

APPENDIX J

SUBSISTENCE

TABLE OF CONTENTS

		Page
J.1	Introduction.....	J-3
J.2	Subsistence Defined.....	J-3
J.3	Annual Cycle of Harvest Activities	J-5
J.4	Community Subsistence Harvest Patterns	J-5
J.5	Traditional Iñupiat Settlement Patterns and Subsistence Use Areas.....	J-6
J.6	Cultural Values of Subsistence	J-7
J.7	Contemporary Subsistence Uses.....	J-8
J.8	Barrow	J-8
	J.8.1 Contemporary Seasonal Round	J-8
	J.8.2 Subsistence Harvest Estimates	J-9
	J.8.3 Contemporary Subsistence Use Areas	J-13
	J.8.4 Contemporary Subsistence Use Areas East of the Community	J-13
J.9	Atqasuk.....	J-17
	J.9.1 Contemporary Seasonal Round	J-18
	J.9.2 Subsistence Harvests	J-19
	J.9.3 Contemporary Subsistence Use Areas	J-21
	J.9.4 Atqasuk Subsistence Use Areas East of the Community	J-21
J.10	Nuiqsut.....	J-22
	J.10.1 Nuiqsut Subsistence Activities.....	J-23
	J.10.2 Contemporary Seasonal Round	J-24
	J.10.3 Subsistence Harvests	J-25
	J.10.4 Contemporary Subsistence Use Areas	J-25
	J.10.5 Subsistence Expenditures	J-42
J.11	Anaktuvuk Pass.....	J-43
	J.11.1 Contemporary Seasonal Round	J-44
	J.11.2 Subsistence Harvests	J-44
	J.11.3 Subsistence Use Areas	J-45
	J.11.4 Contemporary Connections to Nuiqsut, the Colville River Area, and the Beaufort Sea Coast.....	J-47
J.12	Other Villages	J-48
J.13	Subsistence Access Routes	J-49
J.14	Bibliography	J-51

List of Tables

J-1	Barrow Subsistence Harvests and Subsistence Activities 1987-1992	J-10
J-2	Selected Barrow Subsistence Harvests for 1987, 1988 1989, and 1992	J-11
J-3	Atqasuk Subsistence Harvests Participation for 1994-1995	J-19
J-4	Atqasuk Subsistence Harvest Totals, Actual and Estimate for 1994-1995	J-19
J-5	Nuiqsut Subsistence Harvests and Subsistence Activities for 1985, 1992, and 1993	J-26
J-6	Selected Nuiqsut Subsistence Harvests for 1985, 1992, 1993, and 1994-1995	J-27
J-7	Anaktuvuk Pass Subsistence Harvests and Subsistence Activities	J-45
J-8	Selected Anaktuvuk Pass Subsistence Harvests	J-46

List of Figures

J-1 Annual Cycle of Subsistence Activities – Barrow..... J-9
 J-2 Barrow Expenditures on Subsistence Activities, 1998-1999..... J-12
 J-3 Barrow Household Consumption of Subsistence Foods, 1998-1999..... J-12
 J-4 Annual Cycle of Subsistence Activities – Atqasuk..... J-18
 J-5 Atqasuk Expenditures on Subsistence Activities, 1998-1999..... J-20
 J-6 Atqasuk Household Consumption of Subsistence Foods, 1998-1999..... J-20
 J-7 Annual Cycle of Subsistence Activities – Nuiqsut..... J-23
 J-8 Nuiqsut Caribou Harvest by Month, 1993, 1994-1995, 2000, and 2001..... J-30
 J-9 Nuiqsut Caribou Harvest by Season and Location, 1993, 1994-1995, 2000, and 2001..... J-32
 J-10 Estimated Fishing Effort in the Colville River Delta Fall Subsistence Fishery in Net Days..... J-35
 J-11 Estimated Whitefish and Cisco Harvests for the Colville River Delta Fall Subsistence Fishery, 1985-2002..... J-35
 J-12 Nuiqsut Fish Harvest by Month, 1994-1995, 2000, and 2001..... J-36
 J-13 Nuiqsut Subsistence Fish Harvests by Month and Species, 1994-1995, 2000, and 2001..... J-36
 J-14 Nuiqsut Cumulative Subsistence Fish Harvest by Location, 1994-1995, 2000, and 2001..... J-37
 J-15 Nuiqsut Subsistence Fish Harvest (excluding Arctic Cisco) by Season and Location..... J-38
 J-16 Nuiqsut Harvest Locations for All Species of Geese, 1994-1995, 2000, and 2001..... J-39
 J-17 Nuiqsut Harvest Locations for Eiders, 1994-1995, 2000, and 2001..... J-40
 J-18 Nuiqsut Subsistence Wolf and Wolverine Harvests by Location, 1994-1995, 2000, and 2001..... J-42
 J-19 Nuiqsut Expenditures on Subsistence Activities, 1998-1999..... J-43
 J-20 Nuiqsut Household Consumption of Subsistence Foods in Relation to All Food Consumed, 1998-1999.. J-43
 J-21 Annual Cycle of Subsistence Activities – Anaktuvuk Pass..... J-45

**List of Maps
 (Located in Volume 3)**

J-1 Barrow, Atqasuk, and Nuiqsut Community Subsistence Areas
 J-2 Barrow Subsistence Use Areas for Whale, Moose, Caribou, Fish, and Birds
 J-3 Barrow Subsistence Harvest Sites for All Resources
 J-4 Barrow Partial Subsistence Use Areas for Non-Marine Resources
 J-5 Atqasuk Subsistence Use Areas for Moose, Caribou, Fish and Birds
 J-6 Atqasuk Partial Subsistence Use Areas for Non-Marine Resources
 J-7 Nuiqsut Subsistence Land Use 1973-1986
 J-8 Nuiqsut Partial Subsistence Use Areas for Multiple Resources
 J-9 Nuiqsut Partial Subsistence Use Areas for Caribou (All Seasons) and Geese
 J-10 Nuiqsut Partial Subsistence Use Areas for Fish and Wolf/Wolverine
 J-11 Nuiqsut Partial Subsistence Use Areas for Moose and Seal
 J-12 Nuiqsut Partial Subsistence Use Areas for Berries, Bowhead Whale, and Eider
 J-13 Nuiqsut Partial Subsistence Use Areas for Caribou by Season
 J-14 Anaktuvuk Pass partial Subsistence Use Areas for Multiple Resources
 J-15 Historical Subsistence Access Routes on the North Slope

APPENDIX J

SUBSISTENCE

J.1 Introduction

This section describes the subsistence-harvest patterns of the Iñupiat (Eskimo) communities adjacent to the Planning Area—Barrow, Atqasuk, Nuiqsut, and Anaktuvuk Pass. This community-by-community description provides general information on subsistence harvest patterns, harvest information by resource and community, timing of the subsistence harvest cycles, and harvest area concentrations by resource and by community. The following text was compiled from subsistence sections included in the 1998 Northeast and Northwest IAPs/EISs (USDOI BLM and MMS 1998, 2003) and the *Alpine Satellite Development Plan EIS* (USDOI BLM 2004). This material has been edited and updated with newer information where possible.

Data sources for this section included subsistence resource reports published by: 1) the NSB Department of Wildlife Management and the ADFG, Division of Subsistence; 2) unpublished and published harvest data from these agencies; 3) technical reports published by the MMS; 4) ethnographic and historical literature; 5) relevant correspondence between Iñupiat organizations and agencies (e.g., Kuukpik Corporation 2002); and 6) the results of field interviews (Stephen R. Braund & Associates [SRBA] 2003b). For quantitative measures of use, the best available and/or most recent subsistence harvest data were acquired from ADFG, NSB and MMS reports. These data included information about the number and amount of subsistence species harvested, the location and timing of subsistence harvests, the extent of past and present subsistence land use, and the cultural importance of subsistence uses. Historical and ethnographic literature from academic and historical sources, both published and unpublished, provided additional qualitative data about the use and social context of subsistence resources in the recent past. Fieldwork information, derived from key informant interviews conducted for the *Alpine Satellite Development Plan EIS* (SRBA 2003b, USDOI BLM 2004), provides additional information about subsistence resource use and harvest areas in the present and the recent past.

Iñupiat concerns about oil development in the National Petroleum Reserve – Alaska that were identified during scoping, and those identified in public outreach for recent OCS actions and the Northstar Project, can be divided into eight categories: 1) disruption of migrating subsistence species; 2) direct damage to or contamination of subsistence resources and habitats; 3) disruption of access to subsistence areas; 4) loss of Native food; 5) degradation of traditional Iñupiat places; 6) concern over cumulative oil-development impacts (especially in the community of Nuiqsut); 7) insufficient recognition of Iñupiat indigenous knowledge about subsistence resources, subsistence-harvest areas, and subsistence practices; and 8) damage to Iñupiat culture. One analysis of Iñupiat concerns about oil development was based on approximately 10 years of recorded testimony at North Slope public hearings for state and federal energy development projects (Kruse et al. 1983). The majority of concerns focused on the subsistence use of resources, including damage to subsistence species, loss of access to subsistence areas, loss of Native foods, and interruption of subsistence species migration. These four concerns represented 83 percent of all concerns expressed during testimony taken on the North Slope (Kruse et al. 1983; IAI 1990; Human Relations Area Files, Inc. [HRAF] 1992; USDOI MMS 1994). Further statements recorded during scoping for the Amended IAP/EIS included concerns that subsistence cabins and camps, access, and resources would not be adequately protected by the performance-based ROPs and stipulations. The communities' general perceptions were that stipulations negotiated in cooperation with local communities and agencies as part of the 1998 Northeast IAP/EIS, and in place for only a few years and currently untested, were being abandoned, or reduced, by the BLM.

J.2 Subsistence Defined

The Planning Area is comprised of federal land administered by the BLM. Therefore, management of subsistence hunting in the Planning Area is ruled by Title VIII of the ANILCA, which defines subsistence as:

SUBSISTENCE

the customary and traditional uses by rural Alaska residents of wild, renewable resources for direct personal or family consumption as food, shelter, fuel, clothing, tools, or transportation; for the making and selling of handicraft articles out of inedible byproducts of fish and wildlife resources taken for personal or family consumption; for barter or sharing for personal or family consumption; and for customary trade (16 U.S.C. § 3113).

On federal lands in Alaska, federal law grants subsistence priority over other uses, and federal agencies manage these hunts, and will continue to do so, until state law is compliant with federal regulations (USDOI USFWS 1992). Subsistence fisheries on federal lands are managed by the USDOI (Hulen 1996a, b; Kizzia 1996; Whitney 1996).

The NSB Municipal Code defines subsistence as:

an activity performed in support of the basic beliefs and nutritional needs of the residents of the borough and includes hunting, whaling, fishing, trapping, camping, food gathering, and other traditional and cultural activities (NSB Municipal Code 19.20.020 [67]).

For Alaska Natives, subsistence is more than the harvesting, processing, sharing, and trading of marine and land mammals, fish, and plants. It embodies cultural, social, and spiritual values—the essence of Alaska Native cultures (Bryner 1995, ADNR 1997). The Alaska Federation of Natives (2003) describes subsistence as:

the hunting, fishing, and gathering activities which traditionally constituted the economic base of life for Alaska's Native peoples and which continue to flourish in many areas of the state today.... Subsistence is a way of life in rural Alaska that is vital to the preservation of communities, tribal cultures, and economies. Subsistence resources have great nutritional, economical, cultural, and spiritual importance in the lives of rural Alaskans.... Subsistence, being integral to our worldview and among the strongest remaining ties to our ancient cultures, is as much spiritual and cultural, as it is physical.

Subsistence resources are highly valued and central to the customs and traditions of many cultural groups in Alaska, including the North Slope Iñupiat. These customs and traditions encompass sharing and distribution networks, cooperative hunting, and fishing, and ceremonial activities. Subsistence fishing and hunting are important sources of nutrition and non-traditional employment in almost all rural Alaskan communities. The ADFG estimates that the annual wild food harvest in Alaska's Arctic area is approximately 10,507,255 pounds, or 516 pounds of food per person per year (ADFG 2000). It is important to remember, however, that subsistence harvest levels vary widely from one community to the next.

Subsistence is part of a rural economic system, called a mixed subsistence-market economy, wherein families invest money into small-scale, efficient technologies to harvest wild foods (ADFG 2000). Fishing and hunting for subsistence provide a reliable economic base for many rural regions, and domestic family groups invest in gill nets, motorized skiffs, and snowmachines to conduct these important activities. Subsistence is not oriented toward sales, profits, or capital accumulation (commercial market production), but is focused toward meeting the self-limiting needs of families and small communities. Participants in this mixed-economy augment their subsistence production by cash employment. Cash (from commercial fishing, trapping, and/or wages from public sector employment, construction, fire fighting, oil and gas industry, or other services) provides the means to purchase the equipment, supplies, and gas used in subsistence activities. The combination of subsistence and commercial-wage activities provides the economic basis for the way of life so highly valued in rural communities (Wolfe and Walker 1987). As one North Slope hunter observed, "The best mix is half and half. If it was all subsistence, then we would have no money for snowmobiles and ammunition. If it was all work, we would have no Native foods. Both work well together (ACI et al. 1984)."

Full-time, year-round wage employment has both positively and negatively affected the pursuit of subsistence resources. The subsistence hunt provides cash for snowmachines, boats, motors, fuel, equipment, and ammunition

required for the hunt; however, full-time, year-round employment limits the time a subsistence hunter can spend hunting. Employment in the oil fields, or away from the communities, further limits the pursuit of subsistence resources, as the primary hunters may be working during the best harvest times. During the summer, extensive hunting and fishing activities can be pursued after work without any light limitation, and travel is limited to raised ground and waterways because of the difficulty associated with traveling on wet tundra. Speaking at the 2001 meeting in Nuiqsut for the Liberty Development and Production Plan Draft Environmental Impact Statement, Rosemary Ahtuanguaruak, then-acting mayor of the community, stated: “[Alaskan Natives] require the guns and the snowmachines to allow them to harvest in the narrow windows of time that exist due to commitment to work. They are torn by the traditional needs of providing from the land and the stresses of needing cash to purchase items that save on time (USDOJ MMS 2001).”

J.3 Annual Cycle of Harvest Activities

The primary subsistence-harvest areas in the Northeast National Petroleum Reserve – Alaska are shown in [Map J-1](#). Seasonal movement to hunting sites and camps for subsistence activities involves travel over, and use of, extensive areas, ranging from 70 miles offshore to the Brooks Range mountains.

Barrow and its environs have a long and continuous history of use and occupation by Iñupiat hunters, as evidenced by numerous archaeological deposits. Atqasuk and Nuiqsut were seasonally-occupied traditional subsistence use areas, recently reestablished as sedentary villages as people returned from Barrow, where they had moved after World War II, to places where they had historic connections. Knowledge of the land and the availability of subsistence resources were part of the historic connections (IAI 1990). This section describes subsistence use for the communities of Barrow, Atqasuk, Nuiqsut, and Anaktuvuk Pass during past and present times. The proposed amendment could affect the areas used for subsistence activities, both within and near the Planning Area.

J.4 Community Subsistence Harvest Patterns

Subsistence resources are often harvested from specific camps, where multiple resource harvest opportunities are available seasonally. In general, communities harvest resources nearest to them; however, harvest activities could occur throughout the Planning Area. Harvests tend to be concentrated near communities and along productive rivers and coastlines. It is a complex problem to determine where and when a subsistence resource can be harvested, given the distribution, migration, and seasonal and cyclical variation of animal populations. Harvest areas that are used infrequently could still be quite important (USDOJ BLM 1978).

Species use and harvest success can vary greatly over short periods of time, thus short-term harvest data can be misinterpreted. For example, if a community did not harvest a bowhead whale, an increase in caribou and other species harvests would compensate for the lack of the whale resources. If caribou were not available one winter, other marine and terrestrial species would be hunted with greater intensity. Similar scenarios have taken place in Kaktovik and Nuiqsut in the last 25 years (Brower and Hepa 1998). In these cases, the cultural value of sharing and reciprocity ensures that other communities contribute subsistence foods to the communities affected by the lack of a certain resource. In one case, the Anaktuvuk Pass and Nuiqsut communities sponsored hunts for the other community suffering a harvest failure (SRBA 2003b). The reliance on household survey data for estimates of subsistence resource use could underestimate actual harvests as well as impacts to these harvests. While the data may suggest the extent of an area that is being used, it does not indicate how Nuiqsut’s residents have adjusted or will adjust to the Alpine field or the other recent development near the village. Household surveys also may not address people who harvest in a wide geographic area. However, household surveys provide the best available data at this time.

Bowhead whales, caribou, and fish are the main subsistence resources for Barrow, Nuiqsut, and Atqasuk, although subsistence resource harvests differ between communities. Bowhead whale hunting, which requires a great deal of cooperation and year-round preparation, is the impetus and focus of the Iñupiat sociocultural system. The bowhead whale is the preferred meat and the subsistence resource of primary importance, because it provides a unique and

powerful cultural basis for sharing and community cooperation (Stoker 1983 in ACI and SRBA 1984). In terms of the number of animals harvested and consumed, and the large number of hunting trips, however, caribou is the most important overall subsistence resource. Depending on the community, fish is the second or third most important resource, after caribou and bowhead whales. Bearded seals and waterfowl are also considered primary subsistence species. Bearded seal meat, oil (used as a condiment), and hides are important staples and necessary complements to other subsistence foods, while waterfowl are important during the spring, when they provide the season's first fresh meat and add variety to the subsistence diet. Migratory birds from the project area are important to Native peoples in western, southwestern, and interior Alaska and to people along the Pacific Flyway. In the late 1970s, when bowhead whale quotas were low and the WAH caribou suffered a severe population decline, the Alaska Board of Game placed restrictive harvest limits on these resources. In response, Iñupiat subsistence hunting efforts switched to bearded seals, ducks, geese, and fish. Atqasuk had only indirect access to bearded seals, resulting in the harvest of more ducks, geese, and fish (Schneider et al. 1980).

Whaling continues to be the most valued activity in the subsistence economy of the communities, even in light of harvest constraints imposed by International Whaling Commission quotas. Barrow is the only community within the area that harvests whales in both the spring and the fall, while Nuiqsut only harvests during the fall; however, some Nuiqsut hunters travel to Barrow to participate with Barrow whaling crews during the spring (NSB 1998). The subsistence use of bowhead whales is important to the communities of Barrow and Nuiqsut, as well as to the few Atqasuk men who whale with Barrow or Wainwright crews. The sharing of whale maktak and meat is also important to inland communities. Seasonally and plentiful supplies of other subsistence resources, such as caribou and fish, as well as retail grocery foods, supplement and support whale harvests. Whaling traditions, such as kin-based crews, use of skin boats in Barrow for their spring whaling season, onshore preparations for distribution of the meat, and regional participation and sharing remain the central values and activities for Iñupiat in the North Slope communities. Bowhead whaling strengthens family and community ties, adds to the sense of a common Iñupiat heritage, culture, and way of life, and provides strength, purpose, and unity in the face of rapid change.

J.5 Traditional Iñupiat Settlement Patterns and Subsistence Use Areas

The ACP has been occupied by various groups as far back as 12,000 years ago, based on evidence from archaeological sites such as the Mesa site (Kunz and Mann 1977). Beginning 4,000 years ago, the Barrow area supported several seasonal villages. Approximately 1,300 years ago, the Iñupiat began continuous year-round occupation of the Barrow area. Archaeologists have connected this period of continuous occupation to the beginning of whaling and the development of semi-permanent coastal communities (SRBA and Institute of Social and Economic Research [ISER] 1993).

The North Slope Iñupiat have undergone numerous changes as they adapted to changing cultural, social, and physical environments. Before sustained contact with Euro-Americans, the Iñupiat moved seasonally between coastal and riverine environments on the ACP, gathering at communally recognized locations for bowhead whale hunts or cooperative caribou hunts. If the whale harvest was successful, the meat and maktak were distributed, and a celebration, called Nalukataq, was held. After the whaling, Iñupiat would disperse to coastal and riverine winter residences (SRBA and ISER 1993). Additionally, numerous regional groups of Iñupiat and Athabaskans gathered at trading fairs, including one in the Nuiqsut area (Elavgak in Brown 1979).

The Iñupiat developed adaptive strategies, both sociocultural and technological, to the variable distribution and availability of subsistence resources. Sociocultural strategies included an emphasis on sharing and hospitality, non-restrictive land use rules, wide-ranging mobility to extract sparsely distributed resources, and an adaptive set of hunting rules (e.g., allowing caribou herd leaders to pass and taking only as many caribou as necessary) and techniques (e.g., drivelines for caribou hunting and breathing holes for seal hunting). Technological strategies included specialized tools, innovation of new materials (e.g., steel, plastic, and woven fabrics), and adoption of useful and new technologies from other cultures (e.g., rifles, outboard motors, snowmachines; Brown 1979, IAI 1990).

Euro-American contact began intermittently in the early 19th century and intensified with the shift from commercial whaling north of the Bering Strait in the 1850s. In 1884, the establishment of a shore-based whaling station at Barrow brought Iñupiat from other areas, in pursuit of wage employment, access to technologically advanced trade goods, and increased trade opportunities. Eskimo people from as far as Siberia and Saint Lawrence Island moved to Barrow to participate in the commercial whale harvest. After the Pacific Steam Whaling Company ceased shore-based whaling in Barrow in 1896, Iñupiat whalers took over the shore-based whale harvest, with wealthier captains maintaining as many as six crews year-round (SRBA and ISER 1993).

Changes in resource distribution, fluctuations in whale and caribou populations, epidemic disease, and prolonged contact with Euro-Americans caused major changes in the geographic distribution and lifestyles of the Iñupiat (SRBA and ISER 1993). The eventual depletion of whales and other marine mammals, as well as the increased hunting pressure caused by the need for commercial whaling crews' provisions, probably caused critical resource shortages. The promise of jobs and access to trade goods, in addition to famine and disease, caused a decline in the overall population of the region and the relocation of inland peoples to the coastal villages. In response to the famine, and a need to feed stranded commercial whalers, the federal government instituted reindeer herding programs in Point Hope, Wainwright, and Barrow, which lasted until the 1930s. The Barrow reindeer herd dispersed by 1952 because of inattention, predation by wolves, and assimilation into wild caribou herds.

By 1910, commercial whaling had ended and fur trapping became an alternative cash economy method for the Iñupiat. While commercial whaling had brought Iñupiat from the interior to the coast, specifically to Barrow and Wainwright, fur trapping encouraged the Iñupiat to disperse along the coast and return inland to winter trapping camps. The Depression forced fur prices down and made trapping unprofitable for Iñupiat hunters. Thus, following the Depression, the Iñupiat population again aggregated into centralized communities, and schools, missions, churches, and truancy laws were established. Economic growth in Fairbanks and Anchorage presented opportunities for the Iñupiat to move into the growing cities (Hoffman et al. 1988).

During World War II, the U.S. Navy and other federal agencies began exploring the then Naval Petroleum Reserve – Alaska, mapping the Beaufort Sea coast and establishing research stations near Barrow (Ebbley and Joesting 1943). After the war, DEW-Line sites provided employment to Iñupiat people and allowed them continued use of subsistence resources and access to Euro-American goods and services (Hoffman et al. 1988). Wage employment (e.g., National Petroleum Reserve – Alaska, Naval Arctic Research Laboratory, DEW-Line sites, the FAA, and the Weather Bureau) attracted inland and coastal Iñupiat to Barrow (HRAF 1992).

Not all Iñupiat, however, moved to centralized communities. Many continued to move around the land, much as their ancestors had. Iñupiat who settled in Barrow for access to education and health care, returned seasonally to the areas from which their families had come. Following the passage of ANCSA, groups that centralized in Barrow and other coastal villages to gain access to education, health care, employment, and other advantages of a more urban life, began to return to formerly used subsistence harvest areas near Nuiqsut, Anaktuvuk Pass, and Atkasuk (Brown 1979).

J.6 Cultural Values of Subsistence

For centuries, survival in the Arctic centered on the pursuit of subsistence foods and materials and the knowledge needed to find, harvest, process, distribute, and store the harvest. The development of Iñupiat culture depended on the passing on of traditional knowledge and beliefs about subsistence resources, including observations of game behavior, how to successfully locate and harvest game, and behavior that would ensure successful harvests in the future. Additionally, a suite of tools, techniques, and strategies necessary to survive and thrive in the harsh Arctic environment were handed down (Spencer 1976). Today, subsistence and culture continue to be intertwined for the Iñupiat; the process of obtaining, refining, and passing on subsistence skills is inextricably linked to the Iñupiat culture, which is based on interdependent family groups and a tradition of sharing harvested resources.

J.7 Contemporary Subsistence Uses

Contemporary subsistence uses reflect centuries-old seasonal resource harvest patterns, based on resource availability and abundance. As Iñupiat residence patterns changed, hunters continued to pursue resources in the same manner and locations as their ancestors (Brown 1979, IAI 1990, SRBA and ISER 1993). The Iñupiat adopted aspects of Euro-American culture and technology, while maintaining core elements of Iñupiat culture, values, and identity (IAI 1990). The Iñupiat have creatively adopted new technologies to continue traditional subsistence pursuits and maintain connections to the land (Spencer 1976).

J.8 Barrow

The Iñupiat name for the modern Barrow area is *Utqiagviq*, meaning “the place where we hunt snowy owls.” As with other communities adjacent to the Planning Area, Barrow residents (population 4,434 in 2002) enjoy a diverse subsistence resource base that includes both marine and terrestrial animals (ADCED 2003). Barrow is situated on a point of land, the demarcation point between the Chukchi and Beaufort seas, where the sea ice is prone to cracking. The main subsistence focus has been marine mammal hunting, and whaling in particular. In Barrow, one of 10 Alaska Eskimo bowhead whaling communities, bowhead whale hunting is the key activity in the organization of social relations in the community and one of the greatest concentrations of effort, time, money, group symbolism, and significance (SRBA and ISER 1993). Other harvested resources, such as caribou, waterfowl and several varieties of fish, are vital for subsistence; however, they have less influence on the organization of social relations than whales. The reliance on subsistence activities remains a key component of the Barrow economy and the local Iñupiat culture. Barrow’s location offers superb opportunities for hunting marine and terrestrial mammals, waterfowl, and fish. Barrow harvesters’ lifetime subsistence-harvest area, as documented in Pederson (1979), as well as specific subsistence harvest areas and sites for major subsistence resources, are shown in [Maps J-2, J-3, and J-4](#).

J.8.1 Contemporary Seasonal Round

Barrow’s seasonal round is related to the timing of subsistence resources ([Figure J-1](#)). Preparation for bowhead whaling occurs year-round. Bowhead whale hunting in the spring is undertaken by Barrow whalers during April and May, with May generally being the most successful month (SRBA and ISER 1993). Traditionally, whaling crew members opportunistically hunted other marine mammals, such as seals and polar bears, after the spring whaling. Beginning with the whaling season of 1978, bowhead whale quotas, instituted by the International Whaling Commission, altered traditional spring whaling activities by reducing opportunities for bowhead whale harvest. Barrow hunters harvest caribou in April, but usually refrain from taking caribou during May because of calving and the spring thaw.

Once the spring whaling season is over, usually in late May or early June, subsistence activities diversify. Some hunters turn their attention to hunting seals, walrus, and polar bears, while others go inland to fish or hunt for waterfowl and caribou. In June, Iñupiat hunters continue to hunt geese and opportunistically harvest caribou, ptarmigan, and eiders. Barrow residents harvest the largest number of caribou in July and August, when the caribou can be hunted by boat (in warmer weather, the caribou move to the coast to escape the heat and insects). In addition, Barrow hunters prefer to harvest caribou in August, when the caribou are in peak condition (Fuller and George 1999). In August, Barrow hunters also harvest marine mammals, eiders, and fish, depending on weather and ice conditions. Bearded seals are harvested principally for their blubber, which is rendered into oil, and their skins, which are used for boat coverings. Ringed seals are harvested primarily for their meat. Walrus are harvested in July and August when they drift north with the floe ice, and if the pack ice moves close enough to Barrow. Freshwater fishing occurs from breakup, in June, through November. Barrow residents fish for Arctic cod year-round, but fish for broad whitefish, the most heavily harvested species, from June to October. Fish harvested in August include whitefish, grayling, salmon and capelin. Residents of Barrow harvest eiders during the “fall migration” in July. Families may go up the Colville River to harvest moose and berries in August and early September.

	Winter					Spring		Summer			Fall	
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Fish												
Birds												
Berries												
Furbearers												
Caribou												
Polar Bear												
Seals												
Walrus												
Bowhead Whale												
	No to Very Low Levels of Subsistence Activity					Sources: SRBA and ISER (1993) and SRBA (2003a).						
	Low to Medium Levels of Subsistence Activity											
	High Levels of Subsistence Activity											

Figure J-1. Annual Cycle of Subsistence Activities – Barrow.

If ice conditions are favorable, bowhead whaling in the fall may begin as early as mid-August and continue into October. Residents of Barrow, who have remained inland, hunt caribou if the animals are accessible; otherwise, they concentrate on fishing for grayling and burbot. The subsistence fish harvest generally peaks in October (under-ice fishery), when whitefish and grayling are concentrated at overwintering areas (Fuller and George 1999). During November and December, Barrow residents also harvest ground (or parka) squirrels and ptarmigan, and, if weather and ice conditions permit and the animals appear close to town, seals and caribou (SRBA and ISER 1993). During the winter months, residents of Barrow harvest furbearers, such as wolf and wolverine.

J.8.2 Subsistence Harvest Estimates

Barrow's total annual subsistence harvests varied from 621,067 pounds in 1987 to 1,363,736 pounds in 1992 (Table J-1; SRBA and ISER 1993). The 1992 harvest of 349 pounds per capita of wild resources represents nearly 1 pound per day per person. Barrow residents rely heavily on large land and marine mammals and fish (Table J-2). Marine mammals comprised approximately 55 percent of the total resources harvested, and land mammals comprised 30 percent of the total.

Bowhead whale, caribou, walrus, and whitefish accounted for approximately 85 percent of Barrow's annual subsistence harvest in terms of edible pounds in 1989 (Table J-2). In 1992, the total harvest of marine mammals (bowhead whale, walrus, and ringed and bearded seals) accounted for approximately 72 percent of the total village harvest of all species, and bowhead whale provided the single greatest contribution of food to the community, at 54 percent of the total harvest (Fuller and George 1999). The success of bowhead whaling in 1992 resulted in a decrease in the harvest of other resources, such as fish. Land mammals (caribou, moose, and Dall sheep) contributed approximately 19 percent of Barrow's total harvest in 1992, and caribou was the principal terrestrial resource (17 percent of the total harvest). Close to half (45 percent) of Barrow households participated in caribou hunting in 1992; caribou is one of the most consistently eaten subsistence resources in Barrow. In 1992, fish constituted approximately 7 percent of the total harvest in Barrow, and broad whitefish was the most important fish resource (4 percent of the total harvest). Birds, such as eiders and geese, contributed less than 2 percent of the total harvest by weight; however, participation in bird hunting was high.

SUBSISTENCE

Table J-1. Barrow Subsistence Harvests and Subsistence Activities 1987, 1988, 1989, and 1992.

Resource	Percentage of Households					Estimated Harvest				
	Use	Try to Harvest	Harvest	Receive	Give	Number	Total Pounds	Mean Household Pounds	Per Capita Pounds	% Total Harvest
1987										
All resources			58				621,067	663	206	100
Fish			33			45,563	68,452	73	23	11
Salmon			3			196	1,190	1	0	<1
Non-salmon						45,367	67,262	72	22	11
Land mammals			30			1,893	213,835	228	71	34
Large land mammals						1,660	213,777	228	71	34
Small land mammals						233	58	0	0	<1
Marine mammals			41				316,229	337	105	51
Birds and eggs			36			10,579	22,335	24	7	4
Vegetation			3				216	0	0	<1
1988										
All resources			50				614,669	656	204	100
Fish			18			38,085	51,062	54	17	8
Salmon			1			80	490	1	0	<1
Non-salmon			14			38,005	50,571	54	17	8
Land mammals			27			1,751	207,005	221	69	34
Large land mammals			27			1,599	207,005	221	69	34
Small land mammals						152	0	0	0	<1
Marine mammals			39			654	334,069	357	111	54
Birds and eggs			34			9,183	22,364	24	7	4
Vegetation			2				169	0	0	0
1989										
All resources			61				872,092	931	289	100
Fish			29			68,287	118,471	126	39	14
Salmon			10			2,088	12,244	13	4	1
Non-salmon			13			66,199	106,226	113	35	12
Land mammals			43			1,774	214,683	229	71	25
Large land mammals			39			1,705	214,676	229	71	25
Small land mammals			2			68	7	0	0	<1
Marine mammals			45				508,181	542	169	58
Birds and eggs			41			12,869	29,446	31	10	3
Vegetation							1,312	1	0	<1
1992										
All resources							1,363,736	1,190	349	100
Fish							96,003	84	25	7
Land mammals							252,661	220	65	19
Marine mammals							989,348	863	253	73
Birds and eggs							23,866	21	6	2
Invertebrates							694	1	0	<1
Vegetation							1,164	1	0	<1

Sources: SRBA and ISER (1993; for 1987-1989), Fuller and George (1999; for 1992), and SRBA (2003a).

Table J-2. Selected Barrow Subsistence Harvests for 1987, 1988, 1989, and 1992.

Resource	Estimated Harvest				
	Number	Total Pounds	Mean Household Pounds	Per Capita Pounds	% of Total Harvest
1987					
Caribou	1,595	186,669	199	62	30
Bowhead whale	7	184,629	197	61	30
Seal	704	61,194	65	20	10
Walrus	84	64,663	69	21	10
Whitefish	27,367	51,253	55	17	8
Moose	52	25,786	28	9	4
Geese	2,873	12,740	14	4	2
Grayling	12,664	10,131	11	3	2
Polar bear	12	5,744	6	2	1
Duck	5,252	7,878	8	3	1
1988					
Bowhead whale	11	233,313	249	77	38
Caribou	1,533	179,314	191	59	29
Seal	570	47,890	51	16	8
Walrus	61	47,215	50	16	8
Whitefish	20,630	39,766	42	13	6
Moose	53	26,367	28	9	4
Geese	3,334	14,672	16	5	2
Polar bear	11	5,650	6	2	1
Duck	4,498	6,747	7	2	1
Grayling	8,684	6,947	7	2	1
1989					
Bowhead whale	10	377,647	403	125	43
Caribou	1,656	193,744	207	64	22
Whitefish	38,054	92,399	99	31	11
Walrus	101	77,987	83	26	9
Seal	440	33,077	35	11	4
Geese	3,944	16,289	17	5	2
Moose	40	20,014	21	7	2
Polar bear	39	19,471	21	6	2
Duck	8,589	12,883	14	4	1
Grayling	8,393	6,714	7	2	1
1992					
Bowhead whale	22	729,952	637	187	54
Caribou	1,993	233,206	203	60	17
Walrus	206	159,236	139	41	12
Bearded Seal	463	81,471	71	21	6
Broad whitefish	23,997	59,993	52	15	4

Sources: SRBA and ISER (1993; for 1987-1989), Fuller and George (1999; for 1992), and SRBA (2003a).

Household consumption and expenditures used for pursuit of subsistence resources are shown in [Figures J-2 and J-3](#). Household expenditures for subsistence activities shown in [Figure J-2](#) indicate that 414 households (84 percent of all households that responded to the 1998-1999 NSB survey) spent from \$1 to \$10,000 on subsistence activities during the previous calendar year. Seventy-six households (16 percent) reported spending no money on subsistence

SUBSISTENCE

activities, 87 households (18 percent) spent from \$1 to \$500 on subsistence activities, and 159 households (32 percent) spent between \$1,001 and \$6,000 per year on subsistence activities. Twenty-one percent of responding households reported spending more than \$6,000 in the previous year on subsistence activities. Out of the households that responded to the subsistence foods consumption survey, 298 (56 percent) reported eating subsistence foods for half or more of their food intake, while 83 respondents (16 percent) reported eating very little, and only 27 (5 percent) reported eating no subsistence foods at all (Figure J-3). It is likely that some number of those not spending money on subsistence pursuits are receiving subsistence foods from other households, or are participating indirectly as part of family or group activities (NSB 1999).

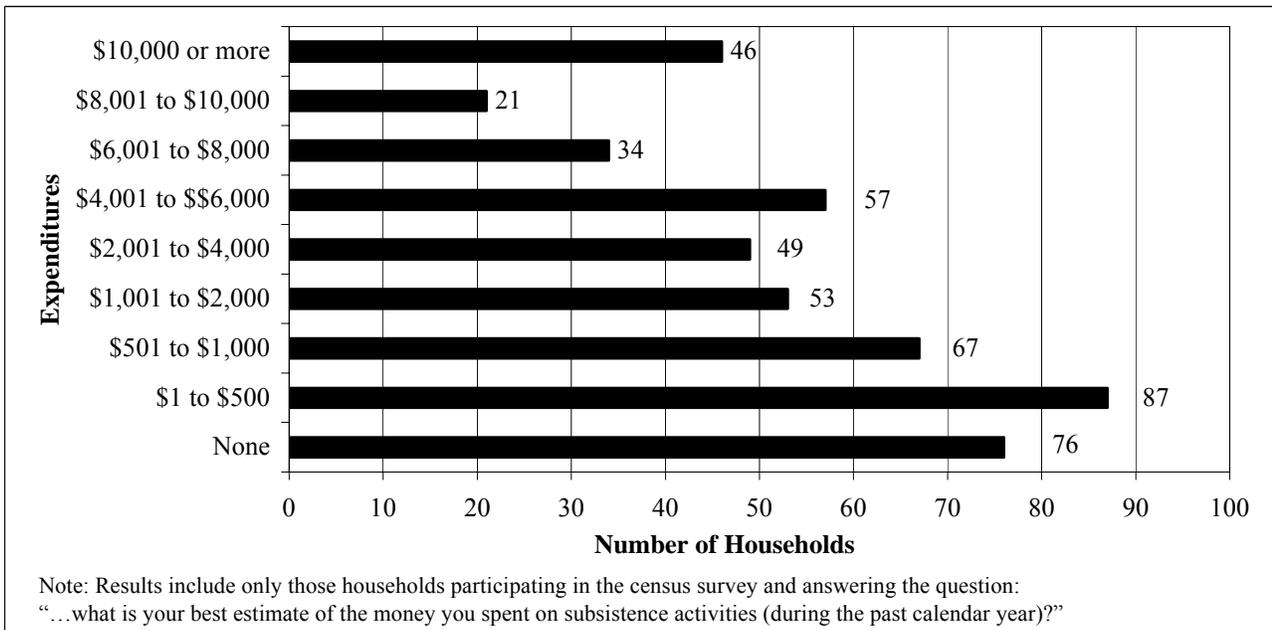


Figure J-2. Barrow Expenditures on Subsistence Activities, 1998-1999.

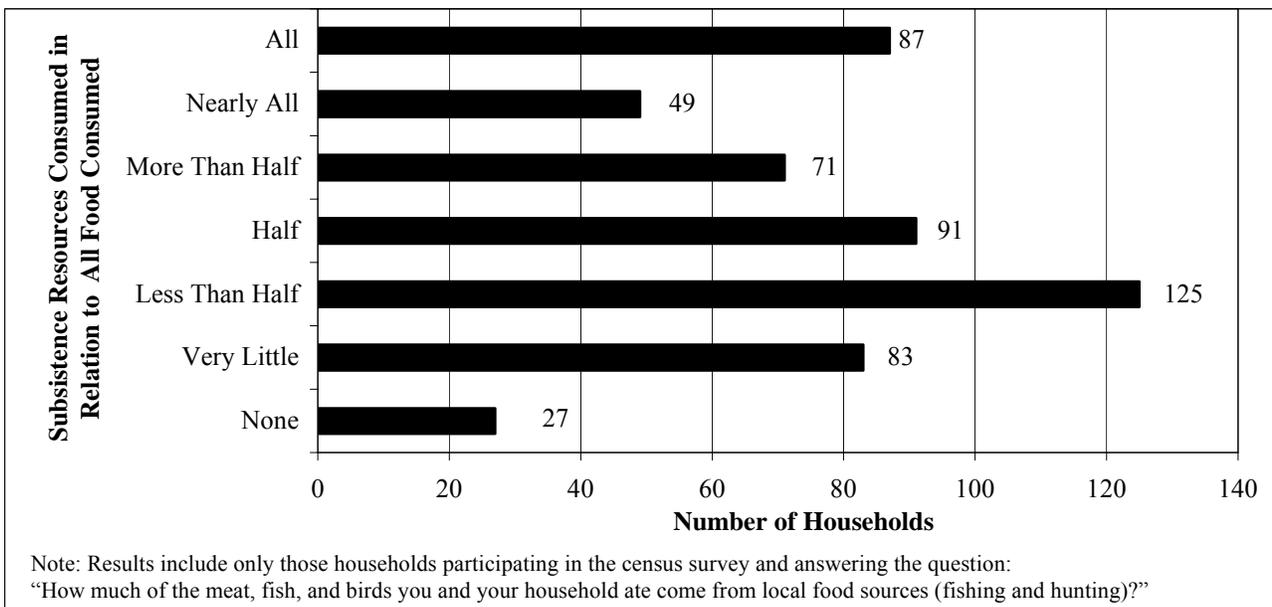


Figure J-3. Barrow Household Consumption of Subsistence Foods, 1998-1999.

J.8.3 Contemporary Subsistence Use Areas

The community of Barrow incorporates residents from throughout the NSB. Many residents hunt in the areas where they were raised, which may include the subsistence harvest areas of other communities. Former residents and family members who now reside in Anchorage or Fairbanks may receive subsistence foods from Barrow. Pedersen (1979) documented Barrow lifetime subsistence use areas in the 1970s ([Map J-2](#)) and SRBA and ISER (1993) conducted a 3-year subsistence harvest study in Barrow for the 1987 to 1989 harvest years ([Map J-3](#)). With a few exceptions, primarily associated with offshore and furbearer use, the harvest locations for the 1987 to 1989 study period were located within Pedersen's (1979) Barrow lifetime community land use area. The documented Barrow subsistence use area represents a large geographic area, extending beyond Wainwright in the west, to the Kuparuk River in the east, and south to the Avuna River. Inland use areas go beyond the Colville River to the foothills of the Brooks Range. The Barrow subsistence harvest data from both the 1970s and 1980s ([Maps J-2 and J-3](#)), and from 1990 to 2003 ([Map J-4](#)), show Barrow residents using the Colville River Delta area for subsistence activities.

J.8.4 Contemporary Subsistence Use Areas East of the Community

In August 2003, SRBA interviewed eight subsistence harvesters in Barrow for the *Alpine Satellite Development Plan EIS*. One purpose of these interviews was to learn whether, and to what extent, Barrow subsistence harvesters use the Kogru and Kalikpik rivers, Fish and Judy creeks, and the Colville River Delta areas for subsistence activities. These interviews focused only on these three locations, and did not represent a comprehensive discussion of Barrow subsistence use areas. These interviews were coordinated with the Iñupiat Community of the Arctic Slope who identified Barrow subsistence users for these interviews.

The Iñupiat Community of the Arctic Slope chose subsistence hunters who either traveled far to the east of Barrow, or who had been raised east of Barrow and returned to their "homeland" for subsistence activities. As shown in [Map J-4](#), the area currently used by the eight interviewed hunters generally coincided with the Barrow lifetime community land use area east and southeast of Barrow, with the following exceptions: the interviewed hunters generally did not utilize the formerly used area east of the Itkillik River; they traveled farther south in the vicinity of the Anaktuvuk River; and they made expanded use of the area near the Titaluk and Kigalik rivers approximately 120 miles south of Barrow.

Generally, the interviewed Barrow hunters used the area east of Cape Halkett to pursue wolf, wolverine, and caribou. In winter, the hunting area for these three animals overlapped, as hunters looking for wolf and wolverine tended to cover great distances, and also harvested caribou on their travels. In summer, the caribou use area extended down the coast from Smith Bay to Cape Halkett, across the coastal areas of Harrison Bay to the Colville River Delta, and up the Colville River as far as Ocean Point. Several Barrow families have relatives living in Nuiqsut who move back and forth between the two communities. Many Barrow residents with ancestral ties to areas between Barrow and Nuiqsut continue to return to these traditionally used areas for subsistence activities. Barrow hunters use the Northeast National Petroleum Reserve – Alaska area primarily for caribou, moose, and furbearers (wolf and wolverine). One Barrow interviewee indicated he had hunted moose in the Colville River from south of Umiat to approximately Ocean Point. The interviewed Barrow hunters indicated that they fished as far east as the lakes in the vicinity of Cape Halkett.

Several families now living in Barrow have elders who were born and raised along the coast between Smith Bay and the Colville River Delta. These families moved to Barrow, most often in the late 1940s, primarily because children were required to attend school; some families moved for jobs or access to medical care. Once the families resided in Barrow, they made special efforts to return to the coast from Smith Bay to the Cape Halkett area, to continue subsistence activities at traditional family harvest areas (see [Maps J-3 and J-4](#)). The third generation of these families continues to use the traditional areas, often harvesting resources that are less available in the Barrow

area, such as furbearers (wolf, wolverine, fox and Arctic ground squirrels), caribou, and moose. Seals and fish are harvested closer to Barrow. A Barrow hunter described a recent summer caribou hunt as follows:

When the Western Arctic Herd are further west from Barrow in Point Lay or Point Hope, that's too far to travel. We had to go east through the ocean to the Cape Halkett area and go into creeks looking for caribou. On nice warm days, you find caribou on the coast and in the water, in the end of July or the first part of August. We go for 1 week. My uncle has a cabin near Cape Halkett (SRBA 2003b).

Furbearer hunts, unlike subsistence food resource hunts, involve friendly competition. Furs are not shared in the same way as food resources, and the hunts take place over much larger areas. One hunter stated, in good humor, "We fish closest to our own area, we do not try to step on each others toes with fish, but we have no respect [for territory] when it comes to wolf and wolverines!" Barrow residents from the same families, known for their connection with the Cape Halkett area, use a vast area to the south and east of Teshekpuk Lake for furbearer hunting, and travel into the Fish and Judy creeks, Ublutuoch River, Itkillik River, and Umiat areas while hunting wolves and wolverines (Map J-4). One hunter said, "I like to go to the south side of Teshekpuk Lake, Inigok, and Umiat before the snow is too soft to get wolves and wolverines for clothing" (SRBA 2003b). Another hunter, explaining his winter hunting by snowmachine, stated:

From February through March, I travel to the east for furbearers. I go down to Price River, then to Fish and Judy creeks, then through Inigok to the Ikpikpuk, back over to the Colville to Umiat, down through the Itkillik, back and forth in a circle, then up to Teshekpuk Lake. I go on both sides of the river. By April the fur isn't so great, so I go home.

According to 2003 interview data, Barrow hunters occasionally use the Kalikpik-Kogru rivers area for caribou during the summer, especially if caribou are not available closer to Barrow. The hunters reported that they traveled by boat as far as the Kogru River, and that other Barrow hunters likely traveled further east. Several Barrow families historically and currently use this area. During the winter, the Colville River Delta is on the eastern edge of Barrow's use area. Barrow residents make use of the Fish and Judy creeks area for caribou, wolf, wolverine, and fox by snowmachine. Hunters use cabins and camps near Teshekpuk Lake (e.g., Puviaq and Inigok) and along the Ikpikpuk and Chipp rivers as bases for snowmachine travel.

In addition to the harvest of resources, use of these areas is important to Barrow residents for maintaining connection to family history, graves, structures, caches, ice cellars, campsites, and traditional harvest areas. Although there are high costs associated with fuel, time, equipment, and effort for these trips, the cultural connection to these traditional areas is strong.

J.8.4.1 Bowhead Whale

Barrow residents hunt bowhead whales during the spring and fall; however, more whales are harvested during the major whaling season in the spring (Figure J-1). In 1977, the International Whaling Commission established an overall quota for subsistence hunting of the bowhead whale by the Alaskan Eskimos. The quota is currently regulated by the Alaska Eskimo Whaling Commission, which annually decides how many bowhead whales each whaling community may take. A vote at the May 2002 meeting of the International Whaling Commission denied the Alaskan Iñupiat a bowhead whale quota. North Slope whalers pursued diplomatic measures through the State Department to conduct another vote on the bowhead whale quota, and were successful in getting the quota restored (Dobbyn 2002, Gay 2002, Kizzia 2002, Kizzia and O'Harra 2002). Presently, Barrow whalers continue to hunt in the fall to meet their quota and to seek strikes that can be transferred to the community from other villages. Barrow crews may be joined by members from other communities for spring whaling. Some captains from other communities may have different ranks for spring whaling in Barrow than for fall whaling in their home villages (SRBA 2003b).

From early April through the first week of June, the Iñupiat hunt bowhead whales from leads that open as pack-ice conditions deteriorate. Barrow whalers hunt bowhead whales from camps located along the coast from Point Barrow to the Skull Cliff area. There are approximately 30 spring whaling camps along the edge of the landfast ice. While the locations of these camps depend on ice conditions and currents, most whaling camps are located south of Barrow. The distance of the leads from shore varies from year to year. The leads are generally parallel to and quite close to the shore, but occasionally break directly from Point Barrow to Point Franklin, forcing Barrow whalers to travel over the ice as far as 10 miles offshore. Typically, the lead is open from Point Barrow to the coast, and hunters whale only 1 to 3 miles from shore. A stricken whale can be chased in either direction in the lead. Spring whaling in Barrow is conducted almost entirely with skin boats, which are easier to maneuver than aluminum skiffs, and do not transmit sounds that could alert nearby whales (ACI et al. 1984; SRBA and ISER 1993).

In the fall, whaling occurs east of Point Barrow, from the Barrow vicinity to Cape Simpson. During the fall migration, Iñupiat whalers use aluminum skiffs with outboard motors to pursue the whales in open water, up to 30 miles offshore.

No other marine mammal is harvested with an effort as concentrated and intense as that of the bowhead whale harvest. Bowhead whales are very important in the subsistence economy, and accounted for over 21 percent (an average of 10 whales per year) of the annual Barrow subsistence harvest from 1962 to 1982 (Stoker 1983). During the final year of a study in 1989, data indicated that approximately 58 percent of the total harvest was marine mammals and close to 43 percent of the total harvest was bowhead whales (Tables J-1 and J-2; SRBA and ISER 1993, ADFG 2001). As with all species, the number of bowhead whales harvested varies from year to year. Over the past 30 years, the number of whales taken each year varied from 0 to 23. Barrow's current community residents stated that 1982 was the only year in which no bowhead whales were harvested (ACI et al. 1984; SRBA and ISER 1993).

J.8.4.2 Beluga Whale

Beluga whales are available from the beginning of the spring whaling season through June, and occasionally into July and August, in ice-free waters. Barrow hunters do not like to hunt beluga whales during the bowhead whale hunt for fear of scaring away the larger animals. Thus, the hunters harvest beluga whales after the spring bowhead whale season ends, which is dependent on when the bowhead whale quota is reached. Beluga whales are harvested in the leads between Point Barrow and Skull Cliff, and later in the summer beluga whales are occasionally harvested on both sides of the barrier islands of Elson Lagoon. The annual average number of beluga whale harvested in Barrow, between 1962 and 1982, was estimated to be five whales, or less than 1 percent of the total annual subsistence harvest (Stoker 1983). In SRBA and ISER's study, there were no harvests of beluga whales in the 3-year period of data collection; however, non-sampled households might have harvested some beluga whales (SRBA and ISER 1993, ADFG 2001). The annual subsistence harvest for the eastern Chukchi Sea was reported to be approximately 60 beluga whales per year by the NOAA Fisheries Service (Angliss and Lodge 2002). Since 1987, the Alaska Beluga Whale Committee recorded 23 beluga whales taken by Barrow hunters, ranging from 0 in 1987, 1988, 1990, and 1995, to 2 in 1992, to a high of 8 in 1997 (Fuller and George 1999, Alaska Beluga Whale Committee 2002).

J.8.4.3 Caribou

Caribou, the primary terrestrial source of meat for Barrow residents, are available throughout the year, with peak harvest periods from February through early April and from late June through late October (Figure J-1). The approximate boundary for Barrow's primary subsistence harvest area for caribou, as reflected in research conducted in the late 1980s and early 1990s, extends southwest from Barrow along the Chukchi coast for roughly 35 miles, then runs south and eastward toward the drainage of the upper Meade River. It heads easterly, crossing the Usuktok River, and then trends north and east, crossing the Topaguruk and Oumalik rivers, until it reaches Teshekpuk Lake; from here the boundary generally follows the coastline back to Barrow (Map J-3). Over the 20-year period from 1962 to 1982, residents harvested an annual average of 3,500 caribou, which accounted for 58

percent of the total annual subsistence harvest (Stoker 1983). From 1987 through 1989, caribou provided 22 to 30 percent of the total edible pounds harvested by Barrow residents (Table J-2; SRBA and ISER 1993, ADFG 2001).

J.8.4.4 Seals

Hair seals are available from October through June; however, because of the high availability of bowhead whales, bearded seals, and caribou during other parts of the year, hair seals are harvested primarily during the winter months (Figure J-1). Ringed seals are the most common hair seal species harvested. Ringed seal hunting is concentrated in the Chukchi Sea, although some hunting occurs off Point Barrow, and along the barrier islands that form Elson Lagoon. During the winter, leads in the area immediately adjacent to Barrow and north toward Point Barrow point make this area an advantageous spot for sealing. Spotted seals are occasionally harvested off Point Barrow and the barrier islands of Elson Lagoon. Oarlock Island in Admiralty Bay is a favorite place for hunting spotted seals. From 1962 to 1982, hair seal harvests were estimated at between 31 and 2,100 seals a year. The average annual harvest from 1962 to 1982 was estimated at 955 seals, or 4 percent of the total annual subsistence harvest (Stoker 1983). During 1987 through 1989, ringed seals provided approximately 2 percent of the total edible pounds harvested (SRBA and ISER 1993, ADFG 2001).

The hunting of bearded seals is an important subsistence activity in Barrow. Bearded seal meat is a preferred food, and the skins are used to cover skin boats used for whaling. Six to nine bearded seals' skins are needed to cover a boat. Bearded seals are harvested more often than the smaller hair seals, because of their large body size and thick hides. They are hunted in both the Chukchi and Beaufort seas during the summer months, and from open water while hunters are pursuing other marine mammals (NSB 1998). Occasionally, bearded seals are available in Dease Inlet and Admiralty Bay. The average annual subsistence harvest of bearded seals from 1962 to 1982 was 150 seals, or approximately 3 percent of the total annual subsistence harvest (Stoker 1983). The reported average annual harvest of 174 bearded seals during the 1987 to 1989 period provided slightly more than 4 percent of the total edible pounds harvested for those study years (SRBA and ISER 1993).

J.8.4.5. Fish

Barrow residents harvest marine and riverine fish, such as capelin, char, cod, grayling, salmon, sculpin, trout, and whitefish (ACI et al. 1984); however, their dependency on fish varies with the availability of other resources. Fishing occurs primarily in the summer and fall months, and peaks in September and October (Figure J-1). Tom cod are harvested during the fall and early winter when there is still daylight (NSB 1998). The subsistence harvest area for fish is extensive, primarily because Barrow residents supplement their camp food with fish whenever they are hunting.

Most fishing by Barrow Iñupiat in the Planning Area occurs at inland fish camps, particularly in lakes and rivers that flow into the southern end of Dease Inlet (Craig 1987). Inland fish camps are found in the Inaru, Meade, Topaguruk, Chipp, Alaktak, and Ikpikpuk river drainages, and as far east as Teshekpuk Lake. Inland fisheries within or adjacent to the Planning Area include those on the Alaktak and Ikpikpuk river drainages and on Teshekpuk Lake. At these established fish camps, hunters set nets for whitefish, char, and salmon. These camps provide good fishing opportunities as well as access to inland caribou and birds. Inland fishing intensifies when whitefish and grayling begin to migrate out of the lakes into the major rivers in August. This is also the peak harvest period for berries and greens (Schneider et al. 1980; ACI et al. 1984). From 1969 to 1973, the average annual harvest of fish was about 80,000 pounds (Craig 1987); from 1962 to 1982, the estimated annual average was 60,000 pounds (Stoker 1983). In a 1986 partial estimate of fish harvests for the Barrow fall fishery in the Inaru River, the catch included least cisco (45 percent), broad whitefish (36 percent), humpback whitefish (16 percent), Arctic cisco (1 percent), fourhorn sculpin (1 percent), and burbot (less than 1 percent; Craig 1987). Fish harvests from 1987 to 1989 were approximately 80,000 pounds annually and provided approximately 11 percent of the total annual edible subsistence harvest (Table J-1; SRBA and ISER 1993).

J.8.4.6 Walrus

Walrus are harvested during the summer marine mammal hunt west of Point Barrow and southwest to Peard Bay. Most hunters will travel no more than 15 to 20 miles to hunt walrus. The major walrus hunting effort occurs from June through mid-August, with the peak season in July (Figure J-1). The annual average harvest from 1970 through 1979 was estimated at 57 walrus. The annual average harvest from 1962 to 1982 was estimated at 55 walrus, or approximately 5 percent of the total annual subsistence harvest (Stoker 1983). The 1987 to 1989 study indicated a greater walrus harvest than reported earlier; an annual harvest of 81 walrus provided 9 percent of the total edible pounds of meat harvested during this period. From 1989 to 1995, 109 walrus were harvested, ranging from a low of 1 walrus harvested in 1989 to a high of 30 in 1993 (Stephensen et al. 1994; Cramer 1996). Between 1990 and 2002, the harvest ranged from 7 to 206 animals (SRBA and ISER 1993, Fuller and George 1999, Schliebe 2002).

J.8.4.7 Migratory Birds

Migratory birds, particularly eider ducks and geese, provide an important food source for Barrow residents because of their dietary importance during spring and summer. In May, hunters travel great distances, along major inland rivers and lakes, to harvest geese, while most eider and other ducks are harvested along the coast (Schneider et al. 1980). Previously harvested extensively, snowy owls are no longer taken on a regular basis. Birds' eggs are still gathered occasionally, especially on the offshore islands where foxes and other predators are less common. Waterfowl are hunted during the spring whaling season (beginning in late April or early May) when their flights follow the open leads, providing a source of fresh meat for whaling camps. Later in the spring, Barrow residents harvest many geese and ducks; the harvest peaks in May and early June and continues through the end of June (Figure J-1). In late August and early September, with peak movement in the first two weeks of September, ducks and geese migrate south and are again hunted by Barrow residents. Eiders and other ducks are hunted along the coast, from Point Franklin to Admiralty Bay and Dease Inlet. Concentrated hunting areas are also located along the shores of the major barrier islands of Elson Lagoon. During spring whaling, families not involved with whaling may hunt geese; additionally, successful whaling crews may hunt geese while other crews are still whaling (NSB 1998).

A favorite spot for hunting birds is the "shooting station" at the narrowest point of the barrier spit that forms Point Barrow and separates the Chukchi Sea from Elson Lagoon. This area, a highly successful hunting spot during spring and fall bird migrations, is easily accessible to Barrow residents. Barrow residents harvested an estimated annual average of 8,000 pounds of birds from 1962 to 1982, which accounted for approximately 1 percent of the total annual subsistence harvest (Stoker 1983). From 1987 to 1989, 74,145 pounds of birds were harvested, accounting for approximately 4 percent of the total edible pounds harvested (SRBA and ISER 1993, ADFG 2001).

J.8.4.8 Polar Bear

Barrow residents hunt polar bears in the winter and spring (Figure J-1); however, polar bears comprise a small portion of the Barrow subsistence harvest, with an annual average of eight bears harvested from 1962 to 1983, or less than 1 percent of the annual subsistence harvest (Schliebe 1983; Stoker 1983). From 1987 to 1989, polar bears provided approximately 2 percent of the total edible pounds harvested (Table J-2; SRBA and ISER 1993, ADFG 2001).

J.9 Atqasuk

The community of Atqasuk is located on the banks of the Meade River, 60 air miles south of Barrow. Atqasuk had a population of 231 residents in 2002 (ADCED 2003). Located near the site of several former settlements used in prehistoric and historic times, the current community is situated near a coal mine that provided fuel for Barrow during and after World War II, when the community was known as Meade River. The area is rich in caribou, fish, and waterfowl, and hunters access areas of the coast for seals and other marine resources. Some Atqasuk hunters are members of Barrow whaling crews and take part in bowhead whaling and festivities in Barrow, returning with shares after a successful harvest.

Atqasuk residents use the same variety of marine resources as Barrow residents, but only a small portion of the marine resources used by Atqasuk residents are acquired on coastal hunting trips initiated in Atqasuk; most are acquired on hunting trips initiated in Barrow or Wainwright with relatives or friends (ACI et al. 1984; SRBA 2003b). These connections with coastal and marine resources are important to the community. As one resident observed: “We use the ocean all the time, even up here; the fish come from the ocean; the whitefish as well as the salmon migrate up here” (ACI et al. 1984).

Atqasuk depends on the same resources as Barrow, but in different proportions, and their subsistence use areas overlap significantly. Areas heavily used by local subsistence hunters include the entire Meade River drainage, Avalik River, and upper Okpiksak, Topaguruk, and Nigisaktuvik rivers (Schneider et al. 1980; SRBA and ISER 1993). Atqasuk’s subsistence-harvest area, as described in 1979, is depicted in [Map J-5](#). [Map J-6](#) shows more recent subsistence use areas for non-marine resources, as described in interviews conducted for the *Alpine Satellite Development Plan EIS* (SRBA 2003b).

J.9.1 Contemporary Seasonal Round

Atqasuk subsistence harvests rely on a diversity of seasonally abundant resources that hunters must harvest when available ([Figure J-4](#)). Some species, like ptarmigan and caribou, may be present year-round, but are only harvested when permitted, or when encountered. December and January generally are not productive months for subsistence resource pursuits because of the winter weather and seasonal darkness. Between November and April, furbearer harvesters travel substantial distances from the community to harvest wolves, foxes, and wolverines; depending on snow conditions, the peak of harvest activity is in February and March. In late February through March, some residents may begin fishing under the ice on the Meade River, its tributaries, and any lakes that do not freeze completely, as an adjunct to fur and caribou hunting (SRBA 2003b). Additionally, hunters may harvest caribou if they are encountered at this time; the need to harvest more caribou may increase through March, as late fall food supplies are depleted. The harvest of caribou increases as the length of daylight increases and the weather becomes more moderate. Some residents may travel to Barrow to participate in spring whaling. Beginning in May, hunters pursue migrating birds and caribou. The breakup of river ice and lack of snow in June make travel difficult. After the ice goes out, gill-netters harvest fish near the Atqasuk community as the fish move upriver to spawn. The high water on the rivers and lakes of the area in late spring and early summer allows the most extensive boat travel. Later in the summer, the water levels may be too low to allow long-range travel, so community residents plan their travels for late June through July. Subsistence resources are particularly abundant from July through September; hunters harvest grizzly bears, moose, squirrels, and migratory birds throughout the summer. By October, migratory birds have left the area, and hunters shift their focus to caribou and fish. In November, hunters attempt to harvest enough caribou for the upcoming winter; the fish have already left most of the lakes for the deep river channels to overwinter.

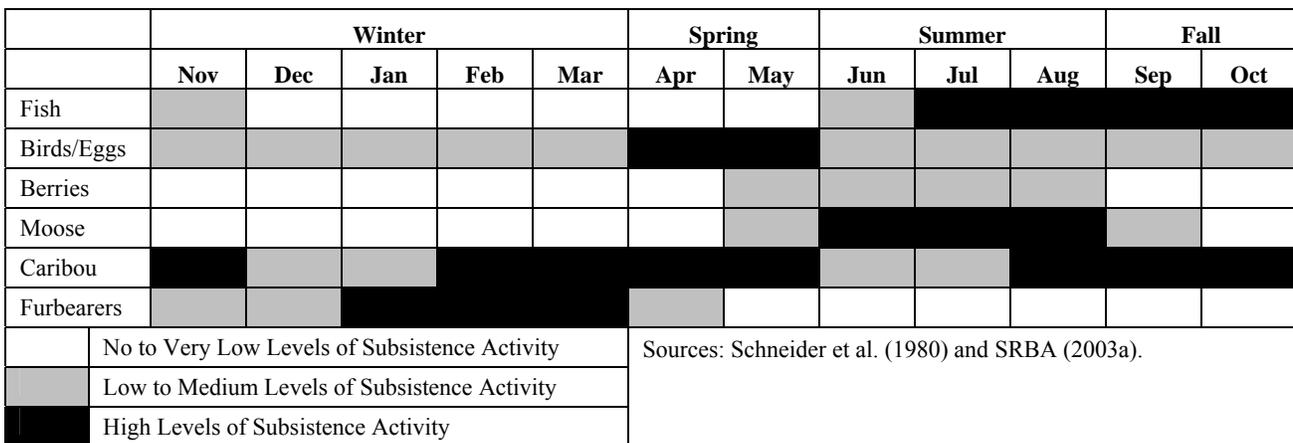


Figure J-4. Annual Cycle of Subsistence Activities – Atqasuk.

J.9.2 Subsistence Harvests

Atqasuk is similar to Nuiqsut and Barrow in that residents harvest caribou, fish, and birds locally; however, Atqasuk is more connected to Barrow than to Nuiqsut for marine mammal harvests and membership in whaling crews (Hepa et al. 1997). Limited subsistence harvest data are available for Atqasuk (Tables J-3 and J-4). Neither the ADFG nor the MMS have collected subsistence harvest data for Atqasuk, and the NSB Department of Wildlife Management has only collected harvest data for the harvest year 1994-1995 (Hepa et al. 1997), and participation data for 1992 (Fuller and George 1999). For 1994-1995, 57 percent of the harvest by edible pounds consisted of caribou, with 37 percent fish, 3 percent birds, 2 percent marine mammals, and 1 percent plants. Atqasuk residents harvested caribou primarily within 10 miles of Atqasuk, with the majority harvested between July and December (Hepa et al. 1997). Residents harvested fish between June and November, with the greatest number of fish harvested between August and October. Subsistence hunters at Atqasuk harvested 279 birds in May, 8 seals in July, and 84 gallons of berries between July and September (Table J-4). Other subsistence foods may be received as shares and traded or bartered within the community and with other villages. Between October and May, fur hunters harvested 2 wolves, 6 ground squirrels and 10 wolverines.

Table J-3. Atqasuk Subsistence Harvests Participation for 1994-1995.

Harvest Participation (%)		Harvest Instances Resulting in Sharing (%)	
Successful harvest	74	Shared	91
Attempted, not successful	3	Not Shared	4
Did not attempt	23	Unknown	5

Sources: Hepa et al. (1997) and SRBA (2003a).

Table J-4. Atqasuk Subsistence Harvest Totals, Actual and Estimated for 1994-1995.

Harvest Items	Total Number Harvested for 40 Households	Estimated Total Number Harvested for 56 Households
Whitefish	1,400	1,960
Broad whitefish	1,630	2,282
Burbot	162	227
Grayling	5,716	8,002
Humpback whitefish	500	700
Rainbow trout	15	21
Silver salmon	10	14
Salmonberries (gallons)	72	101
Blueberries (gallons)	12	17
White-fronted goose	76	106
Goose (unidentified)	168	235
Canada goose	2	3
Brant	5	7
Eider (unidentified)	12	17
Ptarmigan	16	22
Caribou	187	262
Ground squirrel	6	8
Wolf	2	3
Wolverine	10	14
Ringed seal	4	6
Bearded seal	4	6

Sources: Hepa et al. (1997) and SRBA (2003a).

Most Atqasuk residents participated in subsistence activities and shared subsistence resource harvests (Table J-3). Of interviewed households in 1994-1995, 77 percent of residents attempted to and/or were successful in harvesting subsistence resources (Hepa et al. 1997). Fuller and George (1999) reported similar participation rate information for the 1992 harvest year; of households that successfully harvested subsistence resources in 1994-1995, 91 percent shared their resources with others and 4 percent did not.

Households responding to a 1998-1999 NSB census survey reported that 17 households (52 percent) spent more than \$2,000 on subsistence activities, 11 households (33 percent) spent between \$4,000 and \$10,000, and 3 households (9 percent) spent more than \$10,000 (Figure J-5). Of households that responded to the survey, 23 households (70 percent) consumed half or more of their food from subsistence harvests, 4 households (12 percent) consumed less than half, and 6 households (18 percent) consumed very little subsistence food (Figure J-6).

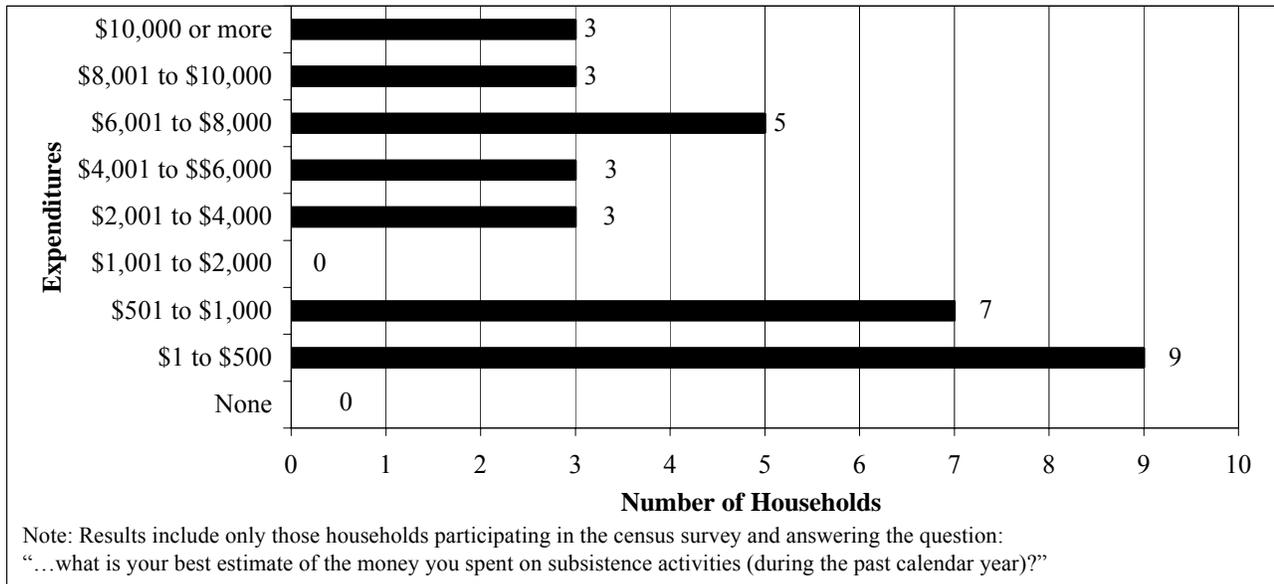


Figure J-5. Atqasuk Expenditures on Subsistence Activities, 1998-1999.

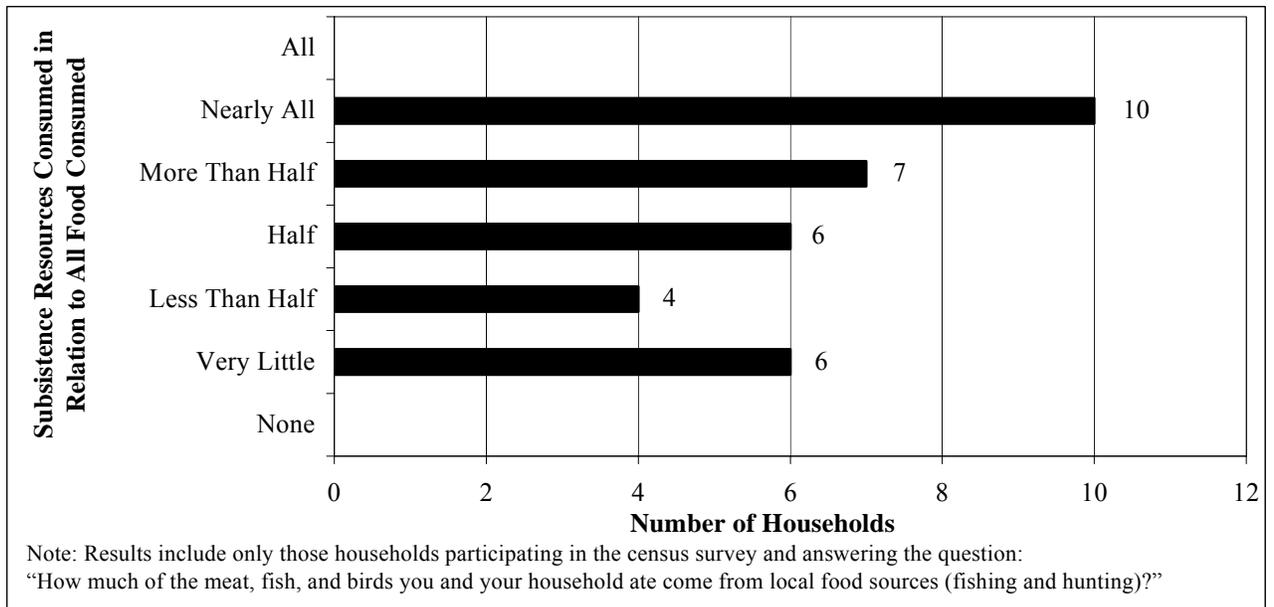


Figure J-6. Atqasuk Household Consumption of Subsistence Foods, 1998-1999.

J.9.3 Contemporary Subsistence Use Areas

Subsistence hunters at Atqasuk use harvest locations relatively close to the community, with some use of the coast west of Barrow and of Dease Inlet (Schneider et al. 1980; Hepa et al. 1997). The main advantages of Atqasuk's location are access to river and lake resources and position in the migration path of the TLH caribou (Schneider et al. 1980). Atqasuk's lifetime subsistence use area, as described in the 1970s and depicted in [Maps J-5](#) and [J-6](#), extends from northeast of Wainwright to Barrow, along the coast to the vicinity of Smith Bay, south along the Ikpikpuk River to the Titaluk River, and west and north to Peard Bay (Pedersen 1979).

J.9.4 Atqasuk Subsistence Use Areas East of the Community

In August 2003, SRBA interviewed seven subsistence harvesters in Atqasuk. One of the purposes of these interviews was to learn if Atqasuk residents currently used the Kogru and Kalikpik rivers, Fish and Judy creeks, or Colville River Delta areas for subsistence activities. The interviews focused on areas east of Atqasuk, and did not address current subsistence uses north, south, or west of Atqasuk.

Based on these interviews, the area used in the last 10 years has expanded from the use area depicted by Pedersen (1979). The use area extends from the eastern edge of Teshekpuk Lake in the east, to the Kaolak River in the west, to the Inaru River in the north, and beyond the Colville River in the south ([Map J-6](#)). Several Atqasuk residents have ties to the Smith Bay-Cape Halkett-Kogru River areas, and some of these residents intensively used the area north and southeast of Teshekpuk Lake in their youth. One hunter stated that there were "numerous small camps and villages along the coast between Drew Point, Smith Bay, and Dease Inlet. It was a [caribou] grazing area" (SRBA 2003b). He explained that there were many ice cellars in an area between the mouth of the Ikpikpuk River and Teshekpuk Lake named *Shubjat*, because it was high, dry ground away from the coast. Polar bears, with their keen sense of smell, would find and dig up the coastal ice cellars (SRBA 2003b).

Based on the 2003 interviews, Atqasuk hunters traveled east as far as Fish and Judy creeks ([Map J-6](#)). During the winter, resources sought in the eastern portion of the current Atqasuk use area include fish in the Ikpikpuk River and lakes west of Teshekpuk Lake, and wolf, wolverine, and caribou. The harvest of caribou in this eastern area, which is incidental to the pursuit of wolves and wolverines, takes Atqasuk hunters far from the community on several extended trips each winter. Atqasuk hunters encounter furbearer and caribou hunters from other communities on these extensive travels. The Kalikpik and Kogru river area and the Fish and Judy creeks area are occasionally used in the winter by Atqasuk hunters traveling by snowmachine, primarily in search of wolf and wolverine. The Kalikpik and Kogru river area is a "homeland" for several Atqasuk families, who in the past traveled by boat to harvest caribou, birds, and fish in this area.

During the summer and fall, subsistence use areas for caribou, fish, berries, and waterfowl are primarily centered around Atqasuk, generally within 50 miles of the community. The harvest of resources near Atqasuk, both in the summer and winter, consists of day trips involving snowmachines, all-terrain vehicles, and boats, depending on the season. However, one subsistence user said he would go to one harvest area for a week, and then he would go home for a week or two, gas up, and go to another harvest area (SRBA 2003b).

It is not uncommon for winter hunters on snowmachines to encounter hunters from other communities. At these times, the hunting area of one community overlaps with the hunting area from another community. One Atqasuk hunter, who took several long winter hunting trips, said that he does not go to the area above Umiat, instead leaving "that country to those guys in Nuiqsut. They come up and hunt all over that area in moose season" (SRBA 2003b). Hunters make use of camps and cabins belonging to other hunters, often relatives from other communities, to support their hunting trips. Subsistence fur hunters travel to the Inigok area and center their hunts from there, since they may buy fuel for snowmachines at the Inigok camp (SRBA 2003b). The limited Atqasuk interviews indicated that Atqasuk hunters do not hunt regularly in the Nuiqsut or Colville River areas, traveling to Nuiqsut only for special occasions, such as funerals.

J.9.4.1 Caribou

Caribou is the most important resource, by weight, harvested by Atqasuk residents. Although the late summer-early fall harvest is the most important, caribou are harvested every month of the year (Figure J-4). Caribou migration patterns and limited access prohibit hunting in the late spring and early summer. A subsistence harvest survey conducted by the NSB Department of Wildlife Management, covering the period from July 1994 to June 1995, noted 187 reported caribou harvested by Atqasuk hunters, approximately 57 percent of the total subsistence harvest in edible pounds (Hepa et al. 1997). Caribou are hunted by boat and snowmachine, and on foot from hunting camps along the Meade, Inaru, Topaguruk and Chipp river drainages (which also are used for fishing). Caribou hunting by snowmachine involves considerable travel over a widespread area and is generally incidental to furbearer hunting (Schneider et al. 1980; ACI et al. 1984).

J.9.4.2 Fish

Fish is a preferred food in Atqasuk; respondents indicated that fish is the second most important resource in quantity harvested (ACI et al. 1984). Summer gillnetting, hook and line, late fall and winter jigging through ice, and winter gillnetting under the ice are the four most common fishing techniques. The most productive season for gillnetting begins in June and runs through to fall and early winter. The most prevalent subsistence fishing activity is catching humpback whitefish and least cisco in gillnets. Also caught are broad whitefish, burbot, grayling, and chum salmon (only in some years), all of which are fished with gillnets, baited hooks, and jigging (Craig 1987). Fall and early winter is the preferred time for fishing, when water levels drop in the Meade River and the water becomes clearer. Nets are most commonly set close to the community. During the fall, fishing continues under the ice in the Meade River and in nearby lakes (Schneider et al. 1980; ACI et al. 1984; NSB 1998). Narvaqpak (southeast of Atqasuk) is a popular fishing area (NSB 1998). Most fishing occurs along the Meade River, only a few miles from the village; however, fish are also pursued in most rivers, streams, and deeper lakes of the region. Fish camps are also located on two nearby rivers, the Usuktuk and the Nigisaktuvik, and downstream on the Meade River, near the Okpiksak River (Craig 1987).

Humpback whitefish and least cisco accounted for 96 percent of the summer catch in 1983. The summer gillnet fishery in the Meade and Usuktuk rivers produced a harvest of approximately 8,450 pounds of fish. Adding catches with other gear (angling) and winter catches (1,100 pounds and 2,700 pounds, respectively), the total harvest was approximately 12,250 pounds. The annual per capita catch in 1983 was about 43 pounds, with a total of 231 residents in the village (Craig 1987). A subsistence-harvest survey conducted by the NSB Department of Wildlife Management, covering the period from July 1994 to June 1995, reported that fish harvested by Atqasuk hunters represented 37 percent of the total subsistence harvest in edible pounds (Hepa et al. 1997).

J.9.4.3 Migratory Birds

Atqasuk residents harvest migratory birds, especially white-fronted geese, from late April through June when they begin to appear along rivers, lakes and the tundra, following the snowline north (Figure J-4; NSB 1998). Hunters also harvest ptarmigan at this time. From late August through September, waterfowl are hunted continually through June and July along the major rivers (e.g., Meade River and its tributaries), and on numerous lakes and ponds. Ptarmigan are also heavily hunted during the fall (NSB 1998). Waterfowl eggs are gathered in the immediate vicinity of the community for a short period in June (ACI et al. 1984). The subsistence harvest survey, conducted by the NSB Department of Wildlife Management, reported that bird harvests by Atqasuk hunters represented 3 percent of the total subsistence harvest in edible pounds (Hepa et al. 1997).

J.10 Nuiqsut

Nuiqsut's population was 443 in 2002 (ADCED 2003). Important subsistence resources for Nuiqsut include bowhead whale, caribou, fish, waterfowl, ptarmigan, and, to a lesser extent, seals, muskox, and Dall sheep. Polar bear, beluga whale, and walrus may be taken opportunistically while in pursuit of other subsistence species. Much

of Nuiqsut’s contemporary terrestrial subsistence harvest area lies within the proposed Planning Area. Nuiqsut’s subsistence harvest area for the period 1973 to 1986 is depicted in [Map J-7](#). Specific subsistence harvest areas for major subsistence resources for Nuiqsut, derived from the 2003 interviews conducted in the community for the *Alpine Satellite Development Plan EIS*, are depicted in [Map J-8](#) (SRBA 2003b). The annual cycle of subsistence activities in Nuiqsut is indicated in [Figure J-7](#).

	Winter					Spring		Summer			Fall	
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Fish	High	Low	Low	Low	Low	Low	Low	High	High	High	Low	High
Birds/Eggs	Low	Low	Low	Low	Low	High	High	High	High	Low	Low	High
Berries	Low	Low	Low	Low	Low	Low	Low	Low	Low	High	High	Low
Moose	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Caribou	Low	High	Low	Low	Low	High	High	Low	High	High	Low	High
Furbearers	Low	Low	Low	Low	Low	High	Low	Low	Low	Low	Low	Low
Polar Bear	High	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Seals	Low	Low	Low	Low	Low	High	High	High	High	High	High	Low
Bowhead Whales	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	High	High
	No to Very Low Levels of Subsistence Activity					Sources: Research Foundation of the State University of New York (1984), IAI (1990), and SRBA (2003a).						
	Low to Medium Levels of Subsistence Activity											
	High Levels of Subsistence Activity											

Figure J-7. Annual Cycle of Subsistence Activities – Nuiqsut.

The Iñupiat community of Nuiqsut has subsistence harvest areas in and adjacent to the Planning Area, as shown in [Maps J-7, J-8, J-9, J-10, J-11, J-12, and J-13](#). Nuiqsut’s marine subsistence harvest area includes the Beaufort Sea, from Cape Halkett in the west to Flaxman Island in the east, and up to 30 miles off shore ([Maps J-11 and J-12](#)). The Cross Island vicinity is the central location for Nuiqsut’s subsistence bowhead whale hunting. Before oil development at Prudhoe Bay, the onshore area from the Colville River Delta in the west to Flaxman Island in the east, inland to the foothills of the Brooks Range, and especially up the drainages of the Sagavanirktok, Colville, Itkillik and Kuparuk rivers, were historically important to the Iñupiat for subsistence harvests of caribou, waterfowl, furbearers, fish, and polar bears. Nuiqsut hunters use the general vicinity of Teshekpuk Lake to harvest caribou, wolves, and wolverines, ([Figures J-9 and J-10](#)) and several Nuiqsut families, along with relatives in Barrow and Atqasuk, share use rights to cabins, camps, and allotments in the area and consider it their homeland.

In addition to bowhead whales, seals and eiders historically were hunted offshore as far east as Flaxman Island ([Maps J-11 and J-12](#)). Commercial whaling near and within the barrier islands during the late 1800s has also been documented (Brower *in* NSB 1980). Bowhead whales have also been observed inshore of the barrier islands, an area that has recently been mentioned as a whale feeding area (Nauwigewauk *in* Shapiro et al. 1979; Akootchook *in* USDOI MMS 1979; Brower *in* NSB 1980; Long *in* Dames and Moore 1996; and Nukapigak *in* USDOI MMS 1998).

J.10.1 Nuiqsut Subsistence Activities

A diverse seasonal abundance of terrestrial mammals, fish, birds, and other resources is available in the immediate area surrounding Nuiqsut. Traditional subsistence activities in the Nuiqsut area revolve around caribou, marine mammals, and fish, with moose, waterfowl, and furbearers as important supplementary resources. Nuiqsut’s location on the Colville River, some 35 miles upstream from the Beaufort Sea, is a prime area for fish and caribou harvests, but is less advantageous for marine mammal harvests (ADCED 2003). The Colville River, which is the largest river system on the North Slope, supports the largest overwintering areas for whitefish (Craig 1989).

Twenty-seven families from Barrow permanently resettled Nuiqsut in 1973. The Nuiqsut area was formerly a place where Iñupiat and Athabaskan people gathered to trade and fish, maintaining connections between the Nunamiut of the inland areas and the Taremiut of the coast (Brown 1979). The ANCSA allowed Iñupiat from Barrow who wished to live in a more traditional manner to resettle in Nuiqsut, and many of those who moved there had some family connection to the area (IAI 1990). Easy access to the main channel of the Colville River for fishing, hunting, and ease of movement between upriver hunting sites and downriver whaling and sealing sites, were the primary reasons for resettling in the area (Brown 1979).

Nuiqsut is 1 of 10 Alaskan Eskimo whaling communities. Many of those who resettled in Nuiqsut were experienced whalers and crew who remembered past whale harvests before the temporary abandonment of the settlement (IAI 1990). Nuiqsut whale hunting is based from Cross Island, approximately 70 miles northeast of Nuiqsut and approximately 15 miles from West Dock, on the west side of Prudhoe Bay. Nuiqsut whalers travel approximately 100 miles from Nuiqsut to the Cross Island whaling camp. Nuiqsut whaling occurs in the fall when the whales migrate closer to shore, because the spring migration path is too distant from shore for effective hunting with small boats. Nuiqsut residents also participate in Barrow's spring whale hunt through close family ties in that community (Fuller and George 1999).

Subsistence activities are important components of the Nuiqsut economy, and of local Iñupiat culture and identity (IAI 1990). A 1993 ADFG subsistence study showed that nearly two-thirds of all Nuiqsut households received more than half of their meat, fish, and birds from local subsistence activity (Pedersen 1995). This activity is supported by the cash component of the mixed economy. Nuiqsut is situated closer to current and foreseeable areas of petroleum development than any other community on the North Slope. This development has deterred subsistence resource users from hunting, fishing, and gathering at their former harvest areas east of the Colville River and at coastal areas such as Oliktok Point (IAI 1990, Fuller and George 1999). Subsistence food use and harvest is important for residents of Nuiqsut who have lived in the community for more than 10 years. As employment increases in Nuiqsut, jobs are being filled by people who move into the community from elsewhere, and who may not have the time, knowledge, or inclination to attempt to harvest subsistence foods in the Nuiqsut area. As long-term local residents continue to be underemployed, subsistence foods continue to be a lower cost alternative to imported foods (Circumpolar Research Associates 2002). However, a definitive link between household wage income and household subsistence productivity has not been demonstrated; the former is apparently dependent on education levels, and the latter on the number of capable producers in the household (Pedersen et al. 2000).

J.10.2 Contemporary Seasonal Round

The seasonal availability of many important subsistence resources directs the timing of subsistence harvest activities (Figure J-7). Fishing may occur year-round, but is most common from ice breakup (late June) through November (Fuller and George 1999). Beginning in March, Nuiqsut residents hunt ptarmigan. Waterfowl hunting begins in the spring, and hunters typically harvest ducks and geese while participating in other subsistence activities, such as jigging for burbot or lingcod (IAI 1990). Caribou are hunted year-round, but primarily during the late summer and fall months. Moose hunting takes place in August and September, in boat-accessible hunting areas south of Nuiqsut (Fuller and George 1999). August is the primary harvest month for caribou and moose because water levels are right for traveling upriver or on the coast by boat, the animals are usually in their best condition, and moose are legal to hunt in Game Management Unit 26 for subsistence harvesters. Bowhead whaling usually occurs in September, when the whales migrate closer to the shore. Nuiqsut hunters harvest few polar bears, but when they are harvested it is often after the fall whaling season. If weather and ice conditions permit, summer net fishing at fish camps, or near the community, begins in June or July. Gill netting at campsites is most productive between October and mid-November. Jigging for grayling also occurs in the fall. Furbearer hunters pursue wolves and wolverines through the winter and spring, primarily in mid-March and April. Furbearer hunting can take place anytime during the winter; however, most hunters avoid going out in the middle of winter because of poor weather conditions and lack of daylight (IAI 1990).

J.10.3 Subsistence Harvests

The ADFG collected subsistence harvest data for Nuiqsut in 1985 and 1993 and selected 1993 as the most representative year for subsistence harvest data in Nuiqsut (Tables J-5 and J-6). Nuiqsut's total annual subsistence harvests was 160,035 pounds in 1985 and 267,818 pounds in 1993. The 1993 harvest of 742 pounds per capita of wild resources represents approximately 2 pounds per day per person. In 1985, fish and land mammals accounted for 86 percent of Nuiqsut's total subsistence harvest, and marine mammals contributed 8 percent. In 1993, fish, terrestrial mammals, and land mammals each accounted for approximately one-third of the total subsistence harvest. The importance of subsistence to Nuiqsut residents is further reflected in the high participation rates in 1993 by households that use (100 percent), harvest (90 percent), try to harvest (94 percent), and share (98 percent) subsistence resources.

In 1985 and 1994, Nuiqsut harvested no bowhead whales, and relied on sharing with other communities for marine mammal products. The community harvested two bowhead whales in 1992 and three bowhead whales in 1993. In years when bowhead whale, fish, and terrestrial mammal subsistence harvests have been successful, each whale has provided nearly one-third of the subsistence resource harvest (Tables J-5 and J-6; Fuller and George 1999). In 1992, bowhead whale (32 percent), caribou (22 percent), and fish (25 percent) comprised 79 percent of Nuiqsut's annual subsistence harvest. In 1993, bowhead whale (29 percent), whitefish (29 percent), and caribou (31 percent) comprised 88 percent of Nuiqsut's annual subsistence harvest (Table J-6; ADFG 2001).

The 1994-1995 year was unusual in that Nuiqsut crews harvested no whales. Caribou contributed 58 percent of edible pounds of wild foods for the sampled period, fish contributed 30 percent, moose and birds each contributed 5 percent, marine mammals contributed 2 percent, and wild plant foods contributed less than 1 percent of all edible pounds harvested (Brower and Hepa 1998). The majority of Nuiqsut residents participated in subsistence harvest activities, with 66 percent successful, unsuccessful, or out hunting at the time of the interviews, 21 percent not attempting to harvest, and the balance not wishing to be interviewed (5 percent), out of town (7 percent), or unable to be contacted (1 percent). Eighty-seven percent of harvest instances resulted in resource sharing.

J.10.4 Contemporary Subsistence Use Areas

Pedersen (1979, In Prep.) documented Nuiqsut "lifetime" and 1973 to 1986 land use areas (Map J-7). Brown (1979) and Hoffman et al. (1988) also documented Nuiqsut subsistence use areas in the 1970s, which are incorporated within the lifetime use areas depicted in Pedersen (1979). Pedersen's 1973-1986 subsistence land use documentation, as compared to Pedersen's Nuiqsut lifetime use areas and other documentation of Nuiqsut subsistence use areas, indicates that Nuiqsut resource harvesters use a larger area offshore and a larger area to the west, including northwest to Barrow, going to the south to Anaktuvuk Pass; and shows changes around industrial development to the east (Maps J-7 and J-8). It should be noted that when the 1970s research was conducted, Nuiqsut had only been resettled since 1973, and hunters, who were relearning the land, were not using the entire area that was originally used by people from the Colville River Delta (IAI 1990). Thus, Pedersen (In Prep.) shows a larger Nuiqsut subsistence use area for 1973-1986 than Pedersen (1979) showed for lifetime use areas or Brown (1979) depicted from his limited interviews. This change likely reflects Pedersen's continued research, as well as Nuiqsut hunters' expanded use as residents resettled their traditional area.

SRBA (2003b) conducted 21 interviews with subsistence resource users in Nuiqsut in June and July of 2003. The Kuukpik Subsistence Oversight Panel helped arrange the interviews and provided translation as needed. Interviewees included a variety of currently active resource users, both male and female, young hunters, productive middle-aged hunters, and active elders who still harvest subsistence foods and train the younger hunters. Interviews were conducted using large-scale (1:250,000) USGS topographic maps with overlays to record information. One of the goals of the interviews was to identify recent Nuiqsut subsistence use areas for key resources, such as caribou, fish, waterfowl (geese and eiders), furbearers (wolf and wolverine), moose, seal, bowhead whales, and berries. The recent period, as defined for these interviews, included the last 10 years. Map J-8 depicts the recent subsistence use areas for all resources for the 21 Nuiqsut residents interviewed in 2003.

SUBSISTENCE

Table J-5. Nuiqsut Subsistence Harvests and Subsistence Activities for 1985, 1992, and 1993.

Resource	Percentage of Households					Estimated Harvest				
	Use	Try to Harvest	Harvest	Receive	Give	Number	Total Pounds	Mean Household Pounds	Per Capita Pounds	% Total Harvest
1985										
All resources	100	98	98	100	95		160,035	2,106	399	100
Fish	100	93	93	78	83	68,153	70,609	929	176	44
Salmon	60	43	40	23	23	441	1,366	18	3	1
Non-salmon	100	93	93	75	83	67,712	69,243	911	173	43
Land mammals	100	95	93	70	85	1,224	67,866	893	169	42
Large land mammals	98	90	90	70	80	536	67,621	890	169	42
Small land mammals	65	63	58	13	23	688	245	3	1	<1
Marine mammals	100	48	23	100	30	59	13,355	176	33	8
Birds and eggs	98	95	95	60	80	3,952	8,035	106	20	5
Vegetation	38	50	18	20	10		169	2	0	0
1992										
All resources							150,196	1,430	359	100
Fish							51,955	495	124	35
Land mammals							41,503	395	99	28
Marine mammals							52,749	502	126	35
Birds and eggs							3,924	37	9	3
Vegetation							65	1	0	
1993										
All resources	100	94	90	98	92		267,818	2,943	742	100
Fish	100	81	81	94	90	71,897	90,490	994	251	34
Salmon	71	45	36	47	39	272	1,009	11	3	<1
Non-salmon	97	79	79	90	87	71,626	89,481	983	248	33
Land mammals	98	77	76	94	82	1,290	87,390	960	242	33
Large land mammals	98	76	74	92	82	691	87,306	959	242	33
Small land mammals	53	45	42	18	27	599	84	1	0	<1
Marine mammals	97	58	37	97	79	113	85,216	936	236	32
Birds and eggs	90	77	76	69	73	3,558	4,325	48	12	2
Vegetation	79	71	71	40	27		396	4	1	0

Sources: Fuller and George (1999), ADFG (2001), and SRBA (2003a).

When compared with the earlier documented Nuiqsut use areas, the 2003 information depicts a similar use area, with some notable variation. The 2003 interviews did not focus on the area west of Barrow and hence did not capture the travel between Nuiqsut and Barrow, and associated hunting. The western extent is similar, but with some minor variation, likely a result of interviewing different hunters in the different studies. During the 2003 interviews, it became apparent that the southern extent of Nuiqsut’s land use extended beyond the map used for the interviews; therefore, the 2003 data do not reflect Nuiqsut’s southern subsistence extent. As noted in Pedersen et al. (2000), ADFG Division of Subsistence (2001), SRBA (2003b), and scoping testimonies, some formerly used areas depicted in lifetime use area maps and the 1973-1986 use areas (the Prudhoe Bay area, for example) are no longer accessed because of industrial development.

Table J-6. Selected Nuiqsut Subsistence Harvests for 1985, 1992, 1993, and 1994-1995.

Resource	Estimated Harvest				
	Number	Total Pounds	Mean Household Pounds	Per Capita Pounds	% of Total Harvest
1985					
Caribou	513	60,021	790	150	38
Whitefish	58,733	59,701	786	149	37
Bowhead whale	0	7,458	98	19	5
Geese	1,345	6,045	80	15	4
Moose	13	6,650	88	17	4
Seals	57	4,431	58	11	3
Burbot	669	2,675	35	7	2
Char	1,083	3,060	40	8	2
Grayling	4,055	3,650	48	9	2
1992					
Bowhead whale	2	48,715	464	117	32
Caribou	278	32,551	310	78	22
Arctic cisco	22,391	22,391	213	54	15
Broad whitefish	6,248	15,621	149	37	10
Moose	18	8,835	84	21	6
1993					
Caribou	672	82,169	903	228	31
Bowhead whale	3	76,906	845	213	29
Whitefish	64,711	77,671	854	215	29
Seals	109	8,310	91	23	3
Grayling	4,515	4,063	45	11	2
Moose	9	4,403	48	12	2
Burbot	1,416	5,949	65	16	2
Char	618	1,748	19	5	1
Geese	1,459	2,314	25	6	1
1994-1995					
Caribou	258				
Whitefish	14,532				
Seals	24				
Grayling	462				
Moose	5				
Burbot	91				
Char	8				
Geese	457				
Berries	14				

Sources: Brower and Opie (1997; for 1994-1995); Fuller and George (1999; for 1992); ADFG (2001; for 1985 and 1993); and SRBA (2003a).

J.10.4.1 Bowhead Whale

Although Nuiqsut is not located on the coast, bowhead whale are still a major subsistence resource. Bowhead whaling is usually undertaken from Cross Island between late August and early October, with the exact timing depending on ice and weather conditions (Figure J-7 and Map J-12). Ice conditions can extend the season up to 2 months or restrict it to less than 2 weeks. Unlike Barrow spring whaling, where the hunt is staged from the edge of

ice leads using skin boats, Nuiqsut whalers use aluminum skiffs with outboard motors to hunt bowhead whales in open water in the fall. Bowhead whales are most often harvested by Nuiqsut residents within 10 miles of Cross Island, but occasionally hunters travel much further from the island. Historically, the entire coastal area, from Nuiqsut east to Flaxman Island and the Canning River Delta, has been used for whaling; however, the area to the west of Cross Island has not been as productive as areas closer to the island, and whaling too far to the east requires towing the whales back to Cross Island for butchering. This long trip creates the potential for meat spoilage (IAI 1990). Nuiqsut whalers have not successfully harvested bowhead whales consistently in the past (20 whales from 1972-1995), but their success has improved in recent years. Unsuccessful harvests were common in the 1980s, with no whales taken in 1983-1985 or 1988; however, in the 1990s, the only unsuccessful years were 1990 and 1994 (USDOI MMS 1996a, USACE 1998). Nuiqsut Whaling Captains Association President, Frank Long, Jr., presented a history and summary of major concerns of Nuiqsut bowhead whaling in the *Proceedings of the 1995 Arctic Synthesis Meeting* (USDOI MMS 1996b). During the 1996 Nuiqsut Whaling Captains' Meeting, Thomas Napageak stated that "when they had that big seismic operation going on here at Kuvlum, no whales were spotted in this area, so we had to go 40 miles or so out there to get to those whales who were migrating" (Dames and Moore 1996).

Bowhead Whale Use Area

The recent Nuiqsut subsistence bowhead whale hunting area is depicted in [Map J-12](#). The general Nuiqsut harvest area for bowhead whales is located off the coast between the Kuparuk and Canning rivers. Nuiqsut has been a bowhead whaling community since its reestablishment in 1973. Whalers currently travel to Cross Island to conduct fall bowhead whaling. In the past, they used Narwhal Island as a base, and still have structures there. Cross Island has cabins and equipment for hauling up and butchering the whales. Nuiqsut hunters typically travel out either the Nigliq or the main Colville channel of the Colville River Delta, depending on water levels, and travel along the coast, inside or just outside the barrier islands. Whalers may opportunistically harvest seals, caribou, and polar bears en route. After setting up camp, work groups may start fishing and hunting other species to support the whalers (SRBA 2003b).

J.10.4.2 Beluga Whale

Nuiqsut residents have indicated that beluga whales are not significant to the subsistence cycle of the community, although some beluga whales are incidentally harvested during the bowhead whale harvest. In recent testimony, Thomas Napageak stated: "I don't recall a time when I went hunting for beluga whales. I've never seen a beluga whale here" (USDOI BLM 1998).

J.10.4.3 Seals

Seals are hunted nearly year-round ([Figure J-7](#)), but the bulk of the seal harvest occurs during the open-water season. In the spring, seals may be hunted once the landfast ice goes out. Present day sealing is most commonly done at the mouth of the Colville, when it begins flooding after ice breakup in June. According to Thomas Napageak:

...when the river floods, it starts flowing out into the ocean in front of our village affecting the seals that include the bearded seals in the spring month of June... When the river floods, near the mouth of Nigliq River it becomes filled with a hole or thin spot in [the] sea ice that has melted as the river breaks up. When it reaches the sea, that is the time that they begin to hunt for seals, through the thin spot in the sea ice that has melted. They hunt for bearded seals and other types of seals (USDOI BLM 1998).

Nuiqsut resident Ruth Nukapigak recounts past trips to this same sealing area: "I love to follow my son Jonah every year just when the ice begins moving down there and it takes us 1 hour travel time to get there. That is where we go to hunt for seals" (USDOI BLM 1998). Nuiqsut elder Samuel Kunaknana, interviewed in 1979, noted that when the ice is nearshore in the summer, it is considered to be good for seal hunting (Kunaknana *in* Shapiro et al.

1979). Although seal meat is eaten, the dietary significance of seals primarily comes from seal oil, served with almost every subsistence meal. Seal oil is also used as a preservative for meats, greens, and berries. Seal skins are important in the manufacture of clothing; because of their beauty, spotted seal skins often are preferred for making boots, slippers, mitts, and parka trim. Ringed seal skins, however, are used to make clothing more often, because their harvest is more abundant than that of spotted seals. A 1993 ADFG subsistence survey in Nuiqsut indicated that 32 percent of the total subsistence harvest was marine mammals, and 3 percent of the total harvest was seals (Tables J-5 and J-6; ADFG 2001). Fuller and George (1999) estimated that 24 ringed seals, 16 bearded seals, and 6 spotted seals were harvested in 1992, and that overall, marine mammals (including bowhead whales) contributed 35 percent to the total subsistence harvest (Table J-5). A subsistence harvest survey conducted by the NSB Department of Wildlife Management, covering July 1994 to June 1995, reported a harvest of 23 ringed seals and a 2 percent contribution of marine mammals to the total subsistence harvest because no bowhead whales were harvested that season (Brower and Opie 1997, Brower and Hepa 1998).

Seal Use Areas

Ringed, spotted, and bearded seals are important subsistence resources for Nuiqsut hunters. As depicted in Map J-11, seals are harvested along the coast, and offshore from Cape Halkett in the west to Foggy Island Bay in the east. In the summer, Nuiqsut hunters harvest ringed and spotted seals in the Colville River as far south as Ocean Point. In the spring, hunters usually shoot seals in the water and on the ice edge (SRBA 2003b).

In April and May, hunters ride out to Harrison Bay on snowmobiles and look for breathing holes—cracks in the ice and open water where seals might surface to breath. By the second week in June, open waters on the Colville River and much of Harrison Bay allow hunters to take boats out on a route called “around the world.” This route follows the Nigliq Channel to Harrison Bay, west to Atigaru Point, along the ice edge out as far as 28 miles, then to Thetis Island (called *Amauliqtuq*), east to Oliktok Point, and back south through the main channel of the Colville River. Thetis Island is used as a shelter when the weather turns bad. This route is also used to harvest eiders, and occasionally walruses (SRBA 2003b).

Seals are a culturally important subsistence species for food, skins, and barter. In historic times, seal oil lamps provided heat and light for Iñupiat dwellings and a condiment for dried foods. Seal meat and oil are still locally consumed and traded to Anaktuvuk Pass for dried caribou and other products. Seal skins are used for handicrafts and other articles, bartered, or sold (SRBA 2003b).

J.10.4.4 Walruses

Alaska Department of Fish and Game subsistence survey data indicate that two walruses were harvested in the 1985-1986 harvest season, but no new walrus data for the community have been gathered since 1986 (ADFG 2001). Walruses are probably incidentally taken during seal hunting (NSB 1998).

J.10.4.5 Polar Bears

The harvest of polar bears by Nuiqsut hunters begins in mid-September and extends into late winter. Polar bear meat is sometimes eaten, although little harvest data are available. Nuiqsut residents have indicated that polar bears are not a significant subsistence resource for the community and, if taken, would be an incidental harvest. According to Thomas Napageak’s statement at the Beaufort Sea Sale 144 Public Hearings in Nuiqsut, “the taking of polar bear is not very important now” (USDOJ MMS 1995). One polar bear was reported harvested between 1962 and 1982, and 20 were harvested between 1983 and 1995 (Stocker 1983, Schliebe 1995, Brower and Opie 1997, Brower and Hepa 1998, NSB 1998, ADFG 2001).

J.10.4.6 Caribou

Nuiqsut hunters harvest several large land mammals, including caribou and moose. Caribou may be the most preferred mammal in Nuiqsuts’ diet, and, during periods of high availability, it provides a source of fresh meat

throughout the year (Figure J-7). Subsistence caribou harvest data are shown in Table J-6 (Brower and Hepa 1998, ADFG 2001). In 1985, Nuiqsut hunters harvested an estimated 513 caribou, providing 60,000 edible pounds of meat, or 38 percent of the total subsistence harvest (ADFG 2001). Fuller and George (1999) estimated that 278 caribou were harvested in 1992. A 1993 ADFG subsistence study estimated a harvest of 672 caribou, providing 82,000 edible pounds of meat, or 31 percent of the total subsistence harvest (ADFG 2001). In 1993, 74 percent of Nuiqsut’s households harvested caribou, 98 percent used caribou, 79 percent shared caribou with other households, and 79 percent received caribou shares (ADFG 2001). A subsistence harvest survey, covering July 1994 to June 1995, reported that Nuiqsut hunters harvested 258 caribou, which made up 58 percent of the total subsistence harvest in edible pounds (Brower and Hepa 1998). Brower and Hepa (1998) noted that number of caribou is low when compared to reported harvests for earlier years, even though no bowhead whales were taken that year. Explanations offered by local hunters for the decreased harvest were: 1) the need to travel longer distances to harvest caribou than in the past; 2) the increasing numbers of muskox that hunters believe keep caribou away from traditional hunting areas; 3) restricted access to traditional subsistence hunting areas due to oil exploration and development in these areas; and 4) disruption of caribou migration into traditional Nuiqsut harvest areas (Brower and Opie 1997, Brower and Hepa 1998, NSB 2003). Caribou harvest numbers may vary for a number of social or environmental reasons, but, regardless of harvest numbers, they are a key subsistence resource.

Cumulative Nuiqsut caribou harvests for 1993, 1994-1995, 2000, and 2001 are depicted in Figure J-8. There are monthly and seasonal differences in the proportion of caribou harvested, with summer harvests providing approximately 60 percent of the harvested caribou. For the 4 data years, July (23 percent of annual harvest) and August (24 percent) are the months with the greatest cumulative caribou harvests. September (8 percent) is normally consumed by whaling activity, and caribou hunting may be done en route to the whaling grounds to support the crews. According to several hunters, October (16 percent) is a preferred month for hunting caribou, as the caribou have accumulated a thick layer of fat for the winter. March (6 percent) represents the beginning of spring, with longer days and warmer weather encouraging hunters to go out on the land again and harvest caribou.

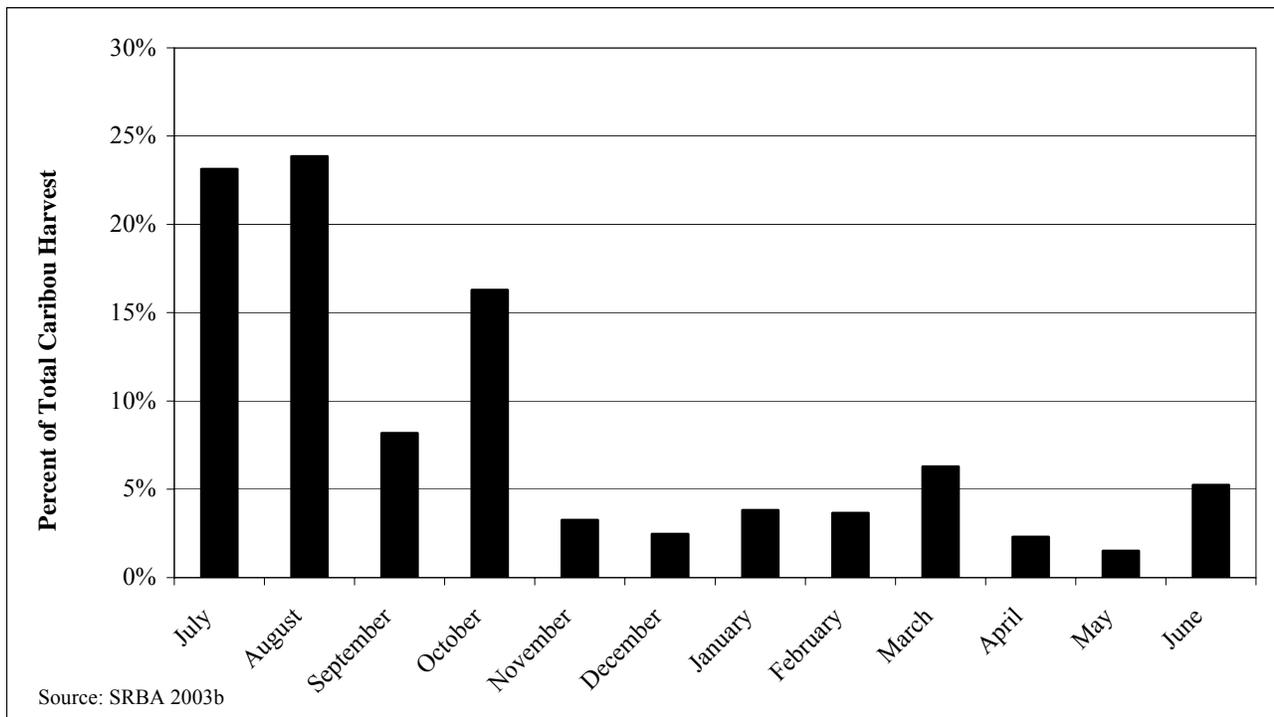


Figure J-8. Nuiqsut Caribou Harvest by Month, 1993, 1994-1995, 2000, and 2001.

Caribou Use Areas

Harvest location data for caribou collected by the NSB and the ADFG, and from hunting area interviews conducted in Nuiqsut for the *Alpine Satellite Development Plan EIS* indicate that there are several primary harvest areas for caribou (Maps J-9 and J-13; Brower and Hepa 1998; ADFG 2001, 2003; NSB 2003; SRBA 2003b). North of Nuiqsut, these harvest locations include the Nuiqsut area, the Colville River Delta, the Nigliq Channel, and the Fish and Judy creeks area. To the south of Nuiqsut, the Colville River provides access to areas and sites such as Itkillikpaat, Ocean Point, the Itkillik River, Umiat, and the confluence of the Anaktuvuk and Chandler rivers. These areas are usually associated with Traditional Land Use Inventory sites, cabins, camps, and Native allotments with harvest locations for other species nearby. These harvest locations, which may be used in winter (October through May), summer (defined as the open water period, including June through September), or both, are accessed by foot, boat, all-terrain vehicle, and snowmachine.

Maps J-9 and J-13 show caribou hunting areas. Summer hunting (Map J-13) is done by boat after the river ice breaks up; hunters proceed along the coast from Smith Bay east to the Sagavanirktok River Delta, including Oliktok Point, several barrier islands, and in all channels of the Colville River Delta and Fish and Judy creeks. Hunters also go south on the Colville River beyond Umiat, passing Itkillikpaat, Ocean Point, Signal Hill, and Umirak. Summer is the major caribou harvest season by proportion of individual caribou taken. In July, large numbers of caribou migrate to the coast and shallow waters of Harrison Bay and the Colville River Delta to escape the mosquitoes. This behavior gives subsistence hunters an opportunity to harvest the number of caribou adequate for subsistence in a relatively short amount of time. Because of the risk of spoilage, the harvested caribou must be processed and stored quickly, whether placed in ice cellars at camps or brought back to Nuiqsut and put in freezers. Outboard boats provide rapid transportation for the hunters and their harvest. August is a time of increased bot and warble fly activity, and the caribou disperse into smaller groups and go south, since coastal winds provide little relief from flies (SRBA 2003b).

Winter harvests occur after the rivers and lakes freeze over and snow covers the tundra, allowing for greater overland hunting range via snowmachines. Interviewed hunters have hunted from the vicinity of Admiralty Inlet and Teshekpuk Lake in the west, to the Franklin Bluffs area east of the Dalton Highway, south to Anaktuvuk Pass, and along the northern foothills of the Brooks Range. Hunters take caribou as needed while they pursue wolves, wolverines, and foxes southeast of Teshekpuk Lake, in the Brooks Range foothills, the Kuparuk Hills, and east of the Colville River. Subsistence caribou hunting, independent of the furbearer harvest, continues all winter throughout the Fish and Judy creeks area, along the Nigliq Channel, and south along the Colville and Itkillik rivers. During the coldest months, many hunters stay closer to Nuiqsut, venturing farther out as spring approaches (SRBA 2003b). March represents the beginning of spring, as the days grow longer and temperatures increase. Preparations for *Nalukataq* begin in March as senior whaling crew members hunt caribou and other resources for the celebration. In April, the snow is often inadequate to support travel over the tundra, limiting overland travel by snowmachines. Caribou are harvested near the village and along frozen waterways at this time, but as spring approaches, the caribou are often lean and not in the best condition (SRBA 2003b).

Nuiqsut residents take hunting trips upriver by boat in summer and fall, when moose and caribou may be harvested, and by snowmachine in winter, in pursuit of caribou and furbearers. Nuiqsut hunters also travel up the Itkillik River and to the Chandler and Anaktuvuk rivers by boat and snowmachine. There are many camps and cabins in the area of Fish and Judy creeks, throughout the Colville River Delta, and up the Colville River to the south, that are used for summer and winter caribou hunting (Map J-9). These camps often have drying racks and ice cellars for processing and storing harvested game, as well as caches of survival gear and supplies.

Figure J-9 depicts harvest amounts by season for caribou harvested at known locations in 1993, 1994-1995, 2000, and 2001. Figure J-9 represents a preliminary analysis of Nuiqsut subsistence harvest location data and not a definitive model of subsistence caribou harvests. Nuiqsut is the only community for which these data were available. Frequency of use and harvest numbers should not be construed as a quantitative measure of value. During both the summer and winter, the greatest number of caribou were harvested at Fish and Judy creeks (approximately 14 percent), in the Nuiqsut area (approximately 11 percent), and in the Colville River Delta,

including Nigliq and the Nigliq Channel (approximately 19 percent). The Nuiqsut area itself is the second largest (approximately 7 percent) winter harvest location and fourth largest (approximately 4 percent) summer harvest location.

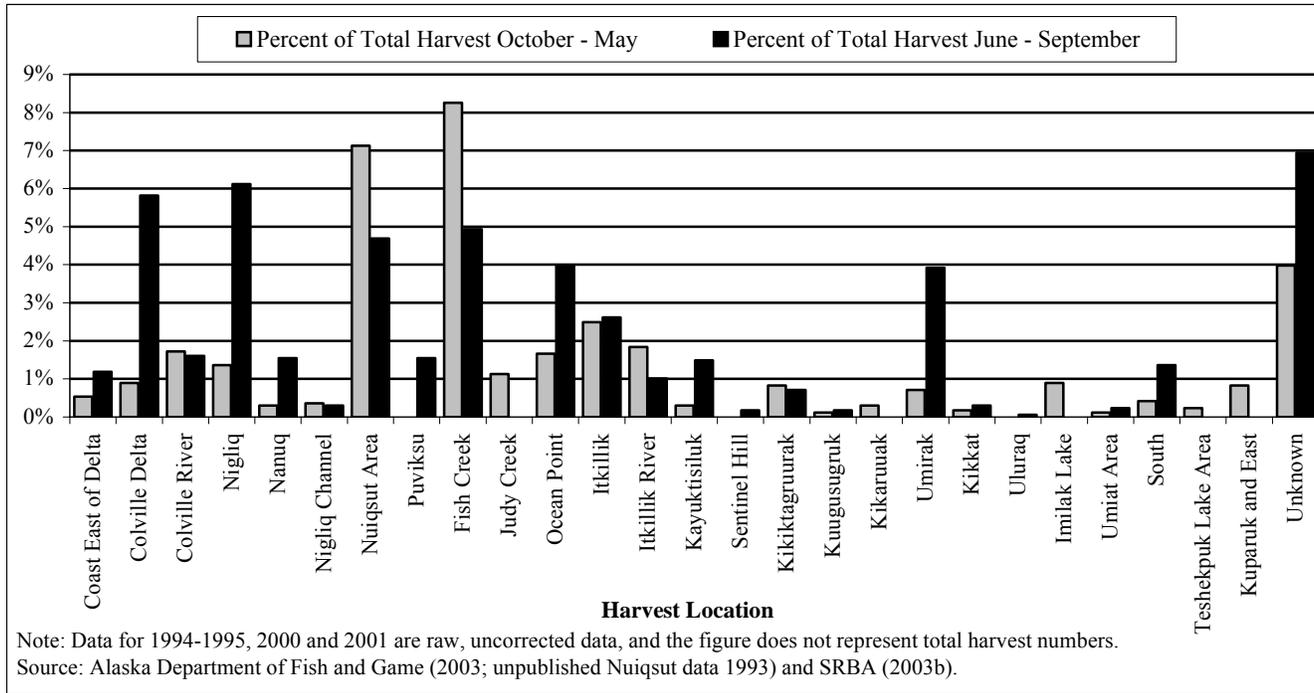


Figure J-9. Nuiqsut Caribou Harvest by Season and Location, 1993, 1994-1995, 2000, and 2001.

There are several reasons for the frequency of use of the Nuiqsut area as a harvest location, including proximity, accessibility in both summer (by boat) and winter (by snowmachine), coordination with work obligations, need to avoid spoiling the meat, lack of transportation or gas money, the general availability of caribou in both seasons, and a desire to combine caribou harvesting with fishing, waterfowl hunting, and berry picking. More distant harvest locations for caribou are associated with camps, cabins, and allotments where caribou are hunted, processed, and stored while other subsistence tasks (e.g., fishing and berry picking) are undertaken (Map J-9). It is a common practice for experienced Nuiqsut hunters to take younger, less experienced hunters to Fish and Judy creeks, Nigliq, the Colville River Delta, or Itkillikpaat during the summer and winter, stay at a cabin or camp site, set a net for fishing, and harvest caribou. These activities provide multiple traditional foods for the community through sharing and distribution upon the hunters’ return. Furthermore, they serve to transfer to younger hunters a multi-generational knowledge of and identification with specific harvest, processing, and storage methods, and traditional harvest locations. These subsistence activities in the Planning Area, and nearby areas, reinforce the cultural identity of the community and residents’ identification with their unique history.

J.10.4.7 Fish

Fish provide the most edible pounds per capita of any subsistence resource harvested by Nuiqsut (Table J-5). Although variable by season and from year to year, fish provide a relatively stable, predictable, and substantive contribution to subsistence resource harvests. The subsistence harvesting of fish is not subject to seasonal limitations under federal fisheries management, and no permit is required for rural residents, a situation that adds to the importance of fish in the community’s subsistence year-round. Nuiqsut has the largest documented subsistence fish harvest on the Beaufort Sea coast (Moulton et al. 1986; Moulton 1997). On occasion, fish may provide the only source of fresh, easily accessed subsistence foods.

Nuiqsut's location on the Nigliq Channel of the Colville River, with large resident fish populations, reflects the importance of fish to subsistence users. The river supports 20 species of fish, approximately half of which are taken by Nuiqsut residents (George and Nageak 1986). Local residents generally harvest fish during the summer and fall (Figure J-7). The summer, open-water harvest lasts from ice breakup to freezeup (early June to mid-September). The summer harvest covers a wide area and is longer than the fall/winter harvest in duration, and a greater number of species are caught. Broad whitefish, the primary species harvested during the summer, is the only anadromous species harvested in July. Thomas Napageak stated:

In the summer when it is time to fish for large, round-nosed whitefish, the place called Tirragruag gets filled with them as well as the entrance to Itkillik. Nigliq River gets filled with nets all the way to the point where it begins. We do not go to Kuukpiluk in the summer months. Then we enter Fish Creek...another place where they fish for whitefish is Nuiqsagruaq (USDOI BLM and MMS 1998).

In July, lake trout, northern pike, broad whitefish, and humpback whitefish are harvested south of Nuiqsut. Traditionally, coastal areas were fished in June and July when melting ice created enough open water for seining fish. Nuiqsut elder Sarah Kunaknana said during a 1979 interview: "...in the little bays along the coast we start seining for fish. After just seining one or two times, there would be so many fish we would have a hard time putting them all away" (Shapiro et al. 1979). Salmon species reportedly have been caught in August, but not in large numbers. Pink and chum salmon are the most commonly caught (George and Nageak 1986). Arctic char is found in the main channel of the Colville River, but is not caught abundantly (George and Kovalsky 1986, George and Nageak 1986, ADFG 2001).

The fall/winter under-ice fish harvest begins after ice freezeup, when the ice is safe for snowmachine travel. Local families fish for approximately 1 month after freezeup, until the river ice is too thick to allow the setting of nets through holes in the ice. The Kuukpigruaq Channel is the most important fall fishing area in the Colville River region, and the primary species harvested are Arctic and least cisco. After freezeup, people continue to fish for whitefish (Napageak *in* USDOI BLM and MMS 1998). Nuiqsut resident Ruth Nukapigak recounts a recent winter fishing trip in December 1997: "I, myself, took my net out in December right before Christmas Day. I was catching whitefish in my net" (USDOI BLM and MMS 1998). Arctic and least cisco amounted to 88 and 99 percent of the harvest in 1984 and 1985, respectively. Humpback and broad whitefish, sculpin, and some large rainbow smelt are also harvested, but only in low numbers (George and Kovalsky 1986, George and Nageak 1986). A fish identified as "spotted least cisco" has also been harvested (this fish was not identified by Morrow [1980], but could be a resident form of least cisco [George and Kovalsky 1986]). Weekend fishing for burbot and grayling occurs at Itkillikpaat, 6 miles from Nuiqsut (George and Nageak 1986).

The summer fish catch in 1985 totaled about 19,000 pounds, mostly of broad whitefish. In the fall, approximately 50,000 pounds of fish were caught for an annual per capita catch of 244 pounds, and some of this catch was shipped to Barrow (Craig 1987). A 1985 ADFG subsistence survey estimated the edible pounds of all fish harvested at 176 pounds per capita, or approximately 44 percent of the total subsistence harvest (Table J-5). In 1992, 35 percent of the edible pounds of Nuiqsut's total subsistence harvest was fish, and by 1993, the estimate of edible pounds of all fish harvested had risen to approximately 251 pounds per capita, or approximately 34 percent of the total subsistence harvest (Table J-5). A subsistence harvest survey conducted by the NSB Department of Wildlife Management, covering July 1994 to June 1995, reported that the subsistence fish harvest provided 30 percent of the total subsistence harvest (Brower and Opie 1997, Brower and Hepa 1998).

Whitefish are eaten fresh (cooked), frozen, and dried. Salmon are harvested in low numbers and are usually eaten fresh. Because fish are an abundant and stable food source, and a source of fresh food during the midwinter months, fish are shared at Thanksgiving and Christmas feasts and given to relatives, friends, and community elders. Because fishing often involves the entire family, it serves as an important social activity in the community; most Nuiqsut families (81 percent of all households in 1993) participate in some fishing activity (Brower and Hepa 1998, ADFG 2001).

Fish Use Areas

Nuiqsut resource users have a long history of subsistence fishing in the Colville River and its tributaries, from the Colville River Delta to the confluence with the Ninuluk Creek, the Nigliq Channel, nearby Fish and Judy creeks, and the innumerable lakes in the region. Nuiqsut fishermen also use coastal areas east to the Kuparuk River and fish around several barrier islands, including Thetis and Cross islands (Map J-10). Many families set nets near Nuiqsut in the Nigliq Channel when time, transportation needs, or funds do not permit longer trips from town, particularly during the school and work year. Cooperative arrangements are made between resource users wherein resources (such as time, equipment, gas, and labor) are pooled in exchange for shares of the harvest. Resource users often fish in conjunction with other subsistence activities, such as caribou and moose hunting and berry picking, especially in harvest areas with camps and cabins. Certain species of fish are only seasonally available, and must be harvested when present in the area. Nuiqsut fishers freeze or dry these fish for later consumption and barter. Other fish species are available year-round and provide a welcome change to the diet (and fresh food) during the winter and spring months (SRBA 2003b).

In general, fish comprise more than one-third of the subsistence harvest of Nuiqsut residents (Table J-5). This percentage varies with fish availability and the availability of other resources, such as caribou and bowhead whales (Brower and Hepa 1998). Subsistence fishing in Nuiqsut has been the subject of scientific research since 1985, when studies were undertaken in response to harvest failures that resource users associated with the construction of nearshore infrastructure for oil development (Moulton 2000). In addition, the NSB Department of Wildlife Management collected information on Nuiqsut subsistence fish harvests for 1994–1995, 2000, and 2001 (Brower and Hepa 1998, NSB 2003).

There are significant differences in methodology and sampling during the last 3 years of the 17-year Moulton studies (Moulton 2000, 2002), and between the Moulton and the NSB studies. From 1985 to 1998, Moulton collected data from five net sites (Upper Nigliq, Nanuq, Nigliq Delta, Outer Delta, and the main portion of the Colville River) in the Colville River Delta on subsistence harvests of Arctic cisco, least cisco, broad whitefish, and humpback whitefish. Skipping 1999, Moulton resumed data collection in 2000, but reported only the subsistence harvest on the Nigliq Channel sites (Upper Nigliq, Nanuq, and Nigliq Delta).

The data collected by the NSB are broader in scope, geographically and in the number of species covered, than the Moulton data. In addition to the cisco and whitefish species addressed by Moulton, harvest information collected by the NSB includes data for char, burbot, pike, salmon, and grayling. The NSB harvest locations reflect those reported in the 2003 Nuiqsut interviews (SRBA 2003b), with summer and winter fishing taking place in the Nigliq Channel, Colville River and Delta, and in Fish and Judy creeks, as well as other locations in specific seasons using both nets and angling gear (Map J-10; Brower and Hepa 1998). The relative value of different species to local resource users ranged from valued staples (e.g., cisco and whitefish) to the highly prized (e.g., burbot). Burbot, which are caught by jigging through holes in the ice in the Nigliq Channel and other Colville River Delta channels, the Colville River, and Fish and Judy creeks, are highly prized for their large livers and high fat content in the winter; however, they are harvested in numbers that do not compare with the volume of some other species (SRBA 2003b).

Figures J-10 and J-11 show the highly variable nature of the subsistence fish harvest in the Colville River Delta and Nigliq areas. Fishing effort in net-days ranged by area from 19 to 1,407 net days, although there is no clear correspondence between the harvest and harvest effort. In 1993, low efforts brought more fish, while high efforts in 2002 resulted in few fish harvested, even considering the reduced number of sites sampled. As shown in Figure J-11, the Arctic cisco harvest, at the five monitored set net harvest sites, ranged from a 1993 peak of nearly 47,000 to a 1988 low of approximately 6,100. This variability demonstrates the importance of having alternative species and harvest strategies available when poor fish harvests coincide with reduced terrestrial or marine mammal harvests.

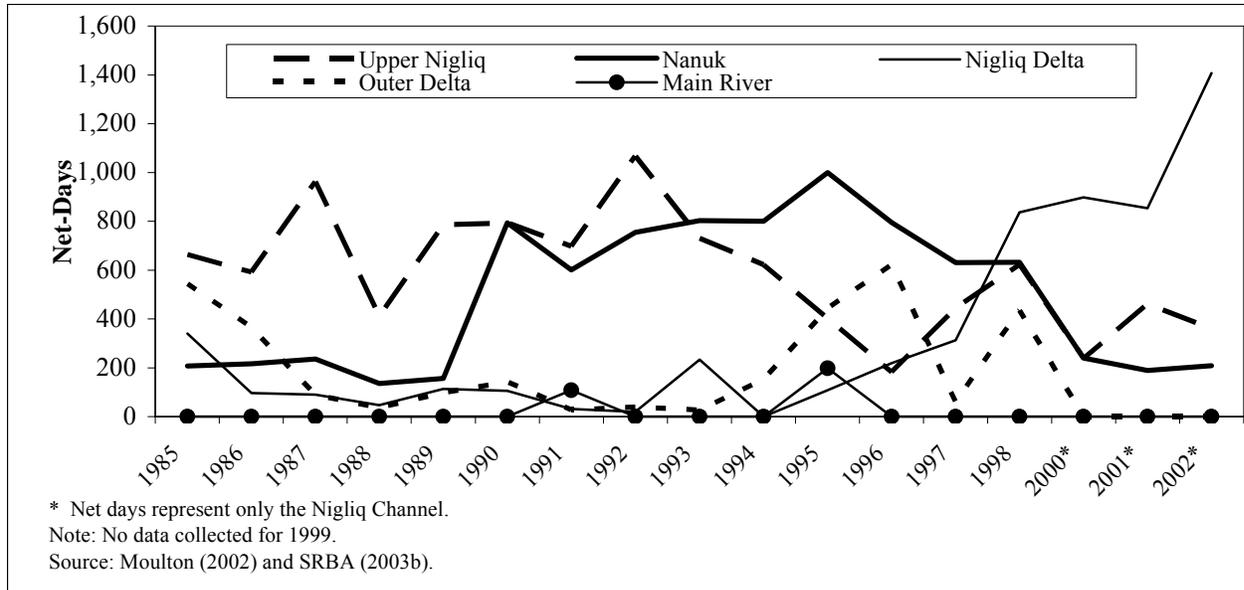


Figure J-10. Estimated Fishing Effort in the Colville River Delta Fall Subsistence Fishery in Net Days.

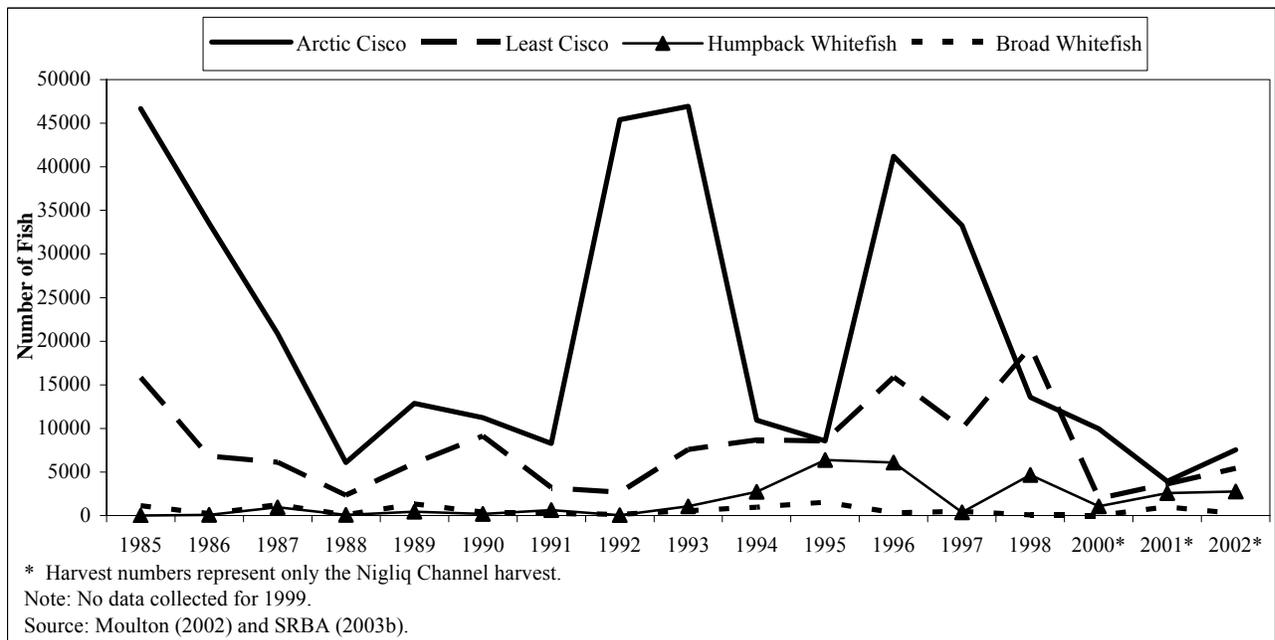


Figure J-11. Estimated Whitefish and Cisco Harvests for the Colville River Delta Fall Subsistence Fishery, 1985-2002.

The NSB subsistence harvest data for 1994-1995, 2000, and 2001 show that the greatest proportion of fish were harvested in October (54 percent), November (13 percent), July (11 percent), December (4 percent), and September (4 percent); however, undated fish harvests (9 percent) were the fourth largest group (Figure J-12). The large number of fish harvested reflects the importance of the resource in general and demonstrates the numerical dominance of Arctic cisco in the fall and winter harvest. Based on NSB subsistence harvest data for 1994-1995, 2000, and 2001, the majority of Arctic cisco were harvested in October, while harvests of broad whitefish peaked in July and October (Figure J-13).

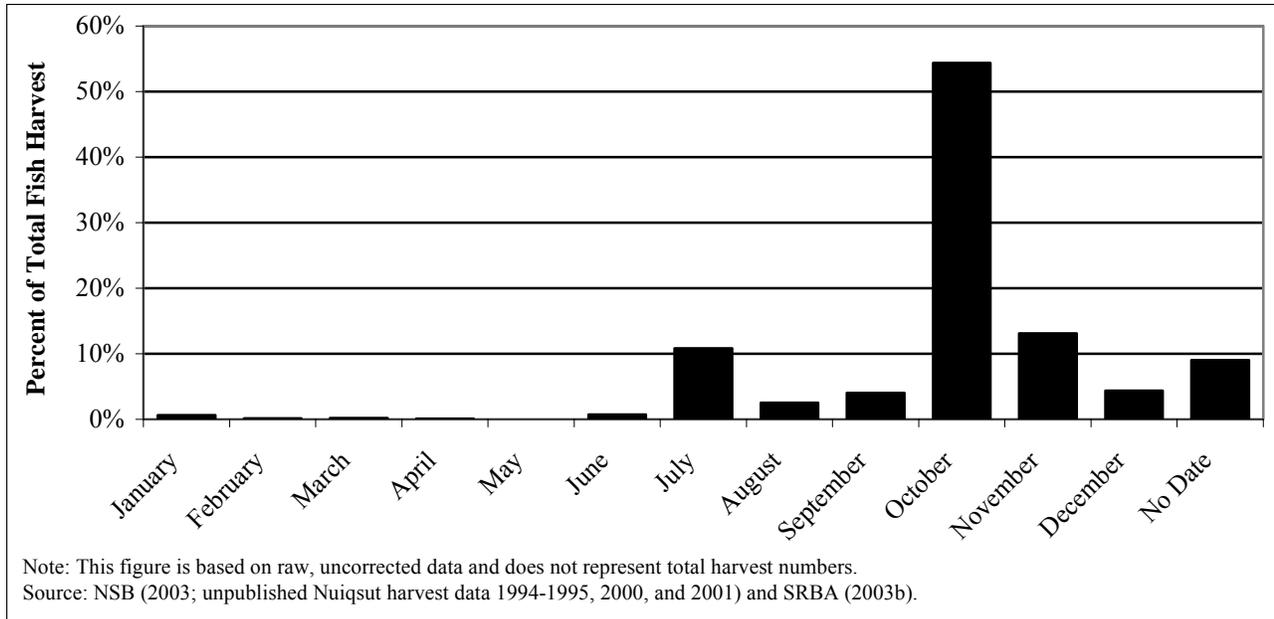


Figure J-12. Nuiqsut Fish Harvest by Month, 1994-1995, 2000, and 2001.

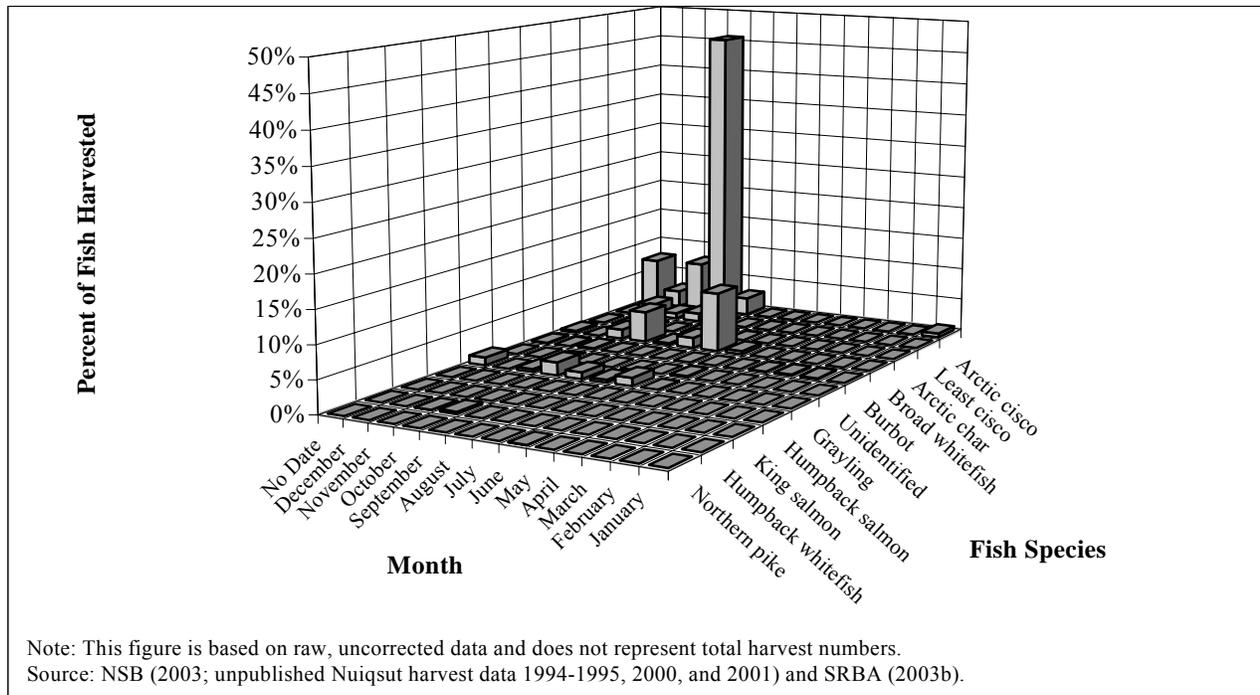


Figure J-13. Nuiqsut Subsistence Fish Harvests by Month and Species, 1994-1995, 2000, and 2001.

Key fishing areas, as measured by total harvest for all species, were around Nuiqsut and throughout the Colville River Delta, including Nigliq and the Nigliq Channel (Figure J-14). Because of their large numbers and annual variability, Arctic cisco harvests were removed from the analysis in order to better examine fish harvested in smaller proportions. Figure J-15 shows that the Colville River Delta, including the Nigliq Channel, Nuiqsut, and the Nigliq locality, remained an important Nuiqsut fish harvest location, even when excluding Arctic cisco. In

addition, Nanuq Lake, Fish Creek, and upriver locations, such as Itkillikpaat, Kayuktusilik, and Umiraq, were also important for the harvesting of fish other than Arctic cisco.

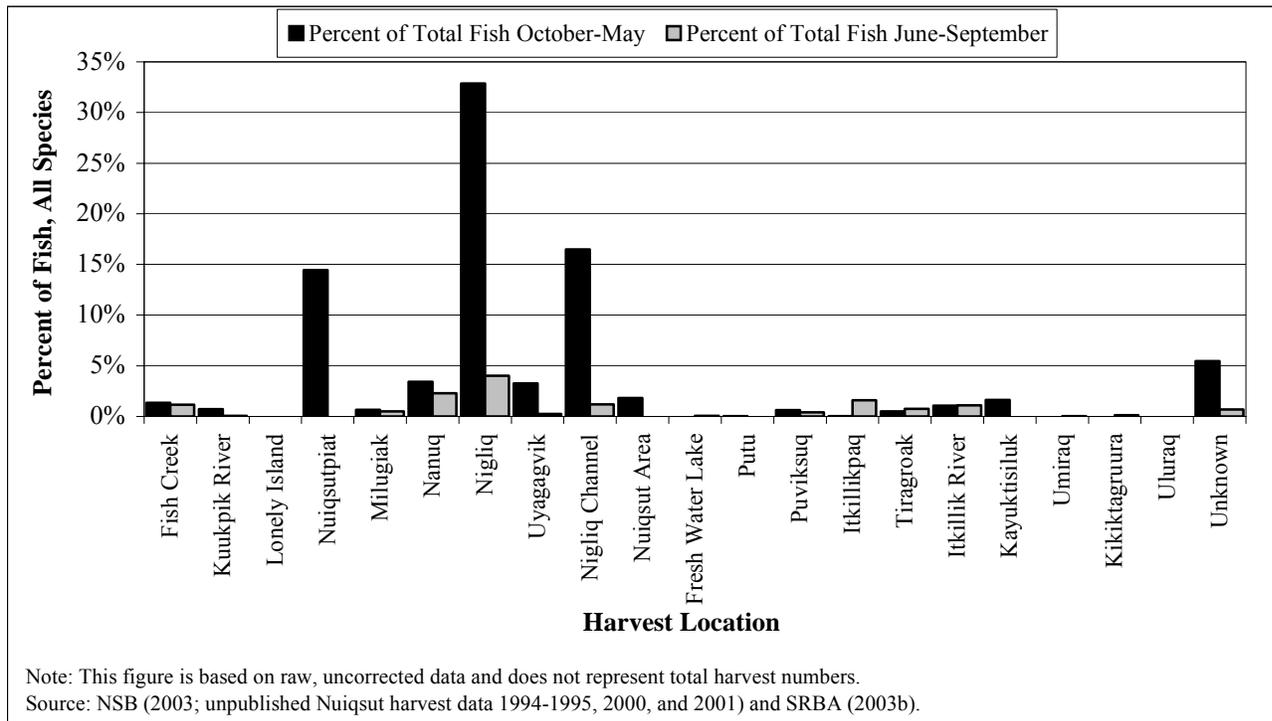


Figure J-14. Nuiqsut Cumulative Subsistence Fish Harvest by Location, 1994-1995, 2000, and 2001.

Resource users set nets in the Nigliq Channel for broad whitefish in mid-June and July, following the breakup of ice on the river; after breakup, the fishery is accessible on foot, by boat, truck, or all-terrain vehicle. Several interviewed resource users stated that “everybody in town goes down there if they can” (SRBA 2003b). In August and September, fishers set nets and angle in the Nigliq Channel, Nanuq Lake, Fish Creek, and the Colville River Delta, or travel by boat up the Colville River, up to and beyond Umiat, for grayling, chum salmon, silver salmon, and Arctic char. Some people fish in the nearshore waters, inside the barrier islands. Fishing in these areas may be done by Nuiqsut bowhead whaling crews while they are at Cross Island (Map J-10). In the fall and early winter, grayling gather at river mouths, and nets are set under the ice for other fish migrating out of the rivers, including whitefish and cisco. Jigging through the ice for burbot, grayling, and rainbow trout continues until the coldest months of winter (SRBA 2003b).

Fishing is an important family activity and an opportunity for multiple generations to gather at camps for cooperative fishing and other resource harvests. Elders from the area know the most productive fishing spots, which species are available at which locations, and the best times to fish for them. Angling and jigging are done by children, as well as elders, in all seasons, and species harvested by these methods are highly valued. For example, one Nuiqsut resident spoke of the high local value placed on burbot livers when he said, “We all eat that! We get them for the liver; it is rich and the meat is rich” (SRBA 2003b). In the summer, net fishing along the Nigliq Channel, and at cabins and camps on Fish Creek, are highly valued family activities, as Nuiqsut families cooperate for weeks at camp, catching and drying whitefish for later consumption and distribution. Family members with year-round wage jobs work in town, while other family members of all ages work at the camps. The wage workers return in the evenings or weekends to bring supplies, visit, and participate in subsistence activities (SRBA 2003b).

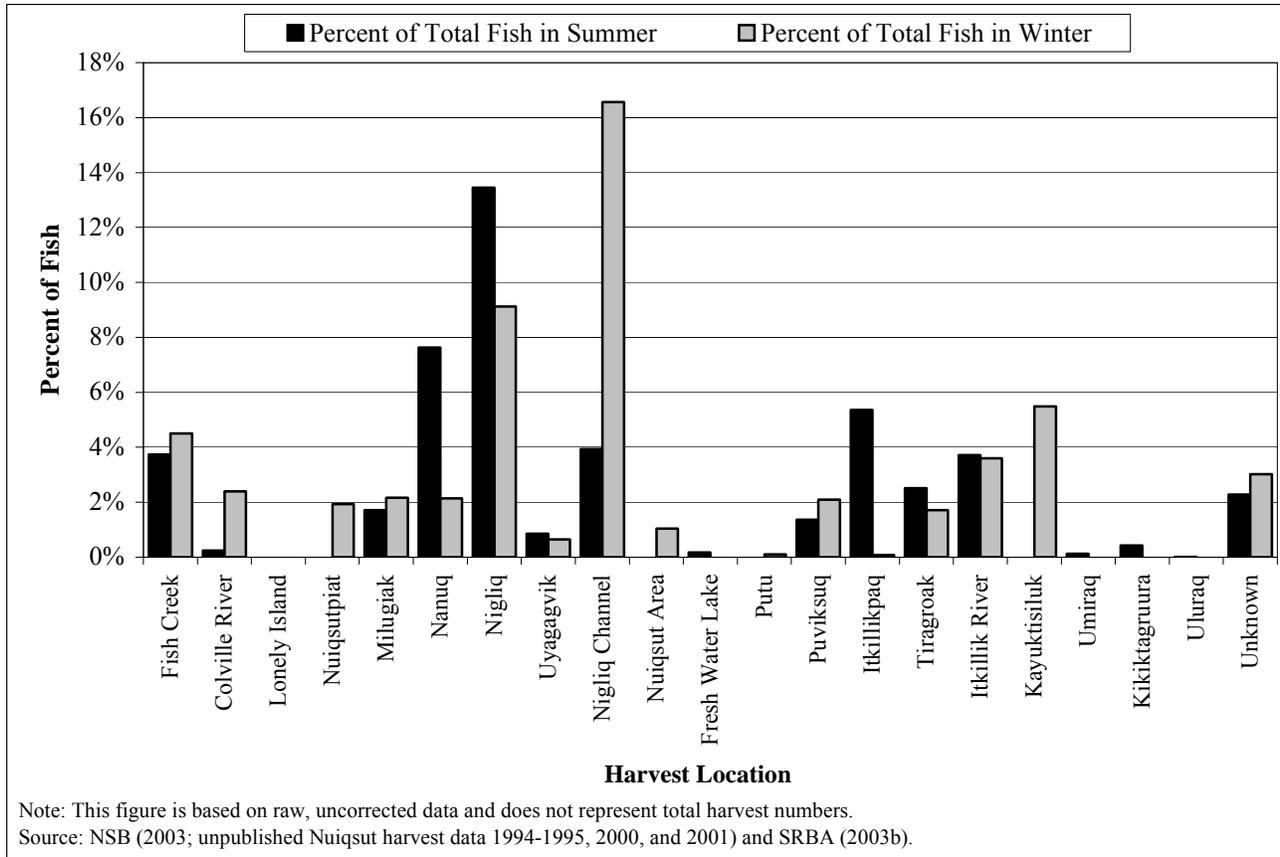


Figure J-15. Nuiqsut Subsistence Fish Harvest (excluding Arctic Cisco) by Season and Location.

J.10.4.8 Waterfowl

The most important species of waterfowl for Nuiqsut hunters are the Canada goose, white-fronted goose, and brant; eiders are also harvested. Ruth Nukapigak relates that “...when the white-fronted goose come, they do hunt them. When the thin ice near the mouth of the river breaks up, that is when they start duck hunting. We, the residents of Nuiqsut, go there to hunt for ducks when they arrive” (USDOI BLM 1998). Ptarmigan is the only upland bird hunted extensively (Brower and Hepa 1998, ADFG 2001). Recent data indicate that the subsistence bird harvest provided 5 percent of the total subsistence harvest (Brower and Hepa 1998). Waterfowl hunting occurs mostly in the spring, beginning in May, and continues throughout the summer. In the summer and early fall, waterfowl hunting usually occurs as an adjunct to other subsistence activities, such as checking fish nets.

Waterfowl Use Areas

Waterfowl harvested by Nuiqsut hunters occupy two habitats in the greater Nuiqsut area. Ducks, geese, and brant molt and nest in the wet tundra to the north of Nuiqsut (Map J-9), while eiders nest and molt on the sandy areas of the Colville River Delta and the barrier islands (Map J-12). Both groups of waterfowl raise their young in the area until fall, when they migrate south. Nuiqsut hunters harvest waterfowl during the migration in May and June, using snowmachines and boats (Figure J-7). The hunters harvest the migrating birds from snow blinds built to the south, near Sentinel Hill and Ocean Point or at Fish Creek. Once the river breaks up, hunters look for birds by boat, and, as summer approaches, begin to look for eiders at the ice edge in the Colville River Delta and Harrison Bay. Hunters end the waterfowl harvest when the birds are nesting (SRBA 2003b).

In earlier times, Iñupiat resource users harvested flightless molted birds by cooperatively herding them into creeks, and dividing the harvest between the work group members. One resident remembered doing this cooperative

herding as recently as the late 1940s at Oliktok Point. In the past, Nuiqsut people gathered and stored eggs from waterfowl nests on the tundra. According to 2003 interviews, eggs are no longer gathered, and certain species of waterfowl are not harvested. Some residents indicated that they do not eat certain varieties of ducks (e.g. oldsquaws and pintails), while many choose to avoid harvesting black brant and spectacled eiders because they are endangered. Nearly all resource users harvested geese in May, and most harvested some eiders when ice breakup allows boat travel on the river and in Harrison Bay (SRBA 2003b).

The NSB collected waterfowl harvest data for 1994-1995, 2000, and 2001 (Brower and Hepa 1998, NSB 2003). Goose hunting areas included the Fish and Judy creeks area, the Colville River Delta, the area around Nuiqsut extending to the Fish and Judy creeks area, along the Colville River up to Sentinel Hill, the area around Ocean Point, and along the Itkillik River (Map J-9 and Figure J-16). Figure J-16 shows that 79 percent of geese, including white-fronted and Canada, were harvested in the Fish and Judy creeks area (63 percent) and the Colville River Delta (16 percent). Of the remaining 21 percent, most geese were harvested up the Colville River, from Ocean Point to Umiraq. The Fish Creek harvest was by far the largest reported for the study years, with nearly 48 percent of the harvest. The Colville River Delta area sites, which include the Nuiqsut area and Uyagagvik, were significant when aggregated. Reported harvest locations to the south, which were along the Colville and Itkillik rivers, constituted a small, yet significant portion of the harvest. These locations included, but were not limited to, Puviqsuq, Itkillik, Ocean Point, Kittik, and Kuukpagruk. Interviewed subsistence users in Nuiqsut related that the harvest sequence for migratory waterfowl proceeds from the south to the north, and that the first birds of the season are those harvested upriver (SRBA 2003b).

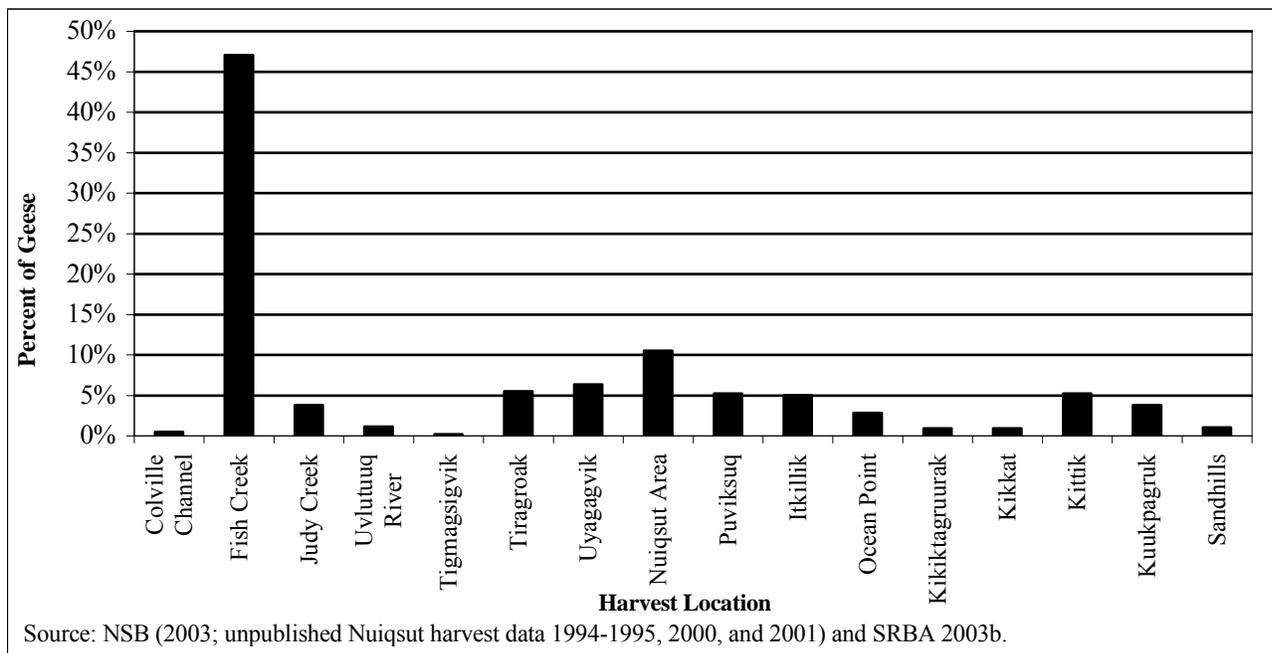


Figure J-16. Nuiqsut Harvest Locations for All Species of Geese, 1994-1995, 2000, and 2001.

Map J-12 shows the partial subsistence use areas for eiders, which reflects the more specialized habitat needs of eiders. Figure J-17 shows the cumulative harvest of eiders by location, based on NSB harvest data for 1994-1995, 2000, and 2001 (NSB 2003). More than half (53 percent) of all eiders were harvested in the ocean. Associated coastal and offshore harvest locations for eiders include Atigaru Point (Atigaruk), Thetis Island (Amauliqtuuq), and Lonely Island. The Colville River Delta and its channels and sites in the area, including Milugiaq, the Nigliq Channel, and Pisiktaviq, were the major freshwater harvest areas for eiders, accounting for 28 percent of the eider harvest.

Waterfowl, an important subsistence food, are the first fresh meat in the spring. Waterfowl are an important food for *Nalukataq* celebrations held by whaling captains in the early summer, and whaling crew members spend considerable effort in harvesting waterfowl. Waterfowl may be harvested by hunters walking down the Nigliq Channel after work or school, without having to invest in transportation. Waterfowl hunting trips also are sometimes the last overland trips made to cabins and camps on Fish and Judy creeks and along the Nigliq Channel before conditions make it impossible to use snowmachines for the season. The first boat trips of the year are taken to harvest seals and eiders at the Nigliq Channel mouth (SRBA 2003b).

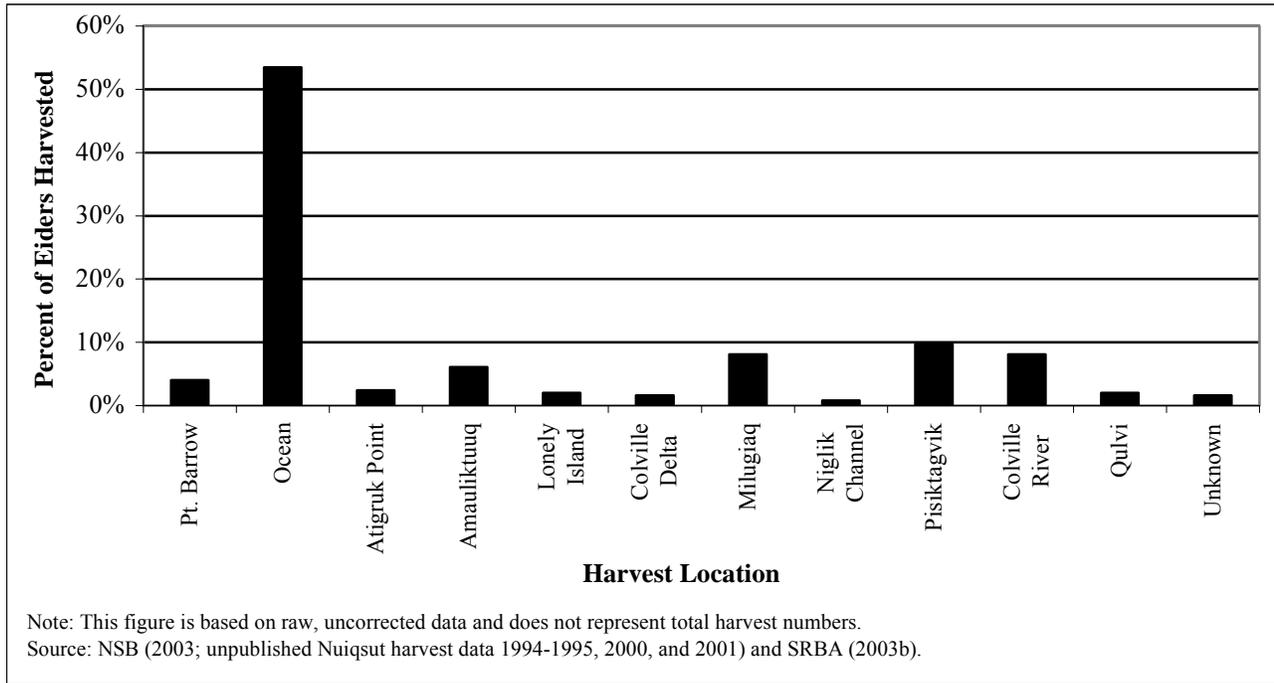


Figure J-17. Nuiqsut Harvest Locations for Eiders, 1994-1995, 2000, and 2001.

J.10.4.9 Moose

Moose are normally harvested by boat, in August, upriver from Nuiqsut on the Colville, Chandler, and Itkillik rivers, but the timing of harvest varies depending on current hunting regulations (Figure J-7). August 1 through September 14 is the current legal season for harvest. Local residents have indicated that the windy weather in September is not suitable for moose hunting, and fall whaling occupies much of the community during the month. Many hunters plan their work schedules around this harvest period in order to participate in the moose harvest. Hunting trips include extended families and friends, occupying as many as six boats, which travel to Fish and Judy creeks, up the Colville River to the general area of Umiat, or up the Itkillik River. Camps are set up, and cabins and caches are cleaned. As with other subsistence activities, moose hunting trips provide opportunities for other harvest activities, including caribou hunting, fishing, and berry picking. Evenings at camp are a time for visiting, telling stories, and teaching young people about subsistence practices (SRBA 2003b). In public testimony for the 1998 Northeast IAP/EIS in Nuiqsut, Nelson Ahvakana stated:

The regulations state in 26(A), under Alaska Fish and Game, that the village residents would hunt moose in the month of August by boat only and then in September. But when September comes around, the people here usually don't hunt by boat because the winds are so severe that the river is not available to go hunting up in that area. They don't hunt if the river is shallow. They don't hunt by packing what they have all the way up to the mouth of the creeks up there (USDOI BLM 1998).

Harvest data show that moose have also been harvested during the winter months by snowmachine (Table J-6; Brower and Hepa 1998). In 1985, hunters reported a harvest of 13 moose (ADFG 2001). In 1993, 9 moose were reported harvested by surveyed subsistence households (Brower and Hepa 1998, ADFG 2001). A subsistence-harvest survey conducted by the NSB Department of Wildlife Management covering July 1994 to June 1995, reported 5 moose harvested, 5 percent of the total edible pounds harvested that season (Brower and Hepa 1998).

Moose Use Areas

As depicted in Map J-11, moose are hunted from the Colville River Delta area upstream to Ninuluk Creek, up the drainages of the Itkillik River and Fish and Judy creeks, and up some side streams off the Colville River. One hunter mentioned going almost to the Killik River confluence looking for moose, while several others reported Fish and Judy creeks, the Chandler and Anaktuvuk river confluences, several side streams and channels of the Colville River, and the Itkillik River area as prime moose hunting areas (SRBA 2003b). Although small numbers of moose are harvested, they are a valued component of the subsistence harvest in Nuiqsut, and hunters spend considerable effort in their pursuit. Moose offer a significant amount of meat per animal harvested because of their relatively large size compared to other terrestrial mammal subsistence resources.

J.10.4.10 Furbearers

During the 2003 interviews, Nuiqsut hunters described three species of terrestrial furbearers as being especially important: wolf, wolverine, and fox (SRBA 2003b). Once there is adequate snow in the winter for snowmachine travel, usually by November, hunters earnestly begin the pursuit of wolf and wolverine. The harvest area for furbearers extends from the eastern edge of the Colville River Delta along the coast, almost to Admiralty Bay, and then south along the Ikpikpuk River to the Colville River, eastward to the Toolik River, north and crossing the Dalton Highway to Franklin Bluffs, and west and north back to the Colville River Delta (Map J-10). During interviews, the southern extent of the harvest area sometimes extended off of the map that was used.

Hunters travel in groups of one to three over this vast area looking for wolf and wolverine tracks and signs. When the hunters spot tracks, they follow them until the animal can be harvested. Foxes are sometimes trapped, but only a few of the hunters interviewed still set traps. Several hunters consider fox furs harvested inland to be of better quality than those on the coast. These hunters believe that coastal foxes, particularly the Arctic fox, get greasy while feeding on seal scraps left by polar bears, causing their fur to become stained (SRBA 2003b).

Wolverine harvest locations reported for 1994-1995, 2000, and 2001, as shown in Figure J-18, indicate that a third of the harvests took place in or near Nuiqsut, 18 percent at unknown locations, and 33 percent near areas south of Nuiqsut, along the Colville River from Ocean Point to Umirak. Similarly, 27 percent of wolves harvested during these years were harvested in the Kuparuk (*Kuukpaagruk*) area, with 29 percent harvested in the area of Fish and Judy creeks, Harrison Bay, and Tingmiaqsigvik. A number of upriver sites accounted for the balance of the wolf harvest, including Kikiktagruurak (14 percent), Kittik (9 percent), Ahaliurak (5 percent), and Ocean Point (5 percent). One hunter, explaining where wolves and wolverines could be found, said, "Wolf, wolverine, and caribou go to the lowest levels, which have the best hiding spots. These are rivers, bluff bases, creeks, frozen ground, and low level places that allow them to hide" (SRBA 2003b).

The relatively small number of wolves and wolverines harvested is not representative of their importance to the community. The pursuit of furbearers is friendly and competitive, both within and between villages, and has an important function in teaching young hunters, primarily males, the landmarks and resources of a very large area. Occasionally, furbearer hunters will encounter hunters from other villages on the tundra, which fosters connections between villages; this connection takes place mostly in a male social context. Wolf and wolverine fur continues to be an important and highly valued component in Iñupiat clothing. There is an economic interest in fur hunting, despite the relatively poor commercial market for fur; one fur hunter stated that he received \$450 for a good wolverine pelt and \$600 for a wolf pelt. This money allowed him to pay for enough gas for a snowmachine trip to Barrow (SRBA 2003b).

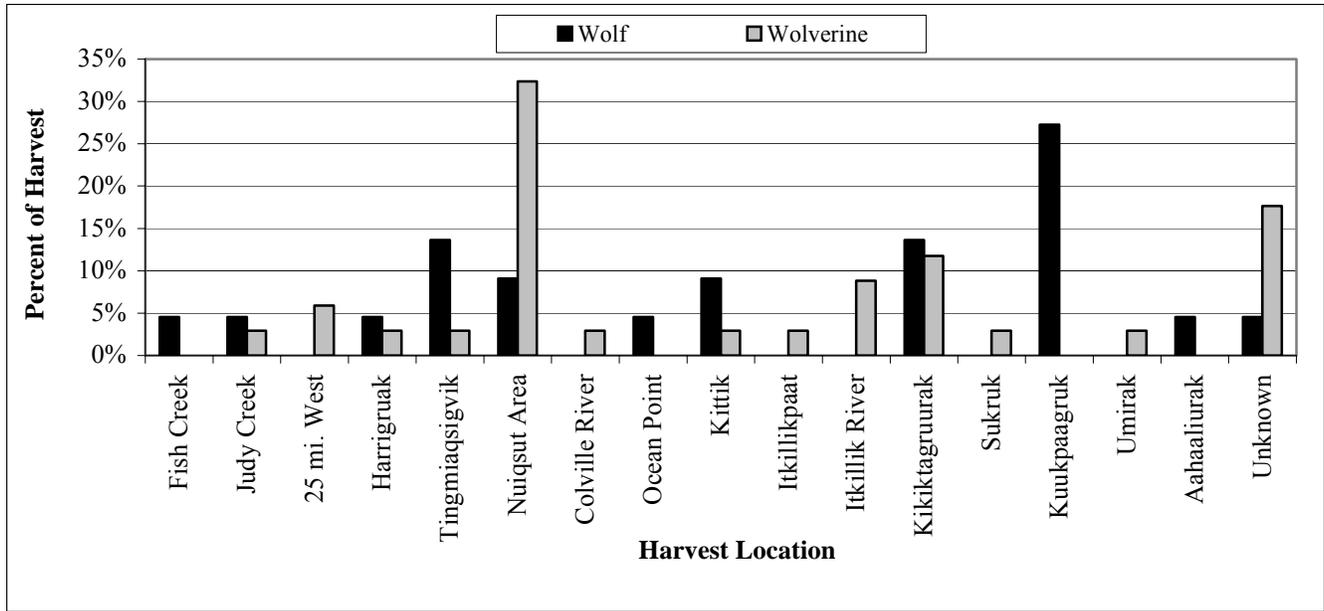


Figure J-18. Nuiqsut Subsistence Wolf and Wolverine Harvests by Location, 1994-1995, 2000, and 2001.

J.10.4.11 Berries and Plants

As shown in Map J-12, berries and plants are a widely dispersed resource, but are available for a very short time. Depending on the variety, they are available along the raised banks of streams and rivers and in wet tundra areas. Berries of numerous varieties are harvested in the Fish and Judy creeks area, and along the Colville, Chandler, Anaktuvuk, and Itkillik rivers. Plants such as Eskimo potato, medicinal plants, and greens are harvested at the same time, usually when families are out at camp hunting and fishing in the late summer. Berry picking is still considered a job primarily for women and children, although many men mentioned picking berries as well. Berry varieties include salmonberries and blueberries. Berries are primarily harvested in August, when many families are out moose hunting up the creeks and rivers of the area. People will often pick buckets or large freezer bags full of berries, which are then taken home and stored in ice cellars or freezers for later use in Eskimo ice cream made from whipped seal, or other fat, sugar, plants, and berries.

J.10.5 Subsistence Expenditures

Figures J-19 and J-20 indicate recent survey results regarding Nuiqsut household consumption of subsistence foods and expenditures on subsistence activities. At the Nuiqsut 1998 Northeast IAP/EIS public hearing, Thomas Napageak considered the household expenditures for subsistence activities indicated in Figure J-19 to be too low. He reported that: “A snowmobile alone costs about that much [\$10,000]. An Evinrude \$12,000. Those are what we use to hunt. They think that we don’t spend a lot of money to subsist here. We no longer use oars to do our hunting when we are in our boats. We use Evinrude outboard motors...” (USDOI BLM 1998). Some residents purchase equipment and loan it to friends and relatives who have more time to hunt, in return for a share of the harvest (SRBA 2003b). A gill net suitable for fishing in the Colville River cost from \$130 to \$185 in 2003, outboard motors of appropriate size cost \$4,000 to \$16,000, and a new, fully equipped outboard boat (with motors, fuel tank, cover, and trailer), suitable for river and maritime use, can cost almost \$40,000 dollars.

Nuiqsut residents, responding to a NSB 1998-1999 household census, indicated that 17 households (27 percent of respondents) spent from \$1 to \$1,000 on subsistence activities, 24 households (38 percent of respondents) spent between \$1,001 and \$6,000 per year on subsistence activities, and 16 households (25 percent of respondents) spent more than \$6,001 (Figure J-19). Eight Nuiqsut residents reported spending more than \$10,000 on subsistence activities. Nuiqsut residents were also asked what amount of subsistence foods they ate daily; of the 44

respondents, 75 percent indicated that subsistence foods made up half or more of their daily food intake (Figure J-20). Only 6 respondents (14 percent) indicated little or no use of subsistence foods.

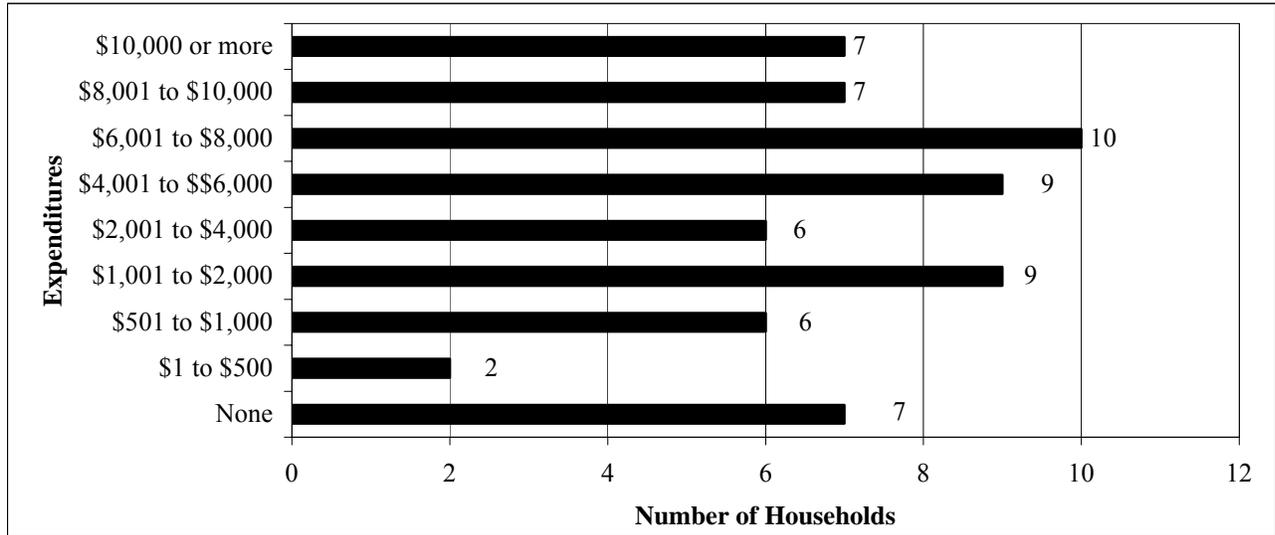


Figure J-19. Nuiqsut Expenditures on Subsistence Activities, 1998-1999.



Figure J-20. Nuiqsut Household Consumption of Subsistence Foods in Relation to All Food Consumed, 1998-1999.

J.11 Anaktuvuk Pass

This section is reproduced from the *Alpine Satellite Development Plan EIS* (USDOI BLM 2004), one of the few documents to address North Slope oil development impacts on the community of Anaktuvuk Pass. Anaktuvuk Pass is just south of the continental divide, in a low pass connecting the drainages of the Anaktuvuk and John rivers, 60 miles west of the Dalton Highway. The area has been used by the interior Iñupiat people, called the Nunamiut, for at least 500 years, and by Iñupiat predecessor groups for at least 4,000 years. The modern village began in 1949, with the establishment of a trading post, followed by a post office in 1951, and a church in 1958. Residents incorporated as a fourth-class city in 1959. A permanent school was established in 1961, and the community was reclassified as a second-class city in 1971 (Hall et al. 1985).

The Nunamiut people are among the few in the NSB without direct access to marine mammals. As a consequence, the Iñupiat of this village rely heavily on terrestrial mammals and fish for subsistence. Caribou is the main terrestrial mammal resource, with moose and Dall sheep also important resources for hunters. Freshwater fish from area lakes and streams are an important supplement to terrestrial mammals. Terrestrial resources are often bartered for marine resources with other communities, particularly Nuiqsut and Barrow (Brower and Opie 1996, Fuller and George 1999).

Hall et al. (1985) divided the history of the people of Anaktuvuk Pass into seven periods: prehistoric (before 1860), protohistoric (1860-1890), pre-removal historic (1890-1920), coastal hiatus (1920-1934), return (1934-1949), settlement (1949-1960), and mechanization (1960-1984). This structuring of events revolves around the arrival of Euro-Americans, the historic depopulation of the Brooks Range and interior in response to environmental and historical events, and the resettlement of those areas. Euro-American contact beginning in the 19th century, and the cyclical nature of the environment (e.g., fluctuations in caribou herds), worked together to change Nunamiut lifeways from the protohistoric through the coastal hiatus periods.

A caribou population crash and the advent of commercial whaling in the latter half of the 19th century; sustained contact with Euro-Americans; the introduction of new technology (such as rifles), trade goods (flour, tea, sugar, and coffee), and diseases; and the integration of Iñupiat people into the world economic system (commercial whaling and later fur trapping), all had effects on the Nunamiut. As a result of these changes, many Nunamiut were drawn to the coast through the Colville River area. They dispersed along the coast to participate in commercial whaling and fur trapping, and to access the greater abundance and diversity of subsistence and imported resources in the coastal areas. Others moved towards Fort Yukon and the Mackenzie River area, where the Porcupine Caribou Herd was more numerous than the WAH caribou (Hall et al. 1985).

Following the decline of commercial whaling by 1910, falling fur prices in the 1930s, and the steady rebound in WAH caribou populations, Iñupiat people returned to the Brooks Range in the late 1930s. Many followed the Colville River back to Anaktuvuk Pass, a location preferred by Nunamiut people for its ready access to caribou, moose, Dall sheep, and fish. A trading post and a school were built in Anaktuvuk Pass, which became the nucleus of a community that drew in Nunamiut people from several communities in the Brooks Range. The maintenance of the subsistence way of life from a sedentary village was partially facilitated by the use of a variety of all-terrain vehicles to replace pack dogs. These all-terrain vehicles included snowmachines, four-, six-, and eight-wheeled vehicles, and tracked vehicles (Hall et al. 1985).

J.11.1 Contemporary Seasonal Round

Seasonal subsistence activities are summarized in [Figure J-21](#). Caribou hunting is the mainstay of the Nunamiut subsistence hunt; caribou are hunted year-round as needed, but in particular from July through November. The caribou migrate through the Anaktuvuk Pass area twice a year, in the spring and fall, although the number and timing of the migration through the area vary from year to year.

The 1994-1995 harvest year was one such anomalous year, when the migrations were small and the summer availability was high—a time when the caribou are normally out on the coastal plain for insect relief (Brower and Opie 1996). Dall sheep (the main target), brown bear, and moose are hunted in August, September, and October some distance from the village. Birds and fish are supplementary to terrestrial mammals, but are harvested when available and are more important if caribou numbers are low. Berries are seasonally important, with salmonberries and blueberries providing the majority of vegetable foods.

J.11.2 Subsistence Harvests

As mentioned above, Anaktuvuk Pass is unlike the other NSB communities in that resource users have no direct access to the marine mammal resource that in many ways defines the Iñupiat of the coast. [Tables J-7](#) and [J-8](#) show the importance of terrestrial mammals, with nearly three-fourths of the community participating in the harvest, which comprised 88 to 95 percent of the harvest. Caribou are the main terrestrial mammal species harvested, with

moose and sheep also harvested in small numbers. Fish are a smaller component of the subsistence diet by weight, but are still an important food source. Fish species harvested include grayling, Arctic char, lake trout, burbot, and pike. Birds harvested during the brief migration include a variety of geese and ducks. Preferred species are white-fronted and Canada geese and several species of small ducks, such as pintail. Vegetation harvested includes berries and Eskimo potatoes (SRBA 2003b).

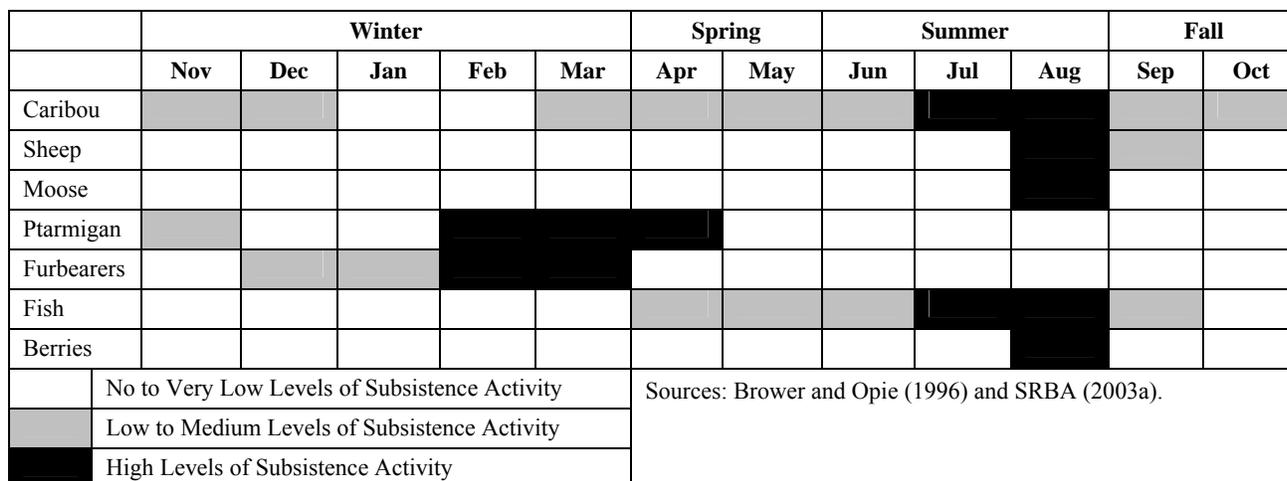


Figure J-21. Annual Cycle of Subsistence Activities – Anaktuvuk Pass.

Table J-7. Anaktuvuk Pass Subsistence Harvests and Subsistence Activities.

Resource	Percentage of Households					Estimated Harvest				
	Use	Try to Harvest	Harvest	Receive	Give	Number	Total Pounds	Mean Household Pounds	Per Capita Pounds	% Total Harvest
1992										
All resources							85,040	1,076	315	100
Fish		67				4,892	6,897	87	26	8
Land mammals		74				771	74,412	942	276	88
Marine mammals		1				0	0	0	0	0
Birds/eggs		21				733	913	12	3	1
Vegetation		68				607	2,818	36	10	3
1994-1995										
All resources		62	61		75					100
Fish						1,282				4
Land mammals						424				95
Marine mammals						0				0
Birds/eggs						196				>1
Vegetation						21				>1
Sources: Brower and Opie (1996), Fuller and George (1999), and SRBA (2003a).										

J.11.3 Subsistence Use Areas

Anaktuvuk Pass hunters rely heavily on terrestrial mammals, and to a lesser extent, on fish. One of the important factors contributing to the resettlement of the area was the seasonal migration of caribou through the Pass. Detailed and exhaustive mapping of lifetime subsistence use areas for the community were presented in the 1985 report produced by Hall et al. for the NSB, but these are beyond the scope of this document. [Map J-14](#) is a partial

SUBSISTENCE

subsistence use area map for the last 10 years based on interviews conducted in 2003 for the *Alpine Satellite Development Plan EIS* (SRBA 2003a, b).

A formerly used harvest strategy was herding small groups of migrating caribou into lakes, streams, or valleys to limit their mobility, and then harvesting and processing the caribou in a cooperative group undertaking (Spearman 1979). While waiting for the caribou to be herded through these areas, members of the group would fish in the streams and lakes. Many residents recalled this way of life from their youth in the smaller communities (e.g. Chandler Lake, Killik River, and Tulugaq Lake), which in the 1950s came together in Anaktuvuk Pass (Rausch 1951). Nunamiut hunters bartered furs and dried caribou for other resources, such as marine mammal fats and hides, with coastal people at trade fairs in the Colville River Delta, Barrow, and Barter Island. Anaktuvuk Pass people currently trade resources and hunting access with Nuiqsut people in much the same manner as they did during traditional times; however, hunters now use modern means of transportation and hunt on a compressed time schedule (Spearman 1979; Hall et al. 1985; Ahtuanguaruk in USDOJ MMS 2001; SRBA 2003b).

Table J-8: Selected Anaktuvuk Pass Subsistence Harvests.

Resource	Estimated Harvest				
	Number	Total Pounds	Mean Household Pounds	Per Capita Pounds	% Total Harvest
1990					
Caribou	592	69,964	985	223	
1991					
Caribou	545	66,712	940	245	
1992					
Caribou	600	70,222	889	260	83
Dall sheep	32	3,168	40	12	4
Grayling	3,709	2,967	38	11	4
Lake trout	531	2,124	27	8	3
Arctic char	640	1,791	23	7	2
1993					
Caribou	574	67,713	846	219	
1994-1995					
Caribou	322				83
Dall sheep	27				13
Grayling	931				1
Lake trout	80				1
Arctic char	215				1

Sources: Brower and Opie (1996), Fuller and George (1999), ADFG (2001), and SRBA (2003a).

Harvest areas identified in the most recent data from the NSB are primarily within approximately 20 miles of Anaktuvuk Pass, with most trips taken in the immediate vicinity of the community (Brower and Opie 1996). Lifetime subsistence use areas, as depicted in Hall et al. (1985), encompass the entire NSB from Aklavik, Canada, to Kivalina and Kotzebue Sound, and north to Point Barrow and Wainwright. Anaktuvuk Pass residents also traveled to Fort Yukon, Bettles, Wiseman, and Old Crow while trapping or working at seasonal jobs (Paneak 1990, Brower and Opie 1996). Travel corridors and trapping areas included the Sagavanirktok, Killik, Kobuk, Itkillik, John, and Colville rivers, and the coast between the Colville River Delta and Demarcation Point (Hall et al. 1985).

In August 2003, SRBA interviewed 12 subsistence harvesters in Anaktuvuk Pass for the *Alpine Satellite Development Plan EIS*. One purpose of these interviews was to learn if Anaktuvuk Pass residents used the Colville River Delta area for subsistence activities. The City of Anaktuvuk Pass identified knowledgeable Anaktuvuk Pass subsistence users for these interviews. Resource users interviewed in Anaktuvuk Pass used the valleys and slopes of the Brooks Range Mountains between the Killik River valley and Itkillik Lake, with some resource users having gone farther east and west on occasion. Most resource users did not go farther south than the Alatna, Hunt Fork, and North Fork rivers, although some had made trips to Bettles in the past. North of the Brooks Range, resource

users traveled by snowmachine and all-terrain vehicle along the front slope of the mountains, east to Itkillik Lake, west to Chandler River, north to Rooftop Ridge, and parallel the Colville River past Umiat to the Chandler and Killik rivers, then heading back south into the mountains. Periodic trips to Nuiqsut were made along the east or west side of the Anaktuvuk River, almost to its confluence with the Colville River, then heading east towards the Kuparuk hills, and north to Nuiqsut along the cat trail that roughly parallels the Itkillik River (Map J-14).

J.11.4 Contemporary Connections to Nuiqsut, the Colville River Area, and the Beaufort Sea Coast

Anaktuvuk Pass residents have numerous connections to Nuiqsut, the Colville River area, and the Beaufort Sea. These connections include relatives who live in Nuiqsut; persons, or persons with relatives, who were born and raised along the Colville River and now reside in Anaktuvuk Pass; hunting for caribou in the Nuiqsut area during times of scarcity at Anaktuvuk Pass; hunting for wolf and wolverine during trips to Nuiqsut; and trading and exchanging with coastal residents and attending funerals (Rausch 1951; Hall et al. 1985; Paneak 1990; SRBA 2003b).

Many residents have relatives and friends residing in Nuiqsut, Kaktovik, and Barrow, as well as other North Slope communities. Some Anaktuvuk Pass residents moved into the community at different ages and maintained connections to the communities they came from, including Fort Yukon, Shungnak, Barrow, and Fairbanks (SRBA 2003b). Others grew up, or had relatives who grew up, along the Colville River and the Beaufort Sea coast and moved to Anaktuvuk Pass after the community was established. Two lifetime Anaktuvuk Pass residents described their several trips to Nuiqsut in the 1970s, stating that they mostly went to Nuiqsut for funerals. One resident stated, “Our fathers grew up in the flat country, we didn’t, but our fathers did. They could travel anytime, even at night and never get lost. We never grew up in the flats; we are mountain men” (SRBA 2003b). The late Simon Paneak, of Anaktuvuk Pass, was noted for having traveled widely, as he had guided several wide-ranging explorations of the region, including the National Petroleum Reserve – Alaska (Ebbley and Joesting 1943, Paneak 1990).

Coastal residents trade food, furs, and other goods with Anaktuvuk Pass residents in exchange for dry meat and other Nunamiut specialties. Some Anaktuvuk Pass residents receive marine mammal products from friends and relatives in coastal communities (SRBA 2003b). Anaktuvuk Pass ties to the coast were particularly evident with one harvester who was born in Barrow and had lived the last 30 years in Anaktuvuk Pass. This person said, “I eat both foods: coastal (seal oil, seal, walrus, white fish) and Nunamiut/inland food (caribou, moose, freshwater fish [grayling, char, lake trout, ling cod], edible plants, and berries).”

Periodic shortages of caribou and other game have made living inland a difficult proposition for Iñupiat people for centuries, and required them to follow the migrating caribou herds year-round. In the late 1940s, the Nunamiut settled into Anaktuvuk Pass from Chandler Lake, Killik River, and Tuluḡaq Lake, partially in response to the requirement for children to attend school. A result of sedentary life was the increased difficulty resource users experienced in harvesting adequate amounts of subsistence foods, even with modern transportation and other equipment. An added, and more recent complication, was the establishment of the Gates of the Arctic National Park and Preserve, which has restricted the use of certain all-terrain vehicles (such as Argos and four-wheelers) at snow-free times of the year. This has restricted Nunamiut from accessing subsistence areas, which they formerly occupied and used, during snow-free months (Hall et al. 1985; SRBA 2003b).

Several times in the 1970s and 1980s, and as recently as 1994 and 1998, Anaktuvuk Pass residents found it necessary to travel great distances to procure enough caribou to feed their community. The NSB has paid for some trips, using charters and float planes to fly hunters from Anaktuvuk Pass to places like Umiat and Schrader Lake (located approximately 60 miles southwest of Kaktovik; SRBA 2003b). More recently, hunters have traveled to Nuiqsut to harvest caribou (Map J-14), and on other occasions Nuiqsut hunters have provided caribou, fish, and other coastal foods during lean times to the residents of Anaktuvuk Pass. The Nunamiut resource users reciprocated with gifts of dry meat and other specialties.

A lifetime Anaktuvuk Pass hunter, describing his winter trail to Nuiqsut, indicated he traveled in February or March, hunting as he traveled. This hunter stated that he generally stayed on the trail, using his binoculars to look out to the sides of the trail for game. He went to Nuiqsut once or twice a year, but did not do any fishing on the way to Nuiqsut, just wolf and wolverine hunting. He stated that his trips had a dual purpose, to hunt and to visit relatives in Nuiqsut, and that he generally stayed in Nuiqsut less than a week. He put 6,000 miles on his snowmachine in 6 months (SRBA 2003b).

Another Anaktuvuk Pass hunter harvested 15 to 20 caribou on a trip to Nuiqsut in 1998. He indicated that he harvested considerable caribou each year and said, "I hunt mostly in the winter time; it is easier. That is when the caribou are pretty fat. I hunt mostly in winter when there is snow on the ground; you can go further. The summer time you cannot go too much unless you have a good Argo. My dad has one." He said that he received marine mammals from Nuiqsut and Barrow when they sent them up. He stated, "Also from Wainwright when they catch a whale; they send some in a box" (SRBA 2003b).

There is friendly competition between hunters and communities in the pursuit of wolf, wolverine, and fox. Several Anaktuvuk Pass hunters have traveled north to Nuiqsut, and hunted wolf, wolverine, and caribou en route. One hunter said, "I hunted everything on my trip to Nuiqsut," and described the trip to Nuiqsut as "one camp" away. In other words, he left Anaktuvuk Pass, made camp for one night, and went to Nuiqsut the next day. Other hunters remarked similarly on the route, noting important landmarks and features along the way. One hunter had harvested wolf and wolverine near Ocean Point in 1998. While residents of several communities encountered each other while hunting furbearers, it was often noted that "it is better for them to see your tracks than for you to see theirs," as often the tracks of other hunters was a sign that the animal being sought had already been taken or run off by the other hunter (SRBA 2003b).

In summary, Anaktuvuk Pass residents have hunted caribou, wolf, and wolverine along their winter travel routes north from near the confluence of the Anaktuvuk and Colville rivers all the way to Nuiqsut ([Map J-14](#)). In summer, Anaktuvuk Pass residents have hunted for caribou along the Colville River, past Ocean Point, and down the Nigliq Channel to the Beaufort Sea. They have also hunted summer caribou down the main channel of the Colville River to Anajuk Point, and fished in the main channel of the Colville River near Ikillikpaat.

J.12 Other Villages

Other communities within or adjacent to the National Petroleum Reserve – Alaska are the Chukchi Sea communities of Point Lay and Wainwright. Subsistence harvest areas for these communities are not within or adjacent to the Planning Area, although recent research indicates that movement by the TLH caribou does bring the herd into the traditional subsistence harvest areas of the communities of Wainwright and Point Lay. Outside the North Slope, black brant that molt in the National Petroleum Reserve – Alaska have a substantial value to subsistence users in the Y-K Delta, and Canada geese are used extensively by subsistence hunters in Alaska's Interior region.

Although subsistence users in many areas south of the Brooks Range utilize migratory waterfowl, by far the most important use is by Y-K Delta subsistence hunters. The Yup'ik Eskimo of the Y-K Delta region sustain themselves by harvests of their subsistence mainstays of salmon and other fish, and seals. However, waterfowl and other birds are important seasonal foods as well, particularly in the spring when their migrations bring them back to the Y-K Delta region. The Y-K Delta, one of the most productive areas for geese worldwide, is home to all of the world's cackling Canada geese (65,000), nearly all of the emperor geese (59,000), about 80 percent of the world's Pacific black brant, and 107,000 white-fronted geese. In addition, almost 75 percent of Alaska's population of sandhill cranes breeds on the Delta (USDOI USFWS 1999a, b).

An estimated annual average of 97,000 birds was taken for subsistence use on the Y-K Delta between 1985 and 1995. Six goose subspecies are taken in this area: Pacific white-fronted goose, lesser Canada goose, cackling Canada goose, emperor goose, black brant, and lesser snow goose. Tundra swans and sandhill cranes are important species taken, and the principal duck species are pintail, mallard, and scoters. Other duck species taken are scaup,

oldsquaw, and king and spectacled eiders. Eighty-one percent of all birds harvested are taken before September 1 (Wentworth and Seim 1996). Of the total harvest on the Y-K Delta in this period, 26,000 (27 percent) were geese, 44,000 (46 percent) were ducks, 16,000 (16 percent) were ptarmigan, 6,000 (6 percent) were swans, 3,000 (3 percent) were cranes and 2,000 (2 percent) were other birds (primarily loons, murre, shorebirds, and gulls). This represented an average of 33 birds harvested for every household on the Y-K Delta. Converted to usable weights, the subsistence harvest of birds provided an average of 280,000 pounds of food annually to Y-K Delta residents between 1985 and 1995, or about 95 pounds of food per Y-K Delta household.

Large numbers of waterfowl breed, molt, and stage within or adjacent to the Planning Area. Because most of these species migrate along the Pacific and Mid-Continent flyways and other major corridors to distant localities where they spend most of the year, their conservation and management is of interest to subsistence hunters on the Y-K Delta.

J.13 Subsistence Access Routes

As part of a study analyzing travel in North Alaska in 1974, a map describing historic travel routes was produced; this map was included in the 1998 Northeast IAP/EIS (USDOI BLM and MMS 1998). In the often featureless plain that characterizes much of the Planning Area during winter, topographic features such as river valleys, shorelines, large lakes, and the Beaufort Sea coastline, as well as geological formations such as pingoes, are crucial to the Iñupiat in determining safe routes to subsistence hunting sites. During periods of extreme weather, river valleys and shore banks offer some measure of protection for hunters, and there are often subsistence camps and cabins in these areas. If the weather is not too extreme and the river valley is sufficiently well defined, a traveler can continue the journey to the hunting site. During good weather, Iñupiat hunters can navigate using familiar features, such as meandering river bends, and transit between river drainages in the pursuit of game. Although fluvial features may define spring and summer movement corridors, they should be considered as points from which general cross-country movement sometimes occurs.

The Colville River valley and adjacent coastal lowlands comprise a traditional Iñupiat harvest zone that was actively inhabited until the 1940s. The Colville River historically was used by the coastal Iñupiat as a link to the Interior ([Map J-15](#)). Beyond its function as an interregional link, the Colville River and its tributaries provide the people of Nuiqsut with an area rich in hunting, fishing, and trapping opportunities. Moose are hunted along the length of the river, while summer fishing occurs in the Colville River Delta. Anaktuvuk Pass hunters travel down the Anaktuvuk River to the Colville and Ikillik rivers for moose and caribou, and, on occasion, to travel to Nuiqsut.

Winter fishing occurs around the village and inland along Fish Creek. Caribou are taken throughout the range of Nuiqsut's coastal subsistence harvest area and also along the southern reaches of the Ikillik River. The principal watercourses west of the Colville River that are used in the pursuit of subsistence resources are the Ublutuoch River and Judy and Fish creeks. To the east of the Colville River, hunters use the Miluveach and Ikillik rivers. Along the coastal plain, Nuiqsut hunters seem to favor hunting in the area between the community and Teshekpuk Lake. The lake is approximately 85 miles from Nuiqsut, and subsistence hunters often circumnavigate it before returning home.

While hunting near Teshekpuk Lake, Nuiqsut hunters often encounter hunters from Barrow, which has the largest subsistence hunting zone on the North Slope ([Map J-1](#)). From a review of [Map J-15](#), it is believed that Barrow hunters use all of these routes and more. Atqasuk is used as a base camp for Barrow hunters as they hunt toward and into the foothills of the Brooks Range. The Meade, Topaguruk, and Ikpikpuk rivers are used for navigation into the Interior. The Ikpikpuk River route is particularly important, because it lies on the boundary of the Planning Area. Barrow hunters guide along the Beaufort Sea shoreline, using the smooth ice and the landfast-ice zone to reach Teshekpuk Lake. They often circumnavigate the lake and proceed to Nuiqsut to visit family members (Tremont 1987, 1997).

SUBSISTENCE

Atqasuk subsistence hunters primarily use the Meade, Inaru, Topaguruk, and Chipp river drainages for caribou hunting and for fishing, but the extent of their subsistence-harvest area extends farther west toward the Chukchi coast and east toward the Oumalik and Ikpikpuk rivers ([Map J-6](#); USDOI BLM 1978; Schneider et al. 1980).

J.14 Bibliography

- Ahtuanguaruak, R. 2001.** Scoping Testimony. Draft Environmental Impact Statement Hearing, Liberty Development and Production Plan, March 19, 2001, Nuiqsut, Alaska. U.S. Department of the Interior, Minerals Management Service, Alaska Outer Continental Shelf Region, Anchorage, Alaska.
- Akootchook, I. 1979.** As Cited in USDOI MMS 1979. Public Hearing, Beaufort Sea Lease Sale, Kaktovik. U.S. Department of the Interior, Minerals Management Service, Alaska Outer Continental Shelf Region, Anchorage, Alaska.
- Alaska Beluga Whale Committee (ABWC). 2002.** Electronic Mail Dated June 6, 2002, from K. Frost to M. Burwell; Subject: Harvest Figures for Beluga Whales at Point Lay and Wainwright. U.S. Department of the Interior, Minerals Management Service, Alaska Outer Continental Shelf Region.
- Alaska Consultants, Inc. (ACI), and Stephen R. Braund and Associates (SRBA). 1984.** Subsistence Study of Alaska Eskimo Whaling Villages. Prepared for the U.S. Department of Interior, Anchorage, Alaska.
- _____, **C.S. Courtnage, and SRBA. 1984.** Barrow Arch Socioeconomic and Sociocultural Description. Technical Report No. 101 (A99/PB 85-150019). Prepared for the U.S. Department of Interior, Minerals Management Service, Alaska Outer Continental Shelf Region, Social and Economic Studies, Anchorage, Alaska.
- Alaska Department of Community and Economic Development (ADCED). 2003.** Alaska Community Database, Community Information Summaries for Barrow, Atqasuk, Anaktuvuk Pass, and Nuiqsut: [http://www.dced.state.ak.us/cbd/commdb/CF_CIS.htm].
- Alaska Department of Fish and Game (ADFG). 2000.** Subsistence in Alaska: A Year 2000 Update. Alaska Department of Fish and Game, Division of Subsistence, Juneau, Alaska.
- _____. **2001.** Community Profile Database. Version 3.11. March 2001. Alaska Department of Fish and Game, Division of Subsistence, Juneau, Alaska.
- _____. **2003.** Unpublished Nuiqsut Subsistence Harvest Data, 1993. Alaska Department of Fish and Game, Division of Subsistence, Juneau, Alaska.
- Alaska Department of Natural Resources (ADNR). 1997.** Historical and Projected Oil and Gas Consumption. Alaska Department of Natural Resources, Anchorage, Alaska.
- Alaska Federation of Natives. 2003.** [<http://www.nativefederation.org/frames/subsistence.html>].
- Angliss, R.P., and K.L. Lodge. 2002.** Alaska Marine Mammal Stock Assessments, 2002. National Oceanic and Atmospheric Administration Technical Memorandum. NMFS-AFSC-133. With Contributions from B. Fadely, R. Hobbs, T. Loughlin, S. Mizroch, S. Moore, M. Muto, M. Perez, D. Rugh, J. Sease, K. Shelden, R. Towell, A. York, and the Alaska Fisheries Science Center Publications Unit. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Alaska Fisheries Science Center, and National Marine Mammal Laboratory, Seattle, Washington.
- Brower, H.K., Jr., and R.T. Opie. 1996.** North Slope Borough Subsistence Harvest Documentation Project: Data for Anaktuvuk Pass, Alaska, for the Period July 1, 1994, to June 30, 1995. North Slope Borough, Department of Wildlife Management, Barrow, Alaska.

- _____, and _____. **1997.** North Slope Borough Subsistence Harvest Documentation Project: Data for Nuiqsut, Alaska, for the Period July 1, 1994 to June 30, 1995. North Slope Borough, Department of Wildlife Management, Barrow, Alaska.
- _____, and **R.T. Hepa. 1998.** North Slope Borough Subsistence Documentation Project: Data for Nuiqsut, Alaska, for the Period July 1, 1994 to June 30, 1995. North Slope Borough, Department of Wildlife Management, Barrow, Alaska.
- Brower, T.P. 1980.** As Cited in North Slope Borough 1980. Qiniqtuagaksrat Utuqqanaat Inuuniagninisiqu: The Traditional Land Use Inventory for the Mid-Beaufort Sea. Volume 1. North Slope Borough, Commission on History and Culture, Barrow, Alaska.
- Brown, W.E. 1979.** Nuiqsut Paisanjich – Nuiqsut Heritage: A Cultural Plan. Prepared by Arctic Environmental Information and Data Center for the Village of Nuiqsut and the North Shore Bureau Planning Commission and Commission on History and Culture.
- Bryner, W.M. 1995.** Toward a Group Rights Theory for Remediating Harm to the Subsistence Culture of Alaska Natives. *Alaska Law Review* 12(2):293-294.
- Circumpolar Research Associates (CRA). 2002.** Sociocultural Impacts of the Alpine Field on the Colville River Community of Nuiqsut: An Initial Assessment. Final Report for Phillips, Inc., and the Kuukpikmuit Subsistence Oversight Panel, Anchorage, Alaska.
- Craig, P.C. 1987.** Anadromous Fishes in the Arctic Environment - A Precarious or Relatively Stable Existence? *Biological Papers of the University of Alaska*, University of Alaska, Juneau, Alaska.
- Cramer, D. 1996.** Facsimile Message Dated January 30, 1996 to M. Burwell; Subject: Latest Barrow Walrus-Harvest Figures. U.S. Department of the Interior, Minerals Management Service, Alaska Outer Continental Shelf Region.
- Dames and Moore. 1996.** Northstar Community Meeting, Nuiqsut, March 27, 1996. Dames and Moore, Anchorage, Alaska.
- Dobbyn, P. 2002.** Native Whalers Vow to Defy IWC; Subsistence: Eskimos Would Prefer Commission Reconsider Its Stance. *Anchorage Daily News*, Page B2. Anchorage, Alaska.
- Ebbley, N., Jr., and H.R. Joesting. 1943.** Report of Investigation of Petroleum Seepages, Arctic Slope Area, Alaska. U.S. Bureau of Mines and the Alaska Territorial Department of Mines, Washington, D.C., and Juneau, Alaska. [Edition published on Alaska Department of Natural Resources, Division of Geological and Geophysical Surveys Website as MR 195-27.pdf with additional material.]
- Elavgak, F. 1979.** As Cited in Brown, W.E., Nuiqsut Paisanjich. Arctic Environmental Information and Data Center. Prepared for the Village of Nuiqsut and the North Slope Borough Planning Commission and Commission on History and Culture.
- Fuller, A.S., and J.C. George. 1999.** Evaluation of Subsistence Harvest Data from the North Slope Borough 1993 Census for Eight North Slope Villages for the Calendar Year 1992. North Slope Borough, Department of Wildlife Management, Barrow, Alaska.
- Gay, J. 2002.** Panel Approves Whale Hunting Extension: QUOTAS: International Whaling Commission Allows Bowhead Kills for Eskimos. *Anchorage Daily News*, Page B1. Anchorage, Alaska.
- George, J.C., and B.P. Nageak. 1986.** Observations on the Colville River Subsistence Fishery at Nuiqsut, Alaska for the Period July 4 – November 1, 1984. North Slope Borough, Barrow, Alaska.

- _____, **and R. Kovalsky. 1986.** Observations on the Kupigruak Channel (Colville River) Subsistence Fishery, October 1985. North Slope Borough, Barrow, Alaska.
- Hall, E.S., Jr., S.C. Gerlach, and M.B. Blackman. 1985.** In the National Interest: A Geographically Based Study of Anaktuvuk Pass Iñupiat Subsistence Through Time. 2 Volumes. North Slope Borough, Barrow, Alaska.
- Harcharek, R.C. 1995.** North Slope Borough 1993/94 Economic Profile and Census Report. Volume 7. North Slope Borough, Department of Planning and Community Services, Barrow, Alaska.
- Hepa, R., H.K. Brower, Jr., and D. Bates. 1997.** North Slope Borough Subsistence Harvest Documentation Project: Data for Atqasuk, Alaska for the Period July 1, 1994 to June 30, 1995. North Slope Borough, Department of Wildlife Management, Barrow, Alaska.
- Hoffman, D., D. Libbey, and G. Spearman. 1988.** Nuiqsut: Land Use Values Over Time in the Nuiqsut Area. North Slope Borough and the Anthropology and Historic Preservation Section of the Cooperative Park Studies Unit Occasional Paper No. 12. University of Alaska, Fairbanks, Alaska.
- Hulen, D. 1996a.** State Loses Subsistence Fight. Anchorage Daily News, Page 1A. Anchorage, Alaska.
- _____. **1996b.** State Vows Subsistence Fight not Over; Lawyers Plan Return to Court to Resist Federal Takeover Plan. Anchorage Daily News, Page 1B. Anchorage, Alaska.
- Human Relations Area Files, Inc. (HRAF). 1992.** Social Indicators Study of Alaskan Coastal Villages, Key Informant Summaries, Volume 1: Schedule A Regions (North Slope, NANA, Calista, Aleutian-Pribilof), J.G. Jorgensen (Principal Investigator). Outer Continental Shelf Study MMS 92-0031. U.S. Department of the Interior, Minerals Management Service, Alaska Outer Continental Shelf Region, Anchorage, Alaska.
- Impact Assessment, Inc. (IAI). 1990.** Subsistence Resource Harvest Patterns: Nuiqsut. Special Report No. 8. Prepared for the U.S. Department of the Interior, Minerals Management Service, Alaska Outer Continental Shelf Region, Anchorage, Alaska.
- Kizzia, T. 1996.** Hunting Disputes on Table; Rural Subsistence Issues Top Federal Board's Agenda. Anchorage Daily News, Page B1. Anchorage, Alaska.
- _____. **2002.** Inupiat Lose Bowhead Appeal; BAN: International Whaling Commission Won't Renew Quotas. Anchorage Daily News, Page A1. Anchorage, Alaska.
- _____, **and D. O'Harra. 2002.** Loss of Hunt Stings Eskimos; Bowhead Whales: Alaska Natives, U.S. Officials Search for Options after Commission's Ruling. Anchorage Daily News, Page A1. Anchorage, Alaska.
- Kruse, J.A., M. Baring-Gould, W. Schneider, J. Gross, G. Knapp, and G. Sherrod. 1983.** A Description of the Socioeconomics of the North Slope Borough. Technical Report No. 85. U.S. Department of the Interior, Minerals Management Service, Alaska Outer Continental Shelf Region, Social and Economic Studies Program, Anchorage, Alaska.
- Kunz, M.L., and D.H. Mann. No Date.** The Mesa Project: Interactions Between Early Prehistoric Humans and Environmental Change in Arctic Alaska: [<http://www.ndo.ak.blm.gov/arctic/cultural/MESA.HTM>].
- _____, **and** _____. **1977.** The Mesa Project: Interactions Between Early Prehistoric Humans and Environmental Changes in Arctic Alaska. Pages 55-62 *In* Arctic Research in the United States. National Science Foundation/Interagency Arctic Research Policy Committee 2: Spring/Summer 1977. U.S. Department of Interior, Bureau of Land Management, Fairbanks, Alaska.

- Kuukpik Corporation. 2002.** Letter to the U.S. Army Corps of Engineers, from Kuukpik Corporation, Dated March 6, 2002.
- Long, F., Jr. 1996.** As Cited in Dames and Moore 1996. Northstar Project Community Meeting, Nuiqsut, March 27, 1996. Dames and Moore, Anchorage, Alaska.
- Morrow, J.E. 1980.** The Freshwater Fishes of Alaska. Alaska Northwest Publishing Company, Anchorage, Alaska.
- Moulton, L.L. 1997.** The 1996 Colville River Fishery. *In* The 1997 Endicott Development Fish Monitoring Program. Volume 2. Report Prepared by MJM Research for British Petroleum Exploration – Alaska, Inc., Anchorage, Alaska.
- _____. **2000.** Harvest Estimate and Associated Information for the 2000 Colville River Fall Fishery. Prepared by MJM Research for Phillips Alaska, Inc., and British Petroleum Exploration – Alaska, Inc., Anchorage, Alaska.
- _____. **2002.** Harvest Estimate and Associated Information for the 2000 Colville River Fall Fishery. Prepared by MJM Research for ConocoPhillips Alaska, Inc.
- _____, **L.J. Field, and S. Brotherton. 1986.** Assessment of the Colville River Fishery in 1985. Chapter 3 *In* Colville River Fish Study, 1985 Biological Report, J.M. Colonell and L.L. Moulton (eds.). Report Prepared by Entrix, Inc., for ARCO Alaska, Inc., Anchorage, Alaska; the North Shore Bureau, Barrow, Alaska; and, the City of Nuiqsut, Alaska.
- Nauwigewauk, V. 1979.** As Cited in Shapiro, Metzner, and Toovak 1979. Historical References to Ice Conditions along the Beaufort Sea Coast of Alaska. Report UAG-R-268. University of Alaska, Geophysical Institute, Fairbanks, Alaska.
- North Slope Borough (NSB). 1980.** *Qiniqtuagaksrat Utuuqanaat Inuuniagninisiquun*: The Traditional Land Use Inventory for the Mid-Beaufort Sea. Volume 1. North Slope Borough, Commission on History and Culture, Barrow, Alaska.
- _____. **1998.** Economic Profile and Census Report. North Slope Borough, Barrow, Alaska.
- _____. **1999.** North Slope Borough 1998/99 Economic Profile and Census Report. Volume 8. North Slope Borough, Department of Planning and Community Services, Barrow, Alaska.
- _____. **2003.** Unpublished Subsistence Survey Data. North Slope Borough, Division of Wildlife Management, Barrow, Alaska.
- Nukapigak, I. 1998.** As Cited in USDO I MMS, Alaska Outer Continental Shelf Region 1998. Liberty Scoping Meeting, Nuiqsut, March 18, 1998. U.S. Department of the Interior, Minerals Management Service, Alaska Outer Continental Shelf Region, Anchorage, Alaska.
- Paneak, S. 1990.** We Hunt to Live. Reprinted by the North Slope Borough Planning Department, Barrow, Alaska from Alaska Magazine, March 1960. With Permission from His Widow Susie Paneak.
- Pedersen, S. 1979.** Regional Subsistence Land Use, North Slope Borough, Alaska. Occasional Paper No. 21. Anthropology and Historic Preservation, Cooperative Park Studies Unit, University of Alaska, Fairbanks, and the North Slope Borough, Barrow, Alaska.

-
- _____. **1995.** Nuiqsut. Chapter 22 *In An Investigation of the Sociocultural Consequences of Outer Continental Shelf Development in Alaska*, J.A. Fall and C.J. Utermohle (eds.). Alaska Department of Fish and Game, Division of Subsistence Technical Report No. 160. Volume 5. U.S. Department of Interior, Minerals Management Service, Anchorage, Alaska.
- _____. **In Prep.** North Slope Subsistence Data Atlas, Nuiqsut Map Series, Extent Land Use by Nuiqsut Residents circa 1973-1986. Alaska Department of Fish and Game, Subsistence Division, Fairbanks, Alaska.
- _____, **R.J. Wolfe, C. Scott, and R.A. Caulfield. 2000.** Subsistence Economics and Oil Development: Case Studies from Nuiqsut and Kaktovik, Alaska. Final Report. Alaska Department of Fish and Game, Division of Subsistence, and the University of Alaska, Fairbanks, Department of Alaska Native and Rural Development, Fairbanks, Alaska.
- Rausch, R. 1951.** Notes on the Nunamiut Eskimos and Mammals of the Anaktuvuk Pass Region, Brooks Range, Alaska. Reprinted with Permission of the Author by the North Slope Borough Planning Department, from *Arctic*, Volume 4, Number 3, December 1951, Barrow, Alaska.
- Research Foundation of the State University of New York (RFSUNY). 1984.** Ethnographic Study and Monitoring Methodology of Contemporary Economic Growth, Socio-cultural Change and Community Development in Nuiqsut, Alaska. Prepared for U.S. Department of Interior, Minerals Management Service, Alaska Outer Continental Shelf Region, Leasing and Environment Office, Social and Economic Studies Unit, Anchorage, Alaska.
- Schliebe, S.L. 1983.** Alaska Polar Bear Harvest Characteristics 1980-1982 Status Report. U.S. Department of the Interior, U.S. Fish and Wildlife Service, Anchorage Alaska.
- _____. **1995.** Alaska Polar Bear Harvest Characteristics 1983-1995 Status Report. U.S. Department of the Interior, U.S. Fish and Wildlife Service, Anchorage, Alaska.
- _____. **2002.** Personal Communication with Mike Burwell, U.S. Department of Interior, Minerals Management Service.
- Schneider, W., S. Pedersen, and D. Libbey. 1980.** The Barrow-Atqasuk Report: A Study of Land Use Values Through Time in the Barrow-Atqasuk Area. Occasional Paper No. 24. University of Alaska, Anthropology and Historic Preservation Cooperative Park Studies Unit, Fairbanks, Alaska, and North Slope Borough, Barrow, Alaska.
- Shapiro, L.H., R.C. Metzner, and K. Toovak. 1979.** Historical References to Ice Conditions along the Beaufort Sea Coast of Alaska. Report UAG-R-268. University of Alaska, Geophysical Institute, Fairbanks, Alaska.
- Spearman, G. 1979.** Anaktuvuk Pass: Land Use Values Over Time. North Slope Borough, Barrow, Alaska, and the University of Alaska, Fairbanks, Anthropology and Historic Preservation Cooperative Park Studies Unit, Fairbanks, Alaska.
- Spencer, R.F. 1976.** The North Alaskan Eskimo: A Study in Ecology and Society. Dover Publications, New York, New York.
- Stephen R. Braund and Associates (SRBA). 2003a.** Alpine Satellite Development Plan Preliminary Draft Environmental Impact Statement. Subsistence, Cultural Resources, and Traditional Knowledge Sections Prepared by SRBA, Anchorage, Alaska.
- _____. **2003b.** Unpublished Field Notes from Interviews Conducted in Nuiqsut, Barrow, Atqasuk, and Anaktuvuk Pass. July and August 2003. Anchorage, Alaska.

- _____, **and Institute of Social and Economic Research. 1993.** North Slope Subsistence Study - Barrow, 1987, 1988 and 1989. Minerals Management Service Technical Report No. 149. Prepared for U.S. Department of Interior, Minerals Management Service, and the North Slope Borough, Anchorage, Alaska.
- Stephensen, W.M., D.W. Cramer, and D.M. Burn. 1994.** Review of the Marine Mammal Marking, Tagging, and Reporting Program 1988-1992. U.S. Fish and Wildlife Service Technical Report MMM 94-1. U.S. Department of the Interior, U.S. Fish and Wildlife Service, Anchorage, Alaska.
- Stoker, S.W. 1983.** Subsistence Harvest Estimates and Faunal Resource Potential at Whaling Villages in Northwestern Alaska. Pages A-1 to A-82 *In* Subsistence Study of Alaska Eskimo Whaling Villages. Prepared by Alaska Consultants, Inc., and Stephen R. Braund and Associates for U.S. Department of the Interior, Washington, D.C.
- Tremont, J. 1987.** Surface-Transportation Networks of the Alaskan North Slope. Outer Continental Shelf Report MMS 87-0010. U.S. Department of Interior, Minerals Management Service, Alaska Outer Continental Shelf Region, Anchorage, Alaska.
- _____. **1997.** Conversation between J. Tremont and M. Burwell; Subject: Present-day Subsistence Access Routes on the North Slope. U.S. Department of the Interior, Minerals Management Service, Alaska Outer Continental Shelf Region, Anchorage, Alaska.
- U.S. Army Corps of Engineers (USACE). 1998.** Draft Environmental Impact Statement. Beaufort Sea Oil and Gas Development/Northstar Project. Appendix B. U.S. Army Corps of Engineers, Anchorage, Alaska.
- U.S. Department of the Interior, Bureau of Land Management (USDOI BLM). 1978.** National Petroleum Reserve-Alaska 105(c) Investigations. U.S. Department of Interior, Bureau of Land Management, Anchorage, Alaska.
- _____. **1998.** Public Hearings for the Northeast National Petroleum Reserve-Alaska Integrated Activity Plan/Environmental Impact Statement, January 13, 1998. Nuiqsut, Alaska. U.S. Department of Interior, Bureau of Land Management, Anchorage, Alaska.
- _____. **2004.** Alpine Satellite Development Plan Final Environmental Impact Statement. Volumes 1, 2, and 3. U.S. Department of Interior, Bureau of Land Management, Anchorage, Alaska.
- _____, **and Minerals Management Service (USDOI BLM and MMS). 1998.** Northeast National Petroleum Reserve-Alaska Final Integrated Activity Plan/Environmental Impact Statement. Volumes I and II. BLM/AK/PL-98/016+3130+930. U.S. Department of the Interior, Bureau of Land Management and Minerals Management Service, Anchorage, Alaska.
- _____, **and** _____. **2003.** Northwest National Petroleum Reserve-Alaska, Final Integrated Activity Plan/Environmental Impact Statement. Volumes 1 and 2. U.S. Department of the Interior, Bureau of Land Management and Minerals Management Service, Anchorage, Alaska.
- U.S. Department of the Interior, Minerals Management Service (USDOI MMS). 1979.** Public Hearing, Official Transcript of Proceedings, Beaufort Sea BF Oil and Gas Lease Sale, Nuiqsut. U.S. Department of Interior, Minerals Management Service, Alaska Outer Continental Shelf Region, Anchorage, Alaska.
- _____. **1994.** Scoping Report, Beaufort Sea Sale 144. U.S. Department of Interior, Minerals Management Service, Alaska Outer Continental Shelf Region, Anchorage, Alaska.
- _____. **1996a.** Beaufort Sea Planning Area Oil and Gas Lease Sale 144 Final EIS. Outer Continental Shelf Environmental Impact Statement/Environmental Assessment MMS 96-0012. U.S. Department of the Interior, Minerals Management Service, Alaska Outer Continental Shelf Region, Anchorage, Alaska.

- _____. **1995.** Public Hearing, Official Transcript of Proceedings, Beaufort Sea Sale 144 Draft EIS, November 7, 1995, Kaktovik, Alaska. U.S. Department of Interior, Minerals Management Service, Alaska Outer Continental Shelf Region, Anchorage, Alaska.
- _____. **1996b.** Proceedings of the 1995 Arctic Synthesis Meeting, October 23-25, 1995, Anchorage, Alaska. U.S. Department of the Interior, Minerals Management Service, Alaska Outer Continental Shelf Region, Anchorage, Alaska.
- _____. **1998.** Liberty Scoping Meeting, March 18, 1998, Nuiqsut, Alaska. U.S. Department of the Interior, Minerals Management Service, Alaska Outer Continental Shelf Region, Anchorage, Alaska.
- _____. **2001.** Transcript of Public Testimony, Draft Environmental Impact Statement for Liberty Development and Production Plan, March 19, 2001, Nuiqsut, Alaska. U.S. Department of Interior, Minerals Management Service, Alaska Outer Continental Shelf Region, Anchorage, Alaska.
- U.S. Department of the Interior, U.S. Fish and Wildlife Service (USDOI USFWS). 1992.** Pacific Flyway Management Plan.
- _____. **1999a.** Population Status and Trends of Sea Ducks in Alaska. Unpublished Report. U.S. Department of the Interior, U.S. Fish and Wildlife Service, Anchorage, Alaska.
- _____. **1999b.** Guide to Management of Alaska's Land Mammals. U.S. Department of the Interior, U.S. Fish and Wildlife Service, Office of Subsistence Management, Anchorage, Alaska.
- Wentworth, C., and S. Seim. 1996.** Subsistence Waterfowl Harvest Survey, Yukon-Kuskokwim Delta, Comprehensive Report 1985-1995 and Results 1995. U.S. Department of the Interior, U.S. Fish and Wildlife Service, Anchorage, Alaska.
- Whitney, D. 1996.** Stevens Pushes Subsistence Moratorium. Natives Oppose One-Year Delay in Federal Takeover of State Fisheries. Anchorage Daily News, Page B1. Anchorage, Alaska.
- Wolfe, R.J., and R.J. Walker. 1987.** Subsistence Economies in Alaska: Productivity, Geography, and Development Impacts. *Arctic Anthropology* 24(2):56-81.