou hunting is another major subsistence activity that takes place during the first part of the summer. The Western Arctic Caribou herd has been expanding in recent years, and caribou are currently found year round throughout the northeastern part of the Seward Peninsula. The result of this expansion has been that caribou hunting has increased in importance. In the early 1980's when Sobelman documented Shishmaref subsistence, moose (which moved into the area in the 1950s) were the primary land animals harvested. It was only when moose were not available that people actively looked for caribou. Many older hunters discussed how in their parents' time, caribou hunting required substantial overland travel towards the Buckland area. Recent changes in caribou hunting strategies demonstrate the importance of viewing subsistence as a dynamic system that is constantly shifting and adapting to ecological changes.

Numerous place names throughout the *Tapqagmuit* territory describe historic caribou hunting. Names often describe where caribou drives had historically taken place or where caribou were hunted while crossing lakes. These names not only describe past events but also provide local hunters with information about where caribou have historically migrated and where they in turn may have success in hunting them. Certain place names around Shishmaref refer to historic caribou hunting sites. One such place on the east side of Shishmaref Inlet, *Amaguagviaqshuk*, "A place to pack kayaks to" refers to a lake where caribou drives were conducted. *Nalluizhaavik* "place to herd caribou" is another important site, also on the east side of Shishmaref Inlet. It refers to corrals made of caribou antlers that funneled caribou into a lake where they were hunted with kayaks.

There are mixed views regarding the current abundance of caribou. While in a general sense people take advantage of the hunting opportunities, those who had both a cultural and economic interest in reindeer herding expressed frustration at the impact caribou have had on local reindeer herding operations. A common comment from many hunters is that caribou "stole the reindeer away" (Wisniewski 2004 field notes).

Reindeer-caribou interactions are also described in the section on reindeer.

Summer caribou hunting generally takes place along the coastal island and mainland north of Shishmaref going towards Cape Espenberg, as well as along the east side of Shishmaref Inlet towards the Serpentine River. During the late spring and

summer, hunters travel up the coast to hunt caribou as they move out towards barrier islands. Caribou move towards the direction of the wind to escape mosquitoes, and as a result, hunters note the wind direction and travel towards likely hunting areas. Summer caribou hunting trips generally include setting gill nets for whitefish at different camping and hunting spots. Caribou are hunted along the coast until about mid-September when rutting begins. Caribou are hunted throughout the winter as they move inland. They tend to congregate in areas near Serpentine Hot Springs where thermal activity keeps some areas relatively snow free. They are also hunted around the Goodhope and Lane River drainages.

Qunfiq (Reindeer; Rangifer tarandus) (Map 13)

While not as economically important now as in the past, reindeer herding continues to play an important role in the seasonal round of subsistence activities for several families. Reindeer herding, like many of the subsistence activities described here, is significant on multiple levels. On one level it provides economic opportunities through the sale of antlers and meat as well as providing a source of meat for families that participate directly in herding activities or receive meat through their distribution network. It also provides jobs for young hunters during corralling and butchering. Reindeer herding also operates on a symbolic level. The act of going out on the land and rounding up deer for corralling is part of retaining people's relationship with the land. The historic traditions of reindeer herding contributes to locally constructed identity. Many residents who grew up eating reindeer consider it special and prefer reindeer meat to caribou. For a more in-depth discussion of contemporary reindeer herding, see Simon (1998). Both reindeer and caribou hides provide important hunting equipment. The skins are used for sleeping mats when camping on the tundra and for mats to kneel on during ice fishing. Of the two hides, reindeer skins are viewed as superior due to the fact that reindeer hair stays intact much longer than that of caribou. Other skins are de-haired and tanned and used for making boots (mukluks) or for making coffee thermos cases. Like many resources, reindeer continue to provide residents with a variety of traditional materials beyond meat that are important for traveling in the country.

Local reindeer herds have diminished in size as the Western Arctic Caribou herd has expanded into the northern Seward Peninsula and lured reindeer in to their midst. Yet limited reindeer herding still takes place. Map 13 illustrates contemporary observed reindeer migration and herding areas. Reindeer roam free most of the year and are usually corralled between late June and early July. Corraling reindeer involves several people. During the spring and early summer, reindeer are driven, and the process from tracking down the deer, driving them towards the corral, and cutting antlers, castrating bulls, and marking new fawns often lasts for several days. Reindeer may also be corralled later in the year for butchering, and in the early spring when they are fawning. It is also common to butcher some reindeer at this time for immediate use. Local herders can distinguish between caribou and reindeer and efforts are made to keep caribou out of the herds. When caribou integrate with reindeer herds, they generally linger on the outskirts, and while reindeer can be herded with snow machines, caribou run away, often with reindeer following them. Reindeer also have smaller legs than caribou and generally drop their calves earlier in the spring. Despite the recent decline in the viability of reindeer herding, it is an important element of Shishmaref's local culture and it will continue to have an important local symbolic and practical role in the life of many residents.

Tullik (Moose; *Alces alces*) (Map 14)

Moose hunting begins in August. People hunt them up the *Nuluk*, *Agugvik* (Arctic River), *Sanaguich*, and Serpentine rivers, and Tin Creek. People also hunt in the Goodhope, Espenberg, and Lane River drainages. These represent some of the areas used but do not represent the limits of moose hunting areas. The Serpentine River drainage is the main area most hunters use.

Moose began entering the study area during the 1950's and have expanded in terms of numbers and importance since that time. In more recent years, however, moose numbers appear to have declined somewhat and local hunters hunt them more selectively. Shishmaref residents have recently worked out a self-regulating, co-management agreement with the Alaska Department of Fish and Game (ADF&G). In game management unit 22, subunits 22 D and B have been closed to moose hunting for nonresidents, and local hunters only harvest bulls. In subunit 22 E, which includes much

of the land around Shishmaref, moose hunting is closed to nonresidents, and hunters are only harvesting bull moose. Establishing co-management brings increased state oversight into the lives of Shishmaref hunters; however, many of those interviewed felt this regulation was appropriate for increasing and maintaining a healthy moose population.

When Sobelman (1985) interviewed Shishmaref hunters, moose were described as the most important of the terrestrial resources. Caribou were hunted when people had little or no success in hunting moose. Currently, caribou serve as the primary terrestrial resource. While people still invest considerable time and effort in hunting moose, caribou are more readily available and can be obtained with a greater degree of consistency. The shift from focusing on moose to caribou demonstrates the flexibility of Shishmaref hunters in response to resource availability.

Umijmak (Musk Ox; *Ovibos moschatus*)

Musk oxen were reintroduced to the Seward Peninsula during the 1970s. They can be found throughout most of the drainages around Shishmaref and typically congregate in herds that range between 15 and 100 animals. Their numbers have dramatically increased in recent years, and they have received a mixed reception by local hunters. To many, the oxen are viewed as nothing more than a pest that are negatively impacting both caribou and moose populations through their trampling and wallowing, which destroys moose browse and tundra lichen. Additionally, many residents claim to have a strong distaste for the meat, related to their general dislike for the animals and their reintroduction. Others, however, regularly apply for permits and have integrated ox hunting into their annual round of activities. Ox hunting is regulated by both the state and federal governments, and they are hunted by permit only on specific lands depending on whether the permit is of state or federal origin.

Plants (Map 15)

Despite the relatively short growing season in the Bering Strait, Shishmaref residents take advantage of a wide variety of greens (leaves sedges and shoots), berries, and other plants. Collecting wild plants begins in early summer or spring. People collect greens along the Arctic and Serpentine rivers, as well as in open tundra and along

hillsides. Plants farther inland generally ripen earlier than those along the coast and are harvested first. Greens, which are mixed with seal oil and dipped in salt, are an important seasonally available food. Sourdock (*Rumex arctius*) and wild rhubarb are collected later in the summer. Sourdock is often stored in sealskin pokes with herring. Other greens collected include beach grasses and wild celery, which are found on the islands.

Shishmaref is recognized throughout the Bering Strait region as an exceptional place for harvesting berries. It is common for families to harvest 40 to 50 gallons of berries annually. Families from Nome and other communities often travel to Shishmaref to pick berries with friends and family members living there. Map 15 illustrates that many of the numerous camps and family owned allotments were chosen because they were traditional family berry harvesting areas. Berry picking generally begins in mid to late July when people travel to camps and allotments along the Serpentine and Arctic rivers to harvest salmon berries. Effective berry picking requires detailed knowledge of local topography. Certain hillsides and bluffs are known to produce especially large berries. Often particular dips or subtleties in topography are productive harvest sites and have names relating to their productivity.

After harvesting along the rivers and inland areas, people head to coastal camps around Labor Day to harvest black berries. Some families choose to travel up the coast towards Cape Espenberg to hunt seals on the islands off the cape and pick berries on the mainland. Other families may head down towards *Ikpik and Nuluk*. Black berries grow in abundance on barrier islands. Some hunters commented that southward migrating geese can quickly consume all the berry resources on an island and are seen as having a negative impact on those resources. Fall berry picking often supplements waterfowl, seal, moose, and caribou hunting. Berries are stored in freezers or are mixed with reindeer fat and sugar to make *akutuq* (Eskimo ice cream). Berries are an important food source throughout the winter and are a common dessert and evening snack food.

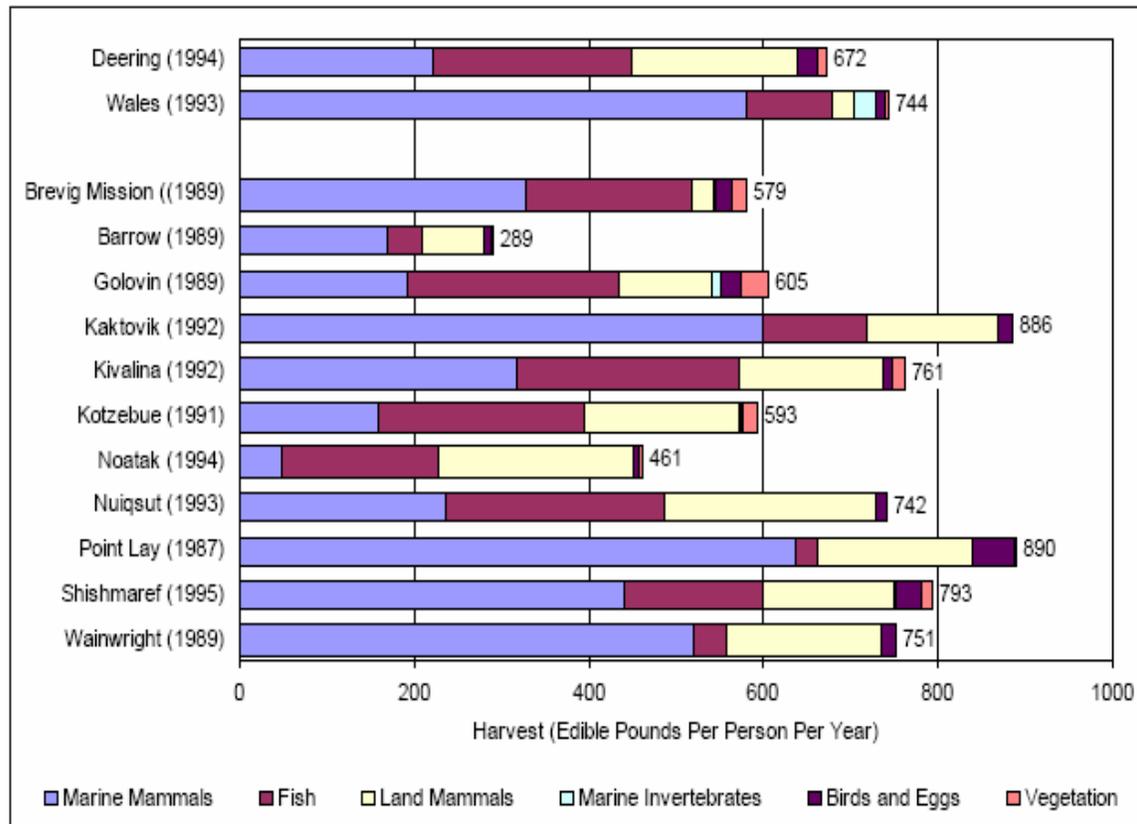
Summary

The subsistence cycle as practiced by Shishmaref residents varies annually. It varies substantially from family to family based on food preferences and degree of cash investment in subsistence and resources availability. The presence of a resource, as was briefly described in reference to waterfowl, does not necessarily mean that it will be harvested: accessibility and storage are both critical factors. Thus, bearded seals may be passing by Shishmaref off shore; however, if ice conditions don't permit travel, no hunting will occur. Opportunistic hunting, harvesting seasonally available resources, and moving between available resources are all based on natural fluctuations in wild resource populations and personal preferences.

Economic Role of Subsistence

Despite a wide range of ecological and economic factors that can influence hunters' success, the Maganz et al (2002) publication shows Shishmaref leading Bering Strait communities in terms of the of edible pounds of locally harvested wild resources consumed per person per year (see table 2).

Table 2. Estimated Harvest in 14 Northwest Alaska Communities (Maganz et al 2002:29)



Subsistence hunting in Shishmaref is a key component of the Bering Strait rural economy and has been described as a “mixed subsistence market economy,” which is prevalent in rural communities throughout the North. The economic system is constructed around a family’s investments of money into efficient technologies to harvest wild resources, gillnets, rifles, snow machines, and outboard skiffs. The combination of money earned through paid employment and wild resources is the defining characteristic of the mixed-subsistence economy. The general pattern throughout the rural North is that families are able to successfully integrate jobs with subsistence hunting and redistribute

wild resources to other households that are less successful in pooling together the resources needed to hunt and fish.

Previous research by the Alaska Department of Fish and Game revealed that in many rural Alaska communities, 30 percent of households produce 70 percent of community subsistence harvests (Wolfe 2000, Magdanz et al 2002). Additionally, Magdanz et al. (2002) report that among Bering Strait communities, the production and distribution of wild foods typically occur within extended families and along kinship network systems. What is important to note in their findings is that redistribution of subsistence resources is not based on a simple “everybody shares” definition, but that wild resource redistribution takes place within *specific* networks. This is not to say that these networks are not flexible or that random gift giving of wild foods doesn’t take place—it does.

One example of the mixed economy of Shishmaref is enacted by those who invest in subsistence activities instead of participating in harvesting. For example, in one household, a father in his mid 70’s no longer participated in hunting and looked to his youngest son to supply most of their Native foods. This elder purchased gas on several occasions for his son to use for traveling and hunting. Thus, while not able to participate directly in obtaining wild foods, this elder continued to participate in the subsistence economy by providing material support that enabled a younger family member to go hunting and provide meat for his parents. This type of investment is common. The purchasing of gas and boat building supplies, or participating in construction and repair of equipment is a common form of investment in subsistence economies that is repaid with wild resources.

The use of wild resources for non-food items, such as crafts that Shishmaref crafts people make for local use and for sale, is another important economic aspect of the use of wild resources. As has been stated throughout this report, not just the meat or food products of locally harvested resources are used. Furs and skins are necessary raw materials for manufacturing much of the clothing worn while out hunting. Shishmaref is home to many well-known carvers and sewers whose crafts are made from fur, bone, horn, and ivory. The sale of these crafts provide an important source of income for many families. The sharing of skins and other products among family members and throughout

distribution networks is common practice. Making clothing and hunting gear are also ways those who may not be able to hunt can support an active hunter.

To understand the importance of wild food harvest from an economic perspective, but not taking into account its historic, cultural, and social significance, Alaska Department of Fish and Game Subsistence Division came up with a \$3 to \$5 dollar replacement exchange per pound of wild food. Following this model of simple replacement value, the monetary value of wild foods in Shishmaref is roughly between \$2,379 and \$3,965 per individual per year (based on the 1995 reported harvest of 793 pounds per person in table 2). In Arctic Alaska, where the average wild food harvest is 516 pounds per person per year, the estimated replacement value for the region is between \$31,521,765 and \$52,536,275 (ADF&G 2000 update). These numbers, however, need to be examined in the context of the price of foods in a rural community like Shishmaref and the limited availability and quality of local store-bought foods. It is additionally important to look at the nutritional significance of wild foods compared with those available in stores in Shishmaref.

Nutritional Value of Subsistence Foods

Subsistence foods provide a major nutritional component to the diet of rural residents throughout Alaska in terms of calories and protein. Looking specifically at Arctic communities where the average annual harvest is 516 pounds per person annually, wild foods provide 333 percent of daily protein requirements (based on a 49-gram mean daily requirement) and 48 percent of the mean daily caloric requirement of 2,400 calories per day (ADF&G 2000). In 1995 Shishmaref reported an average annual harvest of 793 pounds (see table 2), 277 pounds above the Arctic regional average. Wild resources account for well over half of average daily caloric intake. Incidences of diabetes and obesity in communities that obtain wild foods are in general much lower than in communities where these foods contribute less.

Local Values Associated With Subsistence Foods

The importance of subsistence foods, however, goes far beyond economic and nutritional value. Indeed, those factors are a distant second when compared with the cultural and social significance of harvesting and eating wild resources in Shishmaref.

Anyone who walks around Shishmaref quickly sees the importance of wild foods. Every house has a collection of racks next to it with foods drying and hides being stretched or stored. By the airport each family has drying racks that by mid summer are groaning under the weight of seal, *ugruk*, fish, reindeer, and caribou meat being prepared through traditional techniques. As stated earlier, each family puts up close 50 gallons of seal oil per year. In both formal interviews and in casual conversations wild foods, different ways of preparing and eating them, hunting, and boating are common themes. People continually state that subsistence hunting was why Shishmaref existed and why they (Shishmaref Iñupiat) lived on Sarichef Island, as opposed to moving to Nome or another larger town with greater cash-economic opportunities.

Access to the sea and to the mainland is a significant reason why people settled and continue to live on Sarichef Island. Harvesting, sharing, and eating wild foods are key to the identity of many Shishmaref residents. This point was driven home to me with great force one afternoon as I camped with a family and we shared lunch.

For lunch today we had *Ushuk* (fermented *Ugruk* flipper, a choice and seasonally available food that is highly valued), *muktuk* (bowhead whale fat with skin), *paunuluk* (dried *ugruk* meat), seal oil, intestine, and pieces of blubber, duck soup, and whitefish. My ignorance on how to eat *ushuk* coupled with peoples concern over how I might react to the taste brought an element of humor to the meal. What struck me, however, as I sat eating and looked around was the seriousness of eating these wonderful foods. Older people sat on makeshift chairs while the rest of us sat on the ground, kids were sent outside the tent, and the focus was clearly on eating these foods. Indeed, this very act of being in camp as a family and eating foods that were harvested and prepared by family members was in part what it means to live here (in Shishmaref). Sitting and eating with community members it was clear that eating subsistence foods that were harvested and prepared by family members and being in camp on the land with family is what living in Shishmaref means to many people. Later that afternoon while helping Clifford frame his new boat, he turned to me and simply said “this is why we are here, subsistence is our way of life, all those places we showed you, that’s not just were we go—everyone goes to those places” (Wisniewski Shishmaref notes 2004).

Clifford’s statement and those of many residents who I interviewed, traveled with, and had the pleasure of sharing meals with highlighted the importance of subsistence practices. Subsistence practices also serve to highlight the importance of place. While people say that subsistence harvesting is the primary reason for the continuing existence of the community, sitting together, sharing, and eating these wonderful wild foods also

defines the people of Shishmaref. Both eating and harvesting are linked on many levels to people's intimate knowledge of the surrounding lands. One hunter talked about plant use to expand on the importance of detailed environmental knowledge. He described how one area may not produce because of lack of rain, a late freeze or other factors, "that's why we know lots of different places; we know where to go and which are good at different times" (Wisniewski 2004 Shishmaref notes). At the same time, the *Tapqaqmiut* landscape symbolizes both a food source and a sense of identity that is developed and enhanced by Shishmaref residents' experiences traveling and harvesting resources from that landscape. Traveling through and harvesting resources in this place plays a significant role in how many people identify themselves as people from that area.

Place also plays a much more pragmatic role in people's ability to participate in subsistence harvesting activities. Access to the coast is of primary importance for hunters during the spring. People need to see what the sea ice is doing and where leads might be opening. As ice conditions in the Chukchi Sea open enough to allow boat use, ice conditions within the lagoon behind Sarichef Island deteriorate making travel on snow machines dangerous until the lagoon opens up enough for boating. Shishmaref's location is directly related to its functionality as a base for subsistence hunting.

Shishmaref residents have a strong aesthetic appreciation of the land, and they speak at length of how special it is to be out hunting, to see seals, and to watch the ice pack retreat north in the spring. People also identify themselves as hunters and the act of participating in the Shishmaref spring hunt contributes to this sense of identity. In interviews and conversations, the very act of getting on the land and the personal satisfaction it provides was constantly brought up as a key value associated with subsistence. Shishmaref residents express a strong attachment to their traditional territory and to subsistence practices and foods. People speak fondly about their experiences on the land. People talk about trips they have taken and living out at camps. As one hunter reported, in early summer he loved to be out driving reindeer even if there weren't many deer, it was great just to get out and do it (Wisniewski 2004 field notes). Activities such as corralling reindeer, picking berries and greens, ice fishing, and spring marine mammal hunting are regarded as parts of a pleasurable life. For many Shishmaref residents active engagement in subsistence activities on *traditional lands* provides an irreplaceable satisfaction and sense of identity.

3. Results and Discussion

The final section of this report synthesizes the data presented in the two previous chapters. The data are examined as they relate to the research questions defined in chapter 1:

- What is the relationship between contemporary land use and traditional territorial boundaries in Shishmaref?
- What is the relationship between locally generated knowledge-traditional ecological knowledge of traditional lands and effective harvesting of local subsistence resources?
- How do the intersections of place and subsistence contribute to a sense of identity?
- What impacts, if any, will community relocation to Nome or Kotzebue have on the people of Shishmaref in relation to subsistence activities?

GIS analysis of land use biographies collected by the researcher, as shown in maps 2 through 15, shows that the land use patterns of Shishmaref residents cover a broad geographic area. The area of heaviest use takes place within the historically identified *Tapqaqmiut* traditional territory (see map 16). Map 5 displays the contemporary subsistence patterns for the communities of Brevig Mission, Deering, and Shishmaref. Recognizing that subsistence land use is dynamic and fluctuates with resource availability, these maps need to be viewed as snapshots in time. It is important to note that in some cases there is considerable overlap; hunting patterns for the different communities generally take place within territories that are loosely congruent with the historically defined territory each community is in. The resiliency of these traditional territories, and underlying land tenure systems, present one example of the continuing importance of place for Bering Strait Iñupiat in terms of cultural and socio-economic well being.

Territoriality has a key role in generating the body of traditional ecological knowledge necessary for successful participation in a subsistence hunting way of life. Traditional ecological knowledge is largely place based, and the bulk of subsistence land use takes place within an area about which people have detailed knowledge. GIS analysis demonstrates that the bulk of subsistence hunting takes place within this traditional

territory. This continued reliance on traditional lands is linked directly to the collective body of knowledge that has been accumulated across generations and transmitted orally. This collective body of knowledge contributes to effective harvesting of wild resources. Shishmaref's traditional territory is defined in the contemporary setting through place names and use, allotments, and camps in traditional family harvesting areas and on contemporary land use practices. Soblemans 1985 work coincides with Fair 1997 in terms of positioning Shishmaref subsistence harvesting knowledge and practices generally within the traditional *Tapqagmiut* territory. Maps 5 through 16 also demonstrate the extent that contemporary subsistence continues to take place on *Tapqagmiut* lands.

It is important to examine this continuity of land use within a specific territory on multiple levels. In one sense it highlights the importance of territoriality for successful participation in a subsistence economy by demonstrating the importance of detailed environmental knowledge. In another sense it highlights some of the potential problems that would likely occur if Shishmaref relocated to Nome or Kotzebue. A variety of issues that will impact Shishmaref residents' subsistence include, though are not limited to:

- Lack of detailed knowledge of a new area
- Lack of access rights to a new area
- Lack of knowledge of regulations regarding resource use in a new area.
- Lack of knowledge of legal harvesting techniques
- Increased pressure on subsistence resources in the vicinity of Nome and Kotzebue
- Costs associated to return to Shishmaref for hunting
- Loss of investment in subsistence camps and allotments
- Loss of subsistence practices as a mechanism through which important cultural knowledge is passed from older to younger generations
- Loss of identity through not being able to practice subsistence on Shishmaref lands

Hunters demonstrated in interviews and by formally mapping out areas that they use, the importance detailed ecological knowledge has in subsistence hunting. Most hunters stated they know little to nothing about where to harvest resources in the Nome area, or what animals are available there that might not be available around Shishmaref.

The times when particular resources might be available and knowledge of ice dynamics in Norton Sound are different from those around Shishmaref.

Shishmaref residents also realize people from Nome are already invested in camps, allotments, and cabins, and having lived in that area have (local or regionally recognized) pre-established rights to harvest those resources. Shishmaref residents, for the most part, practice subsistence within a historically identified territory and have camps and allotment selections based on historic familial uses of specific areas. The level of subsistence harvesting in Nome may be roughly equivalent to that of Shishmaref. Therefore, Nome, with its larger Native and non-Native populations and already established local subsistence infrastructure in the form of camps, cabins, and allotments, would limit Shishmaref residents' ability to participate in local subsistence practices. They would not be able to participate at the same level as when they were using land within their traditionally occupied territory.

Alaska state law acknowledges the right of all rural residents' to engage in subsistence practices. However, if Shishmaref residents were forced to move to a regional hub such as Nome or Kotzebue, they would in effect lose many of their rights of access because they would not be recognized as a distinct group of people with historic ties to lands or resources in the Nome or Kotzebue areas. Many hunters may choose not to hunt in the areas around Nome because they would feel those resources belonged to "Nome people" and as such, Shishmaref residents would be excluded from use. As discussed earlier in this report, traditional land tenure systems are still used and incorporated into the current political system, and it is the regional recognition of a resident's ties to ancestral areas that impacts people's perception of their right to participate in subsistence regardless of state protected rights. People's perceptions and interpretations have a strong influence on their continued participation in subsistence practices.

Many families from Shishmaref have relatives in Nome who regularly return to Shishmaref for subsistence, particularly for spring marine mammal hunting and fall berry picking. The wild foods they collect both through active participation and through distribution networks are important dietary, economic, and cultural resources. Other communities throughout the Bering Strait region also rely on marine mammal products from Shishmaref and often trade their locally harvested resources for items from

Shishmaref. A decline in resources harvested from Shishmaref will affect a wider range of residents in Northwest Alaska than just Shishmaref residents.

Access is also an issue as it relates to landownership in the Nome area. Much of the land around Shishmaref has been incorporated into the Bering Land Bridge National Park. Subsistence practices on parklands are protected by ANILCA (Alaska National Interest Lands Conservation Act), which acknowledges Shishmaref's residents' right to engage in subsistence harvesting of resources on park lands. The status of lands around Nome is different from the political-ecological setting within which Shishmaref residents currently engage in subsistence practices. Lack of knowledge of areas open to hunting and concerns over trespass would impact the confidence with which Shishmaref hunters engaged in subsistence practices in the Nome area and could lead to a decline in subsistence harvest levels by Shishmaref residents.

People also expressed concern about how Nome or Kotzebue residents would feel about their attempts to use Nome's or Kotzebue's resources. If one or two families chose to relocate to one of these regional hubs their participation in the local subsistence economy would no doubt be seen as much less of an impact than a collective group moving to a regional hub. Concern also was expressed over how Nome or Kotzebue residents would feel about competing with Shishmaref hunters for subsistence resources. For example, the 2003 walrus harvest data collected by the U.S Fish and Wildlife Service shows the Nome Eskimo Community reporting a harvest of 30 walrus, and the King Island Community reported a harvest of 11, totaling 41 walrus harvested in the Nome area. During this same time period, Shishmaref hunters reported 37 animals taken, a nearly equal harvest to that reported by the Nome Eskimo community and the King Island community. This increased pressure on resources may lead to increased state and federal oversight, a result of which could be a further decline in subsistence harvesting in order to avoid confrontation with authorities. Nome currently has several sub communities of people from Diomedes, Wales, Shishmaref, and St Lawrence Island who participate in local subsistence practices. One fish camp in the Nome area is locally known as "Little Shishmaref." Therefore the relocation of Shishmaref as community would likely impact both Nome (and Kotzebue) subsistence practices as well as have a negative influence on Shishmaref practices.

Somewhat parallel to the previously mentioned concerns over trespass are Shishmaref residents' concerns over legal harvesting techniques. Regulations and effective harvesting techniques vary throughout Alaska, and what is considered legal in one region or game management unit may not be legal in another based in part on the population of the community. Many in Shishmaref were worried that lack of knowledge about legal harvesting techniques would stop people from practicing subsistence. People are heavily financially invested in equipment such as boats or nets that are designed to fit local conditions and ecological niches. In addition to boats nets and other subsistence tools, many families have invested substantial resources into the development of their allotment camps. Many people are concerned they will have difficulty in maintaining regular employment in Nome or Kotzebue, and therefore, would not have the funds to return to Shishmaref for subsistence practices, causing them to lose that important connection with their traditional lands.

For many Shishmaref people it is not just subsistence practices in a general sense, but subsistence practices on traditional Shishmaref lands from which they derive their sense of identity as a distinct group of people (*Kigiqtaamiut* and *Tapqaqmiut*). Relocation to Nome or Kotzebue would disrupt the practices from which this identity is actively defined and reaffirmed. Relocation away from Shishmaref lands would likely have a negative impact on Shishmaref residents' identity as a distinct group of people. Some residents would continue to return or attempt to return to the Shishmaref area for subsistence needs and to maintain their identity and place based cultural practices.

Potential declines in subsistence practices also pose important concerns for many people, in part because subsistence is an important mechanism through which cultural values and knowledge are passed on. For many Shishmaref residents cultural values and knowledge are developed and lived out through subsistence on traditional lands, wherein names of significant places are shared as well as the wealth of traditional knowledge that is contained within those place names. Subsistence opportunities in Nome would not provide the same level of opportunity for the transfer of important traditional knowledge. The Shishmaref landscape provides an important context for this knowledge accumulation and transfer. The transfer of knowledge about Shishmaref lands, history, and practice are key to maintaining the history and cultural knowledge of Shishmaref

residents as a distinct group of people. The loss of access to the lands that provide this context would have potential long-term affects on identity.

None of the above mentioned scenarios should be interpreted to mean that people from Shishmaref would not or could not adapt to changing geographical and social circumstances. Rather these scenarios highlight some of the important aspects of subsistence practices to Shishmaref residents on traditional lands and illustrate some of the factors that may potentially affect Shishmaref people's actual engagement in subsistence. These changes, in turn, influence a wide range of social and cultural mechanisms such as social networks, identity as a distinct group of people, and quality of life in general.

Conclusions

Continued successful participation by Shishmaref residents in the subsistence economy of the Bering Strait region depends in part on peoples continued residence within their traditional territory and the generation and transmission of detailed ecological knowledge to a younger generation of hunters growing up and engaging in subsistence hunting on the same lands. Relocation of Shishmaref to a regional hub would likely result in a decline in the procurement of wild resources by Shishmaref hunters, a decline in the generation and transmission of traditional knowledge, and a loss of cultural identity that had previously been generated and maintained by actively engaging in traditional subsistence practices within the *Tapqagmiut* territory.

Subsistence hunting on lands around Shishmaref has and continues to contribute to the cultural, social, and economic well being of Shishmaref residents for generations, from providing a food distribution network to serving as a mechanism for the transmission of important cultural values. Hunting and gathering activities provide the medium through which cultural knowledge is taught and transferred. Anthropologist Paul Nadasdy (2003:64) highlights how in a similar fashion hunting provides an important context for transmission of cultural knowledge for the Kluane people of the southwest Yukon:

...The importance of hunting to Kluane people cannot be measured in hunting calories alone. Hunting is every bit as important to their survival as *aboriginal people* as it is to their physical survival. It has been the fundamental organizing principle of their culture, structuring and

informing every aspect of their entire way of life. Everything from their technology and social organization to their beliefs and values were, and in many ways continue to be, deeply intertwined with (and given meaning by) the need to kill animals to survive.

Writing of people's responses to environmental change in the eastern Arctic community of Igloolik, Shari Fox (2002) reports that responses to changes in the environment or people's ability to participate in subsistence practices brings about emotional responses due in part to the role these practices play in terms of identity. Fox continues on to write that in Igloolik walrus hunting was "how one made oneself a real *Inuk*" (real person) (2002:44).

Fox's work in Igloolik and Nadasdy's work in Kluane country parallel how Shishmaref residents draw upon subsistence practices on traditional lands as the mechanism through which traditional knowledge is generated. Active engagement in subsistence hunting on Shishmaref traditional lands is an activity that is important for the economy and the maintenance of the cultural identity of Shishmaref residents. Hunters and elders have strong attachments to places within *Tapqagmiut* lands, many of which are directly related to family histories and hold meaningful recollections that come from the places they know and continue to travel to. Additionally, people maintain their strong ties to traditional lands and places through their intimate knowledge of its changes and processes.

Many people in Shishmaref continue to rely on and prefer wild foods. Shishmaref residents use a wide resource base in order to compensate for population fluctuations and other uncertainties associated with resource availability. Hunting will therefore continue to be a major component of "the context" of the identity of Shishmaref people as well as provide an important source of nutritional food and a means of economic exchange. Carrying out traditional subsistence practices on traditional lands provides important social and economic opportunities that are important for the well being of the Shishmaref Inupiat and their survival as a people. Programs that explore different alternatives to providing assistance to Shishmaref residents must bear in mind the importance of place to Shishmaref people. Place is important in terms of successful participation in the region's subsistence economy. Place and traditional *Tapqagmiut* lands specifically are crucial due to the role the history and knowledge associated with place and traditional lands has in the identity of Shishmaref people. Programs such as relocation to regional centers that in

the short term appear to be a more cost effective route to assist community residents may in the long run have greater costs and impacts by contributing to loss of opportunity to engage in important (place based) cultural practices and values. Relocation of the community from the area people use and identify as their subsistence use area may have a dramatic impact on subsistence use by Shishmaref people. These and other factors may in the end demonstrate that relocation to a regional center may over time cost more than providing assistance to helping community residents move to a locally preferred nearby alternative.

Glossary

Cultural Anthropology:

Anthropology is a social science whose primary concern is with the notion of culture (e.g. diverse local constructions of meaning, ways of interacting in the world, understandings that have been created out of local contexts and are transmitted, recreated, and actualized against different subjectivities). Cultural anthropologists use a variety of methods: participant observation, semi-structured and formal interviews, surveys, and mapping to explore the diversity of ways of being in and defining the world. Anthropology provides an important juxtaposition through articulating the importance of understanding the different value and knowledge systems that are enacted throughout the world.

Cultural Resources:

“Cultural resources are aspects of the physical environment that have value to a social group” (King 1998:9). Some examples of cultural resources include shipwrecks, museum collections, religious sites and their associated practices, landscapes, archeological sites and Native American cultural items, human remains, and cultural items not limited to Native Americans. The social group for whom cultural resources may have value can include but is not limited to “a community, a neighborhood, a tribe, or any scholarly or not so scholarly discipline that documents and studies cultural things—archeologists, architectural historians, folklorists, cultural anthropologists”(King 1998:9).

Human Ecology:

Human ecology is an interdisciplinary approach to studying human/ecosystem relations. Human Ecology as a sub-field of anthropology focuses on how people interact with the natural environment and in turn how the natural environment “influences and is influenced by social organization and cultural values”(Bennett 1969:11).

Iñupiat:

Iñupiat is the plural form of Iñupiaq, which describes the language and culture of the Inuit speaking people of northern Alaska.

Kigiqtaamiut:

Kigiqtaamiut is a self-designating term that describes the people of Shishmaref. *Miut* is Iñupiaq for people. *Kigiqtaq* (island) is the Iñupiaq name for Sarichef Island. Kigiqtaamiut therefore refers to people of the island.

Land Use and Occupancy:

Land use refers to actively harvesting traditional resources: hunting, trapping, fishing, collecting plants, berries, and traveling to resource harvesting areas. Land occupancy refers to the “area a particular group regards as it’s own by virtue of continuing use, habitation, naming, knowledge, and control” (Tobias 2000:3).

Mixed Subsistence, Market Economy:

Subsistence is an integral aspect of Alaska's rural economy. Families living in rural settings invest money into small-scale technologies such as fishing nets, outboard motor skiffs, and snow machines to assist in the harvesting of wild resources, which meet limited needs of families and communities. These investments in technologies do not generally aid in accumulated profits. The combination of money earned through employment and subsistence resources are the basis for the mixed subsistence, market economy of rural Alaska, and much of northern North America. "Successful families in rural areas combine jobs with subsistence activities and share wild food harvests with cash poor households who cannot fish or hunt, such as elders, the disabled, and single mothers with small children" (Robert J. Wolf 2000:4).

Participatory Action Research

Participatory research (PR) is research that recognizes local or traditional knowledge and involves working with local knowledge bearers in an equal and collaborative format, "whereby each respects the other's knowledge and ability to meet a given objective" (Herlihy and Knapp 2003:304). Participatory action research (PAR) is using this collaborative methodology to meet a specific social need. Participatory action research synthesizes both quantitative and qualitative data and provides results in both areas. PAR describes the methods and approaches that enable local people to collect, organize, and interpret their own knowledge of life and conditions, to plan and act.

Participatory Mapping Research

Participatory mapping is a method to produce geographic information about people and place. Researchers collaborate with local residents to document spatial knowledge and locations that are often passed on through toponyms. Place and indigenous spatial knowledge form mental maps. Participatory mapping research recognizes cognitive, spatial, and environmental knowledge of local people and attempts to transcribe this into a conventional format.

Place Names:

Traditional place names in the Bering Strait region are those names Iñupiat people give to places throughout the country to identify the land they know so well, and with which they have a strong spiritual connection. These names describe the natural features of the land, or commemorate significant historical events and are passed from one generation to the next through oral traditions. Place names embody much of the traditional knowledge and provide a context for how people use and know the land. The names embodied with traditions serve as one example of how territories are both defined and recognized by different groups.

Subsistence:

Subsistence hunting and fishing generally refers to customary and traditional harvesting of wild resources for food, clothing, fuel, sharing, redistribution, and trade. Subsistence practices are central to the customs and traditions of Alaska's indigenous peoples: Aleut, Athabascan, Alutiiq, Haida, Iñupiat, Tlingit, Tsimshian, and Yu'pik. In addition to serving as an important social and cultural context, harvesting subsistence resources for food provide an important nutritional component for both Alaska Natives and non-Native rural residents.

Tapqamiut:

“The people along the sandy strand” (Ray 1975:6; Sobelman 1985:19). Shishmaref came into being with the consolidation of villages that hitherto had been scattered along the Seward Peninsula coast from “about 25 miles north of Wales to Cape Espenberg.” Moving east people ranged to the Goodhope River and as far inland as Serpentine Hot Springs (Iyat).

Traditional Ecological Knowledge:

“Traditional ecological knowledge (TEK) is a cumulative body of knowledge, practice, and belief, evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and their environment ... Traditional ecological knowledge is both cumulative and dynamic building on experiences and adapting to changes. It is an attribute of societies with a historical continuity of resource use on a particular land” (Berkes 1998:8).

Territory:

Territory can be defined as a geographically bounded area that is occupied exclusively by one group. An exclusively occupied territory could be defended either through defense mechanisms or via other communicated means (i.e. place names). Territories in general refer to the spatially and temporally bounded areas within which a culture group or society harvested natural resources in a traditional or customary pattern (Andrews 1994:65-66). Ernest J. Burch 1998, and Dorothy Jean Ray 1975, both examine the presence of defined Iñupiat territories on the Seward Peninsula and throughout Northwest Alaska

Territoriality:

The presence of recognized territories and local forms of land tenure that are practiced in a local context.

Traditional Cultural Properties:

Traditional cultural properties (TCPs) are outlined in National Register Bulletin 38 as places, buildings, objects or structures that are valued by a human community for the role they play in sustaining the community’s cultural identity “because they (the places) embody or sustain values, character, or cultural coherence” (King 2003:1).

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This report is based primarily on information provided by Shishmaref residents through on going research efforts that began in the summer of 2004 and is continuing into the present. Additionally, a number of books and reports were utilized for both specific information and to provide a context for understanding much of the information Shishmaref residents shared though this period of research.

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Appendix 1
Interview Consent Form

Shishmaref Land Use and Occupancy Study Land Use Biography Interview Consent Form

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Description:

This land use and occupancy study is designed to document and the extent of contemporary land use and historic occupancy of the area around Shishmaref. A mapping interview would outline land use in the area and demonstrate how people from Shishmaref use the lands around the community. The information would be used in an Environmental Impact Statement the purpose of which is look at different options for a community relocation site Your participation in this process would be entirely voluntary, and would be for as long or as short a time as you like. You may end your participation at anytime.

Benefits and Risks:

Your participation in this project will assist the federal government in deciding how best to help the community of Shishmaref respond to current erosion issues. Participation in this study provides an opportunity for your concerns and knowledge to be incorporated into this Environmental Impact Statement. You will help present important information about the significance of this area to people here, which is information that may not otherwise be well represented. There are no anticipated risks associated with this study.

Confidentiality:

The information you share will be incorporated into a Geographic Information System (GIS) map-making program. Your name will be confidential unless you specifically allow your name to be used by checking the box in the "Interview Methods" section below. No other personal information will be collected. You will be given the chance to review and comment on all the information you share, prior to its integration into this Environmental Impact Statement. You may end your participation at anytime with no consequences. The information collected, including your name, will be stored by the Army Corps of Engineers office in Anchorage. If you decline to have the Corps use your name in any published documents, it would only be disclosed outside the Federal Government if required under the Freedom of Information Act or if ordered by a court of competent jurisdiction.

Project Support:

This project is sponsored by Army Corps of Engineers and the information collected may be used in future federal studies.

Contact People:

If you have any questions about this project, please contact the principal investigator, at the address or phone number listed above, if you have other questions about your participation in this research you can contact Diane Hanson at 907-753-2631.

Interview Methods:

- I do not want to be quoted.
- I do not want my name to appear in any written documents.
- I consent to my name being used when I am quoted in written documents.
- I agree that that the information I share may be incorporated into this report.

Signature:

Your signature below means that you have freely agreed to participate in this research study. If you have any questions, you may ask them now or at any time during this study.

Interviewee _____

Date _____

Interviewer _____

Date _____

One copy of this form is for you to keep and the other will be kept with the project file.

Appendix 2

Interview Protocol

Shishmaref Land use Interview Protocol

This is the general interview script that was used to facilitate discussions about individual hunter's subsistence activities on the land. Not all hunters reported on all species. Some people were extremely knowledgeable regarding different species and through interviews provided a wide range of ecological knowledge some of which were presented in some of the maps included in this report (see map 12, 13) display observed migrations and winter and summer ranges. Interview script focus primarily on contemporary practices but is flexible and attempts to provide frame work to gain insight in to the flexibility of an individual hunters practices and to roughly gauge individual harvest levels

Marine Mammals: ugruk, anmiak. Spotted seal common seal, walrus

When do you usually begin hunting ugruk

Where do you generally hunt for them (What is the general area?)

Did you hunt ugruk last year? (Where did you hunt at that time?) (Kill sites)

How many people (families) do you supply ugruk for (including oil) (how many buckets)
How many ugruks for 1 bucket? How many animals does that generally take?

Are there other places you have take them (how many where, when)

Land Animals: Moose, Caribou, Reindeer: (Brown bear and Musk ox were not discussed at this time)

When do you usually begin hunting moose?

Where do you generally hunt them (general areas and kill sites?)

Did you hunt moose last year? (Where did hunt at that time?) (Kill sites)

How many people do you try to hunt moose for (families moose meat is shared with?)

Fish: tom cod, flounder, ling cod, trout, herring, grayling, whitefish, crab, clams

When do you start going for whitefish?

Where are some of the places you catch them?

Where did you fish for them last year?

Other places you have fished for them?

Other people (families, elders) you regularly give fish to?

Are there any camps or places your family used to travel to for catching whitefish?
(placename)

Berries and greens:

When you generally start picking berries?

Where do you usually start picking them?

Do you have a cabin (camp, allotment) there? (placename?, some history of family use of that place)

Do you travel to other areas to pick after that, where

Do you have (cabin, camp allotment) there (history of family use of that place)

How many gallons do you try to put up in a year for your family? Do you pick berries for other families—do other families go with you to those places.

Are there other places you go for berries (coastal islands)

Upland hunting and furbearing animals: wolf, wolverine, fox, ptarmigan, hares.

Where have you hunted or trapped (furbearing animals)

Did you (do you) have a trapline (where) (kill sites) what animals

Do you have cabins, camps in that trapping area?

Is there history of family use of that area?

Did you hunt (furbearing animal) last year

Other places you have hunted (furbearing animal) (kill sites) other animals hunted trapped there (time period)

Waterfowl:

When do you usually try and hunt (Waterfowl)

Where do you hunt them this time of year?

Do you have blinds or camps set up there?

Are there other times when you hunt (Waterfowl?)

Where do you hunt then at that time?

Do you have blinds or camps there?