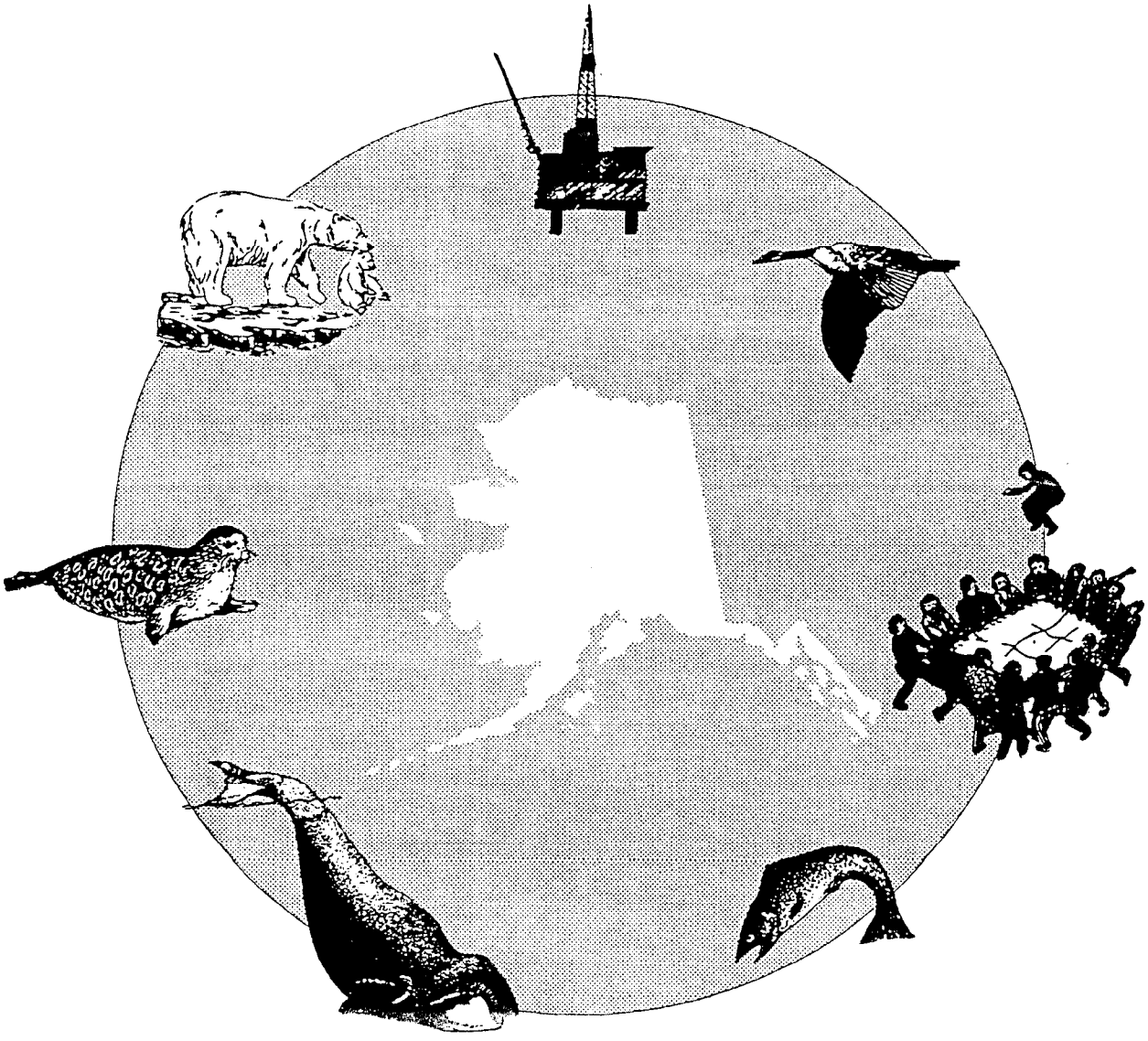
OCS Study
MMS 95-014

An Investigation of the Sociocultural Consequences of Outer Continental Shelf Development in Alaska

V. Alaska Peninsula and Arctic



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Alaska OCS Environmental Studies Program

An Investigation of the Sociocultural Consequences of Outer Continental Shelf Development in Alaska

I. Introduction

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EXECUTIVE SUMMARY

This report provides selected findings from a three-year study entitled "An Investigation of the Sociocultural Consequences of Outer Continental Shelf Development in Alaska." The findings are primarily organized by study community, and the report consists of 24 chapters in six volumes. The project was conducted by the Division of Subsistence of the Alaska Department of Fish and Game (the division) under a cooperative agreement (No. 14-35-0001-30622) with the U.S. Department of the Interior, Minerals Management Service (MMS). The primary purpose of the research was to investigate the long-term social and cultural consequences of the development of the resources of Alaska's Outer Continental Shelf (OCS), especially as these affect the subsistence uses of fish and wildlife. Investigation of the consequences of the *Exxon Valdez* oil spill of March 1989 was a major focus of the research.

Most data were collected through voluntary face-to-face interviews using two instruments. The first, the "harvest survey questionnaire," modeled after the division's standard survey instrument, collected data on household demography, involvement in the cash economy, resource harvests and uses, and assessments of changes in subsistence harvest and use patterns. The second instrument, the "Social Effects Questionnaire" was based in part on questionnaires and interview protocols used in prior Social Indicators research funded by MMS. It addressed changes in social and community organization which could be affected by OCS development.

Three rounds of fieldwork took place, in 1992, 1993, and 1994. Study communities in the area affected by the *Exxon Valdez* oil spill included Chenega Bay, Cordova, Tatitlek, and Valdez in the Prince William Sound area; Kenai, Nanwalek, Port Graham, and Seldovia in the Cook Inlet area; Akhiok, Karluk, Kodiak, Larsen Bay, Old Harbor, Ouzinkie, and Port Lions in the Kodiak Island Borough; and Chignik Bay and Chignik Lake in the Lake and Peninsula Borough (Alaska Peninsula). Additionally, the study added control or reference communities in the Arctic region which will strengthen the application of the findings to broad questions of sociocultural change which are related to development of the resources of the Outer Continental Shelf. These were Kotzebue, Kaktovik, Kivalina, and Nuiqsut.

Earlier research by the division found that the *Exxon Valdez* oil spill caused major impacts on subsistence uses and the sociocultural systems which they support. There was a definite geographic pattern to these spill effects which reflects the relative degree of oiling and the persistence of oil in the environment. Impacts were greatest on communities closest to the spill -- particularly Tatitlek and Chenega Bay -- and lessened with distance from Prince William Sound.

Over the three years of this study, further evidence of this geographic pattern developed, with communities closer to the spill in Prince William Sound and lower Cook Inlet, as well as Ouzinkie, reporting higher levels of spill impacts than more distant communities. A relatively high percentage of respondents in Chenega Bay, Nanwalek, and Tatitlek in all three study years said there was less sharing of wild foods

since the spill. Similarly, of all study communities, the largest percentages in Ouzinkie, Port Graham, Chenega Bay, Nanwalek, and Tatitlek said that the spill had a negative effect on children's participation in subsistence activities. Households in Prince William Sound communities, and especially Cordova and Chenega Bay, were most likely to say that they liked living in their community less during the study years than before the spill.

Subsistence harvest levels in all the communities of the oil spill area appear to be rebounding from the low levels of the first and second post-spill years. Pre-spill levels of harvests have been approached or matched in most affected communities, such as Nanwalek, Port Graham, Port Lions, Larsen Bay, Old Harbor, and Akhiok. However, in the severely impacted communities of Tatitlek, Chenega Bay, and Ouzinkie, harvest levels remain below pre-spill averages. In Tatitlek and Chenega Bay, harvests appear to have declined in the third year of this project from estimated levels for the first and second years. There also continues to be an important shift in the composition of subsistence harvests in Chenega Bay and Tatitlek, with much lower takes of marine mammals than before the spill and a larger portion of the harvests composed of fish.

In many study communities, a significant proportion of households reported that subsistence uses have not recovered to earlier levels. This position is expressed strongly in the Prince William Sound villages, in Nanwalek, and in Ouzinkie. In all four villages, a larger percentage of households reported lowered levels of resource harvests compared to before the spill in 1993 than did so in 1991. Thus the perception appears to be not only one of lowered subsistence uses, but that uses continue to decline.

There has been an important shift in the explanations people offer concerning why the spill's impacts reduced their resource uses. In 1989, a majority of households with spill-caused reductions in resource uses cited fear of oil contamination as the reason for the decline. By 1993, the vast majority of households who still said that the spill's effects were impacting their subsistence uses cited reduced resource populations as the cause of the decline. This viewpoint was especially strong in Prince William Sound. A large majority of respondents in Chenega Bay in all three years said that populations of deer, harbor seals, sea lions, sea ducks, and clams were down since the spill. In the second and third years an increasing majority said that salmon stocks were down as well. At Tatitlek, a majority of respondents said there were less deer, seals, sea lions, sea ducks, salmon, halibut, clams, bidarkies, and octopus.

Contamination concerns about specific resources, while substantially reduced from the levels expressed in the first few years after the spill, persist among many households, especially in Chenega Bay, Tatitlek, Port Graham, and Nanwalek. Substantial percentages of households reported that they had not received adequate information about the safety of subsistence foods. This illustrates an important finding that many households in the spill area returned to using subsistence foods despite lingering contamination fears. The economic and cultural necessities of using subsistence foods have compelled Alaska Natives of the spill area to resume subsistence harvests even at increased costs of time, money, and health concerns.

In Tatitlek and Chenega Bay, subsistence harvesters' observations of reduced wildlife populations and diseased animals (such as a viral infection in Prince William Sound herring), created substantial doubts about the overall health of the natural environment. In 1989, the spill's immediate effects caused subsistence users to distrust the safety of subsistence foods. Direct observations of dead and injured wildlife, interpreted through traditional systems of knowledge, strongly suggested to subsistence users that resources might be unsafe for humans. The spill also created conditions very unfamiliar to subsistence users which experience and training were ill-equipped to explain. Under these circumstances, many households acted with caution. By 1993, traditional knowledge about food safety and edibility continued to inform people's decisions about subsistence uses. In addition, public health advisories had been disseminated in villages through the work of the Oil Spill Health Task Force. But doubts persisted that traditional and scientific knowledge were not enough to answer questions about what the spill had done. In the view of many of the people interviewed as part of this project, and especially in Prince William Sound and among Alaska Native people, the spill had caused fundamental changes to natural resource populations and the natural environment overall that have yet to be adequately explained. This uncertainty has had profound effects on the outlook for the future that people expressed in several communities, such as Tatitlek, Chenega Bay, and Cordova. This remains an important long-term impact of the spill.

Finally, one additional social effect of the *Exxon Valdez* oil spill has been the prolonged litigation over damage claims. Rulings in federal court which ruled ineligible claims by the Alaska Native Class concerning injuries to their way of life were especially disheartening to the people whose subsistence uses had suffered following the spill. In some cases, these rulings discouraged people from participating in this research. They concluded that additional studies were pointless. The settlement with Exxon regarding the replacement value of lost subsistence harvests was viewed by subsistence users as, at best, only a partial compensation of the Native Class claims. A view persisted that the cultural importance of subsistence to the Alaska Native communities of the spill area and the injury that this culture suffered had not yet been acknowledged by the judicial process. Appeals of these rulings were in preparation as this report was being completed. This continuing litigation remains another long-term impact of the spill, and should be considered in impact assessments for future Outer Continental Shelf development.

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CHAPTER XVII: CHIGNIK BAY

by

Lisa Hutchinson-Scarbrough

COMMUNITY BACKGROUND

Setting

The community of Chignik Bay is located approximately 180 miles (290 km) southwest of King Salmon. It is situated at the southern end of Chignik Bay at the head of Anchorage Bay (Fig. I-1). It has a spectacular setting with 3,000-foot mountains behind the village and the snow-capped Aleutian Range visible to the north across Chignik Bay.

The volcanic Aleutian Range is the primary landform throughout the Alaska Peninsula with approximately a dozen volcanoes rising to elevations of 4-8,000 feet. Throughout the peninsula, water is prevalent in the form of lakes, streams, rivers, wetland areas, coastal bays, coves, and tidal flats, all of which provide prime habitat for land and marine mammals, birds, fish, and plants.

The climate is maritime to transitional (Selkregg 1976:4) and influenced greatly by the Pacific Ocean to the south, and the Bering Sea to the north that separately bring winds and moisture to the land. The mountains trap clouds, fog, and moisture, particularly on the Pacific side, leaving Chignik Bay with average annual precipitation deposits of over 127 inches, including 57 inches of snow. Temperatures are moderate with average summer temperatures of 50 degrees and winter temperatures of 35 degrees (Alaska Department of Community and Regional Affairs (ADC&RA) 1982a:np).

History

As early as 6,000 years ago, the maritime hunting cultures of Pacific and Yupi'k Eskimos and Aleuts occupied the Alaska Peninsula. They were ancestral to today's Alaska Peninsula Native people (Clark 1984:136-137). Archaeological evidence along the Chignik River documents that throughout the first millennium AD, people lived along the Chignik River and depended heavily on salmon (Dumond 1987:67-71).

Russian explorers moved into the area during the late 1700's and established the Russian American Company which involved the exploitation of furbearing marine mammals as well as the labor of Native people. The Russian American Company was replaced with the Alaska Commercial Company when the United States purchased Alaska from Russia in 1867. The Americans continued to monopolize the resources and Native people, much as the Russians had (Tuten 1977:24).

The first reference to a village at Chignik Bay was noted by Ivan Petroff in 1880. The community he reported was named "Kaluiak", a small village of "deer" [caribou] hunters (Tuten 1977:25). In 1888, the Fisherman's Packing Company of Oregon set up a salmon saltery at Chignik Bay, and the

following year, two canneries were built in Chignik Lagoon. In 1896, Chignik Bay received its first two canneries owned by the Pacific Steam Whaling Co. and Hume Bros. & Hume. In 1901 they joined with Pacific Packing and Navigation Co. and in 1904, Northwestern Fisheries bought the two canneries (Davis 1986:91-94).

At first the canneries offered employment for people from all over the world including Scandinavia, Italy, China, Mongolia, Hawaii, and the Philippines, but did not employ many Alaska Native people (Davis 1986:94). But, by the turn of the twentieth century, the Natives were involved in trapping foxes in the winter and working as fishermen and in the canneries in the summer. During the Russian colonial era, there were many marriages between Natives and Russians. Later, around 1900, many Natives intermarried with Scandinavians and other newcomers. The people living in the Chignik villages today are descended from such unions.

Throughout the years, Chignik has remained a center for commercial fishing. The fishing fleet has evolved from small boats and fish traps owned by the canneries to the privately-owned hand and purse seine boats that are in operation today. The seafood processing plants evolved as well, changing ownership and preservation methods. Canneries in Chignik Bay have since been replaced with two cold storage facilities, Aleutian Dragon Fisheries and Chignik Pride Fisheries, that process, freeze, and salt salmon, cod, and halibut for commercial sale.

Economy

Today, fishing remains the mainstay of the cash economy at Chignik Bay. Almost every household in Chignik Bay either fishes commercially, or works for Aleutian Dragon Fisheries (ADF) or Chignik Pride Fisheries (CPF), the two local seafood processing plants. Salmon is the primary resource harvested in Chignik Bay. However, halibut and cod are also processed, and other resources including herring, crab, and shrimp have also been produced there as well. During the peak seasons, workers from outside the community continue to come to Chignik Bay to work in the fisheries.

Chignik Bay is located within the Chignik River system, one of Alaska's major producers of sockeye salmon. This system also supports king, coho, pink, and chum salmon. The headwaters to the Chignik area originate in the western slopes and glaciers of the Aleutian Range as well as waters from the Black Lake region, which flow into the upper Chignik River, Chignik Lake, the lower Chignik River, Chignik Lagoon, and Chignik Bay.

This system is managed by Alaska Department of Fish and Game (ADF&G) in order to allow for commercial and subsistence harvesting of salmon while insuring that desired escapement requirements are met. Approximately 100 commercial limited entry salmon permits are allowed for the Chignik region, and the majority of the fish caught are sold to either ADF or CPF.

Most of the year-round residents of Chignik Bay depend on these salmon runs as part of their annual subsistence harvest in order to satisfy some of their nutritional needs. In addition, local residents harvest a variety of resources for subsistence, some of which include other saltwater fishes, freshwater fishes,

marine invertebrates, marine mammals, waterfowl, land mammals and a variety of wild plants and berries.

Government, Facilities and Services

Chignik Bay was incorporated into a second class city in 1983 and has a mayor, city council and village administrator. In addition, Far West Inc. village corporation and traditional council members represent Chignik's Native population.

Some of the facilities and services in Chignik Bay include but are not limited to: a school offering grades pre-school to 12, gymnasium, recreation hall, post office with daily service (depending on weather), firehouse with fire truck, a 2,700-foot gravel airstrip with daily commercial air service (weather depending), water and sewer system, telephone and electricity, city office, two large well-stocked stores, a restaurant that operates in the summer months, health clinic with two health aides and a physician's assistant, a radio station, public safety officer, Bible chapel, an old Russian Orthodox church, and two cold seafood processing facilities with dormitories and cafeterias and deep water docks that allow for services of ocean-going vessels at Chignik Bay and service with the Alaska Marine Highway ferry.

Chignik Bay is accessible by air and the sea. In 1992, Peninsula Airways and Mark Air provided daily transportation, mail, and cargo service into Chignik Bay. The Alaska Marine Highway ferry services Chignik Bay four times a year from May-September. Commercial fishing boats and a variety of other vessels utilize Chignik Bay's docks or anchor in Anchorage Bay on a daily basis primarily to bring fish or supplies in and out of the village. The City of Chignik and the state of Alaska maintain roads throughout the community as well as a 2.5-mile long road leading to the airstrip. All-terrain vehicles and automobiles are commonly owned by residents of Chignik Bay.

RESEARCH METHODS

Subsistence Resource Specialist Lisa Scarbrough communicated with Chignik Bay's Village Council President, Rick Skonberg on December 2, 1991, via telephone to discuss the project. A copy of the research design was faxed to him and he presented the design to the Village Council on December 3, and they approved the study.

Fieldwork in the community of Chignik Bay occurred only in the first year of the three-year study. The fieldwork was conducted from April 13-21, 1992, by Scarbrough, Susan Savage with Katmai National Park, and Tracy Andrews with Minerals Management Service (MMS). Chignik Bay village residents assisting included Rick Skonberg, Kevin Murphy, and John Harrod who helped with household lists, and Olive Kalmakoff who assisted for two days to help set up interviews. Aleutian Dragon Fisheries provided us with a vehicle free of charge to enable us to get to households located "across the bay."

Chignik Bay's population fluctuates greatly from winter to summer because of the commercial fishing and processing operations, but there are a core number of people that live in the village year-around and claim Chignik Bay as their home. The goal was to interview every household in the village that had spent eight months or more in Chignik Bay during the study year (April 1991-March 1992), and did not claim residency elsewhere. Because of this criterion, households that have kinship ties to the village and perform a fair amount of subsistence activities, yet only spend part of the year in the Chignik region, could not be counted as permanent residents and were excluded from the target sample. On the other hand, several households that moved to Chignik Bay for a full-time permanent job such as with the school or fisheries, yet have little time for subsistence activities, were included if they did not claim residency anywhere else.

Village Council President Rick Skonberg provided the research team with a list of households living in Chignik Bay. In addition, the team met with fisheries production managers, Kevin Murphy (ADF) and John Harrod (CPF) who provided a list of households permanently employed at the fish processors during the study period. Those not fitting the residency requirement were dropped from the list. These lists were double checked with households that ADF&G had interviewed in 1990 as well as those surveyed in 1991 during the MMS social indicators oil spill survey. Chignik Bay's population size remained steady; however, the community's household composition had changed considerably with only 50 percent of the 1990 households still present in the village.

There were 44 households which fit the residency criteria. Generally the harvest survey was conducted first followed by the social effects survey. The harvest survey took on average 66 minutes to complete in Chignik Bay (Table I-7). Many of the households elected to do the second survey at a later time because of the length of the harvest survey. The social effects survey took on average 42 minutes per household (Table I-8).

The harvest survey was usually conducted with the primary harvester in the household but often included more than one person. The social effects survey only allowed for one randomly selected member over 16 years of age per household to be interviewed. Twenty-eight percent of those names randomly selected were substituted with another person because either there was only one member or one gender in the household, or the selected person was unavailable. If the household had a panel member interviewed in 1991 by the MMS social indicators study, and if they were willing, that person was interviewed in place of the name randomly selected. This, however, did not occur often because the 1991 panel included 23 people, but of these, 11 had moved from Chignik Bay and only 12 still remained. Of the 12 that remained, only 5 were interviewed because 3 declined and 4 were out of town.

Of the 44 households, 30 subsistence harvest surveys or 68 percent of the total, and 29 social effects surveys, or 66 percent of the total were completed. Four households declined the harvest survey, and five declined the social effects survey. Most of the remaining 10 households were away from the village during the time of the survey. The primary reasons for refusals were that people were tired of surveys or they were too busy preparing for the upcoming fishing season.

DEMOGRAPHY

The 1990 United States census reported the population of Chignik Bay at 188, which was consistent with the 1980 census of 178. The population of Chignik Bay in the 1950's and 1960's was higher, topping 253, and dropped to below 100 in the 1960's and 1970's (Fig. XVII-1, Table I-1). In 1992 at the time of this study, the Division estimated the permanent population at 128[1]. Overall there were 44 households containing an average of 2.9 people per household, with 52.9 percent females and 47.1 percent males, and 51.7 percent Alaska Natives. The average age of the residents was 26.1 years, and the mean length of residency for household heads was 12.4 years (Fig. XVII-2; Table XVII-2, Table XVII-3).

CASH ECONOMY

The fishing industry remains the primary employment category in Chignik Bay either through commercial fishing or the fish processing plants. Other major employers include: the City of Chignik, the school, the health clinic, and the retail grocery and supply stores. Of the estimated 85.1 adults in Chignik Bay, 91.4 percent were employed with an average of 1.8 jobs each. Of these, 18.9 percent had year-round jobs, but the average length of employment was 8.1 months. There were an average of 1.8 employed adults holding a mean of 3.1 jobs per household (Table XVII-4).

Chignik Bay's average household income from all sources was $45,098.29, with a mean per capita income of $15,551.13. The most important single source of earned income was from the seafood processing facilities, yet these provided only 19 percent of the jobs held in the community. Commercial fishing provided for 42 percent of the jobs, but ranked second below the cannery jobs in terms of per capita income (Fig. XVII-3; Table XVII-5).

The total amount of other income for Chignik Bay in 1992 was $178,713.33, with a household average of $4,061.67, and a per capita income of $1,400.57. The primary source of other income was the Alaska Permanent Fund Dividend, which 76.7 percent of the households received (Table XVII-6).

The mean monthly expense for food estimated by sampled Chignik Bay households was $454. The median food expense per month was $400. The latter represents 10.7 percent of the total average household income in the community (Table I-101).

The largest number of sampled Chignik Bay households (40.0 percent) reported that their financial situation was better during the 1991/92 study year than before the *Exxon Valdez* oil spill (March 1989). On

[1] Employees of the seafood processing plants and other residents were not included in this estimate if they claimed residence elsewhere or if they lived in Chignik Bay less that eight months during the study year. During the peak of the salmon season, the population of Chignik Bay often expands to over 1,000 people. Of the 188 people counted by the US Census for 1990, 28 lived in "group quarters" (or fish processing facilities)(Alaska Department of Labor 1991:95).

the other hand, 33.3 percent of the households claimed that their financial situation had worsened since the spill, and 20.0 percent said it had remained the same (Table 1-103).

RESOURCE USES: 1991/92

The largest percentage of sampled households in Chignik Bay (63.3 percent) in 1991/92 estimated that between 1 to 25 percent of their annual use of meat, fish and poultry derived from wild foods. As shown in Table I-104, 23.3 percent of the households provided an estimate of 26 to 50 percent, 6.7 percent said 51 to 75 percent, and 6.7 percent estimated that 76 to 99 percent of their meat was subsistence foods.

While 100 percent of the households in Chignik Bay reported using at least one resource in 1991/92 (Table XVII-8), the majority of residents also participated in the harvesting and processing of subsistence resources. Table XVII-9 demonstrates that 82.8 percent of all residents attempted to harvest at least one resource, and 78.2 percent processed resources. As shown in Table XVII-9, 25.3 percent of the community's population hunted game, 64.4 percent fished, 71.3 percent gathered plants, and 1.2 percent trapped or hunted furbearers.

Chignik Bay households were involved in sharing of resources with at least 21 other Alaska communities (Table XVII-10). Many of these communities are located on the Alaska Peninsula; but mostly Chignik Bay households shared and gave away resources to people living in their own community. In 1991 almost every household (96.7 percent), received wild resources, while 63.3 percent gave resources away. Sharing patterns have not varied much since 1984. In Chignik Bay, there are fewer elders in 1991/92 than in 1984; but, sharing with those now present is reported to be at about the same as previous levels.

RESOURCE HARVEST QUANTITIES: 1991/92

The per capita harvest for all resources in Chignik Bay was 357.5 pounds usable weight. The mean household harvest in pounds was 1,036.6 (Table XVII-8). It was reported that 93.3 percent of the households attempted to harvest wild resources, 90.0 percent were successful, and 100 percent received and used wild resources. On average, households used 16.4 different kinds of wild resources, attempted to harvest 10.7 kinds, harvested 9.7 types, received 9.0 varieties, and gave away 6.5 different wild resources.

Over three-fourths (79.0 percent) of the harvest of wild resources in Chignik Bay was fish, 281.0 pounds per capita (Table XVII-11). Most of the fish were salmon, providing 171.1 pounds per capita (4403 fish) or 47.8 percent of the total harvest (Table XVII-12). Sockeye salmon made up the greatest portion of salmon harvested. The sockeye harvest totaled 2,398.0 fish for 12,109.9 pounds, averaging 94.9 pounds per capita. Spawning sockeye salmon ranked second with a total of 896.1 fish at 2,105.9 pounds, but coho salmon provided for more in edible pounds at 4,308.0 from 803.7 fish harvested. In addition, 3,021.5

pounds of chinook salmon, 141.7 pounds of pink salmon, 83.6 pounds of chum salmon, and 54.8 pounds of spawning coho salmon were also harvested for home use by Chignik Bay residents (Table XVII-13).

By gear type, in pounds, 32.4 percent of all resources harvested by Chignik Bay residents were removed from commercial fish catches (Table XVII-14). Of the total salmon harvested in pounds, 21.9 percent were removed from commercial catches, 68.2 percent were taken with subsistence gear, and 9.9 percent with rod and reel gear (Table XVII-15).

Of the 2,398 sockeye salmon (fresh) harvested, 473.7 were removed from commercial catches, 684.9 were caught with subsistence nets, 1,210.0 were caught with purse seines, none with beach seines, and 29.3 with rods and reels (Table XVII-16). Chignik Bay households reported that 43.3 percent removed some salmon from commercial catches, 43.3 percent caught salmon using various subsistence gear, and 40.0 percent used rods and reels. Eighty percent of Chignik Bay's households harvested salmon in 1991/92 with sockeye salmon being the most popular. Coho and chinook salmon were the most popular salmon caught by rod and reel (Table XVII-17).

Eight different methods were used by Chignik Bay households to preserve their salmon harvests (Table I-106). On average, households used 2.6 methods. These methods included freezing (used by 83.3 percent of the households), smoking (40.0 percent), drying (33.3 percent), canning (30.0 percent), pickling (30.0 percent), salting (30.0 percent), kippering (13.3 percent), and fermenting (3.3 percent).

For non-salmon fish, the largest per capita harvest was halibut at 100.5 pounds. This level is slightly higher than that for sockeye salmon. Pacific cod provided 4.8 pounds per person, the second largest non-salmon resource harvested. The total non-salmon per capita harvest was 109.9 pounds, representing 30.7 percent of all wild resources harvested (Table XVII-11, Table XVII-12, Table XVII-13).

By gear type, 9,113.8 pounds of non-salmon fish were removed from commercial catches by residents of Chignik Bay (Table XVII-18). Of total pounds harvested, 65.0 percent of the non-salmon fish were taken from commercial catches, 20.7 percent by subsistence gear, and 14.3 percent with rods and reels (Table XVII-19). Chignik Bay households reported that 43.3 percent removed some non-salmon other fish from commercial catches, 33.3 percent used subsistence gear, and 26.7 percent used rods and reels (Table XVII-20).

In 1984 and 1989, subsistence surveys also determined that salmon and other fish provided the majority of wild foods for Chignik Bay residents. In 1991/92, however, their harvest levels were substantially higher for salmon and other fish, as well as marine invertebrates (Fig. XVII-5, Fig. XVII-8). Salmon harvests in 1984 provided 136.8 pounds per person; in 1989, 111.6 pounds per person; and 171.1 pounds per person in 1991/92. Other fish that consisted mostly of cod, halibut, and trout provided 22.0 pounds per person in 1984, 54.8 pounds in 1989, and 109.9 pounds per person harvested in 1991/92.

The majority of respondents (46.2 percent) reported that their overall use and harvest of salmon in 1991/92 was higher as compared to the previous year (Table I-9). Of all respondents, 38.5 percent thought that their household used and harvested the same amount of salmon, and 15.4 percent thought they used

and harvested less in 1991 than in 1990. When asked to compare 1991/92 with the year before the 1989 *Exxon Valdez* oil spill, 66.7 percent thought their use and harvest was about the same, 22.2 percent said it was more, and 11.1 percent thought it was less in 1991/92 than in 1988 (Fig. XVII-7, Table I-10).

Of non-salmon other fish, 65.4 percent thought their use and harvests were about the same comparing the study year with the year prior, while an 19.2 percent of respondents thought their levels were less and 15.4 percent claimed more (Table I-15). When asked to compare their use and harvests with the year prior to the *Exxon Valdez* oil spill, 64.7 percent said there was little change, 17.6 percent thought there was more and 17.6 percent thought it was less (Table I-16).

Marine invertebrates harvested by Chignik Bay residents made up 10.9 percent of the total resources harvested (Fig. XVII-6). They totaled 4,958.5 pounds and averaged 38.9 pounds per capita. Some of the shellfish species harvested included: 15.7 pounds per capita of crab (Dungeness, Tanner, and king), 11.9 pounds of clams (butter, razor, steamer, and pinkneck), 8.1 pounds of octopus, 1.4 pounds of sea urchins, and 1.4 pounds per capita of chitons (bidarkies) (Table XVII-13; Fig. XVII-5). Shellfish harvests more than doubled each year the harvest surveys were conducted, showing 7.4 pounds per person in 1984, 15.6 pounds in 1989, and 38.9 pounds in 1991/92 (Table XVII-11).

When the sampled households were asked to make an assessment of changes in their subsistence uses and harvests, half (50.0 percent) of the Chignik Bay respondents thought their use and harvests of marine invertebrates were about the same as compared to the previous year, while 30.8 percent reported higher levels and 19.2 percent reported less (Table I-45). When respondents compared their use and harvest of shell fish to the year before the spill, the majority (63.2 percent) felt there was little change while 21.1 percent thought there was more and 15.8 percent thought less (Table I-46).

For land mammals, the Chignik Bay average harvest was 24.4 pounds per person in 1991/92 with a community total of 3,112.3 pounds, which represented 6.8 percent of the total harvest. In 1989, the harvest was reported at 15.8 pounds per person, and in 1984, 14.1 pounds per person (Fig. XVII-5, Fig. XVII-6; Table XVII-11, Table XVII-12). In 1991/92, 13.2 caribou were harvested, providing the largest percentage of game for the community at 15.5 pounds per capita. Deer, which were harvested by Chignik Bay residents on Kodiak Island, provided 5.0 pounds of meat per capita. There were no small land mammals harvested for food (Table XVII-13).

Of the sampled households, 54.2 percent thought their use and harvest of large game during the study year was about the same as compared to the previous year. On the other hand, 20.8 percent of households reported more use and harvests and 25.0 percent reported less (Table 1-21). When asked to compare the 1991/92 study year with the year before the oil spill, again, the majority (61.1 percent) thought their harvest of large game was about the same, 27.8 percent thought it was less, and 11.1 percent thought it was higher in 1991/92 than in 1988 (Table 1-22). When asked to compare use and harvest of small game and furbearers, 80.0 percent of the responding households felt their use was the same as the previous year

and a similar proportion, 85.7 percent, thought it was the same as compared to the year before the spill (Tables 1-27, Table 1-28).

Marine mammals, birds, eggs, and wild plant harvests remained relatively consistent throughout the three study years with land mammal harvests, birds, and plants being slightly higher and marine mammals harvests as slightly lower in 1991/92 than in the previous study years (Fig. XVII-5, Fig. XVII-8).

Harbor seals were the only marine mammals that were reported harvested by Chignik Bay residents in 1991/92, and represented less than one percent (0.7 percent) of the total harvest. Approximately six seals were harvested providing a total of 328.5 pounds and a per capita harvest of 2.6 pounds. Marine mammal use has declined slightly since 1989 when 3.1 pounds, and from 1984, when 5.9 pounds per capita were reported harvested (Fig. XVII-5, Fig. XVII-8; Table XVII-11, Table XVII-12, Table XVII-13).

Of the sampled Chignik Bay households, almost all (94.4 percent) reported that their 1991/92 use and harvest of marine mammals was about the same as the previous year. Households reporting more totaled 5.6 percent, and no one reported using less in 1990 (Table I-33). When asked to compare 1991/92 harvest and use to the year before the spill (1988), every interviewed household said it was about the same while no one reported lesser or greater levels (Table I-34, Fig. XVII-7). When these households were asked to evaluate the populations of Steller sea lions in their region, 65.2 percent thought there were more than before the spill, while 21.7 percent thought there was no change and 13.0 percent thought less (Table I-99). General reasons were primarily given to explain why certain individuals felt the numbers of sea lions had increased, but these mostly had to do with increased sea lions in Anchorage Bay (Table I-100). For a few winters following the spill, the two seafood processing facilities in Chignik Bay that usually are open in the summer for salmon, began a winter operation of processing cod. The additional waste dumped in the bay attracted numerous sea lions, particularly the large bulls. Some residents who do not frequently travel outside the village reported that they have never seen so many sea lions. Others, however, that do get out when they fish or hunt outside the bay reported that they thought the numbers of seals and sea lions were down considerably since the spill.

Birds and eggs were taken at an average of 4.4 pounds per capita, or 1.2 percent of the total harvest. This is similar to the 1989 per capita levels of 3.7 pounds per person. In 1984, only 1.8 pounds per person were reported (Fig. XVII-5, Fig. XVII-8, Table XVII-11, Table XVII-12, Table XVII-13). In 1991/92, almost all of Chignik Bay's bird harvest consisted of ducks (3.6 pounds per capita). The most frequently taken species of ducks were harlequin, scoter, mallard, and goldeneye. No eggs were harvested; however, some were received from other communities (Fig. XVII-13).

When asked to compare the study year's use and harvest of birds, and eggs to the previous year, 55.0 percent of the respondents felt there was no change, while 25.0 percent of respondents reported they had a greater harvest and use and 25.0 percent thought less (Table I-39). When asked to compare 1991/92 with the year before the 1989 *Exxon Valdez* oil spill, 70.6 percent thought their use and harvest was

about the same, 17.3 percent said it was less, and 11.8 percent thought they used more in 1991 than in 1988 (Table I-40).

Plants and berries provided 1.8 percent of the total resource harvest at 6.3 pounds per person. In 1989, four pounds per person were reported; in 1984, this information was not collected (Table XVII-11). Berries mostly represented this category, with 202.4 gallons harvested in 1991/92, which equates to 6.3 pounds per capita (Table XVII-13). Two households (6.7 percent) used plants for medicinal purposes (Table I-109). These households used high bush cranberries [*Viburnum edule* (Table I-108)] for colds and coughs.

Most responding households in Chignik Bay, 56.5 percent, said their use and harvest of plants and berries and firewood was about the same as the previous year, while the second largest group (30.4 percent) thought it was less (Table 1-51). Of those assessing subsistence plant use and harvest levels compared to the year before the oil spill, 77.8 percent reported no change, while 16.7 percent reported less uses (Table 1-52).

When Chignik Bay respondents were asked how they would compare their overall use and harvest of wild resources during the 1991/92 study year with the previous year, half (50.0 percent) of those responding felt that there was little change. As shown in Table 1-57, 34.6 percent reported their use and harvests were higher than the previous year, while 15.4 percent thought they harvested or used less wild resources than they did the year before. When they compared the study year to the year before the 1989 oil spill, 63.2 percent reported their use and harvests were the same, 26.3 percent thought it was higher, and 10.5 percent thought it was less than before the oil spill (Table I-58). Economic reasons were the primary responses given by those reporting increases or decreases in harvest levels (Tables I-59-62). Some felt a need to put up additional subsistence foods to make up for economic losses due to the spill, and others were able to get more subsistence foods because they were better off financially and could afford the gas or equipment to get out and harvest the foods.

Five sampled households in Chignik Bay (16.7 percent) discarded resources during the study year because of perceived abnormalities (Table I-107). Most often, salmon were discarded (three households; 10.0 percent). Explanations offered for these abnormalities in the salmon varied, and included disease and abnormal appearance. The three households could not provide explanations for the abnormalities. One household discarded shellfish because they feared oil contamination.

SUBSISTENCE EQUIPMENT EXPENSES AND USE

Subsistence activities require the use of tools and equipment to aid in harvesting and processing various resources. As summarized in Table XVII-7, on average Chignik Bay households used 11 different types of equipment to assist them with their subsistence activities in 1991/92. Some of this equipment and

supplies included: boats, motors, all terrain vehicles (ATVs), guns, fish nets, tackle, smokehouses, camp houses, camp gear, freezers, freezer bags, salt, and gasoline.

The value of Chignik Bay's equipment used in any capacity for subsistence activities in 1991/92 averaged $35,564 per household. Annual fuel costs for all resource activities averaged $978 per household. The annual maintenance costs of equipment (boats, guns, nets, smokehouses) and supplies (bullets, fish tackle, salt, plastic bags) averaged $1,838 per household. Some of this equipment was used for other purposes, such as commercial fishing. Residents estimated that on average they used the equipment for subsistence activities 13.7 percent of the time. When calculated for subsistence activities only, the average household value of equipment and expenses in the study year was $5,261, with a community total value of $231,462. Households in Chignik Bay also regularly borrowed subsistence equipment from (63.3 percent of all households) and loaned (50.0 percent of households) subsistence equipment to other households (Table XVII-7).

THE *EXXON VALDEZ* OIL SPILL AND CHIGNIK BAY: THE SOCIAL EFFECTS QUESTIONNAIRE, 1991/92

The following section will discuss some of the study findings regarding possible social effects of the 1989 *Exxon Valdez* oil spill (EVOS) that originated in Prince William Sound, but spread as far as the Chignik region. Selected findings of the social effects questionnaire are summarized in Figures I-1 to I-16 and Tables XVII-21 to XVII-30. For a review of oil spill-related events occurring in Chignik Bay in 1989, see the "Oiled Mayors" study (Impact Assessment Inc. [IAI] 1990c:109-116). Also, Curtiss Rooks discusses the results of key respondent interviews he conducted in Chignik Bay following the oil spill 1989 for the MMS-sponsored social indicators study (Rooks 1993:819-849).

Both of the above mentioned studies as well as this study (social effects questionnaire results) found that the damage occurring in the Chignik region is not easily measurable because much of the oil spill's effects in these communities were social, such as increased conflicts between people, increased stress and drinking, and clinical depression, due mostly to loss of income as a result of the almost complete closure of the 1989 Chignik commercial fishery. Commercial fisherman, cannery workers, local businesses and the City of Chignik all suffered due to loss of income and the uncertainty of the eventual physical and biological damage that the spill might have caused. People also were uncertain about the safety of eating subsistence foods, but felt they needed to put up more food to make up for the loss of income.

In 1991/92, the social effects questionnaire tried to assess the importance of living in the community to the residents of Chignik Bay (Table XVII-27). This survey asked household respondents to rate a list of reasons why they live in their community. The most popular reason given by Chignik Bay residents was that they have job opportunities (96.6 percent). Other high ranking reasons given

included: the beauty of the area attracts them (89.7 percent), the area provides them with the necessary personal freedoms (89.7 percent), and less crime (82.8 percent).

When asked why they moved or returned to Chignik Bay, the majority of respondents stated it is where they were from or born (79.3 percent) or had friends or relatives that lived there (65.5 percent). For those not born in Chignik Bay, 79.3 percent said that Chignik's hunting and fishing opportunities were the top reasons as to why they moved or returned to the community. These responses are representative of the settlement patterns for Chignik Bay, where the population today is almost equally divided between Alaska Native people who established Chignik Bay as their home generations ago, and non-Alaska Natives who came to Chignik Bay to work at the canneries or to fish.

When asked why they remained in Chignik Bay, the main reason respondents provided was employment opportunities (48.3 percent). When asked if they like living in Chignik Bay more, the same or less since the EVOS, most responded "the same" (83.3 percent), while 12.5 percent liked Chignik Bay less and 4.2 percent had greater appreciation. Those who were less satisfied with Chignik Bay felt that since the spill, animals were harder to find, and there was increased conflict in the community. As one Chignik Bay respondent put it:

> Since the spill I've become more aware of political problems exposed by the spill that made me less happy with village life and the people here; the problems that occurred related to greed for money. I now have a greater appreciation of what we have here and a greater awareness of how it can be threatened.

Residents content with life in Chignik Bay (44.8 percent) were nearly equivalent to those wishing to live somewhere else (51.7 percent). Also, 62.1 percent felt they would not be living in Chignik Bay when they are old as compared to 34.5 percent that thought they would stay the rest of their lives.

Over half of the respondents (65.5 percent) were confident that hunting, fishing, and gathering opportunities would remain the same in the future, while 34.4 percent were not certain or did not think the opportunities would be the same. Those concerned about change in subsistence opportunities felt that increased development (44.4 percent), population pressures (22.2 percent), and the environment being vulnerable to damage (22.2 percent) were reasons to be uncertain. When asked if they would continue to live in the region if wild foods were no longer available, 55.2 percent said "yes", and 44.8 percent said "no".

> We wouldn't continue to live here if wild foods weren't available in the area because we couldn't afford it and it's not healthy to eat just store bought food.

The social effects questionnaire also tried to determine the significance of wild foods to the year-round residents. The results are presented in Table XVII-21. Of all Chignik Bay respondents, 24.1 percent claimed they had eaten wild foods the day before the survey was conducted, compared to 72.7 percent of Chignik Lake respondents (Fig. I-3). Only 17.2 percent of Chignik Bay respondents said their wild foods that day were a major part of at least one of their meals; while 59.1 percent of respondents

from the neighboring village of Chignik Lake had wild food as a major meal the day prior to their interviews. The majority of Chignik Bay respondents who ate wild foods the day prior said the food was harvested by the respondent (10.3 percent) or by a friend in another household (10.3 percent). Chignik Lake respondents said their wild food meals were obtained by the respondent (31.8 percent) or by a relative in another household (27.3 percent) (Table XVIII-21).

When asked if bidarkies (chitons), clams, or seals were important, every respondent in Chignik Bay, said clams were important. Bidarkies and seal meat were not as important to the respondents in Chignik Bay with 79.3 percent saying bidarkies were not important and 82.8 percent commenting that seal oil or meat was insignificant (Table XVII-22). Some of the elder respondents that said seal meat was not important, but would clarify their answer by saying that eating seal oil and meat was important to them in the past when growing up, but rarely eat it anymore because there are not many seals around, or the younger hunters do not hunt seals anymore. One man in Chignik Bay said:

> I don't eat seal meat much anymore, not like when I was young. Sometimes I still crave it [seal meat, oil] but [I] have gotten away from it now. I really like octopus dipped in seal grease.

Most of the respondents who said bidarkies and seals were important to them also felt that these resources were safe for children to eat. At Chignik Lake, 90.9 percent also felt clams were safe for children to eat, but Chignik Bay residents were more skeptical with 46.4 percent feeling they were not safe or uncertain (Table XVII-22, Table XVIII-22). Many of those skeptical in Chignik Bay (44.4 percent), however, did not have pollution concerns, but were afraid of paralytic shellfish poisoning (PSP), because of a recent incident where a resident of Sand Point died from eating clams that were PSP contaminated. About one-fourth (22.2 percent) of Chignik Bay respondents felt clams were unsafe because of pollution or uncertainty of safety.

The respondents were asked to compare their observations of the availability of various resources in their region with the year before the spill (Tables XVII-23). The majority of Chignik Bay respondents in 1991/92 felt that land mammal numbers were the same as 1988. Over 50 percent of respondents agreed that clam populations showed little change. Chignik Bay residents felt that salmon availability was either the same (39.1 percent) or less (39.1 percent). Of Chignik Bay respondents, 36.4 percent were uncertain and 31.8 percent felt there was the same amount of sea ducks in 1991 than in 1988, the year prior to the spill.

When asked if the spill affected their participation with children in the harvesting and processing of wild foods, very few respondents (8.0 percent) in Chignik Bay said "yes" (Table XVII-24). One Chignik Bay respondent commented that her children's behavior changed following the spill. She had to go fishing that summer and they couldn't find someone to watch their children.

> Everybody was working on the cleanup; the oldest was 12 at the time and had to care for the younger kids. The oldest became more rebellious- she was resentful about having to take on the responsibility of constantly caring for her siblings.

The most common reason in both communities given by those feeling the spill had an impact was that they (the adults) did not trust the safety of eating the wild foods that they have always depended on. Comparing Chignik Bay with communities closer to the spill such as Tatitlek and Nanwalek, over 50 percent of the respondents in the latter two villages said the spill impacted their participation with children in the harvesting and processing of wild foods (Fig. I-6).

The social effects questionnaire also addressed the possible spill impact on the distribution and exchange of subsistence foods, activities, hunting and fishing gear, money, and labor (Table XVII-25). Most of the Chignik Bay respondents, 79.3 percent, said they share subsistence foods, labor, and equipment with others. When asked to compare sharing of wild resources with the previous year, 71.4 percent of Chignik Bay respondents felt there was no change, while 25.0 felt they shared more. The results were the same when respondents were asked to compare sharing of wild resources to the year before the EVOS, with 66.7 percent feeling there was no change. Chignik Lake residents concurred that there was little change between time periods, where 81.0 percent felt sharing was the same compared to the previous year and 80.0 percent saw no change from 1988 (Table XVIII-25). Again, communities closer to the spill site were more impacted than these Chignik-area communities when it came to sharing of wild resources (Fig. I-7).

The Chignik Bay community felt the influence of elders in politics and guidance over the last three years had either remained the same (32.1 percent) or decreased (32.1 percent). Many of the respondents commented that this was not due to the oil spill but because there were fewer elders in the village than three years before. Of Chignik Bay respondents, 37.9 percent belonged to a native corporation; primarily Bristol Bay Native Corporation (Table XVII-26). Respondents thought the *Exxon Valdez* oil spill had little impact on how they viewed a leader. One respondent in Chignik Bay commented about leadership following the spill:

> Since the spill, I've become more aware of the people who are in leadership positions and I learned what is needed for a leader.

Table XVII-28 presents the results of questions asked about the effectiveness of various services in dealing with problems that resulted as a result of the *Exxon Valdez* oil spill. Because the Chignik communities had limited exposure of the *Exxon Valdez* oil spill compared to a Prince William Sound village such as Chenega Bay, this section of the social effects survey was confusing to many of those interviewed. Only those who were involved in the local clean-up, or had a local government job during the clean-up really understood the questions. As a result, most of the categories asked were responded to with "do not know," or "somewhat effective." The majority of respondents felt Exxon was ineffective; this was Chignik Bay's evaluation of Veco as well. Veco was the group that organized and ran the clean-up operations in the Chignik region. Chignik Bay respondents felt that the Chignik Seiners Association (the local commercial fishing group) was effective (44.0 percent) as well as the local law enforcement (37.5 percent) and their city council (20.0 percent).

Concerning the safety of wild foods following the Exxon spill, 53.6 percent of Chignik Bay respondents felt they were adequately informed about the safety of eating these foods (Fig. I-9, Table XVII-29). However, 32.1 percent said they were not adequately informed. Some felt they did not receive clear or definitive advice or got incomplete information (30.8 percent), others received no information (23.1 percent), and 15.4 percent felt the information was deliberately withheld. As one Chignik Bay respondent put it:

> We didn't get information about what we could or could not eat; [we] gave salmon that looked like it had oil inside to the VPSO who gave it to DEC, but they never answered our questions directly, just said it was lucky we hadn't eaten it; everything had to be hush-hush and we still don't know what was wrong with it.

Another Chignik Bay respondent made the following comments regarding information about food safety following the spill:

> The spill generated more awareness of what needs to be done to protect this area and keep it clean. But I feel more information should have been available about how to identify fish that were unsafe to eat and what the oil does to the fish. More information should have been available through the general media.

Also, 53.8 percent of the Chignik Bay respondents who were uninformed did not provide a reason why they felt left in the dark.

The last section of the social effects survey asked about outer continental shelf (OCS) development and tried to determine how people felt about off-shore oil exploration and development, and how it might affect various wild resources in the region (Table XVII-30). The majority of respondents in both Chignik Bay and Chignik Lake felt that if there was oil development in the off-shore area of their region, fish, shellfish, marine mammals, and birds would decrease (Table XVII-30, Table XVIII-30). Chignik Bay and Lake respondents were more pessimistic than most of the other communities in the 1991/92 study year regarding the effect on fish populations if OCS development were occur in their region (Fig. I-10). Approximately 50 percent of Chignik Bay respondents predicted lower populations of marine mammals, marine invertebrates, and birds. The majority of respondents in Chignik Bay (48.3 percent) felt land mammal populations would not change, while Chignik Lake respondents were equally divided, feeling uncertain of the effect, and whether they would decrease or show no change (Figs. I-11 to I-14). A Chignik Bay respondent commented about OCS development:

> OCS development: even if [they] just search for oil [it] can cause decrease in wild foods; if [they] had to build to support the development, like an airport, that would affect the game on the land... activity in the ocean scares the fish away.

Another respondent said that he was unsure what the impact of OCS development would be:

> If it was managed correctly and there were no spills, it would probably be OK. But if there was a spill all resources would decrease.

Few Chignik Bay respondents (37.9 percent) felt that OCS activities would bring more jobs to their community if it were to occur in their region (Fig. I-15). Many of the respondents commented that oil exploration and development in their region would certainly provide jobs, but not to anyone in their community but rather to specialists from outside. One Chignik Bay respondent described who got jobs after the Exxon spill:

> ADEC hired people to work on the clean-up who were not real qualified so the quality of their work suffered, but they tried. Some organizations sent Native folks to Kodiak to get training, but some of the Natives didn't have enough education to pass the exams, so outsiders were hired. Exxon spent money in the wrong areas-- didn't spend their money wisely.

Another Chignik respondent commented about the oil spill jobs:

> Outsiders got more benefit from the spill than locals; even for health care the locals had to wait longer because there were a lot of people here from the outside.

When asked if a small oil spill could be contained and cleaned up in their region, 41.4 percent of Chignik Bay respondents did not think it could be done. Even more respondents did not think a large oil spill (smaller than the EVOS) could be contained and cleaned up in their region (65.5 percent) (Table XVII-30). One Chignik Bay respondent commented:

> If a small spill occurred near a location where there is cleanup equipment and they can get to it quickly--maybe they can clean it up. No way can another big spill be effectively contained and cleaned up.

Another Chignik Bay respondent stated:

> A small spill maybe can be cleaned up depending on where it occurred: a spill in the Shelikof Strait can't be contained due to the currents and weather.

DISCUSSION

Prior to 1992, the Division of Subsistence conducted subsistence harvest surveys in Chignik Bay pertaining to 1984 and 1989. The village's subsistence harvests did not change much from 1984 to 1989, but rose dramatically in 1991/92. In 1984, per capita subsistence harvests totaled 188.0 pounds, and 208.8 pounds in 1989 (Morris 1987; Fall et al. forthcoming). However, in 1991/92 harvests increased substantially with Chignik Bay residents harvesting 357.5 pounds (edible weight) of wild resources per person.

Subsistence harvests of land mammals, marine mammals, birds and plants have remained virtually the same throughout the three separate study years. Salmon, other fish, and shellfish harvests, however, have varied. Other fish and shellfish levels have almost doubled from the estimated 1989 levels, and that of salmon has increased by about 50 percent from 1989.

Every spring, most Chignik residents put up most of their subsistence salmon just prior to the first Chignik commercial salmon opening. During this period in 1989, oil from the EVOS was noticed in the Chignik area. People were concerned about the safety of the salmon as a food source. As a result of the fear and confusion, most did not put up their usual amount of subsistence salmon in 1989. Average household subsistence salmon harvest levels in 1989 dropped to 344 edible pounds (134 pounds were removed from commercial catches). By contrast, Chignik Bay's pre-spill average household salmon harvest in 1984 was 590 pounds, including 159 pounds removed from commercial catches. In 1991/92, salmon harvests averaged 496 pounds per household (109 pounds were removed from commercial catches).

Thus, one possible explanation for the documented increase in harvest levels in 1991/92 compared to 1989 is that fear of oil contamination as a result of the 1989 *Exxon Valdez* oil spill prevented many people from harvesting the desired number of fish and shellfish they normally take due to health warnings and lack of confidence in resources harvested from the sea. By 1991/92, most people reported that they no longer feared contamination. Most local residents in 1989 and 1991/92 did not feel that the spill had much effect on land mammals, birds, and plants, since most of these are found inland from the sea. Game harvests at Chignik Bay are much lower that at Chignik Lake because these animals are generally available inland near Chignik Lake and not near Chignik Bay, requiring a much greater effort to obtain them.

The composition of the community of Chignik Bay has changed dramatically over the years. About three-fourths of the households in 1984 and half of the households surveyed in 1989 had moved away from the village by 1991/92. On the other hand, the population of year-round residents has almost doubled from 25 households in 1984 to 44 in 1991/92 due to more year-round jobs provided by the local fish processing facilities. Many families who move to the community for their jobs leave after a few years, however, contributing to the high household turnover rate.

The majority of households in Chignik Bay participate in commercial salmon fishing. In 1989, the Chignik Management Area was virtually shut down due to oil that was present in Chignik Bay as a result of the *Exxon Valdez* oil spill (EVOS) in Prince William Sound. The Alaska Department of Fish and Game decided to delay opening commercial fishing until the safety level was determined. Once fishing opened, Chignik fisherman were only allowed to fish inside of Chignik Lagoon. This forced 102 boats to trade off fishing in the confined area. Exxon told Chignik fisherman that they had to fish in order to make a loss of income damage claim. Only six Chignik Bay residents were hired to do part-time clean-up work in 1989 as a result of the EVOS earning a household mean of $2,662 (Fall et al, forthcoming).

As a result of the spill, income in 1989 was less than in 1991/92. In 1989, Exxon made payments to 37 percent of Chignik's households totaling $114,920.00 for damage claims. This money provided an average of $8,025.39 to every household's income in 1989. In 1989, average household income from all sources including Exxon damage claims was $39,281.39, while in 1990/91, it was $45,098.29 (Table XVII 5,

Table XVII-6; Fall et al. forthcoming). Income information was not collected by the Division of Subsistence in 1984 (Morris 1987).

Many families claimed they never were compensated for their spill-related commercial fishing losses in 1989, and that less is being made commercial fishing now than before 1989. Some families that previously left in the winter are now staying year-round in Chignik to save money. These families are comprised of people who grew up in the area. They put up additional subsistence foods to keep their food costs down. This may account, in part, for some of the increase in subsistence harvests. Also, the cost of living has increased and perhaps more people need subsistence foods to supplement the expense of living in the community.

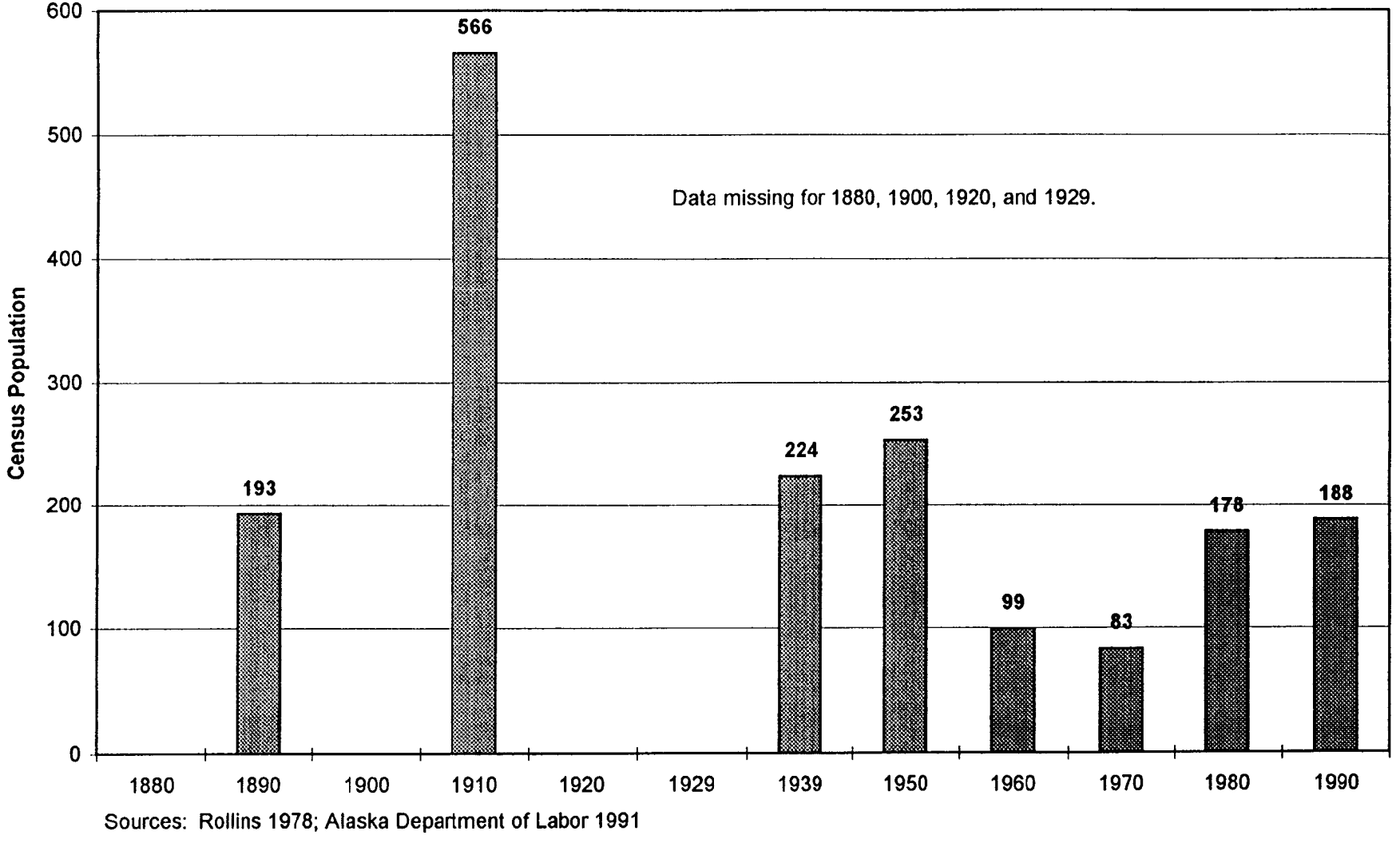
In summary, the oil spill caused a great deal of confusion, disruption, stress, and anger in Chignik Bay in the summer of 1989. People were concerned about the safety of their subsistence foods and had to decide if it was safe to eat them, and worried what they would do without these foods if they did not harvest them. The biggest stress was related to income loss as a result of the disruption to the commercial fishery. Fisherman felt that Exxon did not live up to its promise to pay for their loss of income from fishing. Only a few Chignik Bay residents were hired to do test fishing and work the clean-up. Some felt the Chignik clean-up was just a front put on by Veco to show the public that Exxon was making an effort. Others felt that there was not enough oil present to warrant closing down commercial fishing or the clean-up. By 1992, however, most Chignik Bay residents no longer had any concerns about the safety of their subsistence foods and felt that their community was back to normal. Financially, however, over half of Chignik Bay's households in 1991, felt that they were about the same or worse off than they were before the oil spill and had never caught up with their loss from 1989.

The Chignik communities rank high compared to the other communities regarding their predictions of negative effects of OCS activities on their local resource populations. Because they do not currently have any off-shore oil wells in their region, they do not have anything to compare the impacts to, except seeing that the leaking oil from the *Exxon Valdez* oil tanker wreck, hundreds of miles away from Chignik Bay, still managed to find its way to their beaches, and threatened their local wild resources. Also, because both communities get most of their income from the commercial fishing industry, there is great fear that oil exploration and development in their region might severely impact the fish and their livelihood. This is something the people of the Chignik area are not willing to gamble on, especially if OCS development would not bring the increased employment.

In 1994, certain residents of both Chignik Bay and Chignik Lake still blamed the EVOS for many of the financial problems they have today. Several commercial permit holders had been forced to sell their permits and boats because they never recovered from the losses they suffered from the 1989 commercial fishing closure. Others were concerned that the amount of salmon, particularly silvers and chums have not returned to the pre-1989 return levels. Others thought that ducks and clams were much less since 1989, and blamed the 1989 Exxon oil tanker spill. Many claimed that their subsistence harvest levels are the same, but they have to travel further and spend more days to find resources that

only a few years ago could be more easily obtained. Tar balls continued to wash up on the beaches after storms, particularly near Perryville, which concerned some residents Chignik Bay and Chignik Lake. On the other hand, there are many other residents who had recovered from the spill and were back to life as normal. They felt that the spill no longer has any presence in their lives and community. For this they were thankful, and hoped a large spill will never occur again.

Figure XVII-1. Chignik Bay Census Population, 1880 - 1990



Sources: Rollins 1978; Alaska Department of Labor 1991

Table XVII-1. Sample Participation: Chignik Bay 1992

VARIABLE	Social Indicators		TOTAL
	Panel	Panel*	HOUSEHOLDS
Estimated Household Structures	12	32	44
Non-Residential Structures	NA	0	0
Estimated Households	12	32	44
Total Panel	23	NA	NA
Interview Goal:	23	21	44
Households Interviewed	5	25	30
Failed to Contact/Unavailable	4	6	10
Refused	3	1	4
Vacant Residential Structures	NA	0	0
Seasonal Households**	0	0	0
Non-Resident Household ***	0	0	0
Invalid Households and Vacancies	0	0	0
Failed to Contact: HH Interviewed	0	NA	NA
Refused: HH Interviewed	1	NA	NA
SI Household Moved	11	NA	NA
SI Respondent Deceased	0	NA	NA
SI Panel Disposition	24	NA	NA
Total Households Attempted:	12	32	44
Refusal Rate:	37.50%	3.85%	11.76%
Non-Perm. HH Rate ("Vacancy Rate"):	0.0%	0.0%	0.0%
Interview Goal (Percentage)	21.7%	119.0%	68.2%
Social Effects Surveys Completed	5	24	29
Total Permanent Households	12	32	44
Percentage Interviewed	41.67%	78.13%	68.18%
Percentage of Total Households	27.27%	72.73%	100.00%
Interview Weighting Factor	2.400	1.280	1.467

NOTES:

* Includes panel members who were not attempted to contact.

** Seasonal households are households which maintain a permanent domicile elsewhere where they spend the majority of their time.

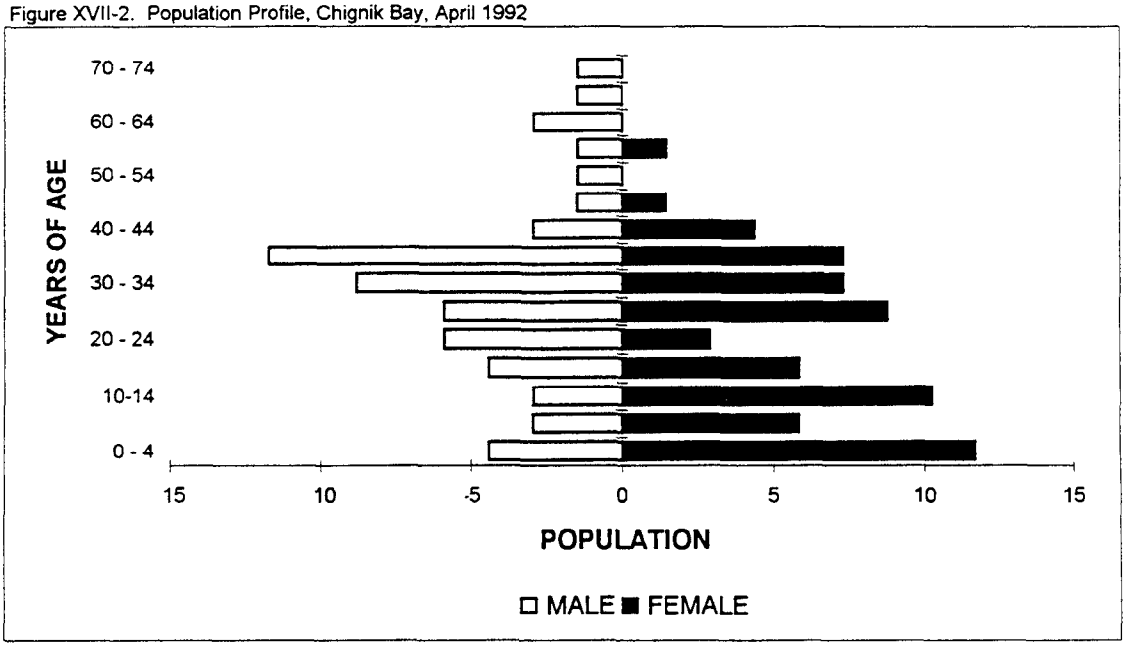
*** Non-resident households are households which were not present during the study year or which were resident less than the required number of months.

Table XVII-2. Demographic Characteristics of Households, Chignik Bay, April 1992

Characteristics	
Sampled Households	30
Number of Households in the Community	44
Percentage of Households Sampled	68.18
Household Size	
Mean	2.90
Minimum	1.00
Maximum	7.00
Sample Population	87
Estimated Community Population	127.60
Age	
Mean	26.07
Minimum	0.06
Maximum	72.84
Median	27.641
Length of Residency - Population	
Mean	12.36
Minimum	0.06
Maximum	70.13
Length of Residency - Household Heads	
Mean	17.59
Minimum	0.63
Maximum	70.13
Sex	
Males	
Number	60.13
Percentage	47.13
Females	
Number	67.47
Percentage	52.87
Alaska Native	
Households (Either Head)	
Number	26.40
Percentage	60.00
Estimated Population	
Number	66.00
Percentage	51.72

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992.

Figure XVII-2. Population Profile, Chignik Bay, April 1992



SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992

Table XVII-3 Population Profile, Chignik Bay, April 1992

AGE	MALE			FEMALE			TOTAL		
	NUMBER	PERCENT	CUM. PERCENT	NUMBER	PERCENT	CUM. PERCENT	NUMBER	PERCENT	CUM. PERCENT
0 - 4	4.40	7.32%	7.32%	11.73	17.39%	17.39%	16.13	12.64%	12.64%
5-9	2.93	4.88%	12.20%	5.87	8.70%	26.09%	8.80	6.90%	19.54%
10-14	2.93	4.88%	17.07%	10.27	15.22%	41.30%	13.20	10.34%	29.89%
15 - 19	4.40	7.32%	24.39%	5.87	8.70%	50.00%	10.27	8.05%	37.93%
20 - 24	5.87	9.76%	34.15%	2.93	4.35%	54.35%	8.80	6.90%	44.83%
25 - 29	5.87	9.76%	43.90%	8.80	13.04%	67.39%	14.67	11.49%	56.32%
30 - 34	8.80	14.63%	58.54%	7.33	10.87%	78.26%	16.13	12.64%	68.97%
35 - 39	11.73	19.51%	78.05%	7.33	10.87%	89.13%	19.07	14.94%	83.91%
40 - 44	2.93	4.88%	82.93%	4.40	6.52%	95.65%	7.33	5.75%	89.66%
45 - 49	1.47	2.44%	85.37%	1.47	2.17%	97.83%	2.93	2.30%	91.95%
50 - 54	1.47	2.44%	87.80%	0.00	0.00%	97.83%	1.47	1.15%	93.10%
55 - 59	1.47	2.44%	90.24%	1.47	2.17%	100.00%	2.93	2.30%	95.40%
60 - 64	2.93	4.88%	95.12%	0.00	0.00%	100.00%	2.93	2.30%	97.70%
65 - 69	1.47	2.44%	97.56%	0.00	0.00%	100.00%	1.47	1.15%	98.85%
70 - 74	1.47	2.44%	100.00%	0.00	0.00%	100.00%	1.47	1.15%	100.00%
75 - 79	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
80 - 84	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
85 - 89	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
90 - 94	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
95 - 99	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
100 - 104	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
Missing	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
TOTAL	60.13	47.13%		67.47	52.87%		127.60	100.00%	

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992

Table XVII-4. Employment Characteristics, Chignik Bay, 1991/92

Characteristics		
ADULTS		
Total		85.07
Employed		
	Number	77.73
	Percentage	91.38
Jobs		
	Number	136.40
	Mean	1.75
	Minimum	1
	Maximum	4
Months Employed		
	Mean	8.08
	Minimum	1
	Maximum	12
	Year-Round	18.87%
HOUSEHOLDS		
Total		44.00
Employed		
	Number	44.00
	Percentage	100.00
Jobs per Employed Household		
	Mean	3.10
	Minimum	1
	Maximum	8
Employed Adults		
	Mean	1.77
	Minimum	1
	Maximum	3

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992.

Table XVII-5. Community, Household, and Per Capita Incomes, All Sources and by Employer Type, Chignik Bay, 1991/92

INCOME SOURCE	INCOME		
	COMMUNITY TOTAL	AVERAGE HOUSEHOLD	PER CAPITA
All Sources	$1,984,324.80	$45,098.29	$15,551.13
Earned Income	$1,805,611.47	$41,036.62	$14,150.56
Agriculture, Forestry, and Fishing	489,045.33	11,114.67	3,832.64
Agriculture	0.00	0.00	0.00
Forestry	0.00	0.00	0.00
Fishing, Hunting, Trapping	489,045.33	11,114.67	3,832.64
Hatchery/Enhancement	0.00	0.00	0.00
Commercial Fishing	489,045.33	11,114.67	3,832.64
Hunting/Trapping	0.00	0.00	0.00
Mining	0.00	0.00	0.00
Construction	7,333.33	166.67	57.47
Manufacturing	604,630.00	13,741.59	4,738.48
Cannery	604,630.00	13,741.59	4,738.48
Other Manufacturing	0.00	0.00	0.00
Logging/Timber	0.00	0.00	0.00
Transportation, Communications, and Utilities	0.00	0.00	0.00
Trade	61,512.00	1,398.00	482.07
Wholesale	0.00	0.00	0.00
Retail	61,512.00	1,398.00	482.07
Finance, Insurance, and Real Estate	586.67	13.33	4.60
Services	115,808.00	2,632.00	907.59
Government	526,696.13	11,970.37	4,127.71
Federal	105,799.47	2,404.53	829.15
State	12,613.33	286.67	98.85
Local	408,283.33	9,279.17	3,199.71
Local Government	183,883.33	4,179.17	1,441.09
Local Education	224,400.00	5,100.00	1,758.62
Unknown	0.00	0.00	0.00
Other Income	$178,713.33	$4,061.67	$1,400.57

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992

Table XVII-6. Community, Household, and Per Capita Other Income by Source, Chignik Bay, 1991/92

Source	OTHER INCOME			
	PERCENTAGE REPORTING	COMMUNITY TOTAL	AVERAGE HOUSEHOLD	PER CAPITA
All Sources		$178,713.33	$4,061.67	$1,400.57
Exxon Claims	0.00	0.00	0.00	0.00
Aid to Families with Dependent Children	3.33	11,440.00	260.00	89.66
Adult Public Assistance	0.00	0.00	0.00	0.00
Exxon Damages	0.00	0.00	0.00	0.00
Pension/Retirement	3.33	5,866.67	133.33	45.98
Longevity Bonus	3.33	2,566.67	58.33	20.11
Social Security	13.33	50,113.07	1,138.93	392.74
Workman's Comp./Insurance	0.00	0.00	0.00	0.00
Energy Assistance	10.00	3,784.00	86.00	29.66
Supplemental Security Income	0.00	0.00	0.00	0.00
Food Stamps	0.00	0.00	0.00	0.00
Unemployment	0.00	0.00	0.00	0.00
Native Corporation Dividend	60.00	25,247.20	573.80	197.86
Dividend/Interest	6.67	1,842.13	41.87	14.44
Child Support	0.00	0.00	0.00	0.00
Rental Income	0.00	0.00	0.00	0.00
Veteran Disability	0.00	0.00	0.00	0.00
Equipment Leasing	0.00	0.00	0.00	0.00
Rental Assistance	0.00	0.00	0.00	0.00
Fishing Permit Leasing	0.00	0.00	0.00	0.00
Per Diem	0.00	0.00	0.00	0.00
Disability	0.00	0.00	0.00	0.00
Alaska Permanent Fund Dividend	76.67	77,853.60	1,769.40	610.14
Weatherization	0.00	0.00	0.00	0.00
Veteran's Assistance	0.00	0.00	0.00	0.00
Investments/Stocks/Bonds	0.00	0.00	0.00	0.00
Bureau of Indian Affairs Grants	0.00	0.00	0.00	0.00
Housing Allowances/Off-Base Allowances	0.00	0.00	0.00	0.00
Women, Infants, and Children Program	0.00	0.00	0.00	0.00
General Assistance Grant	0.00	0.00	0.00	0.00
Foster Care	0.00	0.00	0.00	0.00
Inheritance	0.00	0.00	0.00	0.00
Contest Winnings	0.00	0.00	0.00	0.00
Capital Gains	0.00	0.00	0.00	0.00
ASRC Elder Trust	0.00	0.00	0.00	0.00
Other	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992

Figure XVII-3. Employment by Industry, Chignik Bay, 1991/92

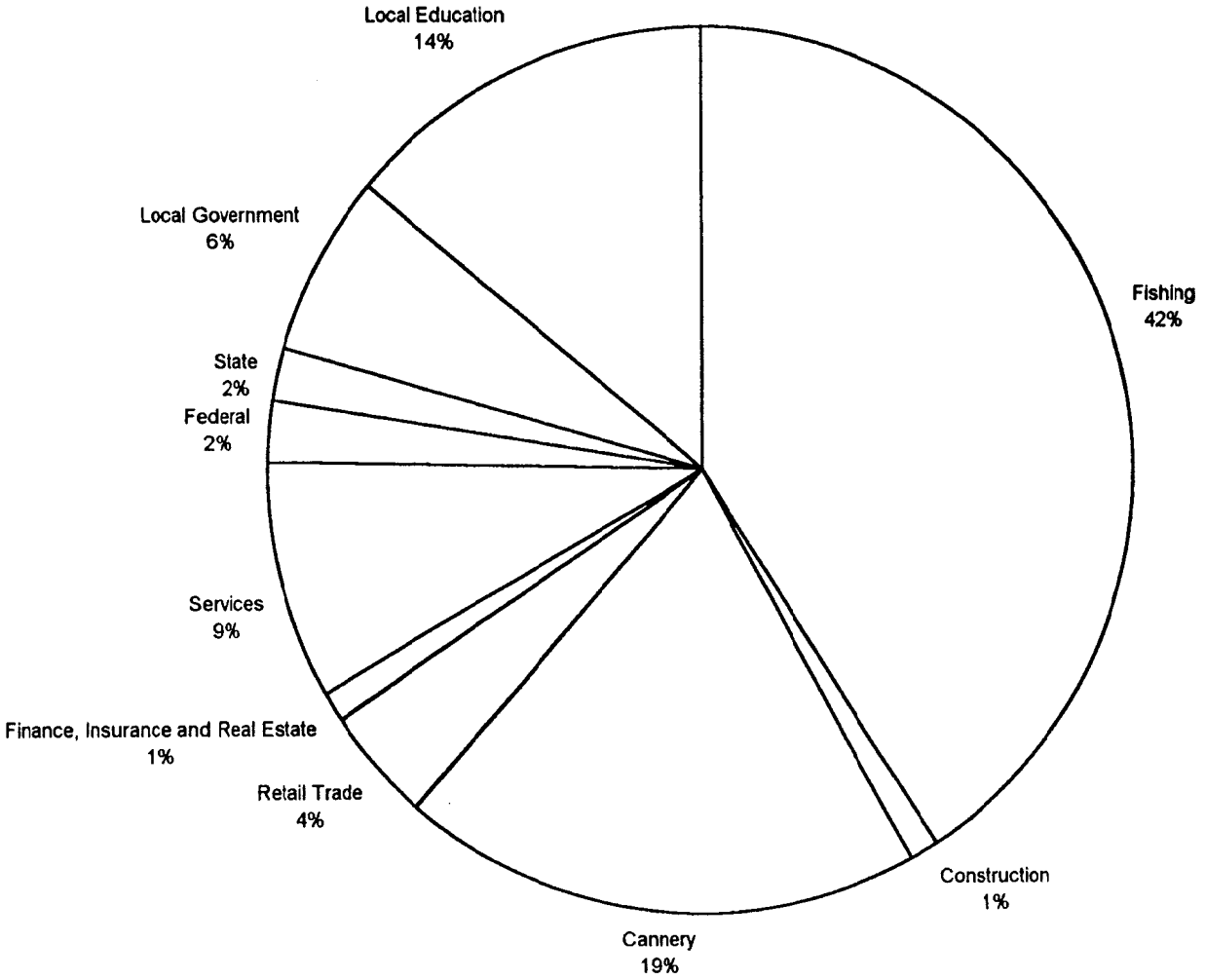


Table XVII-7. Subsistence Equipment Expenses and Use, Chignik Bay, 1991/92

Sampled Households = 30
Community Households = 44

Equipment Type	Equipment Count		Equipment Cost			Use of Equipment for Subsistence			HH Sharing of Equipment	
			Replacement	Annual Fuel	Annual Cost		Cost			
	Total	HH Mean	HH Mean	HH Mean	HH Mean	% of Cost	Total	HH Mean	% Borrowing	% Lending
All Equipment			$35,564.01	$978.22	$1,837.98	13.71	$231,462.22	$5,260.51	63.33	50.00
Skiff with outboard	4.40	0.10	$1,066.67		$10.00	57.06	$27,597.53	$627.22	6.67	0.00
Outboard Motor	16.13	0.37	$1,186.67	$142.00	$409.67	28.71	$21,958.20	$499.05	16.67	10.00
Boats with inboard	5.87	0.13	$19,750.00	$625.00	$866.67	4.76	$44,506.00	$1,011.50	23.33	6.67
Skiff, manually-propelled	24.93	0.57	$2,300.00		$26.67	50.20	$51,392.00	$1,168.00	16.67	10.00
ATV/Motorcycle	39.60	0.90	$4,603.33	$108.72	$139.52	19.53	$41,693.15	$947.57	13.33	16.67
Snowmachine/snowmobile	0.00	0.00	$0.00	$0.00	$0.00	0.00	$0.00	$0.00	6.67	0.00
Airplane	0.00	0.00	$0.00	$0.00	$0.00	0.00	$0.00	$0.00	3.33	0.00
Highway vehicle	11.73	0.27	$2,700.00	$80.00	$116.67	12.38	$15,781.33	$358.67	13.33	6.67
Tackle			$158.00		$18.50	98.11	$7,619.33	$173.17	20.00	10.00
Pots	11.73	0.27	$33.50		$0.00	100.00	$1,474.00	$33.50	6.67	6.67
Fishing Nets	8.80	0.20	$608.33		$21.67	61.30	$16,991.33	$386.17	23.33	6.67
Guns	96.80	2.20	$1,166.67				$51,333.33	$1,166.67	20.00	16.67
Traps	5.87	0.13	$1.67				$73.33	$1.67	6.67	3.33
Ammunition					$90.13		$3,965.87	$90.13	16.67	23.33
Cabins	2.93	0.07	$125.00		$0.00	40.00	$2,200.00	$50.00	10.00	6.67
Miscellaneous Camping Equipment			$215.00				$9,460.00	$215.00	6.67	6.67
Fishing/Hunting Camps	0.00	0.00	$0.00			0.00	$0.00	$0.00	3.33	0.00
Freezer	46.93	1.07	$1,383.11				$60,856.89	$1,383.11	30.00	16.67
Miscellaneous freezing supplies					$35.19		$1,548.56	$35.19	6.67	6.67
Canner	14.67	0.33	$57.00				$2,508.00	$57.00	23.33	16.67
Miscellaneous canning supplies					$35.83		$1,576.67	$35.83	6.67	13.33
Vacuum sealer/Sealer	8.80	0.20	$63.33				$2,786.67	$63.33	10.00	3.33
Miscellaneous sealer supplies					$53.80		$2,367.20	$53.80	6.67	3.33
Smoke house/dry rack	17.60	0.40	$145.73				$6,412.27	$145.73	20.00	20.00
Miscellaneous smoker supplies					$13.67		$601.33	$13.67	20.00	13.33

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992.

Table XVII-8. Characteristics of Resource Harvest and Use, Chignik Bay, 1991/92

Study Community	Chignik Bay
Mean Number Of Resources Used Per Household	16.37
Minimum	3
Maximum	34
95 % Confidence Limit (+/-)	11.30
Median	15.5
Mean Number Of Resources Attempted To Harvest Per Household	10.67
Minimum	0
Maximum	28
95 % Confidence Limit (+/-)	16.07
Median	8.5
Mean Number Of Resources Harvested Per Household	9.67
Minimum	0
Maximum	26
95 % Confidence Limit (+/-)	16.67
Median	8
Mean Number Of Resources Received Per Household	9.00
Minimum	1
Maximum	23
95 % Confidence Limit (+/-)	12.94
Median	9
Mean Number Of Resources Given Away Per Household	6.50
Minimum	0
Maximum	25
95 % Confidence Limit (+/-)	22.86
Median	5
Mean Household Harvest, Pounds	1,036.59
Minimum	0.00
Maximum	7,639.80
Total Pounds Harvested	45,610.12
Community Per Capita Harvest, Pounds	357.45
Percent Using Any Resource	100.00
Percent Attempting To Harvest Any Resource	93.33
Percent Harvesting Any Resource	90.00
Percent Receiving Any Resource	100.00
Percent Giving Away Any Resource	73.33
Number Of Households In Sample	30
Number of Resources Available	100

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992

Table XVII-9. Participation in the Harvest and Processing of Wild Resources, Chignik Bay, 1991/92

Total Number of People			127.60
GAME	Hunt	Number	32.27
		Percentage	25.29
		Missing	0.00
		Missing %	0.00
	Process	Number	57.20
		Percentage	44.83
		Missing	0.00
		Missing %	0.00
FISH	Fish	Number	82.13
		Percentage	64.37
		Missing	0.00
		Missing %	0.00
	Process	Number	88.00
		Percentage	68.97
		Missing	0.00
		Missing %	0.00
FURBEARERS	Hunt or Trap	Number	1.47
		Percentage	1.15
		Missing	0.00
		Missing %	0.00
	Process	Number	1.47
		Percentage	1.15
		Missing	0.00
		Missing %	0.00
PLANTS	Gather	Number	90.93
		Percentage	71.26
		Missing	0.00
		Missing %	0.00
	Process	Number	63.07
		Percentage	49.43
		Missing	0.00
		Missing %	0.00
ANY RESOURCE			
	Attempt	Number	105.60
		Percent	82.76
	Process	Number	99.73
		Percent	78.16

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992.

Table XVII-10. Percentage of Households Sharing Resources by Community, Chignik Bay, 1991/92

Community	Salmon		Non-salmon Fish		Marine Invertebrates		Game		Marine Mammals		Birds and Eggs		Plants and Berries*		Any Resource	
	Recv	Gave	Recv	Gave	Recv	Gave	Recv	Gave	Recv	Gave	Recv	Gave	Recv	Gave	Recv	Gave
All Communities	70.00	66.67	66.67	50.00	93.33	46.67	80.00	33.33	20.00	16.67	46.67	30.00	33.33	36.67	100.00	73.33
Anchorage	0.00	26.67	0.00	13.33	0.00	13.33	0.00	3.33	0.00	0.00	0.00	0.00	0.00	6.67	0.00	26.67
Bristol Bay Area	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00
Kodiak Island Area	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00
Chignik Bay	60.00	43.33	56.67	36.67	93.33	36.67	70.00	23.33	16.67	13.33	30.00	30.00	26.67	30.00	96.67	63.33
Chignik Lagoon	3.33	0.00	3.33	0.00	3.33	3.33	6.67	0.00	0.00	0.00	3.33	0.00	0.00	0.00	13.33	3.33
Chignik Lake	10.00	0.00	10.00	3.33	3.33	6.67	26.67	3.33	0.00	6.67	10.00	3.33	0.00	6.67	30.00	10.00
Dillingham	0.00	3.33	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	3.33	3.33
Fairbanks	0.00	3.33	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	3.33	0.00	6.67	3.33
Igiugig	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00
Ivanof Bay	3.33	0.00	0.00	0.00	3.33	0.00	3.33	0.00	3.33	0.00	6.67	0.00	0.00	3.33	6.67	3.33
Ketchikan	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33
King Cove	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00
King Salmon	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00
Kodiak City	0.00	13.33	3.33	6.67	0.00	0.00	3.33	3.33	0.00	0.00	0.00	0.00	0.00	0.00	6.67	13.33
Levelock	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	3.33	3.33	3.33
Nondalton	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33
Perkinsville	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	3.33	0.00
Perryville	0.00	3.33	13.33	0.00	0.00	3.33	0.00	0.00	0.00	3.33	6.67	0.00	0.00	0.00	16.67	6.67
Pilot Point	0.00	0.00	0.00	0.00	0.00	3.33	3.33	0.00	0.00	0.00	3.33	0.00	0.00	0.00	6.67	3.33
Port Heiden	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33
Sand Point	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33
Kodiak - AK Natives	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00
Other U.S.	0.00	30.00	0.00	13.33	0.00	6.67	0.00	10.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	36.67
Community Unknown	0.00	0.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.67	0.00

Plants and Berries includes sharing of wood and kelp for fertilizer.

Note: Percentages are based upon valid responses.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992.

Table XVII-11. Subsistence Harvests in Pounds Usable Weight per Person by Resource Category, Chignik Bay, 1984, 1989, and 1991/92

	Pounds Usable Weight per Person		
	1984	1989	1991/92
Salmon	136.8	111.8	171.1
Other Fish	22.0	54.8	109.9
Marine Invertebrates	7.4	15.6	38.9
Land Mammals	14.1	15.8	24.4
Marine Mammals	5.9	3.1	2.6
Birds and Eggs	1.8	3.7	4.4
Wild Plants	*	4.0	6.3
All Resources	188.0	208.8	357.5

* No plant data collected for 1984

Table XVII-12. Composition of Resource Harvests by Resource Category, Chignik Bay, 1984, 1989, and 1991/92

	Percentage of Total Harvest		
	1984	1989	1991/92
Salmon	72.8%	53.5%	47.8%
Other Fish	11.7%	26.2%	30.7%
Marine Invertebrates	3.9%	7.5%	10.9%
Land Mammals	7.5%	7.6%	6.8%
Marine Mammals	3.1%	1.5%	0.7%
Birds and Eggs	1.0%	1.8%	1.2%
Wild Plants	*	1.9%	1.8%

* No plant data collected for 1984

Figure XVII-4. Harvests of Wild Resources for Home Use, Pounds Usable Weight per Capita, Chignik Bay, 1984, 1989, and 1991/92

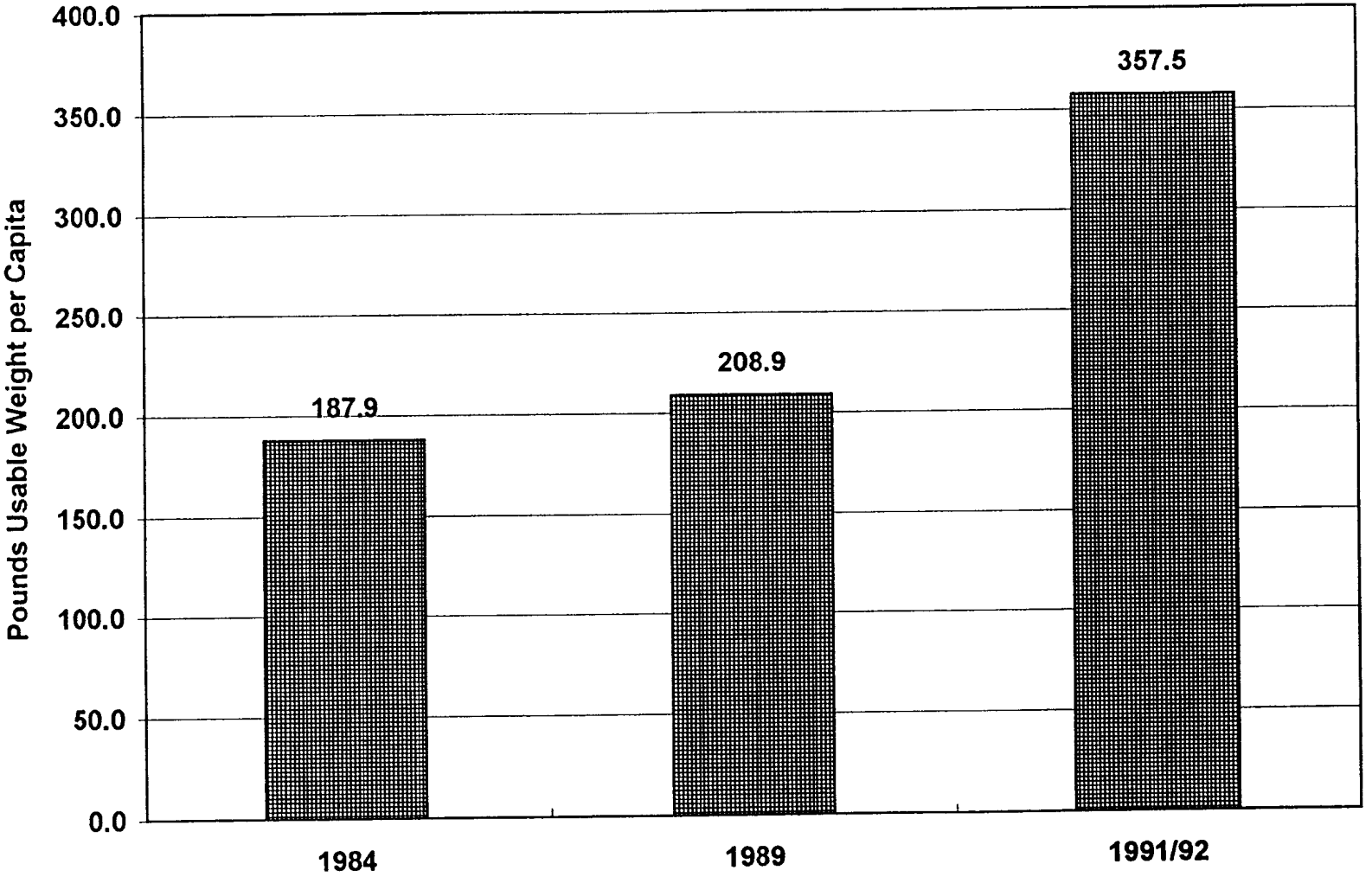


Figure XVII-5. Per Capita Harvests of Wild Resources by Resource Category, Chignik Bay, 1984, 1989, and 1991/92

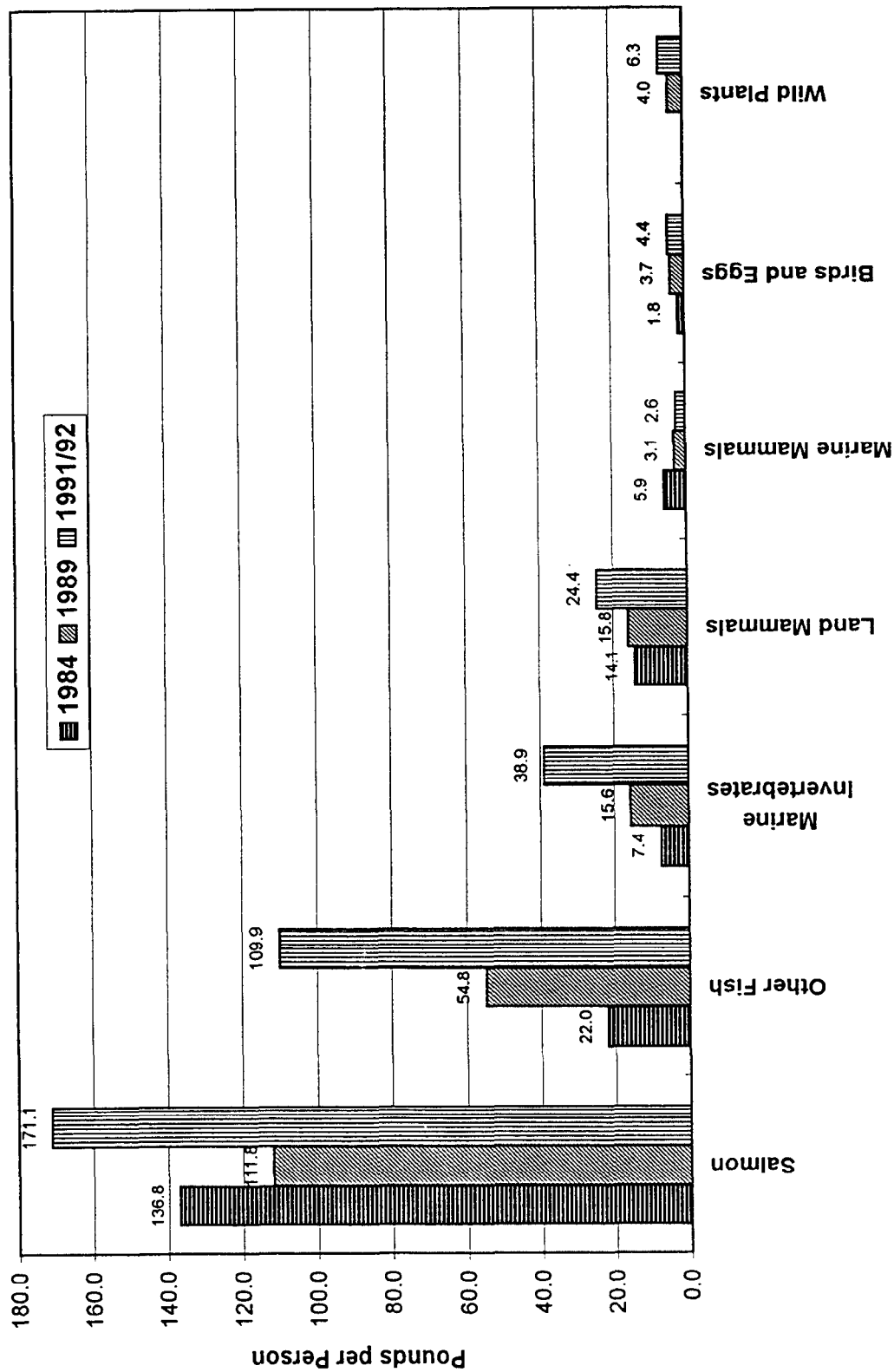


Figure XVII-6. Composition of Wild Resource Harvests by Resource Category, Chignik Bay, 1991/92

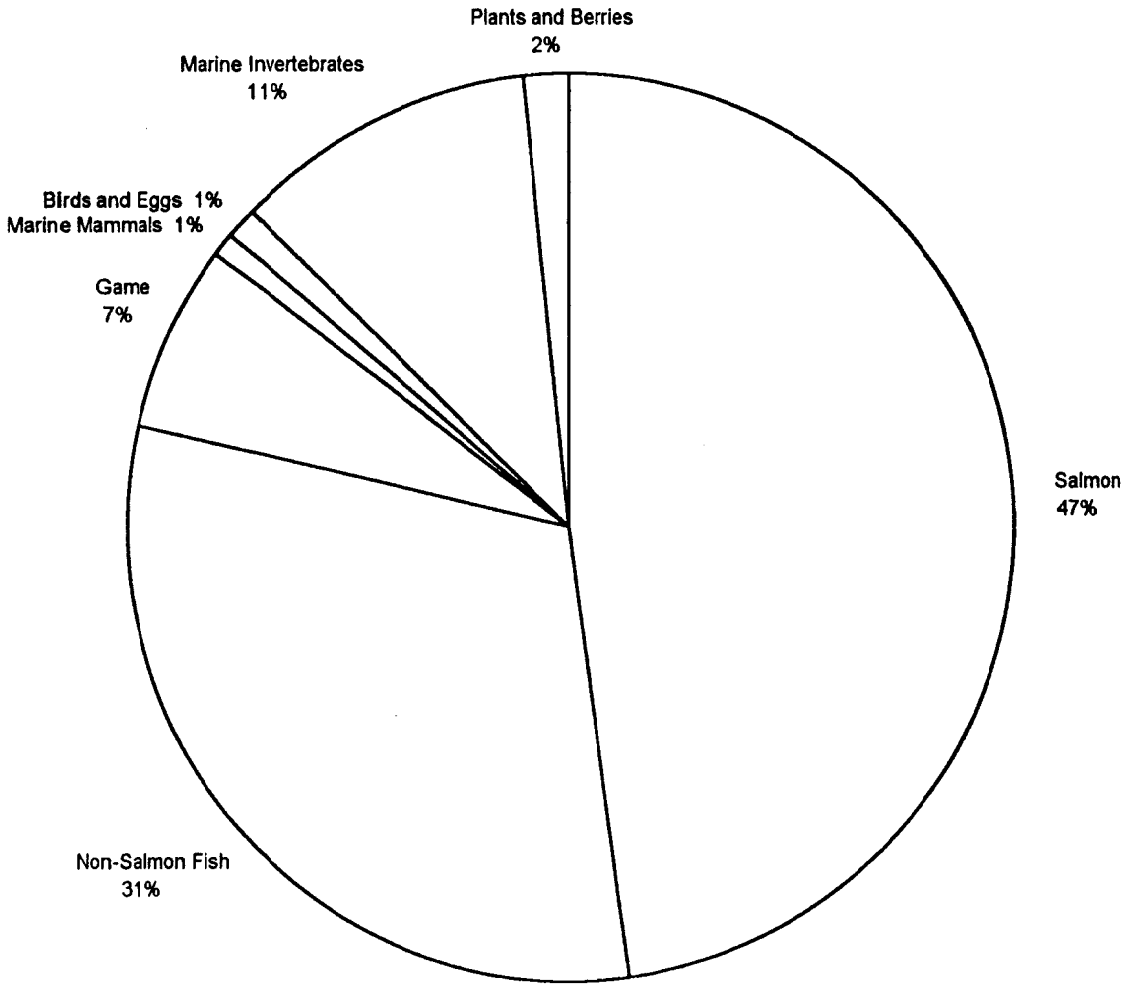


Figure XVII-7. Percentage of Chignik Bay Households Reporting Lower Levels of Uses of Wild Resources Compared to 1988, the Year Before the Exxon Valdez Oil Spill

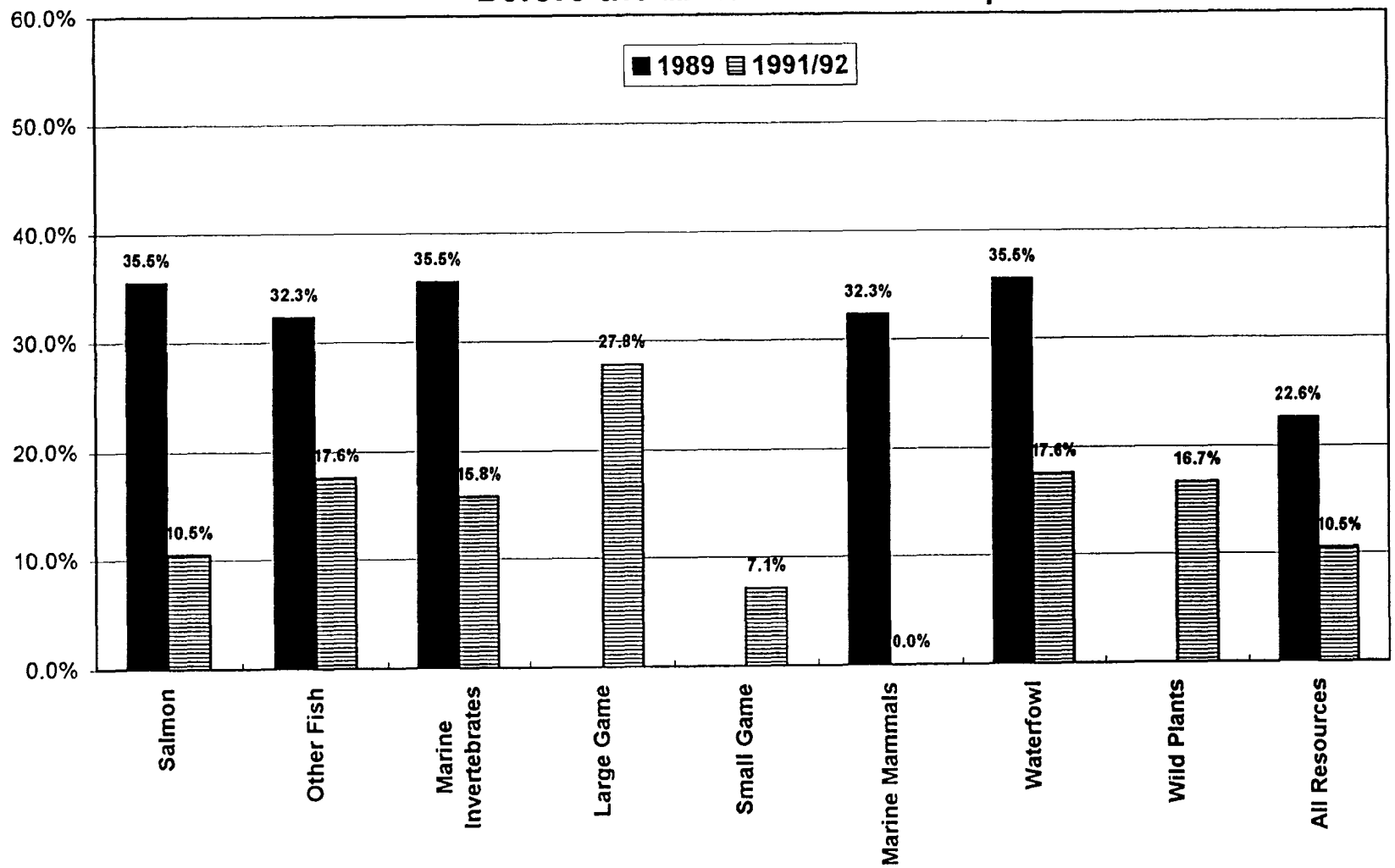


Table XVII-13. Estimated Harvest and Use of Fish, Mammal, Bird, and Plant Resources, Chignik Bay, 1991/92

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
All Resources	100.0	93.3	90.0	100.0	73.3	45,610.12	1,036.59	357.45			31.05%	29.43%
Fish	100.0	86.7	83.3	80.0	70.0	35,846.27	814.69	280.93			31.99%	30.79%
Salmon	100.0	80.0	80.0	70.0	66.7	21,825.36	496.03	171.05	4,402.93	100.07	28.78%	26.73%
Chum Salmon	23.3	6.7	6.7	16.7	6.7	83.60	1.90	0.66	17.60	0.40	81.34%	80.75%
Coho Salmon	63.3	50.0	50.0	33.3	40.0	4,308.01	97.91	33.76	803.73	18.27	50.52%	52.35%
Chinook Salmon	53.3	46.7	43.3	16.7	30.0	3,021.48	68.67	23.68	198.00	4.50	46.83%	42.51%
Pink Salmon	23.3	23.3	23.3	0.0	6.7	141.68	3.22	1.11	67.47	1.53	48.36%	47.63%
Sockeye Salmon	86.7	63.3	60.0	53.3	46.7	12,109.90	275.23	94.91	2,398.00	54.50	34.45%	32.94%
Spawnouts, Salmon	40.0	26.7	26.7	26.7	16.7	2,160.69	49.11	16.93	918.13	20.87	54.23%	50.26%
Spawning Coho Salmon	6.7	6.7	3.3	3.3	3.3	54.78	1.25	0.43	22.00	0.50	115.36%	115.86%
Spawning Sockeye Salmon	40.0	26.7	26.7	23.3	16.7	2,105.91	47.86	16.50	896.13	20.37	55.09%	51.11%
Landlocked Salmon	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Unknown Salmon	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Non-Salmon Fish	96.7	80.0	66.7	66.7	50.0	14,020.91	318.66	109.88			53.02%	52.87%
Cod	43.3	30.0	26.7	16.7	23.3	606.61	13.79	4.75	189.57	4.31	46.19%	44.27%
Pacific Cod (Gray)	43.3	30.0	26.7	16.7	23.3	606.61	13.79	4.75	189.57	4.31	46.19%	44.27%
Sablefish (Black Cod)	16.7	3.3	3.3	16.7	6.7	50.01	1.14	0.39	16.13	0.37	115.36%	117.22%
Greenling	10.0	10.0	10.0	0.0	3.3	107.07	2.43	0.84	107.07	2.43	110.52%	105.55%
Atka Mackerel	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Lingcod	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Unknown Greenling	10.0	10.0	10.0	0.0	3.3	107.07	2.43	0.84	107.07	2.43	110.52%	105.55%
Flounder	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Unknown Flounder	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Halibut	90.0	66.7	56.7	43.3	43.3	12,825.72	291.49	100.52	400.68	9.11	56.74%	56.68%
Herring	3.3	3.3	0.0	3.3	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Spawn on Kelp	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Rockfish	26.7	16.7	16.7	13.3	3.3	156.20	3.55	1.22	82.13	1.87	53.64%	58.19%
Black Rockfish (black bass)	16.7	16.7	16.7	3.3	3.3	103.40	2.35	0.81	68.93	1.57	53.97%	56.06%
Red Rockfish	16.7	6.7	6.7	10.0	3.3	52.80	1.20	0.41	13.20	0.30	84.79%	86.08%
Sculpin	10.0	10.0	10.0	0.0	6.7	38.13	0.87	0.30	76.27	1.73	81.48%	77.02%
Unknown Sculpin	10.0	10.0	10.0	0.0	6.7	38.13	0.87	0.30	76.27	1.73	81.48%	77.02%
Smelt	13.3	0.0	0.0	13.3	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Rainbow Smelt	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Eulachon (Hooligan, Candlefish)	13.3	0.0	0.0	13.3	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Unknown Smelt	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Giant Wrymouth	3.3	3.3	3.3	0.0	0.0	4.40	0.10	0.03	4.40	0.10	115.36%	117.22%
Prowfish	3.3	3.3	3.3	0.0	0.0	5.87	0.13	0.05	2.93	0.07	115.36%	117.22%
Walleye Pollock (Whiting)	10.0	0.0	0.0	10.0	3.3	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Silver Hake	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Grayling	6.7	3.3	3.3	3.3	0.0	3.08	0.07	0.02	4.40	0.10	115.36%	113.10%
Trout and Char	30.0	26.7	23.3	13.3	13.3	223.81	5.09	1.75	159.87	3.63	45.43%	48.33%

Table XVII-13. Estimated Harvest and Use of Fish, Mammal, Bird, and Plant Resources, Chignik Bay, 1991/92

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
Char	23.3	23.3	20.0	6.7	10.0	119.09	2.71	0.93	85.07	1.93	56.13%	59.58%
Dolly Varden	23.3	23.3	20.0	6.7	10.0	119.09	2.71	0.93	85.07	1.93	56.13%	59.58%
Trout	16.7	16.7	13.3	6.7	6.7	104.72	2.38	0.82	74.80	1.70	74.85%	75.69%
Rainbow Trout	16.7	16.7	13.3	3.3	6.7	98.56	2.24	0.77	70.40	1.60	79.33%	80.14%
Steelhead	6.7	3.3	3.3	3.3	0.0	6.16	0.14	0.05	4.40	0.10	115.36%	115.86%
Game	86.7	40.0	20.0	80.0	33.3	3,112.27	70.73	24.39	30.80	0.70	59.74%	52.61%
Big Game	86.7	36.7	20.0	80.0	33.3	3,112.27	70.73	24.39	29.33	0.67	62.27%	52.61%
Brown Bear	6.7	3.3	3.3	3.3	0.0	498.67	11.33	3.91	1.47	0.03	115.36%	114.49%
Caribou	86.7	30.0	16.7	80.0	33.3	1,980.00	45.00	15.52	13.20	0.30	58.74%	56.07%
Deer	50.0	10.0	6.7	43.3	13.3	633.60	14.40	4.97	14.67	0.33	81.86%	80.62%
Moose	50.0	10.0	0.0	50.0	6.7	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Small Game/Furbearer	6.7	10.0	3.3	3.3	0.0	0.00	0.00	0.00	1.47	0.03	115.36%	0.00%
Fox	3.3	3.3	3.3	0.0	0.0	0.00	0.00	0.00	1.47	0.03	115.36%	0.00%
Arctic Fox	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Red Fox	3.3	3.3	3.3	0.0	0.0	0.00	0.00	0.00	1.47	0.03	115.36%	0.00%
Cross Fox	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Beaver	3.3	0.0	0.0	3.3	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Hare	0.0	10.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Arctic Hare	0.0	3.3	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Snowshoe Hare	0.0	10.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Land Otter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Lynx	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Marmot	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Mink	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Porcupine	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Weasel	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Wolf	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Wolverine	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Marine Mammals	33.3	13.3	13.3	20.0	16.7	328.53	7.47	2.57	5.87	0.13	54.62%	54.22%
Whale	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Gray Whale	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Seal	33.3	13.3	13.3	20.0	16.7	328.53	7.47	2.57	5.87	0.13	54.62%	54.22%
Harbor Seal	33.3	13.3	13.3	20.0	16.7	328.53	7.47	2.57	5.87	0.13	54.62%	54.22%
Steller Sea Lion	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Sea Otter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Birds and Eggs	56.7	33.3	26.7	46.7	30.0	554.99	12.61	4.35	833.07	18.93	44.28%	46.46%
Birds	56.7	33.3	26.7	46.7	30.0	554.99	12.61	4.35	833.07	18.93	44.28%	46.46%
Upland Game Birds	46.7	16.7	10.0	36.7	13.3	73.92	1.68	0.58	105.60	2.40	72.35%	73.39%
Ptarmigan	46.7	16.7	10.0	36.7	13.3	73.92	1.68	0.58	105.60	2.40	72.35%	73.39%
Migratory Birds	53.3	30.0	26.7	33.3	26.7	481.07	10.93	3.77	727.47	16.53	46.20%	48.12%
Waterfowl	53.3	30.0	26.7	33.3	26.7	469.19	10.66	3.68	608.67	13.83	49.65%	49.42%

Table XVII-13. Estimated Harvest and Use of Fish, Mammal, Bird, and Plant Resources, Chignik Bay, 1991/92

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
Ducks	50.0	30.0	26.7	30.0	26.7	456.87	10.38	3.58	598.40	13.60	50.10%	50.07%
Eider	6.7	6.7	6.7	0.0	3.3	46.93	1.07	0.37	29.33	0.67	81.86%	78.23%
Eider, Unknown	6.7	6.7	6.7	0.0	3.3	46.93	1.07	0.37	29.33	0.67	81.86%	78.23%
Scoter	13.3	13.3	13.3	3.3	10.0	114.84	2.61	0.90	127.60	2.90	70.30%	72.35%
Scoter, Unknown	13.3	13.3	13.3	3.3	10.0	114.84	2.61	0.90	127.60	2.90	70.30%	72.35%
Harlequin	16.7	13.3	13.3	6.7	13.3	95.33	2.17	0.75	190.67	4.33	61.13%	59.56%
Goldeneye	16.7	16.7	16.7	0.0	10.0	57.49	1.31	0.45	71.87	1.63	52.73%	51.92%
Bufflehead	6.7	6.7	6.7	0.0	0.0	4.69	0.11	0.04	11.73	0.27	90.26%	85.04%
Merganser	3.3	3.3	3.3	0.0	3.3	26.40	0.60	0.21	29.33	0.67	115.36%	117.22%
Scaup	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Mallard	30.0	20.0	16.7	16.7	6.7	85.07	1.93	0.67	85.07	1.93	63.13%	63.83%
Pintail	3.3	3.3	3.3	0.0	0.0	2.35	0.05	0.02	2.93	0.07	115.36%	117.22%
Teal	13.3	13.3	10.0	3.3	6.7	9.68	0.22	0.08	32.27	0.73	82.26%	81.82%
Oldsquaw	10.0	6.7	6.7	3.3	3.3	14.08	0.32	0.11	17.60	0.40	80.16%	78.89%
Canvasback	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Ducks, Unknown	6.7	0.0	0.0	6.7	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Geese	23.3	6.7	6.7	16.7	0.0	12.32	0.28	0.10	10.27	0.23	99.69%	100.04%
Brant	6.7	3.3	3.3	3.3	0.0	10.56	0.24	0.08	8.80	0.20	115.36%	115.86%
Emperor Geese	6.7	0.0	0.0	6.7	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Snow Geese	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
White-fronted Geese	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Canada Geese	6.7	3.3	3.3	3.3	0.0	1.76	0.04	0.01	1.47	0.03	115.36%	114.49%
Canada Geese, Unknown	6.7	3.3	3.3	3.3	0.0	1.76	0.04	0.01	1.47	0.03	115.36%	114.49%
Geese, Unknown	3.3	0.0	0.0	3.3	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Shorebirds	6.7	6.7	6.7	0.0	3.3	11.88	0.27	0.09	118.80	2.70	106.87%	101.69%
Common Snipe	6.7	6.7	6.7	0.0	3.3	11.88	0.27	0.09	118.80	2.70	106.87%	101.69%
Eggs	3.3	0.0	0.0	3.3	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Seabird Eggs	3.3	0.0	0.0	3.3	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Gull Eggs	3.3	0.0	0.0	3.3	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Waterfowl Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Duck Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Duck Eggs, Unknown	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Marine Invertebrates	100.0	76.7	70.0	93.3	46.7	4,958.46	112.69	38.86			40.44%	38.46%
Clams	63.3	56.7	56.7	26.7	30.0	1,515.05	34.43	11.87	505.02 gal	11.48	44.84%	41.49%
Butter Clams	50.0	46.7	46.7	20.0	26.7	1,089.00	24.75	8.53	363.00 gal	8.25	59.56%	55.41%
Razor Clams	26.7	20.0	20.0	13.3	13.3	74.80	1.70	0.59	24.93 gal	0.57	53.18%	56.60%
Pacific Littleneck Clams (Steamers)	36.7	36.7	36.7	13.3	20.0	346.85	7.88	2.72	115.62 gal	2.63	46.12%	47.71%
Pinkneck Clams	3.3	3.3	3.3	3.3	3.3	4.40	0.10	0.03	1.47 gal	0.03	115.36%	117.22%
Horse Clams (Gaper)	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Cockles	10.0	6.7	6.7	6.7	0.0	19.80	0.45	0.16	6.60 gal	0.15	102.91%	104.98%
Mussels	6.7	6.7	6.7	0.0	3.3	4.69	0.11	0.04	3.12 gal	0.07	108.31%	110.28%

Table XVII-13. Estimated Harvest and Use of Fish, Mammal, Bird, and Plant Resources, Chignik Bay, 1991/92

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
Crabs	93.3	16.7	16.7	86.7	30.0	2,002.00	45.50	15.69	1,664.67	37.83	61.58%	59.21%
Dungeness Crab	76.7	13.3	13.3	70.0	26.7	518.47	11.78	4.06	740.67	16.83	64.06%	61.46%
King Crab	26.7	6.7	6.7	23.3	13.3	16.87	0.38	0.13	7.33	0.17	94.36%	94.97%
Tanner Crab	80.0	16.7	16.7	70.0	30.0	1,466.67	33.33	11.49	916.67	20.83	60.81%	59.13%
Tanner Crab, Unknown	6.7	6.7	6.7	0.0	3.3	504.53	11.47	3.95	315.33	7.17	107.34%	106.61%
Chitons (bidarkis)	33.3	33.3	30.0	13.3	16.7	173.02	3.93	1.36	43.87 gal	1.00	51.81%	50.52%
Chitons (large)	3.3	3.3	3.3	0.0	0.0	7.35	0.17	0.06	2.45 gal	0.06	115.36%	115.86%
Red Gumboots	3.3	3.3	3.3	0.0	0.0	7.35	0.17	0.06	2.45 gal	0.06	115.36%	115.86%
Chitons (small)	33.3	33.3	30.0	13.3	16.7	165.67	3.77	1.30	41.42 gal	0.94	49.42%	48.62%
Black Gumboots	33.3	33.3	30.0	13.3	16.7	165.67	3.77	1.30	41.42 gal	0.94	49.42%	48.62%
Octopus	60.0	43.3	36.7	36.7	26.7	1,032.53	23.47	8.09	258.13	5.87	66.41%	67.19%
Sea Cucumber	3.3	3.3	3.3	0.0	0.0	14.67	0.33	0.11	7.33 gal	0.17	115.36%	115.86%
Sea Urchin	30.0	33.3	30.0	13.3	20.0	183.22	4.16	1.44	366.43 gal	8.33	79.75%	80.42%
Shrimp	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Snails	6.7	6.7	6.7	0.0	0.0	13.20	0.30	0.10	8.80 gal	0.20	97.39%	98.25%
Limpets	3.3	3.3	3.3	3.3	0.0	0.29	0.01	0.00	0.19 gal	0.00	115.36%	117.22%
Plants and Berries	70.0	63.3	63.3	30.0	33.3	809.60	18.40	6.34	202.40 gal	4.60	44.52%	42.65%
Berries	66.7	60.0	60.0	23.3	30.0	762.67	17.33	5.98	190.67 gal	4.33	46.26%	44.55%
Plants/Greens/Mushrooms	23.3	23.3	23.3	3.3	3.3	46.93	1.07	0.37	11.73 gal	0.27	41.14%	37.57%
Seaweed/Kelp (Food)	3.3	0.0	0.0	3.3	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Wood	53.3	53.3	53.3	6.7	13.3	0.00	0.00	0.00	248.23 crd	5.64	52.75%	0.00%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992

Table XVII-14. Estimated Amount of Resources Removed From Commercial Harvest, Chignik Bay, 1991/92

Resource	Removed From Catch		Percent of	
	Amount	Pounds	Species Harvest (lbs)	Community Harvest (lbs)
All Resources		14769.40	36.20	32.38
Fish		13897.47	38.77	30.47
Salmon	758.27	4783.62	21.92	10.49
Chum Salmon	10.27	48.77	58.33	0.11
Coho Salmon	145.20	778.27	18.07	1.71
Chinook Salmon	98.27	1499.55	49.63	3.29
Pink Salmon	30.80	64.68	45.65	0.14
Sockeye Salmon	473.73	2392.35	19.76	5.25
Non-Salmon Fish		9113.84	65.00	19.98
Cod	151.07	483.41	79.69	1.06
Pacific Cod (Gray)	151.07	483.41	79.69	1.06
Sablefish (Black Cod)	16.13	50.01	100.00	0.11
Greenling	73.33	73.33	68.49	0.16
Unknown Greenling	73.33	73.33	68.49	0.16
Halibut	261.80	8380.22	65.34	18.37
Rockfish	45.47	101.20	64.79	0.22
Black Rockfish (black bass)	32.27	48.40	46.81	0.11
Red Rockfish	13.20	52.80	100.00	0.12
Sculpin	51.33	25.67	67.31	0.06
Unknown Sculpin	51.33	25.67	67.31	0.06
Marine Invertebrates		871.93	17.58	1.91
Crabs	630.67	725.27	36.23	1.59
Dungeness Crab	315.33	220.73	42.57	0.48
Tanner Crab	315.33	504.53	34.40	1.11
Tanner Crab, Unknown	315.33	504.53	100.00	1.11
Octopus	36.67	146.67	14.20	0.32

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992

Table XVII-15. Percentage of Salmon Harvest By Resource, Gear Type, and Total Salmon Harvest, Chignik Bay, 1991/92

Resource	Percent Base	Subsistence Methods: Net No.	Net Lbs.	Seine No.	Seine Lbs.	Beach Seine No.	Beach Seine Lbs.	Subsistence Gear Any Method No.	Subsistence Gear Any Method Lbs.	Removed from Commercial Catch No.	Removed from Commercial Catch Lbs.	Rod and Reel No.	Rod and Reel Lbs.	Any Method No.	Any Method Lbs.
Salmon	total	23.35	21.50	34.14	35.20	19.85	11.45	77.35	68.15	17.22	21.92	5.43	9.93		
Chum Salmon	gear type	0.71	0.74	0.00	0.00	0.00	0.00	0.22	0.23	1.35	1.02	0.00	0.00		
	resource	41.67	41.67	0.00	0.00	0.00	0.00	41.67	41.67	58.33	58.33	0.00	0.00		
	total	0.17	0.16	0.00	0.00	0.00	0.00	0.17	0.16	0.23	0.22	0.00	0.00	0.40	0.38
Coho Salmon	gear type	11.55	13.57	19.51	20.46	16.78	31.46	16.41	20.14	19.15	16.27	41.72	24.65		
	resource	14.78	14.78	36.50	36.50	18.25	18.25	69.53	69.53	18.07	18.07	12.41	12.41		
	total	2.70	2.92	6.66	7.20	3.33	3.60	12.69	13.72	3.30	3.57	2.27	2.45	18.25	19.74
Chinook Salmon	gear type	0.43	1.43	0.00	0.00	0.00	0.00	0.13	0.45	12.96	31.35	39.88	67.09		
	resource	2.22	2.22	0.00	0.00	0.00	0.00	2.22	2.22	49.63	49.63	48.15	48.15		
	total	0.10	0.31	0.00	0.00	0.00	0.00	0.10	0.31	2.23	6.87	2.17	6.67	4.50	13.84
Pink Salmon	gear type	2.14	0.98	0.00	0.00	0.00	0.00	0.65	0.31	4.06	1.35	6.13	1.42		
	resource	32.61	32.61	0.00	0.00	0.00	0.00	32.61	32.61	45.65	45.65	21.74	21.74		
	total	0.50	0.21	0.00	0.00	0.00	0.00	0.50	0.21	0.70	0.30	0.33	0.14	1.53	0.65
Sockeye Salmon	gear type	66.62	73.72	80.49	79.54	0.00	0.00	55.64	64.34	62.48	50.01	12.27	6.83		
	resource	28.56	28.56	50.46	50.46	0.00	0.00	79.02	79.02	19.76	19.76	1.22	1.22		
	total	15.56	15.85	27.48	28.00	0.00	0.00	43.04	43.85	10.76	10.96	0.67	0.68	54.46	55.49
Spawning Coho Salmon	gear type	0.00	0.00	0.00	0.00	2.52	2.19	0.65	0.37	0.00	0.00	0.00	0.00		
	resource	0.00	0.00	0.00	0.00	100.00	100.00	100.00	100.00	0.00	0.00	0.00	0.00		
	total	0.00	0.00	0.00	0.00	0.50	0.25	0.50	0.25	0.00	0.00	0.00	0.00	0.50	0.25
Spawning Sockeye Salmon	gear type	18.54	9.55	0.00	0.00	80.70	66.35	26.31	14.16	0.00	0.00	0.00	0.00		
	resource	21.28	21.28	0.00	0.00	78.72	78.72	100.00	100.00	0.00	0.00	0.00	0.00		
	total	4.33	2.05	0.00	0.00	16.02	7.60	20.35	9.65	0.00	0.00	0.00	0.00	20.35	9.65

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992

Table XVII-16. Estimated Salmon Harvest by Gear Type and Species, Chignik Bay, 1991/92

		Subsistence Methods								Removed from Commercial Catch		Rod and Reel		Any Method	
		Net		Seine		Beach Seine		Subsistence Gear Any Method							
	Harvest Units	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Salmon	numbers	1,028.13	23.37	1,503.33	34.17	874.13	19.87	3,405.60	77.40	758.27	17.23	239.07	5.43	4,402.93	100.07
	pounds	4,691.93	106.63	7,682.77	174.61	2,498.76	56.79	14,873.45	338.03	4,783.62	108.72	2,168.29	49.28	21,825.36	496.03
Chum Salmon	numbers	7.33	0.17	0.00	0.00	0.00	0.00	7.33	0.17	10.27	0.23	0.00	0.00	17.60	0.40
	pounds	34.83	0.79	0.00	0.00	0.00	0.00	34.83	0.79	48.77	1.11	0.00	0.00	83.60	1.90
Coho Salmon	numbers	118.80	2.70	293.33	6.67	146.67	3.33	558.80	12.70	145.20	3.30	99.73	2.27	803.73	18.27
	pounds	636.77	14.47	1,572.27	35.73	786.13	17.87	2,995.17	68.07	778.27	17.69	534.57	12.15	4,308.01	97.91
Chinook Salmon	numbers	4.40	0.10	0.00	0.00	0.00	0.00	4.40	0.10	98.27	2.23	95.33	2.17	198.00	4.50
	pounds	67.14	1.53	0.00	0.00	0.00	0.00	67.14	1.53	1,499.55	34.08	1,454.79	33.06	3,021.48	68.67
Pink Salmon	numbers	22.00	0.50	0.00	0.00	0.00	0.00	22.00	0.50	30.80	0.70	14.67	0.33	67.47	1.53
	pounds	46.20	1.05	0.00	0.00	0.00	0.00	46.20	1.05	64.68	1.47	30.80	0.70	141.68	3.22
Sockeye Salmon	numbers	684.93	15.57	1,210.00	27.50	0.00	0.00	1,894.93	43.07	473.73	10.77	29.33	0.67	2,398.00	54.50
	pounds	3,458.91	78.61	6,110.50	138.88	0.00	0.00	9,569.41	217.49	2,392.35	54.37	148.13	3.37	12,109.90	275.23
Spawning Coho Salmon	numbers	0.00	0.00	0.00	0.00	22.00	0.50	22.00	0.50	0.00	0.00	0.00	0.00	22.00	0.50
	pounds	0.00	0.00	0.00	0.00	54.78	1.25	54.78	1.25	0.00	0.00	0.00	0.00	54.78	1.25
Spawning Sockeye Salmon	numbers	190.67	4.33	0.00	0.00	705.47	16.03	896.13	20.37	0.00	0.00	0.00	0.00	896.13	20.37
	pounds	448.07	10.18	0.00	0.00	1,657.85	37.68	2,105.91	47.86	0.00	0.00	0.00	0.00	2,105.91	47.86
Landlocked Salmon	numbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Salmon	numbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992

Table XVII-17. Percentage of Households Harvesting Salmon by Gear Type and Species, Chignik Bay, 1991/92

Resource	Subsistence Methods				Removed from Commercial Catch	Rod and Reel	Any Method
	Net	Seine	Beach Seine	Any Subsistence Gear			
Salmon	13.33	23.33	23.33	43.33	43.33	40.00	80.00
Chum Salmon	3.33	0.00	0.00	3.33	3.33	0.00	6.67
Coho Salmon	6.67	3.33	3.33	13.33	26.67	26.67	50.00
Chinook Salmon	3.33	0.00	0.00	3.33	23.33	20.00	43.33
Pink Salmon	3.33	0.00	0.00	3.33	10.00	10.00	23.33
Sockeye Salmon	13.33	23.33	0.00	33.33	43.33	13.33	60.00
Spawning Coho Salmon	0.00	0.00	3.33	3.33	0.00	0.00	3.33
Spawning Sockeye Salmon	6.67	0.00	20.00	26.67	0.00	0.00	26.67
Landlocked Salmon	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Salmon	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992

Table XVII-18. Estimated Harvest of Fish Other than Salmon by Gear Type, Chignik Bay, 1991/92

	Harvest Units	Subsistence Gear		Removed From Commercial Catch		Rod and Reel		Ice Fishing		Any Method	
		Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Non-Salmon Fish	pounds	2,901.59	65.95	9,113.84	207.13	2,005.48	45.58	0.00	0.00	14,020.91	318.66
Grayling	pounds	0.00	0.00	0.00	0.00	3.08	0.07	0.00	0.00	3.08	0.07
Pacific Cod (Gray)	pounds	123.20	2.80	483.41	10.99	0.00	0.00	0.00	0.00	606.61	13.79
Sablefish (Black Cod)	pounds	0.00	0.00	50.01	1.14	0.00	0.00	0.00	0.00	50.01	1.14
Halibut	pounds	2,708.43	61.56	8,380.22	190.46	1,737.08	39.48	0.00	0.00	12,825.72	291.49
Black Rockfish (black bass)	pounds	22.00	0.50	48.40	1.10	33.00	0.75	0.00	0.00	103.40	2.35
Red Rockfish	pounds	0.00	0.00	52.80	1.20	0.00	0.00	0.00	0.00	52.80	1.20
Unknown Sculpin	pounds	11.00	0.25	25.67	0.58	1.47	0.03	0.00	0.00	38.13	0.87
Unknown Greenling	pounds	30.80	0.70	73.33	1.67	2.93	0.07	0.00	0.00	107.07	2.43
Giant Wrymouth	pounds	0.00	0.00	0.00	0.00	4.40	0.10	0.00	0.00	4.40	0.10
Prowfish	pounds	0.00	0.00	0.00	0.00	5.87	0.13	0.00	0.00	5.87	0.13
Dolly Varden	pounds	0.00	0.00	0.00	0.00	119.09	2.71	0.00	0.00	119.09	2.71
Rainbow Trout	pounds	0.00	0.00	0.00	0.00	98.56	2.24	0.00	0.00	98.56	2.24
Steelhead	pounds	6.16	0.14	0.00	0.00	0.00	0.00	0.00	0.00	6.16	0.14

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992

Table XVII-19. Percentage of Fish Other Than Salmon Harvested by Gear Type, Chignik Bay, 1991/92

Resource	Percent Base	Subsistence Gear Lbs.	Removed from Commercial Catch Lbs.	Rod and Reel Lbs.	Ice Fishing Lbs.
Non-Salmon Fish	resource	20.69	65.00	14.30	0.00
Grayling	resource	0.00	0.00	100.00	0.00
Pacific Cod (Gray)	resource	20.31	79.69	0.00	0.00
Sablefish (Black Cod)	resource	0.00	100.00	0.00	0.00
Halibut	resource	21.12	65.34	13.54	0.00
Black Rockfish (black bass)	resource	21.28	46.81	31.91	0.00
Red Rockfish	resource	0.00	100.00	0.00	0.00
Unknown Sculpin	resource	28.85	67.31	3.85	0.00
Unknown Greenling	resource	28.77	68.49	2.74	0.00
Giant Wrymouth	resource	0.00	0.00	100.00	0.00
Prowfish	resource	0.00	0.00	100.00	0.00
Dolly Varden	resource	0.00	0.00	100.00	0.00
Rainbow Trout	resource	0.00	0.00	100.00	0.00
Steelhead	resource	100.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992

Table XVII-20. Percentage of Households Harvesting Fish Other Than Salmon by Gear Type and Species, Chignik Bay, 1991/92

Resource	Subsistence Gear	Removed from Commercial Catch	Rod and Reel	Ice Fishing	Any Method
Non-Salmon Fish	33.33	43.33	26.67	0.00	66.67
Grayling	0.00	0.00	3.33	0.00	3.33
Pacific Cod (Gray)	6.67	20.00	0.00	0.00	26.67
Sablefish (Black Cod)	0.00	3.33	0.00	0.00	3.33
Halibut	26.67	36.67	10.00	0.00	56.67
Black Rockfish (black bass)	3.33	13.33	3.33	0.00	16.67
Red Rockfish	0.00	6.67	0.00	0.00	6.67
Unknown Sculpin	3.33	10.00	3.33	0.00	10.00
Unknown Greenling	6.67	3.33	3.33	0.00	10.00
Giant Wrymouth	0.00	0.00	3.33	0.00	3.33
Prowfish	0.00	0.00	3.33	0.00	3.33
Dolly Varden	0.00	0.00	20.00	0.00	20.00
Rainbow Trout	0.00	0.00	13.33	0.00	13.33
Steelhead	3.33	0.00	0.00	0.00	3.33

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992

Figure XVII-8. Composition of Harvests by Resource Category, Chignik Bay, 1984, 1989, and 1991/92

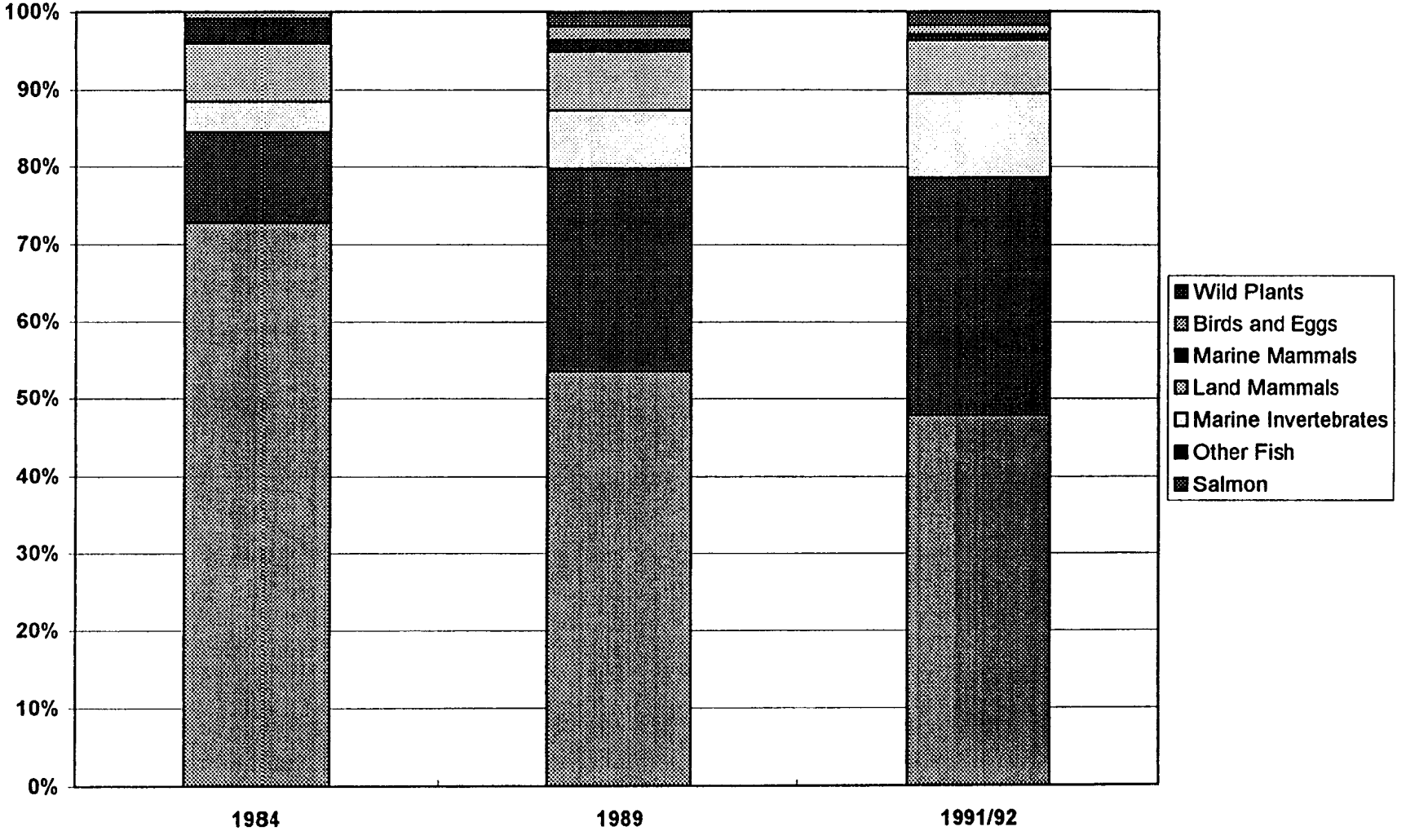


Table XVII-21. Uses of Wild Foods, Chignik Bay

	STUDY YEAR
	1991
ANY WILD FOODS EATEN YESTERDAY?	
No	
Count	22
Col %	75.9%
Yes	
Count	7
Col %	24.1%
WILD FOODS AS MAIN PART OF A MEAL	
No	
Count	24
Col %	82.8%
Yes	
Count	5
Col %	17.2%
HARVEST OF WILD FOODS BY RESPONDENT	
No	
Count	26
Col %	89.7%
Yes	
Count	3
Col %	10.3%
WF HARVESTED BY RELATIVE IN HH	
No	
Count	27
Col %	93.1%
Yes	
Count	2
Col %	6.9%
WF HARVESTED BY RELATIVE IN ANOTHER HH	
No	
Count	29
Col %	100.0%
WF HARVESTED BY RELATIVE IN ANOTHER COMM.	
No	
Count	28
Col %	96.6%

(continued)

Table XVII-21. Uses of Wild Foods, Chignik Bay

	STUDY YEAR
	1991
Yes	
Count	1
Col %	3.4%
WF HARVESTED BY FRIEND IN HH	
No	
Count	28
Col %	96.6%
Yes	
Count	1
Col %	3.4%
WF HARVESTED BY FRIEND IN COMMUNITY	
No	
Count	26
Col %	89.7%
Yes	
Count	3
Col %	10.3%
WF HARVESTED BY FRIEND IN ANOTHER COMM.	
No	
Count	29
Col %	100.0%

Table XVII-22. Safety of Using Subsistence Foods, Chignik Bay

	STUDY YEAR
	1991
IS EATING BIDARKIES IMPORTANT TO YOU?	
No	
Count	23
Col %	79.3%
Yes	
Count	6
Col %	20.7%
BIDARKIE HARVEST AREAS SAFE?	
Safe	
Count	6
Col %	100.0%
ARE CLAMS SAFE FOR CHILDREN TO EAT?	
Do Not Know	
Count	4
Col %	14.3%
Not Safe	
Count	9
Col %	32.1%
Safe	
Count	15
Col %	53.6%
WHY CLAMS NOT SAFE TO EAT	
Fearful of PSP poisoning	
Count	4
Col %	44.4%
Oil pollution or fear of contamination	
Count	1
Col %	11.1%
Unsure about safety	
Count	1
Col %	11.1%
Safe to eat if you know which ones to take	
Count	3
Col %	33.3%

(continued)

Table XVII-22. Safety of Using Subsistence Foods, Chignik Bay

	STUDY YEAR
	1991
IS EATING SEAL MEAT OR OIL IMPORTANT?	
No	
Count	24
Col %	82.8%
Yes	
Count	5
Col %	17.2%
ARE SEALS FROM HARVEST AREAS SAFE TO EAT?	
Safe	
Count	5
Col %	100.0%

Table XVII-23. Resource Population Statuses, Chignik Bay

	STUDY YEAR
	1991
COMPARED TO 1988: CARIBOU	
Do Not Know	
Count	5
Col %	22.7%
Less	
Count	4
Col %	18.2%
Same	
Count	11
Col %	50.0%
More	
Count	2
Col %	9.1%
COMPARED TO 1988: BEAR	
Do Not Know	
Count	2
Col %	9.1%
Same	
Count	16
Col %	72.7%
More	
Count	4
Col %	18.2%
COMPARED TO 1988: HARBOR SEAL	
Do Not Know	
Count	10
Col %	47.6%
Less	
Count	5
Col %	23.8%
Same	
Count	5
Col %	23.8%
More	
Count	1

(continued)

Table XVII-23. Resource Population Statuses, Chignik Bay

	STUDY YEAR
	1991
Col %	4.8%
COMPARED TO 1988: SEA LIONS	
Do Not Know	
Count	7
Col %	31.8%
Less	
Count	2
Col %	9.1%
Same	
Count	3
Col %	13.6%
More	
Count	10
Col %	45.5%
COMPARED TO 1988: SEA DUCKS	
Do Not Know	
Count	8
Col %	36.4%
Less	
Count	5
Col %	22.7%
Same	
Count	7
Col %	31.8%
More	
Count	2
Col %	9.1%
COMPARED TO 1988: COMMON MURRE	
Do Not Know	
Count	8
Col %	38.1%
Less	
Count	4
Col %	19.0%

(continued)

Table XVII-23. Resource Population Statuses, Chignik Bay

	STUDY YEAR
	1991
Same	
Count	9
Col %	42.9%
COMPARED TO 1988: SALMON	
Do Not Know	
Count	4
Col %	17.4%
Less	
Count	9
Col %	39.1%
Same	
Count	9
Col %	39.1%
More	
Count	1
Col %	4.3%
COMPARED TO 1988: HALIBUT	
Do Not Know	
Count	4
Col %	18.2%
Less	
Count	4
Col %	18.2%
Same	
Count	11
Col %	50.0%
More	
Count	3
Col %	13.6%
COMPARED TO 1988: ROCKFISH	
No Response	
Count	1
Col %	4.5%
Do Not Know	
Count	13

(continued)

Table XVII-23. Resource Population Statuses, Chignik Bay

	STUDY YEAR
	1991
Col %	59.1%
Less	
Count	1
Col %	4.5%
Same	
Count	5
Col %	22.7%
More	
Count	2
Col %	9.1%
COMPARED TO 1988: DOLLY VARDEN	
Do Not Know	
Count	12
Col %	54.5%
Less	
Count	1
Col %	4.5%
Same	
Count	7
Col %	31.8%
More	
Count	2
Col %	9.1%
COMPARED TO 1988: CLAMS	
Do Not Know	
Count	3
Col %	13.6%
Less	
Count	4
Col %	18.2%
Same	
Count	14
Col %	63.6%
More	

(continued)

Table XVII-23. Resource Population Statuses, Chignik Bay

	STUDY YEAR
	1991
Count	1
Col %	4.5%
COMPARED TO 1988: BIDARKIES	
Do Not Know	
Count	12
Col %	54.5%
Less	
Count	3
Col %	13.6%
Same	
Count	6
Col %	27.3%
More	
Count	1
Col %	4.5%
COMPARED TO 1988: SEA URCHINS	
Do Not Know	
Count	9
Col %	39.1%
Less	
Count	3
Col %	13.0%
Same	
Count	7
Col %	30.4%
More	
Count	4
Col %	17.4%
COMPARED TO 1988: OCTOPUS	
Do Not Know	
Count	4
Col %	17.4%
Less	
Count	6
Col %	26.1%

(continued)

Table XVII-23. Resource Population Statuses, Chignik Bay

	STUDY YEAR
	1991
Same	
Count	10
Col %	43.5%
More	
Count	3
Col %	13.0%

Table XVII-24. Children's Participation in Subsistence, Chignik Bay

	STUDY YEAR
	1991
DO CHILDREN HELP YOUR HH PROCESS WILD FOODS?	
No	
Count	25
Col %	86.2%
Yes	
Count	4
Col %	13.8%
DID EVOS AFFECT PARTICIPATION WITH CHILDREN?	
No	
Count	23
Col %	92.0%
Yes	
Count	2
Col %	8.0%
WHY EVOS AFFECTED PARTICIPATION WITH CHILDREN	
Did not trust foods	
Count	1
Col %	50.0%
Afraid to take kids to the beach	
Count	1
Col %	50.0%

Table XVII-25. Sharing, Chignik Bay

	STUDY YEAR
	1991
DID HOUSEHOLD SHARE?	
No	
Count	6
Col %	20.7%
Yes	
Count	23
Col %	79.3%
PREV. YEAR: SHARING OF WILD RES.	
Less	
Count	1
Col %	3.6%
Same	
Count	20
Col %	71.4%
More	
Count	7
Col %	25.0%
PREV. YEAR: SHARING OF HUNT/FISH GEAR	
Less	
Count	1
Col %	4.5%
Same	
Count	17
Col %	77.3%
More	
Count	4
Col %	18.2%
PREV. YEAR: SHARING OF MONEY	
Less	
Count	3
Col %	12.0%
Same	
Count	17
Col %	68.0%
More	

(continued)

Table XVII-25. Sharing, Chignik Bay

	STUDY YEAR
	1991
Count	5
Col %	20.0%
PREV. YEAR: SHARING OF LABOR	
Less	
Count	1
Col %	3.6%
Same	
Count	22
Col %	78.6%
More	
Count	5
Col %	17.9%
PRE-OS: SHARING OF WILD RESOURCES	
Do Not Know	
Count	1
Col %	3.7%
Less	
Count	4
Col %	14.8%
Same	
Count	18
Col %	66.7%
More	
Count	4
Col %	14.8%
PRE-OS: SHARING OF HUNT/FISH GEAR	
Do Not Know	
Count	1
Col %	4.3%
Less	
Count	1
Col %	4.3%
Same	
Count	18
Col %	78.3%

(continued)

Table XVII-25. Sharing, Chignik Bay

	STUDY YEAR
	1991
More	
Count	3
Col %	13.0%
PRE-OS: SHARING OF MONEY	
Do Not Know	
Count	1
Col %	4.0%
Less	
Count	1
Col %	4.0%
Same	
Count	19
Col %	76.0%
More	
Count	4
Col %	16.0%
PRE-OS: SHARING OF LABOR	
Do Not Know	
Count	1
Col %	3.7%
Less	
Count	3
Col %	11.1%
Same	
Count	21
Col %	77.8%
More	
Count	2
Col %	7.4%

Table XVII-26. Political Activities, Chignik Bay

	STUDY YEAR
	1991
LAST 3 YRS.: ELDERS INFLUENCE	
Do Not Know	
Count	7
Col %	25.0%
Decreased	
Count	9
Col %	32.1%
Same	
Count	9
Col %	32.1%
Increased	
Count	3
Col %	10.7%
PRE-EVOS: ATTEND PUBLIC MEETINGS	
Never	
Count	7
Col %	25.9%
Sometimes	
Count	12
Col %	44.4%
Almost Always	
Count	8
Col %	29.6%
LAST YEAR: ATTEND PUBLIC MEETINGS	
Never	
Count	14
Col %	48.3%
Sometimes	
Count	7
Col %	24.1%
Almost Always	
Count	8
Col %	27.6%
VOTE IN LAST CITY COUNCIL ELECTION?	
No	

(continued)

Table XVII-26. Political Activities, Chignik Bay

	STUDY YEAR
	1991
Count	17
Col %	60.7%
Yes	
Count	11
Col %	39.3%
VOTE IN LAST STATE-WIDE ELECTION?	
No	
Count	14
Col %	48.3%
Yes	
Count	15
Col %	51.7%
BELONG TO NATIVE CORPORATION?	
No	
Count	18
Col %	62.1%
Yes	
Count	11
Col %	37.9%
REGIONAL NATIVE CORPORATION	
Aleut Corp.	
Count	1
Col %	9.1%
Bristol Bay Native Corp.	
Count	9
Col %	81.8%
Koniag, Inc.	
Count	1
Col %	9.1%
VOTE IN LAST REG. CORP. ELECTION?	
Yes	
Count	11
Col %	100.0%
VILLAGE NATIVE CORPORATION	
Aleknagik Native Corporation	

(continued)

Table XVII-26. Political Activities, Chignik Bay

	STUDY YEAR
	1991
Count	1
Col %	9.1%
Far West, Incorporation (Chignik Bay)	
Count	7
Col %	63.6%
Oceanside Corporation (Perryville)	
Count	1
Col %	9.1%
Unga Corporation (Sand Point)	
Count	1
Col %	9.1%
Lesnoi (Woody Is. Village Corp., Kodiak)	
Count	1
Col %	9.1%
VOTE IN LAST NATIVE VILLAGE CORP. ELECTION?	
No	
Count	3
Col %	27.3%
Yes	
Count	8
Col %	72.7%
HAS VIEW OF LEADER CHANGED SINCE EVOS?	
Do Not Know	
Count	1
Col %	3.8%
No	
Count	24
Col %	92.3%
Yes	
Count	1
Col %	3.8%
WHY POST EVOS VIEW OF LEADERS	
Trust	
Count	1

(continued)

Table XVII-26. Political Activities, Chignik Bay

	STUDY YEAR
	1991
Col %	33.3%
Awareness/involvement	
Count	1
Col %	33.3%
Aware of Animosity	
Count	1
Col %	33.3%

Table XVII-27. Significance of Place, Chignik Bay

	STUDY YEAR
	1991
MAIN REASON MOVED TO COMMUNITY	
Born or reared here	
Count	7
Col %	24.1%
Married a person born or reared here	
Count	3
Col %	10.3%
Employment reasons	
Count	16
Col %	55.2%
Recreational opportunities	
Count	1
Col %	3.4%
Pace of Life	
Count	1
Col %	3.4%
Quality of Life	
Count	1
Col %	3.4%
LIVE HERE: WHERE PERSON IS FROM	
No	
Count	23
Col %	79.3%
Yes	
Count	6
Col %	20.7%
LIVE HERE: RELATIVES LIVE HERE	
No	
Count	19
Col %	65.5%
Yes	
Count	10
Col %	34.5%
LIVE HERE: MARRIED PERSON FROM HERE	
No	

(continued)

Table XVII-27. Significance of Place, Chignik Bay

	STUDY YEAR
	1991
Count	19
Col %	65.5%
Yes	
Count	10
Col %	34.5%
LIVE HERE: ALWAYS LIVED HERE	
No	
Count	23
Col %	79.3%
Yes	
Count	6
Col %	20.7%
LIVE HERE: FRIENDS LIVE HERE	
No	
Count	10
Col %	34.5%
Yes	
Count	19
Col %	65.5%
LIVE HERE: HUNTING & FISHING HERE	
No	
Count	6
Col %	20.7%
Yes	
Count	23
Col %	79.3%
LIVE HERE: JOB OPPORTUNITIES HERE	
No	
Count	1
Col %	3.4%
Yes	
Count	28
Col %	96.6%
LIVE HERE: EDUCATIONAL OPPORTUNITIES	
No	

(continued)

Table XVII-27. Significance of Place, Chignik Bay

	STUDY YEAR
	1991
Count	21
Col %	72.4%
Yes	
Count	8
Col %	27.6%
LIVE HERE: COST OF LIVING	
No	
Count	7
Col %	24.1%
Yes	
Count	22
Col %	75.9%
LIVE HERE: HOUSING AVAILABLE	
No	
Count	8
Col %	27.6%
Yes	
Count	21
Col %	72.4%
LIVE HERE: STORES	
No	
Count	23
Col %	79.3%
Yes	
Count	6
Col %	20.7%
LIVE HERE: MEDICAL SERVICES	
No	
Count	16
Col %	55.2%
Yes	
Count	13
Col %	44.8%
LIVE HERE: OTHER SERVICES	
No	

(continued)

Table XVII-27. Significance of Place, Chignik Bay

	STUDY YEAR
	1991
Count	20
Col %	69.0%
Yes	
Count	9
Col %	31.0%
LIVE HERE: BEAUTY OF AREA	
No	
Count	3
Col %	10.3%
Yes	
Count	26
Col %	89.7%
LIVE HERE: SIZE OF COMMUNITY	
No	
Count	8
Col %	27.6%
Yes	
Count	21
Col %	72.4%
LIVE HERE: LESS CRIME	
No	
Count	5
Col %	17.2%
Yes	
Count	24
Col %	82.8%
LIVE HERE: LESS DRINKING/DRUGS	
No	
Count	17
Col %	58.6%
Yes	
Count	12
Col %	41.4%
LIVE HERE: NECESSARY PERSONAL FREEDOMS	
No	

(continued)

Table XVII-27. Significance of Place, Chignik Bay

	STUDY YEAR 1991
Count	3
Col %	10.3%
Yes	
Count	26
Col %	89.7%
LIVE HERE: RECREATIONAL OPPORTUNITIES	
No	
Count	8
Col %	27.6%
Yes	
Count	21
Col %	72.4%
OTHER REASONS FOR LIVING IN COMMUNITY	
Quality of Life	
Count	3
Col %	60.0%
Cultural Reasons	
Count	2
Col %	40.0%
Location	
Count	1
Col %	20.0%
MAIN REASON REMAINING IN COMMUNITY	
Relatives (family)	
Count	2
Col %	6.9%
Married a person born or reared here	
Count	1
Col %	3.4%
Friends	
Count	1
Col %	3.4%
Employment reasons	
Count	14
Col %	48.3%

(continued)

Table XVII-27. Significance of Place, Chignik Bay

	STUDY YEAR 1991
Economic reasons	
Count	3
Col %	10.3%
Housing/property	
Count	1
Col %	3.4%
Environmental qualities	
Count	4
Col %	13.8%
Recreational opportunities	
Count	1
Col %	3.4%
Quality of Life	
Count	2
Col %	6.9%
POST-EVOS: CHANGE IN LIKING COMMUNITY	
Less	
Count	3
Col %	12.5%
Same	
Count	20
Col %	83.3%
More	
Count	1
Col %	4.2%
POST-EVOS: WHY CHANGE IN LIKING COMMUNITY	
Non-specific	
Count	1
Col %	20.0%
Increased dissension/conflict/violence	
Count	1
Col %	20.0%
Animals harvest to find/hunt/fish	
Count	1

(continued)

Table XVII-27. Significance of Place, Chignik Bay

	STUDY YEAR
	1991
Col %	20.0%
Other reasons	
Count	1
Col %	20.0%
Lived here longer	
Count	1
Col %	20.0%
RATHER LIVE IN ANOTHER COMMUNITY	
Do Not Know	
Count	1
Col %	3.4%
No	
Count	15
Col %	51.7%
Yes	
Count	13
Col %	44.8%
EXPECT TO LIVE IN REGION WHEN OLD	
Do Not Know	
Count	1
Col %	3.4%
No	
Count	18
Col %	62.1%
Yes	
Count	10
Col %	34.5%
CONFIDENT ABOUT HUNT/FISH/GATHERING	
Do Not Know	
Count	3
Col %	10.3%
No	
Count	7
Col %	24.1%

(continued)

Table XVII-27. Significance of Place, Chignik Bay

	STUDY YEAR
	1991
Yes	
Count	19
Col %	65.5%
WHY UNCONFIDENT ABOUT HUNTING/FISHING/GATHERING	
Increased restrictions	
Count	1
Col %	11.1%
Uncertainty about the future	
Count	1
Col %	11.1%
Increased development	
Count	4
Col %	44.4%
Environmental, animal rights, anti-gun interests	
Count	1
Col %	11.1%
Population pressure	
Count	2
Col %	22.2%
Vulnerable to environmental damage	
Count	2
Col %	22.2%
Miscellaneous reasons	
Count	1
Col %	11.1%
CONTINUE TO LIVE HERE IF NO WILD FOOD	
No	
Count	13
Col %	44.8%
Yes	
Count	16
Col %	55.2%

Table XVII-28. Effectiveness of Oil Spill Responses, Chignik Bay

	STUDY YEAR
	1991
EFFECTIVENESS EVOS: US COAST GUARD	
Do Not Know	
Count	9
Col %	36.0%
Not Effective	
Count	3
Col %	12.0%
Somewhat	
Count	7
Col %	28.0%
Effective	
Count	6
Col %	24.0%
EFFECTIVENESS EVOS: ADEC	
Do Not Know	
Count	8
Col %	32.0%
Not Effective	
Count	3
Col %	12.0%
Somewhat	
Count	8
Col %	32.0%
Effective	
Count	6
Col %	24.0%
EFFECTIVENESS EVOS: INSURANCE COMPANIES	
Do Not Know	
Count	14
Col %	60.9%
Not Effective	
Count	3
Col %	13.0%
Somewhat	
Count	2

(continued)

Table XVII-28. Effectiveness of Oil Spill Responses, Chignik Bay

	STUDY YEAR
	1991
Col %	8.7%
Effective	
Count	4
Col %	17.4%
EFFECTIVENESS EVOS: LOCAL NATIVE PROFIT	
Do Not Know	
Count	16
Col %	66.7%
Not Effective	
Count	1
Col %	4.2%
Somewhat	
Count	4
Col %	16.7%
Effective	
Count	3
Col %	12.5%
EFFECTIVENESS EVOS: NATIVE NON-PROFITS	
Do Not Know	
Count	19
Col %	79.2%
Not Effective	
Count	1
Col %	4.2%
Somewhat	
Count	2
Col %	8.3%
Effective	
Count	2
Col %	8.3%
EFFECTIVENESS EVOS: BOROUGH GOVERNMENT	
Do Not Know	
Count	11
Col %	84.6%

(continued)

Table XVII-28. Effectiveness of Oil Spill Responses, Chignik Bay

	STUDY YEAR
	1991
Not Effective	
Count	1
Col %	7.7%
Effective	
Count	1
Col %	7.7%
EFFECTIVENESS EVOS: VILLAGE CORPORATION	
Do Not Know	
Count	14
Col %	58.3%
Not Effective	
Count	2
Col %	8.3%
Somewhat	
Count	5
Col %	20.8%
Effective	
Count	3
Col %	12.5%
EFFECTIVENESS EVOS: CITY COUNCIL	
Do Not Know	
Count	9
Col %	36.0%
Not Effective	
Count	5
Col %	20.0%
Somewhat	
Count	6
Col %	24.0%
Effective	
Count	5
Col %	20.0%
EFFECTIVENESS EVOS: IRA COUNCIL	
Do Not Know	
Count	12

(continued)

Table XVII-28. Effectiveness of Oil Spill Responses, Chignik Bay

	STUDY YEAR
	1991
Col %	66.7%
Not Effective	
Count	3
Col %	16.7%
Somewhat	
Count	1
Col %	5.6%
Effective	
Count	2
Col %	11.1%
EFFECTIVENESS EVOS: CHAMBER OF COMMERCE	
Do Not Know	
Count	3
Col %	100.0%
EFFECTIVENESS EVOS: COMMERCIAL BUSINESSES	
Do Not Know	
Count	11
Col %	52.4%
Not Effective	
Count	1
Col %	4.8%
Somewhat	
Count	5
Col %	23.8%
Effective	
Count	4
Col %	19.0%
EFFECTIVENESS EVOS: COMMERCIAL FISHING GROUPS	
Do Not Know	
Count	6
Col %	24.0%
Not Effective	
Count	1

(continued)

Table XVII-28. Effectiveness of Oil Spill Responses, Chignik Bay

	STUDY YEAR
	1991
Col %	4.0%
Somewhat	
Count	7
Col %	28.0%
Effective	
Count	11
Col %	44.0%
EFFECTIVENESS EVOS: OTHER BUSINESS GROUPS	
Do Not Know	
Count	9
Col %	64.3%
Somewhat	
Count	4
Col %	28.6%
Effective	
Count	1
Col %	7.1%
EFFECTIVENESS EVOS: SCHOOLS	
Do Not Know	
Count	13
Col %	72.2%
Not Effective	
Count	2
Col %	11.1%
Somewhat	
Count	2
Col %	11.1%
Effective	
Count	1
Col %	5.6%
EFFECTIVENESS EVOS: CHURCHES	
Do Not Know	
Count	15
Col %	83.3%

(continued)

Table XVII-28. Effectiveness of Oil Spill Responses, Chignik Bay

	STUDY YEAR
	1991
Not Effective	
Count	2
Col %	11.1%
Somewhat	
Count	1
Col %	5.6%
EFFECTIVENESS EVOS: MEDICAL PROFESSION	
Do Not Know	
Count	11
Col %	57.9%
Not Effective	
Count	1
Col %	5.3%
Somewhat	
Count	3
Col %	15.8%
Effective	
Count	4
Col %	21.1%
EFFECTIVENESS EVOS: HEALTH AIDES	
Do Not Know	
Count	10
Col %	52.6%
Somewhat	
Count	3
Col %	15.8%
Effective	
Count	6
Col %	31.6%
EFFECTIVENESS EVOS: SOCIAL WORKERS	
Do Not Know	
Count	13
Col %	86.7%
Not Effective	
Count	1

(continued)

Table XVII-28. Effectiveness of Oil Spill Responses, Chignik Bay

	STUDY YEAR
	1991
Col %	6.7%
Effective	
Count	1
Col %	6.7%
EFFECTIVENESS EVOS: LOCAL LAW ENFORCEMENT	
Do Not Know	
Count	9
Col %	37.5%
Not Effective	
Count	3
Col %	12.5%
Somewhat	
Count	3
Col %	12.5%
Effective	
Count	9
Col %	37.5%
EFFECTIVENESS EVOS: STATE LAW ENFORCEMENT	
Do Not Know	
Count	12
Col %	60.0%
Not Effective	
Count	2
Col %	10.0%
Somewhat	
Count	6
Col %	30.0%
EFFECTIVENESS EVOS: EXXON	
Do Not Know	
Count	5
Col %	19.2%
Not Effective	
Count	12

(continued)

Table XVII-28. Effectiveness of Oil Spill Responses, Chignik Bay

	STUDY YEAR
	1991
Col %	46.2%
Somewhat	
Count	7
Col %	26.9%
Effective	
Count	2
Col %	7.7%
EFFECTIVENESS EVOS: VECO	
Do Not Know	
Count	4
Col %	15.4%
Not Effective	
Count	9
Col %	34.6%
Somewhat	
Count	7
Col %	26.9%
Effective	
Count	6
Col %	23.1%
EFFECTIVENESS EVOS: ALYESKA PIPELINE	
Do Not Know	
Count	17
Col %	65.4%
Not Effective	
Count	7
Col %	26.9%
Somewhat	
Count	2
Col %	7.7%
EFFECTIVENESS EVOS: ANIMAL RESCUE GROUPS	
Effective	
Count	1
Col %	100.0%

(continued)

Table XVII-28. Effectiveness of Oil Spill Responses, Chignik Bay

	STUDY YEAR
	1991
EFFECTIVENESS EVOS: OILED MAYORS	
Not Effective	
Count	1
Col %	100.0%

Table XVII-29. Subsistence Food Safety Information, Chignik Bay

	STUDY YEAR
	1991
ADEQUATELY INFORMED ABOUT FOOD SAFETY?	
No	
Count	9
Col %	32.1%
Somewhat	
Count	4
Col %	14.3%
Yes	
Count	15
Col %	53.6%
WHY NOT ADEQUATELY INFORMED	
No Response	
Count	3
Col %	23.1%
Lack of clear or definitive advice	
Count	4
Col %	30.8%
Received incomplete information	
Count	4
Col %	30.8%
Received no information	
Count	3
Col %	23.1%
Untimely	
Count	1
Col %	7.7%
Personal observations contradicted advice or findings	
Count	1
Col %	7.7%
Believe information was deliberately withheld	
Count	2
Col %	15.4%
There were not enough tests	

(continued)

Table XVII-29. Subsistence Food Safety Information, Chignik Bay

	STUDY YEAR
	1991
Count	1
Col %	7.7%

Table XVII-30. OCS Development Effects, Chignik Bay

	STUDY YEAR
	1991
OCS EFFECT: FISH	
Do Not Know	
Count	4
Col %	13.8%
Decrease	
Count	18
Col %	62.1%
No Change	
Count	6
Col %	20.7%
Increase	
Count	1
Col %	3.4%
OCS EFFECT: SHELLFISH	
Do Not Know	
Count	8
Col %	27.6%
Decrease	
Count	14
Col %	48.3%
No Change	
Count	6
Col %	20.7%
Increase	
Count	1
Col %	3.4%
OCS EFFECT: MARINE MAMMALS	
Do Not Know	
Count	6
Col %	20.7%
Decrease	
Count	15
Col %	51.7%
No Change	
Count	8

(continued)

Table XVII-30. OCS Development Effects, Chignik Bay

	STUDY YEAR
	1991
Col %	27.6%
OCS EFFECT: LAND MAMMALS	
Do Not Know	
Count	5
Col %	17.2%
Decrease	
Count	10
Col %	34.5%
No Change	
Count	14
Col %	48.3%
OCS EFFECT: BIRDS	
Do Not Know	
Count	5
Col %	17.2%
Decrease	
Count	15
Col %	51.7%
No Change	
Count	9
Col %	31.0%
OCS DEVELOPMENT = MORE JOBS?	
Do Not Know	
Count	1
Col %	3.4%
No	
Count	17
Col %	58.6%
Yes	
Count	11
Col %	37.9%
CONTAIN AND CLEANUP SMALL OIL SPILL	
No	
Count	12
Col %	41.4%

(continued)

Table XVII-30. OCS Development Effects, Chignik Bay

	STUDY YEAR
	1991
Maybe	
Count	10
Col %	34.5%
Yes	
Count	7
Col %	24.1%
CONTAIN AND CLEANUP LARGE OIL SPILL	
Do Not Know	
Count	2
Col %	6.9%
No	
Count	19
Col %	65.5%
Maybe	
Count	5
Col %	17.2%
Yes	
Count	3
Col %	10.3%

CHAPTER XVIII: CHIGNIK LAKE

by

Lisa Hutchinson-Scarbrough

COMMUNITY BACKGROUND

Setting

The community of Chignik Lake is located on the Alaska Peninsula approximately 190 miles (306 km) southwest of King Salmon near the mouth of the lake that shares its name. Chignik Lake is situated within a narrow pass that leads through the volcanic Aleutian Range from Bristol Bay near Port Heiden to the Pacific Ocean side of the Alaska Peninsula (Fig. I-1).

The Aleutian Range is the primary landform throughout the Alaska Peninsula, containing a dozen volcanoes rising to elevations of 4-8,000 feet. Water is a major feature throughout the Alaska Peninsula in the form of lakes, streams, rivers, ponds, wetland areas, bays, lagoons, and tidal flats. Water combined with high brush and alpine tundra all provide prime habitat for fresh and saltwater fishes, marine and land mammals, waterfowl, and plants.

The climate is maritime to transitional (Selkregg 1976:4) and influenced greatly by the Pacific Ocean to the south, and the Bering Sea to the north that separately bring winds and moisture to the land. The beauty of Chignik Lake's setting is paid for by the almost constant winds that funnel back and forth through the pass. The area is appropriately named for Chignik means "windy place" in the local Alutiiq language. Chignik Lake does not have its own weather station; however in 1982, a weather station at Chignik Bay, a village inside of Anchorage Bay approximately 20 miles east of Chignik Lake, recorded an average of 127 inches of annual precipitation with an annual snowfall of 59 inches, average summer temperatures of 50 degrees, and winter temperatures of 35 degrees (Alaska Department of Community and Regional Affairs (ADC&RA) 1982b).

History

Scattered around the village as well as throughout the Chignik region are artifacts including lithic tools, stone lamps, and house depression remains. Little is known about these early Chignik occupants. Archaeological evidence along the Chignik River documents that throughout the first millennium AD, people lived along the Chignik River and depended heavily on salmon (Dumond 1987:67-71) It is believed that as early as 6,000 years ago, the maritime hunting cultures of Pacific and Yupi'k Eskimos and Aleuts occupied the Alaska Peninsula. They were ancestral to today's Alaska Peninsula Native people (Clark 1984:136-137).

Many of the residents of Chignik Lake are descendants of a Native woman named Dora Artemie Lind Andre born in 1903 at Bear River near Port Moller (Davis 1986:44). Her father was from Old Harbor and her mother from Ugashik. Her parents raised her at Old Village (near the Chignik Lagoon sandspit), where they stayed in the summers. They wintered at Chignik Lake to trap and because subsistence foods were easier to get there than other areas they had lived. Chignik Lake remained a winter trapping camp until the early 1960's when Dora and others established a school and Russian Orthodox Church there. This school was constructed by local people to provide for children living in communities like Old Village, Kanatak, Ilnik, and Port Moller. Before this, these children had to travel to Port Heiden, Pilot Point, or Kodiak if they wanted to attend school (Morris 1987:29). In addition these residents wanted to remain of one faith, Russian Orthodox, and therefore chose not to move across Chignik Lagoon to Chignik Lagoon village (Davis 1986:45). (See Chapter XVII for more specific history of Chignik area.)

Economy

Commercial fishing provides the primary income for residents of Chignik Lake. Also, the school employs a great number of people in the village. Other employers include the Bristol Bay Area Health Corporation, and the local village corporation. The 1990 United States census stated that the mean household wage and salary income in 1989 was $21,760 with per capita income of $7,765 (U.S. Bureau of the Census 1992a).

Chignik Lake is part of the Chignik River system which includes Black Lake, upper and lower Chignik River, Chignik Lagoon, and Chignik Bay. This system produces the largest sockeye salmon run on the south side of the Alaska Peninsula as well as coho, king, pink, and chum salmon. It is managed by Alaska Department of Fish and Game (ADF&G) in order to allow for commercial and subsistence harvesting of salmon surplus to the desired escapement requirements. Approximately 100 commercial salmon permits are allowed for the Chignik region, and the majority of the fish caught are sold to either Aleutian Dragon Fisheries (ADF) or Chignik Pride Fisheries (CPF), both located in Anchorage Bay at the community of Chignik Bay. A large portion of Chignik Lake households either own or lease a Chignik salmon permit or work as crewmen on a boat.

In addition, most Chignik Lake residents depend on these salmon runs as part of their annual subsistence harvest in order to satisfy some of their nutritional needs. Other resources utilized include: other saltwater and freshwater fishes, marine invertebrates, marine mammals, waterfowl, land mammals, and a variety of wild plants and berries.

Government, Facilities, and Services

Chignik Lake is part of the Lake and Peninsula Borough and is governed by the Chignik Lake Village Council. The village council employs a village administrator and administrative clerk to handle village business matters. The Village Native Corporation is Chignik River, Limited.

Chignik Lake's facilities include a 2,800-foot gravel airstrip managed by the Alaska Department of Transportation, a contract post office, a Russian Orthodox Church with a priest, health clinic with two village health aides operated by the Bristol Bay Area Health Corporation, a washateria with showers, village corporation office, water, sewer, electricity, telephone and television service, a local store with limited supplies owned by one of the families in the community, and the Lake and Peninsula School District school with classes held for pre-school through 12th grade, gymnasium, library, kitchen, workshop, darkroom, and teachers' quarters.

Transportation into and out of Chignik Lake village is by air or water, but limited due to the weather, and tides and ice in Chignik River. In 1992, two commercial airline companies serviced Chignik Lake, providing daily transportation service, as well as mail and cargo delivery. Boats including skiffs to small barges can be navigated from Chignik Lagoon up the lower Chignik River to the village providing the tide is high, and the river is free of ice. Roads are limited to the village. There are a few trucks in the village but primarily residents use snowmachines, all terrain vehicles (ATVs), or skiffs for transportation.

RESEARCH METHODS

James Fall, the Division of Subsistence Regional Program Manager and Lisa Scarbrough, Subsistence Resource Specialist traveled to Chignik Lake on December 4, 1991, where they met with Chignik Lake Village Council President, Harry Kalmakoff Jr., about the project. On December 5, they met with the village council to present information on the project and the council approved the study. The study took place in Chignik Lake only in the first year of the three-year project. The fieldwork was conducted from April 6-13, 1992, by Scarbrough, Susan Savage with Katmai National Park (NPS), and Tracy Andrews with Minerals Management Service (MMS). Chignik Lake village residents assisting included Lola Lind who provided a list of household compositions, and Annette Takak who helped the researchers set up appointments and describe the project to residents.

The goal was to interview every household in the village that had spent eight months or more in Chignik Lake during the study year (April 1991-March 1992), and did not claim residency elsewhere. Village administrator Lola Lind provided a list of 33 households in the village that fit the residency criteria. Her list was double checked with a list of households that the division interviewed in 1990. Chignik Lake's population and household compositions remained steady over the previous two years. The 1990 Social Indicators study was not conducted in Chignik Lake.

The harvest survey was usually conducted with the primary harvester in the household but often included more than one person. The social effects survey only allowed for one randomly selected member over 16 years of age per household to be interviewed. Sixteen percent of those names randomly selected were substituted with another person because either there was only one gender in the household, or the selected person was unavailable.

The harvest survey was almost always administered first, followed by the social effects survey. The harvest survey took on average 97 minutes to finish in Chignik Lake, because the village is very active with subsistence activities (Table I-7). As a result, many of the households elected to do the social effects survey a different time. The social effects survey took an average of 47 minutes per household to complete (Table I-8).

Of the 33 households, 24 subsistence harvest surveys, or 73 percent of the total, and 22 social effects surveys, or 67 percent of the total, were completed. Six households declined the subsistence harvest survey, and seven declined the social effects survey (Table XVIII-1). The remaining households not surveyed were either away from the village during the time of the survey or were elder households that family members requested we not interview. The illness of a senior member of one prominent family had many people in the village preoccupied, which possibly contributed toward some of the refusals and out of town households. In addition, other reasons for refusals were that people were tired of being interviewed, and some households felt uncomfortable talking to a female researcher about hunting and fishing activities. A few of the households have never participated in an interview with the Division because they do not trust ADF&G.

DEMOGRAPHY

The population of Chignik Lake has remained relatively the same since it was established in the late 1950's, according to the U.S. census reports (Fig. XVIII-1, Table I-1). The 1990 U.S. census reported the population of Chignik Lake at 133. In 1992 at the time of this study, researchers found Chignik Lake's population was 131 with 92.0 percent of the residents classified as Alaska Native (Table XVIII-2). The 33 households contained an average of 4.0 people per household. During the summer months, the population increases slightly because family members return to the village to fish and visit relatives. The proportion of females to males was about equal at 49.5 percent and 50.5 percent, respectively. The mean age of Chignik Lake residents was 25.0 years, and length of residency for household heads was 24.0 years (Table XVIII-2, Table XVIII-3, Fig. XVIII-2).

CASH ECONOMY: 1991/92

Of the estimated 75.6 adults in Chignik Lake in 1991/92, 69.1 percent were employed during the study year with an average of 1.6 jobs each (Table XVIII-4). From these, 7.9 percent had year-round employment, and the average length of jobs was 7.2 months. There were an average of 1.7 employed adults per household holding a mean of 2.7 jobs.

Chignik Lake's average household income from all sources was $32,563.28 with a mean per capita income of $8,226.51 (Table XVIII-5). The most important single source of earned income was commercial fishing, providing an average household income of $13,332.50. Commercial fishing represented 51 percent

of Chignik Lake's employment (Fig.-XVIII-3). The school ranked second, providing 21 percent of the community's jobs.

The total amount of other income for Chignik Lake in 1991/92 was $206,220.67, with a household average of $6,249.11, and a per capita income of $1,578.72 (Table XVIII-6). The primary source of other income was the Alaska Permanent Fund Dividend, which 87.5 percent of the households received.

The mean monthly expense for food estimated by sampled Chignik Lake households was $540. The median food expense per month was $525. The latter represents 19.3 percent of the total average household income in the community (Table I-101).

The greatest proportion of sampled Chignik Lake households (37.5 percent) reported that their financial situation was worse during the 1991/92 study year than before the *Exxon Valdez* oil spill (March 1989). Thirty-three percent of the households claimed that their financial situation was about the same, and thirteen percent said it was better than before the spill (Table I-103).

RESOURCE USES: 1991/92

The largest percentage of sampled households in Chignik Lake (33.3 percent) estimated that between 26 to 50 percent of their annual use of meat, fish and poultry derived from wild foods. As shown in Table I-104, 29.2 percent of the households estimated the contribution of wild foods at 51 to 75 percent; 20.8 percent estimated at 76 to 99 percent, and 16.7 percent estimated at 1 to 25 percent.

Every household in Chignik Lake reported using and harvesting one or more subsistence resources during the 1991/1992 study year. Individuals from Chignik Lake who harvested a resource totaled 103.1 or 78.9 percent of all residents, and 64.2 percent processed wild foods. On average, Chignik Lake households used 24.0 kinds of wild resources in 1991/92, the widest range of any of the study communities in the three years of the project. Also, households on average attempted to harvest 14.6 kinds of wild resources, harvested 14.4 kinds, received 15.2 kinds, and gave away 13.3 varieties (Table XVIII-8, Table XVIII-9).

As shown in Table XVIII-9, 59.0 percent gathered plants, 72.9 percent fished, 45.4 percent of the community's population hunted game, and 3.2 percent trapped or hunted furbearers. Ninety-six percent of Chignik Lake's households harvested salmon in 1991, with spawning sockeye salmon ("reds") being the most popular followed by fresh sockeye salmon (Table XVIII-13).

Chignik Lake's households were involved in sharing resources with at least 18 other Alaska communities (Table XVIII-10). Many of these communities are located on the Alaska Peninsula, a pattern consistent with past study years. In 1991/92, 95.8 percent of Chignik Lake's households received wild resources, while 91.7 percent gave resources away. Most Chignik Lake households shared their subsistence food with people living in their own community, as well as the other Chignik area villages. Sharing patterns have not varied much since 1984 when the Division of Subsistence first conducted harvest

surveys in the region (Morris 1987). In Chignik Lake, there were fewer elders in 1991 than in 1984; however, sharing with those now present is reported to be at about the same as previous levels.

RESOURCE HARVEST QUANTITIES: 1991/92

The mean per capita harvest for all resources in Chignik Lake was 442.4 pounds usable weight. The mean household harvest in pounds was 1,751.0 (Table XVIII-13). These harvest levels were almost equivalent to 1989 levels of 453.0 pounds per person but much greater than 1984 when estimated harvests totaled 279.0 pounds per person (Fig. XVIII-4, Table XVIII-11). In all three study years, salmon and land mammals made up the largest portion of resource harvest by Chignik Lake residents (Fig. XVIII-5, Fig. XVIII-6, Table XVIII-12).

In 1991/92, over half (55.8 percent) of the harvest of wild resources in Chignik Lake was fish, 245.3 pounds per capita (Table XVIII-11, Table XVIII-12). Most of the fish were salmon, providing 203.7 pounds per capita (6,599.3 fish) or 46.0 percent of the total harvest (Fig. XVIII-5, Fig. XVIII-6, Fig. XVIII-7, Fig. XVIII-8). Sockeye salmon made up the greatest portion of salmon harvested. These totaled 2,923.3 fish at 14,762.4 pounds, averaging 113.0 pounds per capita. The harvest of spawning sockeye salmon was almost the same with a total of 2,610.4 fish at 6,134.5 pounds. There were 491.0 coho salmon harvested that provided for 2,631.1 pounds. In addition, 1,867.4 pounds of chinook salmon, 603.5 pounds of pink salmon, 215.5 pounds of chum salmon, and 195.2 pounds of spawning coho salmon were also harvested for subsistence by Chignik Lake residents (Table XVIII-13).

By gear type, in pounds, 28.5 percent of all resources harvested by Chignik Lake residents were removed from commercial fish catches (Table XVIII-14). Of the total pounds harvested of salmon, 23.3 percent were removed from commercial catches, 68.3 percent were taken with subsistence gear, and 8.4 percent with rod and reel gear (Table XVIII-15).

Of the 2,923.3 sockeye (fresh) salmon harvested, 675.1 were removed from commercial catches, 2,248.1 harvested with subsistence gear, and none taken with rod and reel (Table XVIII-16). It was reported that 66.7 percent of Chignik Lake households removed some salmon from commercial catches, 70.8 percent used various subsistence gear, and 37.5 percent used rod and reel in order to harvest their home use salmon (Table XVIII-17). Coho was the most popular species of salmon caught by rod and reel. Subsistence harvests of salmon by Chignik Lake residents occur in Chignik Lake itself as well as from fish camps along Chignik Lagoon. Community residents participate in commercial fisheries within the Chignik Management Area. Chignik Lake itself is closed to commercial fishing.

Eight different methods were used by Chignik Lake households to preserve their salmon harvests (Table I-106). On average, households used 4.0 methods. These methods included freezing (used by 95.8 percent of the households), drying (62.5 percent), smoking (54.2 percent), salting (54.2 percent), canning (50.0 percent), pickling (45.8 percent), kippering (25.0 percent), and fermenting (8.3 percent).

Harvest estimates of salmon for Chignik Lake for 1984 and 1989 were very similar to each other, with 139.5 pounds per person in 1984 and 152.7 pounds per person in 1989. The 1991/92 salmon harvest estimate was higher at 203.7 pounds per person (Fig. XVIII-5, Fig. XVIII-6). As reported in Table I-9, 61.9 percent of the interviewed households in Chignik Lake believed that their salmon uses in 1991/92 were about the same as the previous year, while 9.5 percent said they were higher, and 28.6 percent said they were lower. Compared to before the oil spill, 82.4 percent of the households estimated that their salmon uses during the study year were about the same, 5.9 percent said they were higher, and 11.8 percent said they were lower (Fig. XVIII-7, Table I-10).

For non-salmon fish, the largest per capita harvest was halibut at 30.8 pounds. Pacific (gray) cod provided 4.6 pounds per person, the second largest non-salmon resource harvested. The total non-salmon per capita harvest was 41.6 pounds, representing 9.4 percent of all wild resources harvested by Chignik Lake residents (Fig. XVIII-5, Fig. XVIII-6, Fig. XVIII-7, Fig. XVIII-8, Table XVIII-13).

By gear type, 3,314.6 pounds of non-salmon fish were removed from commercial fish catches by residents of Chignik Lake (Table XVIII-18). Of total pounds harvested, 61.1 percent were taken from commercial catches, 36.1 percent harvested with subsistence gear, 2.1 percent taken with rods and reels and 0.7 percent by ice fishing (Table XVIII-19). Chignik Lake households reported that 58.3 percent removed some non-salmon fish from commercial catches, 41.7 percent used subsistence gear, 16.7 percent used rod and reel, and 4.2 percent fished through the ice (Table XVIII-20).

Non-salmon fish harvests were virtually the same in 1989 (38.9 pounds per person) and 1991/92 (41.6 pounds per capita), but were lower in 1984 at 16.2 pounds per person (Fig. XVIII-5, Fig. XVIII-6). Of the sampled Chignik Lake households, 76.2 percent reported that their overall use and harvest of fish other than salmon was about the same in 1991/92 as it was the previous year (Table I-15). Only 9.5 percent reported an increase in harvest and use, and 14.3 percent reported a decrease. When asked to compare 1991/92 with the year before the 1989 *Exxon Valdez* oil spill, 80.0 percent thought their use and harvest was about the same, 13.3 percent said it was higher, and 6.7 percent thought it was less in 1991/92 than in 1988 (Fig. XVIII-7, Table I-16).

Marine invertebrates harvested by Chignik Lake residents made up 4.7 percent of all resources harvested (Fig. XVIII-6). They totaled 2,710.9 pounds and averaged 20.8 pounds per capita. Some of the shellfish harvests included: 11.1 pounds per capita of clams (butter, razor and steamer), 4.5 pounds per person of cockles, 2.5 pounds per person of crab, 1.2 pounds per person of octopus, and 1.1 pounds per person of chitons (Table XVIII-13). These harvests occur along the Pacific coast of the Alaska Peninsula, such as along Chignik Lagoon, Chignik Bay, and Kuiukta Bay (Morris 1987).

Marine invertebrate levels did not vary much either in the last two study years, with 1989 per capita harvests of 15.9 pounds and 20.8 pounds in 1991/92. Levels of shellfish harvest in 1984 were lower at 3.3 pounds per person (Fig. XVIII-5, Fig. XVIII-7, Fig. XVIII-8). Of all Chignik Lake respondents, 54.5 percent thought their use and harvests of marine invertebrates in 1991/92 were about the same as compared to the

previous year, while 31.8 percent reported more and 13.6 reported less (Fig. XVIII-7, Table I-45). Compared to before the spill in 1988, most Chignik Lake respondents felt shellfish use and harvests were the same (73.7 percent) with 15.8 percent seeing an increase and 10.5 percent seeing a decrease in 1991/92 (Table I-46).

For land mammals, Chignik Lake's 1991/92 per capita harvest was 152.6 pounds and the community's total harvest was 19,929.3 pounds, which provided for 34.5 percent of the total harvest. There was a harvest of 104.5 caribou, averaging 3.2 animals (475.0 pounds) per household. Moose harvests totaled 6.9 animals that provided 112.5 pounds per household. Other game animals reported harvested per household included brown bear (14.2 pounds), porcupine (2.0 pounds), hare (0.3 pounds), and fox (12.4 individuals for fur only) (Fig. XVIII-6, Table XVIII-13).

In 1984, Chignik Lake's game harvests averaged 112.7 pounds per person. This estimate is believed to be low since a few of the primary hunters of the village were not interviewed at that time. The 1989 harvest level of 216.4 pounds is believed to be more representative of the village's use. In 1991/92, the harvest levels were down from 1989 at 152.6 pounds per person. Residents reported that caribou were hard to find in 1991/92 and therefore, they were not able to achieve their normal harvest levels (Fig. XVIII-5, Fig. XVIII-7, Fig. XVIII-8).

Of the sampled households, 54.5 percent thought their use and harvest of large game during the study year was about the same as compared to the previous year (Table I-21). On the other hand, there was an even split of households reporting more use and harvests (22.7 percent) and those reporting less (22.7 percent). When asked to compare the 1991/92 study year with the year before the oil spill, again, the majority (82.4 percent) thought their harvest of large game was about the same, 11.8 percent thought it was higher, and 5.9 percent thought it was less in 1991/92 than in 1998 (Table I-22). When asked to compare use and harvest of small game and furbearers, 81.3 percent of the responding households felt their use was the same as the previous year, and 71.4 percent thought it was the same as compared to the year before the spill (Table I-27, Table I-28).

Harbor seals were the only marine mammals that were reported harvested by Chignik Lake residents in 1991/92 and made up only one percent of their subsistence harvest (Fig. XVIII-6). The total community harvest in pounds of seal totaled 539.0 pounds for the 9.6 animals harvested (Table XVIII-13). Marine mammal use has remained virtually the same from 1984 to 1991/92 with per capita harvests in 1984 at 3.7 pounds, 1989 at 6.5 pounds, and 1991/92 at 4.1 pounds (Fig. XVIII-5). Of the sampled Chignik Lake households, 72.2 percent reported that their 1991/92 use and harvest of marine mammals was about the same as the previous year (Table I-33). Households reporting less totaled 27.8 percent, and no one reported more use. When asked to compare 1991/92 marine mammal harvest and use to the year before the spill (1988), 80.0 percent said it was about the same, and 20.0 percent thought it was less, while no one reported more (Fig. XVIII-7, Table I-34).

Despite the fact that most saw little change in their harvest and use of marine mammals, many respondents (64.3 percent) felt there was an increase in the populations of Steller sea lions in their region since the spill, 28.6 percent thought they were about the same, and 7.1 percent thought there were less (Table I-99). Many of those thinking there were more sea lions have noticed more in Anchorage Bay because since the spill, the sea food processing facilities have stayed open in the winter to process cod, which put additional waste products in the bay and attracted numerous sea lions (Table I-100).

Birds and eggs were taken at an average of 13.2 pounds per capita, or 3.0 percent of the total harvest. This is similar to the 1989 per capita levels of 15.3 pounds per person. In 1984, 3.6 pounds per person were reported (Fig. XVIII-5, Fig. XVIII-6). In 1991/92, almost all of Chignik Lake's bird harvest consisted of ducks (5.9 pounds per capita). The most frequently taken species of ducks were oldsquaw, mallard, teal, goldeneye, and pintail. Some other bird resources harvested included: ptarmigan at 3.5 pounds, eggs at 3.1 pounds, and geese at 0.8 pounds per capita (Table XVIII-13). When asked to compare the study year's use and harvest of birds and eggs to the previous year, 52.4 percent of the respondents felt there was no change, 42.9 percent said it was less, and only 4.8 percent reported an increase (Table I-39). When asked to compare 1991/92 use and harvest of birds and eggs to the year before the EVOS, 62.5 percent saw little change while 31.3 percent thought their harvest was less and 6.3 percent saw an increase (Table I-40).

Plants and berries provided 1.5 percent of the total resources harvested at 6.5 pounds per person, which was about equivalent to 1989's average of 7.4 pounds (Fig. XVIII-5, Fig. XVIII-6). This information was not collected in 1984. Berries mostly represented this category with a community total of 161.2 gallons harvested which equates to 4.9 pounds per capita (Table XVIII-13). Six households at Chignik Lake (25.0 percent) used plants for medicinal purposes (Table I-109). These households used cranberries [*Oxycoccus* (Table I-108)] and wild celery (*Heracleum lanatum)* for colds and coughs, swamp grass for steam baths, and an unknown plant as a pain killer.

Of responding households overall, 63.6 percent thought their use and harvest of plants and berries and firewood was about the same as the previous year, while the second largest group (27.3 percent) thought it was less, and 9.1 percent said they had an increase (Table I-51). Seventy-five percent reported that their use and harvest was the same as compared to 1988, and 25.0 percent said it was less (Table I-52).

When Chignik Lake respondents were asked how they would compare their overall use and harvest of wild resources during the 1991/92 study year with the previous year, 68.2 percent of those responding felt that there was little change. As shown in Table I-57, 18.2 percent reported their use and harvests were higher during the study year, while 13.6 percent thought they were less. Their responses were similar when they compared the study year to the year before the spill; 77.8 percent reported their use and harvests were the same, 16.7 percent said they were less, and 5.6 percent thought they were greater than before the oil spill (Table I-58). When interviewed in 1990 about their subsistence uses in the year

following the oil spill, a larger percentage of households (23.8 percent) said their uses had declined compared to the year before (Fig. XVIII-7).

Five sampled households in Chignik Lake (20.8 percent) discarded resources during the study year because of perceived abnormalities (Table I-107). Most often, shellfish were discarded (two households; 8.3 percent). Explanations offered for these abnormalities varied, and included disease and abnormal appearance. One household thought the reason for the abnormalities was normal variation and the other could not provide an explanation for the abnormalities. Other species discarded included salmon, game, and birds.

SUBSISTENCE EQUIPMENT EXPENSES AND USE: 1991/92

Subsistence activities require the use of tools and equipment to aid in harvesting and processing various resources. Chignik Lake households used on average 21 different types of equipment to assist them with their subsistence activities in 1991/92 (Table XVIII-7). Some of this equipment and supplies included: boats, motors, ATVs, guns, fish nets, tackle, smokehouses, camp houses, camp gear, freezers, freezer bags, salt, and gasoline.

The replacement value of Chignik Lake's subsistence equipment in 1991/92 averaged $49,776 per household. Annual fuel costs for all resource subsistence activities averaged $2,397 per household. The annual maintenance costs of equipment (boats, fish racks, nets, guns) and supplies (bullets, fish tackle, salt, storage bags) averaged $1,320 per household. Some of this equipment was used for other purposes, like commercial fishing. Residents estimated that on average 26.9 percent of the use of this equipment was for subsistence activities. When calculated for subsistence activities only, the average household value of equipment and expenses in the study year was $14,392, with a community total value of $474,938. Households in Chignik Lake also borrowed (87.5 percent) subsistence equipment from and loaned (87.5 percent) subsistence equipment to other households (Table XVIII-7).

THE *EXXON VALDEZ* OIL SPILL AND CHIGNIK LAKE: THE SOCIAL EFFECTS QUESTIONNAIRE, 1991/92

The following section will discuss some of the study findings in Chignik Lake about the social effects of the 1989 *Exxon Valdez* oil spill (EVOS). As discussed in Chapter I, the oil from this spill in Prince William Sound spread to and beyond the Chignik region. Chignik Lake is not situated directly on the coast; however, most of this community's subsistence activities and income depend on the resources in waters that were oiled by the spill. Selected findings of the social effects questionnaire are summarized in Figures I-1 through I-16 and Tables XVIII-21 through XVIII-30. For a review of oil spill-related events occurring in Chignik Lake in 1989, see the "Oiled Mayors" study (Impact Assessment Inc. [IAI] 1990c:109-110,120-122).

In addition, Curtiss Rooks discusses the results of key respondent interviews he conducted following the oil spill in Chignik Bay in 1989 for the MMS-sponsored social indicators study (Rooks 1993:819-849). Rooks, as well as this study, found that the damage occurring in the Chignik region had more of an impact financially and emotionally than the actual loss of subsistence harvests. Since commercial fishing is the major source of income for the Chignik communities, the shut down, then confinement of the commercial fishery in 1989 due to oil from the EVOS found in the area, disrupted all these communities. Chignik Lake villagers were probably hurt harder economically than the neighboring villages of Chignik Lagoon and Chignik Bay, because their average incomes are much less than the other communities. They did not have disposable income to cover them for a year of lost income. Following the year of the spill, several of Chignik Lake's residents who owned commercial fishing permits were forced to foreclose on their loans and to sell their permits and boats. These people thought this was unfortunate because they hoped to pass their permits and boats on to their children someday. Also people felt a need to put up additional wild foods to make up for the lost income as well as a poor caribou harvest that winter (which was not oil spill related). One Chignik Lake respondent commented on this subject:

> I used to just crew (commercial fishing boat deck hand) for other people - but I never was lucky and didn't get on a good boat. So I bought my own boat- then the oil spill happened and the shut down of the Bay and Lagoon (Chignik) for several weeks. Exxon paid the boat owners $15,000 each in compensation for losing these weeks out of the season (salmon fishing) - but that hardly begins to cover our losses.

In 1991/92, the social effects questionnaire asked respondents questions to try to assess the importance of living in the community to the people, such as why they live there (Table XVIII-27). The most popular reasons given by Chignik Lake respondents were the beauty of the area, necessary personal freedoms, less crime (each 86.4 percent), followed closely by hunting and fishing opportunities (81.8 percent).

When asked why they moved or returned to Chignik Lake, the majority of responses were family related: 18.2 percent said they were born or reared there, 18.2 percent married a person from there, and 31.8 percent said they moved there because their family lived there. Also, 18.2 percent said they came to Chignik Lake for employment reasons, such as to teach in the school or to commercial fish.

When asked why they remained in Chignik Lake, the main reason provided was because they have relatives that live in the village (31.8 percent). Also, 18.2 percent thought subsistence opportunities were a main factor, and 18.2 percent said Chignik Lake offers the quality of life they prefer. When asked if they like living in Chignik Lake more, the same or less since the EVOS, most responded "the same" (89.5 percent), while one person (5.3 percent) liked it less and another person had greater appreciation.

The majority of respondents (77.3 percent) said they would rather not live somewhere else if they could, while 22.7 percent would prefer to live somewhere else. Additional evidence of satisfaction with

the community was the finding that 63.6 percent of the respondents expected to be living in the region when they were old, while 36.3 percent said no or were uncertain.

About three-fourths of Chignik Lake's respondents (72.7 percent) were confident that hunting, fishing and gathering opportunities would remain the same in the future, while the remaining said "no" or were uncertain. A reason given by those concerned was they thought the resources in their region are vulnerable to environmental damage and increased development (33.3 percent). When asked if they would continue to live in the region if wild foods were no longer available, the majority 72.7 percent said "yes".

The social effects questionnaire also tried to determine the significance of wild foods to the year-round residents. The results for Chignik Lake are presented in Table XVIII-21. Of those questioned in Chignik Lake, 72.7 percent reported they had eaten wild foods the day before the survey was conducted and 59.1 percent had eaten this wild food as a major meal (Fig. I-3). Chignik Lake respondents said their wild food meals were obtained by the respondent (31.8 percent) or by a relative in another household (27.3 percent). By contrast, in the nearby community of Chignik Bay, 24.1 percent of the respondents ate wild foods the day before, with these foods mostly consisting of minor parts of their meals the day before their survey (Table XVII-21). These levels might not be representative in both of these communities, especially Chignik Lake where most residents are Russian Orthodox, because the surveys were conducted during Lent when certain foods are restricted until Easter.

When asked if bidarkies (chitons), clams, or seals were important, every respondent in Chignik Lake said clams were important. Half (50.0 percent) of the Chignik Lake respondents said bidarkies were important while 40.9 percent appreciated seal meat and oil. Of the respondents that said they eat these resources, everyone in Chignik Lake thought seals were safe for children to eat, while 90.9 percent of Chignik Lake felt clams and bidarkies were safe for children to eat (Table XVIII-22). One respondent said that for a long time he could not take his family to harvest clams because of fears of oil contamination. Three others commented about the safety and concern of eating clams following the EVOS:

> After the spill, no sea food was safe.
>
> Right after the oil spill the community was spooked about the safety of clams and didn't harvest any for several months.
>
> They (ADEC) told everyone not to eat clams in this area (following the spill), but I went to the places that hadn't been affected by oil and opened up the clams to see how they looked. They looked fine and I ate them. I have been raised up with clams and other foods like that and I can't be without them.

Chignik Bay residents were more skeptical about clams with 46.4 percent feeling they were not safe or uncertain (Table XVII-22). Many of those skeptical in both communities did not have oil pollution concerns, but rather were cautious of the time of year they harvested them because of fears of paralytic shellfish poisoning (PSP).

The respondents were asked to compare their observations of the availability of various resources in their region in 1991/92 with the year before the spill (Table XVIII-23). The majority of Chignik Lake residents in 1991/92 felt that land mammals were the same as 1988, but were more uncertain about marine mammal populations in their area. Over 50 percent of respondents in both Chignik Lake and Chignik Bay agreed that clam populations showed little change (Table XVII 23, Table XVIII-23). Half of Chignik Lake's respondents felt that there was little change in the availability of salmon, with 25 percent believing salmon were fewer than the year prior to the spill. A large number of respondents (35.0 percent) thought there were fewer ducks in 1991 than in 1988.

When asked if the spill affected their participation with children in the harvesting and processing of wild foods, very few respondents (13.6 percent) in Chignik Lake said "yes" (Table XVIII-24). These respondents said the spill affected their participation with children in the harvesting and processing of wild foods because they did not trust the foods (66.7 percent), and they were too busy with spill-related activities to do things with them (33.3 percent). Even fewer (8.0 percent) of Chignik Bay residents felt there was a change (Table XVII-24); however, in communities closer to the source of the spill such as Tatitlek and Nanwalek, over 50 percent of those households felt the spill impacted their levels of doing subsistence activities with children (Fig. I-6).

The social effects questionnaire also addressed the spill's possible impact on the distribution and exchange of subsistence foods, hunting and fishing gear, money, and labor (Table XVIII-25). Of all Chignik Lake respondents, 95.5 percent said they share subsistence foods, labor, and equipment with others. When asked to compare sharing of wild resources with the previous year, Chignik Lake respondents felt there was little change between time periods (81.0 percent). Eighty percent saw no change with their sharing of wild resources compared to 1988. Again, communities closer to the spill site were more impacted than the Chignik area communities when it came to sharing of wild resources (Fig. I-7). Some of the responses in Chignik Lake about sharing illustrate central cultural values of the community:

> My grandma taught us to always share with people.
>
> I was raised helping people.
>
> I like to share with people.
>
> If you share with someone, that person with share with you.
>
> Our village works that way, if somebody needs something, we will share.
>
> By sharing, we are able to accomplish getting food.
>
> The economy is bad and people need the help.

As in Chignik Bay, respondents in Chignik Lake felt the influence of elders in politics and guidance over the last three years had either remained the same (52.6 percent) or decreased (42.1 percent). Many of the respondents commented that the decrease was not due to the oil spill but because there were fewer elders in the village than three years before. Of all Chignik Lake respondents, 77.3

percent belonged to a regional native corporation, with the majority of those belonging to Bristol Bay Native Corporation. Both communities of Chignik Lake (80.0 percent) and Chignik Bay (92.3 percent) felt the *Exxon Valdez* oil spill had little impact on how they viewed a leader (Table XVII-26, Table XVIII-26).

Table XVIII-28 present the results of questions asked about the effectiveness of various services in dealing with problems that resulted from the *Exxon Valdez* oil spill. Because the Chignik communities had limited exposure of the oil spill compared to a Prince William Sound village such as Chenega Bay, this section of the social effects survey was confusing to many of those interviewed. Only those who were involved in the local clean-up, or had a local government job during the clean-up really understood the questions. As a result, most of the categories asked were responded to with "do not know" or "somewhat effective." Only a few of the respondents in Chignik Lake felt Exxon was effective (11.1 percent); however, they thought Veco did a good or somewhat effective job (61.9 percent). The community thought Veco was effective in dealing with spill-related problems, since Veco was the group that organized and ran the clean-up operations in the Chignik region. Other groups rated effective with dealing with spill related problems included: the Chignik fishing group (50.0 percent), and local law enforcement (30.8 percent).

Concerning the safety of wild foods following the Exxon spill, 59.1 percent of Chignik Lake residents felt they were adequately informed about the safety of eating these foods (Fig. I-9, Table XVIII-29). However, 18.2 percent said they were not adequately informed, and felt they did not receive clear or definitive advice (37.5 percent), got incomplete information (25.0 percent), received no information (12.5 percent), or the information was untimely (12.5 percent).

The last section of the social effects survey asked about outer continental shelf (OCS) development and tried to determine how people felt about off-shore oil exploration and development, and how it might affect various wild resources in the region (Table XVII-30, Table XVIII-30). The majority of respondents in both Chignik Lake and Chignik Bay communities felt that if there was oil development in the off-shore area of their region, fish, shellfish, marine mammals, and birds would decrease. They were more pessimistic than most of the other communities in the 1991/92 study year regarding the effect on fish populations if OCS development were to occur in their region (Fig. I-10). Chignik Lake also ranked high compared to other study communities regarding residents opinions of the effects on marine mammals and marine invertebrates, and topped the list with 68.2 percent fearful of damage to bird populations (Fig. 1-11, Fig. I-12, Fig. 1-14). Chignik Lake respondents were equally divided about possible effects on land mammal populations (Fig. I-13).

When asked if they thought if OCS activities would provide more jobs to residents of their community, most, 59.1 percent, felt confident that jobs would be available; while 40.9 percent were uncertain or thought there would be little economic benefit to their community (Fig. I-15, Table XVIII-30). However, many of the respondents from both communities commented that oil exploration and

development in their region would certainly provide jobs, but not to anyone in their community but rather to specialists from outside.

When asked if a small oil spill could be contained and cleaned up in their region, 63.6 percent were uncertain or did not think it could be done. Even more, 81.8 percent of the respondents did not think a large oil spill (smaller than the EVOS) could be contained and cleaned up in their region (Table XVIII-30).

DISCUSSION

The study results confirmed earlier findings concerning the importance of subsistence uses to Chignik Lake. Chignik Lake residents harvested a per capita of 442.4 pounds (edible weight) of wild resources from April 1991 through March 1992. A mean of 24 different resources were used per household. Every household used and harvested wild resources during the study year. Salmon and non-salmon other fish represented 55.5 percent of the wild resources harvested, with game animals at 34.5 percent.

The Division of Subsistence has conducted subsistence harvest surveys in Chignik Lake for three separate study years, 1984, 1989, and 1991/92. Per capita subsistence harvests in 1984 totaled 279.0 pounds, while 1989's level of 453.0 pounds was almost identical to 1991/92 at 442.5 pounds (Morris 1987; Fall et al. forthcoming). The higher level in 1989 compared to 1984 was due to greater harvests of caribou in the latter year. Harvests of non-salmon other fish, shellfish, marine mammals, birds, and plants have all remained consistent from 1989 to 1991, and only vary slightly from 1984. Per capita salmon harvest levels were about the same in 1984 and 1989, and increased by 50 pounds in 1991/92; however, the per capita harvest of game animals in 1991/92 decreased by about 29 percent from 1989.

Chignik Lake residents reported to the Division researchers that caribou in 1991/92 were relatively scarce in their local harvest area and therefore they harvested more salmon to make up for the loss of game meat. Fear of oil contamination as a result of the 1989 *Exxon Valdez* oil spill prevented some people in 1989 from harvesting the desired number of fish and shellfish they normally take due to health warnings and lack of confidence in resources harvested from the sea, but most felt that the spill had little effect on the remaining resources. One Chignik Lake resident in 1990 stated:

> After the oil spill, we haven't eaten or harvested clams. There're some brave ones [people] around here that still go and get them. We usually eat bidarkies and sea urchins all the time, but not no more. I heard on the radio there's a cancer-causing thing in the clams.

In 1992, another household stated that they were still concerned about contamination of the shellfish following the spill, but got their clams in other areas where they thought that the oil had not touched. By 1991, however, most people at Chignik Lake reported that they no longer feared that oil contamination was a problem with any of the resources. For example, in 1984, 56.5 percent of Chignik

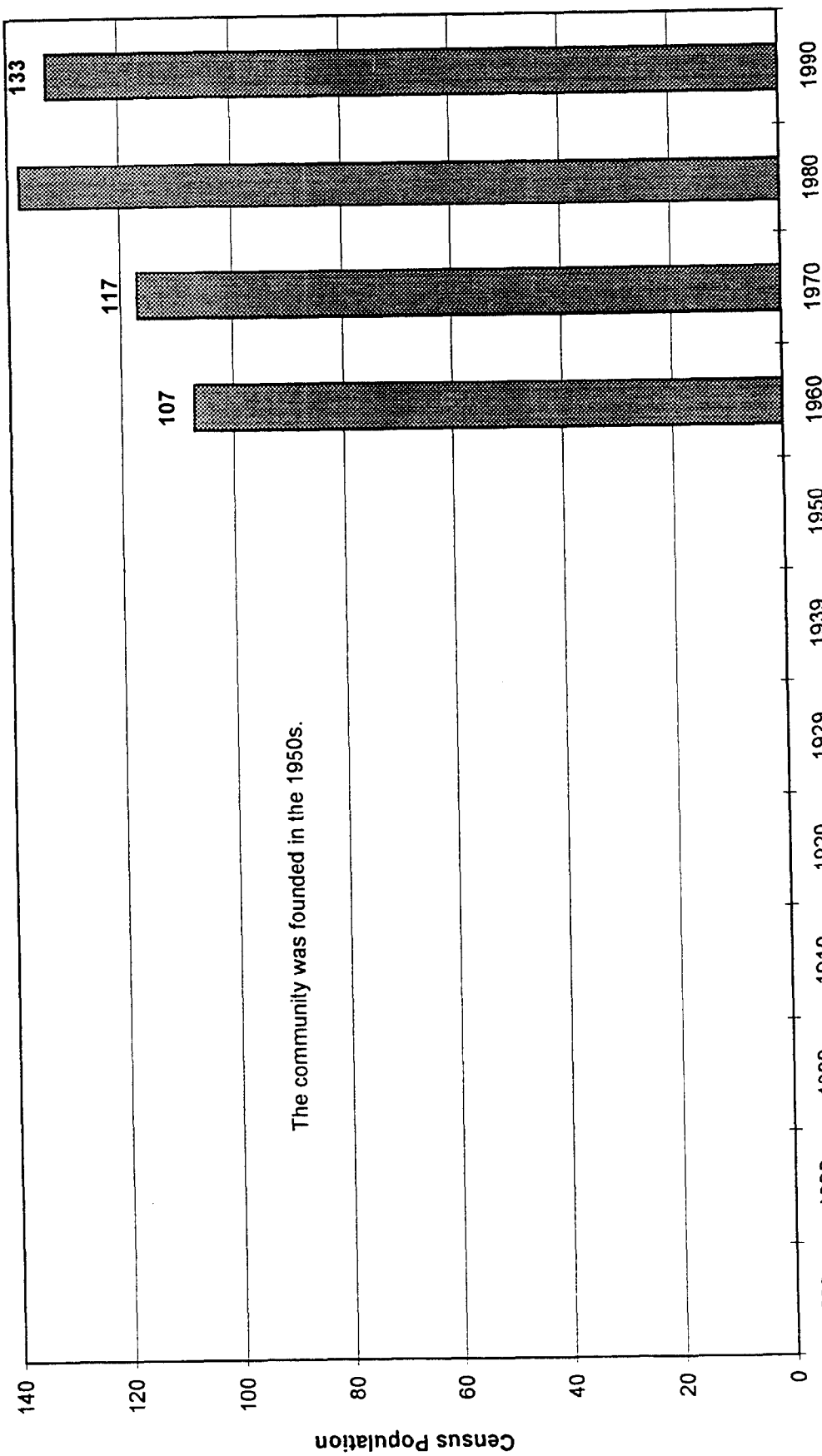
Lake residents tried to harvest and 91.3 percent used shellfish. In 1989, the year of the spill, 47.6 percent tried to harvest, and 81.0 percent used marine invertebrates, and in 1991/92, 72.2 percent reported that they tried to harvest and 100 percent used shellfish. In 1984, every Chignik Lake household attempted to harvest salmon, but in 1989, this level dropped slightly to 85.7 percent. In 1991/92, 95.8 percent reported that they attempted to harvest salmon.

According to interviews conducted by the division for 1989, only one Chignik Lake resident was hired to do part-time clean-up work in 1989 as a result of the *Exxon Valdez* oil spill. In 1989, households reported average earnings from Exxon commercial fishing damage claims of $4018.18 in 1989, and none in 1991/92. This information suggests that the oil spill contributed little to the income of people in this community (Table XVIII-5, Table XVIII-6, Fall et al. forthcoming). Despite the reported Exxon claims, many Chignik Lake families commented to the researchers in 1990/91 that they never were completely compensated for their commercial fishing losses in 1989 and that less is being made commercial fishing than previously.

In 1994, during interviews with Chignik Lake residents, opinions differed about the lasting effects of the oil spill. Some residents of Chignik Lake expressed some lingering, or even increasing concern about the effects of the *Exxon Valdez* oil spill on natural resources. Because Chignik Lake is far from the main source of the spill, in Prince William Sound, some felt that oil is more apparent now (1994) than it was in 1989 and 1991.

The Chignik region is situated along the coast in the direction that ocean currents and other debris travel from the Northern Gulf of Alaska, where the spill occurred. Thus, Chignik area residents, suspect that the effects of the oil spill are just starting to show in the Chignik region. They cite several examples of these concerns. Residents of all five villages in the Chignik region reported that they continue to see tar balls that land on their beaches, particularly after storms. The return of salmon, especially chums and silvers, are reported to be less than they were prior to the spill or in 1991/92 when the social effects survey was conducted. Some fisherman report finding salmon that are diseased inside and outside, which they did not notice occurring prior to the spill. Clams are down, they report, and there appears to be fewer large butter clams with an increased number of clams found empty on the beaches. Eider ducks, once seen in large quantities near their village, are almost gone according to several Chignik Lake residents. Financial losses continue to haunt many of their families and a couple of Chignik Lake's commercial permit holders have been forced to sell their permits and boats because they have not been able to recover the loss from the 1989 commercial fishing closure. On the other hand, other residents have almost forgotten about the oil spill and feel that their lives and subsistence activities have recovered and are back to normal.

Figure XVIII-1. Chignik Lake Census Population, 1880 - 1990



Sources: Rollins 1978; Alaska Department of Labor 1991

Table XVIII-1. Sample Participation: Chignik Lake 1992

VARIABLE	TOTAL HOUSEHOLDS
Estimated Household Structures	33
Non-Residential Structures	0
Estimated Households	33
Interview Goal:	33
Households Interviewed	24
Failed to Contact/Unavailable	3
Refused	6
Vacant Residential Structures	0
Seasonal Households*	0
Non-Resident Household **	0
Invalid Households and Vacancies	0
Total Households Attempted:	33
Refusal Rate:	20.00%
Non-Perm. HH Rate ("Vacancy Rate"):	0.0%
Interview Goal (Percentage)	72.7%
Social Effects Surveys Completed	22
Total Permanent Households	33
Percentage Interviewed	72.73%
Percentage of Total Households	100.00%
Interview Weighting Factor	1.375

NOTES:

* Seasonal households are households which maintain a permanent domicile elsewhere where they spend the majority of their time.

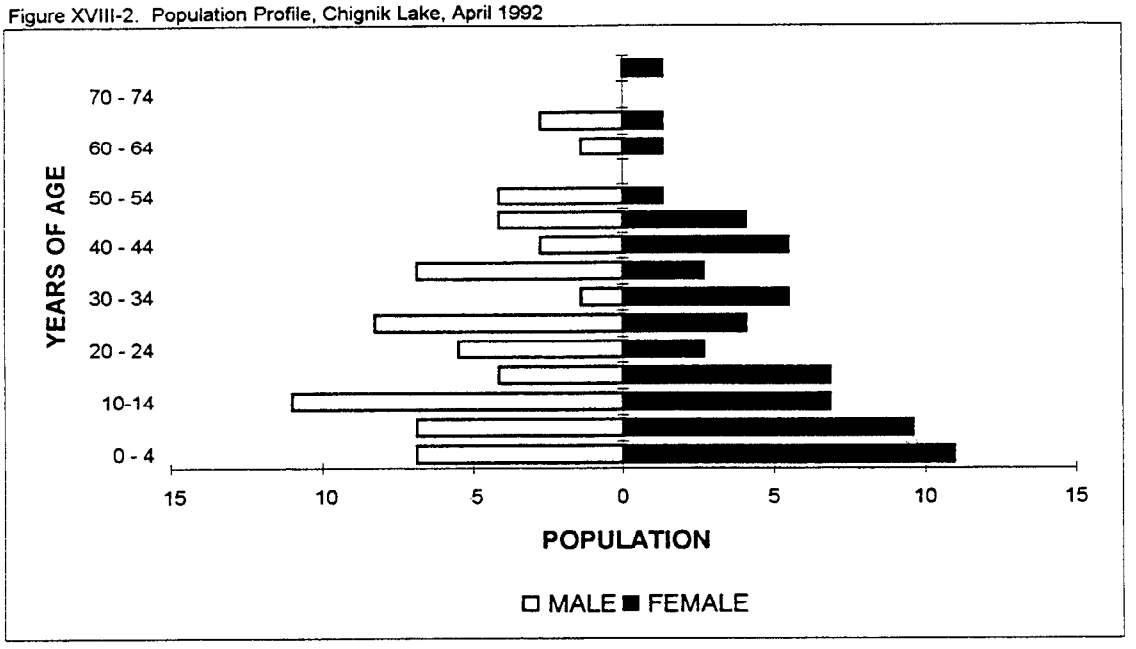
** Non-resident households are households which were not present during the study year or which were resident less than the required number of months.

Table XVIII-2. Demographic Characteristics of Households, Chignik Lake, April 1992

Characteristics	
Sampled Households	24
Number of Households in the Community	33
Percentage of Households Sampled	72.73
Household Size	
Mean	3.96
Minimum	1.00
Maximum	7.00
Sample Population	95
Estimated Community Population	130.63
Age	
Mean	25.03
Minimum	0.20
Maximum	69.65
Median	22.335
Length of Residency - Population	
Mean	16.42
Minimum	0.20
Maximum	52.28
Length of Residency - Household Heads	
Mean	23.68
Minimum	0.63
Maximum	52.28
Sex	
Males	
Number	66.00
Percentage	50.53
Females	
Number	64.63
Percentage	49.47
Alaska Native	
Households (Either Head)	
Number	27.50
Percentage	83.33
Estimated Population	
Number	119.63
Percentage	91.58

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992.

Figure XVIII-2. Population Profile, Chignik Lake, April 1992



SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992

Table XVIII-3. Population Profile, Chignik Lake, April 1992

AGE	MALE			FEMALE			TOTAL		
	NUMBER	PERCENT	CUM. PERCENT	NUMBER	PERCENT	CUM. PERCENT	NUMBER	PERCENT	CUM. PERCENT
0 - 4	6.88	10.42%	10.42%	11.00	17.02%	17.02%	17.88	13.68%	13.68%
5-9	6.88	10.42%	20.83%	9.63	14.89%	31.91%	16.50	12.63%	26.32%
10-14	11.00	16.67%	37.50%	6.88	10.64%	42.55%	17.88	13.68%	40.00%
15 - 19	4.13	6.25%	43.75%	6.88	10.64%	53.19%	11.00	8.42%	48.42%
20 - 24	5.50	8.33%	52.08%	2.75	4.26%	57.45%	8.25	6.32%	54.74%
25 - 29	8.25	12.50%	64.58%	4.13	6.38%	63.83%	12.38	9.47%	64.21%
30 - 34	1.38	2.08%	66.67%	5.50	8.51%	72.34%	6.88	5.26%	69.47%
35 - 39	6.88	10.42%	77.08%	2.75	4.26%	76.60%	9.63	7.37%	76.84%
40 - 44	2.75	4.17%	81.25%	5.50	8.51%	85.11%	8.25	6.32%	83.16%
45 - 49	4.13	6.25%	87.50%	4.13	6.38%	91.49%	8.25	6.32%	89.47%
50 - 54	4.13	6.25%	93.75%	1.38	2.13%	93.62%	5.50	4.21%	93.68%
55 - 59	0.00	0.00%	93.75%	0.00	0.00%	93.62%	0.00	0.00%	93.68%
60 - 64	1.38	2.08%	95.83%	1.38	2.13%	95.74%	2.75	2.11%	95.79%
65 - 69	2.75	4.17%	100.00%	1.38	2.13%	97.87%	4.13	3.16%	98.95%
70 - 74	0.00	0.00%	100.00%	0.00	0.00%	97.87%	0.00	0.00%	98.95%
75 - 79	0.00	0.00%	100.00%	1.38	2.13%	100.00%	1.38	1.05%	100.00%
80 - 84	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
85 - 89	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
90 - 94	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
95 - 99	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
100 - 104	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
Missing	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
TOTAL	66.00	50.53%		64.63	49.47%		130.63	100.00%	

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992

Table XVIII-4. Employment Characteristics, Chignik Lake, 1991/92

Study Year			1991/92
ADULTS			
	Total		75.63
	Employed		
		Number	52.25
		Percentage	69.09
	Jobs		
		Number	83.88
		Mean	1.61
		Minimum	1
		Maximum	4
	Months Employed		
		Mean	7.24
		Minimum	1
		Maximum	12
		Year-Round	7.89%
HOUSEHOLDS			
	Total		33.00
	Employed		
		Number	30.25
		Percentage	91.67
	Jobs per Employed Household		
		Mean	2.77
		Minimum	1
		Maximum	6
	Employed Adults		
		Mean	1.73
		Minimum	1
		Maximum	4

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992.

Table XVIII-5. Community, Household, and Per Capita Incomes, All Sources and by Employer Type, Chignik Lake, 1991/92

INCOME SOURCE	INCOME		
	COMMUNITY TOTAL	AVERAGE HOUSEHOLD	PER CAPITA
All Sources	$1,074,588.17	$32,563.28	$8,226.51
Earned Income	$868,367.50	$26,314.17	$6,647.79
Agriculture, Forestry, and Fishing	439,972.50	13,332.50	3,368.21
Agriculture	0.00	0.00	0.00
Forestry	0.00	0.00	0.00
Fishing, Hunting, Trapping	439,972.50	13,332.50	3,368.21
Hatchery/Enhancement	0.00	0.00	0.00
Commercial Fishing	439,972.50	13,332.50	3,368.21
Hunting/Trapping	0.00	0.00	0.00
Mining	0.00	0.00	0.00
Construction	0.00	0.00	0.00
Manufacturing	0.00	0.00	0.00
Cannery	0.00	0.00	0.00
Other Manufacturing	0.00	0.00	0.00
Logging/Timber	0.00	0.00	0.00
Transportation, Communications, and Utilities	10,725.00	325.00	82.11
Trade	0.00	0.00	0.00
Wholesale	0.00	0.00	0.00
Retail	AMT UNK	AMT UNK	AMT UNK
Finance, Insurance, and Real Estate	3,987.50	120.83	30.53
Services	48,345.00	1,465.00	370.11
Government	365,337.50	11,070.83	2,796.84
Federal	27,390.00	830.00	209.68
State	866.25	26.25	6.63
Local	337,081.25	10,214.58	2,580.53
Local Government	22,687.50	687.50	173.68
Local Education	314,393.75	9,527.08	2,406.84
Unknown	0.00	0.00	0.00
Other Income	$206,220.67	$6,249.11	$1,578.72

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992

Table XVIII-6. Community, Household, and Per Capita Other Income by Source, Chignik Lake, 1991/92

Source	OTHER INCOME			
	PERCENTAGE REPORTING	COMMUNITY TOTAL	AVERAGE HOUSEHOLD	PER CAPITA
All Sources		$206,220.67	$6,249.11	$1,578.72
Exxon Claims	0.00	0.00	0.00	0.00
Aid to Families with Dependent Children	8.33	13,945.25	422.58	106.76
Adult Public Assistance	4.17	5,527.50	167.50	42.32
Exxon Damages	0.00	0.00	0.00	0.00
Pension/Retirement	0.00	0.00	0.00	0.00
Longevity Bonus	8.33	8,250.00	250.00	63.16
Social Security	16.67	15,840.00	480.00	121.26
Workman's Comp./Insurance	0.00	0.00	0.00	0.00
Energy Assistance	62.50	12,375.00	375.00	94.74
Supplemental Security Income	4.17	5,527.50	167.50	42.32
Food Stamps	8.33	16,500.00	500.00	126.32
Unemployment	0.00	0.00	0.00	0.00
Native Corporation Dividend	75.00	21,216.25	642.92	162.42
Dividend/Interest	16.67	2,016.67	61.11	15.44
Child Support	0.00	0.00	0.00	0.00
Rental Income	0.00	0.00	0.00	0.00
Veteran Disability	0.00	0.00	0.00	0.00
Equipment Leasing	0.00	0.00	0.00	0.00
Rental Assistance	0.00	0.00	0.00	0.00
Fishing Permit Leasing	0.00	0.00	0.00	0.00
Per Diem	0.00	0.00	0.00	0.00
Disability	0.00	0.00	0.00	0.00
Alaska Permanent Fund Dividend	87.50	104,610.00	3,170.00	800.84
Weatherization	0.00	0.00	0.00	0.00
Veteran's Assistance	0.00	0.00	0.00	0.00
Investments/Stocks/Bonds	0.00	0.00	0.00	0.00
Bureau of Indian Affairs Grants	0.00	0.00	0.00	0.00
Housing Allowances/Off-Base Allowances	0.00	0.00	0.00	0.00
Women, Infants, and Children Program	0.00	0.00	0.00	0.00
General Assistance Grant	0.00	0.00	0.00	0.00
Foster Care	0.00	0.00	0.00	0.00
Inheritance	0.00	0.00	0.00	0.00
Contest Winnings	0.00	0.00	0.00	0.00
Capital Gains	0.00	0.00	0.00	0.00
ASRC Elder Trust	0.00	0.00	0.00	0.00
Other	4.17	412.50	12.50	3.16

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992

Figure XVIII-3. Employment by Industry, Chignik Lake, 1991/92

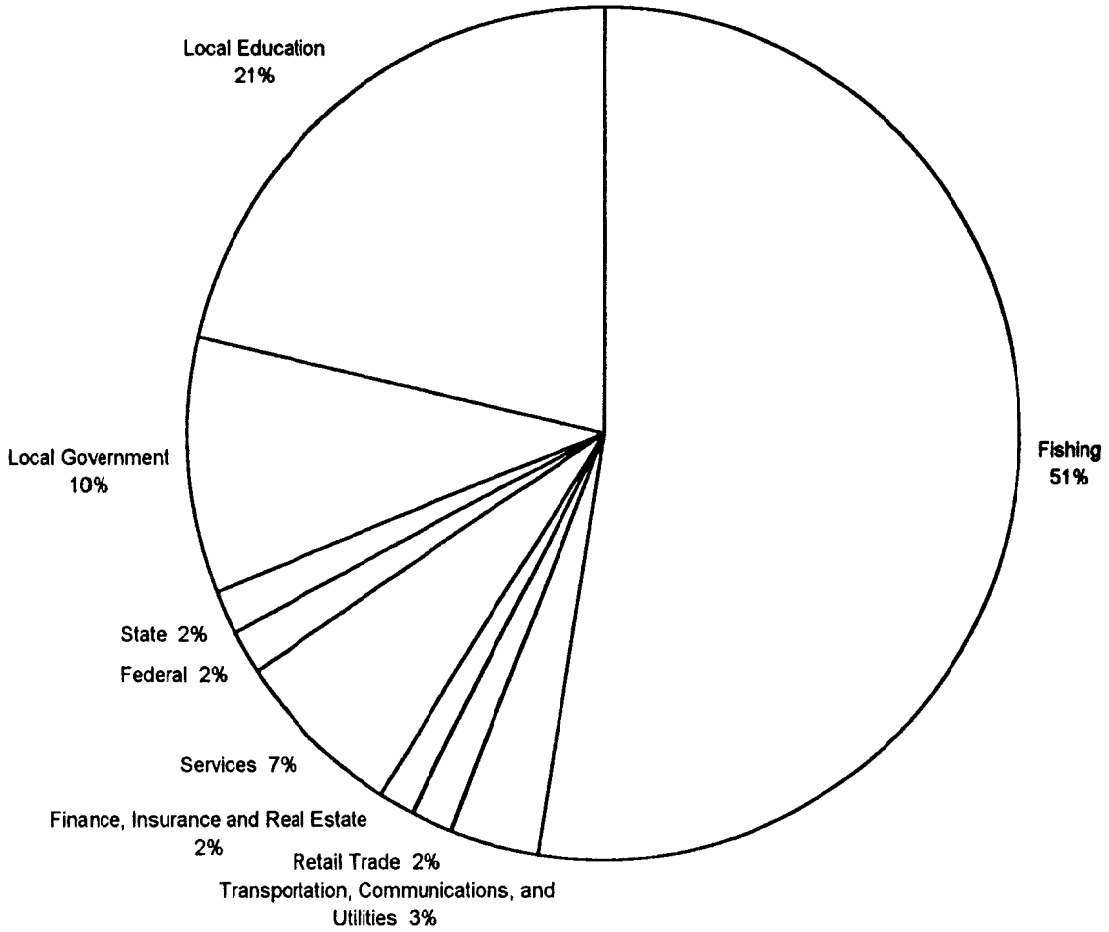


Table XVIII-7. Subsistence Equipment Expenses and Use, Chignik Lake, 1991/92

Sampled Households = 24
Community Households = 33

Equipment Type	Equipment Count		Equipment Cost			Use of Equipment for Subsistence			HH Sharing of Equipment	
			Replacement	Annual Fuel	Annual Cost		Cost			
	Total.	HH Mean	HH Mean	HH Mean	HH Mean	% of Cost	Total	HH Mean	% Borrowing	% Lending
All Equipment			$49,775.65	$2,396.74	$1,320.29	26.90	$474,937.47	$14,392.04	87.50	87.50
Skiff with outboard	13.75	0.42	$2,391.67		$131.94	57.24	$51,532.25	$1,561.58	8.33	16.67
Outboard Motor	31.63	0.96	$2,781.82	$264.55	$220.00	43.38	$46,763.01	$1,417.06	20.83	25.00
Boats with inboard	2.75	0.08	$23,750.00	$1,570.42	$25.00	5.76	$48,164.88	$1,459.54	4.17	8.33
Skiff, manually-propelled	24.75	0.75	$3,204.17		$52.50	54.36	$58,425.13	$1,770.46	20.83	25.00
ATV/Motorcycle	41.25	1.25	$4,660.42	$134.33	$168.13	46.67	$76,436.92	$2,316.27	16.67	37.50
Snowmachine/snowmobile	20.63	0.63	$2,187.50	$134.78	$174.50	64.92	$53,493.28	$1,621.01	16.67	25.00
Airplane	4.13	0.13	$3,041.67	$74.42	$154.17	56.67	$61,155.88	$1,853.21	25.00	8.33
Highway vehicle	4.13	0.13	$895.83	$13.67	$14.58	92.78	$28,294.48	$857.41	0.00	4.17
Tackle			$130.42		$17.01	87.99	$4,280.83	$129.72	25.00	45.83
Pots	2.75	0.08	$15.63		$0.00	100.00	$515.63	$15.63	0.00	0.00
Fishing Nets	12.38	0.38	$138.71		$20.00	100.00	$5,237.57	$158.71	50.00	33.33
Guns	134.75	4.08	$1,147.50				$37,867.50	$1,147.50	20.83	33.33
Traps	123.75	3.75	$33.54				$1,106.88	$33.54	4.17	4.17
Ammunition					$177.53		$5,858.36	$177.53	16.67	33.33
Cabins	5.50	0.17	$583.33		$0.00	38.50	$7,411.25	$224.58	41.67	4.17
Miscellaneous Camping Equipment			$586.61				$19,358.04	$586.61	12.50	33.33
Fishing/Hunting Camps	16.50	0.50	$2,183.10			46.12	$33,226.38	$1,006.86	12.50	8.33
Freezer	55.00	1.67	$1,170.00				$38,610.00	$1,170.00	45.83	54.17
Miscellaneous freezing supplies					$55.00		$1,815.00	$55.00	16.67	45.83
Canner	13.75	0.42	$110.42				$3,643.75	$110.42	41.67	25.00
Miscellaneous canning supplies					$61.39		$2,025.83	$61.39	12.50	29.17
Vacuum sealer/Sealer	11.00	0.33	$72.08				$2,378.75	$72.08	12.50	25.00
Miscellaneous sealer supplies					$22.08		$728.75	$22.08	8.33	20.83
Smoke house/dry rack	13.75	0.42	$691.25				$22,811.25	$691.25	37.50	25.00
Miscellaneous smoker supplies					$26.46		$873.13	$26.46	16.67	16.67

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992.

Table XVIII-8. Characteristics of Resource Harvest and Use, Chignik Lake, 1991/92

Study Year	1991/92
Mean Number Of Resources Used Per Household	24.00
Minimum	7
Maximum	41
95 % Confidence Limit (+/-)	8.75
Median	23.5
Mean Number Of Resources Attempted To Harvest Per Household	14.63
Minimum	1
Maximum	30
95 % Confidence Limit (+/-)	14.03
Median	15
Mean Number Of Resources Harvested Per Household	14.42
Minimum	1
Maximum	30
95 % Confidence Limit (+/-)	14.20
Median	15
Mean Number Of Resources Received Per Household	15.17
Minimum	1
Maximum	34
95 % Confidence Limit (+/-)	14.70
Median	14
Mean Number Of Resources Given Away Per Household	13.25
Minimum	0
Maximum	33
95 % Confidence Limit (+/-)	17.36
Median	11.5
Mean Household Harvest, Pounds	1,750.99
Minimum	4.52
Maximum	4,419.69
Total Pounds Harvested	57,782.61
Community Per Capita Harvest, Pounds	442.35
Percent Using Any Resource	100.00
Percent Attempting To Harvest Any Resource	100.00
Percent Harvesting Any Resource	100.00
Percent Receiving Any Resource	100.00
Percent Giving Away Any Resource	91.67
Number Of Households In Sample	24
Number of Resources Available	100

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992

Table XVIII-9. Participation in the Harvest and Processing of Wild Resources, Chignik Lake, 1991/92

Total Number of People			130.63
GAME	Hunt	Number	45.38
		Percentage	34.74
		Missing	0.00
		Missing %	0.00
	Process	Number	68.75
		Percentage	52.63
		Missing	0.00
		Missing %	0.00
FISH	Fish	Number	72.88
		Percentage	55.79
		Missing	0.00
		Missing %	0.00
	Process	Number	79.75
		Percentage	61.05
		Missing	0.00
		Missing %	0.00
FURBEARERS	Hunt or Trap	Number	4.13
		Percentage	3.16
		Missing	0.00
		Missing %	0.00
	Process	Number	8.25
		Percentage	6.32
		Missing	0.00
		Missing %	0.00
PLANTS	Gather	Number	77.00
		Percentage	58.95
		Missing	0.00
		Missing %	0.00
	Process	Number	44.00
		Percentage	33.68
		Missing	0.00
		Missing %	0.00
ANY RESOURCE			
	Attempt	Number	103.13
		Percent	78.95
	Process	Number	85.25
		Percent	65.26

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992.

Table XVIII-10. Households Sharing Resources by Community, Chignik Lake, 1991/92

Community	Salmon		Non-salmon Fish		Marine Invertebrates		Game		Marine Mammals		Birds and Eggs		Plants and Berries*		Any Resource	
	Recv	Gave	Recv	Gave	Recv	Gave	Recv	Gave	Recv	Gave	Recv	Gave	Recv	Gave	Recv	Gave
All Communities	70.83	91.67	87.50	70.83	91.67	66.67	91.67	66.67	62.50	29.17	62.50	66.67	45.83	50.00	100.00	91.67
Adak Station	0.00	0.00	0.00	4.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.17
Anchorage	0.00	33.33	0.00	0.00	0.00	12.50	0.00	20.83	0.00	4.17	0.00	12.50	0.00	8.33	0.00	37.50
Kodiak Island Area	0.00	0.00	0.00	0.00	4.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.17	0.00
Chefornak	0.00	4.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.17
Chignik Bay	4.17	4.17	25.00	8.33	62.50	4.17	0.00	12.50	4.17	0.00	4.17	4.17	0.00	0.00	62.50	25.00
Chignik Lagoon	0.00	12.50	4.17	8.33	16.67	4.17	0.00	8.33	0.00	0.00	4.17	16.67	0.00	4.17	20.83	25.00
Chignik Lake	66.67	75.00	54.17	66.67	79.17	62.50	91.67	58.33	58.33	25.00	62.50	66.67	41.67	41.67	95.83	91.67
Dillingham	0.00	0.00	0.00	4.17	0.00	0.00	0.00	0.00	4.17	0.00	0.00	0.00	0.00	0.00	4.17	4.17
Fairbanks	0.00	4.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.17
Holy Cross	0.00	4.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.17
Homer	0.00	0.00	0.00	0.00	4.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.17	0.00
Ivanof Bay	0.00	0.00	4.17	0.00	16.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.67	0.00
King Salmon	0.00	4.17	12.50	4.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.50	4.17
Naknek	0.00	0.00	8.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.33	0.00
Perryville	0.00	16.67	66.67	4.17	37.50	4.17	0.00	20.83	0.00	4.17	4.17	4.17	8.33	0.00	75.00	25.00
Pilot Point	0.00	12.50	16.67	0.00	0.00	4.17	4.17	4.17	0.00	0.00	8.33	4.17	0.00	4.17	20.83	12.50
Port Heiden	0.00	16.67	4.17	4.17	0.00	4.17	4.17	4.17	0.00	4.17	0.00	0.00	0.00	4.17	8.33	20.83
Sitka	0.00	4.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.17
Eagle River	0.00	4.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.17
Other U.S.	0.00	12.50	0.00	0.00	0.00	4.17	0.00	12.50	0.00	4.17	0.00	0.00	0.00	8.33	0.00	29.17
Community Unknown	0.00	4.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.17

Plants and Berries includes sharing of wood and kelp for fertilizer.

Note: Percentages are based upon valid responses.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992.

Table XVIII-11. Subsistence Harvests in Pounds Usable Weight per Person by Resource Category, Chignik Lake, 1984, 1989, and 1991/92

	Pounds Usable Weight per Person		
	1984	1989	1991/92
Salmon	139.5	152.7	203.7
Other Fish	16.2	38.9	41.6
Marine Invertebrates	3.3	15.9	20.8
Land Mammals	112.7	216.4	152.6
Marine Mammals	3.7	6.5	4.1
Birds and Eggs	3.6	15.3	13.2
Wild Plants	*	7.4	6.5
All Resources	279.0	453.0	442.4

* No plant data collected for 1984.

Table XVIII-12. Composition of Resource Harvests by Resource Category, Chignik Lake, 1984, 1989, and 1991/92

	Percentage of Total Harvest		
	1984	1989	1991/92
Salmon	50.0%	33.7%	46.0%
Other Fish	5.8%	8.6%	9.4%
Marine Invertebrates	1.2%	3.5%	4.7%
Land Mammals	40.4%	47.8%	34.5%
Marine Mammals	1.3%	1.4%	0.9%
Birds and Eggs	1.3%	3.4%	3.0%
Wild Plants	*	1.6%	1.5%

* No plant data collected for 1984.

Figure XVIII-4. Harvests of Wild Resources for Home Use, Pounds Usable Weight per Capita, Chignik Lake, 1984, 1989, and 1991/92

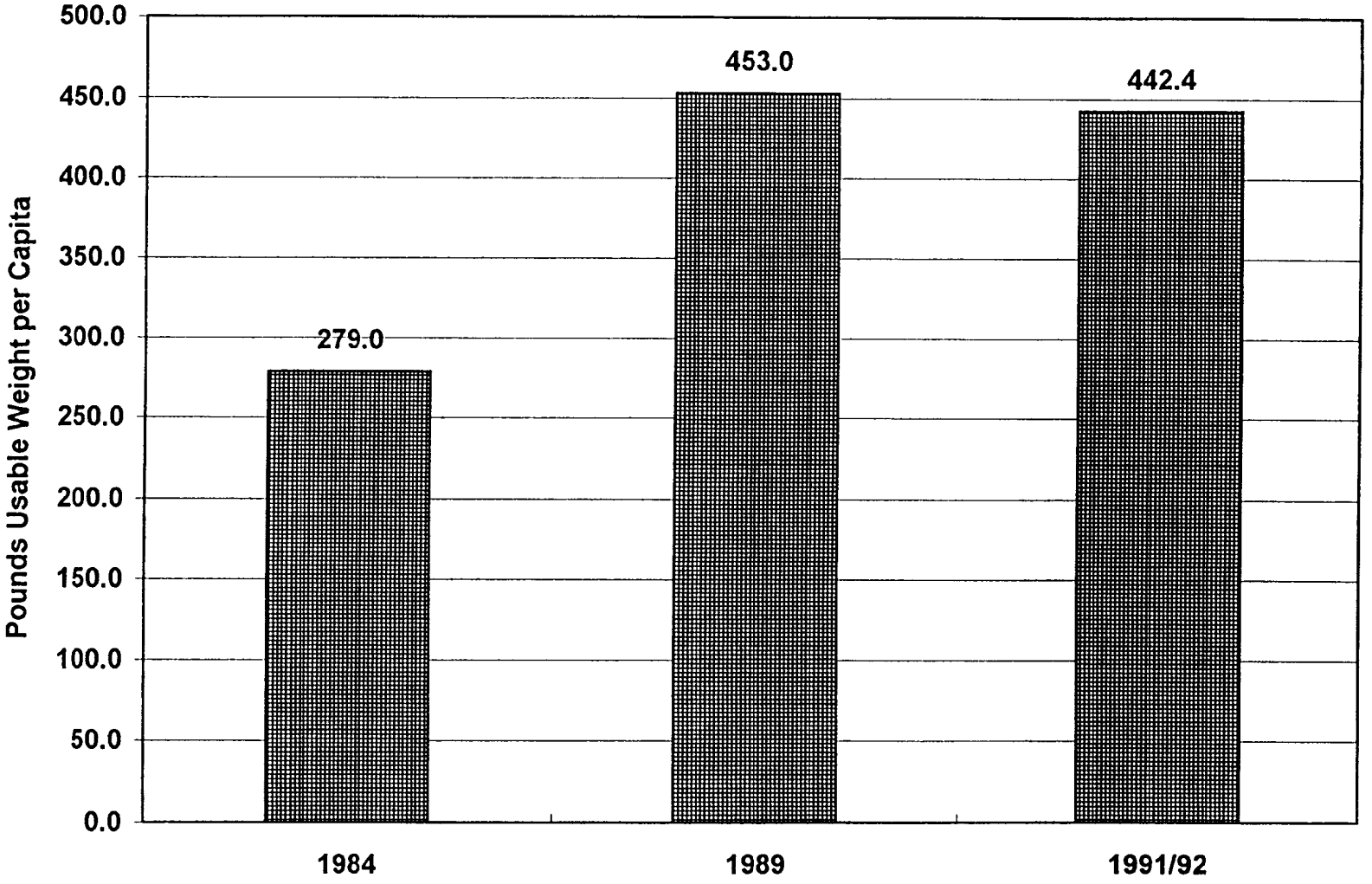


Figure XVIII-5. Per Capita Harvests of Wild Resources by Resource Category, Chignik Lake, 1984, 1989, and 1991/92

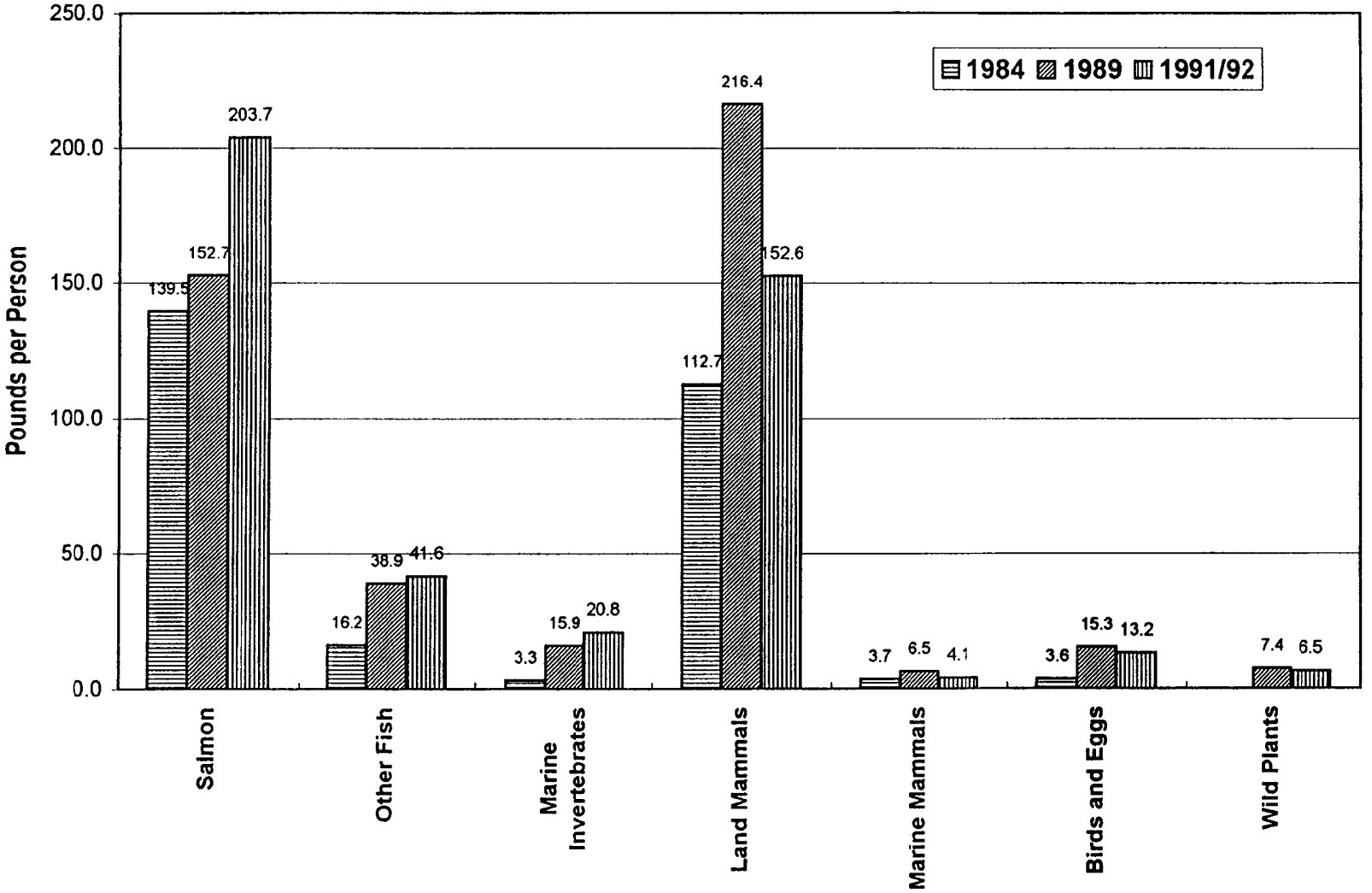


Figure XVIII-6. Composition of Wild Resource Harvests by Resource Category, Chignik Lake, 1991/92

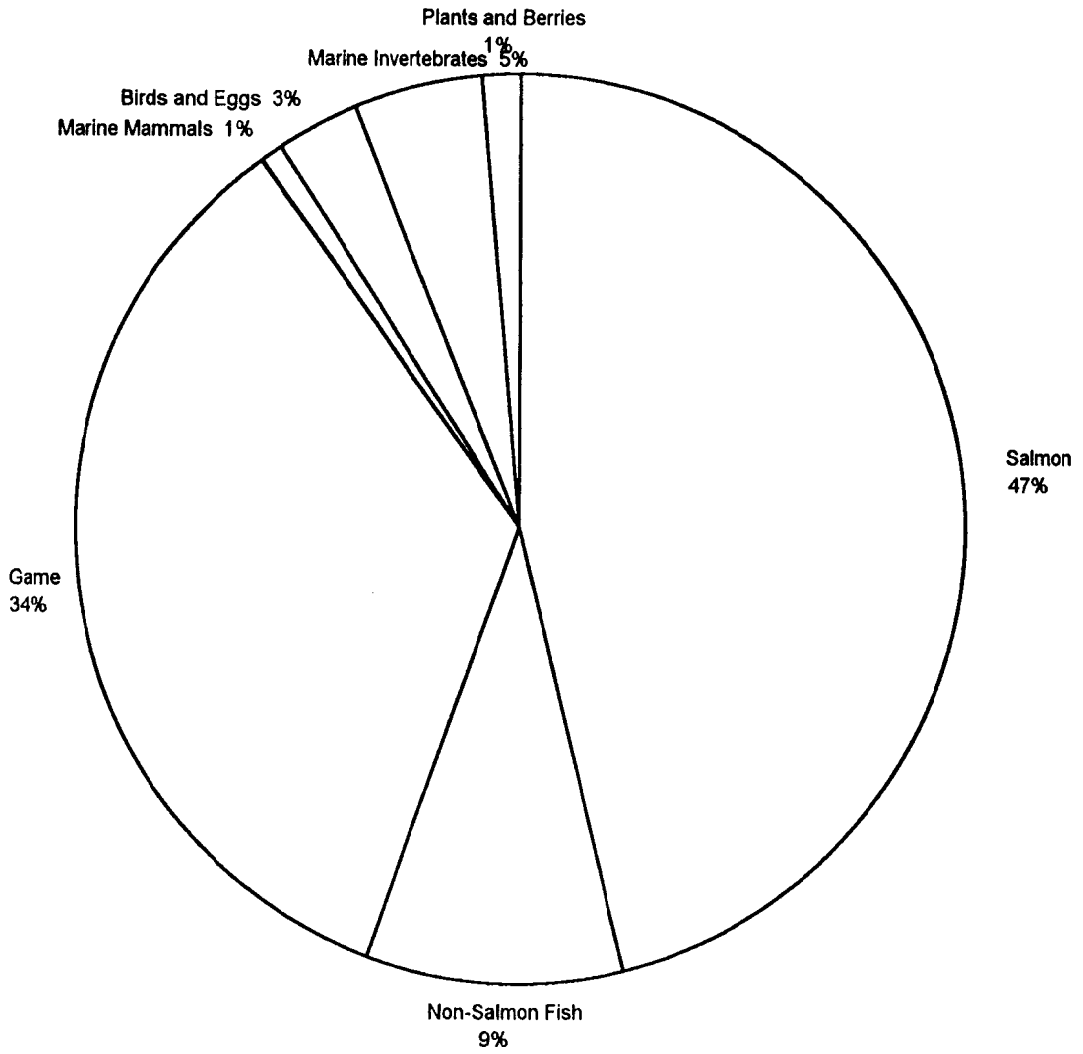


Figure XVIII-7. Percentage of Chignik Lake Households Reporting Lower Levels of Uses of Wild Resources Compared to 1988, the Year Before the Exxon Valdez Oil Spill

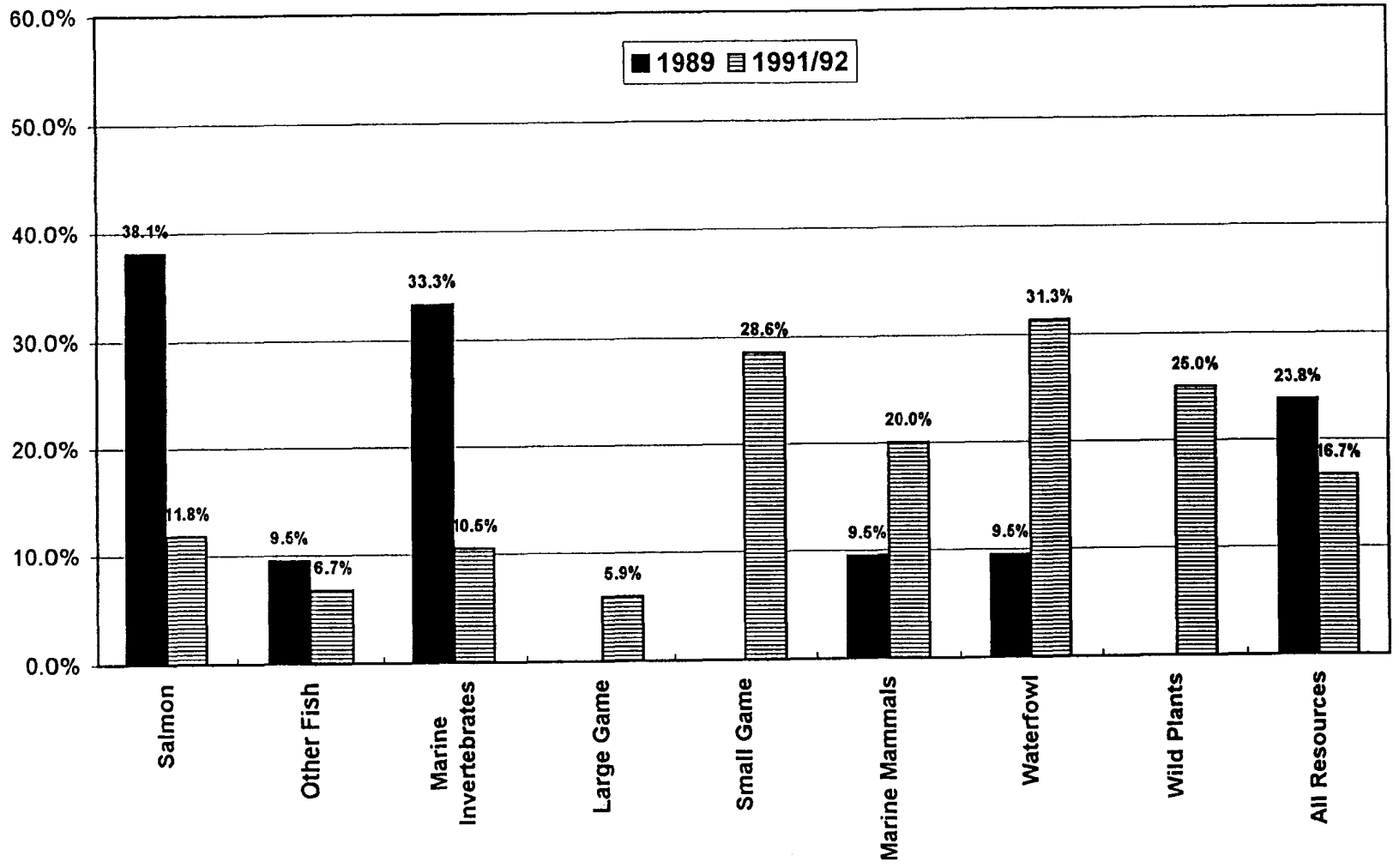


Table XVIII-13. Estimated Harvest and Use of Fish, Mammal, Bird and Plant Resources, Chignik Lake, 1991/92

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
All Resources	100.0	100.0	100.0	100.0	91.7	57,782.61	1,750.99	442.35			19.13%	17.92%
Fish	100.0	95.8	95.8	87.5	91.7	32,041.83	970.96	245.30			20.27%	19.56%
Salmon	100.0	95.8	95.8	70.8	91.7	26,613.83	806.48	203.74	6,599.31	199.98	22.63%	21.43%
Chum Salmon	12.5	4.2	4.2	12.5	4.2	215.53	6.53	1.65	45.38	1.38	108.03%	109.75%
Coho Salmon	62.5	45.8	45.8	41.7	33.3	2,631.09	79.73	20.14	490.88	14.88	34.87%	38.44%
Chinook Salmon	58.3	41.7	41.7	20.8	33.3	1,867.44	56.59	14.30	122.38	3.71	41.22%	40.50%
Pink Salmon	37.5	25.0	25.0	25.0	25.0	603.49	18.29	4.62	287.38	8.71	49.99%	49.49%
Sockeye Salmon	79.2	70.8	70.8	41.7	54.2	14,762.41	447.35	113.01	2,923.25	88.58	24.30%	23.75%
Spawnouts, Salmon	87.5	79.2	79.2	50.0	79.2	6,329.68	191.81	48.46	2,688.81	81.48	28.96%	25.51%
Spawning Coho Salmon	16.7	12.5	12.5	8.3	12.5	195.15	5.91	1.49	78.38	2.38	70.70%	71.53%
Spawning Sockeye Salmon	87.5	79.2	79.2	50.0	79.2	6,134.53	185.89	46.96	2,610.44	79.10	29.54%	26.02%
Landlocked Salmon	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Unknown Salmon	4.2	4.2	4.2	0.0	4.2	204.19	6.19	1.56	41.25	1.25	108.03%	110.91%
Non-Salmon Fish	100.0	79.2	79.2	87.5	70.8	5,428.00	164.48	41.55			27.19%	26.84%
Cod	45.8	29.2	29.2	25.0	29.2	594.00	18.00	4.55	185.63	5.63	41.74%	42.39%
Pacific Cod (Gray)	45.8	29.2	29.2	25.0	29.2	594.00	18.00	4.55	185.63	5.63	41.74%	42.39%
Sablefish (Black Cod)	8.3	0.0	0.0	8.3	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Greenling	8.3	8.3	8.3	0.0	4.2	44.00	1.33	0.34	44.00	1.33	101.21%	101.95%
Atka Mackerel	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Lingcod	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Unknown Greenling	8.3	8.3	8.3	0.0	4.2	44.00	1.33	0.34	44.00	1.33	101.21%	101.95%
Flounder	12.5	8.3	8.3	4.2	4.2	123.75	3.75	0.95	41.25	1.25	79.11%	78.23%
Unknown Flounder	12.5	8.3	8.3	4.2	4.2	123.75	3.75	0.95	41.25	1.25	79.11%	78.23%
Halibut	91.7	62.5	62.5	66.7	50.0	4,021.10	121.85	30.78	125.62	3.81	32.07%	32.49%
Herring	8.3	4.2	4.2	4.2	0.0	412.50	12.50	3.16	68.75 gal	2.08	108.03%	104.97%
Spawn on Kelp	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Rockfish	8.3	4.2	4.2	4.2	8.3	41.25	1.25	0.32	27.50	0.83	108.03%	104.97%
Black Rockfish (black bass)	4.2	4.2	4.2	0.0	4.2	41.25	1.25	0.32	27.50	0.83	108.03%	104.97%
Red Rockfish	4.2	0.0	0.0	4.2	4.2	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Sculpin	20.8	16.7	16.7	12.5	12.5	31.63	0.96	0.24	63.25	1.92	58.95%	61.68%
Unknown Sculpin	20.8	16.7	16.7	12.5	12.5	31.63	0.96	0.24	63.25	1.92	58.95%	61.68%
Smelt	66.7	0.0	0.0	66.7	25.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Rainbow Smelt	33.3	0.0	0.0	33.3	16.7	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Eulachon (Hooligan, Candlefish)	62.5	0.0	0.0	62.5	25.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Unknown Smelt	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Giant Wrymouth	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Prowfish	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Walleye Pollock (Whiting)	8.3	4.2	4.2	4.2	0.0	3.85	0.12	0.03	2.75	0.08	108.03%	109.75%
Silver Hake	4.2	0.0	0.0	4.2	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%

Table XVIII-13. ... mated Harvest and Use of Fish, Mammal, Bird and Plant Resources, Chignik Lake, 1991/92

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
Grayling	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Trout and Char	50.0	33.3	33.3	29.2	20.8	155.93	4.73	1.19	111.38	3.38	46.83%	50.26%
Char	33.3	16.7	16.7	20.8	0.0	78.93	2.39	0.60	56.38	1.71	56.91%	58.57%
Dolly Varden	33.3	16.7	16.7	20.8	0.0	78.93	2.39	0.60	56.38	1.71	56.91%	58.57%
Trout	29.2	20.8	20.8	16.7	20.8	77.00	2.33	0.59	55.00	1.67	81.25%	84.13%
Rainbow Trout	16.7	8.3	8.3	12.5	8.3	67.38	2.04	0.52	48.13	1.46	93.21%	96.35%
Steelhead	16.7	12.5	12.5	4.2	12.5	9.63	0.29	0.07	6.88	0.21	62.27%	59.44%
Game	100.0	58.3	58.3	91.7	66.7	19,929.25	603.92	152.57	138.88	4.21	26.76%	23.08%
Big Game	100.0	58.3	58.3	91.7	66.7	19,855.00	601.67	152.00	112.75	3.42	25.17%	23.06%
Brown Bear	45.8	4.2	4.2	41.7	16.7	467.50	14.17	3.58	1.38	0.04	108.03%	107.39%
Caribou	100.0	58.3	58.3	79.2	58.3	15,675.00	475.00	120.00	104.50	3.17	26.27%	24.60%
Deer	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Moose	58.3	16.7	16.7	45.8	33.3	3,712.50	112.50	28.42	6.88	0.21	53.88%	53.06%
Small Game/Furbearer	33.3	20.8	20.8	16.7	20.8	74.25	2.25	0.57	26.13	0.79	60.91%	53.24%
Fox	12.5	12.5	12.5	0.0	4.2	0.00	0.00	0.00	12.38	0.38	68.96%	0.00%
Arctic Fox	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Red Fox	12.5	12.5	12.5	0.0	4.2	0.00	0.00	0.00	11.00	0.33	66.63%	0.00%
Cross Fox	4.2	4.2	4.2	0.0	0.0	0.00	0.00	0.00	1.38	0.04	108.03%	0.00%
Beaver	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Hare	12.5	8.3	8.3	8.3	8.3	8.25	0.25	0.06	4.13	0.13	79.11%	78.23%
Arctic Hare	4.2	0.0	0.0	4.2	4.2	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Snowshoe Hare	8.3	8.3	8.3	4.2	4.2	8.25	0.25	0.06	4.13	0.13	79.11%	78.23%
Land Otter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Lynx	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Marmot	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Mink	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Porcupine	33.3	16.7	16.7	16.7	20.8	66.00	2.00	0.51	8.25	0.25	53.62%	54.32%
Weasel	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Wolf	4.2	0.0	0.0	4.2	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Wolverine	4.2	4.2	4.2	0.0	0.0	0.00	0.00	0.00	1.38	0.04	108.03%	0.00%
Marine Mammals	70.8	25.0	20.8	62.5	29.2	539.00	16.33	4.13	9.63	0.29	47.19%	46.09%
Whale	4.2	0.0	0.0	4.2	4.2	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Gray Whale	4.2	0.0	0.0	4.2	4.2	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Seal	70.8	25.0	20.8	62.5	29.2	539.00	16.33	4.13	9.63	0.29	47.19%	46.09%
Harbor Seal	70.8	25.0	20.8	62.5	29.2	539.00	16.33	4.13	9.63	0.29	47.19%	46.09%
Steller Sea Lion	4.2	0.0	0.0	4.2	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Sea Otter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Birds and Eggs	91.7	70.8	70.8	62.5	66.7	1,719.44	52.10	13.16	3,117.13	94.46	39.02%	38.12%
Birds	91.7	66.7	66.7	54.2	62.5	1,318.49	39.95	10.09	1,750.38	53.04	43.94%	42.98%

Table XVIII-13. Estimated Harvest and Use of Fish, Mammal, Bird and Plant Resources, Chignik Lake, 1991/92

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
Upland Game Birds	83.3	54.2	54.2	45.8	50.0	454.30	13.77	3.48	649.00	19.67	33.51%	32.81%
Ptarmigan	83.3	54.2	54.2	45.8	50.0	454.30	13.77	3.48	649.00	19.67	33.51%	32.81%
Migratory Birds	66.7	50.0	50.0	41.7	45.8	864.19	26.19	6.62	1,101.38	33.38	53.15%	50.76%
Waterfowl	66.7	50.0	50.0	41.7	45.8	864.19	26.19	6.62	1,101.38	33.38	53.15%	50.76%
Ducks	66.7	50.0	50.0	41.7	45.8	763.81	23.15	5.85	1,050.50	31.83	54.02%	51.87%
Eider	12.5	8.3	8.3	4.2	8.3	33.00	1.00	0.25	20.63	0.63	79.11%	78.23%
Eider, Unknown	12.5	8.3	8.3	4.2	8.3	33.00	1.00	0.25	20.63	0.63	79.11%	78.23%
Scoter	4.2	0.0	0.0	4.2	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Scoter, Unknown	4.2	0.0	0.0	4.2	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Harlequin	25.0	12.5	12.5	16.7	12.5	27.50	0.83	0.21	55.00	1.67	66.63%	64.10%
Goldeneye	41.7	37.5	37.5	16.7	20.8	96.80	2.93	0.74	121.00	3.67	43.93%	43.21%
Bufflehead	25.0	16.7	16.7	12.5	20.8	29.70	0.90	0.23	74.25	2.25	64.45%	64.11%
Merganser	4.2	4.2	4.2	4.2	0.0	1.24	0.04	0.01	1.38	0.04	108.03%	107.39%
Scaup	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Mallard	45.8	37.5	37.5	20.8	29.2	185.63	5.63	1.42	185.63	5.63	50.39%	51.17%
Pintail	37.5	29.2	29.2	12.5	25.0	94.60	2.87	0.72	118.25	3.58	47.04%	45.87%
Teal	25.0	20.8	20.8	4.2	20.8	50.74	1.54	0.39	169.13	5.13	71.03%	70.99%
Oldsquaw	20.8	20.8	20.8	4.2	20.8	216.70	6.57	1.66	270.88	8.21	82.05%	82.47%
Canvasback	4.2	4.2	4.2	0.0	4.2	7.56	0.23	0.06	6.88	0.21	108.03%	108.58%
Ducks, Unknown	12.5	4.2	4.2	8.3	4.2	20.35	0.62	0.16	27.50	0.83	108.03%	107.39%
Geese	41.7	29.2	29.2	16.7	33.3	100.38	3.04	0.77	50.88	1.54	41.75%	47.70%
Brant	16.7	12.5	12.5	4.2	12.5	14.85	0.45	0.11	12.38	0.38	62.07%	60.00%
Emperor Geese	16.7	16.7	16.7	4.2	16.7	75.63	2.29	0.58	30.25	0.92	61.81%	62.38%
Snow Geese	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
White-fronted Geese	4.2	0.0	0.0	4.2	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Canada Geese	4.2	4.2	4.2	0.0	4.2	9.90	0.30	0.08	8.25	0.25	108.03%	107.39%
Canada Geese, Unknown	4.2	4.2	4.2	0.0	4.2	9.90	0.30	0.08	8.25	0.25	108.03%	107.39%
Geese, Unknown	8.3	0.0	0.0	8.3	4.2	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Shorebirds	4.2	0.0	0.0	4.2	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Common Snipe	4.2	0.0	0.0	4.2	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Eggs	41.7	20.8	16.7	37.5	20.8	400.95	12.15	3.07	1,366.75	41.42	68.05%	71.75%
Seabird Eggs	37.5	20.8	16.7	33.3	20.8	391.88	11.88	3.00	1,306.25	39.58	70.65%	73.16%
Gull Eggs	37.5	20.8	16.7	33.3	20.8	391.88	11.88	3.00	1,306.25	39.58	70.65%	73.16%
Waterfowl Eggs	20.8	8.3	8.3	20.8	8.3	9.08	0.28	0.07	60.50	1.83	75.05%	73.01%
Duck Eggs	20.8	8.3	8.3	20.8	8.3	9.08	0.28	0.07	60.50	1.83	75.05%	73.01%
Duck Eggs, Unknown	20.8	8.3	8.3	20.8	8.3	9.08	0.28	0.07	60.50	1.83	75.05%	73.01%
Marine Invertebrates	100.0	79.2	75.0	91.7	66.7	2,710.88	82.15	20.75			25.85%	26.43%
Clams	100.0	70.8	70.8	79.2	54.2	1,444.00	43.76	11.05	481.33 gal	14.59	30.32%	31.49%
Butter Clams	83.3	62.5	62.5	58.3	45.8	746.21	22.61	5.71	248.74 gal	7.54	26.53%	25.90%

Table XVIII-13. Estimated Harvest and Use of Fish, Mammal, Bird and Plant Resources, Chignik Lake, 1991/92

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
Razor Clams	37.5	29.2	29.2	29.2	8.3	239.25	7.25	1.83	79.75 gal	2.42	74.47%	76.88%
Pacific Littleneck Clams (Steamers)	83.3	58.3	58.3	54.2	45.8	458.54	13.90	3.51	152.85 gal	4.63	37.78%	38.95%
Pinkneck Clams	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Horse Clams (Gaper)	4.2	0.0	0.0	4.2	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Cockles	70.8	54.2	50.0	45.8	58.3	591.94	17.94	4.53	197.31 gal	5.98	33.53%	32.12%
Mussels	4.2	0.0	0.0	4.2	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Crabs	79.2	33.3	33.3	66.7	50.0	322.85	9.78	2.47	316.25	9.58	44.12%	42.17%
Dungeness Crab	62.5	20.8	20.8	50.0	33.3	142.45	4.32	1.09	203.50	6.17	58.37%	59.19%
King Crab	16.7	0.0	0.0	16.7	8.3	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Tanner Crab	66.7	16.7	16.7	50.0	45.8	180.40	5.47	1.38	112.75	3.42	52.81%	52.92%
Tanner Crab, Unknown	12.5	12.5	12.5	0.0	12.5	149.60	4.53	1.15	93.50	2.83	61.40%	61.74%
Chitons (bidarkis)	75.0	50.0	50.0	58.3	41.7	146.30	4.43	1.12	36.58 gal	1.11	31.26%	30.68%
Chitons (large)	4.2	0.0	0.0	4.2	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Red Gumboots	4.2	0.0	0.0	4.2	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Chitons (small)	75.0	50.0	50.0	58.3	41.7	146.30	4.43	1.12	36.58 gal	1.11	31.26%	30.68%
Black Gumboots	75.0	50.0	50.0	58.3	41.7	146.30	4.43	1.12	36.58 gal	1.11	31.26%	30.68%
Octopus	79.2	16.7	12.5	70.8	41.7	159.50	4.83	1.22	39.88	1.21	78.91%	79.15%
Sea Cucumber	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Sea Urchin	70.8	45.8	41.7	54.2	41.7	46.30	1.40	0.35	92.59 gal	2.81	50.22%	53.49%
Shrimp	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Snails	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Limpets	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Plants and Berries	87.5	79.2	79.2	33.3	45.8	842.22	25.52	6.45	210.55 gal	6.38	25.87%	23.39%
Berries	87.5	79.2	79.2	29.2	41.7	644.88	19.54	4.94	161.22 gal	4.89	27.39%	25.07%
Plants/Greens/Mushrooms	54.2	54.2	54.2	4.2	12.5	197.34	5.98	1.51	49.34 gal	1.50	46.00%	44.63%
Seaweed/Kelp (Food)	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Wood	54.2	54.2	54.2	16.7	25.0	0.00	0.00	0.00	24.75 crd	0.75	28.76%	0.00%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992

Table XVIII-14. Estimated Amount of Resources Removed From Commercial Harvest, Chignik Lake, 1991/92

Resource	Removed From Catch			Percent of	
	Amount		Pounds	Species Harvest (lbs)	Community Harvest (lbs)
All Resources			9,912.63	28.52	17.16
Fish			9,514.70	29.69	16.47
Salmon	1,182.50		6,200.11	23.30	10.73
Chum Salmon	24.75		117.56	54.55	0.20
Coho Salmon	167.75		899.14	34.17	1.56
Chinook Salmon	75.63		1,154.04	61.80	2.00
Pink Salmon	198.00		415.80	68.90	0.72
Sockeye Salmon	675.13		3,409.38	23.10	5.90
Unknown Salmon	41.25		204.19	100.00	0.35
Non-Salmon Fish			3,314.59	61.06	5.74
Cod	158.13		506.00	85.19	0.88
Pacific Cod (Gray)	158.13		506.00	85.19	0.88
Greenling	41.25		41.25	93.75	0.07
Unknown Greenling	41.25		41.25	93.75	0.07
Flounder	41.25		123.75	100.00	0.21
Unknown Flounder	41.25		123.75	100.00	0.21
Halibut	67.87		2,172.52	54.03	3.76
Herring	68.75	gal	412.50	100.00	0.71
Sculpin	63.25		31.63	100.00	0.05
Unknown Sculpin	63.25		31.63	100.00	0.05
Walleye Pollock (Whiting)	2.75		3.85	100.00	0.01
Trout and Char	16.50		23.10	14.81	0.04
Char	16.50		23.10	29.27	0.04
Dolly Varden	16.50		23.10	29.27	0.04
Marine Invertebrates			397.93	14.68	0.69
Crabs	228.25		243.93	75.55	0.42
Dungeness Crab	134.75		94.33	66.22	0.16
Tanner Crab	93.50		149.60	82.93	0.26
Tanner Crab, Unknown	93.50		149.60	100.00	0.26
Octopus	38.50		154.00	96.55	0.27

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992

Table XVIII-15. Percentage of Salmon Harvest By Resource, Gear Type, and Total Salmon Harvest, Chignik Lake, 1991/92

		Subsistence Methods														
		Net		Seine		Beach Seine		Other		Subsistence Gear Any Method		Removed from Commercial Catch		Rod and Reel		Any Method
Resource	Percent Base	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No. Lbs.
Salmon	total	40.55	38.16	10.52	12.41	23.28	16.36	2.25	1.38	76.60	68.31	17.92	23.30	5.48	8.40	
Chum Salmon	gear type	0.00	0.00	2.97	2.97	0.00	0.00	0.00	0.00	0.41	0.54	2.09	1.90	0.00	0.00	
	resource	0.00	0.00	45.45	45.45	0.00	0.00	0.00	0.00	45.45	45.45	54.55	54.55	0.00	0.00	
	total	0.00	0.00	0.31	0.37	0.00	0.00	0.00	0.00	0.31	0.37	0.38	0.44	0.00	0.00	0.69 0.81
Coho Salmon	gear type	1.54	2.18	2.97	3.35	0.00	0.00	0.00	0.00	1.22	1.82	14.19	14.50	72.24	62.67	
	resource	8.40	8.40	4.20	4.20	0.00	0.00	0.00	0.00	12.61	12.61	34.17	34.17	53.22	53.22	
	total	0.63	0.83	0.31	0.42	0.00	0.00	0.00	0.00	0.94	1.25	2.54	3.38	3.96	5.26	7.44 9.89
Chinook Salmon	gear type	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.40	18.61	12.93	31.93	
	resource	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	61.80	61.80	38.20	38.20	
	total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.15	4.34	0.71	2.68	1.85 7.02
Pink Salmon	gear type	0.00	0.00	9.90	4.37	0.00	0.00	0.00	0.00	1.36	0.79	16.74	6.71	5.70	1.94	
	resource	0.00	0.00	23.92	23.92	0.00	0.00	0.00	0.00	23.92	23.92	68.90	68.90	7.18	7.18	
	total	0.00	0.00	1.04	0.54	0.00	0.00	0.00	0.00	1.04	0.54	3.00	1.56	0.31	0.16	4.35 2.27
Sockeye Salmon	gear type	51.75	68.86	84.16	89.32	17.90	31.90	2.78	5.68	44.47	62.45	57.09	54.99	0.00	0.00	
	resource	47.37	47.37	19.99	19.99	9.41	9.41	0.14	0.14	76.90	76.90	23.10	23.10	0.00	0.00	
	total	20.98	26.27	8.86	11.09	4.17	5.22	0.06	0.08	34.07	42.66	10.23	12.81	0.00	0.00	44.30 55.47
Spawning Coho Salmon	gear type	1.13	0.74	0.00	0.00	0.00	0.00	32.41	32.66	1.55	1.07	0.00	0.00	0.00	0.00	
	resource	38.60	38.60	0.00	0.00	0.00	0.00	61.40	61.40	100.00	100.00	0.00	0.00	0.00	0.00	
	total	0.46	0.28	0.00	0.00	0.00	0.00	0.73	0.45	1.19	0.73	0.00	0.00	0.00	0.00	1.19 0.73
Spawning Sockeye Salmon	gear type	45.58	28.22	0.00	0.00	82.10	68.10	64.81	61.66	50.99	33.32	0.00	0.00	9.13	3.47	
	resource	46.72	46.72	0.00	0.00	48.33	48.33	3.69	3.69	98.74	98.74	0.00	0.00	1.26	1.26	
	total	18.48	10.77	0.00	0.00	19.12	11.14	1.46	0.85	39.06	22.76	0.00	0.00	0.50	0.29	39.56 23.05
Unknown Salmon	gear type	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.49	3.29	0.00	0.00	
	resource	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	100.00	0.00	0.00	
	total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.63	0.77	0.00	0.00	0.63 0.77

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992

Table XVIII-16. Estimated Salmon Harvest by Gear Type and Species, Chignik Lake, 1991/92

		Subsistence Methods										Removed from Commercial Catch		Rod and Reel		Any Method	
		Net		Seine		Beach Seine		Other		Subsistence Gear Any Method							
	Harvest Units	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Salmon	numbers	2,675.75	81.08	694.38	21.04	1,536.56	46.56	148.50	4.50	5,055.19	153.19	1,182.50	35.83	361.63	10.96	6,599.31	199.98
	pounds	10,154.90	307.72	3,303.99	100.12	4,353.42	131.92	366.85	11.12	18,179.16	550.88	6,200.11	187.88	2,234.57	67.71	26,613.83	806.48
Chum	numbers	0.00	0.00	20.63	0.63	0.00	0.00	0.00	0.00	20.63	0.63	24.75	0.75	0.00	0.00	45.38	1.38
	pounds	0.00	0.00	97.97	2.97	0.00	0.00	0.00	0.00	97.97	2.97	117.56	3.56	0.00	0.00	215.53	6.53
Coho	numbers	41.25	1.25	20.63	0.63	0.00	0.00	0.00	0.00	61.88	1.88	167.75	5.08	261.25	7.92	490.88	14.88
	pounds	221.10	6.70	110.55	3.35	0.00	0.00	0.00	0.00	331.65	10.05	899.14	27.25	1,400.30	42.43	2,631.09	79.73
Chinook	numbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	75.63	2.29	46.75	1.42	122.38	3.71
	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1,154.04	34.97	713.41	21.62	1,867.44	56.59
Pink	numbers	0.00	0.00	68.75	2.08	0.00	0.00	0.00	0.00	68.75	2.08	198.00	6.00	20.63	0.63	287.38	8.71
	pounds	0.00	0.00	144.38	4.38	0.00	0.00	0.00	0.00	144.38	4.38	415.80	12.60	43.31	1.31	603.49	18.29
Sockeye	numbers	1,384.63	41.96	584.38	17.71	275.00	8.33	4.13	0.13	2,248.13	68.13	675.13	20.46	0.00	0.00	2,923.25	88.58
	pounds	6,992.36	211.89	2,951.09	89.43	1,388.75	42.08	20.83	0.63	11,353.03	344.03	3,409.38	103.31	0.00	0.00	14,762.41	447.35
Spawning Coho	numbers	30.25	0.92	0.00	0.00	0.00	0.00	48.13	1.46	78.38	2.38	0.00	0.00	0.00	0.00	78.38	2.38
	pounds	75.32	2.28	0.00	0.00	0.00	0.00	119.83	3.63	195.15	5.91	0.00	0.00	0.00	0.00	195.15	5.91
Spawning Sockeye	numbers	1,219.63	36.96	0.00	0.00	1,261.56	38.23	96.25	2.92	2,577.44	78.10	0.00	0.00	33.00	1.00	2,610.44	79.10
	pounds	2,866.12	86.85	0.00	0.00	2,964.67	89.84	226.19	6.85	6,056.98	183.54	0.00	0.00	77.55	2.35	6,134.53	185.89
Landlocked	numbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Salmon	numbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	41.25	1.25	0.00	0.00	41.25	1.25
	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	204.19	6.19	0.00	0.00	204.19	6.19

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992

Table XVIII-17. Percentage of Households Harvesting Salmon by Gear Type and Species, Chignik Lake, 1991/92

Resource	Subsistence Methods					Removed from Commercial Catch	Rod and Reel	Any Method
	Net	Seine	Beach Seine	Other	Any Subsistence Gear			
Salmon	45.83	20.83	29.17	8.33	70.83	66.67	37.50	95.83
Chum Salmon	0.00	4.17	0.00	0.00	4.17	4.17	0.00	4.17
Coho Salmon	4.17	4.17	0.00	0.00	8.33	25.00	25.00	45.83
Chinook Salmon	0.00	0.00	0.00	0.00	0.00	25.00	20.83	41.67
Pink Salmon	0.00	4.17	0.00	0.00	4.17	20.83	8.33	25.00
Sockeye Salmon	29.17	16.67	4.17	4.17	54.17	58.33	0.00	70.83
Spawning Coho Salmon	8.33	0.00	0.00	4.17	12.50	0.00	0.00	12.50
Spawning Sockeye Salmon	33.33	0.00	29.17	4.17	66.67	0.00	12.50	79.17
Landlocked Salmon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Salmon	0.00	0.00	0.00	0.00	0.00	4.17	0.00	4.17

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992

Table XVIII-18. Estimated Harvest of Fish Other than Salmon by Gear Type, Chignik Lake, 1991/92

	Harvest Units	Subsistence Gear		Removed From Commercial Catch		Rod and Reel		Ice Fishing		Any Method	
		Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Non-Salmon Fish	pounds	1,960.50	59.41	3,314.59	100.44	114.40	3.47	38.50	1.17	5,428.00	164.48
Pacific Cod (Gray)	pounds	88.00	2.67	506.00	15.33	0.00	0.00	0.00	0.00	594.00	18.00
Unknown Flounder	pounds	0.00	0.00	123.75	3.75	0.00	0.00	0.00	0.00	123.75	3.75
Halibut	pounds	1,848.58	56.02	2,172.52	65.83	0.00	0.00	0.00	0.00	4,021.10	121.85
Herring	pounds	0.00	0.00	412.50	12.50	0.00	0.00	0.00	0.00	412.50	12.50
Black Rockfish (black bass)	pounds	0.00	0.00	0.00	0.00	41.25	1.25	0.00	0.00	41.25	1.25
Unknown Sculpin	pounds	0.00	0.00	31.63	0.96	0.00	0.00	0.00	0.00	31.63	0.96
Unknown Greenling	pounds	2.75	0.08	41.25	1.25	0.00	0.00	0.00	0.00	44.00	1.33
Walleye Pollock (Whiting)	pounds	0.00	0.00	3.85	0.12	0.00	0.00	0.00	0.00	3.85	0.12
Dolly Varden	pounds	1.93	0.06	23.10	0.70	53.90	1.63	0.00	0.00	78.93	2.39
Rainbow Trout	pounds	9.63	0.29	0.00	0.00	19.25	0.58	38.50	1.17	67.38	2.04
Steelhead	pounds	9.63	0.29	0.00	0.00	0.00	0.00	0.00	0.00	9.63	0.29

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992

Table XVIII-19. Percentage of Fish Other Than Salmon Harvested by Gear Type, Chignik Lake, 1991/92

Resource	Percent Base	Subsistence Gear Lbs.	Removed from Commercial Catch Lbs.	Rod and Reel Lbs.	Ice Fishing Lbs.
Non-Salmon Fish	resource	36.12	61.06	2.11	0.71
Pacific Cod (Gray)	resource	14.81	85.19	0.00	0.00
Unknown Flounder	resource	0.00	100.00	0.00	0.00
Halibut	resource	45.97	54.03	0.00	0.00
Herring	resource	0.00	100.00	0.00	0.00
Black Rockfish (black bass)	resource	0.00	0.00	100.00	0.00
Unknown Sculpin	resource	0.00	100.00	0.00	0.00
Unknown Greenling	resource	6.25	93.75	0.00	0.00
Walleye Pollock (Whiting)	resource	0.00	100.00	0.00	0.00
Dolly Varden	resource	2.44	29.27	68.29	0.00
Rainbow Trout	resource	14.29	0.00	28.57	57.14
Steelhead	resource	100.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992

Table XVIII-20. Percentage of Households Harvesting Fish Other Than Salmon by Gear Type and Species, Chignik Lake, 1991/92

Resource	Subsistence Gear	Removed from Commercial Catch	Rod and Reel	Ice Fishing	Any Method
Non-Salmon Fish	41.67	58.33	16.67	4.17	79.17
Pacific Cod (Gray)	4.17	25.00	0.00	0.00	29.17
Unknown Flounder	0.00	8.33	0.00	0.00	8.33
Halibut	37.50	41.67	0.00	0.00	62.50
Herring	0.00	4.17	0.00	0.00	4.17
Black Rockfish (black bass)	0.00	0.00	4.17	0.00	4.17
Unknown Sculpin	0.00	16.67	0.00	0.00	16.67
Unknown Greenling	4.17	4.17	0.00	0.00	8.33
Walleye Pollock (Whiting)	0.00	4.17	0.00	0.00	4.17
Dolly Varden	4.17	4.17	12.50	0.00	16.67
Rainbow Trout	4.17	0.00	4.17	4.17	8.33
Steelhead	12.50	0.00	0.00	0.00	12.50

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992

Figure XVIII-8. Composition of Harvests by Resource Category, Chignik Lake, 1984, 1989, and 1991/92

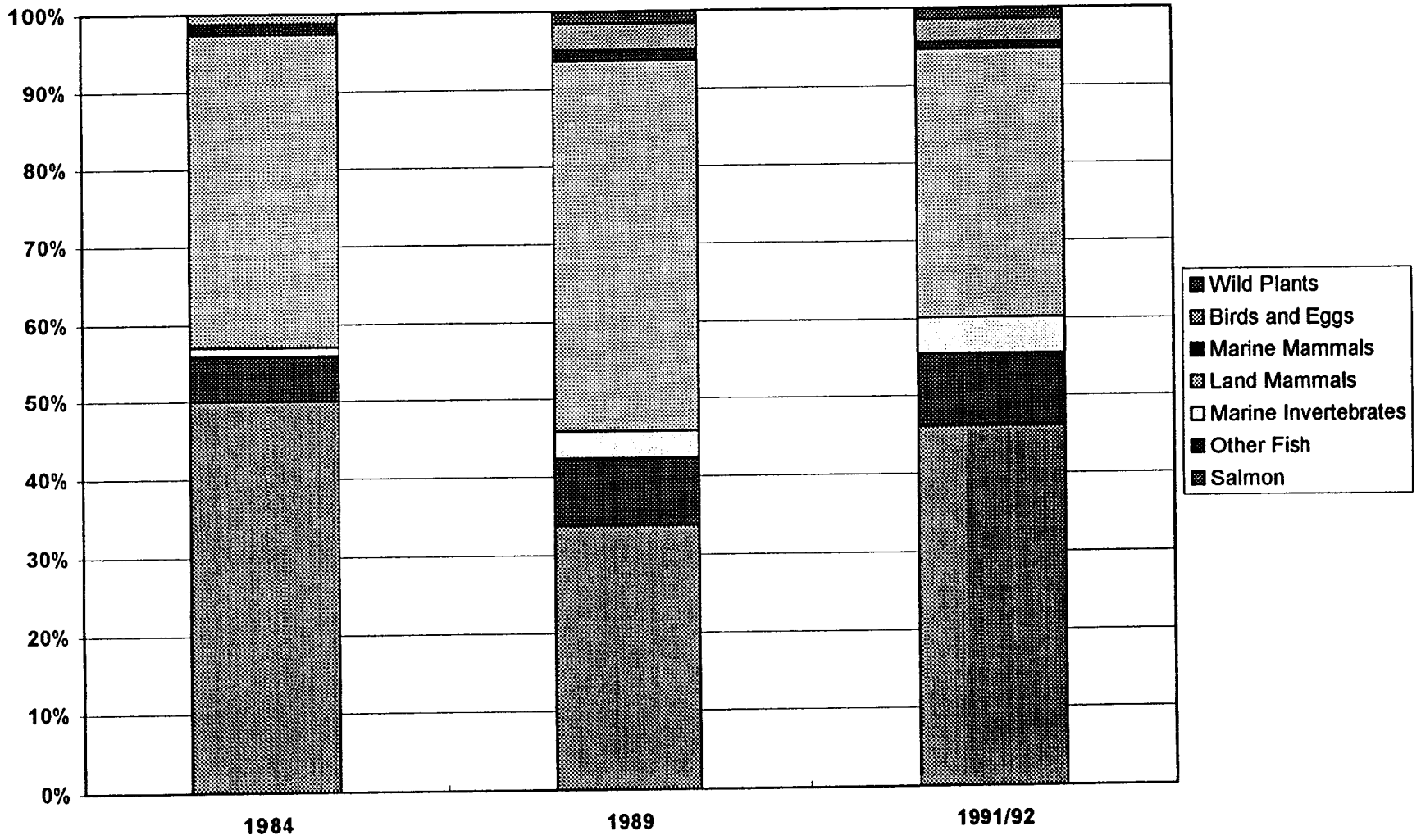


Table XVIII-21. Uses of Wild Foods, Chignik Lake

	STUDY YEAR
	1991
ANY WILD FOODS EATEN YESTERDAY?	
No	
Count	6
Col %	27.3%
Yes	
Count	16
Col %	72.7%
WILD FOODS AS MAIN PART OF A MEAL	
No	
Count	9
Col %	40.9%
Yes	
Count	13
Col %	59.1%
HARVEST OF WILD FOODS BY RESPONDENT	
No	
Count	15
Col %	68.2%
Yes	
Count	7
Col %	31.8%
WF HARVESTED BY RELATIVE IN HH	
No	
Count	18
Col %	81.8%
Yes	
Count	4
Col %	18.2%
WF HARVESTED BY RELATIVE IN ANOTHER HH	
No	
Count	16
Col %	72.7%
Yes	
Count	6
Col %	27.3%

(continued)

Table XVIII-21. Uses of Wild Foods, Chignik Lake

	STUDY YEAR
	1991
WF HARVESTED BY RELATIVE IN ANOTHER COMM.	
No	
Count	22
Col %	100.0%
WF HARVESTED BY FRIEND IN HH	
No	
Count	22
Col %	100.0%
WF HARVESTED BY FRIEND IN COMMUNITY	
No	
Count	19
Col %	86.4%
Yes	
Count	3
Col %	13.6%
WF HARVESTED BY FRIEND IN ANOTHER COMM.	
No	
Count	22
Col %	100.0%

Table XVIII-22. Safety of Using Subsistence Foods, Chignik Lake

	STUDY YEAR
	1991
IS EATING BIDARKIES IMPORTANT TO YOU?	
No	
Count	11
Col %	50.0%
Yes	
Count	11
Col %	50.0%
BIDARKIE HARVEST AREAS SAFE?	
Not Safe	
Count	1
Col %	9.1%
Safe	
Count	10
Col %	90.9%
WHY BIDARKIES NOT SAFE TO EAT	
Safe to eat if you know which ones to take	
Count	1
Col %	100.0%
ARE CLAMS SAFE FOR CHILDREN TO EAT?	
Not Safe	
Count	2
Col %	9.1%
Safe	
Count	20
Col %	90.9%
WHY CLAMS NOT SAFE TO EAT	
Safe to eat if you know which ones to take	
Count	2
Col %	100.0%
DO YOU EAT SEAL OIL OR SEAL MEAT?	
.	
Count	
Col %	
IS EATING SEAL MEAT OR OIL IMPORTANT?	

(continued)

Table XVIII-22. Safety of Using Subsistence Foods, Chignik Lake

	STUDY YEAR
	1991
No	
Count	13
Col %	59.1%
Yes	
Count	9
Col %	40.9%
ARE SEALS FROM HARVEST AREAS SAFE TO EAT?	
Safe	
Count	9
Col %	100.0%

Table XVIII-23. Resource Population Statuses, Chignik Lake

	STUDY YEAR
	1991
COMPARED TO 1988: CARIBOU	
Do Not Know	
Count	4
Col %	20.0%
Less	
Count	4
Col %	20.0%
Same	
Count	12
Col %	60.0%
COMPARED TO 1988: BEAR	
Do Not Know	
Count	7
Col %	35.0%
Less	
Count	1
Col %	5.0%
Same	
Count	9
Col %	45.0%
More	
Count	3
Col %	15.0%
COMPARED TO 1988: HARBOR SEAL	
Do Not Know	
Count	7
Col %	35.0%
Less	
Count	6
Col %	30.0%
Same	
Count	5
Col %	25.0%
More	
Count	2

(continued)

Table XVIII-23. Resource Population Statuses, Chignik Lake

	STUDY YEAR
	1991
Col %	10.0%
COMPARED TO 1988: SEA LIONS	
Do Not Know	
Count	9
Col %	47.4%
Less	
Count	3
Col %	15.8%
Same	
Count	3
Col %	15.8%
More	
Count	4
Col %	21.1%
COMPARED TO 1988: SEA DUCKS	
Do Not Know	
Count	5
Col %	25.0%
Less	
Count	7
Col %	35.0%
Same	
Count	6
Col %	30.0%
More	
Count	2
Col %	10.0%
COMPARED TO 1988: COMMON MURRE	
Do Not Know	
Count	15
Col %	75.0%
Less	
Count	1
Col %	5.0%

(continued)

Table XVIII-23. Resource Population Statuses, Chignik Lake

	STUDY YEAR
	1991
Same	
Count	4
Col %	20.0%
COMPARED TO 1988: SALMON	
Do Not Know	
Count	4
Col %	20.0%
Less	
Count	5
Col %	25.0%
Same	
Count	11
Col %	55.0%
COMPARED TO 1988: HALIBUT	
Do Not Know	
Count	9
Col %	45.0%
Less	
Count	4
Col %	20.0%
Same	
Count	7
Col %	35.0%
COMPARED TO 1988: ROCKFISH	
Do Not Know	
Count	16
Col %	80.0%
Same	
Count	4
Col %	20.0%
COMPARED TO 1988: DOLLY VARDEN	
Do Not Know	
Count	11
Col %	55.0%
Less	

(continued)

Table XVIII-23. Resource Population Statuses, Chignik Lake

	STUDY YEAR
	1991
Count	1
Col %	5.0%
Same	
Count	6
Col %	30.0%
More	
Count	2
Col %	10.0%
COMPARED TO 1988: CLAMS	
Do Not Know	
Count	4
Col %	20.0%
Less	
Count	4
Col %	20.0%
Same	
Count	11
Col %	55.0%
More	
Count	1
Col %	5.0%
COMPARED TO 1988: BIDARKIES	
Do Not Know	
Count	7
Col %	35.0%
Less	
Count	3
Col %	15.0%
Same	
Count	10
Col %	50.0%
COMPARED TO 1988: SEA URCHINS	
Do Not Know	
Count	7
Col %	35.0%

(continued)

Table XVIII-23. Resource Population Statuses, Chignik Lake

	STUDY YEAR
	1991
Less	
Count	5
Col %	25.0%
Same	
Count	8
Col %	40.0%
COMPARED TO 1988: OCTOPUS	
Do Not Know	
Count	9
Col %	45.0%
Same	
Count	10
Col %	50.0%
More	
Count	1
Col %	5.0%

Table XVIII-24. Children's Participation in Subsistence, Chignik Lake

	STUDY YEAR
	1991
DO CHILDREN HELP YOUR HH PROCESS WILD FOODS?	
No	
Count	16
Col %	72.7%
Yes	
Count	6
Col %	27.3%
DID EVOS AFFECT PARTICIPATION WITH CHILDREN?	
No	
Count	19
Col %	86.4%
Yes	
Count	3
Col %	13.6%
WHY EVOS AFFECTED PARTICIPATION WITH CHILDREN	
Were too busy with other affairs	
Count	1
Col %	33.3%
Did not trust foods	
Count	2
Col %	66.7%

Table XVIII-25. Sharing, Chignik Lake

	STUDY YEAR
	1991
DID HOUSEHOLD SHARE?	
No	
Count	1
Col %	4.5%
Yes	
Count	21
Col %	95.5%
PREV. YEAR: SHARING OF WILD RES.	
Do Not Know	
Count	1
Col %	4.8%
Less	
Count	1
Col %	4.8%
Same	
Count	17
Col %	81.0%
More	
Count	2
Col %	9.5%
PREV. YEAR: SHARING OF HUNT/FISH GEAR	
Do Not Know	
Count	2
Col %	11.1%
Less	
Count	2
Col %	11.1%
Same	
Count	13
Col %	72.2%
More	
Count	1
Col %	5.6%
PREV. YEAR: SHARING OF MONEY	
Do Not Know	

(continued)

Table XVIII-25. Sharing, Chignik Lake

	STUDY YEAR
	1991
Count	1
Col %	5.3%
Less	
Count	7
Col %	36.8%
Same	
Count	9
Col %	47.4%
More	
Count	2
Col %	10.5%
PREV. YEAR: SHARING OF LABOR	
Do Not Know	
Count	1
Col %	5.3%
Less	
Count	4
Col %	21.1%
Same	
Count	13
Col %	68.4%
More	
Count	1
Col %	5.3%
PRE-OS: SHARING OF WILD RESOURCES	
Do Not Know	
Count	2
Col %	10.0%
Less	
Count	1
Col %	5.0%
Same	
Count	16
Col %	80.0%

(continued)

Table XVIII-25. Sharing, Chignik Lake

	STUDY YEAR
	1991
More	
Count	1
Col %	5.0%
PRE-OS: SHARING OF HUNT/FISH GEAR	
Do Not Know	
Count	3
Col %	16.7%
Less	
Count	1
Col %	5.6%
Same	
Count	13
Col %	72.2%
More	
Count	1
Col %	5.6%
PRE-OS: SHARING OF MONEY	
Do Not Know	
Count	3
Col %	15.8%
Less	
Count	7
Col %	36.8%
Same	
Count	7
Col %	36.8%
More	
Count	2
Col %	10.5%
PRE-OS: SHARING OF LABOR	
Do Not Know	
Count	3
Col %	15.0%
Less	
Count	2

(continued)

Table XVIII-25. Sharing, Chignik Lake

	STUDY YEAR
	1991
Col %	10.0%
Same	
Count	13
Col %	65.0%
More	
Count	2
Col %	10.0%

Table XVIII-26. Political Activities, Chignik Lake

	STUDY YEAR
	1991
LAST 3 YRS.: ELDERS INFLUENCE	
Do Not Know	
Count	1
Col %	5.3%
Decreased	
Count	8
Col %	42.1%
Same	
Count	10
Col %	52.6%
PRE-EVOS: ATTEND PUBLIC MEETINGS	
Never	
Count	2
Col %	11.1%
Sometimes	
Count	8
Col %	44.4%
Almost Always	
Count	8
Col %	44.4%
LAST YEAR: ATTEND PUBLIC MEETINGS	
Never	
Count	4
Col %	18.2%
Sometimes	
Count	12
Col %	54.5%
Almost Always	
Count	6
Col %	27.3%
VOTE IN LAST CITY COUNCIL ELECTION?	
Do Not Know	
Count	1
Col %	5.6%
No	

(continued)

Table XVIII-26. Political Activities, Chignik Lake

	STUDY YEAR
	1991
Count	2
Col %	11.1%
Yes	
Count	15
Col %	83.3%
VOTE IN LAST STATE-WIDE ELECTION?	
No	
Count	8
Col %	36.4%
Yes	
Count	14
Col %	63.6%
BELONG TO NATIVE CORPORATION?	
Do Not Know	
Count	1
Col %	4.5%
No	
Count	4
Col %	18.2%
Yes	
Count	17
Col %	77.3%
REGIONAL NATIVE CORPORATION	
Bristol Bay Native Corp.	
Count	15
Col %	88.2%
Koniag, Inc.	
Count	2
Col %	11.8%
VOTE IN LAST REG. CORP. ELECTION?	
No	
Count	3
Col %	17.6%
Yes	
Count	14

(continued)

Table XVIII-26. Political Activities, Chignik Lake

	STUDY YEAR
	1991
Col %	82.4%
VILLAGE NATIVE CORPORATION	
Afognak Native Corporation	
Count	1
Col %	5.9%
Far West, Incorporation (Chignik Bay)	
Count	5
Col %	29.4%
Chignik Lagoon Native Corp.	
Count	1
Col %	5.9%
Chignik River Limited	
Count	9
Col %	52.9%
Old Harbor Native Corporation	
Count	1
Col %	5.9%
VOTE IN LAST NATIVE VILLAGE CORP. ELECTION?	
No	
Count	5
Col %	29.4%
Yes	
Count	12
Col %	70.6%
HAS VIEW OF LEADER CHANGED SINCE EVOS?	
Do Not Know	
Count	2
Col %	10.0%
No	
Count	16
Col %	80.0%
Yes	
Count	2
Col %	10.0%

(continued)

Table XVIII-26. Political Activities, Chignik Lake

	STUDY YEAR
	1991
WHY POST EVOS VIEW OF LEADERS	
Trust	
Count	1
Col %	50.0%
Education	
Count	1
Col %	50.0%

Table XVIII-27. Significance of Place, Chignik Lake

	STUDY YEAR
	1991
MAIN REASON MOVED TO COMMUNITY	
Born or reared here	
Count	4
Col %	18.2%
Relatives (family)	
Count	7
Col %	31.8%
Married a person born or reared here	
Count	4
Col %	18.2%
Friends	
Count	1
Col %	4.5%
Subsistence opportunities	
Count	1
Col %	4.5%
Employment reasons	
Count	4
Col %	18.2%
Location	
Count	1
Col %	4.5%
LIVE HERE: WHERE PERSON IS FROM	
No	
Count	14
Col %	63.6%
Yes	
Count	8
Col %	36.4%
LIVE HERE: RELATIVES LIVE HERE	
No	
Count	7
Col %	31.8%
Yes	
Count	15

(continued)

Table XVIII-27. Significance of Place, Chignik Lake

	STUDY YEAR
	1991
Col %	68.2%
LIVE HERE: MARRIED PERSON FROM HERE	
No	
Count	11
Col %	50.0%
Yes	
Count	11
Col %	50.0%
LIVE HERE: ALWAYS LIVED HERE	
No	
Count	12
Col %	54.5%
Yes	
Count	10
Col %	45.5%
LIVE HERE: FRIENDS LIVE HERE	
No	
Count	6
Col %	27.3%
Yes	
Count	16
Col %	72.7%
LIVE HERE: HUNTING & FISHING HERE	
No	
Count	4
Col %	18.2%
Yes	
Count	18
Col %	81.8%
LIVE HERE: JOB OPPORTUNITIES HERE	
No	
Count	11
Col %	50.0%
Yes	
Count	11

(continued)

Table XVIII-27. Significance of Place, Chignik Lake

	STUDY YEAR
	1991
Col %	50.0%
LIVE HERE: EDUCATIONAL OPPORTUNITIES	
No	
Count	12
Col %	54.5%
Yes	
Count	10
Col %	45.5%
LIVE HERE: COST OF LIVING	
No	
Count	13
Col %	59.1%
Yes	
Count	9
Col %	40.9%
LIVE HERE: HOUSING AVAILABLE	
No	
Count	9
Col %	40.9%
Yes	
Count	13
Col %	59.1%
LIVE HERE: STORES	
No	
Count	19
Col %	86.4%
Yes	
Count	3
Col %	13.6%
LIVE HERE: MEDICAL SERVICES	
No	
Count	15
Col %	68.2%
Yes	
Count	7

(continued)

Table XVIII-27. Significance of Place, Chignik Lake

	STUDY YEAR
	1991
Col %	31.8%
LIVE HERE: OTHER SERVICES	
No	
Count	21
Col %	95.5%
Yes	
Count	1
Col %	4.5%
LIVE HERE: BEAUTY OF AREA	
No	
Count	3
Col %	13.6%
Yes	
Count	19
Col %	86.4%
LIVE HERE: SIZE OF COMMUNITY	
No	
Count	6
Col %	27.3%
Yes	
Count	16
Col %	72.7%
LIVE HERE: LESS CRIME	
No	
Count	3
Col %	13.6%
Yes	
Count	19
Col %	86.4%
LIVE HERE: LESS DRINKING/DRUGS	
No	
Count	12
Col %	54.5%
Yes	
Count	10

(continued)

Table XVIII-27. Significance of Place, Chignik Lake

	STUDY YEAR
	1991
Col %	45.5%
LIVE HERE: NECESSARY PERSONAL FREEDOMS	
No	
Count	3
Col %	13.6%
Yes	
Count	19
Col %	86.4%
LIVE HERE: RECREATIONAL OPPORTUNITIES	
No	
Count	5
Col %	22.7%
Yes	
Count	17
Col %	77.3%
OTHER REASONS FOR LIVING IN COMMUNITY	
Pace of Life	
Count	1
Col %	14.3%
Quality of Life	
Count	6
Col %	85.7%
Cultural Reasons	
Count	2
Col %	28.6%
Religious Reasons	
Count	1
Col %	14.3%
MAIN REASON REMAINING IN COMMUNITY	
Do Not Know	
Count	1
Col %	4.5%
Born or reared here	
Count	1
Col %	4.5%

(continued)

Table XVIII-27. Significance of Place, Chignik Lake

	STUDY YEAR
	1991
Relatives (family)	
Count	5
Col %	22.7%
Subsistence opportunities	
Count	4
Col %	18.2%
Employment reasons	
Count	3
Col %	13.6%
Environmental qualities	
Count	2
Col %	9.1%
Size of the community	
Count	1
Col %	4.5%
Personal freedoms (politics)	
Count	1
Col %	4.5%
Quality of Life	
Count	4
Col %	18.2%
POST-EVOS: CHANGE IN LIKING COMMUNITY	
Less	
Count	1
Col %	5.3%
Same	
Count	17
Col %	89.5%
More	
Count	1
Col %	5.3%
POST-EVOS: WHY CHANGE IN LIKING COMMUNITY	
Do Not Know	
Count	1

(continued)

Table XVIII-27. Significance of Place, Chignik Lake

	STUDY YEAR
	1991
Col %	50.0%
Animals harvest to find/hunt/fish	
Count	1
Col %	50.0%
RATHER LIVE IN ANOTHER COMMUNITY	
No	
Count	17
Col %	77.3%
Yes	
Count	5
Col %	22.7%
EXPECT TO LIVE IN REGION WHEN OLD	
Do Not Know	
Count	3
Col %	13.6%
No	
Count	5
Col %	22.7%
Yes	
Count	14
Col %	63.6%
CONFIDENT ABOUT HUNT/FISH/GATHERING	
Do Not Know	
Count	1
Col %	4.5%
No	
Count	5
Col %	22.7%
Yes	
Count	16
Col %	72.7%
WHY UNCONFIDENT ABOUT HUNTING/FISHING/GATHERING	
Increased restrictions	
Count	1

(continued)

Table XVIII-27. Significance of Place, Chignik Lake

	STUDY YEAR
	1991
Col %	16.7%
Uncertainty about the future	
Count	1
Col %	16.7%
Increased development	
Count	2
Col %	33.3%
Population pressure	
Count	1
Col %	16.7%
Vulnerable to environmental damage	
Count	2
Col %	33.3%
CONTINUE TO LIVE HERE IF NO WILD FOOD	
No	
Count	6
Col %	27.3%
Yes	
Count	16
Col %	72.7%

Table XVIII-28. Effectiveness of Oil Spill Responses, Chignik Lake

	STUDY YEAR
	1991
EFFECTIVENESS EVOS: US COAST GUARD	
Do Not Know	
Count	11
Col %	52.4%
Not Effective	
Count	2
Col %	9.5%
Somewhat	
Count	2
Col %	9.5%
Effective	
Count	6
Col %	28.6%
EFFECTIVENESS EVOS: ADEC	
Do Not Know	
Count	8
Col %	38.1%
Not Effective	
Count	4
Col %	19.0%
Somewhat	
Count	4
Col %	19.0%
Effective	
Count	5
Col %	23.8%
EFFECTIVENESS EVOS: INSURANCE COMPANIES	
Do Not Know	
Count	12
Col %	63.2%
Not Effective	
Count	3
Col %	15.8%
Somewhat	
Count	2

(continued)

Table XVIII-28. Effectiveness of Oil Spill Responses, Chignik Lake

	STUDY YEAR
	1991
Col %	10.5%
Effective	
Count	2
Col %	10.5%
EFFECTIVENESS EVOS: LOCAL NATIVE PROFIT	
Do Not Know	
Count	11
Col %	55.0%
Not Effective	
Count	4
Col %	20.0%
Somewhat	
Count	2
Col %	10.0%
Effective	
Count	3
Col %	15.0%
EFFECTIVENESS EVOS: NATIVE NON-PROFITS	
Do Not Know	
Count	13
Col %	72.2%
Not Effective	
Count	4
Col %	22.2%
Somewhat	
Count	1
Col %	5.6%
EFFECTIVENESS EVOS: BOROUGH GOVERNMENT	
Do Not Know	
Count	9
Col %	75.0%
Not Effective	
Count	1
Col %	8.3%

(continued)

Table XVIII-28. Effectiveness of Oil Spill Responses, Chignik Lake

	STUDY YEAR
	1991
Somewhat	
Count	1
Col %	8.3%
Effective	
Count	1
Col %	8.3%
EFFECTIVENESS EVOS: VILLAGE CORPORATION	
Do Not Know	
Count	6
Col %	30.0%
Not Effective	
Count	4
Col %	20.0%
Somewhat	
Count	7
Col %	35.0%
Effective	
Count	3
Col %	15.0%
EFFECTIVENESS EVOS: IRA COUNCIL	
Do Not Know	
Count	12
Col %	60.0%
Not Effective	
Count	2
Col %	10.0%
Somewhat	
Count	4
Col %	20.0%
Effective	
Count	2
Col %	10.0%
EFFECTIVENESS EVOS: CHAMBER OF COMMERCE	
Do Not Know	
Count	3

(continued)

Table XVIII-28. Effectiveness of Oil Spill Responses, Chignik Lake

	STUDY YEAR
	1991
Col %	100.0%
EFFECTIVENESS EVOS: COMMERCIAL BUSINESSES	
Do Not Know	
Count	8
Col %	57.1%
Not Effective	
Count	2
Col %	14.3%
Somewhat	
Count	3
Col %	21.4%
Effective	
Count	1
Col %	7.1%
EFFECTIVENESS EVOS: COMMERCIAL FISHING GROUPS	
Do Not Know	
Count	6
Col %	30.0%
Not Effective	
Count	2
Col %	10.0%
Somewhat	
Count	2
Col %	10.0%
Effective	
Count	10
Col %	50.0%
EFFECTIVENESS EVOS: OTHER BUSINESS GROUPS	
Do Not Know	
Count	10
Col %	66.7%
Not Effective	

(continued)

Table XVIII-28. Effectiveness of Oil Spill Responses, Chignik Lake

	STUDY YEAR
	1991
Count	2
Col %	13.3%
Somewhat	
Count	1
Col %	6.7%
Effective	
Count	2
Col %	13.3%
EFFECTIVENESS EVOS: SCHOOLS	
Do Not Know	
Count	10
Col %	90.9%
Somewhat	
Count	1
Col %	9.1%
EFFECTIVENESS EVOS: CHURCHES	
Do Not Know	
Count	8
Col %	80.0%
Somewhat	
Count	1
Col %	10.0%
Effective	
Count	1
Col %	10.0%
EFFECTIVENESS EVOS: MEDICAL PROFESSION	
Do Not Know	
Count	10
Col %	71.4%
Somewhat	
Count	2
Col %	14.3%
Effective	
Count	2
Col %	14.3%

(continued)

Table XVIII-28. Effectiveness of Oil Spill Responses, Chignik Lake

	STUDY YEAR
	1991
EFFECTIVENESS EVOS: HEALTH AIDES	
Do Not Know	
Count	9
Col %	69.2%
Somewhat	
Count	2
Col %	15.4%
Effective	
Count	2
Col %	15.4%
EFFECTIVENESS EVOS: SOCIAL WORKERS	
Do Not Know	
Count	9
Col %	75.0%
Somewhat	
Count	2
Col %	16.7%
Effective	
Count	1
Col %	8.3%
EFFECTIVENESS EVOS: LOCAL LAW ENFORCEMENT	
Do Not Know	
Count	7
Col %	53.8%
Not Effective	
Count	1
Col %	7.7%
Somewhat	
Count	1
Col %	7.7%
Effective	
Count	4
Col %	30.8%

(continued)

Table XVIII-28. Effectiveness of Oil Spill Responses, Chignik Lake

	STUDY YEAR 1991
EFFECTIVENESS EVOS: STATE LAW ENFORCEMENT	
Do Not Know	
Count	7
Col %	77.8%
Not Effective	
Count	1
Col %	11.1%
Effective	
Count	1
Col %	11.1%
EFFECTIVENESS EVOS: EXXON	
Do Not Know	
Count	6
Col %	28.6%
Not Effective	
Count	7
Col %	33.3%
Somewhat	
Count	6
Col %	28.6%
Effective	
Count	2
Col %	9.5%
EFFECTIVENESS EVOS: VECO	
Do Not Know	
Count	5
Col %	23.8%
Not Effective	
Count	3
Col %	14.3%
Somewhat	
Count	3
Col %	14.3%
Effective	

(continued)

Table XVIII-28. Effectiveness of Oil Spill Responses, Chignik Lake

	STUDY YEAR 1991
Count	10
Col %	47.6%
EFFECTIVENESS EVOS: ALYESKA PIPELINE	
Do Not Know	
Count	13
Col %	65.0%
Not Effective	
Count	4
Col %	20.0%
Somewhat	
Count	2
Col %	10.0%
Effective	
Count	1
Col %	5.0%

Table XVIII-29. Subsistence Food Safety Information, Chignik Lake

	STUDY YEAR
	1991
ADEQUATELY INFORMED ABOUT FOOD SAFETY?	
Do Not Know	
Count	2
Col %	9.1%
No	
Count	4
Col %	18.2%
Somewhat	
Count	3
Col %	13.6%
Yes	
Count	13
Col %	59.1%
WHY NOT ADEQUATELY INFORMED	
No Response	
Count	3
Col %	37.5%
Do Not Know	
Count	1
Col %	12.5%
Lack of clear or definitive advice	
Count	3
Col %	37.5%
Received incomplete information	
Count	2
Col %	25.0%
Received no information	
Count	1
Col %	12.5%
Untimely	
Count	1
Col %	12.5%

Table XVIII-30. OCS Development Effects, Chignik Lake

	STUDY YEAR
	1991
OCS EFFECT: FISH	
Do Not Know	
Count	4
Col %	18.2%
Decrease	
Count	14
Col %	63.6%
No Change	
Count	4
Col %	18.2%
OCS EFFECT: SHELLFISH	
Do Not Know	
Count	4
Col %	18.2%
Decrease	
Count	13
Col %	59.1%
No Change	
Count	5
Col %	22.7%
OCS EFFECT: MARINE MAMMALS	
Do Not Know	
Count	4
Col %	18.2%
Decrease	
Count	14
Col %	63.6%
No Change	
Count	4
Col %	18.2%
OCS EFFECT: LAND MAMMALS	
Do Not Know	
Count	7
Col %	31.8%
Decrease	

(continued)

Table XVIII-30. OCS Development Effects, Chignik Lake

	STUDY YEAR
	1991
Count	7
Col %	31.8%
No Change	
Count	8
Col %	36.4%
OCS EFFECT: BIRDS	
Do Not Know	
Count	1
Col %	4.5%
Decrease	
Count	15
Col %	68.2%
No Change	
Count	5
Col %	22.7%
Increase	
Count	1
Col %	4.5%
OCS DEVELOPMENT = MORE JOBS?	
Do Not Know	
Count	1
Col %	4.5%
No	
Count	8
Col %	36.4%
Yes	
Count	13
Col %	59.1%
CONTAIN AND CLEANUP SMALL OIL SPILL	
Do Not Know	
Count	3
Col %	13.6%
No	
Count	11
Col %	50.0%

(continued)

Table XVIII-30. OCS Development Effects, Chignik Lake

	STUDY YEAR
	1991
Maybe	
Count	5
Col %	22.7%
Yes	
Count	3
Col %	13.6%
CONTAIN AND CLEANUP LARGE OIL SPILL	
Do Not Know	
Count	4
Col %	18.2%
No	
Count	14
Col %	63.6%
Maybe	
Count	2
Col %	9.1%
Yes	
Count	2
Col %	9.1%

CHAPTER XIX: KOTZEBUE

by

James Magdanz, Susan Georgette, and Jimmie Evak

COMMUNITY OVERVIEW

Kotzebue is located 26 miles north of the Arctic Circle on the eastern shore of Kotzebue Sound in northwest Alaska. In 1990, the community served as a regional service and distribution center for the Northwest Arctic Borough, an area of 43,298 square miles with a total population of 6,113. Approximately 45 percent of the borough's population resided in Kotzebue, while 55 percent resided in 10 smaller outlying communities. Despite its size, in 1990 Kotzebue remained a predominantly Iñupiat community, with 75.1 percent of its 1990 population Alaska Native according to the U.S. Census.

Occupancy of the present Kotzebue site (in Iñupiaq, *Qikiqtagruk*) has been documented as early as about 600 years ago, but quite likely occurred much earlier. Human occupancy of northwest Alaska has been documented for approximately 10,000 years and the archeological record is incomplete, because during the past 20,000 years the sea level has changed. Coastal sites from as recently as 2,500 years ago may now be submerged and inaccessible. Available evidence suggests that the earliest occupants were full-time hunters of land animals such as caribou (but sea level changes may account for a lack of evidence of marine mammal use in the earlier cultures). Beginning about 5,000 years ago, evidence appears of small marine mammal hunting and of at least seasonal occupancy of the coast. Evidence of the occupation of the Kotzebue Sound area spans at least the past 4,000 years, with ancestral Eskimo cultures evident throughout the past 2,500 years. Between 1,500 and 1,000 years ago, the culture and hunting technology changed dramatically and gave rise to the Northern Maritime Tradition, which in this area included Birnirk, Western Thule, and Kotzebue cultures. This sequence of cultures evolved into the historic culture which greeted European explorers in the eighteenth century, and whose members referred to themselves as Iñupiat or Iñuit. Much more is known about Iñupiat than about earlier cultures, including details of social organization, territoriality, ceremony, and warfare.

Traditional Iñupiat societies were comprised of large, bilaterally extended families living in one or more settlements, and were socially, territorially, and culturally distinct. Eleven Iñupiat societies occupied the area now identified as the Northwest Arctic Borough, including the *Qikiqtagrunmiit*, or Kotzebue people. These societies occupied discrete territories with distinct boundaries, which were vigorously defended. Settlement patterns were related to the local availability of natural resources. Before 1900, most of the Iñupiat of northwest Alaska lived widely scattered across the land in small settlements of 30 to 60 people. The largest settlements included several hundred people and were located at a few unusually productive locations along the coast where sea mammal migrations were

easily accessed. Wales and Point Hope were examples of large traditional settlements. The exact size of *Qikiqtagruk* in traditional times is unknown, but it was among the larger communities. The Kotzebue society has been estimated to include about 375 people in 1840; most but not all of that number wintered just south of the present Kotzebue town site. The relatively large population was supported by a rich local environment that included the lower Noatak River, the protected waters of Hotham Inlet, the coastal lagoons between Sisualik and Cape Krusenstern, and the open ocean of the eastern Chukchi Sea. To a degree unusual in northwest Alaska, traditional residents of Kotzebue had relatively easy and dependable access to inland forested riverine environments, coastal Arctic tundra environments, and marine sea ice environments.

Kotzebue's location was also conducive to trade, as it was near the mouths of three major rivers -- the Noatak, Kobuk, and Selawik -- which provided access to the interior. Kotzebue people were hosts to the largest seasonal gathering of Iñupiat in northwest Alaska during an annual trading fair at *Sisualik*, about ten miles northwest of the present community of Kotzebue. In the early nineteenth century, this fair attracted as many as 2,000 people. The fair lasted several weeks, attendance peaked in mid-July, and traders traveled from as far away as Point Hope, Wales, and the Asiatic mainland. Virtually all commodities and technologies used in traditional life could be obtained at the fair. Tobacco, metal, and firearms reached *Sisualik* through trade routes from Russian before Europeans arrived in the region.

A great famine in 1882-84 decimated the Kotzebue society. Other factors, including European diseases introduced by explorers, whalers, traders, miners, and missionaries, eroded traditional societies. In 1898, more than 1,000 prospectors poured into Kotzebue on their way to inland gold fields, particularly along the Kobuk River. Most left the region the following summer after the discovery of gold in Nome. The first mission in the region was established in Kotzebue by the Religious Society of Friends in 1897, and Kotzebue became the focus of additional missionary activity in the surrounding villages. The missions and associated schools encouraged consolidation of the scattered population. By 1910, the traditional Iñupiat societies had been overwhelmed by European and American influences. The average community size increased while the number of communities decreased. During this period of change and consolidation, several different communities might have emerged as the regional center. Shungnak was the largest community in the region in 1910; Noorvik was the largest in 1920. Noatak, Selawik, and Kotzebue were of similar size in 1930, all having populations of 200 to 300 people. But following World War II, Kotzebue gradually evolved into the dominant regional center, at least in part because of a continually developing transportation infrastructure that facilitated trade and commerce. Several barge companies based in Kotzebue lightered supplies to the various outlying communities. The Air Force established a radar station just south of Kotzebue in the 1960s, providing employment and further improving the airport. Many government agencies chose Kotzebue as the location for their regional offices. Kotzebue's population more than doubled between 1950 and 1960, and continued to outpace the growth of other communities in the region through the 1980s. Much of this growth was due to in-

migration from surrounding communities, whose residents were attracted to Kotzebue by wage employment, proximity to the hospital and schools, and modern amenities like sewer and water.

As a regional center, Kotzebue offered many goods and services not available in the smaller, outlying communities. These included a bank, hotel, barge company, jet airport, community college, hospital, dental clinic, vocational school, senior citizen center, police and fire protection, and variety of retail stores. Nonetheless, Kotzebue offered far fewer goods and services than urban centers such as Fairbanks and Anchorage. In the 1990s, government dominated Kotzebue's economy and employment opportunities. Kotzebue's private sector was limited, although tourism was increasing, commercial fishing contributed significantly to the local economy in some years, and the opening of the Red Dog mine near Kotzebue in the late 1980s provided a new source of private sector jobs. A 1986 Division of Subsistence survey found that 69.4 percent of Kotzebue households had at least one person employed by the government. Local government, primarily the Northwest Arctic Borough School District and the City of Kotzebue, accounted for most of these jobs. Other significant employment categories in Kotzebue included services (27.3 percent of households) and trade (16.5 percent of households). The commercial salmon fishery provided employment to 14.1 percent of households in 1986.

Most Iñupiat families in Kotzebue continued to rely on wild foods for a major portion of their diet. In 1987, the Division of Subsistence surveyed 90 Kotzebue households to estimate wild food harvests for 1986. The estimated total community harvest exceeded one million pounds of edible wild food, the equivalent of 1,395 pounds per household and 398 pounds per capita. This was the highest per capita harvest yet documented for a community in Alaska with more than 2,500 people. Substantial differences in harvest quantities existed between Native and non-Native households in 1986. For Native households, the mean per capita harvests of fish, birds, and berries were almost three times greater than in non-Native households, the mean per capita harvest of big game five times greater, and the mean per capita harvest of marine mammals 200 times greater. Overall, Native households' mean harvest of edible wild resources was 518.1 pounds per capita, compared with the non-Native households' mean harvest of 112.2 pounds per capita. The wild food harvests reported by Kotzebue's Native households in 1986 were similar in magnitude to those reported for smaller communities in Northwest Alaska.

In 1966 the Northwest Alaska Native Association (NANA) was organized to represent regional interests during the land claims settlement with Congress. After the passage of the Alaska Native Claims Settlement Act (ANCSA) in 1971, many NANA leaders joined the newly created NANA Regional Corporation, headquartered in Kotzebue. Ten of the eleven new ANCSA village corporations in the region merged with NANA, fostering a new regional identity and unity. Unlike shareholders in the smaller village corporations, the shareholders of the Kotzebue village corporation, Kikiktagruk Iñupiat Corporation (KIC), chose not to merge with NANA. Thus they remained shareholders in both NANA and KIC. Relationships between the two corporations appeared cordial; a merger occasionally has been discussed. Regardless of which community they called home, NANA shareholders began referring to

themselves as residents of the NANA region, and NANA assumed political and social responsibilities quite outside the usual corporate realm. In some ways NANA came to resemble a traditional Iñupiat society, albeit in a very different social, economic, and political environment. For example, NANA has represented the region in political forums ranging from local councils to the U.S. Congress, it supported employees who serve in public functions like the regional school board, and, it patrolled Native lands to prevent trespass by non-shareholders during hunting season.

The dominating presence of government agencies, on the one hand, and Native corporations, on the other, created a different economic atmosphere in Kotzebue than that in more economically diverse communities in south central Alaska. Relatively high government wages increased the expectations of the labor force, forcing private employers to pay more for labor. Agencies and Native corporations managed large blocks of housing stock, both single family and multi-family residences. One of the two major general stores, Hanson's Trading Company. was owned by a KIC subsidiary. The other, the Alaska Commercial Company, leased its building from KIC. NANA provided most of the tourism services, and owned the major hotel. NANA and KIC were eager to develop the region and provide jobs for shareholders, and possessed ample resources. Successful private businesses were likely to find themselves in competition with a Native Corporation, as have several tourism businesses. Transportation businesses were an exception, as the air taxis and the lighterage company were privately owned and neither NANA or KIC have ventured into the sector.

Much has changed in Kotzebue and the Northwest Arctic Borough since the first European explorers arrived in the early nineteenth century. Most evident have been changes in material culture, such as tools, dwellings, transportation technologies, and clothing. Also obvious are the enormous changes in other aspects of the local economy, which was once capitalized entirely by local families and is now capitalized by government, Native corporations, and a handful of other concerns. Arguably most important, however, have been changes in land status and political power. During the late nineteenth and throughout the twentieth century, control of lands and resources was slowly wrested from the indigenous inhabitants and vested in the state and federal governments or transferred to private individuals and companies. Material living standards have increased, but individual and regional autonomy have decreased. Throughout the twentieth century, Iñupiat have been working to regain a measure of the autonomy they traditionally enjoyed, with mixed results. In the Kotzebue Sound area in recent years, Iñupiat have reassumed responsibility for local and regional governments, for education, for health care, and for many social services. Iñupiat also have played an increasing role in natural resource management. But the state and federal governments have been especially reluctant to share meaningful responsibility for natural resource management. With the exception of a few narrow and carefully constructed cooperative agreements for wildlife management, Iñupiat have had only advisory roles in managing natural resources on their traditional lands. They do not manage the fish and wildlife on which their traditional way of life depends, nor do they manage access to and use of the public lands

and waters that comprise the majority of the region, nor do they manage the development of non-renewable resources like oil and gas. This continues to be a source of considerable frustration for Iñupiat leaders.

It is useful to consider, in general terms, environmental, social, and economic conditions before and after the *Exxon Valdez* oil spill that might not be apparent from the survey results later in this chapter. The Kotzebue Sound marine environment was not directly affected by the *Exxon Valdez* oil spill, as Kotzebue is 600 miles north and west of Valdez. The expected impact of the spill in Kotzebue would have been marginally increased employment opportunities. An Anchorage-based NANA subsidiary, Purcell Security, provided security services during the oil spill clean-up. Some NANA shareholders were hired by Purcell to work on spill-related activities. None of the environmental, social, and economic changes that occurred in Kotzebue during the period between 1986 and 1991 could compare with the magnitude of the changes that were occurring in communities which used marine environments that were directly contaminated by oil from the *Exxon Valdez*.

With a few exceptions, the natural environment surrounding Kotzebue has been little altered by industrial activities. The region is not connected by road or railroad to any other region of Alaska; access is by boat, by snow machine, by dog team, or by air. There are only two small commercial fisheries in the region, a salmon fishery and a winter sheefish fishery, both in Kotzebue Sound. The commercial salmon fishery and salmon markets were depressed in 1986 and continued to be depressed through 1991, resulting in lower than normal harvests and even lower incomes for fishing permit holders.

Dall sheep populations in the Baird and DeLong Mountains declined unexpectedly in 1989 and continued at low levels through 1994. This resulted in reductions in sheep seasons in some areas and total closures of sheep hunting in other areas. The caribou population increased during the period from 1986 to 1991, reaching the highest levels yet recorded. But caribou were readily available during a year-round season in 1986, so the increase in abundance may not have had much effect on harvests. Moose and brown bear populations were in decline in the middle Noatak River drainage during the period, but that decline was only just becoming apparent in 1991 and reductions in seasons and bag limits had not yet occurred in 1991.

The population of Kotzebue continued to grow, although slightly slower in the 1980s than in the previous two decades. Kotzebue construction activities appeared to continue at a normal pace, with some additional residential and commercial buildings added to the stock in the period. Housing prices remained stable.

The most significant economic development to occur in the region was at Red Dog, about 100 miles northwest of Kotzebue. In the period between the 1986 and 1991 harvest surveys, NANA and Cominco Inc. constructed and began operating a mine for lead and zinc. The State of Alaska constructed a road from Red Dog Mine to the Chukchi Sea coast about 50 miles northwest of Kotzebue. Ore from Red Dog Mine is trucked along the road to the coast, then shipped over water to smelters. The

opening of Red Dog Mine provided additional jobs for NANA shareholders and other residents of Kotzebue. A widely publicized water contamination incident in Red Dog Creek shortly after the mine went into production heightened public concerns about industrial development. By the following year, Cominco had contained the natural source of the contamination, and was treating the affected water.

FIELDWORK

The project goal was to interview 100 randomly selected households in Kotzebue. This goal was achieved. The 100 households represent a sample of 12.36 percent of Kotzebue's estimated total of 809 households (Table XIX-2). The interviews took place between April 6 and May 22, 1992.

Community Approval

Obtaining community approval required approximately four months in Kotzebue, longer than in other communities in this study. Although a majority of community leaders supported the project in concept, most were concerned that the proposed sampling method would over represent non-Native households and underestimate subsistence harvests. They noted that in 1986, residents of Native households reported a per capita harvest more than four times as large as that reported by residents of non-Native households. The 1986 survey had employed a stratified random sample. Community leaders and researchers agreed this method could provide more reliable results, but it was more expensive and time-consuming to implement. From January through April, 1992, Division of Subsistence staff attended a series of meetings with the Kotzebue IRA Council, the Kotzebue City Council, and the Northwest Arctic Borough Assembly to discuss the study and the sampling issue. Other local organizations deferred to the IRA Council, and the Council ultimately approved the project on April 3 under the condition that an ethnic based stratification be used in analysis, that year-round camp households in Kotzebue Sound be included in the Kotzebue household list, and that the IRA council have opportunities for review of the sampling process and the draft survey results. The prolonged approval process heightened community awareness of the project, especially because some of the community meetings were carried live on the local radio station. A small minority of community leaders were vocal opponents throughout the approval process.

Sampling

The sample for this community consisted of two separate random samples. The first random sample was a Social Indicators panel which already existed in Kotzebue; the original panel included 72

households, 53 were determined to be still valid for this project. Although the Social Indicators sample had been randomly drawn, it was approximately four years old in 1992. Of the remaining 53 valid households, 9 had moved away by 1992, 1 declined to be interviewed, and 11 were unavailable for other reasons. The final Social Indicators sample included 32 households from the original panel. As a result, the Social Indicators sample was biased toward less transient and more stable households.

The second random sample was drawn from a list of 847 households, of which 833 households comprised the contiguous community of Kotzebue and 14 were "camp" households located near Kotzebue and associated with Kotzebue but outside the city limits. Virtually all households within the city had electrical service, so researchers used a customer list provided by the local electric utility to assemble the Kotzebue household list. The list was edited to remove business listings, and compared with the 1986 survey list to further edit and identify occupied households. Camp households were added to the master list only if the camp residents did not maintain a household in Kotzebue. Kotzebue households which maintained seasonal camps were sampled as part of the utility-based list. Once the list was final, each household was assigned a number and computer-aided random samples were drawn. Each household was contacted in the order in which it arose in the random sample. Of the second random sample, 36 households refused to participate, 38 households were not available for one reason or another, and five were new to Kotzebue. When the sample was filled, researchers had contacted almost 200 households to obtain the necessary sample.

The sampling problems were the result of several factors. The protracted community approval process resulted in a late start to field work. In April and May, residents of Kotzebue were ice fishing, whaling, traveling, or (in some cases) in the process of moving to camp. Researchers made three separate attempts to contact each household in the sample (not counting telephone calls); after three failed attempts researchers dropped the subject household and moved on to the next household on the list. This biased the sample toward households which were less active hunters, fishers, and gatherers. However, a few households known to be high harvesters or community leaders were pursued more diligently than this (as a result of inadequate staff training in procedures). This biased the sample toward more active hunters, fishers, and gatherers. The protracted community approval process, which highlighted weaknesses in sampling methods and risks of participation, may be partially responsible for a higher-than-expected rate of refusals. Also, at the same time the field work for this project was being conducted an unrelated National Science Foundation (NSF) study was being conducted in Kotzebue. The instrument in that study included some personal and possibly offensive questions about sexual behavior. There may have been some confusion by respondents about which survey they were being asked to participate in.

Confidentiality was also an issue among field workers and respondents. Respondents were paid $25 for their time. Payment was by check and to receive payment, respondents had to complete a form with their name and address and sign a statement informing them that they might be contacted later.

Four or five respondents refused to accept payment to protect their confidentiality. Finally, under reporting and over reporting of harvests was believed to have occurred in a few instances for Dall sheep. When harvests appeared to be in excess of legal limits, one field worker (who did not trust that confidentiality would be honored) was found to be recording the legal limit rather than the reported harvest. Some respondents likewise may have reported legal rather than actual harvests. Researchers also suspect that one respondent, who was aware of the political ramifications of high subsistence harvests, may have inflated his actual harvests when he responded to the survey.

In the end, the cumulative effect of the sampling, confidentiality, and harvest reporting problems was unknown. A bias in the Social Indicators sample toward higher harvesting households may have been countered by a bias in the other sample toward lower harvesting households. A few deflated harvest reports may have been balanced by a few inflated harvest reports. The high political profile of this project during the community approval phase aggravated some of these problems and, while unavoidable and even appropriate, was statistically unfortunate. But researchers had no reason to believe the majority of the respondents were not truthful and complete in their responses.

DEMOGRAPHY

According to the federal census, Kotzebue had a population 2,751 people in 1990. For 1991, the population estimate based on household survey results was 3,648.59 people in 809 households (Table XIX-2). Of the total population, 53.35 percent were identified as male and 46.65 percent as female (Fig. XIX-2, Table XIX-2). Alaska Natives made up 86.00 percent of the population of Kotzebue, according to survey results, compared with 75.1 percent, according to the 1990 Census. The higher population and the higher proportion of Native residents estimated by the survey might be explained by a combination of factors. First, real population growth would be expected, perhaps on the order of the 1.5 percent growth annually that occurred from 1980 to 1990, but not the 33 percent suggested by the survey results. Second, the 1990 census may have undercounted Kotzebue. Third, and probably most significant, the Social Indicators sample selected for four-year-plus residents and longer-term residents are more likely to be Native and to live in larger households. The actual population was probably about 3,000; in 1994 the City of Kotzebue estimated the population to be 2,952.

MONETARY ECONOMY

Kotzebue's monetary economy is founded primarily in the provision of public and private services to the community and the region. Compared with the smaller surrounding communities, Kotzebue exhibited higher rates of employment and higher mean incomes, which is consistent with its

role as a regional center. As shown in Table XIX-4, 73.06 percent of adults in the sampled households (persons age 16 years or older) held some form of cash employment in 1991. Slightly more than half of the employed adults, however, held seasonal jobs. This was a function both of the inherent seasonality of available employment such as construction and commercial fishing, and of the desire of many Kotzebue adults to have jobs which allowed ample time for hunting, fishing, and gathering. The average number of months employed for these employed adults was 8.63 months. Of all adults with employment, 45.81 percent were employed year-round. Figure XIX-3 illustrates employment by industry in Kotzebue in 1991. The largest percentage of jobs were in services (20 percent), followed by education (16 percent), commercial fishing (13 percent), and retail trade (10 percent). Except for commercial fishing, these data reflect Kotzebue's role as a regional center of services and trade.

The estimated per capita income for Kotzebue in 1991 was $12,685.95 (Table XIX-5). Of this, $11,087.57 derived from jobs and the remainder ($1,598.38) derived from other sources such as the Alaska Permanent Fund Dividend, pensions, and social security (Table XIX-6). The top source of cash income was jobs with the federal, state, and local governments, including jobs with the schools. Education jobs led all others with a per capita income of $3,480.08. Jobs with service industries were second with $1,806.02 per person, followed by finance, insurance, and real estate (which includes Native corporations), with $1,364.77 per person on average.

The commercial fisheries' contributions to personal income was small. Although commercial fishing provided 14 percent of the employment, it provided barely 1 percent of the earned income reported. This partly reflects the depressed nature of the salmon fishery during the study period, and partly the small sizes of both the salmon and the sheefish commercial fisheries. Compared with commercial fisheries elsewhere in Alaska, the Kotzebue commercial fisheries were minimally capitalized and marginally profitable. The salmon fishery was a set gill net fishery targeting chum. Fish were flown in the round to Anchorage for processing and sale to non-local markets. Annual catches ranged from 100,000 to 600,000 salmon, with recent catches at the lower end of the range. Recent ex-vessel prices have been about 25 cents per pound. Entry to the fishery was limited in 1976 to 219 permit holders; approximately 70 percent were residents of Kotzebue while 20 percent resided in other communities in the Northwest Arctic Borough. Median values for a Kotzebue Sound salmon limited entry permits ranged from $7,750 to $14,500 between 1980 and 1986; recent values were at the low end of that range. In addition to a permit, participation in the commercial salmon fishery required at a minimum a skiff, an outboard motor, and a net. It was possible to participate in the Kotzebue salmon fishery with a total capital investment of $20,000, and to be well equipped for less than $50,000 including the permit. This assumed that fishing equipment was not used for other purposes, but in most cases permit holders used their boats for subsistence fishing, hunting, and gathering and for basic transportation, as well as for commercial fishing. In 1991, 142 permit holders caught 239,923 chum salmon worth $427,948, for an average revenue per permit holder of $3,084. From inception in 1962 through 1986, annual gross

revenue per permit holder averaged $4,376. The commercial sheefish fishery was even smaller by an order of magnitude. This gill net fishery occurred in the winter under the ice. The market was local and the product was sold in the round. Total catch was limited by a quota to 25,000 pounds, but averaged about 12,000 pounds annually. Entry was not limited, and an average of seven fishermen participated each year. Capital investment required was a few thousand dollars at most, as participation required only a snow machine and sled or a dog team, and a net. Recent ex-vessel prices per pound for sheefish in Kotzebue have been 50 to 75 cents. In 1991, five fishermen reported catching 852 sheefish worth $4,112, for an average revenue per permit holder of $822. In short, although the Kotzebue Sound commercial fisheries were managed as commercial fisheries, they resembled what elsewhere in the world often has been called "subsistence" fisheries.

On average, Kotzebue households estimated that they spent $711 per month on food purchases. This was the second highest mean of the 16 study communities, exceeded only by Karluk ($815 per month). The median monthly expenditure on food in Kotzebue was $600 per household. This represents 12.6 percent of the total household income in the community in 1991. Purchased food is approximately 55 percent more expensive in Kotzebue than in Anchorage, according to surveys conducted by the University of Alaska Cooperative Extension Service.

Households in Kotzebue were well equipped for harvesting wild foods. The sample of 100 households reported owning 59 hunting or fishing camps, 42 skiffs with outboards, 75 snowmobiles, 243 guns, and a variety of other harvesting equipment (Table XIX-7). Respondents estimated the replacement cost of their equipment to be, on average, $16,785.23 per household. However, this almost certainly was a gross understatement. The mean replacement value reported for fishing and hunting camps was to be only $203.95. The typical camp near Kotzebue is a Native allotment of 80 or 160 acres; many families own several such allotments. Most camps were acquired through federal land programs rather than purchased, and few are ever sold. Respondents either misunderstood the meaning of "replacement value" or had no idea what their camps were worth. The true replacement value of a remote hunting or fishing camp in northwest Alaska was probably a minimum of $40,000 and ranged upwards to several hundred thousand dollars. Recent remote land sales in the region have ranged from $40,000 (5 acres with river access) to $90,000 (5 acres with river access and two small dwellings). A particularly well situated 80-acre Native allotment in the Noatak Valley was on the market in the late 1980s for more than $1 million, and reportedly had a willing buyer for about $500,000.

Households also spent on average $175.46 on fuel in 1991 and $470.70 on supplies and maintenance of this equipment. On average, respondents estimated that about 35.04 percent of the value of this equipment and these supplies was for subsistence activities.

RESOURCE HARVEST AND USE

In 1991, the estimated harvest of wild resources for home use in Kotzebue averaged 2,673.71 pounds usable weight per household and 592.84 pounds per person (Table XIX-13). This was the highest per capita harvest of the 16 communities included in the first year of the project. The average household in Kotzebue used 14.99 kinds of wild resources in 1991, attempted to harvest 9.52 kinds, harvested 8.95 kinds, received 8.64 kinds, and gave away 6.22 kinds (Table XIX-8). Overall, 99 percent of the sampled households used wild resources, 97 percent attempted to harvest them, 95 percent were successful harvesters, 94 percent received wild resources, and 84 percent gave them away.

Thirty five percent of the interviewed Kotzebue households estimated that between one and 25 percent of their annual use of fish, meat, and poultry was from wild foods. Also, 25 percent placed this estimate at between 26 percent to 50 percent, 17 percent said 51 percent to 75 percent, and 16 percent said between 76 and 99 percent. There was one household that used no wild foods and three (3 percent) who said that all their meat, fish, and poultry derived from wild resource harvests.

According to survey findings, a large percentage of Kotzebue's population engages in subsistence activities. As shown in Table XIX-9, 74.28 percent of the people in the surveyed households participated in at least one subsistence harvest activity in 1991 and 69.84 percent processed wild resources. Also, 37.92 percent hunted, 52.33 percent fished, 2.66 percent trapped, and 61.20 percent gathered wild plants.

Kotzebue households were engaged in resource exchanges with a long list of other communities (Table XIX-10). The list includes at least 35 Alaska places, plus locations outside the state. Although the distribution and exchange of wild resources is complex, with a myriad of small transactions among many individuals and households involving many different resources, several patterns were evident. First, more households reported receiving (94 percent) than giving (85 percent) wild resources, both for all resources aggregated and for all but one aggregated resource category (the exception was birds and eggs). This is consistent with the super-household theory which predicts that 30 percent of the households in a community will harvest 70 percent of the wild resources (and distribute those surplus to their immediate needs). Second, Kotzebue respondents generally received resources from and gave resources to the same communities. Aside from Kotzebue itself, which was named most often for both receiving and giving, eight of the other top ten communities named most often as the source of wild resources received by Kotzebue households were also among the top ten communities named as the destination of wild resources given away by Kotzebue households. These eight communities included: Point Hope, Noatak, Nome, Noorvik, Kiana, Selawik, Barrow, and Kivalina. These are all Iñupiat communities, likely to include relatives and friends of Kotzebue residents. Some also were sources of especially valued Iñupiat foods (Point Hope and Barrow for bowhead whale, and Kivalina for bowhead whale and Dolly Varden). Note that for purely statistical reasons, larger communities are more likely to

appear on this list than smaller communities. Third, the two communities often named for giving resources to but rarely named for receiving resources from were Anchorage (given to by 28 percent) and Fairbanks (7 percent). The responses reflect the common practice of Kotzebue families giving wild resources to family and friends who have moved from Kotzebue to urban centers. Fourth, the data offer evidence that wild resources tend to move from smaller to larger communities somewhat more frequently than the reverse. When communities that received resources are ordered and grouped by size, larger communities were named less often as sources of received wild resources than the smaller communities, and more often as recipients of given wild resources than the smaller communities. In general, the community sharing data suggest a high level of resource exchange activity, bi-directional among a specific group of communities, and smaller communities were more likely to provide wild resources to Kotzebue while larger communities were more likely to receive goods from Kotzebue.

The wild resources exchanged included some harvested by many Kotzebue households in substantial quantities, like chum salmon and caribou, as well as some harvested less often or not at all in Kotzebue, like bowhead whale. Chum salmon were received by 63 percent of the households, followed by caribou (62 percent), bowhead whale (61 percent), Dolly Varden (56 percent), berries (54 percent), belukha whale (52 percent) and sheefish (50 percent). Caribou were given away by 59 percent of the households, followed by berries (48 percent), sheefish (47 percent), saffron cod (42 percent), and chum salmon (40 percent). Resource exchange was not simply a mechanism to obtain resources that were locally scarce, because seven of the top ten resources received also were among the top ten resources given away: chum salmon, caribou, Dolly Varden, berries, sheefish, moose, and bearded seal. An intra-community redistribution of major local wild resources obviously was occurring.

Figure XIX-5 depicts the composition of Kotzebue's harvest by resource category. Land mammals ranked first, at 177.46 pounds per person and 30.1 percent of the total harvest. By far, caribou made up the largest portion of the game harvest (140.98 pounds), with moose second (34.59 pounds) (Table XIX-13). Fish other than salmon represented 27.1 percent of the total harvest, with a take of 162.57 pounds per person. Sheefish, at 116.93 pounds per person, was the fish with the largest harvest. An estimated 51,818.9 pounds of fish other than salmon were removed from commercial catches for home use in Kotzebue, about 8.74 percent of the total harvest of this resource category (Table XIX-14). Most of these fish were harvested using subsistence nets (65.19 percent), with 22.26 percent taken through the ice, and 3.81 percent caught with rod and reel gear in open water (Table XIX-19). Overall, 83.0 percent of the sampled households harvested fish other than salmon. Of the total sample, 69.0 percent of the households harvested fish by ice fishing, 47.0 percent used other subsistence methods, 43.0 percent used rod and reel, and 3.0 percent removed fish from commercial catches (Table XIX-20).

With 26.8 percent of the total harvest and 157.71 pounds per person, marine mammals were the third-largest category in Kotzebue's 1991 subsistence harvest (Table XIX-13, Figure XIX-5). Bearded

seal (adult and juvenile combined) were harvested in the largest quantities, with 126.04 pounds per person. Salmon ranked fourth as a resource category, at 12.7 percent of the harvest and 75.15 pounds per person (Table XIX-12, Table XIX-13). Almost all of this harvest was chum salmon (73.1 pounds per person). Most of the salmon harvest was taken with subsistence methods (70.7 percent), followed by removal from commercial catches (27.1 percent) and rod and reel (2.2 percent) (Table XIX-15). As shown in Table XIX-17, 39.0 percent of the sampled Kotzebue households harvested salmon with subsistence gear, 20.0 percent removed salmon from commercial catches, and 12.0 percent harvested salmon with rod and reel. The most common methods used for preserving salmon harvests in Kotzebue were freezing (73 percent of all households used this method), drying (34 percent), smoking (15 percent), and salting (9.0 percent).

Other resource categories which contributed to Kotzebue's harvest in 1991 included wild plants, with 16.23 pounds per person and 2.7 percent of the total harvest. Also, birds and eggs contributed 3.52 pounds per person and about one percent (0.6 percent) of the total harvest. Finally, a small amount of marine invertebrates (clams, crab, shrimp, and mussels) were harvested for about 0.1 pounds per person and less than one percent of the total harvest. A substantial percentage (44 percent) of Kotzebue households used wild plants for medicinal purposes. The most widely used plant was "stinkweed" (*Artemisia* sp.), for a variety of ailments, including colds, coughs, infections, diaper rash, sore muscles, and indigestion.

Ten interviewed households (10.0 percent) in Kotzebue discarded wild foods in 1991 because of perceived abnormalities. Nine of these cases involved game and one involved salmon. For the most part, respondents offered no explanation for these abnormalities, although one cited disease as the cause and another blamed improper handling of the game. In eight out of the ten case, respondents had been familiar with the observed abnormal condition prior to 1989 (the year of the *Exxon Valdez* oil spill).

COMPARISON WITH EARLIER FINDINGS

The Division of Subsistence conducted a household harvest survey in Kotzebue with 90 randomly selected households in early 1987, pertaining to 1986, the results of which can be compared with the 1991 findings (Georgette and Loon 1993; Scott et al. 1993). First, both surveys found very high levels of participation in the use and harvest of subsistence resources in Kotzebue. Second, in both years, subsistence harvest levels in the community were substantial. The estimated harvest for 1986 was 1,395 pounds per household and 398.1 pounds per person. The 1991 estimate was higher, at 2,674 pounds per household and 592.8 pounds per person. Substantial increases in per capita harvest levels were documented for three resource categories (Fig. XIX-4). Harvests of land mammals increased from 113.1 pounds per person in 1986 to 177.5 pounds in 1991. Marine mammal harvests rose from 109.3

pounds per person in 1986 to 157.7 pounds in 1991. The largest increase was recorded for fish other than salmon, which rose from 88.2 pounds in 1986 to 162.6 pounds in 1991. On the other hand, estimated harvests of salmon were virtually identical in both years, 73.1 pounds per person in 1986 and 75.2 pounds in 1991. Also, harvests of marine invertebrates at Kotzebue were about the same in both years (0.1 pounds per person), while harvests of wild plants rose from 7.7 pounds per person in 1986 to 16.2 pounds in 1991 and harvests of birds declined from 6.5 pounds in 1986 to 3.5 pounds in 1991. In terms of overall harvest composition and relative ranking of resource categories, the only notable difference between the two years was the larger relative contribution of fish other than salmon in 1991 compared to 1986. In the earlier year, fish other than salmon ranked third in overall harvest after land mammals and marine mammals, while in 1991, these fish ranked second, with a slightly higher harvest than marine mammals, which ranked third. Other than this, the general composition of Kotzebue's subsistence harvests in 1986 and 1991, at both the species and category levels, were similar to each other.

The differences in total harvests between 1986 and 1991 are within the range of variation, and could be considered, statistically speaking, nearly equivalent. Because of the social indicators panel (see discussion in Research Methods, above), the 1991 sample included more long-term households than the 1986 sample. This would be expected to increase overall harvest estimates. One 1991 household, in particular, reported extremely large harvests of a number of species, and accounted for 18 percent of the total sample household harvest. Highly productive households have been described for other communities in Alaska. A random sample that included one or more highly productive households will necessarily produce higher estimates than one that does not. The 1986 sample included high harvest households, but none with harvests as large as this particular household in 1991.

Variation in individual species' harvests has been typical of other subsistence harvest estimates in northwest Alaska. In Kivalina, Burch and this project have shown that species-by-species variation in harvest from year to year is the norm for that subsistence economy (Burch 1985, and Chapter XX this volume). In the normal seasonal round, abundant harvests of one species may influence subsequent efforts to harvest other species. In Kivalina, a substantial fall harvest of Dolly Varden seems to presage a diminished harvest of early winter caribou. In other words, the differences between 1986 and 1991 probably illustrate the normal variation from year to year in subsistence harvests.

Interviewed Kotzebue households also provided assessments of how their uses of wild resources in 1991 compared to the previous year and to 1988, the year before the *Exxon Valdez* oil spill. The majority of households (58 percent) said that they believed their overall level of subsistence use had not changed much between 1990 and 1991; on the other hand, 24 percent said their uses had gone down compared to the year before and 18 percent said they had gone up. Compared to 1988, slightly fewer households (49 percent) reported stable levels of use, while a larger percentage (33 percent) said their uses had gone down and 18 said they had increased over 1988 levels. At the category level

assessments of change were quite similar across resource groups, with most households reporting stable levels of use in 1991 compared to the previous year. Most households also reported that their uses of each category were about the same as 1988; however, a larger percentage of households reported lower levels of use of such categories as salmon, other fish, and large game, in 1991 compared to 1988 than reported declines over the previous year.

SOCIAL EFFECTS RESPONSES

This section discusses the responses of Kotzebue residents to the social effects instrument, organized in six topics. These include the use of wild foods, sharing practices, community activities, significance of place, organizations' responsiveness to community needs, and Outer Continental Shelf (OCS) development.

Responses to the social effects instrument reflected a high level of use and provide additional detail on wild foods consumption. The harvest survey documented a high level of use (99 percent of the households) and harvesting (96 percent were successful harvesters). On the social effects survey, 58.6 percent of the Kotzebue respondents reported eating wild foods on the day before survey administration, and 51 percent of the respondents reported that wild foods were a main (large) part of that day's meal (Table XIX-21). In other words, wild foods were the main part of the meal for about 85 percent of the respondents who ate wild foods on the day before the survey. This finding is consistent with the harvest survey results. Caribou, sheefish, bearded seal, salmon, and moose -- in that order -- accounted for the largest resource harvests. Such wild foods were likely to be the main portion of a meal. It is also consistent with local researchers' observations that wild foods usually were the "main dish" and store foods were "side dishes" in meals observed in the community. When asked who harvested the wild food eaten yesterday, the most frequent response was that the respondent harvested it himself or herself (19.4 percent), followed by a relative in a different household (16.3 percent), and a friend in a different household (10.2 percent). Relatives in the same household (7.1 percent) and relatives in a different community (8.2 percent) accounted for most of the remainder.

Respondents were asked whether they thought clams or seals harvested in the Kotzebue area were safe for children to eat. In the case of clams, which were harvested by only 4 percent of the sampled households and comprised less than 400 pounds of the total community harvest, exactly half of the respondents thought clams were safe to eat (Table XIX-22). Most other respondents (42 percent) did not know, and a few (8 percent) said clams were not safe. The latter respondents believed clams were unsafe because clams looked bad (25 percent of the "unsafe" responses), clams had been polluted from a non-oil spill source (25 percent), respondents were uncertain of clams' safety (25 percent), or no response (25 percent). In the case of seals, which were used by 61.9 percent of the sampled

households, a substantial majority (91.1 percent) thought seals were safe to eat, while 3.8 percent did not know, and 1.3 percent said seals were not safe. The only reason cited for seals being unsafe was pollution from a non-oil source.

Respondents' assessments of recent trends in local fish and wildlife populations available for harvest indicate a general perception of stable wildlife availability, with a few exceptions. More than half of respondents believed that caribou, bear, ringed seal, bearded seal, sea duck, whitefish, and Arctic char availability was about the same in 1991 as in 1988 (Table XIX-23). Less than half the respondents believed that common murre, salmon, and clam availability was the same as in 1988. For salmon, 29.5 percent believed salmon were less available, while for common murre and clams 36.8 percent and 37.6 percent reported they did not know how availability might have changed. In the case of caribou and bear, 8 percent and 3.4 percent respectively, believed that availability had increased since 1988. Respondents' assessments of increasing caribou and decreasing salmon availability were consistent with Department of Fish and Game population assessments during the same period.

Approximately three out of four Kotzebue respondents reported no change in sharing practices, either from the previous year or from before the *Exxon Valdez* oil spill (EVOS). Sharing of wild resources was perceived to be the "same" as the previous year by 77.6 percent of the respondents, and the same as before EVOS by 82.1 percent (Table XIX-25). Sharing of hunting and fishing gear was perceived to be the same as the previous year by 83.0 percent, and the same as before EVOS by 81.6 percent. Sharing of money was perceived to be the same as the previous year by 73.3 percent, and the same as before EVOS by 77.5 percent. Sharing of labor was perceived to be the same as the previous year by 76.3 percent, and the same as before EVOS by 78.7 percent. The remainder of the respondents were more or less evenly divided among those who perceived sharing to be "less" and those who perceived sharing to be "more." This distribution of responses strongly suggested that sharing practices had remained constant in Kotzebue.

A similar constant pattern was evident in responses to questions about participation in community activities. In Kotzebue, 61.9 percent of the respondents reported that they "sometimes" attended public meetings in the previous year, while 64.6 percent reported they "sometimes" attended public meetings before EVOS (Table XIX-26). Those who "never" attended public meetings in the previous year comprised 23.2 percent of the sample, while before EVOS they comprised 26.8 percent. Those who "always" attended public meetings in the previous year comprised 11.1 percent, while before EVOS they comprised 10.3 percent. Thus participation in meetings evidenced little change. About three quarters of the sample (75.8 percent) reported belonging to a Native corporation. NANA Regional Corporation was named by 86.7 percent of the corporate members, and the Kotzebue village corporation was named by 73.3 percent. Several other corporations were represented in Kotzebue, most by a single member. Respondents reported a fairly high level of participation in elections, ranging from 64.6 percent in the last city election, to 71.7 percent the last state-wide election, to 75.3 percent in the last Native

village corporation election, to 85.3 percent in the last Native regional corporation election. In sum, participation in community activities appeared to be relatively high and constant during the years probed by the social effects questionnaire.

Eighty percent of the respondents said their view of a good leader had not changed since EVOS. Of the 14.7 percent whose view had changed, 75 percent offered no reason or did not know why their view had changed, 18.8 percent said they had become more aware or involved themselves, 18.8 percent said they were looking for more decisive leadership, and 12.5 percent said that leaders' lifestyle (e.g., sobriety) was more important to them than before. Respondents were asked to assess the influence of elders in their community during the past three years; 27.3 percent said elders' influence had stayed the same, while 31.3 percent responded "decreased" and 33.3 percent responded "increased."

Several questions probed respondents' attitudes about the significance of the place in which they lived, including reasons for moving to and remaining in Kotzebue, expectations for future residence there, degree of confidence in continued access to hunting, fishing, and gathering areas, and changes in satisfaction with the community post EVOS (Table XIX-27). Most respondents offered one of three reasons for moving or returning to Kotzebue; 35.4 percent said Kotzebue was where they were from, 29.3 percent cited job opportunities, and 11.1 percent said relatives lived here. Other reasons for moving or returning to Kotzebue cited by more than one respondent included marriage, cultural reasons, quality of life, and family. A subsequent question provided a list of reasons for living in Kotzebue and asked respondents whether each reason was a factor in their decision to live in Kotzebue. The most common response, by 74.7 percent of the respondents, was job opportunities, followed by friends (70.7 percent), hunting and fishing opportunities (70.7 percent), and personal freedom (70.7). More than half the respondents named seven additional reasons, including community size, recreational activities, relatives, educational opportunities, stores, scenery, and medical services. Thus, no single factor predominated. Respondents then were asked for the "most important reason why you remain" in Kotzebue. The responses to this question generally were consistent with the earlier responses; 23.2 percent cited jobs, and 18.2 percent said Kotzebue was where they were from. Interestingly, although hunting and fishing opportunities were cited by 70.7 percent as a reason for living in Kotzebue, they were cited by only 9.1 percent as the "most important" reason for remaining in Kotzebue. One explanation for this might be that while hunting and fishing opportunities are available in Kotzebue, opportunities in smaller nearby communities are in many ways greater. People may remain in Kotzebue for reasons of jobs, friends, and family, even though they know hunting and fishing opportunities could be greater elsewhere in the region. More over, 55.6 percent of the respondents said they would continue living in Kotzebue even if wild foods were not available in the area. But a majority believed that was unlikely; 70.1 percent were confident that they would be able to continue using places they now used for hunting, fishing, and gathering. Of the 23.7 percent who were not sure of continued access, the most common reason for possible loss of access, by far, was increased restrictions (54.2 percent), followed by

population pressure (20.8 percent), environmental damage (12.5 percent), increased development (8.3 percent), and Native ownership of lands (8.3 percent, presumably non-Native respondents). Although 42.4 percent of the respondents said they would move to another community if they could, 72.7 percent expected to be living in the region when they were old. Taken together, the responses suggest a population attracted to Kotzebue for many reasons, but especially for economic opportunities and interpersonal relationships. There was considerable confidence in the future, at least for wildlife harvesting, and an expectation of a life-long relationship with the region.

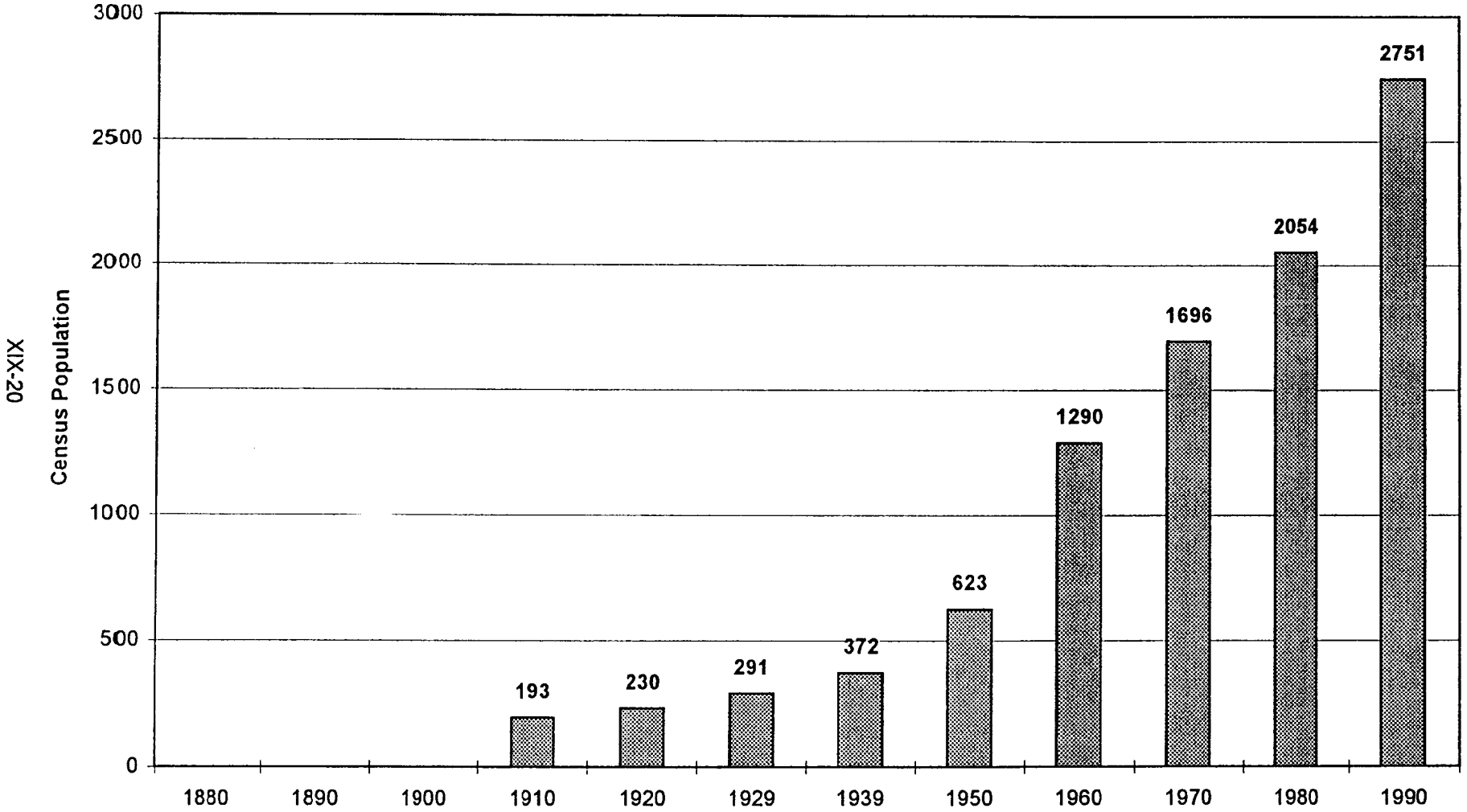
A series of questions explored the perceived effectiveness of a variety of organizations. When Kotzebue respondents were asked to assess effectiveness, by far the most common response was "don't know" (Table XIX-28). Because Kotzebue was far removed from the EVOS and no event of a similar magnitude had recently occurred in the region, Kotzebue residents have had less opportunity to observe organizations in action and thus had less information to measure effectiveness than residents of, for example, Prince William Sound communities. However, while on average 60 percent of the responses for each organization were "don't know," this was not true for Exxon. Only 29.5 percent of the respondents felt they did not know how effective Exxon had been. Exxon received the highest percentage of "not effective" responses (30.5 percent) and the highest percentage of "somewhat effective" responses (28.4 percent). It received an average percentage of "effective" responses (6.3 percent). All of which indicates that Exxon had the highest profile for respondents, and it was perceived as not effective. Other organizations with high profiles (i.e., relatively few "don't know" responses) included VECO and NANA Regional Corporation. The highest percentage of "effective" responses (28.0 percent) and second lowest percentage of "not effective responses (6.5 percent) were accorded to NANA Regional Corporation. Thus NANA was perceived as the most effective organization by a wide margin. VECO was perceived as somewhat more effective than average (13.7 percent "effective). Like VECO, the U.S. Coast Guard and the Alaska Department of Environmental Conservation received higher than average "effective" responses, 12.6 percent and 11.6 percent respectively. All other organizations were perceived as "effective" by fewer than 10 percent of the respondents.

A final series of questions on the social effects questionnaire dealt with the effects of OCS development on resource availability and on jobs, and with the ability of government and industry to clean up oil spills of two different magnitudes (Table XIX-30). Most Kotzebue respondents believed that the off-shore search for and development of oil and gas in the area would decrease the amount of wildlife available for harvest. Those who predicted a decrease ranged from 56.6 percent for land mammals, to 65.7 percent for shellfish, to 67.7 percent for birds, to 77.8 percent for fish, to 81.8 percent for marine mammals. Most of the remaining respondents predicted no change, although 15.3 percent said they did not know what the effect might be on shellfish. Only one respondent thought the availability of any wildlife might increase, that being shellfish. The perceived impact of oil and gas development on

employment opportunity was different; 62.6 percent of the respondents expected oil development to create more jobs for local people, while 29.3 did not expect more jobs.

Respondents were asked whether they thought a small (less than 1,000 barrels) and a large (more than 100,000 barrels) oil spill could be cleaned up today. For the small spill, 19.2 percent said "yes," 25.3 percent said "maybe," and 47.5 percent said "no". For the large spill, 8.1 percent said "yes," 15.2 percent said "maybe," and 69.7 percent said "no."

Figure XIX-1. Kotzebue Census Population, 1880 - 1990



Sources: Rollins 1978; Alaska Department of Labor 1991; no data for 1880, 1890, or 1900

Table XIX-1. Sample Participation: Kotzebue 1992

VARIABLE	Social Indicators		TOTAL
	Panel	Non-Panel*	HOUSEHOLDS
Estimated Household Structures	42	805	847
Non-Residential Structures	NA	6	6
Estimated Households	42	799	841
Total Panel	72	NA	NA
Interview Goal:	50	50	100
Households Interviewed	32	68	100
Failed to Contact/Unavailable	9	38	47
Refused	1	36	37
Vacant Residential Structures	NA	1	1
Seasonal Households**	0	0	0
Non-Resident Household ***	0	5	5
Invalid Households and Vacancies	0	6	6
Failed to Contact: HH Interviewed	0	NA	NA
Refused: HH Interviewed	0	NA	NA
SI Household Moved	28	NA	NA
SI Respondent Deceased	2	NA	NA
SI Panel Disposition	72	NA	NA
Total Households Attempted:	42	148	190
Refusal Rate:	3.03%	34.62%	27.01%
Non-Perm. HH Rate ("Vacancy Rate"):	0.0%	4.1%	3.2%
Interview Goal (Percentage)	64.0%	136.0%	100.0%
Social Effects Surveys Completed	31	68	99
Total Permanent Households	42	767	809
Percentage Interviewed	76.19%	8.87%	12.36%
Percentage of Total Households	5.19%	94.81%	100.00%
Interview Weighting Factor	1.313	11.279	8.090

NOTES:

* Includes panel members who were not attempted to contact.

** Seasonal households are households which maintain a permanent domicile elsewhere where they sp majority of their time.

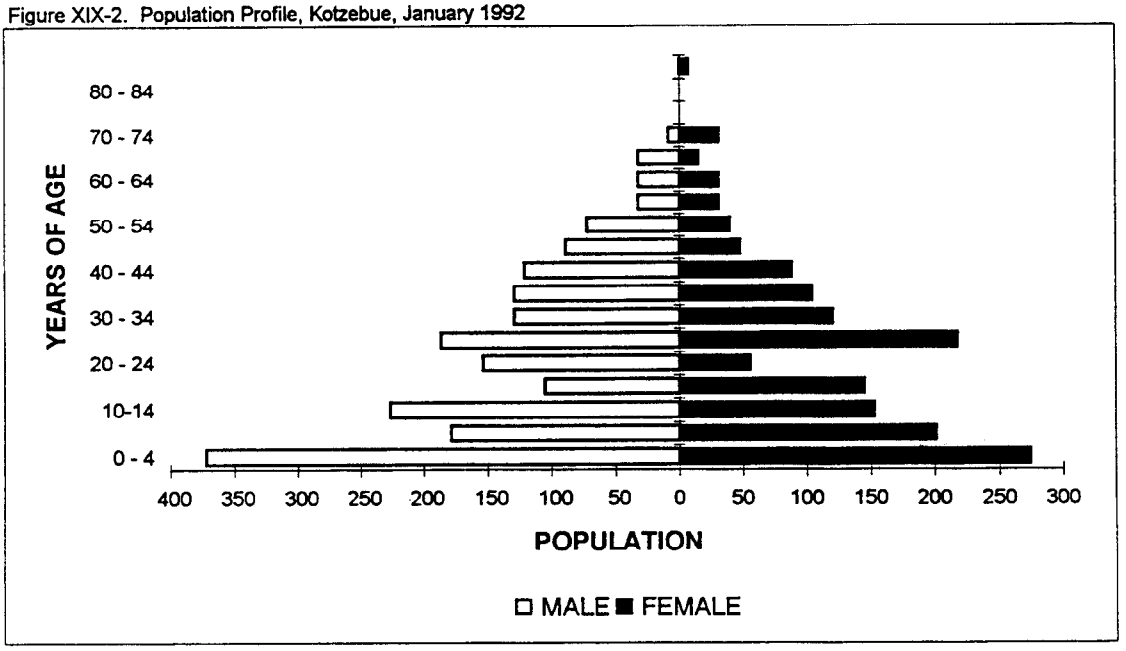
*** Non-resident households are households which were not present during the study year or which were resident less than the required number of months.

Table XIX-2 . Demographic Characteristics of Households, Kotzebue, January 1992

Characteristics	1991
Sampled Households	100
Number of Households in the Community	809
Percentage of Households Sampled	12.36
Household Size	
Mean	4.51
Minimum	1
Maximum	12
Sample Population	451
Estimated Community Population	3,648.59
Age	
Mean	23.88
Minimum	0.16
Maximum	86.16
Median	20.93
Length of Residency - Population	
Mean	16.35
Minimum	0.16
Maximum	74.50
Length of Residency - Household Heads	
Mean	24.75
Minimum	0.5
Maximum	74.50
Sex	
Males	
Number	1,933.51
Percentage	52.99
Females	
Number	1,690.81
Percentage	46.34
Unknown	
Number	24.27
Percentage	0.67
Alaska Native	
Households (Either Head)	
Number	695.74
Percentage	86.00
Estimated Population	
Number	3,066.11
Percentage	84.04

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992.

Figure XIX-2. Population Profile, Kotzebue, January 1992



SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992

Table XIX-3. Population Profile, Kotzebue, January 1992

AGE	MALE			FEMALE			TOTAL		
	NUMBER	PERCENT	CUM. PERCENT	NUMBER	PERCENT	CUM. PERCENT	NUMBER	PERCENT	CUM. PERCENT
0 - 4	372.14	19.25%	19.25%	275.06	16.27%	16.27%	647.20	17.86%	17.86%
5-9	177.98	9.21%	28.45%	202.25	11.96%	28.23%	380.23	10.49%	28.35%
10-14	226.52	11.72%	40.17%	153.71	9.09%	37.32%	380.23	10.49%	38.84%
15 - 19	105.17	5.44%	45.61%	145.62	8.61%	45.93%	250.79	6.92%	45.76%
20 - 24	153.71	7.95%	53.56%	56.63	3.35%	49.28%	210.34	5.80%	51.56%
25 - 29	186.07	9.62%	63.18%	218.43	12.92%	62.20%	404.50	11.16%	62.72%
30 - 34	129.44	6.69%	69.87%	121.35	7.18%	69.38%	250.79	6.92%	69.64%
35 - 39	129.44	6.69%	76.57%	105.17	6.22%	75.60%	234.61	6.47%	76.12%
40 - 44	121.35	6.28%	82.85%	88.99	5.26%	80.86%	210.34	5.80%	81.92%
45 - 49	88.99	4.60%	87.45%	48.54	2.87%	83.73%	137.53	3.79%	85.71%
50 - 54	72.81	3.77%	91.21%	40.45	2.39%	86.12%	113.26	3.13%	88.84%
55 - 59	32.36	1.67%	92.89%	32.36	1.91%	88.04%	64.72	1.79%	90.63%
60 - 64	32.36	1.67%	94.56%	32.36	1.91%	89.95%	64.72	1.79%	92.41%
65 - 69	32.36	1.67%	96.23%	16.18	0.96%	90.91%	48.54	1.34%	93.75%
70 - 74	8.09	0.42%	96.65%	32.36	1.91%	92.82%	40.45	1.12%	94.87%
75 - 79	0.00	0.00%	96.65%	0.00	0.00%	92.82%	0.00	0.00%	94.87%
80 - 84	0.00	0.00%	96.65%	0.00	0.00%	92.82%	0.00	0.00%	94.87%
85 - 89	0.00	0.00%	96.65%	8.09	0.48%	93.30%	8.09	0.22%	95.09%
90 - 94	0.00	0.00%	96.65%	0.00	0.00%	93.30%	0.00	0.00%	95.09%
95 - 99	0.00	0.00%	96.65%	0.00	0.00%	93.30%	0.00	0.00%	95.09%
100 - 104	0.00	0.00%	96.65%	0.00	0.00%	93.30%	0.00	0.00%	95.09%
Missing	64.72	3.35%	100.00%	113.26	6.70%	100.00%	177.98	4.91%	100.00%
TOTAL	1,933.51	53.35%		1,690.81	46.65%		3,624.32	100.00%	

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992

Table XIX-4. Employment Characteristics, Kotzebue, 1991

Characteristics		1991
ADULTS		
Total		1,982.05
Employed		
	Number	1,448.11
	Percentage	73.06
Jobs		
	Number	1,731.26
	Mean	1.20
	Minimum	1
	Maximum	3
Months Employed		
	Mean	8.63
	Minimum	1
	Maximum	12
	Year-Round	45.81
HOUSEHOLDS		
Total		809.00
Employed		
	Number	760.46
	Percentage	94.00
Jobs per Employed Household		
	Mean	2.28
	Minimum	1
	Maximum	9
Employed Adults		
	Mean	1.90
	Minimum	1
	Maximum	7

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992.

Table XIX-5. Community, Household, and Per Capita Incomes, All Sources and by Employer Type, Kotzebue, 1991

INCOME SOURCE	INCOME		
	COMMUNITY TOTAL	AVERAGE HOUSEHOLD	PER CAPITA
All Sources	$46,284,543.56	$57,212.04	$12,685.60
Earned Income	$40,452,705.94	$50,003.34	$11,087.22
Agriculture, Forestry, and Fishing	540,412.00	668.00	148.12
Agriculture	0.00	0.00	0.00
Forestry	0.00	0.00	0.00
Fishing, Hunting, Trapping	540,412.00	668.00	148.12
Hatchery/Enhancement	0.00	0.00	0.00
Commercial Fishing	540,412.00	668.00	148.12
Hunting/Trapping	0.00	0.00	0.00
Mining	1,313,816.00	1,624.00	360.09
Construction	AMT UNK	AMT UNK	AMT UNK
Manufacturing	145,620.00	180.00	39.91
Cannery	0.00	0.00	0.00
Other Manufacturing	145,620.00	180.00	39.91
Logging/Timber	0.00	0.00	0.00
Transportation, Communications, and Utilities	4,623,539.01	5,715.13	1,267.21
Trade	2,540,296.85	3,140.05	696.24
Wholesale	0.00	0.00	0.00
Retail	2,540,296.85	3,140.05	696.24
Finance, Insurance, and Real Estate	4,979,492.08	6,155.12	1,364.77
Services	6,589,410.17	8,145.13	1,806.02
Government	19,720,119.82	24,375.92	5,404.86
Federal	1,181,140.00	1,460.00	323.73
State	3,417,216.00	4,224.00	936.59
Local	15,121,763.82	18,691.92	4,144.55
Local Government	2,424,384.23	2,996.77	664.47
Local Education	12,697,379.59	15,695.15	3,480.08
Unknown	AMT UNK	AMT UNK	AMT UNK
Other Income	$5,831,837.62	$7,208.70	$1,598.38

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992

Table XIX-6. Community, Household, and Per Capita Other Income by Source, Kotzebue, 1991

Source	OTHER INCOME			
	PERCENTAGE REPORTING	COMMUNITY TOTAL	AVERAGE HOUSEHOLD	PER CAPITA
All Sources		$5,831,837.62	$7,208.70	$1,598.38
Exxon Claims	0.00	0.00	0.00	0.00
Aid to Families with Dependent Children	4.00	255,781.53	316.17	70.10
Adult Public Assistance	0.00	0.00	0.00	0.00
Exxon Damages	0.00	0.00	0.00	0.00
Pension/Retirement	13.00	696,041.35	860.37	190.77
Longevity Bonus	10.00	242,700.00	300.00	66.52
Social Security	14.00	615,019.22	760.22	168.56
Workman's Comp./Insurance	1.00	8,090.00	10.00	2.22
Energy Assistance	7.00	30,337.50	37.50	8.31
Supplemental Security Income	4.00	88,148.64	108.96	24.16
Food Stamps	12.00	271,071.63	335.07	74.29
Unemployment	9.00	132,409.03	163.67	36.29
Native Corporation Dividend	83.00	326,702.61	403.84	89.54
Dividend/Interest	4.00	65,529.00	81.00	17.96
Child Support	0.00	0.00	0.00	0.00
Rental Income	0.00	0.00	0.00	0.00
Veteran Disability	0.00	0.00	0.00	0.00
Equipment Leasing	0.00	0.00	0.00	0.00
Rental Assistance	0.00	0.00	0.00	0.00
Fishing Permit Leasing	0.00	0.00	0.00	0.00
Per Diem	0.00	0.00	0.00	0.00
Disability	0.00	0.00	0.00	0.00
Alaska Permanent Fund Dividend	96.00	2,982,257.15	3,686.35	817.37
Weatherization	0.00	0.00	0.00	0.00
Veteran's Assistance	0.00	0.00	0.00	0.00
Investments/Stocks/Bonds	0.00	0.00	0.00	0.00
Bureau of Indian Affairs Grants	0.00	0.00	0.00	0.00
Housing Allowances/Off-Base Allowances	0.00	0.00	0.00	0.00
Women, Infants, and Children Program	0.00	0.00	0.00	0.00
General Assistance Grant	0.00	0.00	0.00	0.00
Foster Care	0.00	0.00	0.00	0.00
Inheritance	0.00	0.00	0.00	0.00
Contest Winnings	0.00	0.00	0.00	0.00
Capital Gains	0.00	0.00	0.00	0.00
ASRC Elder Trust	0.00	0.00	0.00	0.00
Other	4.00	117,749.95	145.55	32.27

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992

Figure XIX-3. Employment by Industry, Kotzebue, 1991

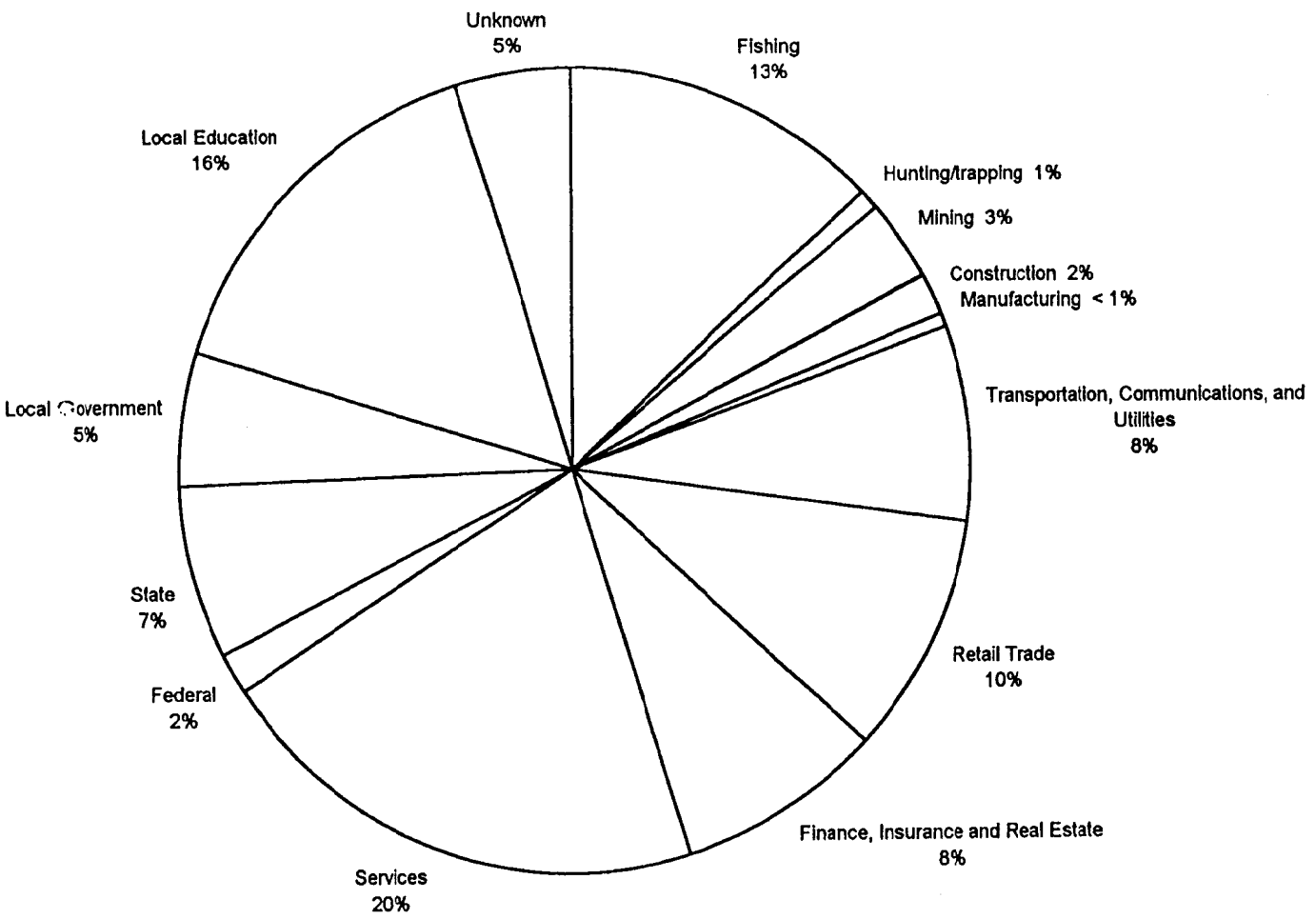


Table XIX-7. Subsistence Equipment Expenses and Use, Kotzebue, 1991

Sampled Households = 100
Community Households = 809

Equipment Type	Equipment Count		Equipment Cost			Use of Equipment for Subsistence			HH Sharing of Equipment	
			Replacement	Annual Fuel	Annual Cost		Cost			
	Total.	HH Mean	HH Mean	HH Mean	HH Mean	% of Cost	Total	HH Mean	% Borrowing	% Lending
All Equipment			$16,785.23	$175.46	$470.70	35.04	$4,941,144.44	$6,107.72	32.00	32.00
Skiff with outboard	339.78	0.42	$4,019.53		$111.49	66.68	$2,253,239.03	$2,785.22	12.00	10.00
Outboard Motor	186.07	0.23	$913.71	$43.43	$23.00	41.50	$329,068.84	$406.76	8.00	3.00
Boats with inboard	24.27	0.03	$98.00	$2.50	$1.00	76.97	$63,203.13	$78.13	0.00	0.00
Skiff, manually-propelled	32.36	0.04	$105.00		$0.00	47.62	$40,450.00	$50.00	1.00	0.00
ATV/Motorcycle	307.42	0.38	$1,015.33	$15.35	$19.08	27.52	$233,687.31	$288.86	2.00	6.00
Snowmachine/snowmobile	606.75	0.75	$2,712.79	$58.38	$90.57	44.63	$1,033,226.18	$1,277.16	2.00	14.00
Sled	355.96	0.44	$435.09		$1.70	54.77	$193,528.84	$239.22	5.00	11.00
Airplane	48.54	0.06	$1,360.00	$0.00	$35.00	1.43	$16,180.00	$20.00	0.00	0.00
Highway vehicle	275.06	0.34	$2,498.06	$9.91	$115.00	9.64	$204,645.90	$252.96	2.00	5.00
Tackle			$87.70		$10.45	84.72	$67,268.35	$83.15	4.00	11.00
Pots	105.17	0.13	$0.20		$0.00	0.00	$0.00	$0.00	0.00	0.00
Fishing Nets	372.14	0.46	$128.17		$3.75	31.19	$33,333.33	$41.20	7.00	4.00
Guns	1,965.87	2.43	$1,573.92				$1,273,297.97	$1,573.92	4.00	14.00
Traps	420.68	0.52	$9.24				$7,475.16	$9.24	1.00	1.00
Ammunition					$55.71		$59,997.24	$74.16	3.00	8.00
Cabins	194.16	0.24	$969.01		$1.00	31.65	$248,371.09	$307.01	6.00	9.00
Miscellaneous Camping Equipment			$158.50				$128,226.50	$158.50	2.00	4.00
Fishing/Hunting Camps	477.31	0.59	$203.95			45.13	$74,468.45	$92.05	8.00	7.00
Freezer	695.74	0.86	$386.15				$312,398.46	$386.15	6.00	6.00
Miscellaneous freezing supplies					$1.95		$1,577.55	$1.95	0.00	0.00
Canner	32.36	0.04	$3.00				$2,427.00	$3.00	0.00	0.00
Miscellaneous canning supplies					$0.00		$0.00	$0.00	0.00	0.00
Vacuum sealer/Sealer	161.80	0.20	$38.77				$31,364.31	$38.77	0.00	1.00
Miscellaneous sealer supplies					$0.00		$0.00	$0.00	0.00	0.00
Smoke house/dry rack	177.98	0.22	$50.67				$40,989.33	$50.67	3.00	0.00
Miscellaneous smoker supplies					$1.00		$809.00	$1.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992.

Table XIX-8. Characteristics of Resource Harvest and Use, Kotzebue, 1991

Study Year	1991
Mean Number Of Resources Used Per Household	14.99
Minimum	0
Maximum	56
95 % Confidence Limit (+/-)	10.72
Median	14
Mean Number Of Resources Attempted To Harvest Per Household	9.52
Minimum	0
Maximum	54
95 % Confidence Limit (+/-)	15.94
Median	8
Mean Number Of Resources Harvested Per Household	8.95
Minimum	0
Maximum	50
95 % Confidence Limit (+/-)	16.03
Median	7
Mean Number Of Resources Received Per Household	8.64
Minimum	0
Maximum	27
95 % Confidence Limit (+/-)	12.89
Median	8
Mean Number Of Resources Given Away Per Household	6.22
Minimum	0
Maximum	29
95 % Confidence Limit (+/-)	18.63
Median	4
Mean Household Harvest, Pounds	2,673.71
Minimum	0.00
Maximum	47,992.80
Total Pounds Harvested	2,163,032.69
Community Per Capita Harvest, Pounds	592.84
Percent Using Any Resource	99.00
Percent Attempting To Harvest Any Resource	97.00
Percent Harvesting Any Resource	95.00
Percent Receiving Any Resource	94.00
Percent Giving Away Any Resource	84.00
Number Of Households In Sample	100
Number of Resources Available	89

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992

Table XIX-9. Participation in the Harvest and Processing of Wild Resources, Kotzebue, 1991

Study Year			1991
Total Number of People			3,648.59
GAME	Hunt	Number	1,383.39
		Percentage	37.92
		Missing	105.17
		Missing %	2.88
	Process	Number	1,674.63
		Percentage	45.90
		Missing	105.17
		Missing %	2.88
FISH	Fish	Number	1,909.24
		Percentage	52.33
		Missing	105.17
		Missing %	2.88
	Process	Number	2,014.41
		Percentage	55.21
		Missing	105.17
		Missing %	2.88
FURBEARERS	Hunt or Trap	Number	97.08
		Percentage	2.66
		Missing	105.17
		Missing %	2.88
	Process	Number	177.98
		Percentage	4.88
		Missing	145.62
		Missing %	3.99
PLANTS	Gather	Number	2,232.84
		Percentage	61.20
		Missing	105.17
		Missing %	2.88
	Process	Number	2,079.13
		Percentage	56.98
		Missing	105.17
		Missing %	2.88
ANY RESOURCE			
	Attempt	Number	2,710.15
		Percent	74.28
	Process	Number	2,548.35
		Percent	69.84

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992.

Table XIX-10. Percentage of Households Sharing Resources by Community, Kotzebue, 1991

Community	Salmon		Non-Salmon Fish		Marine Invertebrates		Game		Marine Mammals		Birds and Eggs		Plants and Berries*		Any Resource	
	Recv	Gave	Recv	Gave	Recv	Gave	Recv	Gave	Recv	Gave	Recv	Gave	Recv	Gave	Recv	Gave
All Communities	68.00	42.00	80.00	65.00	23.00	5.00	74.00	62.00	72.00	43.00	34.00	41.00	58.00	53.00	94.00	85.00
Akiak	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00
Ambler	1.00	0.00	4.00	2.00	0.00	0.00	4.00	0.00	0.00	1.00	1.00	0.00	1.00	0.00	8.00	3.00
Anchorage	1.00	6.00	0.00	14.00	1.00	0.00	1.00	14.00	3.00	10.00	0.00	3.00	1.00	13.00	7.00	28.00
Barrow	0.00	2.00	1.00	6.00	0.00	0.00	0.00	1.00	17.00	0.00	0.00	0.00	0.00	3.00	17.00	9.00
Bethel	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	2.00
Buckland	2.00	0.00	6.00	2.00	0.00	0.00	5.00	1.00	6.00	0.00	0.00	0.00	2.00	1.00	12.00	2.00
Deering	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	1.00	0.00	4.00	0.00	4.00	0.00
Dillingham	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
Diomede	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
Elim	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
Fairbanks	0.00	2.00	0.00	3.00	0.00	1.00	1.00	3.00	0.00	2.00	0.00	0.00	0.00	2.00	1.00	7.00
Fort Yukon	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
Galena	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	1.00
Homer	0.00	0.00	0.00	1.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	1.00
Kenai	0.00	1.00	0.00	2.00	2.00	0.00	0.00	2.00	0.00	1.00	0.00	0.00	0.00	1.00	2.00	2.00
Kiana	0.00	0.00	11.00	5.00	0.00	0.00	6.00	0.00	0.00	4.00	1.00	1.00	3.00	2.00	18.00	7.00
Kivalina	1.00	0.00	8.00	3.00	0.00	0.00	1.00	1.00	10.00	0.00	1.00	0.00	0.00	0.00	15.00	3.00
Kobuk	0.00	1.00	2.00	0.00	0.00	0.00	2.00	1.00	0.00	0.00	2.00	0.00	0.00	0.00	6.00	1.00
Kodiak City	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00
Kotzebue	55.00	36.00	65.00	57.00	0.00	3.00	58.00	51.00	54.00	37.00	28.00	35.00	42.00	43.00	89.00	76.00
Koyuk	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00
Noatak	4.00	1.00	24.00	7.00	0.00	0.00	8.00	1.00	0.00	3.00	2.00	0.00	5.00	3.00	28.00	9.00
Nome	0.00	1.00	1.00	6.00	21.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	2.00	2.00	22.00	6.00
Nondalton	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Noorvik	2.00	1.00	15.00	4.00	0.00	0.00	5.00	3.00	0.00	8.00	3.00	0.00	5.00	3.00	18.00	12.00
Nuiqsut	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
Palmer	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	2.00
Point Hope	0.00	0.00	0.00	5.00	0.00	0.00	0.00	2.00	37.00	1.00	2.00	0.00	0.00	1.00	37.00	6.00
Point Lay	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	5.00	1.00	0.00	1.00	0.00	1.00	5.00	2.00
Selawik	0.00	1.00	14.00	5.00	0.00	0.00	5.00	1.00	1.00	3.00	1.00	0.00	6.00	0.00	18.00	5.00
Shishmaref	0.00	1.00	0.00	1.00	1.00	0.00	0.00	0.00	3.00	1.00	0.00	0.00	2.00	0.00	5.00	1.00

Table XIX-10. Percentage of Households Sharing Resources by Community, Kotzebue, 1991

Community	Salmon		Non-Salmon Fish		Marine Invertebrates		Game		Marine Mammals		Birds and Eggs		Plants and Berries*		Any Resource	
	Recv	Gave	Recv	Gave	Recv	Gave	Recv	Gave	Recv	Gave	Recv	Gave	Recv	Gave	Recv	Gave
Shungnak	2.00	0.00	4.00	0.00	0.00	0.00	3.00	0.00	2.00	2.00	0.00	1.00	0.00	0.00	6.00	3.00
Unalakleet	3.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00
Wainwright	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	3.00	3.00
Sisualik	0.00	1.00	2.00	1.00	0.00	0.00	0.00	0.00	2.00	1.00	0.00	2.00	1.00	0.00	4.00	2.00
Ivik	0.00	0.00	2.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	1.00	0.00	0.00	3.00	1.00
Noatak River Camp	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
Other U.S.	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	3.00
Community Unknown	0.00	1.00	6.00	3.00	0.00	1.00	2.00	4.00	7.00	5.00	1.00	2.00	7.00	1.00	18.00	14.00

Plants and Berries includes sharing of wood and kelp for fertilizer.

Note: Percentages are based upon valid responses.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992.

Figure XIX-4. Per Capita Harvests of Wild Resources by Resource Category, Kotzebue, 1986 and 1991

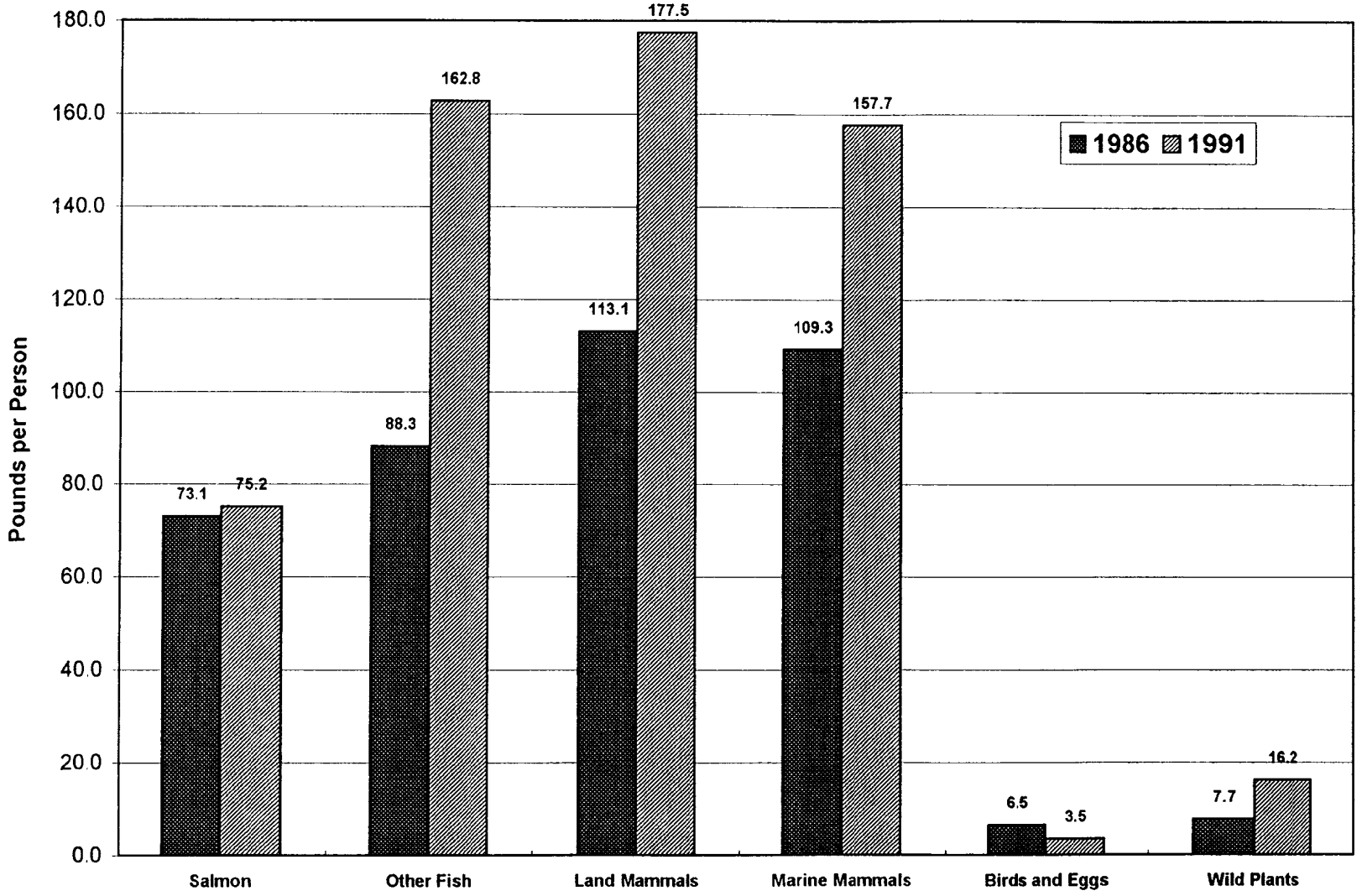


Figure XIX-5. Composition of Wild Resource Harvests by Resource Category, Kotzebue, 1991

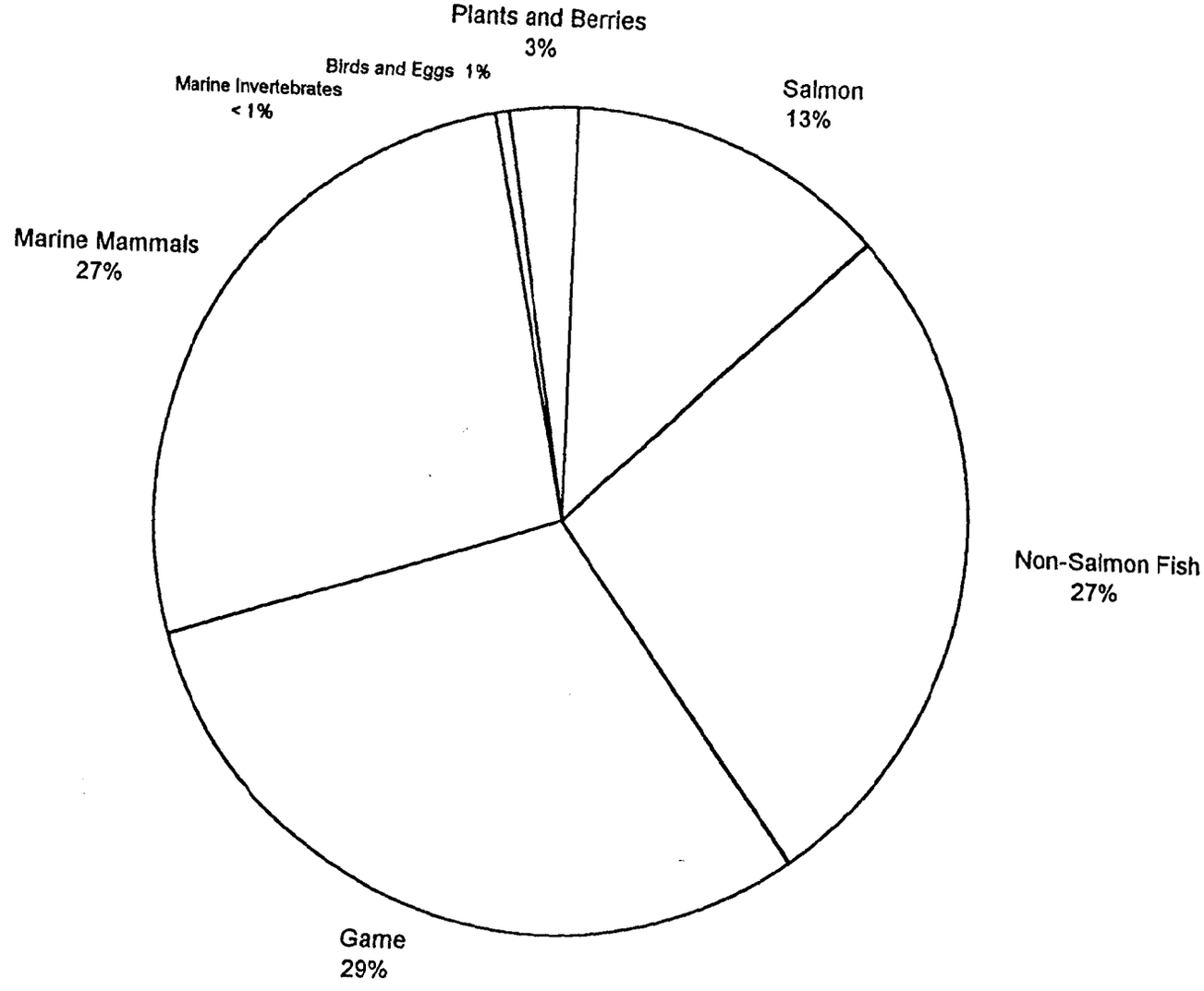


Table XIX-11. Subsistence Harvests in Pounds Usable Weight per Person by Resource Category, Kotzebue, 1986 and 1991

	Pounds Usable Weight per Person	
	1986	1991
Salmon	73.1	75.2
Other Fish	88.3	162.6
Land Mammals	113.1	177.5
Marine Mammals	109.3	157.7
Birds and Eggs	6.5	3.5
Marine Invertebrates		0.2
Wild Plants	7.7	16.2
All Resources	398.1	592.8

Table XIX-12. Composition of Resource Harvests by Resource Category, Kotzebue, 1986 and 1991

	Percentage of Total Harvest	
	1986	1991
Salmon	18.4%	12.7%
Other Fish	22.2%	27.4%
Land Mammals	28.4%	29.9%
Marine Mammals	27.5%	26.6%
Birds and Eggs	1.6%	0.6%
Marine Invertebrates		0.0%
Wild Plants	1.9%	2.7%

Table XIX-13. Estimated Harvest and Use of Fish, Mammal, Bird and Plant Resources, Kotzebue, 1991

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
All Resources	99.0	97.0	95.0	94.0	84.0	2,163,032.69	2,673.71	592.84			39.33%	38.32%
Fish	98.0	85.0	85.0	86.0	67.0	867,353.95	1,072.13	237.72			60.14%	59.05%
Salmon	90.0	53.0	51.0	68.0	42.0	274,201.30	338.94	75.15	45,488.69	56.23	54.09%	52.93%
Chum Salmon	86.0	51.0	49.0	63.0	40.0	266,585.37	329.52	73.07	44,283.28	54.74	53.43%	52.30%
Coho Salmon	3.0	2.0	2.0	2.0	1.0	161.80	0.20	0.04	32.36	0.04	146.40%	147.48%
Chinook Salmon	16.0	10.0	9.0	9.0	5.0	5,674.33	7.01	1.56	485.40	0.60	101.87%	101.47%
Pink Salmon	3.0	2.0	2.0	1.0	0.0	970.80	1.20	0.27	485.40	0.60	157.55%	157.49%
Sockeye Salmon	3.0	1.0	1.0	2.0	1.0	809.00	1.00	0.22	202.25	0.25	185.75%	185.35%
Unknown Salmon	2.0	0.0	0.0	2.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Non-Salmon Fish	96.0	84.0	83.0	80.0	65.0	593,152.65	733.19	162.57			66.30%	65.28%
Blackfish	1.0	1.0	1.0	0.0	0.0	5.66	0.01	0.00	80.90	0.10	185.75%	186.60%
Pike	48.0	28.0	25.0	27.0	20.0	18,767.99	23.20	5.14	5,687.27	7.03	51.07%	49.65%
Sucker	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Cod	72.0	60.0	60.0	34.0	45.0	30,063.34	37.16	8.24	103,962.73	128.51	32.42%	28.00%
Saffron Cod	66.0	56.0	56.0	26.0	42.0	21,398.95	26.45	5.86	101,899.78	125.96	32.90%	31.35%
Burbot	36.0	24.0	23.0	16.0	12.0	8,664.39	10.71	2.37	2,062.95	2.55	54.68%	53.14%
Flounder	6.0	6.0	6.0	0.0	3.0	1,165.77	1.44	0.32	1,059.79	1.31	89.45%	90.35%
Unknown Flounder	6.0	6.0	6.0	0.0	3.0	1,165.77	1.44	0.32	1,059.79	1.31	89.45%	90.35%
Halibut	2.0	1.0	1.0	1.0	0.0	142.38	0.18	0.04			185.75%	187.01%
Herring	45.0	36.0	35.0	17.0	24.0	21,370.71	26.42	5.86	3,561.78 gal	4.40	126.82%	126.35%
Smelt	44.0	32.0	32.0	17.0	9.0	3,071.67	3.80	0.84	819.11 gal	1.01	44.80%	42.83%
Unknown Smelt	44.0	32.0	32.0	17.0	9.0	3,071.67	3.80	0.84	819.11 gal	1.01	44.80%	42.83%
Grayling	11.0	7.0	7.0	4.0	3.0	1,033.90	1.28	0.28	1,148.78	1.42	78.38%	79.71%
Sheefish	85.0	60.0	60.0	50.0	47.0	426,642.53	527.37	116.93	77,571.37	95.89	77.27%	76.25%
Whitefish	56.0	20.0	20.0	45.0	20.0	24,344.81	30.09	6.67	13,911.32	17.20	56.57%	55.54%
Whitefish, Large	48.0	14.0	14.0	40.0	16.0	19,424.09	24.01	5.32	11,099.48	13.72	66.25%	65.09%
Whitefish, Broad/Akakiik	20.0	6.0	6.0	15.0	5.0	4,105.68	5.08	1.13	2,346.10	2.90	89.92%	89.56%
Whitefish, Humpback	32.0	10.0	10.0	27.0	13.0	15,318.42	18.94	4.20	8,753.38	10.82	79.09%	77.96%
Cisco	16.0	6.0	6.0	13.0	6.0	4,354.42	5.38	1.19	2,488.24	3.08	124.75%	124.74%
Least Cisco	3.0	1.0	1.0	2.0	0.0	70.79	0.09	0.02	40.45	0.05	185.75%	185.35%
Bering Cisco	15.0	6.0	6.0	12.0	6.0	4,283.63	5.29	1.17	2,447.79	3.03	126.52%	126.52%
Unknown Whitefish	2.0	1.0	1.0	1.0	0.0	566.30	0.70	0.16	323.60	0.40	185.75%	186.60%
Trout and Char	79.0	43.0	42.0	56.0	33.0	66,543.87	82.25	18.24	20,164.81	24.93	51.35%	51.07%
Char	79.0	43.0	42.0	56.0	33.0	66,543.87	82.25	18.24	20,164.81	24.93	51.35%	51.07%
Dolly Varden	79.0	43.0	42.0	56.0	33.0	66,543.87	82.25	18.24	20,164.81	24.93	51.35%	51.07%
Unknown Char	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%

Table XIX-13. Estimated Harvest and Use of Fish, Mammal, Bird and Plant Resources, Kotzebue, 1991

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
Game	94.0	73.0	68.0	73.0	62.0	647,478.30	800.34	177.46	6,338.52	7.84	60.73%	30.15%
Big Game	94.0	72.0	67.0	72.0	61.0	644,967.16	797.24	176.77	4,065.23	5.03	33.29%	30.00%
Black Bear	6.0	3.0	2.0	4.0	3.0	2,847.68	3.52	0.78	32.36	0.04	146.40%	145.50%
Brown Bear	4.0	1.0	1.0	3.0	1.0	695.74	0.86	0.19	8.09	0.01	185.75%	184.10%
Caribou	93.0	70.0	63.0	62.0	59.0	514,362.20	635.80	140.98	3,782.08	4.68	33.76%	32.33%
Moose	62.0	33.0	27.0	45.0	23.0	126,220.18	156.02	34.59	234.61	0.29	33.20%	32.31%
Sheep, Dall	7.0	2.0	1.0	6.0	0.0	841.36	1.04	0.23	8.09	0.01	185.75%	184.10%
Small Game/Furbearer	28.0	18.0	17.0	15.0	8.0	2,511.14	3.10	0.69	2,273.29	2.81	121.24%	112.05%
Fox	16.0	11.0	11.0	5.0	3.0	0.00	0.00	0.00	364.05	0.45	89.24%	0.00%
Arctic Fox	8.0	5.0	5.0	3.0	1.0	0.00	0.00	0.00	121.35	0.15	100.15%	0.00%
Red Fox	15.0	11.0	11.0	4.0	3.0	0.00	0.00	0.00	242.70	0.30	88.66%	0.00%
Beaver	4.0	1.0	1.0	3.0	0.0	647.20	0.80	0.18	64.72	0.08	185.75%	186.60%
Hare	5.0	5.0	5.0	0.0	3.0	1,461.05	1.81	0.40	436.86	0.54	115.02%	112.85%
Arctic Hare	3.0	3.0	3.0	0.0	0.0	611.60	0.76	0.17	97.08	0.12	121.07%	121.68%
Snowshoe Hare	4.0	4.0	4.0	0.0	3.0	849.45	1.05	0.23	339.78	0.42	120.62%	120.41%
Land Otter	3.0	2.0	2.0	1.0	1.0	0.00	0.00	0.00	24.27	0.03	137.89%	0.00%
Lynx	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Marten	3.0	2.0	2.0	2.0	0.0	0.00	0.00	0.00	24.27	0.03	137.89%	0.00%
Mink	1.0	1.0	1.0	0.0	0.0	0.00	0.00	0.00	8.09	0.01	185.75%	0.00%
Muskrat	4.0	2.0	2.0	2.0	2.0	378.61	0.47	0.10	1,140.69	1.41	160.21%	148.62%
Porcupine	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Weasel	1.0	1.0	1.0	0.0	0.0	0.00	0.00	0.00	8.09	0.01	185.75%	0.00%
Wolf	8.0	3.0	2.0	7.0	2.0	0.00	0.00	0.00	24.27	0.03	137.89%	0.00%
Wolverine	7.0	5.0	5.0	2.0	3.0	0.00	0.00	0.00	48.54	0.06	86.00%	0.00%
Squirrel	2.0	2.0	1.0	1.0	0.0	24.27	0.03	0.01	129.44	0.16	185.75%	186.60%
Parka Squirrel (ground)	2.0	2.0	1.0	1.0	0.0	24.27	0.03	0.01	129.44	0.16	185.75%	186.60%
Marine Mammals	77.0	40.0	37.0	72.0	43.0	575,419.05	711.27	157.71			34.96%	34.94%
Whale	71.0	13.0	5.0	70.0	22.0	13,981.14	17.28	3.83			90.79%	90.58%
Belukha	55.0	13.0	5.0	52.0	14.0	10,947.39	13.53	3.00	11.00	0.01	86.24%	86.45%
Bowhead	61.0	2.0	0.0	61.0	16.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Gray Whale	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Minke (Bottlenose)	1.0	0.0	0.0	1.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Right Whale	1.0	1.0	1.0	1.0	1.0	3,033.75	3.75	0.83			185.75%	184.93%
Seal	68.0	38.0	35.0	45.0	37.0	552,093.96	682.44	151.32	2,443.18	3.02	42.70%	34.74%
Bearded Seal	63.0	36.0	32.0	39.0	34.0	404,338.20	499.80	110.82	962.71	1.19	33.70%	33.75%
Young Bearded Seal	18.0	17.0	16.0	4.0	10.0	55,529.76	68.64	15.22	315.51	0.39	48.77%	49.67%

Table XIX-13. Estimated Harvest and Use of Fish, Mammal, Bird and Plant Resources, Kotzebue, 1991

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
Ribbon Seal	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Ringed Seal	28.0	16.0	16.0	13.0	13.0	67,648.58	83.62	18.54	914.17	1.13	69.14%	68.75%
Spotted Seal	12.0	9.0	9.0	4.0	8.0	24,577.42	30.38	6.74	250.79	0.31	81.11%	80.90%
Walrus	13.0	4.0	2.0	12.0	6.0	9,343.95	11.55	2.56	12.14	0.02	137.89%	137.16%
Polar Bear	1.0	1.0	0.0	1.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Sea Otter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Birds and Eggs	73.0	60.0	58.0	34.0	41.0	12,851.94	15.89	3.52	18,768.80	23.20	38.38%	44.77%
Birds	71.0	57.0	55.0	30.0	38.0	11,999.74	14.83	3.29	13,494.12	16.68	45.49%	46.82%
Owl	1.0	1.0	1.0	0.0	0.0	45.30	0.06	0.01	16.18	0.02	185.75%	186.60%
Snowy Owl	1.0	1.0	1.0	0.0	0.0	45.30	0.06	0.01	16.18	0.02	185.75%	186.60%
Upland Game Birds	54.0	44.0	42.0	16.0	29.0	5,583.72	6.90	1.53	7,976.74	9.86	60.52%	61.87%
Grouse	3.0	3.0	3.0	0.0	1.0	62.29	0.08	0.02	88.99	0.11	126.77%	128.28%
Ptarmigan	53.0	43.0	41.0	16.0	28.0	5,521.43	6.83	1.51	7,887.75	9.75	61.17%	62.49%
Migratory Birds	50.0	37.0	35.0	23.0	20.0	6,370.71	7.87	1.75	5,501.20	6.80	47.50%	51.42%
Waterfowl	50.0	37.0	35.0	23.0	20.0	5,962.98	7.37	1.63	5,452.66	6.74	47.44%	49.10%
Ducks	40.0	34.0	31.0	16.0	15.0	3,564.29	4.41	0.98	3,899.38	4.82	52.59%	51.58%
Eider	3.0	1.0	1.0	2.0	2.0	51.78	0.06	0.01	32.36	0.04	185.75%	186.60%
Eider, Small	2.0	1.0	1.0	1.0	2.0	51.78	0.06	0.01	32.36	0.04	185.75%	186.60%
Spectacled Eiders	2.0	1.0	1.0	1.0	2.0	51.78	0.06	0.01	32.36	0.04	185.75%	186.60%
Eider, Large	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
King Eiders	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Common Eiders	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Eider, Unknown	1.0	0.0	0.0	1.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Mallard	24.0	24.0	21.0	5.0	6.0	1,747.44	2.16	0.48	1,747.44	2.16	56.67%	56.12%
Pintail	16.0	14.0	13.0	4.0	6.0	1,190.85	1.47	0.33	1,488.56	1.84	70.13%	69.52%
Ducks, Unknown	15.0	12.0	12.0	7.0	8.0	574.23	0.71	0.16	631.02	0.78	66.03%	66.24%
Geese	35.0	24.0	23.0	15.0	10.0	2,204.53	2.73	0.60	1,520.92	1.88	57.46%	60.24%
Brant	8.0	5.0	5.0	4.0	3.0	262.12	0.32	0.07	218.43	0.27	116.87%	118.12%
Emperor Geese	1.0	1.0	1.0	0.0	1.0	202.25	0.25	0.06	80.90	0.10	185.75%	186.60%
Snow Geese	1.0	1.0	1.0	0.0	0.0	55.82	0.07	0.02	24.27	0.03	185.75%	187.43%
White-fronted Geese	9.0	9.0	9.0	1.0	2.0	446.57	0.55	0.12	186.07	0.23	71.55%	73.08%
Canada Geese	27.0	17.0	16.0	13.0	10.0	1,097.00	1.36	0.30	914.17	1.13	65.15%	66.38%
Canada Geese, Unknown	27.0	17.0	16.0	13.0	10.0	1,097.00	1.36	0.30	914.17	1.13	65.15%	66.38%
Geese, Unknown	4.0	3.0	3.0	1.0	0.0	140.77	0.17	0.04	97.08	0.12	114.91%	113.70%
Swan	1.0	1.0	1.0	0.0	0.0	194.16	0.24	0.05	32.36	0.04	185.75%	186.60%
Crane	3.0	3.0	3.0	0.0	1.0	407.74	0.50	0.11	48.54	0.06	130.68%	131.78%

Table XIX-13. Estimated Harvest and Use of Fish, Mammal, Bird and Plant Resources, Kotzebue, 1991

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
Sandhill Crane	3.0	3.0	3.0	0.0	1.0	407.74	0.50	0.11	48.54	0.06	130.68%	131.78%
Eggs	24.0	19.0	17.0	8.0	9.0	852.20	1.05	0.23	5,274.68	6.52	53.44%	52.67%
Seabird Eggs	11.0	8.0	7.0	5.0	2.0	296.90	0.37	0.08	1,804.07	2.23	79.15%	78.29%
Murre Eggs	2.0	1.0	1.0	1.0	0.0	30.26	0.04	0.01	137.53	0.17	185.75%	187.01%
Gull Eggs	9.0	7.0	6.0	4.0	2.0	266.65	0.33	0.07	1,666.54	2.06	84.63%	84.70%
Unknown Eggs	13.0	11.0	10.0	3.0	7.0	555.30	0.69	0.15	3,470.61	4.29	72.57%	71.92%
Marine Invertebrates	27.0	7.0	7.0	23.0	5.0	722.80	0.89	0.20			87.89%	89.18%
Clams	8.0	4.0	4.0	5.0	2.0	590.49	0.73	0.16	196.83 gal	0.24	105.07%	106.01%
Razor Clams	1.0	1.0	1.0	0.0	0.0	129.36	0.16	0.04	43.12 gal	0.05	185.75%	184.93%
Pinkneck Clams	1.0	1.0	1.0	0.0	1.0	194.16	0.24	0.05	64.72 gal	0.08	185.75%	187.43%
Unknown Clams	6.0	2.0	2.0	5.0	1.0	266.97	0.33	0.07	88.99 gal	0.11	169.54%	169.93%
Mussels	1.0	1.0	1.0	0.0	0.0	1.58	0.00	0.00	1.05 gal	0.00	185.75%	186.60%
Crabs	24.0	2.0	2.0	23.0	3.0	76.86	0.10	0.02	40.45	0.05	133.32%	138.74%
King Crab	14.0	1.0	1.0	14.0	2.0	50.97	0.06	0.01	24.27	0.03	185.75%	186.60%
Tanner Crab	11.0	1.0	1.0	10.0	1.0	25.89	0.03	0.01	16.18	0.02	185.75%	186.60%
Shrimp	3.0	2.0	2.0	1.0	0.0	53.88	0.07	0.01	26.94 gal	0.03	140.92%	142.36%
Plants and Berries	92.0	85.0	84.0	58.0	51.0	59,206.67	73.19	16.23	10,460.37 gal	12.93	22.43%	19.99%
Berries	92.0	84.0	83.0	54.0	48.0	56,318.54	69.62	15.44	8,664.39 gal	10.71	20.20%	19.67%
Plants/Greens/Mushrooms	41.0	34.0	33.0	25.0	18.0	2,888.13	3.57	0.79	1,795.98 gal	2.22	56.38%	63.89%
Unknown Greens, from land	38.0	34.0	32.0	18.0	15.0	1,431.93	1.77	0.39	1,431.93 gal	1.77	62.39%	60.27%
Roots, Food	21.0	13.0	12.0	16.0	7.0	1,456.20	1.80	0.40	364.05 gal	0.45	107.91%	107.41%
Wood	22.0	21.0	21.0	2.0	3.0	0.00	0.00	0.00	293.26 crd	0.36	48.84%	0.00%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992

Table XIX-14. Estimated Amount of Resources Removed From Commercial Harvest, Kotzebue, 1991

Resource	Removed From Catch		Percent of	
	Amount	Pounds	Species Harvest (lbs)	Community Harvest (lbs)
All Resources		126,204.08	14.54	5.83
Fish		126,204.08	14.55	5.83
Salmon	12,272.53	74,385.20	27.13	3.44
Chum Salmon	12,183.54	73,344.91	27.51	3.39
Chinook Salmon	88.99	1,040.29	18.33	0.05
Non-Salmon Fish		51,818.88	8.74	2.40
Sheefish	9,319.68	51,258.24	12.01	2.37
Trout and Char	169.89	560.64	0.84	0.03
Char	169.89	560.64	0.84	0.03
Dolly Varden	169.89	560.64	0.84	0.03

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992

Table XIX-15. Percentage of Salmon Harvest By Resource, Gear Type, and Total Salmon Harvest, Kotzebue, 1991

		Subsistence Methods											
		Net		Dip Net		Subsistence Gear Any Method		Removed from Commercial Catch		Rod and Reel		Any Method	
Resource	Percent Base	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.
Salmon	total	70.28	70.21	0.53	0.47	70.82	70.68	26.98	27.13	2.21	2.19		
Chum Salmon	gear type	97.34	97.31	0.00	0.00	96.61	96.67	99.27	98.60	97.58	97.98		
	resource	70.28	70.28	0.00	0.00	70.28	70.28	27.51	27.51	2.21	2.21		
	total	68.41	68.32	0.00	0.00	68.41	68.32	26.78	26.75	2.15	2.15	97.35	97.22
Coho Salmon	gear type	0.03	0.02	0.00	0.00	0.03	0.02	0.00	0.00	2.42	2.02		
	resource	25.00	25.00	0.00	0.00	25.00	25.00	0.00	0.00	75.00	75.00		
	total	0.02	0.01	0.00	0.00	0.02	0.01	0.00	0.00	0.05	0.04	0.07	0.06
Chinook Salmon	gear type	1.11	2.16	16.67	36.89	1.23	2.39	0.73	1.40	0.00	0.00		
	resource	73.33	73.33	8.33	8.33	81.67	81.67	18.33	18.33	0.00	0.00		
	total	0.78	1.52	0.09	0.17	0.87	1.69	0.20	0.38	0.00	0.00	1.07	2.07
Pink Salmon	gear type	1.52	0.50	0.00	0.00	1.51	0.50	0.00	0.00	0.00	0.00		
	resource	100.00	100.00	0.00	0.00	100.00	100.00	0.00	0.00	0.00	0.00		
	total	1.07	0.35	0.00	0.00	1.07	0.35	0.00	0.00	0.00	0.00	1.07	0.35
Sockeye Salmon	gear type	0.00	0.00	83.33	63.11	0.63	0.42	0.00	0.00	0.00	0.00		
	resource	0.00	0.00	100.00	100.00	100.00	100.00	0.00	0.00	0.00	0.00		
	total	0.00	0.00	0.44	0.30	0.44	0.30	0.00	0.00	0.00	0.00	0.44	0.30
Unknown Salmon	gear type	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	resource	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992

Table XIX-16. Estimated Salmon Harvest by Gear Type and Species, Kotzebue, 1991

		Subsistence Methods						Removed from Commercial Catch		Rod and Reel		Any Method	
		Net		Dip Net		Subsistence Gear Any Method							
	Harvest Units	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Salmon	numbers	31,970.30	39.52	242.70	0.30	32,213.00	39.82	12,272.53	15.17	1,003.16	1.24	45,488.69	56.23
	pounds	192,519.97	237.97	1,281.86	1.58	193,801.83	239.56	74,385.20	91.95	6,014.27	7.43	274,201.30	338.94
Chum Salmon	numbers	31,120.85	38.47	0.00	0.00	31,120.85	38.47	12,183.54	15.06	978.89	1.21	44,283.28	54.74
	pounds	187,347.55	231.58	0.00	0.00	187,347.55	231.58	73,344.91	90.66	5,892.92	7.28	266,585.37	329.52
Coho Salmon	numbers	8.09	0.01	0.00	0.00	8.09	0.01	0.00	0.00	24.27	0.03	32.36	0.04
	pounds	40.45	0.05	0.00	0.00	40.45	0.05	0.00	0.00	121.35	0.15	161.80	0.20
Chinook Salmon	numbers	355.96	0.44	40.45	0.05	396.41	0.49	88.99	0.11	0.00	0.00	485.40	0.60
	pounds	4,161.17	5.14	472.86	0.58	4,634.03	5.73	1,040.29	1.29	0.00	0.00	5,674.33	7.01
Pink Salmon	numbers	485.40	0.60	0.00	0.00	485.40	0.60	0.00	0.00	0.00	0.00	485.40	0.60
	pounds	970.80	1.20	0.00	0.00	970.80	1.20	0.00	0.00	0.00	0.00	970.80	1.20
Sockeye Salmon	numbers	0.00	0.00	202.25	0.25	202.25	0.25	0.00	0.00	0.00	0.00	202.25	0.25
	pounds	0.00	0.00	809.00	1.00	809.00	1.00	0.00	0.00	0.00	0.00	809.00	1.00
Unknown Salmon	numbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992

Table XIX-17. Percentage of Households Harvesting Salmon by Gear Type and Species, Kotzebue, 1991

Resource	Subsistence Methods			Removed from Commercial Catch	Rod and Reel	Any Method
	Net	Dip Net	Any Subsistence Gear			
Salmon	38.00	1.00	39.00	20.00	12.00	51.00
Chum Salmon	37.00	0.00	37.00	18.00	11.00	49.00
Coho Salmon	1.00	0.00	1.00	0.00	1.00	2.00
Chinook Salmon	7.00	1.00	8.00	4.00	0.00	9.00
Pink Salmon	2.00	0.00	2.00	0.00	0.00	2.00
Sockeye Salmon	0.00	1.00	1.00	0.00	0.00	1.00
Unknown Salmon	0.00	0.00	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992

Table XIX-18. Estimated Harvest of Fish Other than Salmon by Gear Type, Kotzebue, 1991

	Harvest Units	Subsistence Gear		Removed From Commercial Catch		Rod and Reel		Ice Fishing		Any Method	
		Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Non-Salmon Fish	pounds	386,694.02	477.99	51,818.88	64.05	22,624.04	27.97	132,015.71	163.18	593,152.65	733.19
Blackfish	pounds	0.00	0.00	0.00	0.00	0.00	0.00	5.66	0.01	5.66	0.01
Burbot	pounds	1,325.14	1.64	0.00	0.00	0.00	0.00	7,339.25	9.07	8,664.39	10.71
Least Cisco	pounds	70.79	0.09	0.00	0.00	0.00	0.00	0.00	0.00	70.79	0.09
Bering Cisco	pounds	4,085.43	5.05	0.00	0.00	198.21	0.25	0.00	0.00	4,283.63	5.29
Grayling	pounds	218.43	0.27	0.00	0.00	815.47	1.01	0.00	0.00	1,033.90	1.28
Pike	pounds	9,076.98	11.22	0.00	0.00	7,234.89	8.94	2,456.12	3.04	18,767.99	23.20
Sheefish	pounds	275,246.07	340.23	51,258.24	63.36	2,714.20	3.36	97,424.03	120.43	426,642.53	527.37
Whitefish, Broad/Akakiik	pounds	3,751.74	4.64	0.00	0.00	0.00	0.00	353.94	0.44	4,105.68	5.08
Whitefish, Humpback	pounds	14,256.60	17.62	0.00	0.00	1,061.81	1.31	0.00	0.00	15,318.42	18.94
Unknown Whitefish	pounds	566.30	0.70	0.00	0.00	0.00	0.00	0.00	0.00	566.30	0.70
Saffron Cod	pounds	0.00	0.00	0.00	0.00	0.00	0.00	21,398.95	26.45	21,398.95	26.45
Unknown Flounder	pounds	1,112.38	1.38	0.00	0.00	0.00	0.00	53.39	0.07	1,165.77	1.44
Halibut	pounds	134.29	0.17	0.00	0.00	8.09	0.01	0.00	0.00	142.38	0.18
Herring	pounds	16,668.64	20.60	0.00	0.00	3,844.37	4.75	857.70	1.06	21,370.71	26.42
Unknown Smelt	pounds	930.45	1.15	0.00	0.00	14.56	0.02	2,126.66	2.63	3,071.67	3.80
Dolly Varden	pounds	59,250.79	73.24	560.64	0.69	6,732.45	8.32	0.00	0.00	66,543.87	82.25

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992

Table XIX-19. Percentage of Fish Other Than Salmon Harvested by Gear Type, Kotzebue, 1991

Resource	Percent Base	Subsistence Gear Lbs.	Removed from Commercial Catch Lbs.	Rod and Reel Lbs.	Ice Fishing Lbs.
Non-Salmon Fish	resource	65.19	8.74	3.81	22.26
Blackfish	resource	0.00	0.00	0.00	100.00
Burbot	resource	15.29	0.00	0.00	84.71
Least Cisco	resource	100.00	0.00	0.00	0.00
Bering Cisco	resource	95.37	0.00	4.63	0.00
Grayling	resource	21.13	0.00	78.87	0.00
Pike	resource	48.36	0.00	38.55	13.09
Sheefish	resource	64.51	12.01	0.64	22.84
Whitefish, Broad/Akakilik	resource	91.38	0.00	0.00	8.62
Whitefish, Humpback	resource	93.07	0.00	6.93	0.00
Unknown Whitefish	resource	100.00	0.00	0.00	0.00
Saffron Cod	resource	0.00	0.00	0.00	100.00
Unknown Flounder	resource	95.42	0.00	0.00	4.58
Halibut	resource	94.32	0.00	5.68	0.00
Herring	resource	78.00	0.00	17.99	4.01
Unknown Smelt	resource	30.29	0.00	0.47	69.23
Dolly Varden	resource	89.04	0.84	10.12	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992

Table XIX-20. Percentage of Households Harvesting Fish Other Than Salmon by Gear Type and Species, Kotzebue, 1991

Resource	Subsistence Gear	Removed from Commercial Catch	Rod and Reel	Ice Fishing	Any Method
Non-Salmon Fish	47.00	3.00	43.00	69.00	83.00
Blackfish	0.00	0.00	0.00	1.00	1.00
Burbot	4.00	0.00	0.00	19.00	23.00
Least Cisco	1.00	0.00	0.00	0.00	1.00
Bering Cisco	4.00	0.00	2.00	0.00	6.00
Grayling	1.00	0.00	6.00	0.00	7.00
Pike	8.00	0.00	13.00	8.00	25.00
Sheefish	17.00	2.00	7.00	41.00	60.00
Whitefish, Broad/Akakiik	5.00	0.00	0.00	1.00	6.00
Whitefish, Humpback	8.00	0.00	2.00	0.00	10.00
Unknown Whitefish	1.00	0.00	0.00	0.00	1.00
Saffron Cod	0.00	0.00	0.00	56.00	56.00
Unknown Flounder	5.00	0.00	0.00	1.00	6.00
Halibut	1.00	0.00	1.00	0.00	1.00
Herring	10.00	0.00	19.00	7.00	35.00
Unknown Smelt	4.00	0.00	1.00	27.00	32.00
Dolly Varden	30.00	1.00	19.00	0.00	42.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1992

Table XIX-21. Uses of Wild Foods, Kotzebue

	STUDY YEAR
	1991
ANY WILD FOODS EATEN YESTERDAY?	
No	
Count	41
Col %	41.4%
Yes	
Count	58
Col %	58.6%
WILD FOODS AS MAIN PART OF A MEAL	
No Response	
Count	1
Col %	1.0%
No	
Count	47
Col %	48.0%
Yes	
Count	50
Col %	51.0%
HARVEST OF WILD FOODS BY RESPONDENT	
No	
Count	79
Col %	80.6%
Yes	
Count	19
Col %	19.4%
WF HARVESTED BY RELATIVE IN HH	
No	
Count	91
Col %	92.9%
Yes	
Count	7
Col %	7.1%
WF HARVESTED BY RELATIVE IN ANOTHER HH	
No	
Count	82
Col %	83.7%

(continued)

Table XIX-21. Uses of Wild Foods, Kotzebue

	STUDY YEAR
	1991
Yes	
Count	16
Col %	16.3%
WF HARVESTED BY RELATIVE IN ANOTHER COMM.	
No	
Count	90
Col %	91.8%
Yes	
Count	8
Col %	8.2%
WF HARVESTED BY FRIEND IN HH	
No	
Count	98
Col %	100.0%
WF HARVESTED BY FRIEND IN COMMUNITY	
No	
Count	88
Col %	89.8%
Yes	
Count	10
Col %	10.2%
WF HARVESTED BY FRIEND IN ANOTHER COMM.	
No	
Count	97
Col %	99.0%
Yes	
Count	1
Col %	1.0%

Table XIX-22. Safety of Using Subsistence Foods, Kotzebue

	STUDY YEAR
	1991
IS EATING BIDARKIES IMPORTANT TO YOU?	
No	
Count	99
Col %	100.0%
ARE CLAMS SAFE FOR CHILDREN TO EAT?	
Do Not Know	
Count	37
Col %	42.0%
Not Safe	
Count	7
Col %	8.0%
Safe	
Count	44
Col %	50.0%
WHY CLAMS NOT SAFE TO EAT	
No Response	
Count	1
Col %	25.0%
Resource looks bad	
Count	1
Col %	25.0%
Pollution from non-oil spill source	
Count	1
Col %	25.0%
Unsure about safety	
Count	1
Col %	25.0%
IS EATING SEAL MEAT OR OIL IMPORTANT?	
No Response	
Count	1
Col %	1.0%
No	
Count	18
Col %	18.4%
Yes	

(continued)

Table XIX-22. Safety of Using Subsistence Foods, Kotzebue

	STUDY YEAR
	1991
Count	79
Col %	80.6%
ARE SEALS FROM HARVEST AREAS SAFE TO EAT?	
No Response	
Count	3
Col %	3.8%
Do Not Know	
Count	3
Col %	3.8%
Not Safe	
Count	1
Col %	1.3%
Safe	
Count	72
Col %	91.1%
WHY SEAL NOT SAFE TO EAT	
Do Not Know	
Count	1
Col %	50.0%
Pollution from non-oil spill source	
Count	1
Col %	50.0%

Table XIX-23. Resource Population Statuses, Kotzebue

	STUDY YEAR
	1991
COMPARED TO 1988: CARIBOU	
No Response	
Count	1
Col %	1.1%
Do Not Know	
Count	10
Col %	11.4%
Less	
Count	7
Col %	8.0%
Same	
Count	63
Col %	71.6%
More	
Count	7
Col %	8.0%
COMPARED TO 1988: BEAR	
No Response	
Count	8
Col %	9.1%
Do Not Know	
Count	19
Col %	21.6%
Less	
Count	5
Col %	5.7%
Same	
Count	53
Col %	60.2%
More	
Count	3
Col %	3.4%
COMPARED TO 1988: RINGED SEAL	
No Response	
Count	8

(continued)

Table XIX-23. Resource Population Statuses, Kotzebue

	STUDY YEAR
	1991
Col %	9.1%
Do Not Know	
Count	17
Col %	19.3%
Less	
Count	10
Col %	11.4%
Same	
Count	53
Col %	60.2%
COMPARED TO 1988: BEARDED SEAL	
No Response	
Count	9
Col %	10.2%
Do Not Know	
Count	12
Col %	13.6%
Less	
Count	11
Col %	12.5%
Same	
Count	56
Col %	63.6%
COMPARED TO 1988: SEA DUCKS	
No Response	
Count	7
Col %	8.0%
Do Not Know	
Count	25
Col %	28.4%
Less	
Count	12
Col %	13.6%
Same	

(continued)

Table XIX-23. Resource Population Statuses, Kotzebue

	STUDY YEAR
	1991
Count	44
Col %	50.0%
COMPARED TO 1988: COMMON MURRE	
No Response	
Count	9
Col %	10.3%
Do Not Know	
Count	32
Col %	36.8%
Less	
Count	8
Col %	9.2%
Same	
Count	38
Col %	43.7%
COMPARED TO 1988: SALMON	
No Response	
Count	8
Col %	9.1%
Do Not Know	
Count	10
Col %	11.4%
Less	
Count	26
Col %	29.5%
Same	
Count	43
Col %	48.9%
More	
Count	1
Col %	1.1%
COMPARED TO 1988: WHITEFISH	
No Response	
Count	8
Col %	9.1%

(continued)

Table XIX-23. Resource Population Statuses, Kotzebue

	STUDY YEAR
	1991
Do Not Know	
Count	15
Col %	17.0%
Less	
Count	11
Col %	12.5%
Same	
Count	53
Col %	60.2%
More	
Count	1
Col %	1.1%
COMPARED TO 1988: ARCTIC CHAR	
No Response	
Count	8
Col %	9.2%
Do Not Know	
Count	12
Col %	13.8%
Less	
Count	10
Col %	11.5%
Same	
Count	57
Col %	65.5%
COMPARED TO 1988: CLAMS	
No Response	
Count	10
Col %	11.8%
Do Not Know	
Count	32
Col %	37.6%
Less	
Count	8
Col %	9.4%

(continued)

Table XIX-23. Resource Population Statuses, Kotzebue

	STUDY YEAR
	1991
Same	
Count	35
Col %	41.2%

Table XIX-24. Childrens Participation in Subsistence, Kotzebue

	STUDY YEAR
	1991
DO CHILDREN HELP YOUR HH PROCESS WILD FOODS?	
No	
Count	59
Col %	59.6%
Yes	
Count	40
Col %	40.4%
DID EVOS AFFECT PARTICIPATION WITH CHILDREN?	
No	
Count	99
Col %	100.0%

Table XIX-25. Sharing, Kotzebue

	STUDY YEAR
	1991
DID HOUSEHOLD SHARE?	
No	
Count	16
Col %	16.2%
Yes	
Count	83
Col %	83.8%
PREV. YEAR: SHARING OF WILD RES.	
Less	
Count	11
Col %	11.2%
Same	
Count	76
Col %	77.6%
More	
Count	11
Col %	11.2%
PREV. YEAR: SHARING OF HUNT/FISH GEAR	
Less	
Count	11
Col %	12.5%
Same	
Count	73
Col %	83.0%
More	
Count	4
Col %	4.5%
PREV. YEAR: SHARING OF MONEY	
Less	
Count	9
Col %	9.9%
Same	
Count	68
Col %	74.7%
More	

(continued)

Table XIX-25. Sharing, Kotzebue

	STUDY YEAR
	1991
Count	14
Col %	15.4%
PREV. YEAR: SHARING OF LABOR	
Less	
Count	11
Col %	11.8%
Same	
Count	71
Col %	76.3%
More	
Count	11
Col %	11.8%
PRE-OS: SHARING OF WILD RESOURCES	
Do Not Know	
Count	1
Col %	1.1%
Less	
Count	8
Col %	8.4%
Same	
Count	78
Col %	82.1%
More	
Count	8
Col %	8.4%
PRE-OS: SHARING OF HUNT/FISH GEAR	
No Response	
Count	1
Col %	1.1%
Less	
Count	6
Col %	6.9%
Same	
Count	71
Col %	81.6%

(continued)

Table XIX-25. Sharing, Kotzebue

	STUDY YEAR
	1991
More	
Count	9
Col %	10.3%
PRE-OS: SHARING OF MONEY	
No Response	
Count	1
Col %	1.1%
Do Not Know	
Count	1
Col %	1.1%
Less	
Count	10
Col %	11.2%
Same	
Count	69
Col %	77.5%
More	
Count	8
Col %	9.0%
PRE-OS: SHARING OF LABOR	
No Response	
Count	1
Col %	1.1%
Less	
Count	6
Col %	6.7%
Same	
Count	70
Col %	78.7%
More	
Count	12
Col %	13.5%

Table XIX-26. Political Activities, Kotzebue

	STUDY YEAR
	1991
LAST 3 YRS.: ELDERS INFLUENCE	
No Response	
Count	1
Col %	1.0%
Do Not Know	
Count	7
Col %	7.1%
Decreased	
Count	31
Col %	31.3%
Same	
Count	27
Col %	27.3%
Increased	
Count	33
Col %	33.3%
PRE-EVOS: ATTEND PUBLIC MEETINGS	
No Response	
Count	1
Col %	1.0%
Never	
Count	26
Col %	26.8%
Sometimes	
Count	60
Col %	61.9%
Almost Always	
Count	10
Col %	10.3%
LAST YEAR: ATTEND PUBLIC MEETINGS	
No Response	
Count	1
Col %	1.0%
Never	
Count	23

(continued)

Table XIX-26. Political Activities, Kotzebue

	STUDY YEAR
	1991
Col %	23.2%
Sometimes	
Count	64
Col %	64.6%
Almost Always	
Count	11
Col %	11.1%
VOTE IN LAST CITY COUNCIL ELECTION?	
No Response	
Count	1
Col %	1.0%
Do Not Know	
Count	1
Col %	1.0%
No	
Count	33
Col %	33.3%
Yes	
Count	64
Col %	64.6%
VOTE IN LAST STATE-WIDE ELECTION?	
No Response	
Count	1
Col %	1.0%
No	
Count	27
Col %	27.3%
Yes	
Count	71
Col %	71.7%
BELONG TO NATIVE CORPORATION?	
No Response	
Count	1
Col %	1.0%

(continued)

Table XIX-26. Political Activities, Kotzebue

	STUDY YEAR
	1991
No	
Count	23
Col %	23.2%
Yes	
Count	75
Col %	75.8%
REGIONAL NATIVE CORPORATION	
No Response	
Count	3
Col %	4.0%
Bering Straits Native Corp.	
Count	4
Col %	5.3%
Calista Corp.	
Count	1
Col %	1.3%
Doyon, Ltd.	
Count	1
Col %	1.3%
Koniag, Inc.	
Count	1
Col %	1.3%
NANA Regional Corp., Inc.	
Count	65
Col %	86.7%
VOTE IN LAST REG. CORP. ELECTION?	
No Response	
Count	1
Col %	1.3%
No	
Count	10
Col %	13.3%
Yes	
Count	64
Col %	85.3%

(continued)

Table XIX-26. Political Activities, Kotzebue

	STUDY YEAR
	1991
VILLAGE NATIVE CORPORATION	
No Response	
Count	5
Col %	6.7%
Do Not Know	
Count	1
Col %	1.3%
None, At Large	
Count	5
Col %	6.7%
Bethel Native Corporation	
Count	1
Col %	1.3%
Nunchiak Corporation (Buckland)	
Count	1
Col %	1.3%
Katyaak Corporation (Kiana)	
Count	1
Col %	1.3%
Litnik, Incorporated (Kodiak)	
Count	1
Col %	1.3%
Kikkitagruk Inupiat Corporation (Kotzebue)	
Count	55
Col %	73.3%
Noatak Village Corporation	
Count	1
Col %	1.3%
Unalakleet Native Corporation	
Count	1
Col %	1.3%
Sitnasuak Native Corporation (Nome)	
Count	2
Col %	2.7%

(continued)

Table XIX-26. Political Activities, Kotzebue

	STUDY YEAR
	1991
NANA (Selawik)	
Count	1
Col %	1.3%
VOTE IN LAST NATIVE VILLAGE CORP. ELECTION?	
No Response	
Count	2
Col %	2.6%
Do Not Know	
Count	1
Col %	1.3%
No	
Count	16
Col %	20.8%
Yes	
Count	58
Col %	75.3%
HAS VIEW OF LEADER CHANGED SINCE EVOS?	
No Response	
Count	3
Col %	3.2%
Do Not Know	
Count	2
Col %	2.1%
No	
Count	76
Col %	80.0%
Yes	
Count	14
Col %	14.7%
WHY POST EVOS VIEW OF LEADERS	
No Response	
Count	2
Col %	12.5%
Do Not Know	

(continued)

Table XIX-26. Political Activities, Kotzebue

	STUDY YEAR
	1991
Count	2
Col %	12.5%
Trust	
Count	1
Col %	6.3%
Awareness/involvement	
Count	3
Col %	18.8%
Decisive	
Count	3
Col %	18.8%
Environmental awareness	
Count	1
Col %	6.3%
Sobriety/maturity	
Count	1
Col %	6.3%
Lifestyle	
Count	2
Col %	12.5%
Issue specific reasons	
Count	1
Col %	6.3%

Table XIX-27. Significance of Place, Kotzebue

	STUDY YEAR
	1991
MAIN REASON MOVED TO COMMUNITY	
No Response	
Count	3
Col %	3.0%
Born or reared here	
Count	35
Col %	35.4%
Relatives (family)	
Count	11
Col %	11.1%
Married a person born or reared here	
Count	4
Col %	4.0%
Family has always lived here	
Count	2
Col %	2.0%
Friends	
Count	1
Col %	1.0%
Employment reasons	
Count	29
Col %	29.3%
Educational opportunities	
Count	1
Col %	1.0%
Economic reasons	
Count	1
Col %	1.0%
Medical Services	
Count	1
Col %	1.0%
Size of the community	
Count	1
Col %	1.0%

(continued)

Table XIX-27. Significance of Place, Kotzebue

	STUDY YEAR
	1991
Recreational opportunities	
Count	1
Col %	1.0%
Pace of Life	
Count	1
Col %	1.0%
Quality of Life	
Count	3
Col %	3.0%
Cultural Reasons	
Count	4
Col %	4.0%
Not here by choice	
Count	1
Col %	1.0%
LIVE HERE: WHERE PERSON IS FROM	
No Response	
Count	2
Col %	2.0%
No	
Count	53
Col %	53.5%
Yes	
Count	44
Col %	44.4%
LIVE HERE: RELATIVES LIVE HERE	
No Response	
Count	2
Col %	2.0%
No	
Count	33
Col %	33.3%
Yes	
Count	64
Col %	64.6%

(continued)

Table XIX-27. Significance of Place, Kotzebue

	STUDY YEAR
	1991
LIVE HERE: MARRIED PERSON FROM HERE	
No Response	
Count	3
Col %	3.0%
No	
Count	58
Col %	58.6%
Yes	
Count	38
Col %	38.4%
LIVE HERE: ALWAYS LIVED HERE	
No Response	
Count	2
Col %	2.0%
No	
Count	50
Col %	50.5%
Yes	
Count	47
Col %	47.5%
LIVE HERE: FRIENDS LIVE HERE	
No Response	
Count	2
Col %	2.0%
No	
Count	27
Col %	27.3%
Yes	
Count	70
Col %	70.7%
LIVE HERE: HUNTING & FISHING HERE	
No Response	
Count	2
Col %	2.0%
No	

(continued)

Table XIX-27. Significance of Place, Kotzebue

	STUDY YEAR
	1991
Count	27
Col %	27.3%
Yes	
Count	70
Col %	70.7%
LIVE HERE: JOB OPPORTUNITIES HERE	
No Response	
Count	2
Col %	2.0%
No	
Count	23
Col %	23.2%
Yes	
Count	74
Col %	74.7%
LIVE HERE: EDUCATIONAL OPPORTUNITIES	
No Response	
Count	2
Col %	2.0%
No	
Count	36
Col %	36.4%
Yes	
Count	61
Col %	61.6%
LIVE HERE: COST OF LIVING	
No Response	
Count	2
Col %	2.0%
No	
Count	68
Col %	68.7%
Yes	
Count	29
Col %	29.3%

(continued)

Table XIX-27. Significance of Place, Kotzebue

	STUDY YEAR
	1991
LIVE HERE: HOUSING AVAILABLE	
No Response	
Count	2
Col %	2.0%
No	
Count	48
Col %	48.5%
Yes	
Count	49
Col %	49.5%
LIVE HERE: STORES	
No Response	
Count	2
Col %	2.0%
No	
Count	36
Col %	36.4%
Yes	
Count	61
Col %	61.6%
LIVE HERE: MEDICAL SERVICES	
No Response	
Count	3
Col %	3.0%
No	
Count	41
Col %	41.4%
Yes	
Count	55
Col %	55.6%
LIVE HERE: OTHER SERVICES	
No Response	
Count	2
Col %	2.0%
No	

(continued)

Table XIX-27. Significance of Place, Kotzebue

	STUDY YEAR
	1991
Count	52
Col %	52.5%
Yes	
Count	45
Col %	45.5%
LIVE HERE: BEAUTY OF AREA	
No Response	
Count	3
Col %	3.0%
No	
Count	35
Col %	35.4%
Yes	
Count	61
Col %	61.6%
LIVE HERE: SIZE OF COMMUNITY	
No Response	
Count	2
Col %	2.0%
No	
Count	30
Col %	30.3%
Yes	
Count	67
Col %	67.7%
LIVE HERE: LESS CRIME	
No Response	
Count	2
Col %	2.0%
No	
Count	52
Col %	52.5%
Yes	
Count	45
Col %	45.5%

(continued)

Table XIX-27. Significance of Place, Kotzebue

	STUDY YEAR
	1991
LIVE HERE: LESS DRINKING/DRUGS	
No Response	
Count	3
Col %	3.0%
No	
Count	64
Col %	64.6%
Yes	
Count	32
Col %	32.3%
LIVE HERE: NECESSARY PERSONAL FREEDOMS	
No Response	
Count	3
Col %	3.0%
No	
Count	26
Col %	26.3%
Yes	
Count	70
Col %	70.7%
LIVE HERE: RECREATIONAL OPPORTUNITIES	
No Response	
Count	2
Col %	2.0%
No	
Count	30
Col %	30.3%
Yes	
Count	67
Col %	67.7%
OTHER REASONS FOR LIVING IN COMMUNITY	
Quality of Life	
Count	4
Col %	40.0%
Location	

(continued)

Table XIX-27. Significance of Place, Kotzebue

	STUDY YEAR
	1991
Count	5
Col %	50.0%
Not here by choice	
Count	1
Col %	10.0%
MAIN REASON REMAINING IN COMMUNITY	
No Response	
Count	3
Col %	3.0%
Do Not Know	
Count	3
Col %	3.0%
Born or reared here	
Count	18
Col %	18.2%
Relatives (family)	
Count	5
Col %	5.1%
Married a person born or reared here	
Count	1
Col %	1.0%
Family has always lived here	
Count	5
Col %	5.1%
Friends	
Count	3
Col %	3.0%
Subsistence opportunities	
Count	9
Col %	9.1%
Employment reasons	
Count	23
Col %	23.2%
Educational opportunities	

(continued)

Table XIX-27. Significance of Place, Kotzebue

	STUDY YEAR
	1991
Count	2
Col %	2.0%
Economic reasons	
Count	5
Col %	5.1%
Housing/property	
Count	2
Col %	2.0%
Stores	
Count	1
Col %	1.0%
Medical Services	
Count	1
Col %	1.0%
Environmental qualities	
Count	1
Col %	1.0%
Size of the community	
Count	1
Col %	1.0%
Less drinking or drugs	
Count	1
Col %	1.0%
Personal freedoms (politics)	
Count	2
Col %	2.0%
Recreational opportunities	
Count	1
Col %	1.0%
Quality of Life	
Count	7
Col %	7.1%
Cultural Reasons	
Count	1

(continued)

Table XIX-27. Significance of Place, Kotzebue

	STUDY YEAR
	1991
Col %	1.0%
Not here by choice	
Count	4
Col %	4.0%
POST-EVOS: CHANGE IN LIKING COMMUNITY	
No Response	
Count	1
Col %	1.1%
Do Not Know	
Count	1
Col %	1.1%
Less	
Count	6
Col %	6.7%
Same	
Count	73
Col %	82.0%
More	
Count	8
Col %	9.0%
POST-EVOS: WHY CHANGE IN LIKING COMMUNITY	
No Response	
Count	4
Col %	26.7%
Non-specific	
Count	4
Col %	26.7%
Increased drug/alcohol abuse	
Count	2
Col %	13.3%
Financial situation worse	
Count	1
Col %	6.7%

(continued)

Table XIX-27. Significance of Place, Kotzebue

	STUDY YEAR
	1991
Other reasons	
Count	3
Col %	20.0%
Increased appreciation of surroundings	
Count	1
Col %	6.7%
RATHER LIVE IN ANOTHER COMMUNITY	
No Response	
Count	1
Col %	1.0%
Do Not Know	
Count	1
Col %	1.0%
No	
Count	55
Col %	55.6%
Yes	
Count	42
Col %	42.4%
EXPECT TO LIVE IN REGION WHEN OLD	
No Response	
Count	1
Col %	1.0%
Do Not Know	
Count	8
Col %	8.1%
No	
Count	18
Col %	18.2%
Yes	
Count	72
Col %	72.7%
CONFIDENT ABOUT HUNT/FISH/GATHERING	
No Response	
Count	3

(continued)

Table XIX-27. Significance of Place, Kotzebue

	STUDY YEAR
	1991
Col %	3.1%
Do Not Know	
Count	3
Col %	3.1%
No	
Count	23
Col %	23.7%
Yes	
Count	68
Col %	70.1%
WHY UNCONFIDENT ABOUT HUNTING/FISHING/GATHERING	
No Response	
Count	1
Col %	4.2%
Do Not Know	
Count	1
Col %	4.2%
Increased restrictions	
Count	13
Col %	54.2%
Uncertainty about the future	
Count	1
Col %	4.2%
Increased development	
Count	2
Col %	8.3%
Native ownership of lands	
Count	2
Col %	8.3%
Population pressure	
Count	5
Col %	20.8%
Vulnerable to environmental damage	

(continued)

Table XIX-27. Significance of Place, Kotzebue

	STUDY YEAR
	1991
Count	3
Col %	12.5%
CONTINUE TO LIVE HERE IF NO WILD FOOD	
No Response	
Count	1
Col %	1.0%
Do Not Know	
Count	4
Col %	4.0%
No	
Count	39
Col %	39.4%
Yes	
Count	55
Col %	55.6%

Table XIX-28. Effectiveness of Oil Spill Responses, Kotzebue

	STUDY YEAR
	1991
EFFECTIVENESS EVOS: US COAST GUARD	
No Response	
Count	6
Col %	6.3%
Do Not Know	
Count	46
Col %	48.4%
Not Effective	
Count	14
Col %	14.7%
Somewhat	
Count	17
Col %	17.9%
Effective	
Count	12
Col %	12.6%
EFFECTIVENESS EVOS: ADEC	
No Response	
Count	6
Col %	6.3%
Do Not Know	
Count	50
Col %	52.6%
Not Effective	
Count	9
Col %	9.5%
Somewhat	
Count	19
Col %	20.0%
Effective	
Count	11
Col %	11.6%
EFFECTIVENESS EVOS: INSURANCE COMPANIES	
No Response	
Count	6

(continued)

Table XIX-28. Effectiveness of Oil Spill Responses, Kotzebue

	STUDY YEAR
	1991
Col %	6.3%
Do Not Know	
Count	60
Col %	63.2%
Not Effective	
Count	5
Col %	5.3%
Somewhat	
Count	16
Col %	16.8%
Effective	
Count	8
Col %	8.4%
EFFECTIVENESS EVOS: LOCAL NATIVE PROFIT	
No Response	
Count	5
Col %	5.4%
Do Not Know	
Count	43
Col %	46.2%
Not Effective	
Count	6
Col %	6.5%
Somewhat	
Count	13
Col %	14.0%
Effective	
Count	26
Col %	28.0%
EFFECTIVENESS EVOS: NATIVE NON-PROFITS	
No Response	
Count	5
Col %	5.5%
Do Not Know	

(continued)

Table XIX-28. Effectiveness of Oil Spill Responses, Kotzebue

	STUDY YEAR 1991
Count	58
Col %	63.7%
Not Effective	
Count	12
Col %	13.2%
Somewhat	
Count	11
Col %	12.1%
Effective	
Count	5
Col %	5.5%
EFFECTIVENESS EVOS: BOROUGH GOVERNMENT	
No Response	
Count	5
Col %	5.6%
Do Not Know	
Count	57
Col %	64.0%
Not Effective	
Count	11
Col %	12.4%
Somewhat	
Count	12
Col %	13.5%
Effective	
Count	4
Col %	4.5%
EFFECTIVENESS EVOS: VILLAGE CORPORATION	
No Response	
Count	5
Col %	5.7%
Do Not Know	
Count	55
Col %	62.5%

(continued)

Table XIX-28. Effectiveness of Oil Spill Responses, Kotzebue

	STUDY YEAR 1991
Not Effective	
Count	12
Col %	13.6%
Somewhat	
Count	9
Col %	10.2%
Effective	
Count	7
Col %	8.0%
EFFECTIVENESS EVOS: CITY COUNCIL	
No Response	
Count	5
Col %	6.0%
Do Not Know	
Count	54
Col %	64.3%
Not Effective	
Count	15
Col %	17.9%
Somewhat	
Count	7
Col %	8.3%
Effective	
Count	3
Col %	3.6%
EFFECTIVENESS EVOS: IRA COUNCIL	
No Response	
Count	6
Col %	7.1%
Do Not Know	
Count	54
Col %	63.5%
Not Effective	
Count	13
Col %	15.3%

(continued)

Table XIX-28. Effectiveness of Oil Spill Responses, Kotzebue

	STUDY YEAR
	1991
Somewhat	
Count	7
Col %	8.2%
Effective	
Count	5
Col %	5.9%
EFFECTIVENESS EVOS: CHAMBER OF COMMERCE	
No Response	
Count	6
Col %	11.1%
Do Not Know	
Count	37
Col %	68.5%
Not Effective	
Count	7
Col %	13.0%
Somewhat	
Count	4
Col %	7.4%
EFFECTIVENESS EVOS: COMMERCIAL BUSINESSES	
No Response	
Count	6
Col %	7.1%
Do Not Know	
Count	57
Col %	67.9%
Not Effective	
Count	13
Col %	15.5%
Somewhat	
Count	7
Col %	8.3%
Effective	
Count	1

(continued)

Table XIX-28. Effectiveness of Oil Spill Responses, Kotzebue

	STUDY YEAR
	1991
Col %	1.2%
EFFECTIVENESS EVOS: COMMERCIAL FISHING GROUPS	
No Response	
Count	6
Col %	7.1%
Do Not Know	
Count	56
Col %	65.9%
Not Effective	
Count	8
Col %	9.4%
Somewhat	
Count	11
Col %	12.9%
Effective	
Count	4
Col %	4.7%
EFFECTIVENESS EVOS: OTHER BUSINESS GROUPS	
No Response	
Count	7
Col %	8.3%
Do Not Know	
Count	58
Col %	69.0%
Not Effective	
Count	9
Col %	10.7%
Somewhat	
Count	7
Col %	8.3%
Effective	
Count	3
Col %	3.6%

(continued)

Table XIX-28. Effectiveness of Oil Spill Responses, Kotzebue

	STUDY YEAR
	1991
EFFECTIVENESS EVOS: SCHOOLS	
No Response	
Count	6
Col %	6.8%
Do Not Know	
Count	53
Col %	60.2%
Not Effective	
Count	14
Col %	15.9%
Somewhat	
Count	10
Col %	11.4%
Effective	
Count	5
Col %	5.7%
EFFECTIVENESS EVOS: CHURCHES	
No Response	
Count	6
Col %	6.8%
Do Not Know	
Count	59
Col %	67.0%
Not Effective	
Count	17
Col %	19.3%
Somewhat	
Count	5
Col %	5.7%
Effective	
Count	1
Col %	1.1%
EFFECTIVENESS EVOS: MEDICAL PROFESSION	
No Response	
Count	6

(continued)

Table XIX-28. Effectiveness of Oil Spill Responses, Kotzebue

	STUDY YEAR
	1991
Col %	6.8%
Do Not Know	
Count	58
Col %	65.9%
Not Effective	
Count	17
Col %	19.3%
Somewhat	
Count	6
Col %	6.8%
Effective	
Count	1
Col %	1.1%
EFFECTIVENESS EVOS: HEALTH AIDES	
No Response	
Count	6
Col %	6.7%
Do Not Know	
Count	59
Col %	66.3%
Not Effective	
Count	16
Col %	18.0%
Somewhat	
Count	7
Col %	7.9%
Effective	
Count	1
Col %	1.1%
EFFECTIVENESS EVOS: SOCIAL WORKERS	
No Response	
Count	6
Col %	6.7%
Do Not Know	

(continued)

Table XIX-28. Effectiveness of Oil Spill Responses, Kotzebue

	STUDY YEAR
	1991
Count	59
Col %	65.6%
Not Effective	
Count	15
Col %	16.7%
Somewhat	
Count	8
Col %	8.9%
Effective	
Count	2
Col %	2.2%
EFFECTIVENESS EVOS: LOCAL LAW ENFORCEMENT	
No Response	
Count	6
Col %	6.7%
Do Not Know	
Count	60
Col %	66.7%
Not Effective	
Count	15
Col %	16.7%
Somewhat	
Count	7
Col %	7.8%
Effective	
Count	2
Col %	2.2%
EFFECTIVENESS EVOS: STATE LAW ENFORCEMENT	
No Response	
Count	6
Col %	6.5%
Do Not Know	
Count	61

(continued)

Table XIX-28. Effectiveness of Oil Spill Responses, Kotzebue

	STUDY YEAR
	1991
Col %	65.6%
Not Effective	
Count	13
Col %	14.0%
Somewhat	
Count	11
Col %	11.8%
Effective	
Count	2
Col %	2.2%
EFFECTIVENESS EVOS: EXXON	
No Response	
Count	5
Col %	5.3%
Do Not Know	
Count	28
Col %	29.5%
Not Effective	
Count	29
Col %	30.5%
Somewhat	
Count	27
Col %	28.4%
Effective	
Count	6
Col %	6.3%
EFFECTIVENESS EVOS: VECO	
No Response	
Count	6
Col %	6.3%
Do Not Know	
Count	42
Col %	44.2%
Not Effective	

(continued)

Table XIX-28. Effectiveness of Oil Spill Responses, Kotzebue

	STUDY YEAR
	1991
Count	15
Col %	15.8%
Somewhat	
Count	19
Col %	20.0%
Effective	
Count	13
Col %	13.7%
EFFECTIVENESS EVOS: ALYESKA PIPELINE	
No Response	
Count	6
Col %	6.3%
Do Not Know	
Count	49
Col %	51.6%
Not Effective	
Count	18
Col %	18.9%
Somewhat	
Count	14
Col %	14.7%
Effective	
Count	8
Col %	8.4%

Table XIX-29. OCS Development Effects, Kotzebue

	STUDY YEAR
	1991
OCS EFFECT: FISH	
No Response	
Count	1
Col %	1.0%
Do Not Know	
Count	4
Col %	4.0%
Decrease	
Count	77
Col %	77.8%
No Change	
Count	17
Col %	17.2%
OCS EFFECT: SHELLFISH	
No Response	
Count	2
Col %	2.0%
Do Not Know	
Count	15
Col %	15.2%
Decrease	
Count	65
Col %	65.7%
No Change	
Count	16
Col %	16.2%
Increase	
Count	1
Col %	1.0%
OCS EFFECT: MARINE MAMMALS	
No Response	
Count	1
Col %	1.0%
Do Not Know	
Count	4

(continued)

Table XIX-29. OCS Development Effects, Kotzebue

	STUDY YEAR
	1991
Col %	4.0%
Decrease	
Count	81
Col %	81.8%
No Change	
Count	13
Col %	13.1%
OCS EFFECT: LAND MAMMALS	
No Response	
Count	1
Col %	1.0%
Do Not Know	
Count	8
Col %	8.1%
Decrease	
Count	56
Col %	56.6%
No Change	
Count	34
Col %	34.3%
OCS EFFECT: BIRDS	
No Response	
Count	1
Col %	1.0%
Do Not Know	
Count	3
Col %	3.0%
Decrease	
Count	67
Col %	67.7%
No Change	
Count	28
Col %	28.3%
OCS DEVELOPMENT = MORE JOBS?	

(continued)

Table XIX-29. OCS Development Effects, Kotzebue

	STUDY YEAR
	1991
No Response	
Count	1
Col %	1.0%
Do Not Know	
Count	7
Col %	7.1%
No	
Count	29
Col %	29.3%
Yes	
Count	62
Col %	62.6%
CONTAIN AND CLEANUP SMALL OIL SPILL	
No Response	
Count	1
Col %	1.0%
Do Not Know	
Count	7
Col %	7.1%
No	
Count	47
Col %	47.5%
Maybe	
Count	25
Col %	25.3%
Yes	
Count	19
Col %	19.2%
CONTAIN AND CLEANUP LARGE OIL SPILL	
No Response	
Count	1
Col %	1.0%
Do Not Know	
Count	6
Col %	6.1%

(continued)

Table XIX-29. OCS Development Effects, Kotzebue

	STUDY YEAR
	1991
No	
Count	69
Col %	69.7%
Maybe	
Count	15
Col %	15.2%
Yes	
Count	8
Col %	8.1%

CHAPTER XX: KIVALINA

by

James Magdanz, Susan Georgette, and Ronald T. Stanek

COMMUNITY OVERVIEW

Kivalina is a small Iñupiat community located about 80 miles above the Arctic Circle and 80 miles northwest of Kotzebue on the Chukchi Sea coast. The 1990 U.S. census for Kivalina reported 317 people in 67 households. Kivalina was the most western and most northern community in the Northwest Arctic Borough, which included Kotzebue and nine other communities. Neighboring communities included Point Hope, 73 miles northwest, and Noatak, about 45 miles east. The Kotzebue chapter (Chapter XIX) in this volume presents a regional overview, including prehistory, contact history, and twentieth century economic and political development. Those discussions apply to Kivalina as well, so this chapter will forgo a regional perspective and will focus on Kivalina.

Kivalina is situated on a narrow barrier island that separates Corwin (Kivalina) Lagoon from the sea. Flowing into the lagoon are the Kivalina and Wulik rivers which drain from the DeLong Mountains about 50 miles northeast. Between Kivalina Lagoon and the mountains is an area of low gravel hills which form the Kivalina flats. The flats are about 120 square miles in extent and characterized by pingos (pressure ridges caused by permafrost) and a large number of ponds and lakes. The area is bordered on the southeast by the Mulgrave Hills and on the northwest by several smaller groups of hills. A layer of permafrost underlies the surface soils, and tundra vegetation grows over most of the surface with clusters of willows and other shrubs along the rivers. Climate and weather patterns of the area are subject to maritime influences of the Chukchi Sea and ice persists during much of the year. Daytime summer temperatures may reach to 50F or 60F, while freezing conditions last into June and return again in August and September. Sea ice begins to form on the Chukchi Sea near Kivalina in October, begins to open into leads in April, and persists as a loose pack into May and June.

Wildlife resources of the region include several big game species: caribou, moose, brown bear, wolves, wolverine, and Dall sheep. Small game and furbearer species include waterfowl, ptarmigan, hare, fox, ground squirrel, weasel, mink, land otter, and lynx. Several marine mammals inhabit the Chukchi Sea near Kivalina including bowhead and gray whales, belukha, four species of seals, polar bear, and walrus. Freshwater and saltwater fish species of the area include salmon, Dolly Varden, whitefish, grayling, burbot, cod, and smelt. A wide variety of wild plants grow in the area; some of those commonly used for human consumption include berries, roots, and a variety of greens. Although no trees grow along the Chukchi sea coast, wood from interior rivers to the south and east drifts ashore and lodges along the beach.

Archeological evidence at the modern Kivalina site is scant, but occupancy of the general area during the past 10,000 years has been thoroughly documented. In the nineteenth century, the Kivalina area was occupied by the *Kivalinamiut,* one of eleven traditional Iñupiat societies in the area now known as the Northwest Arctic Borough. A two-year famine in 1881-83 virtually destroyed the traditional society; Burch reports that 60 percent of the population died in the first year and 50 percent of the survivors died in the second. The few remaining people left the area. The community was reborn in 1905, when a school was built on the island where Kivalina now exists, and a settlement grew up around the school. The founding Native population consisted of survivors of the aboriginal *Kivalinamiut* Society, as well as refugees from the Shishmaref area, the upper and lower Noatak Valley, and the Kotzebue region. A few Point Hope people married into the community in later years.

Kivalina has been the focus of scientific research for more than three decades, initially as a result of its proximity to Cape Thompson, where the U.S. Atomic Energy Commission planned to demonstrate the peaceful use of nuclear explosives by digging a demonstration deep water port. The project was scuttled in 1964, but not before several environmental studies had been conducted in the area. Doris Saario, Brina Kessel, and Ernest Burch observed, participated in, and recorded subsistence activities by residents of Kivalina from 1959 through 1961 (Wilimovsky and Wolfe 1966). Burch refined data collection methods and continued to collect social and economic data from 1964 through 1966 (Burch 1985). Additional subsistence information was collected in the early 1970s by Northwest Alaska Native Association (NANA) Regional Corporation for the Joint Federal-State Land Use Planning Commission for Alaska (Patterson 1974). The development of Red Dog mine in the 1980s prompted more research in Kivalina, providing new information on the fall fishery there (Braund and Burnham 1983). Under contact to the Division of Subsistence, Burch revisited Kivalina from 1982-84 to replicate his 1964-66 study, and produced an extensive comparative report (Burch 1985). Burch's work laid down a valuable baseline for Kivalina, provided the only rigorous comparison of subsistence harvests before and after the technological revolution that transformed rural Alaska in the 1970s, and advanced harvest data collection methodologies in general. His findings will be summarized here, with social and economic observations in this section, and subsistence harvest observations in the harvest comparison section below.

Burch (1985:2-11) describes population and economic changes in Kivalina over a 20-year period, from 1964 to 1984. The material status of the community changed dramatically. While the population increased by 58 percent, housing stock almost doubled, living space quadrupled, fuel oil replaced wood heat, snow machines replaced dog teams, and travel into and out of the community quadrupled. Combined collect on delivery (C.O.D.) and money orders totaled $11,038 in 1964, compared with $209,674 in 1984, an 1,800% increase. The social structure of the community, however, was stable during the period; all the local families that operated in 1960 were still operating in 1984.

Bowhead whaling resumed in 1968 after a decades-long hiatus, and community morale, Burch reports, was much higher in the 1980s than in the 1960s.

In 1984 the community had reached a stage of development where several federal housing development projects had built modern homes with oil heat and electricity, but there was no running water or sewage system. Scattered among the more recently built homes were a number of unoccupied structures built during the 1950s and 1960s. Many of these were used as storage sheds. Other buildings in the community included a modern school for grades kindergarten-12 equipped with a library, gymnasium, kitchen, clinic, and shop facility; a fire hall; a post office; a village store; a city hall occupied by the village government; a community recreation hall; and two churches. Two large water storage tanks supplied the school with its water and the village with a portion of its supply. Many people still relied on the local river for their water supply.

The changes from 1984 to 1992 were not as dramatic as in the earlier period, although the trend toward a higher standard of living continued. This study did not collect all the community-level economic data needed to allow detailed comparisons with Burch's 1960s and 1980s studies, but some general observations can be made. During the latter period, Kivalina's population increased from 270 to 344 (27 percent). Housing stock increased from 47 to 72 households (53 percent), but the general quality of housing remained constant. Technologies for home heating, home appliances, communications, and transportation evolved, but in no way could the changes be compared to the revolution that had occurred in the previous two decades. Except for the school and clinic, there still was no centralized water and sewer system. Kivalina still was not connected by road to any other community; access was by small commuter airplanes all year round, by boat during periods of open water, and by snow machine or dog team during the winter. Small all-terrain vehicles ("four-wheelers") were used within the community and along the beaches, but rarely for inter-community travel.

One significant change in the quality of community life occurred in the mid-1980s, when the U.S. Postal Service began granting mail contracts to all scheduled air carriers. Previously the service had contracted with a single carrier through competitive bids, a "winner take all" system. The winning carrier usually was the only carrier who could afford to provide scheduled service, and did so essentially without competition for the period of the contract. The new system distributed mail revenues to as many air carriers as could economically operate. Each carrier received less total mail income, but all could depend on a constant revenue stream. This dependable revenue helped support an exponential increase in air taxi services within the region. Instead of receiving air taxi service several times a week, communities began receiving air service several times a day, and with much improved equipment. As a consequence, travel was much easier and imported groceries were much fresher in 1992 than in 1984.

Another significant change was the opening of Red Dog Mine in 1989, which held forth promise of considerable local employment. This open-pit, lead-zinc mine was a joint venture between NANA Regional Corporation and Cominco, Inc. The mine was located about 50 miles northeast of Kivalina, and

its ore was shipped from a port site about 20 miles southeast of Kivalina. The mine and the port were connected by a road built expressly for the purpose. For reasons beyond the scope of this report, however, Kivalina did not benefit as much from mine employment as residents had expected, Kivalina's proximity to the mine notwithstanding. Then Kivalina, being the only community within the watershed occupied by Red Dog Mine, took the brunt of a widely-publicized water contamination incident shortly after the mine opened. Kivalina residents were keenly aware that contaminated water from Red Dog Creek flowed in the Wulik River, where Kivalina obtained its drinking water. Finally, following the opening of the mine access road, Kivalina hunters reported less success in caribou hunting. Some believed the new road adversely affected local patterns of caribou migration, to Kivalina's detriment. These events could be expected to influence Kivalina residents' opinions towards industrial development in general and mineral development in particular.

Other environmental, societal, and economic conditions in the region before and after the *Exxon Valdez* oil spill are discussed in the Kotzebue chapter in this volume (pages XIX-3 to XIX-5). That discussion -- which includes Alaska Native Claims Settlement Act (ANCSA) corporations, material culture, natural resource management, and wildlife populations -- is pertinent to Kivalina as well as to Kotzebue, and is incorporated here by reference.

In the 1990s, Kivalina had relatively few sources of full-time cash employment. However, part-time jobs usually were available during the summer months. Some people from Kivalina traveled to Kotzebue for part-time employment as laborers, machinery operators, commercial fishermen, and clerical staff. Arts and crafts such as skin sewing, bone and ivory carving, and baleen etching also provided small amounts of cash to the economy. A few people have worked as equipment operators and laborers at the Red Dog Mine. Of primary and continuing importance to the Kivalina economy were the annual subsistence harvests of wild resources which are the focus of activities throughout much of the year. Detailed descriptions of the annual cycle of harvest along with the enumeration of major resource groups can be found in Burch (1985). The most important resource groups harvested by Kivalina residents include char, marine mammals, and caribou.

RESEARCH METHODS

Field work occurred in Kivalina during the second year of the project. The Kivalina "study year" was the period from January 1, 1992 through December 31, 1992. In early January 1993, Jim Magdanz, Subsistence Resource Specialist II from Kotzebue, met with the Kivalina City Council to review survey questions and seek community approval for the project. Following approval by the city council, Magdanz and Stanek traveled to Kivalina on January 19 to hire and train Joe Swan Sr., Becky Norton, and Gretchen Booth as local assistants. After training, the group was joined by Jimmie Evak, Fish & Game

Technician III from Kotzebue, and a week later by Tracy Andrews with the Minerals Management Service. Household interviews began on January 23, and all but two were completed by January 30. The last two surveys were completed by local assistants in February and March. On average, resource harvest interviews required nine-tenths hour to complete, and ranged from one-quarter hour to three and on-sixth hours in length (Table 1-5). A summary of sample achievement in Kivalina is provided in Table XX-1, Table XX-2.

DEMOGRAPHY

From the total 72 households in the community, the 62 sampled households (86.11 percent) in this study had a mean size of 4.77 persons, and ranged from one to 12 persons (Table XX-2). While the sample population totaled 296 persons, the expanded estimate totaled 343.7 persons. The average age of Kivalina residents was 25.05 years with the oldest person in the survey being 81.8 years. The average length of residency was 21.16 years; the longest residing person had lived in Kivalina more than 80.9 years. The gender makeup of Kivalina residents was 53.04 percent male and 46.96 percent female. The ethnic composition of the community for the total estimated population was 95.27 percent Native.

MONETARY ECONOMY

Kivalina's monetary economy depended primarily upon government spending for administration, education, health, and social services, with secondary contributions from mining and retail trade, and services. According to the study findings, the average total (earned and other) household income in Kivalina in 1992 was $32,954.48 and the average per capita income was $6,902.63 (Table XX-5). Earned income sources provided 60.7 percent and other sources provided 39.3 percent (Table XX-5). Most prominent among the earned sources was government which contributed an average $10,749.97 per household. Other major sources of cash income included the mining industry with an average household amount of $3,824.32, trade with $2,806.40, and the service sector with $1,754.11. Lesser amounts of income originated from commercial fishing (185.47), and from finance, insurance, and real estate ($480.65).

Other income sources (Table XX-6) generated a household average of $12,847.53 in 1992. Among the 17 different sources of other income, the Alaska Permanent Fund dividend generated largest amount per household ($3,922.55), while other sources contributing significant amounts included Aid to Families with Dependent Children (AFDC) ($1,015.62), food stamps ($1,648.85), unemployment ($1,688.54), and Native corporation dividends (1,076.52). A variety of sources produced lesser sums of money.

Sources of cash employment for Kivalina residents during the study period were very limited as indicated by the low level of employment (56.55 percent) among the estimated 195.1 employment-age adults during the year (Table XX-4). Kivalina residents were highly dependent on government sources including the school and support facilities (local government-education) and village government for almost half (49 percent) of the jobs during 1992 (Fig XX-3). The other job sectors which provided employment were: mining, with 8 percent of the jobs involving working at the Red Dog mine located about 50 miles away; services, with 9 percent of the jobs in health, social, and repair services; retail trade, with 14 percent of the jobs primarily in two stores; and several other sources including commercial fishing (4 percent), transportation, communication, and utilities (T.C.U.) (4 percent), finance, insurance, and real estate (F.I.R.E.) (3 percent), and federal and state government (2 percent).

Four Kivalina households participated in the Kotzebue District commercial salmon fishery. These households traveled to Kotzebue by boat in July, maintained seasonal camps south of the Federal Aviation Administration flight service station in an area known as "South Tent City," and normally remained in Kotzebue through August. This commercial salmon fishery is discussed in more detail in the Kotzebue chapter and readers are referred to that discussion (page XIX-9).

Overall, employed Kivalina residents worked an average of 6.07 months (Table XX-4). About 20 percent of the jobs were year-round. The total number of households employed was 62.71 or 87.10 percent of the 72 total households. For each employed household, there was an average of 2.07 jobs and 1.76 persons employed.

SUBSISTENCE RESOURCE HARVEST AND USE

The harvest, use, and exchange of wild foods remained a central component of Kivalina's economic, social, and cultural life in 1992. Every surveyed Kivalina household was involved, as indicated by the following findings: 100 percent of households used with wild foods in 1992, 98.4 percent harvested wild foods, 98.4 percent received wild foods from others, and 90.3 percent gave away wild foods (Table XX-11). Because of Kivalina's isolation and its overall healthy resource base, most households attempting to harvest wild foods were successful. Kivalina households harvested a mean of 14.10 different resources during the study year and used a mean of 20.68 different resources (Table XX-7).

Kivalina residents harvested an estimated 261,744.1 edible pounds of wild foods in 1992. This was the equivalent of 3,635.33 pounds per household or 761.46 pounds per capita (Table XX-11). Kivalina's 1992 per capita subsistence harvest was approximately 25 percent greater than that reported for 1991 by the more populated and diverse nearby regional center of Kotzebue, but was roughly similar

to the per capita harvests of several other small northern Alaska communities with a marine mammal orientation.

Marine mammals, big game, and fish all figured prominently in Kivalina's subsistence harvest, with none of these resource categories accounting for more that half of the total harvest. In 1992, marine mammals contributed the most (41.76 percent) to Kivalina's harvest by weight, followed by fish (33.27 percent), and big game (21.70 percent) (Fig. XX-5). Birds and eggs, small game, marine invertebrates, and plants and berries together accounted for 3.26 percent of the harvest by weight.

Three very different species -- Dolly Varden, caribou, and bearded seal -- accounted for almost two-thirds of Kivalina's harvest. Dolly Varden contributed 26.7 percent to the community's total harvest, bearded seal contributed 20.6 percent, and caribou contributed 18.2 percent. Other species accounting for more than three percent of Kivalina's harvest by weight included: walrus (8.1 percent); bowhead whale (5.1 percent); belukha (3.8 percent); and moose (3.5 percent).

Unlike many communities in other regions of Alaska, salmon played a minor role in Kivalina's subsistence harvest due to their low abundance in the local area. An estimated 936.6 salmon were harvested by Kivalina households in 1992, accounting for 1.9 percent of the community's total harvest. Most of these (72.7 percent) were chum salmon. The mean household harvest of salmon was about 13 fish, equivalent to a per capita harvest of 14.78 pounds (Table XX-11). Salmon were predominantly taken with subsistence set gill nets although other gear, particularly beach seines and rods-and-reels, was also used (Table XX-13, Table XX-14, Table XX-15). A few Kivalina households moved seasonally to Kotzebue in summer to fish in the commercial salmon fishery there, and removed salmon from their commercial catch for home use (Table XX-12).

As described above, Dolly Varden was by far the most significant fish resource in Kivalina, accounting for 80.1 percent of the community's fish harvest in 1992. An estimated 21,149 Dolly Varden were harvested by Kivalina households during the study year for a mean of almost 294 fish per household (Table XX-11). Most of this (80.08 percent) was harvested with subsistence gear, primarily seines and set gill nets, but some were taken with rods-and-reels during periods of open water and with handlines through the ice water (Table XX-17). Cod species, particularly Arctic cod but also saffron cod and burbot, were also important, accounting for 7.6 percent of Kivalina's fish harvest or an average of about 440 fish per household. Nearly all saffron and Arctic cod fishing took place by hook and line through the ice in late fall and early winter (October-December) (Table XX-17). Whitefish species, particularly humpback whitefish and Bering cisco, ranked third among fish species in harvest by weight, accounting for 5.3 percent of Kivalina's fish harvest or an average of about 37 fish per household. Whitefish were predominantly harvested with subsistence gear, primarily seines and set gill nets.

Caribou dominated Kivalina's big game harvest in 1992, accounting for 83.7 percent of the community's big game harvest by weight. An estimated 351 caribou were harvested by Kivalina residents for a mean of almost five caribou per household (Table XX-11). Moose ranked second among

big game species in harvest by weight; an estimated 17 moose were taken by Kivalina residents in 1992. Kivalina residents also harvested three brown bears during the study year. No Dall sheep were reported taken in 1992, although in some years Kivalina residents harvest these in winter in the mountains to the northeast.

Among the marine mammals, seals contributed the most (58.6 percent) to Kivalina's marine mammal harvest by weight. Bearded seals dominated Kivalina's marine mammal harvest, accounting for 49.4 percent of the marine mammal harvest by weight. An estimated 158 bearded seals were taken in 1992. Spotted and ribbon seals were taken in smaller numbers. Walrus ranked second after bearded seal in terms of pound harvested; an estimated 28 walrus were taken by Kivalina residents in 1992 (Table XX-11). These contributed 19.4 percent of Kivalina's marine mammal harvest. Whales, particularly belukhas and bowheads, were also prominent marine mammal resources. In 1992, Kivalina residents harvested 10 belukhas and one bowhead whale. These accounted for 9.1 percent and 12.1 percent respectively of Kivalina's marine mammal harvest.

Kivalina residents also harvested a variety of small game, furbearers, birds, eggs, marine invertebrates, plants, and berries. This harvest included an estimated 23 wolverines, 9 wolves, 637 ptarmigan, 609 ducks, 944 geese, 3,866 eggs, and 710 gallons of berries (Table XX-11). Among waterfowl resources, eiders accounted for the largest portion (22.8 percent) of Kivalina's waterfowl harvest by weight, followed by brant (18.6 percent), white-fronted geese (16.6 percent), snow geese (15.3 percent), and Canada geese (15.1 percent) (Table XX-11). Murre eggs accounted for 82.1 percent of Kivalina's egg harvest by weight.

Nearly all Kivalina households (98.4 percent) participated in harvest activities. In each resource category except marine invertebrates, 70 percent or more of Kivalina households harvested a resource, indicating the pervasiveness of resource harvest activities in the lives of Kivalina residents (Fig. XX-11). Fishing had the highest participation rate (95.2 percent of Kivalina households) while marine mammal hunting had the lowest (71.0 percent of household) with the exception of marine invertebrate harvesting which was exceedingly minor in Kivalina's subsistence activities (Table XX-11). Kivalina's harvest participation rates were notably higher than those in the nearby regional center of Kotzebue where in 1986 75.1 percent of households fished and 18.3 percent hunted marine mammals. The individual resources harvested by the greatest percentages of Kivalina households included: Dolly Varden (87.1 percent of households), berries (83.9 percent of households), Arctic cod (77.4 percent of households), saffron cod (74.2 percent of households), caribou (74.2 percent of households), geese (69.4 percent of households), and bearded seal (62.9 percent of households) (Table XX-11).

Sharing of major resources was also widespread in Kivalina in 1992. More than half of Kivalina households received sheefish, Dolly Varden, caribou, belukha, bowhead whale, walrus, waterfowl, and eggs (Table XX-11). Forty percent or more of Kivalina households reported giving away Arctic cod, Dolly Varden, caribou, belukha, bowhead whale, bearded seal, waterfowl, and berries. Although information

was not collected on the origin or destination of these resource exchanges, researchers' observations suggest that sheefish, Dolly Varden, belukha, and bowhead whale were common exchange items between Kivalina and Kotzebue.

COMPARISON WITH OTHER YEARS

Results of the 1992 harvest survey in Kivalina suggest that Kivalina's subsistence harvest of wild foods has remained stable over the past decade. As shown in Figure XX-4, Kivalina's per capita harvest in 1992 closely matched that reported by Burch (1985) for the 1982-83 seasonal round and was somewhat less than, but in the same order of magnitude as, that reported for the 1983-84 seasonal round. (Because Burch calculated per capita harvests based on live weights of resources, researchers used Burch's data converted to edible weights as appears in the Division's Community Profile Database.) The higher per capita harvest in 1983-84 was largely due to a particularly successful caribou hunting season brought about by the presence of large numbers of caribou near Kivalina in the fall and winter (Burch 1985:78). The 1983-84 harvest did not indicate a significant trend, but rather demonstrated the annual variations inherent in a community's subsistence production.

An examination of Kivalina's harvest composition at the resource category level also showed a general stability but with annual variations more evident than in the total per capita harvest. For example, in each of the three years marine mammals contributed the most to Kivalina's harvest by weight, although the exact contribution ranged from 42-50 percent (Fig. XX-5). The contribution of fish to Kivalina's harvest was comparable in two of the three years but the third, in this case 1992, was notably higher. The same was true for big game: two of the harvest years were comparable, with the third (1983-84) notably higher. The per capita harvest of each resource category similarly reflected a general stability despite some variations, most significantly the large big game harvest in 1983-84 (Fig. XX-4). These variations in harvest composition were a normal and anticipated feature of subsistence production and did not necessarily point to longer-term trends.

The annual variations in subsistence harvests were strikingly evident at the individual resource level. For almost every major resource, one of the three harvest years had an unusually high or low harvest compared with the other two. With caribou, 1983-84 was particularly low; with belukha, 1992 was particularly low; with bowhead whale, 1983-84 was particularly high; and with walrus, 1992 was particularly high. Only Dolly Varden showed a stable per capita harvest over the three years, although this resource might show similar variations if harvest data were available for more years.

In 1985 Burch found that while there was relatively little change in the general order of magnitude in Kivalina's subsistence harvest from 1964 to 1984, the composition of the harvest of major resources fluctuated dramatically from one year to the next (1985; 109-118). This study further supports

Burch's findings by documenting the same pattern from the early 1980s to the early 1990s. Data on participation in harvest activities were not available from 1982-83 or 1983-84, and so comparisons with 1992 could not be made.

SOCIAL EFFECTS RESPONSES

This section discusses the responses of Kivalina residents to the Social Effects instrument, organized in six topics. These include the use of wild foods, sharing practices, community activities, significance of place, organizations' responsiveness to community needs, and Outer Continental Shelf (OCS) development.

Every sampled household in Kivalina used wild resources during the study year, according to the harvest survey results, and 98 percent harvested wild resources (Table XX-11). The same high level of use was evident on the social effects survey, where 88.5 percent of the sampled households reported eating wild foods on the day before the survey, and 86.9 percent reported that wild foods were a main part of the meal. This was the highest level of wild food consumption reported in any of the study communities in any of the three years of the project, and is consistent with the high harvest levels reported for Kivalina throughout the past three decades.. Kivalina households reported that the wild foods eaten yesterday were most commonly harvested by the respondent (50.8 percent), then by a relative in a different household (49.2 percent), by a relative in the same household (42.6 percent), by a friend in a different household in Kivalina (23 percent), or by a relative in a different community (23 percent). The question asked about "any wild foods that you ate yesterday." Given such a high level of use, it is likely to most households used more than one wild food on the previous day, and also likely that more than one person provided wild foods. Given also that several short-term resident teachers were included in the survey, who would be less likely to use wild foods daily. it would appear that the consumption of wild foods is a daily routine for long-term residents of Kivalina.

Confidence in wild food safety was high in Kivalina. For seals, 98.3 percent of the respondents thought seals from their harvest area were safe for children to eat, for whale muktuk, 96.6 percent, and for whitefish, 93.0 percent. Asked why these resources might be unsafe, respondents who answered "No" either had no response (one respondent for all three resources), or cited pollution from a non-oil spill source (one respondent for muktuk, two respondents for whitefish). Whitefish could have come in contact with the heavy metal contamination originating near the Red Dog mine several years before, although for an overwhelming majority of respondents this was apparently not a concern in 1993.

Kivalina respondents were asked to assess the availability of nineteen different fish and wildlife species in 1993, compared with ten years ago. Kivalina responses suggest a more dynamic environment than nearby Kotzebue responses. The responses may reflect Kivalina's more unpredictable sea-ice

environment, uncertainty about impacts of industrial development near Kivalina, Kivalina's greater contact with and knowledge of wildlife populations, or other factors. In Kotzebue more than half the respondents believed, on average, that resource availability had remained the same, whereas in Kivalina only a third of the respondents believed availability had remained the same. Only a few respondents in Kotzebue believed that resource availability had increased, whereas in Kivalina about 16 percent of the responses indicated "more" wildlife were available. Likewise, twice as many Kivalina residents as Kotzebue residents believed "less" wildlife was available. Only one species, bearded seal, was thought to about the "same" by more than half of the respondents. For all the other 18 species, less than half of the respondents believed availability was the "same." For 13 of the 19 species, the "less" responses exceeded the "more" responses, while for the remaining six species, "more" responses exceeded "less" responses.

Immediately evident in the responses was widespread agreement that caribou and belukha whale were "less" available in 1993 than in 1983. For caribou, 59.3 percent of the respondents reported "less" availability, while for belukha whale, 45.8 percent reported "less" availability (Table XX-21). Only 5.1 percent and 8.5 percent reported "more" availability for caribou and belukha, respectively, while 25.4 percent and 32.2 percent reported the "same." During the interviews, a number of respondents discussed the impact of the new road from Red Dog Mine to the Red Dog Port Site, and reported that caribou were being deflected by the road and thus were more difficult for Kivalina to harvest. Otherwise, respondents assessments of fish and wildlife availability were somewhat inconclusive. Moose, common murre, salmon, and polar bear were reported to be "more" available, although almost as many respondents believed polar bear were "less" available. Bearded seal, Dolly Varden, ringed seal, and whitefish were reported to be about the "same" by approximately half the respondents.

Increases or decreases in abundance are not necessarily related to increases or decreases in harvest, because abundance is only one of many factors influencing harvests. Others include weather, ice, and snow conditions, timing and route of seasonal wildlife migrations, availability of alternative resources, personal considerations, etc. Because of Burch's work in Kivalina in 1982 and 1983, harvest data do exist for the period "ten years ago." It is interesting to compare abundance evaluations with harvest estimates. Researchers compared the average of the 1982 and 1983 harvests with the reported 1992 harvest for selected species. Reported harvests of caribou and belukha, believed to be "less" available, were 23 percent and 64 percent less, respectively, in 1992. Reported harvests of moose and salmon, believed to be "more" available, were 183 percent and 4 percent more, respectively, in 1992. And reported harvests of bearded seal and Dolly Varden, believed to be the "same" in availability, were 60 percent more and 56 percent less, respectively, in 1992. So in evaluating abundance respondents obviously considered non-harvest factors, especially for bearded seal and Dolly Varden.

A majority of respondents perceived no change in sharing practices from the previous year (Table XX-23). For wild resources, sharing was reported the "same" by 61 percent, "less" by 18.6

percent, and "more" by 15.3 percent. For hunting and fishing gear, sharing was reported the "same" by 71.4 percent, "less" by 14.3 percent, and "more" by 8.9 percent. For money, sharing was reported the "same" by 58.9 percent, "less" by 23.2 percent, and "more" by 14.3 percent. And for labor, sharing was reported the "same" by 66.7 percent, "less" by 16.7 percent, and "more" by 13.3 percent.

About a third of the respondents (35.0 percent) believed that elders' influence in politics and guidance in Kivalina had "stayed the same," while 33.3 percent believed elders' influence had "increased," and 25 percent believed elders' influence had "decreased." About half the respondents (47.1 percent) reported attending from 1 to 5 public meetings in the last year, while 9.8 percent reported attending 6 to 10 meetings, 14.8 percent reported attending 11 to 20 meetings, 4.9 percent reported attending more than 20 public meetings, and 9.8 percent reported "never" attending public meetings. But at least some of those who never went to meetings did vote, because 93.4 percent of the respondents reported voting in the last state-wide election.

For the sampled households, 88.5 percent of respondents were Native corporation shareholders. NANA Regional Corporation was the only regional corporation represented in Kivalina, and 92.6 percent of the member respondents voted in the last NANA election. Kivalina's village corporation merged with NANA Regional Corporation shortly after the passage of ANCSA in 1971. Only three Kivalina respondents held Native village corporation shares, all in Kotzebue's village corporation (KIC), and all three (100 percent) reported voting in the last KIC election.

Several social effects questions explored respondent' reasons for living in and remaining in Kivalina, respondents' expectations for future residence in the region, and respondents' confidence in continued access to hunting, fishing, and gathering areas (Table XX-25). Respondents offered a wide variety of reasons for living in Kivalina. Hunting and fishing opportunities were most often cited (by 93.4 percent of respondents), followed by personal freedom (86.9 percent), relatives in Kivalina (83.6 percent), friends in Kivalina (83.6 percent), the beauty of the area (78.7 percent), and the community size (77.0 percent). Except for the hunting and fishing response, most of the frequently cited reasons were "quality of life" rather than economic reasons. Job opportunities (cited by 21.3 percent), available housing (32.8 percent), and cost of living (34.4 percent) were three of the four least cited reasons for living in Kivalina, while personal freedom, relatives, and friends were three of the four most cited reasons for living in Kivalina. When asked why they remained in Kivalina, respondents most commonly indicated that Kivalina was "where you're from" (21.3 percent). Otherwise, reasons for remaining were much like the reasons for living in Kivalina, hunting and fishing (18.0 percent), relatives (14.8 percent), and "family has always lived here" (13.1 percent). The responses suggest that the social stability Burch described for the 1964-1983 period has continued into the 1990s. When asked whether they liked living in Kivalina less, same, or more compared with 10 years ago, 57.6 percent of the respondents said "same," 27.1 percent said "more," and only 13.6 percent said "less." Asked why they responded "less" or "more," about half the respondents either had no response (41.7 percent) or non-specific responses (8.3 percent).

The remainder gave a wide variety of response, none of which were cited by more than two, including improved community cohesiveness, worsened financial situation, and two many people.

Most Kivalina residents, given the opportunity to move, would chose not to leave Kivalina (63.9 percent), while 29.5 percent would chose to move. More than three of four respondents (78.7 percent) expected to be living in the region when old. And an equal percentage (78.7 percent) expected to be able to continue to use the places they used in 1993 for hunting, fishing, and gathering. The 6.6 percent who expected problems accessing harvesting areas cited increased development, animal rights or anti-gun interests, environmental damage, and miscellaneous reasons. More than half (54.1 percent) said they would continue living in Kivalina if wild foods were no longer available, while 27.9 percent said they would not, and 18.0 percent did not know what they would do. The responses, again, indicate a stable community with an expectation of continued stability, and a recognition of the reliance of the community on access for hunting, fishing, and gathering.

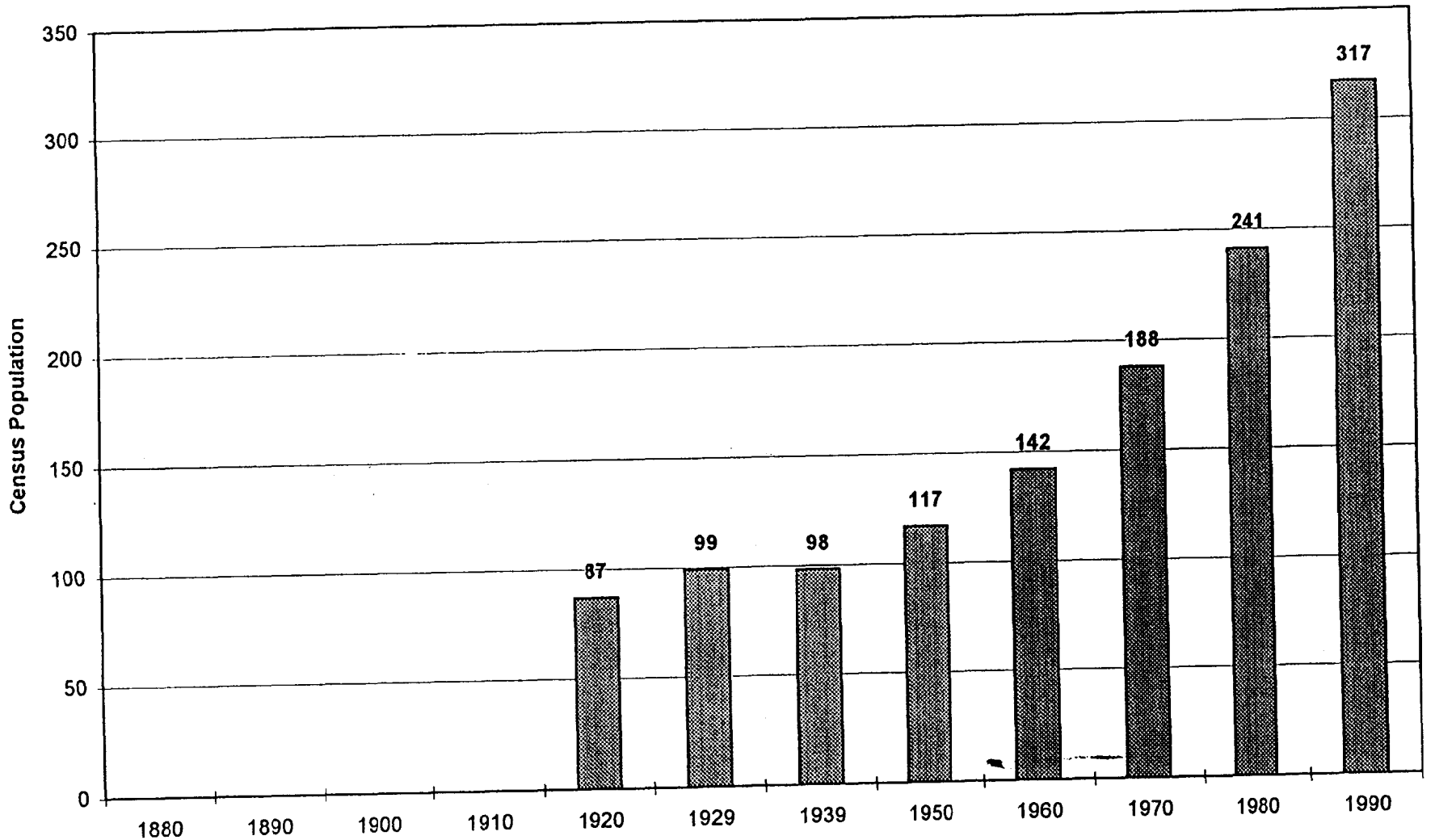
In communities affected by the *Exxon Valdez* oil spill, respondents were asked to assess the effectiveness of various organizations in responding to the spill. Kivalina was not directly affected by the oil spill, and the question in Kivalina was reworded to ask how effective organizations were "in responding to the needs of the community" (Table XX-26). Community health aides received the highest effectiveness rating (55.7 percent of the respondents through they were "effective"), followed by Kivalina businesses (45.9 percent), and the Kivalina city council (41.0 percent). At the other end of the spectrum were the National Park Service (judged "effective" by only 11.5 percent), and the Alaska Department of Environmental Conservation (13.1 percent). To be fair, the National Park Service plays a minor role in Kivalina and had the highest percentage (50.8 percent) of "do not know" responses. Local law enforcement was judged "effective" by 21.3 percent, an average score. But significantly, local law enforcement was judged "not effective" by 19.7 percent, the highest "not effective" score of any organization.

The final series of social effects questions asked about off-shore exploration and development for oil and gas. Respondents were in widespread agreement that the search for and development of off-shore oil and gas deposits would decrease the amount of fish and wildlife available for harvest (Table XX-28). For marine mammals, 85.2 percent predicted a decrease; for fish 72.1 percent; for birds, 54.1 percent; for land mammals, 47.5 percent, and for shellfish, 41.0 percent. Only for land mammals did the number of respondents predicting no change equal more than half the number predicting a decrease. Only one respondent predicted an increase, and that for only one category, land mammals. Respondents were somewhat more optimistic about job opportunities following oil and gas exploration and development, though a slim majority believed no more local jobs would result (41.0 percent). An increase in local jobs was predicted by 36.1 percent.

A majority of respondents doubted the ability to clean up even a small oil spill: 52.5 percent said "no," compared with 23.0 percent "maybe" when asked if they thought less than 1,000 barrels of oil

"could be effectively contained and cleaned up today." For a large oil spill (more than 100,000 barrels), only 11.5 percent responded "maybe," compared with 72.1 percent "no."

Figure XX-1. Kivalina Census Population, 1880 - 1990



Sources: Rollins 1978; Alaska Department of Labor 1991; no data prior to 1920

Table XX-1. Sample Participation: Kivalina 1993

VARIABLE	TOTAL HOUSEHOLDS
Estimated Household Structures	72
Non-Residential Structures	0
Estimated Households	72
Interview Goal:	72
Households Interviewed	62
Failed to Contact/Unavailable	9
Refused	1
Vacant Residential Structures	0
Seasonal Households*	0
Non-Resident Household **	0
Invalid Households and Vacancies	0
Total Households Attempted:	72
Refusal Rate:	1.59%
Non-Perm. HH Rate ("Vacancy Rate"):	0.0%
Interview Goal (Percentage)	86.1%
Social Effects Surveys Completed	61
Total Permanent Households	72
Percentage Interviewed	86.11%
Percentage of Total Households	100.00%
Interview Weighting Factor	1.161

NOTES:

* Seasonal households are households which maintain a permanent domicile elsewhere where they spend the majority of their time.

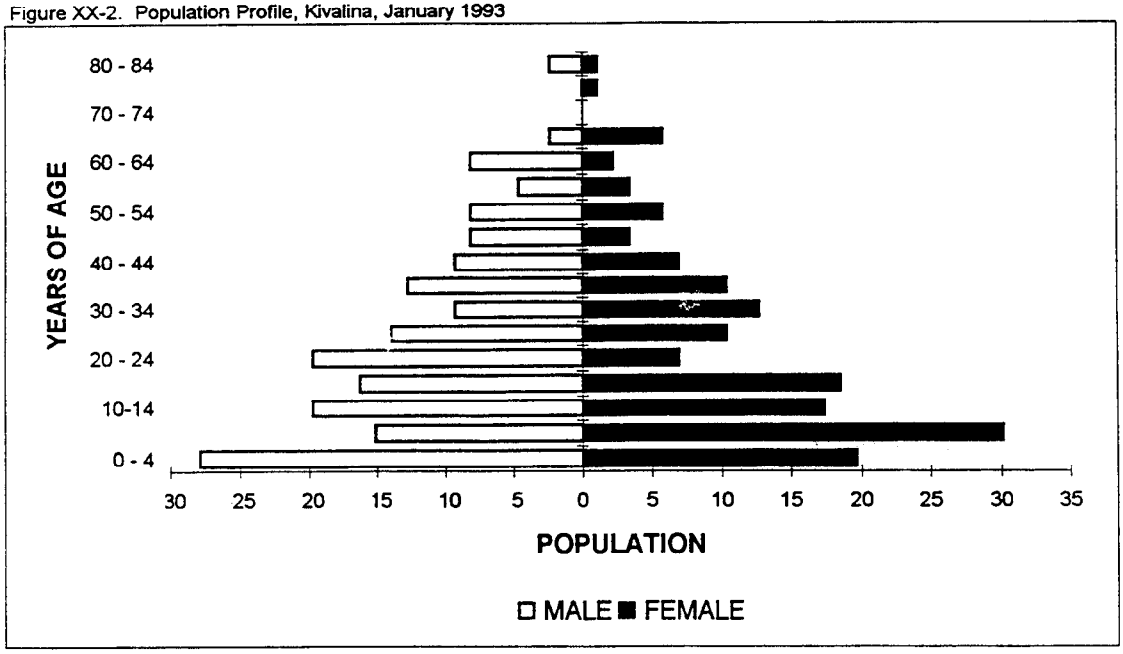
** Non-resident households are households which were not present during the study year or which were resident less than the required number of months.

Table XX-2 . Demographic Characteristics of Households, Kivalina, January 1993

Characteristics	1992
Sampled Households	62
Number of Households in the Community	72
Percentage of Households Sampled	86.11
Household Size	
Mean	4.77
Minimum	1
Maximum	12
Sample Population	296
Estimated Community Population	343.74
Age	
Mean	25.05
Minimum	0.21
Maximum	81.81
Median	20.267
Length of Residency - Population	
Mean	21.16
Minimum	0.210815
Maximum	80.95
Length of Residency - Household Heads	
Mean	34.54
Minimum	0.5
Maximum	76.65708
Sex	
Males	
Number	182.32
Percentage	53.04
Females	
Number	161.42
Percentage	46.96
Alaska Native	
Households (Either Head)	
Number	66.19
Percentage	91.94
Estimated Population	
Number	327.48
Percentage	95.27

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1993.

Figure XX-2. Population Profile, Kivalina, January 1993



SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1993

Table XX-3. Population Profile, Kivalina, January 1993

AGE	MALE			FEMALE			TOTAL		
	NUMBER	PERCENT	CUM. PERCENT	NUMBER	PERCENT	CUM. PERCENT	NUMBER	PERCENT	CUM. PERCENT
0 - 4	27.87	15.29%	15.29%	19.74	12.23%	12.23%	47.61	13.85%	13.85%
5-9	15.10	8.28%	23.57%	30.19	18.71%	30.94%	45.29	13.18%	27.03%
10-14	19.74	10.83%	34.39%	17.42	10.79%	41.73%	37.16	10.81%	37.84%
15 - 19	16.26	8.92%	43.31%	18.58	11.51%	53.24%	34.84	10.14%	47.97%
20 - 24	19.74	10.83%	54.14%	6.97	4.32%	57.55%	26.71	7.77%	55.74%
25 - 29	13.94	7.64%	61.78%	10.45	6.47%	64.03%	24.39	7.09%	62.84%
30 - 34	9.29	5.10%	66.88%	12.77	7.91%	71.94%	22.06	6.42%	69.26%
35 - 39	12.77	7.01%	73.89%	10.45	6.47%	78.42%	23.23	6.76%	76.01%
40 - 44	9.29	5.10%	78.98%	6.97	4.32%	82.73%	16.26	4.73%	80.74%
45 - 49	8.13	4.46%	83.44%	3.48	2.16%	84.89%	11.61	3.38%	84.12%
50 - 54	8.13	4.46%	87.90%	5.81	3.60%	88.49%	13.94	4.05%	88.18%
55 - 59	4.65	2.55%	90.45%	3.48	2.16%	90.65%	8.13	2.36%	90.54%
60 - 64	8.13	4.46%	94.90%	2.32	1.44%	92.09%	10.45	3.04%	93.58%
65 - 69	2.32	1.27%	96.18%	5.81	3.60%	95.68%	8.13	2.36%	95.95%
70 - 74	0.00	0.00%	96.18%	0.00	0.00%	95.68%	0.00	0.00%	95.95%
75 - 79	0.00	0.00%	96.18%	1.16	0.72%	96.40%	1.16	0.34%	96.28%
80 - 84	2.32	1.27%	97.45%	1.16	0.72%	97.12%	3.48	1.01%	97.30%
85 - 89	0.00	0.00%	97.45%	0.00	0.00%	97.12%	0.00	0.00%	97.30%
90 - 94	0.00	0.00%	97.45%	0.00	0.00%	97.12%	0.00	0.00%	97.30%
95 - 99	0.00	0.00%	97.45%	0.00	0.00%	97.12%	0.00	0.00%	97.30%
100 - 104	0.00	0.00%	97.45%	0.00	0.00%	97.12%	0.00	0.00%	97.30%
Missing	4.65	2.55%	100.00%	4.65	2.88%	100.00%	9.29	2.70%	100.00%
TOTAL	182.32	53.04%		161.42	46.96%		343.74	100.00%	

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1993

Table XX-4. Employment Characteristics, Kivalina, 1992

Characteristics		1992
ADULTS		
Total		195.10
Employed		
	Number	110.32
	Percentage	56.55
Jobs		
	Number	124.26
	Mean	1.13
	Minimum	1
	Maximum	4
Months Employed		
	Mean	6.07
	Minimum	1
	Maximum	12
	Year-Round	20.00
HOUSEHOLDS		
Total		72.00
Employed		
	Number	62.71
	Percentage	87.10
Jobs per Employed Household		
	Mean	1.98
	Minimum	1
	Maximum	5
Employed Adults		
	Mean	1.76
	Minimum	1
	Maximum	5

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1993.

Table XX-5. Community, Household, and Per Capita Income, All Sources and by Employer Type, Kivalina, 1992

INCOME SOURCE	INCOME		
	COMMUNITY TOTAL	AVERAGE HOUSEHOLD	PER CAPITA
All Sources	$2,371,833.86	$32,942.14	$6,900.04
Earned Income	$1,446,811.74	$20,094.61	$4,209.01
Agriculture, Forestry, and Fishing	13,353.68	185.47	38.85
Agriculture	0.00	0.00	0.00
Forestry	0.00	0.00	0.00
Fishing, Hunting, Trapping	13,353.68	185.47	38.85
Hatchery/Enhancement	0.00	0.00	0.00
Commercial Fishing	13,353.68	185.47	38.85
Hunting/Trapping	0.00	0.00	0.00
Mining	275,351.23	3,824.32	801.04
Construction	0.00	0.00	0.00
Manufacturing	0.00	0.00	0.00
Cannery	0.00	0.00	0.00
Other Manufacturing	0.00	0.00	0.00
Logging/Timber	0.00	0.00	0.00
Transportation, Communications, and Utilities	21,145.94	293.69	61.52
Trade	202,060.65	2,806.40	587.83
Wholesale	0.00	0.00	0.00
Retail	202,060.65	2,806.40	587.83
Finance, Insurance, and Real Estate	34,606.45	480.65	100.68
Services	126,296.13	1,754.11	367.42
Government	773,997.67	10,749.97	2,251.68
Federal	0.00	0.00	0.00
State	33,445.16	464.52	97.30
Local	740,552.51	10,285.45	2,154.39
Local Government	294,862.19	4,095.31	857.80
Local Education	445,690.32	6,190.14	1,296.58
Unknown	AMT UNK	AMT UNK	AMT UNK
Other Income	$925,022.12	$12,847.53	$2,691.04

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1993

Table XX-6. Community, Household, and Per Capita Other Income by Source, Kivalina, 1992

Source	OTHER INCOME			
	PERCENTAGE REPORTING	COMMUNITY TOTAL	AVERAGE HOUSEHOLD	PER CAPITA
All Sources		$925,022.12	$12,847.53	$2,691.04
Exxon Claims	0.00	0.00	0.00	0.00
Aid to Families with Dependent Children	14.52	73,124.71	1,015.62	212.73
Adult Public Assistance	4.84	16,940.90	235.29	49.28
Exxon Damages	0.00	0.00	0.00	0.00
Pension/Retirement	22.58	63,046.45	875.65	183.41
Longevity Bonus	8.06	27,870.97	387.10	81.08
Social Security	17.74	61,873.55	859.35	180.00
Workman's Comp./Insurance	1.61	22,296.77	309.68	64.86
Energy Assistance	30.65	11,428.26	158.73	33.25
Supplemental Security Income	8.06	17,528.52	243.45	50.99
Food Stamps	35.48	118,717.27	1,648.85	345.37
Unemployment	41.94	121,574.98	1,688.54	353.68
Native Corporation Dividend	85.48	77,509.16	1,076.52	225.49
Dividend/Interest	24.19	2,725.55	37.85	7.93
Child Support	1.61	2,327.23	32.32	6.77
Rental Income	3.23	3,309.68	45.97	9.63
Veteran Disability	0.00	0.00	0.00	0.00
Equipment Leasing	0.00	0.00	0.00	0.00
Rental Assistance	0.00	0.00	0.00	0.00
Fishing Permit Leasing	0.00	0.00	0.00	0.00
Per Diem	0.00	0.00	0.00	0.00
Disability	1.61	20,931.10	290.71	60.89
Alaska Permanent Fund Dividend	95.16	282,423.48	3,922.55	821.61
Weatherization	0.00	0.00	0.00	0.00
Veteran's Assistance	1.61	1,393.55	19.35	4.05
Investments/Stocks/Bonds	0.00	0.00	0.00	0.00
Bureau of Indian Affairs Grants	0.00	0.00	0.00	0.00
Housing Allowances/Off-Base Allowances	0.00	0.00	0.00	0.00
Women, Infants, and Children Program	0.00	0.00	0.00	0.00
General Assistance Grant	0.00	0.00	0.00	0.00
Foster Care	0.00	0.00	0.00	0.00
Inheritance	0.00	0.00	0.00	0.00
Contest Winnings	0.00	0.00	0.00	0.00
Capital Gains	0.00	0.00	0.00	0.00
ASRC Elder Trust	0.00	0.00	0.00	0.00
Other	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1993

Figure XX-3. Employment by Industry, Kivalina, 1992

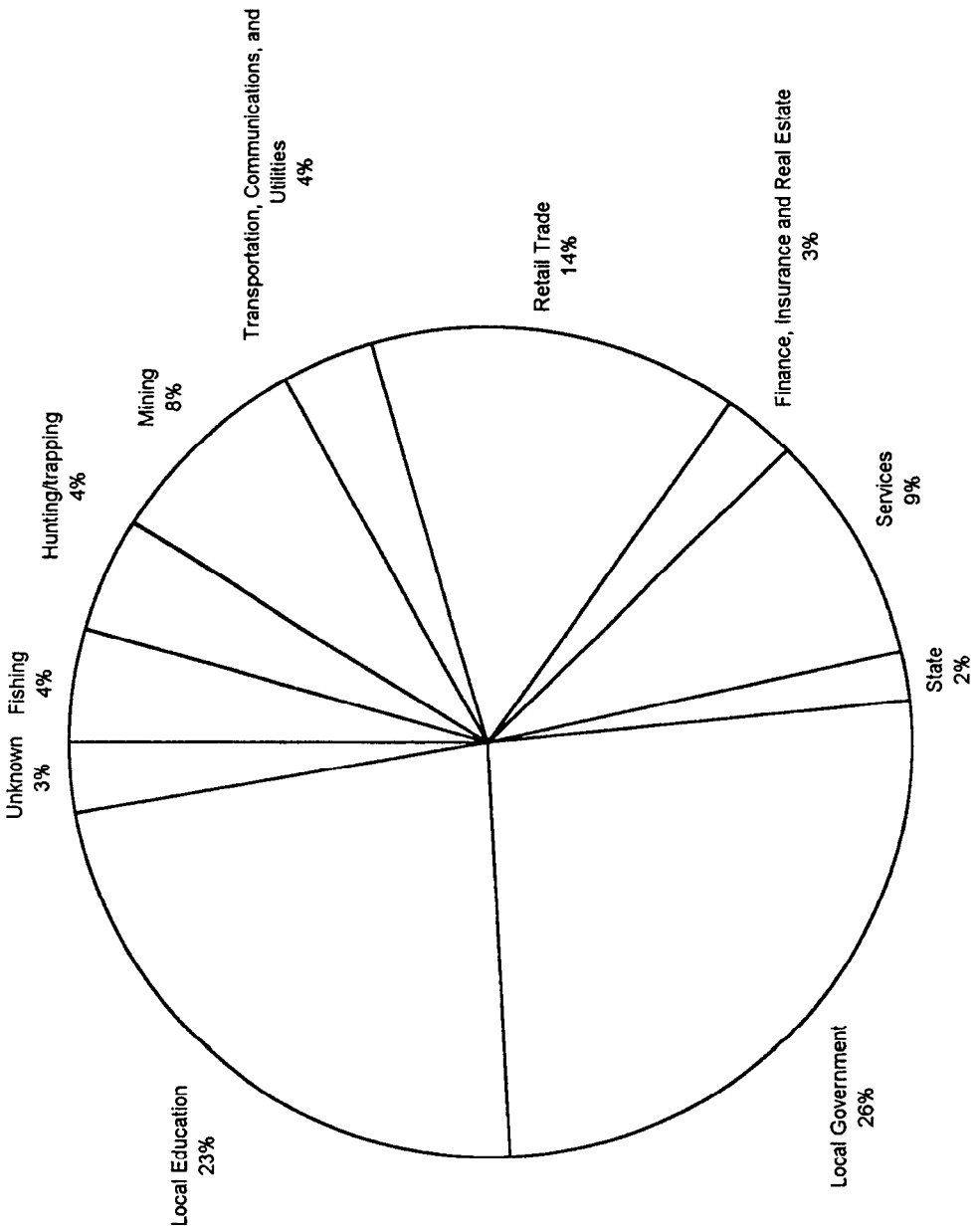


Table XX-7. Characteristics of Resource Harvest and Use, Kivalina, 1992

Study Year	1992
Mean Number Of Resources Used Per Household	20.68
Minimum	3
Maximum	44
95 % Confidence Limit (+/-)	4.04
Median	20
Mean Number Of Resources Attempted To Harvest Per Household	17.15
Minimum	0
Maximum	46
95 % Confidence Limit (+/-)	6.15
Median	15.5
Mean Number Of Resources Harvested Per Household	14.10
Minimum	0
Maximum	33
95 % Confidence Limit (+/-)	5.56
Median	14
Mean Number Of Resources Received Per Household	11.02
Minimum	0
Maximum	43
95 % Confidence Limit (+/-)	7.33
Median	8
Mean Number Of Resources Given Away Per Household	10.10
Minimum	0
Maximum	38
95 % Confidence Limit (+/-)	8.08
Median	7.5
Mean Household Harvest, Pounds	3,635.33
Minimum	0.00
Maximum	21,097.48
Total Pounds Harvested	261,744.10
Community Per Capita Harvest, Pounds	761.46
Percent Using Any Resource	100.00
Percent Attempting To Harvest Any Resource	98.39
Percent Harvesting Any Resource	98.39
Percent Receiving Any Resource	98.39
Percent Giving Away Any Resource	90.32
Number Of Households In Sample	62
Number of Resources Available	83

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1993

Table XX-8. Participation in the Harvest and Processing of Wild Resources, Kivalina, 1992

Study Year			1992
Total Number of People			343.74
GAME	Hunt	Number	118.45
		Percentage	34.46
		Missing	12.77
		Missing %	3.72
	Process	Number	156.77
		Percentage	45.61
		Missing	15.10
		Missing %	4.39
FISH	Fish	Number	183.48
		Percentage	53.38
		Missing	12.77
		Missing %	3.72
	Process	Number	181.16
		Percentage	52.70
		Missing	12.77
		Missing %	3.72
FURBEARERS	Hunt or Trap	Number	39.48
		Percentage	11.49
		Missing	12.77
		Missing %	3.72
	Process	Number	61.55
		Percentage	17.91
		Missing	12.77
		Missing %	3.72
PLANTS	Gather	Number	185.81
		Percentage	54.05
		Missing	12.77
		Missing %	3.72
	Process	Number	166.06
		Percentage	48.31
		Missing	12.77
		Missing %	3.72
ANY RESOURCE			
	Attempt	Number	240.39
		Percent	69.93
	Process	Number	231.10
		Percent	67.23

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1993.

Table XX-9. Subsistence Harvests in Pounds Usable Weight per Person by Resource Category, Kivalina, 1964/65, 1965/66, 1982/83, 1983/84, and 1992

	Pounds Usable Weight per Person				
	1964/65	1965/66	1982/83	1983/84	1992
Fish	393.9	141.9	181.3	200.9	253.3
Land Mammals	209.9	832.7	190.9	297.0	165.3
Marine Mammals	727.8	569.1	392.3	433.0	318.0
Birds and Eggs	2.9	0.1	3.4	5.2	10.8
Wild Plants	6.8	3.9	10.2	4.1	14.0
All Resources	1341.2	1548.8	778.1	940.2	761.5

Note: for 1992, the " fish" category includes .07 pounds per person of marine invertebrates.

Table XX-10. Composition of Resource Harvests by Resource Category, Kivalina, 1964/65, 1965/66, 1982/83, 1983/84, and 1992

	Percentage of Total Harvest				
	1964/65	1965/66	1982/83	1983/84	1992
Fish	29.4%	9.2%	23.3%	21.4%	33.3%
Land Mammals	15.6%	53.8%	24.5%	31.6%	21.7%
Marine Mammals	54.3%	36.7%	50.4%	46.1%	41.8%
Birds and Eggs	0.2%	0.0%	0.4%	0.6%	1.4%
Wild Plants	0.5%	0.3%	1.3%	0.4%	1.8%

Figure XX-4. Harvests of Wild Resources for Home Use, Pounds Usable Weight per Capita, Kivalina, 1964/65, 1965/66, 1982/83, 1983/84, and 1992

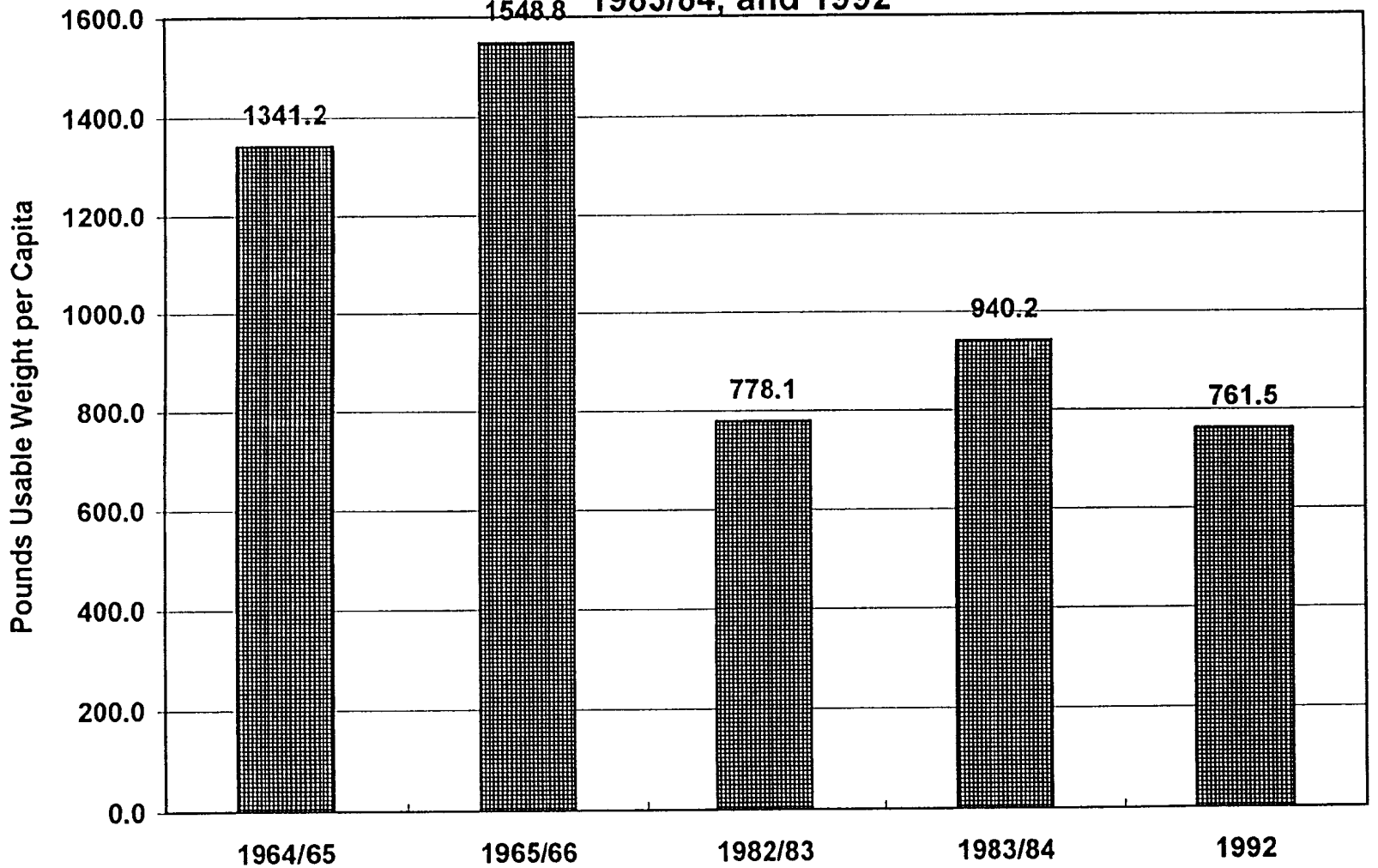


Figure XX-5. Composition of Wild Resource Harvests by Resource Category, Kivalina, 1992

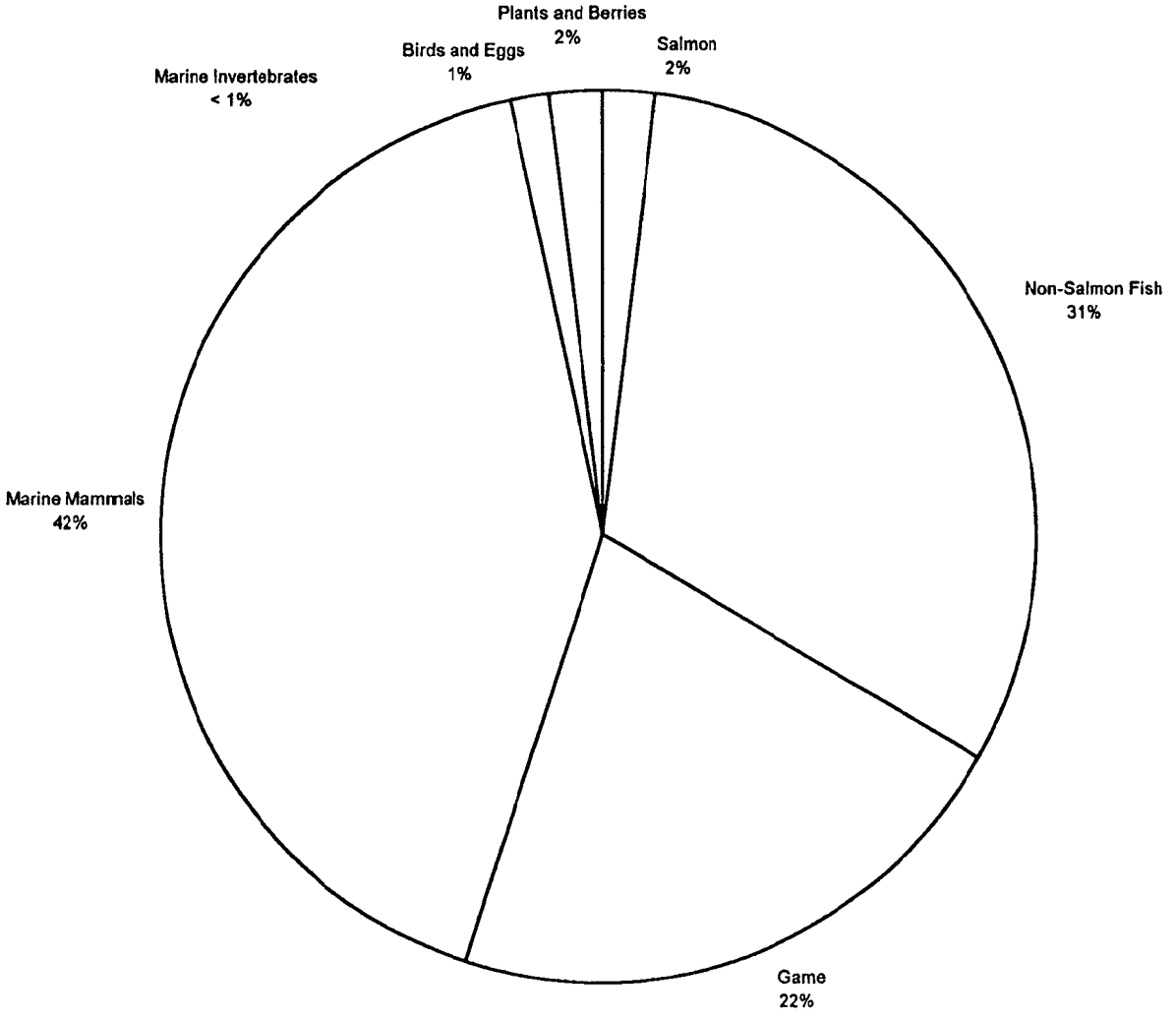


Table XX-11. Estimated Harvest and Use of Fish, Mammal, Bird and Plant Resources, Kivalina, 1992

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
All Resources	100.0	98.4	98.4	98.4	90.3	261,744.10	3,635.33	761.46			11.24%	10.27%
Fish	100.0	95.2	95.2	93.5	75.8	87,067.66	1,209.27	253.29			20.55%	19.07%
Salmon	62.9	43.5	41.9	37.1	37.1	5,081.05	70.57	14.78	936.58	13.01	26.16%	26.32%
Chum Salmon	61.3	43.5	40.3	33.9	33.9	4,178.37	58.03	12.16	680.52	9.45	27.63%	27.59%
Coho Salmon	16.1	12.9	12.9	4.8	4.8	325.53	4.52	0.95	55.74	0.77	31.18%	31.90%
Chinook Salmon	14.5	8.1	8.1	6.5	6.5	127.94	1.78	0.37	13.35	0.19	39.26%	39.33%
Pink Salmon	14.5	11.3	11.3	3.2	11.3	364.37	5.06	1.06	171.87	2.39	32.90%	33.79%
Sockeye Salmon	4.8	3.2	3.2	1.6	3.2	84.84	1.18	0.25	15.10	0.21	63.90%	64.21%
Unknown Salmon	1.6	0.0	0.0	1.6	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Non-Salmon Fish	100.0	95.2	95.2	91.9	72.6	81,986.60	1,138.70	238.51			21.50%	19.99%
Blackfish	1.6	0.0	0.0	1.6	1.6	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Pike	11.3	0.0	0.0	11.3	4.8	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Cod	90.3	88.7	88.7	37.1	48.4	6,612.37	91.84	19.24	31,652.69	439.62	9.82%	10.01%
Saffron Cod	79.0	74.2	74.2	24.2	30.6	3,116.91	43.29	9.07	4,452.72	61.84	12.43%	13.31%
Arctic Cod	82.3	77.4	77.4	22.6	40.3	2,978.46	41.37	8.66	27,076.87	376.07	10.62%	11.16%
Burbot	37.1	30.6	29.0	19.4	21.0	517.01	7.18	1.50	123.10	1.71	21.22%	20.82%
Flounder	4.8	4.8	4.8	0.0	1.6	44.13	0.61	0.13	40.12	0.56	48.69%	48.54%
Unknown Flounder	4.8	4.8	4.8	0.0	1.6	44.13	0.61	0.13	40.12	0.56	48.69%	48.54%
Halibut	3.2	1.6	0.0	3.2	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Herring	6.5	6.5	3.2	3.2	1.6	139.91	1.94	0.41	23.32 gal	0.32	74.22%	74.09%
Smelt	6.5	4.8	4.8	1.6	1.6	21.65	0.30	0.06	154.61	2.15	60.85%	59.74%
Rainbow Smelt	6.5	4.8	4.8	1.6	1.6	21.65	0.30	0.06	154.61	2.15	60.85%	59.74%
Grayling	59.7	50.0	48.4	17.7	19.4	644.05	8.95	1.87	715.61	9.94	17.39%	17.63%
Sheefish	74.2	6.5	4.8	74.2	16.1	70.26	0.98	0.20	12.77	0.18	48.80%	49.73%
Whitefish	59.7	46.8	41.9	25.8	30.6	4,661.57	64.74	13.56			26.23%	25.76%
Whitefish, Large	54.8	41.9	35.5	25.8	29.0	4,159.61	57.77	12.10	2,376.92	33.01	29.22%	28.64%
Whitefish, Broad/Akakiik	1.6	0.0	0.0	1.6	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Whitefish, Humpback	53.2	41.9	35.5	24.2	29.0	4,159.61	57.77	12.10	2,376.92	33.01	29.22%	28.64%
Cisco	11.3	9.7	9.7	3.2	4.8	197.13	2.74	0.57			36.96%	37.10%
Least Cisco	1.6	0.0	0.0	1.6	1.6	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Bering Cisco	9.7	9.7	9.7	1.6	3.2	197.13	2.74	0.57	112.65 gal	1.56	36.96%	37.10%
Unknown Whitefish	4.8	3.2	3.2	1.6	0.0	304.84	4.23	0.89	174.19	2.42	55.18%	55.81%
Trout and Char	100.0	87.1	87.1	64.5	64.5	69,792.66	969.34	203.04	21,149.29	293.74	23.87%	22.29%
Char	100.0	87.1	87.1	64.5	64.5	69,792.66	969.34	203.04	21,149.29	293.74	23.87%	22.29%
Dolly Varden	100.0	87.1	87.1	64.5	64.5	69,792.66	969.34	203.04	21,149.29	293.74	23.87%	22.29%
Trout	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%

Table XX-11. Estimated Harvest and Use of Fish, Mammal, Bird and Plant Resources, Kivalina, 1992

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
Game	96.8	79.0	74.2	74.2	64.5	56,802.77	788.93	165.25	443.03	6.15	9.95%	10.87%
Big Game	96.8	77.4	74.2	74.2	58.1	56,797.55	788.85	165.23	371.03	5.15	9.94%	10.87%
Brown Bear	9.7	8.1	4.8	4.8	3.2	199.74	2.77	0.58	3.48	0.05	42.31%	52.07%
Caribou	96.8	77.4	74.2	67.7	53.2	47,538.58	660.26	138.30	350.71	4.87	10.16%	10.91%
Moose	46.8	30.6	22.6	30.6	30.6	9,059.23	125.82	26.35	16.84	0.23	18.58%	19.65%
Sheep, Dall	8.1	8.1	0.0	8.1	1.6	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Small Game/Furbearer	43.5	45.2	35.5	21.0	25.8	5.23	0.07	0.02	72.00	1.00	18.30%	34.71%
Fox	12.9	22.6	9.7	4.8	3.2	0.00	0.00	0.00	20.90	0.29	37.97%	0.00%
Arctic Fox	6.5	17.7	4.8	3.2	0.0	0.00	0.00	0.00	5.81	0.08	48.91%	0.00%
Red Fox	11.3	21.0	9.7	3.2	3.2	0.00	0.00	0.00	15.10	0.21	34.81%	0.00%
Hare	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Arctic Hare	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Snowshoe Hare	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Land Otter	3.2	16.1	1.6	3.2	1.6	0.00	0.00	0.00	2.32	0.03	74.52%	0.00%
Lynx	0.0	9.7	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Mink	3.2	11.3	3.2	0.0	0.0	0.00	0.00	0.00	2.32	0.03	52.26%	0.00%
Muskrat	3.2	4.8	3.2	0.0	3.2	0.00	0.00	0.00	3.48	0.05	55.18%	0.00%
Porcupine	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Weasel	1.6	3.2	0.0	1.6	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Wolf	14.5	27.4	12.9	4.8	6.5	0.00	0.00	0.00	9.29	0.13	24.79%	0.00%
Wolverine	29.0	32.3	21.0	12.9	17.7	0.00	0.00	0.00	23.23	0.32	24.21%	0.00%
Squirrel	11.3	12.9	8.1	3.2	3.2	5.23	0.07	0.02	10.45	0.15	35.11%	34.71%
Parka Squirrel (ground)	11.3	12.9	8.1	3.2	3.2	5.23	0.07	0.02	10.45	0.15	35.11%	34.71%
Marine Mammals	95.2	79.0	71.0	93.5	69.4	109,317.18	1,518.29	318.02	346.75	4.82	11.00%	13.59%
Whale	93.5	69.4	27.4	91.9	58.1	23,233.26	322.68	67.59	11.03	0.15	17.47%	43.87%
Belukha	87.1	61.3	25.8	69.4	50.0	9,983.38	138.66	29.04	10.03	0.14	16.18%	15.94%
Bowhead	90.3	64.5	4.8	88.7	48.4	13,249.88	184.03	38.55	1.00	0.01	74.52%	73.88%
Gray Whale	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Seal	91.9	74.2	71.0	50.0	48.4	64,014.27	889.09	186.23	305.85	4.25	11.31%	10.29%
Bearded Seal	90.3	66.1	62.9	46.8	45.2	53,832.08	747.67	156.61	155.46	2.16	10.69%	10.69%
Young Bearded Seal	1.6	1.6	1.6	0.0	0.0	204.39	2.84	0.59	2.32	0.03	74.52%	74.65%
Ribbon Seal	14.5	19.4	11.3	3.2	4.8	310.06	4.31	0.90	8.13	0.11	26.75%	43.42%
Ringed Seal	50.0	43.5	41.9	21.0	27.4	7,562.32	105.03	22.00	110.32	1.53	16.39%	17.09%
Spotted Seal	24.2	24.2	21.0	4.8	4.8	2,105.42	29.24	6.13	29.61	0.41	23.53%	29.19%
Walrus	75.8	45.2	37.1	59.7	37.1	21,201.33	294.46	61.68	27.53	0.38	19.78%	20.01%
Polar Bear	19.4	12.9	6.5	16.1	9.7	868.32	12.06	2.53	2.33	0.03	51.99%	53.07%

Table XX-11. Estimated Harvest and Use of Fish, Mammal, Bird and Plant Resources, Kivalina, 1992

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
Birds and Eggs	83.9	77.4	75.8	61.3	62.9	3,707.93	51.50	10.79	6,096.55	84.67	15.02%	11.40%
Birds	83.9	77.4	75.8	41.9	58.1	2,888.07	40.11	8.40	2,230.26	30.98	11.11%	10.95%
Owl	22.6	19.4	9.7	12.9	9.7	81.29	1.13	0.24	29.03	0.40	36.18%	35.65%
Snowy Owl	22.6	19.4	9.7	12.9	9.7	81.29	1.13	0.24	29.03	0.40	36.18%	35.65%
Upland Game Birds	51.6	46.8	41.9	16.1	32.3	445.88	6.19	1.30	636.97	8.85	16.75%	15.43%
Grouse	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Ptarmigan	51.6	46.8	41.9	16.1	32.3	445.88	6.19	1.30	636.97	8.85	16.75%	15.43%
Migratory Birds	80.6	74.2	71.0	38.7	48.4	2,360.90	32.79	6.87	1,564.26	21.73	12.25%	12.13%
Waterfowl	80.6	74.2	71.0	38.7	48.4	2,263.35	31.44	6.58	1,552.65	21.56	12.26%	12.17%
Ducks	54.8	48.4	45.2	25.8	33.9	776.90	10.79	2.26	609.10	8.46	16.60%	15.49%
Eider	46.8	41.9	41.9	19.4	25.8	515.61	7.16	1.50	322.26	4.48	16.29%	15.77%
Eider, Small	14.5	12.9	11.3	9.7	9.7	94.76	1.32	0.28	59.23	0.82	30.16%	30.51%
Spectacled Eiders	14.5	12.9	11.3	9.7	9.7	94.76	1.32	0.28	59.23	0.82	30.16%	30.51%
Eider, Large	19.4	21.0	19.4	6.5	12.9	269.42	3.74	0.78	168.39	2.34	24.91%	24.29%
King Eiders	16.1	17.7	16.1	6.5	11.3	161.65	2.25	0.47	101.03	1.40	25.78%	25.13%
Common Eiders	14.5	16.1	14.5	6.5	11.3	107.77	1.50	0.31	67.35	0.94	27.29%	26.79%
Eider, Unknown	22.6	19.4	19.4	8.1	9.7	151.43	2.10	0.44	94.65	1.31	20.72%	20.32%
Mallard	12.9	11.3	11.3	1.6	8.1	103.35	1.44	0.30	103.35	1.44	38.81%	38.46%
Pintail	33.9	27.4	24.2	16.1	16.1	118.92	1.65	0.35	148.65	2.06	20.72%	21.16%
Oldsquaw	3.2	3.2	3.2	1.6	1.6	9.29	0.13	0.03	11.61	0.16	52.26%	51.52%
Shoveler	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Ducks, Unknown	3.2	3.2	3.2	0.0	3.2	29.73	0.41	0.09	23.23	0.32	53.33%	53.36%
Geese	79.0	69.4	69.4	35.5	46.8	1,486.45	20.65	4.32	943.55	13.10	11.95%	12.51%
Brant	51.6	43.5	43.5	22.6	29.0	421.55	5.85	1.23	351.29	4.88	17.35%	16.64%
Emperor Geese	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Snow Geese	58.1	46.8	45.2	27.4	29.0	347.23	4.82	1.01	150.97	2.10	14.38%	14.27%
White-fronted Geese	27.4	27.4	24.2	12.9	21.0	376.26	5.23	1.09	156.77	2.18	26.60%	26.34%
Canada Geese	56.5	50.0	48.4	19.4	24.2	341.42	4.74	0.99	284.52	3.95	13.79%	14.01%
Canada Geese, Unknown	56.5	50.0	48.4	19.4	24.2	341.42	4.74	0.99	284.52	3.95	13.79%	14.01%
Geese, Unknown	1.6	0.0	0.0	1.6	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Swan	1.6	0.0	0.0	1.6	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Crane	16.1	12.9	11.3	6.5	6.5	97.55	1.35	0.28	11.61	0.16	28.50%	28.89%
Sandhill Crane	16.1	12.9	11.3	6.5	6.5	97.55	1.35	0.28	11.61	0.16	28.50%	28.89%
Eggs	67.7	40.3	38.7	50.0	32.3	819.86	11.39	2.39	3,866.30	53.70	20.06%	20.50%
Seabird Eggs	66.1	38.7	37.1	50.0	30.6	774.50	10.76	2.25	3,650.30	50.70	20.90%	21.32%
Murre Eggs	59.7	35.5	33.9	46.8	27.4	698.32	9.70	2.03	3,174.17	44.09	21.98%	22.13%

Table XX-11. Estimated Harvest and Use of Fish, Mammal, Bird and Plant Resources, Kivalina, 1992

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
Gull Eggs	29.0	27.4	24.2	14.5	14.5	76.18	1.06	0.22	476.13	6.61	29.38%	29.88%
Unknown Eggs	8.1	8.1	8.1	1.6	6.5	45.36	0.63	0.13	216.00	3.00	53.60%	53.75%
Marine Invertebrates	4.8	4.8	4.8	1.6	0.0	25.14	0.35	0.07			49.59%	49.75%
Clams	1.6	1.6	1.6	1.6	0.0	1.15	0.02	0.00	0.38 gal	0.01	74.52%	74.65%
Unknown Clams	1.6	1.6	1.6	1.6	0.0	1.15	0.02	0.00	0.38 gal	0.01	74.52%	74.65%
Mussels	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%	0.00%
Crabs	1.6	1.6	1.6	0.0	0.0	2.32	0.03	0.01	1.45	0.02	74.52%	74.65%
King Crab	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
King Crab, Unknown	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Tanner Crab	1.6	1.6	1.6	0.0	0.0	2.32	0.03	0.01	1.45	0.02	74.52%	74.65%
Tanner Crab, Unknown	1.6	1.6	1.6	0.0	0.0	2.32	0.03	0.01	1.45	0.02	74.52%	74.65%
Shrimp	4.8	4.8	4.8	0.0	0.0	21.67	0.30	0.06	10.83 gal	0.15	47.20%	47.36%
Plants and Berries	95.2	85.5	85.5	48.4	58.1	4,823.42	66.99	14.03	899.13 gal	12.49	10.71%	10.88%
Berries	95.2	83.9	83.9	37.1	53.2	4,612.06	64.06	13.42	709.55 gal	9.85	11.42%	11.18%
Plants/Greens/Mushrooms	50.0	43.5	40.3	25.8	21.0	211.35	2.94	0.61	189.58 gal	2.63	21.63%	21.50%
Unknown Greens, from land	41.9	40.3	38.7	12.9	21.0	182.32	2.53	0.53	182.32 gal	2.53	21.73%	21.36%
Roots, Food	22.6	14.5	6.5	19.4	3.2	29.03	0.40	0.08	7.26 gal	0.10	46.45%	46.04%
Wood	46.8	41.9	41.9	17.7	12.9	0.00	0.00	0.00	93.44 crd	1.30	29.88%	0.00%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1993

Table XX-12. Estimated Amount of Resources Removed From Commercial Harvest, Kivalina, 1992

Resource	Removed From Catch		Percent of	
	Amount	Pounds	Species Harvest (lbs)	Community Harvest (lbs)
All Resources		1,107.34	1.27	0.42
Fish		1,107.34	1.27	0.42
Salmon	54.58	351.10	6.91	0.13
Chum Salmon	49.94	306.60	7.34	0.12
Chinook Salmon	4.65	44.50	34.78	0.02
Non-Salmon Fish		756.23	0.92	0.29
Sheefish	12.77	70.26	100.00	0.03
Trout and Char	207.87	685.97	0.98	0.26
Char	207.87	685.97	0.98	0.26
Dolly Varden	207.87	685.97	0.98	0.26

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1993

Table XX-13. Percentage of Salmon Harvest By Resource, Gear Type, and Total Salmon Harvest, Kivalina, 1992

		Subsistence Methods															
		Setnet		Beach Seine		Dip Net		Subsistence Gear Any Method		Removed from Commercial Catch		Rod and Reel		Ice Fish		Any Method	
Resource	Percent Base	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.
Salmon	total	60.32	59.13	14.63	16.54	6.32	7.15	81.28	82.81	5.83	6.91	12.77	10.23	0.12	0.05		
Chum Salmon	gear type	65.98	76.19	97.46	97.58	98.04	98.13	74.14	82.35	91.49	87.33	55.34	78.21	0.00	0.00		
	resource	54.78	54.78	19.62	19.62	8.53	8.53	82.94	82.94	7.34	7.34	9.73	9.73	0.00	0.00		
	total	39.80	45.05	14.26	16.14	6.20	7.02	60.26	68.20	5.33	6.03	7.07	8.00	0.00	0.00	72.66	82.23
Coho Salmon	gear type	9.04	9.93	2.54	2.42	1.96	1.87	7.32	7.74	0.00	0.00	0.00	0.00	0.00	0.00		
	resource	91.67	91.67	6.25	6.25	2.08	2.08	100.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00		
	total	5.46	5.87	0.37	0.40	0.12	0.13	5.95	6.41	0.00	0.00	0.00	0.00	0.00	0.00	5.95	6.41
Chinook Salmon	gear type	1.54	2.78	0.00	0.00	0.00	0.00	1.14	1.98	8.51	12.67	0.00	0.00	0.00	0.00		
	resource	65.22	65.22	0.00	0.00	0.00	0.00	65.22	65.22	34.78	34.78	0.00	0.00	0.00	0.00		
	total	0.93	1.64	0.00	0.00	0.00	0.00	0.93	1.64	0.50	0.88	0.00	0.00	0.00	0.00	1.43	2.52
Pink Salmon	gear type	20.76	8.28	0.00	0.00	0.00	0.00	15.41	5.91	0.00	0.00	44.66	21.79	100.00	100.00		
	resource	68.24	68.24	0.00	0.00	0.00	0.00	68.24	68.24	0.00	0.00	31.08	31.08	0.68	0.68		
	total	12.52	4.89	0.00	0.00	0.00	0.00	12.52	4.89	0.00	0.00	5.70	2.23	0.12	0.05	18.35	7.17
Sockeye Salmon	gear type	2.67	2.82	0.00	0.00	0.00	0.00	1.98	2.02	0.00	0.00	0.00	0.00	0.00	0.00		
	resource	100.00	100.00	0.00	0.00	0.00	0.00	100.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00		
	total	1.61	1.67	0.00	0.00	0.00	0.00	1.61	1.67	0.00	0.00	0.00	0.00	0.00	0.00	1.61	1.67
Unknown Salmon	gear type	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	resource	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1993

Table XX-14. Estimated Salmon Harvest by Gear Type and Species, Kivalina, 1992

		Subsistence Methods								Removed from Commercial Catch		Rod and Reel		Icefish		Any Method	
		Setnet		Beach Seine		Dip Net		Subsistence Gear Any Method									
	Harvest Units	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Salmon	numbers	564.97	7.85	137.03	1.90	59.23	0.82	761.23	10.57	54.58	0.76	119.61	1.66	1.16	0.02	936.58	13.01
	pounds	3,004.18	41.72	840.33	11.67	363.30	5.05	4,207.81	58.44	351.10	4.88	519.68	7.22	2.46	0.03	5,081.05	70.57
Chum Salmon	numbers	372.77	5.18	133.55	1.85	58.06	0.81	564.39	7.84	49.94	0.69	66.19	0.92	0.00	0.00	680.52	9.45
	pounds	2,288.83	31.79	819.99	11.39	356.52	4.95	3,465.34	48.13	306.60	4.26	406.43	5.64	0.00	0.00	4,178.37	58.03
Coho Salmon	numbers	51.10	0.71	3.48	0.05	1.16	0.02	55.74	0.77	0.00	0.00	0.00	0.00	0.00	0.00	55.74	0.77
	pounds	298.41	4.14	20.35	0.28	6.78	0.09	325.53	4.52	0.00	0.00	0.00	0.00	0.00	0.00	325.53	4.52
Chinook Salmon	numbers	8.71	0.12	0.00	0.00	0.00	0.00	8.71	0.12	4.65	0.06	0.00	0.00	0.00	0.00	13.35	0.19
	pounds	83.44	1.16	0.00	0.00	0.00	0.00	83.44	1.16	44.50	0.62	0.00	0.00	0.00	0.00	127.94	1.78
Pink Salmon	numbers	117.29	1.63	0.00	0.00	0.00	0.00	117.29	1.63	0.00	0.00	53.42	0.74	1.16	0.02	171.87	2.39
	pounds	248.66	3.45	0.00	0.00	0.00	0.00	248.66	3.45	0.00	0.00	113.25	1.57	2.46	0.03	364.37	5.06
Sockeye Salmon	numbers	15.10	0.21	0.00	0.00	0.00	0.00	15.10	0.21	0.00	0.00	0.00	0.00	0.00	0.00	15.10	0.21
	pounds	84.84	1.18	0.00	0.00	0.00	0.00	84.84	1.18	0.00	0.00	0.00	0.00	0.00	0.00	84.84	1.18
Unknown Salmon	numbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1993

Table XX-15. Percentage of Households Harvesting Salmon by Gear Type and Species, Kivalina, 1992

Resource	Setnet	Beach Seine	Dip Net	Any Subsistence Gear	Removed from Commercial Catch	Rod and Reel	Icefish	Any Method
Salmon	22.58	12.90	3.23	30.65	6.45	14.52	1.61	41.94
Chum Salmon	20.97	11.29	1.61	29.03	6.45	11.29	0.00	40.32
Coho Salmon	9.68	1.61	1.61	12.90	0.00	0.00	0.00	12.90
Chinook Salmon	4.84	0.00	0.00	4.84	3.23	0.00	0.00	8.06
Pink Salmon	6.45	0.00	0.00	6.45	0.00	6.45	1.61	11.29
Sockeye Salmon	3.23	0.00	0.00	3.23	0.00	0.00	0.00	3.23
Unknown Salmon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1993

Table XX-16. Estimated Harvest of Fish Other than Salmon by Gear Type, Kivalina, 1992

	Harvest Units	Subsistence Gear		Removed From Commercial Catch		Rod and Reel		Ice Fishing		Any Method	
		Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Non-Salmon Fish	pounds	60,948.63	846.51	756.23	10.50	8,873.89	123.25	11,407.85	158.44	81,986.60	1,138.70
Burbot	pounds	256.06	3.56	0.00	0.00	29.26	0.41	231.68	3.22	517.01	7.18
Bering Cisco	pounds	193.06	2.68	0.00	0.00	0.00	0.00	4.06	0.06	197.13	2.74
Grayling	pounds	299.96	4.17	0.00	0.00	130.88	1.82	213.21	2.96	644.05	8.95
Sheefish	pounds	0.00	0.00	70.26	0.98	0.00	0.00	0.00	0.00	70.26	0.98
Whitefish, Humpback	pounds	3,942.15	54.75	0.00	0.00	18.29	0.25	199.16	2.77	4,159.61	57.77
Unknown Whitefish	pounds	304.84	4.23	0.00	0.00	0.00	0.00	0.00	0.00	304.84	4.23
Saffron Cod	pounds	17.07	0.24	0.00	0.00	162.58	2.26	2,937.26	40.80	3,116.91	43.29
Arctic Cod	pounds	0.00	0.00	0.00	0.00	51.10	0.71	2,927.36	40.66	2,978.46	41.37
Unknown Flounder	pounds	44.13	0.61	0.00	0.00	0.00	0.00	0.00	0.00	44.13	0.61
Herring	pounds	0.00	0.00	0.00	0.00	0.56	0.01	139.35	1.94	139.91	1.94
Rainbow Smelt	pounds	0.00	0.00	0.00	0.00	0.98	0.01	20.67	0.29	21.65	0.30
Dolly Varden	pounds	55,891.34	776.27	685.97	9.53	8,480.25	117.78	4,735.10	65.77	69,792.66	969.34

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1993

Table XX-17. Percentage of Fish Other Than Salmon Harvested by Gear Type, Kivalina, 1992

Resource	Percent Base	Subsistence Gear Lbs.	Removed from Commercial Catch Lbs.	Rod and Reel Lbs.	Ice Fishing Lbs.
Non-Salmon Fish	resource	74.34	0.92	10.82	13.91
Burbot	resource	49.53	0.00	5.66	44.81
Bering Cisco	resource	97.94	0.00	0.00	2.06
Grayling	resource	46.57	0.00	20.32	33.11
Sheefish	resource	0.00	100.00	0.00	0.00
Whitefish, Humpback	resource	94.77	0.00	0.44	4.79
Unknown Whitefish	resource	100.00	0.00	0.00	0.00
Saffron Cod	resource	0.55	0.00	5.22	94.24
Arctic Cod	resource	0.00	0.00	1.72	98.28
Unknown Flounder	resource	100.00	0.00	0.00	0.00
Herring	resource	0.00	0.00	0.40	99.60
Rainbow Smelt	resource	0.00	0.00	4.51	95.49
Dolly Varden	resource	80.08	0.98	12.15	6.78

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1993

Table XX-18. Percentage of Households Harvesting Fish Other Than Salmon by Gear Type and Species, Kivalina, 1992

Resource	Subsistence Gear	Removed from Commercial Catch	Rod and Reel	Ice Fishing	Any Method
Non-Salmon Fish	64.52	6.45	62.90	87.10	95.16
Burbot	19.35	0.00	4.84	11.29	29.03
Bering Cisco	8.06	0.00	0.00	1.61	9.68
Grayling	16.13	0.00	12.90	24.19	48.39
Sheefish	0.00	4.84	0.00	0.00	4.84
Whitefish, Humpback	22.58	0.00	4.84	9.68	35.48
Unknown Whitefish	3.23	0.00	0.00	0.00	3.23
Saffron Cod	3.23	0.00	1.61	69.35	74.19
Arctic Cod	0.00	0.00	1.61	75.81	77.42
Unknown Flounder	4.84	0.00	0.00	0.00	4.84
Herring	0.00	0.00	1.61	1.61	3.23
Rainbow Smelt	0.00	0.00	1.61	3.23	4.84
Dolly Varden	62.90	6.45	61.29	32.26	87.10

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1993

Figure XX-6. Composition of Harvests by Resource Category, Kivalina, 1964/65, 1965/66, 1982/83, 1983/84, and 1992

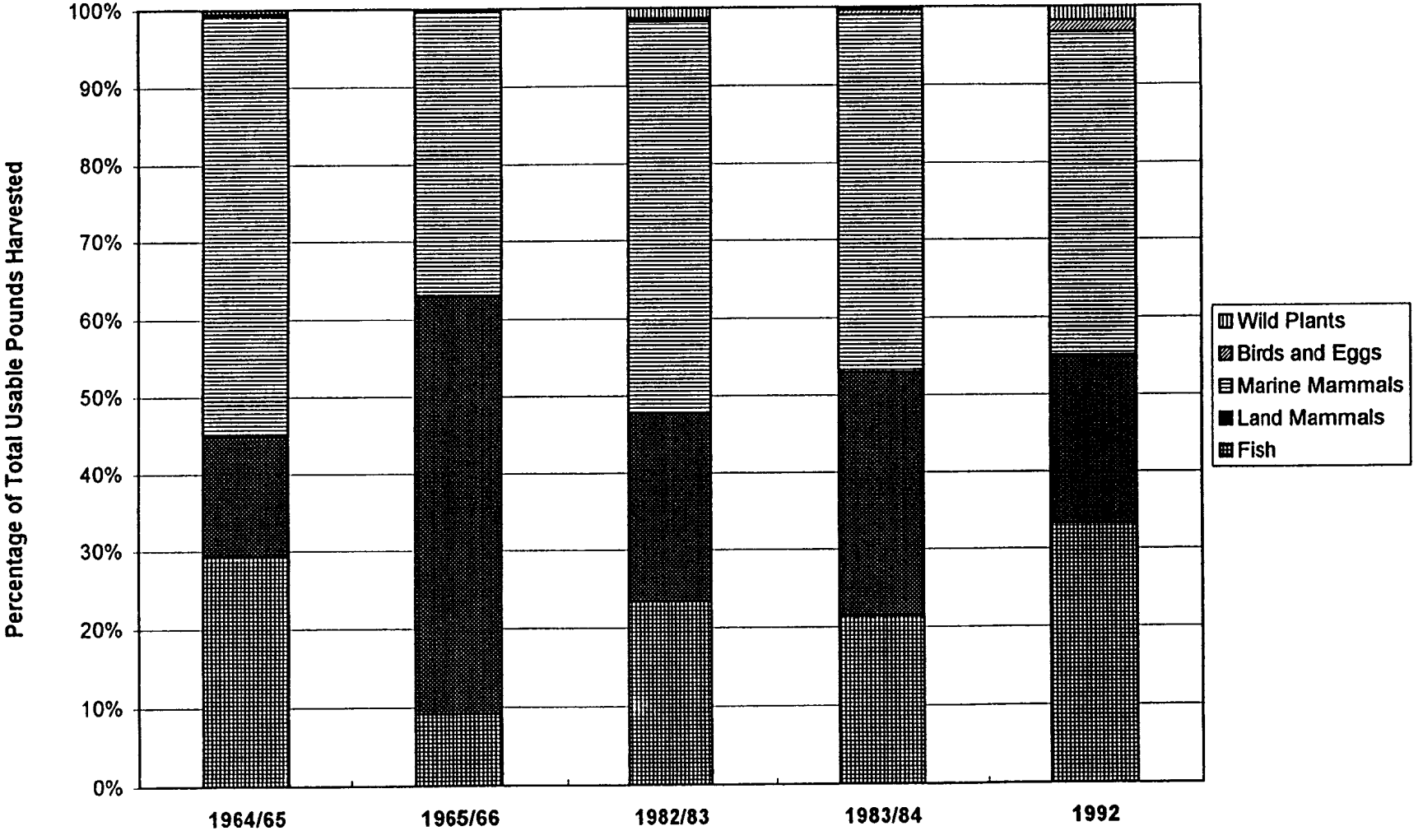


Figure XX-7. Per Capita Harvests of Wild Resources by Resource Category, Kivalina, 1964/65, 1965/66, 1982/83, 1983/84, and 1992

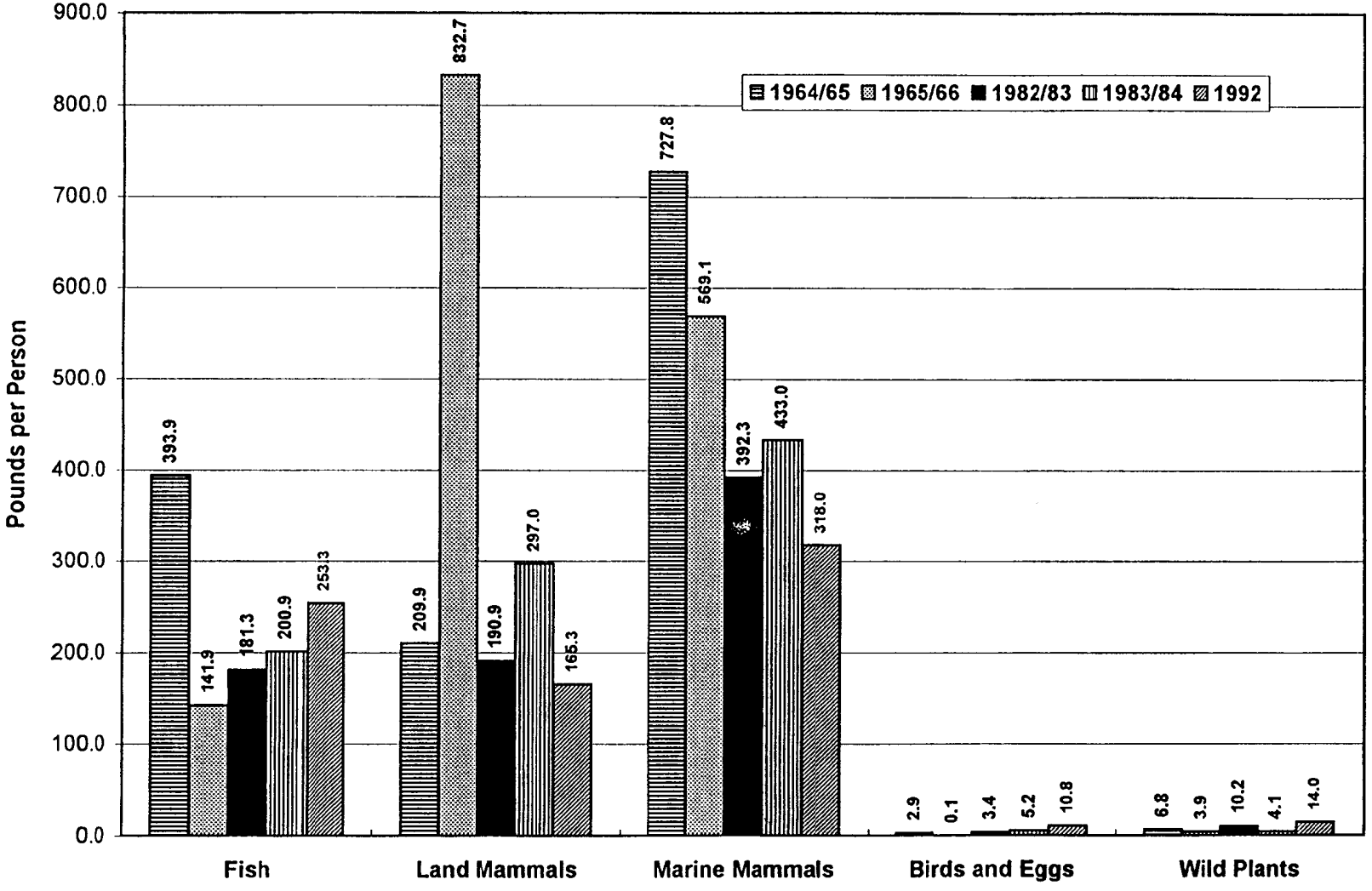


Figure XX-8. Comparison of Per Capita Harvest of Seven Major Resources in Three Harvest Years, Kivalina, 1982/83, 1983/84, and 1992

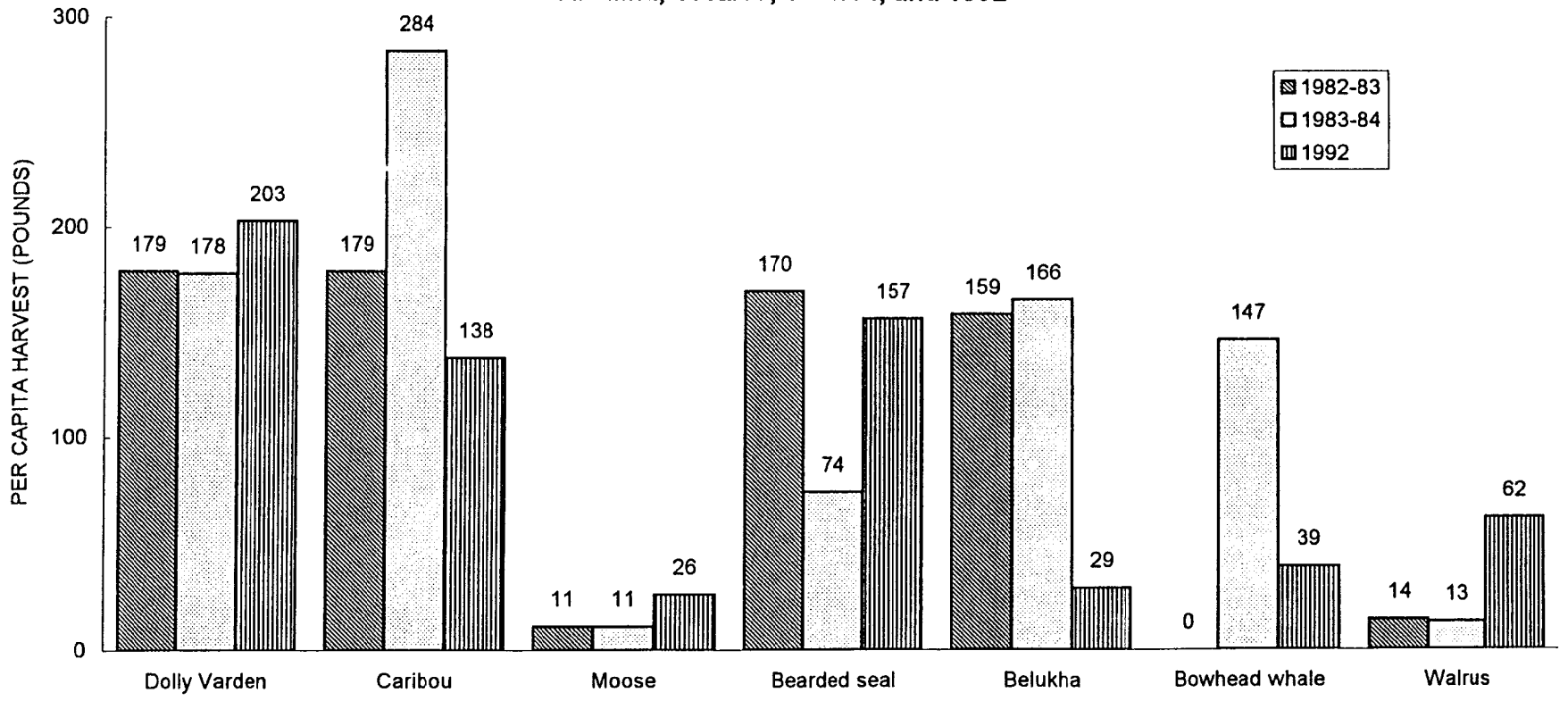


Table XX- 19. Uses of Wild Foods, Kivalina

	STUDY YEAR
	1992
DO YOU USE WILD FOODS?	
No	
Count	1
Col %	1.6%
Yes	
Count	60
Col %	98.4%
CANNOT AFFORD TO BUY STORE FOOD?	
No Response	
Count	1
Col %	1.7%
No	
Count	23
Col %	38.3%
Yes	
Count	36
Col %	60.0%
WANT TO EAT WILD FOOD?	
No	
Count	1
Col %	1.6%
Yes	
Count	60
Col %	98.4%
WILD FOODS ARE HEALTHIER?	
No	
Count	4
Col %	6.6%
Yes	
Count	57
Col %	93.4%
EATING WILD FOODS IS PART OF TRADITION?	
No	
Count	4
Col %	6.6%

(continued)

Table XX- 19. Uses of Wild Foods, Kivalina

	STUDY YEAR
	1992
Yes	
Count	57
Col %	93.4%
ANY WILD FOODS EATEN YESTERDAY?	
No	
Count	7
Col %	11.5%
Yes	
Count	54
Col %	88.5%
WILD FOODS AS MAIN PART OF A MEAL	
No	
Count	8
Col %	13.1%
Yes	
Count	53
Col %	86.9%
HARVEST OF WILD FOODS BY RESPONDENT	
Do Not Know	
Count	2
Col %	3.3%
No	
Count	28
Col %	45.9%
Yes	
Count	31
Col %	50.8%
WF HARVESTED BY RELATIVE IN HH	
No Response	
Count	2
Col %	3.3%
No	
Count	33
Col %	54.1%
Yes	

(continued)

Table XX- 19. Uses of Wild Foods, Kivalina

	STUDY YEAR
	1992
Count	26
Col %	42.6%
WF HARVESTED BY RELATIVE IN ANOTHER HH	
No Response	
Count	1
Col %	1.6%
Do Not Know	
Count	2
Col %	3.3%
No	
Count	28
Col %	45.9%
Yes	
Count	30
Col %	49.2%
WF HARVESTED BY RELATIVE IN ANOTHER COMM.	
No Response	
Count	1
Col %	1.6%
Do Not Know	
Count	2
Col %	3.3%
No	
Count	44
Col %	72.1%
Yes	
Count	14
Col %	23.0%
WF HARVESTED BY FRIEND IN HH	
No Response	
Count	2
Col %	3.3%
Do Not Know	
Count	2
Col %	3.3%

(continued)

Table XX- 19. Uses of Wild Foods, Kivalina

	STUDY YEAR
	1992
No	
Count	50
Col %	82.0%
Yes	
Count	7
Col %	11.5%
WF HARVESTED BY FRIEND IN COMMUNITY	
No Response	
Count	2
Col %	3.3%
Do Not Know	
Count	1
Col %	1.6%
No	
Count	44
Col %	72.1%
Yes	
Count	14
Col %	23.0%
WF HARVESTED BY FRIEND IN ANOTHER COMM.	
No Response	
Count	1
Col %	1.6%
Do Not Know	
Count	1
Col %	1.6%
No	
Count	43
Col %	70.5%
Yes	
Count	16
Col %	26.2%

Table XX-20. Safety of Using Subsistence Foods, Kivalina

	STUDY YEAR
	1992
DO YOU EAT SEAL OIL OR SEAL MEAT?	
No	
Count	3
Col %	4.9%
Yes	
Count	58
Col %	95.1%
ARE SEALS FROM HARVEST AREAS SAFE TO EAT?	
Not Safe	
Count	1
Col %	1.7%
Safe	
Count	57
Col %	98.3%
WHY SEAL NOT SAFE TO EAT	
No Response	
Count	1
Col %	100.0%
DO YOU EAT MUKTUK?	
No	
Count	2
Col %	3.3%
Yes	
Count	59
Col %	96.7%
IS MUKTUK FROM HARVEST AREAS SAFE TO EAT?	
Not Safe	
Count	2
Col %	3.4%
Safe	
Count	57
Col %	96.6%
WHY MUKTUK NOT SAFE TO EAT	
No Response	
Count	1
Col %	50.0%

(continued)

Table XX-20. Safety of Using Subsistence Foods, Kivalina

	STUDY YEAR
	1992
Pollution from non-oil spill source	
Count	1
Col %	50.0%
DO YOU EAT WHITEFISH?	
No	
Count	5
Col %	8.2%
Yes	
Count	56
Col %	91.8%
IS WHITEFISH FROM HARVEST AREAS SAFE TO EAT?	
Do Not Know	
Count	1
Col %	1.8%
Not Safe	
Count	3
Col %	5.3%
Safe	
Count	53
Col %	93.0%
WHY WHITEFISH NOT SAFE TO EAT	
No Response	
Count	1
Col %	33.3%
Pollution from non-oil spill source	
Count	2
Col %	66.7%

Table XX-21. Resource Population Statuses, Kivalina

	STUDY YEAR
	1992
COMPARED TO 10 YRS. AGO: CARIBOU	
No Response	
Count	1
Col %	1.7%
Do Not Know	
Count	5
Col %	8.5%
Less	
Count	35
Col %	59.3%
Same	
Count	15
Col %	25.4%
More	
Count	3
Col %	5.1%
COMPARED TO 10 YRS. AGO: MOOSE	
No Response	
Count	2
Col %	3.4%
Do Not Know	
Count	10
Col %	16.9%
Less	
Count	12
Col %	20.3%
Same	
Count	15
Col %	25.4%
More	
Count	20
Col %	33.9%
COMPARED TO 10 YRS. AGO: POLAR BEAR	
No Response	
Count	4

(continued)

Table XX-21. Resource Population Statuses, Kivalina

	STUDY YEAR
	1992
Col %	6.9%
Do Not Know	
Count	12
Col %	20.7%
Less	
Count	15
Col %	25.9%
Same	
Count	10
Col %	17.2%
More	
Count	17
Col %	29.3%
COMPARED TO 10 YRS. AGO: BELUKHA WHALE	
No Response	
Count	1
Col %	1.7%
Do Not Know	
Count	7
Col %	11.9%
Less	
Count	27
Col %	45.8%
Same	
Count	19
Col %	32.2%
More	
Count	5
Col %	8.5%
COMPARED TO 10 YRS. AGO: BOWHEAD WHALE	
No Response	
Count	2
Col %	3.4%
Do Not Know	

(continued)

Table XX-21. Resource Population Statuses, Kivalina

	STUDY YEAR
	1992
Count	9
Col %	15.3%
Less	
Count	12
Col %	20.3%
Same	
Count	22
Col %	37.3%
More	
Count	14
Col %	23.7%
COMPARED TO 10 YRS. AGO: BEARDED SEAL	
Do Not Know	
Count	7
Col %	11.9%
Less	
Count	13
Col %	22.0%
Same	
Count	30
Col %	50.8%
More	
Count	9
Col %	15.3%
COMPARED TO 10 YRS. AGO: RINGED SEAL	
Do Not Know	
Count	9
Col %	15.3%
Less	
Count	15
Col %	25.4%
Same	
Count	27
Col %	45.8%

(continued)

Table XX-21. Resource Population Statuses, Kivalina

	STUDY YEAR
	1992
More	
Count	8
Col %	13.6%
COMPARED TO 10 YRS. AGO: WALRUS	
Do Not Know	
Count	8
Col %	13.6%
Less	
Count	17
Col %	28.8%
Same	
Count	19
Col %	32.2%
More	
Count	15
Col %	25.4%
COMPARED TO 10 YRS. AGO: SALMON	
No Response	
Count	1
Col %	1.7%
Do Not Know	
Count	22
Col %	37.3%
Less	
Count	5
Col %	8.5%
Same	
Count	20
Col %	33.9%
More	
Count	11
Col %	18.6%
COMPARED TO 10 YRS. AGO: WHITEFISH	
Do Not Know	
Count	15

(continued)

Table XX-21. Resource Population Statuses, Kivalina

	STUDY YEAR
	1992
Col %	25.4%
Less	
Count	10
Col %	16.9%
Same	
Count	26
Col %	44.1%
More	
Count	8
Col %	13.6%
COMPARED TO 10 YRS. AGO: DOLLY VARDEN	
No Response	
Count	2
Col %	3.4%
Do Not Know	
Count	7
Col %	11.9%
Less	
Count	14
Col %	23.7%
Same	
Count	28
Col %	47.5%
More	
Count	8
Col %	13.6%
COMPARED TO 10 YRS. AGO: CLAMS	
No Response	
Count	9
Col %	15.8%
Do Not Know	
Count	41
Col %	71.9%
Less	

(continued)

Table XX-21. Resource Population Statuses, Kivalina

	STUDY YEAR
	1992
Count	4
Col %	7.0%
Same	
Count	3
Col %	5.3%
COMPARED TO 10 YRS. AGO: BRANTS	
No Response	
Count	4
Col %	6.8%
Do Not Know	
Count	13
Col %	22.0%
Less	
Count	16
Col %	27.1%
Same	
Count	17
Col %	28.8%
More	
Count	9
Col %	15.3%
COMPARED TO 10 YRS. AGO: EIDER DUCKS	
No Response	
Count	2
Col %	3.4%
Do Not Know	
Count	13
Col %	22.0%
Less	
Count	11
Col %	18.6%
Same	
Count	23
Col %	39.0%

(continued)

Table XX-21. Resource Population Statuses, Kivalina

	STUDY YEAR
	1992
More	
Count	10
Col %	16.9%
COMPARED TO 10 YRS. AGO: OCEAN DUCKS	
No Response	
Count	3
Col %	5.1%
Do Not Know	
Count	19
Col %	32.2%
Less	
Count	9
Col %	15.3%
Same	
Count	22
Col %	37.3%
More	
Count	6
Col %	10.2%
COMPARED TO 10 YRS. AGO: COMMON MURRE	
No Response	
Count	4
Col %	6.8%
Do Not Know	
Count	17
Col %	28.8%
Less	
Count	5
Col %	8.5%
Same	
Count	22
Col %	37.3%
More	
Count	11
Col %	18.6%

(continued)

Table XX-21. Resource Population Statuses, Kivalina

	STUDY YEAR
	1992
COMPARED TO 10 YRS. AGO: ARCTIC FOX	
No Response	
Count	1
Col %	1.7%
Do Not Know	
Count	14
Col %	23.7%
Less	
Count	18
Col %	30.5%
Same	
Count	17
Col %	28.8%
More	
Count	9
Col %	15.3%
COMPARED TO 10 YRS. AGO: WOLVERINE	
No Response	
Count	2
Col %	3.4%
Do Not Know	
Count	15
Col %	25.4%
Less	
Count	12
Col %	20.3%
Same	
Count	24
Col %	40.7%
More	
Count	6
Col %	10.2%
COMPARED TO 10 YRS. AGO: WOLF	
No Response	
Count	3

(continued)

Table XX-21. Resource Population Statuses, Kivalina

	STUDY YEAR
	1992
Col %	5.1%
Do Not Know	
Count	10
Col %	16.9%
Less	
Count	10
Col %	16.9%
Same	
Count	23
Col %	39.0%
More	
Count	13
Col %	22.0%

Table XX-22. Children's Participation in Subsistence, Kivalina

	STUDY YEAR
	1992
DOES YOUR HOUSEHOLD PROCESS WILD FOODS?	
No	
Count	3
Col %	4.9%
Yes	
Count	58
Col %	95.1%
DO CHILDREN HELP YOUR HH PROCESS WILD FOODS?	
No Response	
Count	3
Col %	4.9%
No	
Count	30
Col %	49.2%
Yes	
Count	28
Col %	45.9%

Table XX-23. Sharing, Kivalina

	STUDY YEAR
	1992
DID HOUSEHOLD SHARE?	
Do Not Know	
Count	1
Col %	1.6%
No	
Count	5
Col %	8.2%
Yes	
Count	55
Col %	90.2%
PREV. YEAR: SHARING OF WILD RES.	
Do Not Know	
Count	3
Col %	5.1%
Less	
Count	11
Col %	18.6%
Same	
Count	36
Col %	61.0%
More	
Count	9
Col %	15.3%
PREV. YEAR: SHARING OF HUNT/FISH GEAR	
Do Not Know	
Count	3
Col %	5.4%
Less	
Count	8
Col %	14.3%
Same	
Count	40
Col %	71.4%
More	
Count	5

(continued)

Table XX-23. Sharing, Kivalina

	STUDY YEAR
	1992
Col %	8.9%
PREV. YEAR: SHARING OF MONEY	
No Response	
Count	1
Col %	1.8%
Do Not Know	
Count	1
Col %	1.8%
Less	
Count	13
Col %	23.2%
Same	
Count	33
Col %	58.9%
More	
Count	8
Col %	14.3%
PREV. YEAR: SHARING OF LABOR	
Do Not Know	
Count	2
Col %	3.3%
Less	
Count	10
Col %	16.7%
Same	
Count	40
Col %	66.7%
More	
Count	8
Col %	13.3%

Table XX-24. Political Activities, Kivalina

	STUDY YEAR
	1992
LAST 4 YRS.: ELDERS INFLUENCE	
Do Not Know	
Count	4
Col %	6.7%
Decreased	
Count	15
Col %	25.0%
Same	
Count	21
Col %	35.0%
Increased	
Count	20
Col %	33.3%
LAST YEAR: ATTEND PUBLIC MEETINGS	
No Response	
Count	1
Col %	1.6%
Do Not Know	
Count	7
Col %	11.5%
Never	
Count	6
Col %	9.8%
2.00	
Count	11
Col %	18.0%
3.00	
Count	4
Col %	6.6%
4.00	
Count	7
Col %	11.5%
5.00	
Count	7
Col %	11.5%

(continued)

Table XX-24. Political Activities, Kivalina

	STUDY YEAR
	1992
8.00	
Count	1
Col %	1.6%
10.00	
Count	5
Col %	8.2%
12.00	
Count	2
Col %	3.3%
15.00	
Count	2
Col %	3.3%
16.00	
Count	1
Col %	1.6%
20.00	
Count	4
Col %	6.6%
24.00	
Count	1
Col %	1.6%
28.00	
Count	2
Col %	3.3%
VOTE IN LAST STATE-WIDE ELECTION?	
No	
Count	4
Col %	6.6%
Yes	
Count	57
Col %	93.4%
BELONG TO NATIVE CORPORATION?	
No	
Count	7
Col %	11.5%

(continued)

Table XX-24. Political Activities, Kivalina

	STUDY YEAR
	1992
Yes	
Count	54
Col %	88.5%
REGIONAL NATIVE CORPORATION	
NANA Regional Corp., Inc.	
Count	54
Col %	100.0%
VOTE IN LAST REG. CORP. ELECTION?	
No Response	
Count	1
Col %	1.9%
Do Not Know	
Count	1
Col %	1.9%
No	
Count	2
Col %	3.7%
Yes	
Count	50
Col %	92.6%
VILLAGE NATIVE CORPORATION	
None, At Large	
Count	50
Col %	94.3%
Kikkitagruk Inupiat Corporation (Kotzebue)	
Count	3
Col %	5.7%
VOTE IN LAST NATIVE VILLAGE CORP. ELECTION?	
Yes	
Count	3
Col %	100.0%

Table XX-25. Significance of Place, Kivalina

	STUDY YEAR
	1992
MAIN REASON MOVED TO COMMUNITY	
No Response	
Count	5
Col %	8.2%
Born or reared here	
Count	46
Col %	75.4%
Relatives (family)	
Count	2
Col %	3.3%
Married a person born or reared here	
Count	1
Col %	1.6%
Family has always lived here	
Count	1
Col %	1.6%
Employment reasons	
Count	4
Col %	6.6%
Quality of Life	
Count	1
Col %	1.6%
This is where they established their home	
Count	1
Col %	1.6%
LIVE HERE: WHERE PERSON IS FROM	
No	
Count	15
Col %	24.6%
Yes	
Count	46
Col %	75.4%
LIVE HERE: RELATIVES LIVE HERE	
No	
Count	10

(continued)

Table XX-25. Significance of Place, Kivalina

	STUDY YEAR
	1992
Col %	16.4%
Yes	
Count	51
Col %	83.6%
LIVE HERE: MARRIED PERSON FROM HERE	
No	
Count	34
Col %	55.7%
Yes	
Count	27
Col %	44.3%
LIVE HERE: ALWAYS LIVED HERE	
No	
Count	15
Col %	24.6%
Yes	
Count	46
Col %	75.4%
LIVE HERE: FRIENDS LIVE HERE	
No	
Count	10
Col %	16.4%
Yes	
Count	51
Col %	83.6%
LIVE HERE: HUNTING & FISHING HERE	
No	
Count	4
Col %	6.6%
Yes	
Count	57
Col %	93.4%
LIVE HERE: JOB OPPORTUNITIES HERE	
No	
Count	48

(continued)

Table XX-25. Significance of Place, Kivalina

	STUDY YEAR
	1992
Col %	78.7%
Yes	
Count	13
Col %	21.3%
LIVE HERE: EDUCATIONAL OPPORTUNITIES	
No	
Count	26
Col %	42.6%
Yes	
Count	35
Col %	57.4%
LIVE HERE: COST OF LIVING	
No Response	
Count	1
Col %	1.6%
No	
Count	39
Col %	63.9%
Yes	
Count	21
Col %	34.4%
LIVE HERE: HOUSING AVAILABLE	
No	
Count	41
Col %	67.2%
Yes	
Count	20
Col %	32.8%
LIVE HERE: STORES	
No	
Count	29
Col %	47.5%
Yes	
Count	32
Col %	52.5%

(continued)

Table XX-25. Significance of Place, Kivalina

	STUDY YEAR
	1992
LIVE HERE: MEDICAL SERVICES	
No	
Count	26
Col %	42.6%
Yes	
Count	35
Col %	57.4%
LIVE HERE: OTHER SERVICES	
No	
Count	48
Col %	78.7%
Yes	
Count	13
Col %	21.3%
LIVE HERE: BEAUTY OF AREA	
No Response	
Count	2
Col %	3.3%
No	
Count	11
Col %	18.0%
Yes	
Count	48
Col %	78.7%
LIVE HERE: SIZE OF COMMUNITY	
No	
Count	14
Col %	23.0%
Yes	
Count	47
Col %	77.0%
LIVE HERE: LESS CRIME	
No	
Count	16
Col %	26.2%

(continued)

Table XX-25. Significance of Place, Kivalina

	STUDY YEAR
	1992
Yes	
Count	45
Col %	73.8%
LIVE HERE: LESS DRINKING/DRUGS	
No	
Count	22
Col %	36.1%
Yes	
Count	39
Col %	63.9%
LIVE HERE: NECESSARY PERSONAL FREEDOMS	
No	
Count	8
Col %	13.1%
Yes	
Count	53
Col %	86.9%
LIVE HERE: RECREATIONAL OPPORTUNITIES	
No	
Count	25
Col %	41.0%
Yes	
Count	36
Col %	59.0%
OTHER REASONS FOR LIVING IN COMMUNITY	
Quality of Life	
Count	8
Col %	66.7%
Cultural Reasons	
Count	3
Col %	25.0%
Location	
Count	1
Col %	8.3%
This is where they established their home	

(continued)

Table XX-25. Significance of Place, Kivalina

	STUDY YEAR
	1992
Count	1
Col %	8.3%
MAIN REASON REMAINING IN COMMUNITY	
No Response	
Count	7
Col %	11.5%
Born or reared here	
Count	13
Col %	21.3%
Relatives (family)	
Count	9
Col %	14.8%
Family has always lived here	
Count	8
Col %	13.1%
Subsistence opportunities	
Count	11
Col %	18.0%
Employment reasons	
Count	3
Col %	4.9%
Housing/property	
Count	1
Col %	1.6%
Less drinking or drugs	
Count	1
Col %	1.6%
Personal freedoms (politics)	
Count	1
Col %	1.6%
Quality of Life	
Count	5
Col %	8.2%
Cultural Reasons	

(continued)

Table XX-25. Significance of Place, Kivalina

	STUDY YEAR
	1992
Count	1
Col %	1.6%
This is where they established their home	
Count	1
Col %	1.6%
10 YRS. AGO: CHANGE IN LIKING COMMUNITY	
Do Not Know	
Count	1
Col %	1.7%
Less	
Count	8
Col %	13.6%
Same	
Count	34
Col %	57.6%
More	
Count	16
Col %	27.1%
10 YRS. AGO: WHY CHANGE IN LIKING COMMUNITY	
No Response	
Count	10
Col %	41.7%
Non-specific	
Count	2
Col %	8.3%
Increased drug/alcohol abuse	
Count	1
Col %	4.2%
Increased government bureaucracy	
Count	1
Col %	4.2%
Financial situation worse	
Count	2
Col %	8.3%

(continued)

Table XX-25. Significance of Place, Kivalina

	STUDY YEAR
	1992
Too many people	
Count	2
Col %	8.3%
Other reasons	
Count	1
Col %	4.2%
Improved financial situation	
Count	1
Col %	4.2%
Lived here longer	
Count	1
Col %	4.2%
Less alcohol	
Count	1
Col %	4.2%
Improved community cohesiveness	
Count	2
Col %	8.3%
RATHER LIVE IN ANOTHER COMMUNITY	
Do Not Know	
Count	4
Col %	6.6%
No	
Count	39
Col %	63.9%
Yes	
Count	18
Col %	29.5%
EXPECT TO LIVE IN REGION WHEN OLD	
Do Not Know	
Count	8
Col %	13.1%
No	
Count	5
Col %	8.2%

(continued)

Table XX-25. Significance of Place, Kivalina

	STUDY YEAR
	1992
Yes	
Count	48
Col %	78.7%
CONFIDENT ABOUT HUNT/FISH/GATHERING	
No Response	
Count	4
Col %	6.6%
Do Not Know	
Count	5
Col %	8.2%
No	
Count	4
Col %	6.6%
Yes	
Count	48
Col %	78.7%
WHY UNCONFIDENT ABOUT HUNTING/FISHING/GATHERING	
No Response	
Count	1
Col %	16.7%
Increased development	
Count	2
Col %	33.3%
Environmental, animal rights, anti-gun interests	
Count	1
Col %	16.7%
Vulnerable to environmental damage	
Count	1
Col %	16.7%
Miscellaneous reasons	
Count	1
Col %	16.7%
CONTINUE TO LIVE HERE IF NO WILD FOOD	

(continued)

Table XX-25. Significance of Place, Kivalina

	STUDY YEAR
	1992
Do Not Know	
Count	11
Col %	18.0%
No	
Count	17
Col %	27.9%
Yes	
Count	33
Col %	54.1%

Table XX-26. Effectiveness of Organizations, Kivalina

	STUDY YEAR
	1992
EFFECTIVENESS NEEDS: ADEC	
Do Not Know	
Count	23
Col %	37.7%
Not Effective	
Count	8
Col %	13.1%
Somewhat	
Count	22
Col %	36.1%
Effective	
Count	8
Col %	13.1%
EFFECTIVENESS NEEDS: ADF&G	
Do Not Know	
Count	23
Col %	37.7%
Not Effective	
Count	5
Col %	8.2%
Somewhat	
Count	17
Col %	27.9%
Effective	
Count	16
Col %	26.2%
EFFECTIVENESS NEEDS: NPS	
Do Not Know	
Count	31
Col %	50.8%
Not Effective	
Count	9
Col %	14.8%
Somewhat	
Count	14

(continued)

Table XX-26. Effectiveness of Organizations, Kivalina

	STUDY YEAR
	1992
Col %	23.0%
Effective	
Count	7
Col %	11.5%
EFFECTIVENESS NEEDS: BOROUGH GOVERNMENT	
Do Not Know	
Count	12
Col %	19.7%
Not Effective	
Count	7
Col %	11.5%
Somewhat	
Count	21
Col %	34.4%
Effective	
Count	21
Col %	34.4%
EFFECTIVENESS NEEDS: CITY COUNCIL	
Do Not Know	
Count	4
Col %	6.6%
Not Effective	
Count	7
Col %	11.5%
Somewhat	
Count	25
Col %	41.0%
Effective	
Count	25
Col %	41.0%
EFFECTIVENESS NEEDS: COMMUNITY BUSINESSES	
Do Not Know	
Count	6
Col %	9.8%

(continued)

Table XX-26. Effectiveness of Organizations, Kivalina

	STUDY YEAR
	1992
Not Effective	
Count	4
Col %	6.6%
Somewhat	
Count	23
Col %	37.7%
Effective	
Count	28
Col %	45.9%
EFFECTIVENESS NEEDS: HEALTH SERVICES	
Do Not Know	
Count	2
Col %	3.3%
Not Effective	
Count	2
Col %	3.3%
Somewhat	
Count	23
Col %	37.7%
Effective	
Count	34
Col %	55.7%
EFFECTIVENESS NEEDS: LOCAL LAW ENFORCEMENT	
No Response	
Count	2
Col %	3.3%
Do Not Know	
Count	5
Col %	8.2%
Not Effective	
Count	12
Col %	19.7%
Somewhat	
Count	29

(continued)

Table XX-26. Effectiveness of Organizations, Kivalina

	STUDY YEAR
	1992
Col %	47.5%
Effective	
Count	13
Col %	21.3%
EFFECTIVENESS NEEDS: REGIONAL ...TIVE PROFIT ORGAN.	
No Response	
Count	2
Col %	3.4%
Do Not Know	
Count	9
Col %	15.3%
Not Effective	
Count	3
Col %	5.1%
Somewhat	
Count	32
Col %	54.2%
Effective	
Count	13
Col %	22.0%
EFFECTIVENESS NEEDS: REGIONAL NATIVE NON-PROFIT ORGAN.	
No Response	
Count	1
Col %	1.7%
Do Not Know	
Count	11
Col %	19.0%
Not Effective	
Count	3
Col %	5.2%
Somewhat	
Count	20
Col %	34.5%

(continued)

Table XX-26. Effectiveness of Organizations, Kivalina

	STUDY YEAR
	1992
Effective	
Count	23
Col %	39.7%
EFFECTIVENESS NEEDS: VILLAGE CORPORATIONS	
Do Not Know	
Count	6
Col %	28.6%
Not Effective	
Count	5
Col %	23.8%
Somewhat	
Count	8
Col %	38.1%
Effective	
Count	2
Col %	9.5%

Table XX-27. OCS Development Effects, Kivalina

	STUDY YEAR
	1992
OCS EFFECT: FISH	
Do Not Know	
Count	4
Col %	6.6%
Decrease	
Count	44
Col %	72.1%
No Change	
Count	13
Col %	21.3%
OCS EFFECT: SHELLFISH	
No Response	
Count	6
Col %	9.8%
Do Not Know	
Count	20
Col %	32.8%
Decrease	
Count	25
Col %	41.0%
No Change	
Count	10
Col %	16.4%
OCS EFFECT: MARINE MAMMALS	
Do Not Know	
Count	4
Col %	6.6%
Decrease	
Count	52
Col %	85.2%
No Change	
Count	5
Col %	8.2%
OCS EFFECT: LAND MAMMALS	
Do Not Know	

(continued)

Table XX-27. OCS Development Effects, Kivalina

	STUDY YEAR
	1992
Count	5
Col %	8.2%
Decrease	
Count	29
Col %	47.5%
No Change	
Count	26
Col %	42.6%
Increase	
Count	1
Col %	1.6%
OCS EFFECT: BIRDS	
No Response	
Count	1
Col %	1.6%
Do Not Know	
Count	10
Col %	16.4%
Decrease	
Count	33
Col %	54.1%
No Change	
Count	17
Col %	27.9%
OCS DEVELOPMENT = MORE JOBS?	
Do Not Know	
Count	14
Col %	23.0%
No	
Count	25
Col %	41.0%
Yes	
Count	22
Col %	36.1%

(continued)

Table XX-27. OCS Development Effects, Kivalina

	STUDY YEAR
	1992
CONTAIN AND CLEANUP SMALL OIL SPILL	
No Response	
Count	1
Col %	1.6%
Do Not Know	
Count	14
Col %	23.0%
No	
Count	32
Col %	52.5%
Maybe	
Count	14
Col %	23.0%
CONTAIN AND CLEANUP LARGE OIL SPILL	
Do Not Know	
Count	10
Col %	16.4%
No	
Count	44
Col %	72.1%
Maybe	
Count	7
Col %	11.5%
ARE YOU IN FAVOR OF THE SEARCH FOR OIL?	
No Response	
Count	1
Col %	1.6%
Do Not Know	
Count	5
Col %	8.2%
No	
Count	44
Col %	72.1%
Yes	
Count	11

(continued)

Table XX-27. OCS Development Effects, Kivalina

	STUDY YEAR
	1992
Col %	18.0%
OPINION ON SEARCH FOR OIL	
No Response	
Count	9
Col %	14.8%
Do Not Know	
Count	3
Col %	4.9%
Create more jobs in the community	
Count	6
Col %	9.8%
We can live in balance with the environment	
Count	1
Col %	1.6%
Increase state revenues	
Count	1
Col %	1.6%
Conditional: in favor of search/development but not locally	
Count	1
Col %	1.6%
Conditions: in favor when necessary	
Count	1
Col %	1.6%
Beneficial to the economy	
Count	2
Col %	3.3%
Conditional: if approved by local government	
Count	1
Col %	1.6%
Because it is there	
Count	1
Col %	1.6%

(continued)

Table XX-27. OCS Development Effects, Kivalina

	STUDY YEAR
	1992
Conditional: depends on time of year	
Count	1
Col %	1.6%
Not making sufficient use of current resources	
Count	3
Col %	4.9%
Environmental conditions (non-pollution/non-biological)	
Count	2
Col %	3.3%
Adverse experiences with other development	
Count	4
Col %	6.6%
Pollution concerns and impacts	
Count	7
Col %	11.5%
Adverse impact of security zones and traffic zones	
Count	1
Col %	1.6%
Status quo - leave it the way it is	
Count	3
Col %	4.9%
Should explore alternative energy sources, conservation	
Count	1
Col %	1.6%
Adverse impact on subsistence and commercial fishing	
Count	12
Col %	19.7%
Reduced national security concerns about domestic production	
Count	1

(continued)

Table XX-27. OCS Development Effects, Kivalina

	STUDY YEAR
	1992
Col %	1.6%
Potential damage to renewable resources	
Count	6
Col %	9.8%
No benefit to local economy	
Count	1
Col %	1.6%
Disastrous - multi-faceted	
Count	2
Col %	3.3%
Uncertainties with development	
Count	1
Col %	1.6%
Not enough research on impacts	
Count	1
Col %	1.6%
ARE YOU IN FAVOR OF THE DEVELOPMENT AND PRODUCTION OF OIL?	
No Response	
Count	1
Col %	1.6%
Do Not Know	
Count	6
Col %	9.8%
No	
Count	45
Col %	73.8%
Yes	
Count	9
Col %	14.8%
OPINION ON DEVELOPMENT AND PRODUCTION	
No Response	
Count	12
Col %	19.7%

(continued)

Table XX-27. OCS Development Effects, Kivalina

	STUDY YEAR
	1992
Do Not Know	
Count	5
Col %	8.2%
Create more jobs in the community	
Count	4
Col %	6.6%
We can live in balance with the environment	
Count	1
Col %	1.6%
Increase state revenues	
Count	1
Col %	1.6%
Conditions: in favor when necessary	
Count	2
Col %	3.3%
Beneficial to the economy	
Count	2
Col %	3.3%
Because it is there	
Count	1
Col %	1.6%
Conditional: depends on time of year	
Count	1
Col %	1.6%
Not making sufficient use of current resources	
Count	1
Col %	1.6%
Environmental conditions (non-pollution/non-biological)	
Count	3
Col %	4.9%
Adverse experiences with other development	

(continued)

Table XX-27. OCS Development Effects, Kivalina

	STUDY YEAR
	1992
Count	5
Col %	8.2%
Pollution concerns and impacts	
Count	5
Col %	8.2%
Adverse impact of security zones and traffic zones	
Count	1
Col %	1.6%
Status quo - leave it the way it is	
Count	3
Col %	4.9%
Should explore alternative energy sources, conservation	
Count	1
Col %	1.6%
Adverse impact on subsistence and commercial fishing	
Count	9
Col %	14.8%
Biological (non-pollution) - migration patterns	
Count	3
Col %	4.9%
Reduced national security concerns about domestic production	
Count	1
Col %	1.6%
Potential damage to renewable resources	
Count	5
Col %	8.2%
Against any development	
Count	1
Col %	1.6%
No benefit to local economy	

(continued)

Table XX-27. OCS Development Effects, Kivalina

	STUDY YEAR
	1992
Count	2
Col %	3.3%
Disastrous - multi-faceted	
Count	3
Col %	4.9%
Uncertainties with development	
Count	1
Col %	1.6%
Adverse impact on Native traditions	
Count	1
Col %	1.6%

CHAPTER XXI: KAKTOVIK

by

Sverre Pedersen

COMMUNITY OVERVIEW

The community of Kaktovik is located on Barter Island, one of the larger barrier islands along the Beaufort Sea coast, about 120 miles east of Prudhoe Bay and 70 miles west of the Canadian border (Fig. I-1). The island lies close to the mainland, separated from the coastal plain of the Arctic National Wildlife Refuge (ANWR) by a shallow channel connecting Arey Lagoon on the island's west side with Kaktovik Lagoon on its east side.

Kaktovik is the easternmost of the eight North Slope Borough communities administered from Barrow 310 miles to the west. The modern village had its beginning in 1923 when Tom Gordon moved his fur-trading post from Demarcation Point to Barter Island in order to become more accessible to area fur trappers (Jacobson and Wentworth 1982). The trading post was established near an abandoned precontact settlement, and local Inupiat families began settling in its vicinity. Initially the community was located on a sand spit at the northeast end of Barter Island, but was moved twice in order to accommodate a nearby military radar facility (more in-depth information on the social history of this community can be found in Libbey 1981, Jacobson and Wentworth 1982, Nielson 1977, and Chance 1990). The present community site is on gently sloping tundra facing northeast to Pipsuk Lagoon. Kaktovik has been a second class city since 1971 (Patterson 1977), and the population has remained predominantly Inupiat, with 84.8 percent of its 1990 population Alaska Native according to the 1990 U.S. Census.

RESEARCH METHODOLOGY 1992

Community Approval, Dates and Staffing

The proposed Minerals Management Service (MMS) survey activity in Kaktovik was first presented for review to members of the North Slope Borough Fish and Game Management Committee (a formal group of community appointed representatives from each North Slope Borough (NSB) community, existing as an advisory body to the borough's Department of Wildlife Management) at a meeting in Barrow in November 1992. This committee includes one member from Kaktovik, Mr. Nolan Solomon, who was present at the meeting. A basic project description, an overview of the two Kaktovik project components (harvest and social effects surveys) and the basic time-frame for the survey, were presented to the committee. Copies of the project description and sample surveys were made available to committee members at the time of the meeting. Though no formal committee action was taken on the proposed

project, none was requested, the committee chairman, Mr. Nolan Solomon (from Kaktovik) stated that he supported the proposed work as did several other committee members.

A formal presentation on the project was made to the Kaktovik City Council on May 20, 1993. Materials presented by the division at the meeting included a project description, copies of draft survey instruments, and a summary of comprehensive harvest and socioeconomic data for Kaktovik collected by the division in 1985 through 1987. Again, no formal record of approval was sought, but council members generally expressed support for the proposed effort. The mayor and one council member did voice concern about the length and content of the surveys, and conveyed uneasiness about participating in the social effects portion of the survey. Two main reasons for this uneasiness were explained. First they noted that the questions posed were outside the "normal" line of inquiry for what they were used to from the division and, second, that much of the data collected would in fact not be analyzed by division researchers. Though the two council members reserved judgment they did not argue that the effort be stopped or modified. The general, but again, informal sentiment expressed by the council, was that they did not object to the proposed community-wide surveys as they believed information of value to the community would be gained from the work. During final discussion of this agenda item several council members offered to be among the first households surveyed in order to more fully understand the scope and intensity of the survey effort.

The study team assembled in Kaktovik on June 7, 1993, and included division staff (Sverre Pedersen, Ron Stanek, and Clarence Alexander), Minerals Management Service staff (Tracy Andrews), staff from NSB Department of Wildlife Management (Raynita Opie), and two local hire assistants (Jane Thompson and Ida Angasan). Survey training of all staff began immediately, and by June 10 several successful test surveys had been carried out. These interviews were completed as a way of evaluating preparedness of all project participants, and to determine if there were any problems in the survey instruments.

Intensive surveys began on June 11, and lasted through June 17, 1993. As the survey effort got underway public announcements were made on the local cable TV channel and over KBRW, the public radio station serving Kaktovik.

On June 11 Kaktovik Mayor Sims called the field survey supervisor (S. Pedersen) and requested that we cease administering the social effects portion of the survey. The mayor stated that he had received calls from some council members questioning the value of the social effects questionnaire. He had again studied the instrument carefully and then polled fellow council members on their feelings regarding the intimacy and line of questioning in the social effects questionnaire. Based on comments received he concluded that the council no longer supported this survey effort. After meeting with Mayor Sims in the early morning of June 12, and agreeing to halt further social effects survey effort until the council met on the issue, the field survey supervisor notified team members to cease administering social effects surveys until further notice. (See Fall and Utermohle 1993 for more on this issue.)

Survey staffing varied from seven at the beginning of the survey and trailed down to a crew of three for the last day of the formal survey period. The number of staff available made it possible to carry out this survey in a relatively short period of time, and thus reduce community disturbance from this activity.

Sample Selection and Achievement

The Kaktovik survey called for a census approach to data collection rather than a sampling scheme. On the basis of community household information, prepared by a local assistant, there were 69 identifiable households in the community during the study period. Of the total number of households six were eliminated because of not having been in the community long enough to qualify for inclusion. The total number of households for the survey was thus 63. The study year was defined as July 1992 through June 1993, in conformance with previous harvest surveys in the community.

In total, 75 percent (47 of 63) of Kaktovik households were interviewed for the harvest portion of the survey (Table XXI-1). Two households were indisposed due to the flu, five were out of town and nine refused to participate. On average, the harvest surveys required 0.51 hours (31 minutes) to complete (Table I-7). Seven households had completed the social effects survey before the council requested that effort discontinued, but these have not been included in any data summaries for this report.

DEMOGRAPHY

In 1990 Kaktovik had a population of 224 people in 70 households according to the federal census (Fig. XXI-1). The estimated community population during the 1992 survey was 193 people in 63 households (Table XXI-2). Household size ranged from 1 to 8 persons per household, with a mean of 3.06 persons per household. Of the total population, males constituted 55.6 percent and 44.4 percent were identified as female (Table XXI-2). Survey results indicate that Alaska Natives made up 91.7 percent of the population. Median age in the survey was 31.4 years and mean length of residency, for total population, was 21.9 years (Table XXI-2). The population profile (Figure XXI-2 and Table XXI-3) is relatively balanced, but appears to have an under-representation of males in the 10-24 years of age bracket.

ECONOMY

The recent village economy can be characterized as mixed cash and subsistence. Subsistence resources are of paramount importance, and constitute the main source of meat, fish and fowl in the local diet. Recent studies of subsistence harvests have found caribou to be the main terrestrial big game species harvested, and bowhead whales and fish to be the two most significant marine resources at this time. Employment figures from the 1992 survey (Table XXI-4) show that 78.6 percent of Kaktovik adults had some form of employment in the study year, the average number of jobs held was 1.4 per person, the

average length of employment was 7.9 months per adult, but that only 44.2 percent of all adults had year-round work. Household-level survey results show that 85.1 percent of Kaktovik households had someone working for at least part of the study year, that in each household an average of 1.9 adults was employed, and that in each household there was an average of 2.8 jobs held (Table XXI-4). Figure XXI-3 illustrates employment by industry in Kaktovik in 1992. The leading source of jobs was in local government (non-education) (53 percent), followed by finance, insurance, and real estate (F.I.R.E.) (18 percent), and local government-education (6 percent). Services and retail trade represented only 1 percent and 4 percent, respectively, of all community employment during the survey year (1992-93).

Income sources for the survey period are shown in Table XXI-5. In 1992, the estimated per capita income in Kaktovik was $18,176 from all sources, and the resultant average household income was $55,688. Earned income contributed $15,386 per capita and unearned income (such as the Alaska Permanent Fund dividend, regional/village corporation dividends and social security) (Table XXI-6) added an estimated $2,789.65 per capita. The main source of employment income was from the local government sector, followed by finance, insurance, and real estate (in this case Native corporation employment), and third by retail trade (Table XXI-5). Local government jobs produced the highest per capita incomes ($10,925) followed by finance, insurance, and real estate ($2,187.50) and local education jobs which paid $1,245.83 per capita in Kaktovik during the study year. Permanent Fund dividend, retirement and social security incomes produced the highest non-employment per capita income in Kaktovik, but Native Corporation dividends and longevity bonus payments were also significant sources of income in the community (Table XXI-6).

RESOURCE HARVEST AND USE

The estimated harvest of wild resources for local use in Kaktovik during 1992/93 was 2,713.3 pounds of usable weight per household and 885.6 pounds per capita (Table XXI-7, Fig. XXI-4). This high estimate is due to an unusually successful whaling season in 1992 when the community harvested three large bowhead whales as part of its Alaska Eskimo Whaling Commission fall harvest quota. Bowhead whale harvests contributed an estimated 1,716.82 pounds per household and 560.35 pounds per person during the 1992/93 survey period. Overall bowhead harvests contributed 63 percent (108,159.70 pounds) of the total estimated harvest for the community, with non-salmon fish (mainly whitefish) and caribou distant second and third contributors at 13 percent (22,847 pounds) and 11 percent (19,135.91 pounds), respectively (Table XXI-11).

Composition of Kaktovik's resource harvest by category in 1992/93 is depicted in Figures XXI-5 and XXI-6. Marine mammals ranked highest, at 599.11 pounds per person and accounted for 68 percent of the community harvest of wild resources in 1992. Land mammal harvest contributed an estimated 149.6 pounds per person or 17 percent of the total community catch, and fishing produced an estimated 118.91

pounds per person or 13 percent of the total harvest. Birds and eggs, and plants and berries also contributed to the community's wild resource harvest in 1992. They produced 16.83 and 1.17 pounds per person, respectively, or 2 and less than 1 percent, and served to supplement and bring additional variety to the locally resource-based dietary regime. Wood, used primarily for heat production but also as a source of construction material at camps, was also found to contribute to the local resource harvest in 1992. The average household harvest of wood was estimated at 0.64 cords for the survey period.

Tables XXI-12 and XXI-13 reports the salmon harvest in Kaktovik by gear type, and Table XXI-14 reports household participation in salmon fishing. Corresponding data for fish other than salmon are provided in Table XXI-15, XXI-16, and XXI-17.

Overall, 96 percent of sampled households in Kaktovik used locally harvested wild resources. Additionally, 89 percent of the surveyed households attempted to harvest wild resources, 89 percent were successful harvesters, 92 percent received shares of wild resources from other households, and 83 percent gave wild resources away to other community households in 1992 (Table XXI-7).

The average household in Kaktovik used 16.0 different kinds of locally harvested resources during the study year, harvested 8.6 different kinds and gave away 7.7 kinds. Also, the average household received 10.5 different kinds of resources from other households in the community (Table XXI-7). Participation in subsistence harvesting and processing is high among Kaktovik residents. As reported in Table XXI-8, 75.7 percent of the people in surveyed households participated in the harvest of one or more wild resources in 1992 and 75.7 percent processed wild resources. Among the major resource categories the highest level of participation occurred in fishing where 68.6 percent of the people in surveyed households participated and also processed fish. Furthermore, 45.8 percent hunted, 13.2 percent trapped or hunted furbearers and 46.5 percent gathered plants (Table XXI-8).

COMPARISON WITH EARLIER FINDINGS

The Division of Subsistence has carried out two household harvest surveys in Kaktovik (Pedersen in prep. b; Scott et al. 1993) which can serve as bases for comparisons. The two earlier years were quite different in terms of harvests in that the first survey, carried out in 1985/86, recorded no bowhead whales having been landed, whereas in the next survey year, 1986/87, Kaktovik whalers were successful. Community resource harvest participation and use remained high throughout the three study years and per capita harvests, particularly of marine mammals, were high in 1985/86 and in 1992/93 (Table XXI-9). Community harvest levels have been substantial and resultant per capita harvest levels have been moderate to high in comparison to other rural Alaskan communities (Scott et al. 1993). In harvest year 1992/93, Kaktovik hunters/fishers produced the highest community catch to date, with the take of three large bowhead whales by far making the greatest contribution (Tables XXI-9 and XXI-10). Marine mammal harvests more than doubled in 1992/93 as compared to 1986/87 when Kaktovik whalers also were

successful but caught smaller whales and was ten-fold higher than in 1985/86 when no whales were harvested (Table XXI-10). The resultant per capita harvest estimates for the three years are not as dramatically different between the three survey years (328.0, 432.8, and 885.6 pounds, respectively), but the 1992/93 harvest year still is over twice as high as the previous high, 1986/87, estimate (Fig. XXI-4).

Comparing major resource category harvest estimates over the three years (Table XXI-9, Fig. XXI-6), two categories distinguish themselves as widely fluctuating in their contribution to the overall estimated community catch. Plainly marine mammal harvest estimates stand out as being the most variable. In 1985 this category was estimated at 10,762 pounds for the community harvest estimate. The major component of this harvest was seals (bearded and ringed seals) with a small contribution of polar bear. In the 1992 survey the marine mammal category was estimated at 115,645.3 pounds for the entire community, more than ten times the 1985 marine mammal harvest, and in this case bowhead whales made up the bulk of the harvest. Fish harvests have also varied widely in the three years, ranging from a low of 6,951 pounds in 1985 to an estimated 22,952 pounds in 1992. Harvest estimates for the fish resource category has thus varied up to three-fold according to these estimates.

Other resource categories when compared across the three survey years have also varied, but not as widely as the two resource groups mentioned, leading to the conclusion that there is likely no such condition as a "normal" harvest year in Kaktovik. Wide fluctuations in the contribution of each resource category and total community harvest is likely the norm, with weather, resource availability, accessibility, and "luck " being the main variables driving the success of the harvesting system.

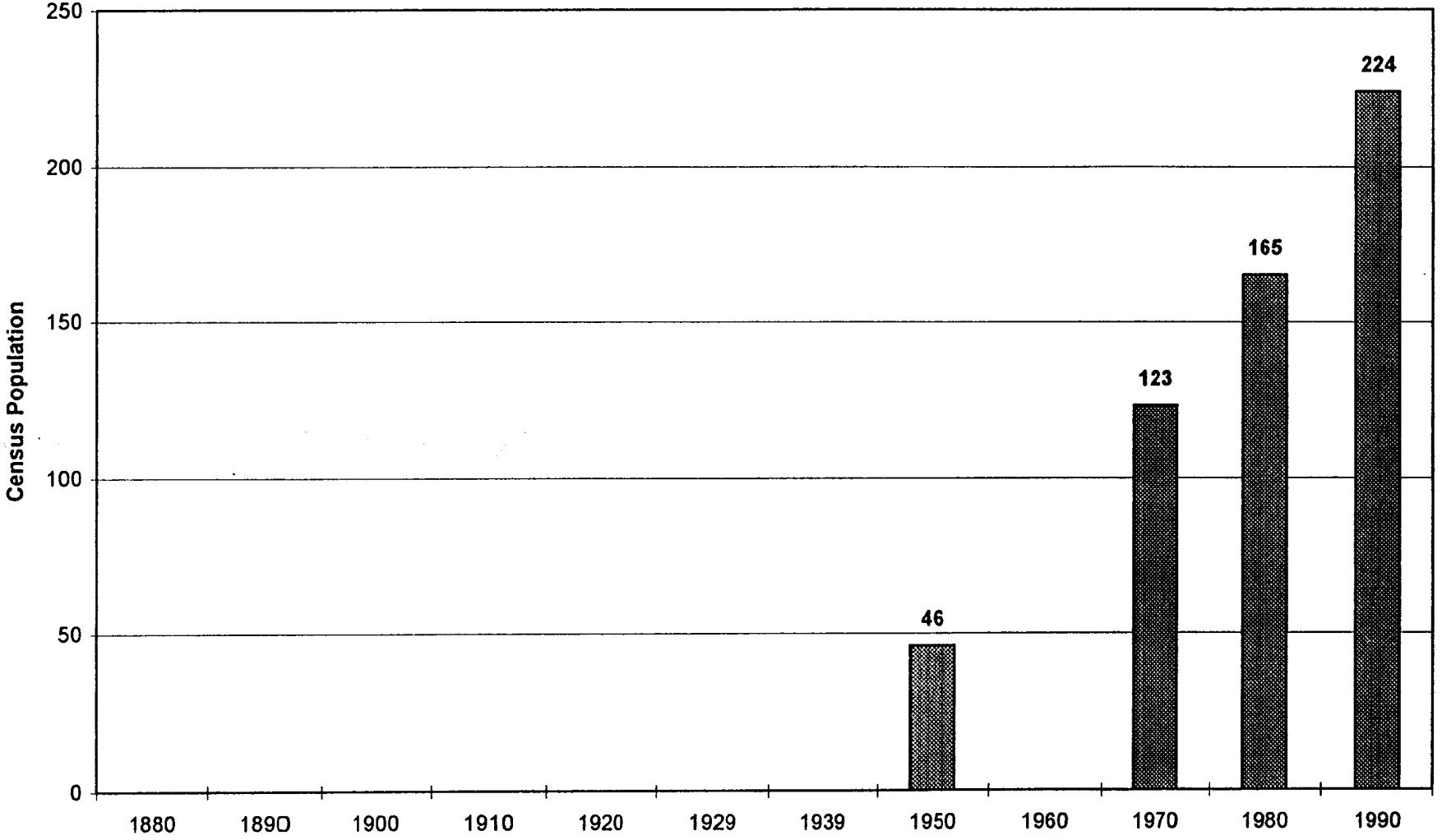
There are now more active whaling crews than ten years ago, additional effort appears to be directed towards whaling, the allowable catch limit (set by the Alaska Eskimo Whaling Commission) for bowhead whales has increased, improved preparedness, and better organization of the hunt are all contributing factors to the dramatic increase seen in whaling success since 1985/86 (Fig.XXI-6). It is important to note however, that fishing and hunting of land mammals (caribou in particular) remain as significant sources of local subsistence harvests. Whaling is an activity which takes place in a relatively short period of time (Sept.-Oct.), whereas fishing and land mammal hunting take place on a near year-round basis and which appear to have reliably produced (and still are considered)staple foods in Kaktovik household diets.

There is also ample local recognition of how easily whaling can be unsuccessful due to factors completely outside local control (early appearance of arctic ice-pack, stormy weather, fog, etc.) because the activity can only take place in a short period of time in fall each year. Maintenance of other harvesting activities which can be carried out nearly year-round, and which have successfully maintained the community in the past, is therefore pursued with vigor. At no time during this study did any household member make mention of any intent to depart from the diversified local resource economy to a focus on marine mammals (bowhead whales) as the main source of locally harvested food resource. Kaktovik hunters/fishers seem to fully understand the importance of taking a diversified subsistence harvest

approach (and seem to really enjoy this condition) and do not appear tempted to shift away from successful fishing and land mammal hunting even though they have had recent success in whaling.

Though the total community subsistence harvest in Kaktovik is not as high as in other study communities, the per person useable harvests is the highest (but fully in line with other nearby whaling communities; Figure XXIII-14 and Braund 1993). Kaktovik has now reached about as high as it can in terms of landed salvaged bowhead harvest (unless the community quota increases again) and it will be interesting to see if this community harvest level can be sustained for any period of time. Chances are good that the weather will not be as cooperative as it was during whaling in the fall of 1993, and that there will be future swings in the community harvest level at least as great as observed to date. Still, this brief comparison has shown that harvest of local subsistence resources to meet dietary and cultural needs in Kaktovik remains high in 1993. In fact, subsistence harvests of some resources (notably marine mammals) increased substantially since 1985/86 and 1986/87. Though mean household income also increased in the same period, it is still probably on par with income in the 1985/87 period figures considering inflation. Thus per person subsistence harvest is increasing over time in Kaktovik. This is important to note as major industrial development interest in lands near Kaktovik exist. Recent oil and gas industry plans to develop a substantial oil deposit (British Petroleum's Bidami Field) 70 miles to the east of the community, but well within the community harvest area, is causing some local concern among Kaktovik residents. How this development will shape long-term access to, and sustainability of, locally harvested resources is unclear. However, by continuing to work with local, state, federal, and industry representatives the local government in Kaktovik can help shape nearby development to safeguard local subsistence land and resource interests.

Figure XXI-1. Kaktovik Census Population, 1880 - 1990



Sources: Rollins 1978; Alaska Department of Labor 1991; no data prior to 1950.

Table XXI-1. Sample Participation: Kaktovik, 1993

VARIABLE	TOTAL HOUSEHOLDS
Estimated Household Structures	63
Non-Residential Structures	0
Estimated Households	63
Interview Goal:	63
Households Interviewed	47
Failed to Contact/Unavailable	7
Refused	9
Vacant Residential Structures	0
Seasonal Households*	0
Non-Resident Household **	0
Invalid Households and Vacancies	0
Total Households Attempted:	63
Refusal Rate:	16.07%
Non-Perm. HH Rate ("Vacancy Rate"):	0.0%
Interview Goal (Percentage)	74.6%
Total Permanent Households	63
Percentage Interviewed	74.60%
Percentage of Total Households	100.00%
Interview Weighting Factor	1.340

NOTES:

* Seasonal households are households which maintain a permanent domicile elsewhere where they spend the majority of their time.

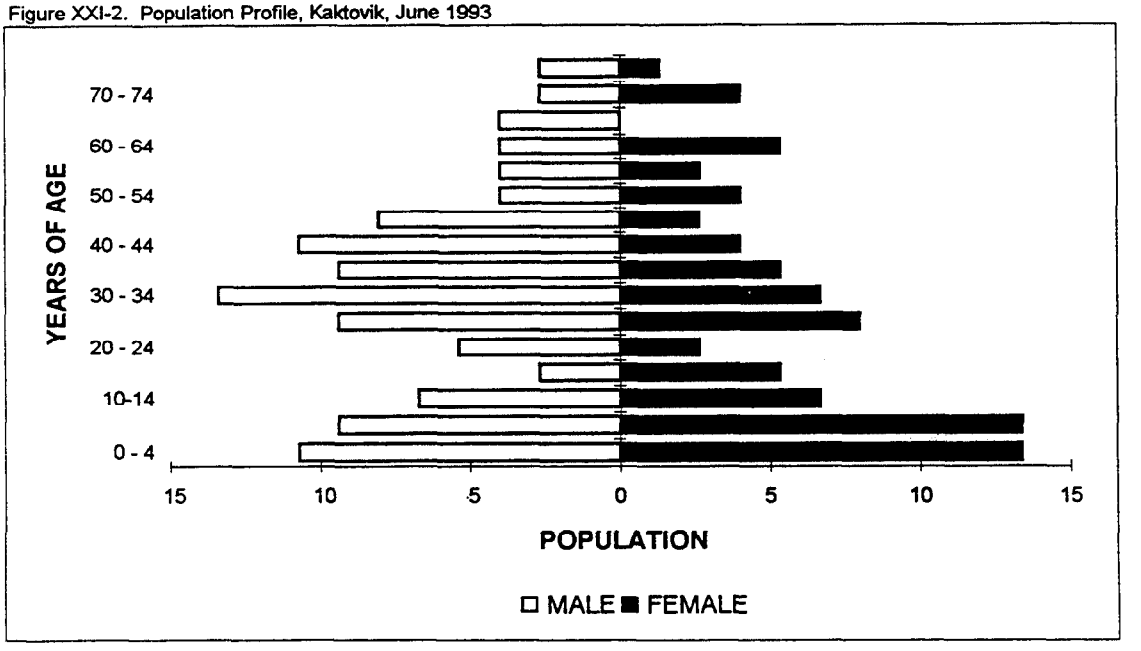
** Non-resident households are households which were not present during the study year or which were resident less than the required number of months.

Table XXI-2 . Demographic Characteristics of Households, Kaktovik, June 1993

Characteristics	1992/93
Sampled Households	47
Number of Households in the Community	63
Percentage of Households Sampled	74.60
Household Size	
Mean	3.06
Minimum	1
Maximum	8
Sample Population	144
Estimated Community Population	193.02
Age	
Mean	31.18
Minimum	0.00
Maximum	78.97
Median	31.436
Length of Residency - Population	
Mean	21.88
Minimum	0
Maximum	79.25
Length of Residency - Household Heads	
Mean	31.10
Minimum	0.75
Maximum	79.25
Sex	
Males	
Number	107.23
Percentage	55.56
Females	
Number	85.79
Percentage	44.44
Alaska Native	
Households (Either Head)	
Number	56.30
Percentage	89.36
Estimated Population	
Number	176.94
Percentage	91.67

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1993.

Figure XXI-2. Population Profile, Kaktovik, June 1993



SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1993

Table XXI-3. Population Profile, Kaktovik, June 1993

AGE	MALE			FEMALE			TOTAL		
	NUMBER	PERCENT	CUM. PERCENT	NUMBER	PERCENT	CUM. PERCENT	NUMBER	PERCENT	CUM. PERCENT
0 - 4	10.72	10.00%	10.00%	13.40	15.63%	15.63%	24.13	12.50%	12.50%
5-9	9.38	8.75%	18.75%	13.40	15.63%	31.25%	22.79	11.81%	24.31%
10-14	6.70	6.25%	25.00%	6.70	7.81%	39.06%	13.40	6.94%	31.25%
15 - 19	2.68	2.50%	27.50%	5.36	6.25%	45.31%	8.04	4.17%	35.42%
20 - 24	5.36	5.00%	32.50%	2.68	3.13%	48.44%	8.04	4.17%	39.58%
25 - 29	9.38	8.75%	41.25%	8.04	9.38%	57.81%	17.43	9.03%	48.61%
30 - 34	13.40	12.50%	53.75%	6.70	7.81%	65.63%	20.11	10.42%	59.03%
35 - 39	9.38	8.75%	62.50%	5.36	6.25%	71.88%	14.74	7.64%	66.67%
40 - 44	10.72	10.00%	72.50%	4.02	4.69%	76.56%	14.74	7.64%	74.31%
45 - 49	8.04	7.50%	80.00%	2.68	3.13%	79.69%	10.72	5.56%	79.86%
50 - 54	4.02	3.75%	83.75%	4.02	4.69%	84.38%	8.04	4.17%	84.03%
55 - 59	4.02	3.75%	87.50%	2.68	3.13%	87.50%	6.70	3.47%	87.50%
60 - 64	4.02	3.75%	91.25%	5.36	6.25%	93.75%	9.38	4.86%	92.36%
65 - 69	4.02	3.75%	95.00%	0.00	0.00%	93.75%	4.02	2.08%	94.44%
70 - 74	2.68	2.50%	97.50%	4.02	4.69%	98.44%	6.70	3.47%	97.92%
75 - 79	2.68	2.50%	100.00%	1.34	1.56%	100.00%	4.02	2.08%	100.00%
80 - 84	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
85 - 89	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
90 - 94	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
95 - 99	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
100 - 104	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
Missing	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
TOTAL	107.23	55.56%		85.79	44.44%		193.02	100.00%	

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1993

Table XXI-4. Employment Characteristics, Kaktovik, 1992/93

Characteristics		1992/93
ADULTS		
Total		131.36
Employed		
	Number	103.21
	Percentage	78.57
Jobs		
	Number	147.45
	Mean	1.43
	Minimum	1
	Maximum	5
Months Employed		
	Mean	7.94
	Minimum	1
	Maximum	12
	Year-Round	44.16
HOUSEHOLDS		
Total		63.00
Employed		
	Number	53.62
	Percentage	85.11
Jobs per Employed Household		
	Mean	2.75
	Minimum	1
	Maximum	10
Employed Adults		
	Mean	1.93
	Minimum	1
	Maximum	5

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1993.

Table XXI-5. Community, Household, and Per Capita Income, All Sources and by Employer Type, Kaktovik, 1992/93

INCOME SOURCE	INCOME		
	COMMUNITY TOTAL	AVERAGE HOUSEHOLD	PER CAPITA
All Sources	$3,508,356.75	$55,688.20	$18,176.01
Earned Income	$2,969,894.41	$47,141.18	$15,386.36
Agriculture, Forestry, and Fishing	0.00	0.00	0.00
Agriculture	0.00	0.00	0.00
Forestry	0.00	0.00	0.00
Fishing, Hunting, Trapping	0.00	0.00	0.00
Hatchery/Enhancement	0.00	0.00	0.00
Commercial Fishing	0.00	0.00	0.00
Hunting/Trapping	0.00	0.00	0.00
Mining	AMT UNK	AMT UNK	AMT UNK
Construction	0.00	0.00	0.00
Manufacturing	3,485.11	55.32	18.06
Cannery	0.00	0.00	0.00
Other Manufacturing	3,485.11	55.32	18.06
Logging/Timber	0.00	0.00	0.00
Transportation, Communications, and Utilities	0.00	0.00	0.00
Trade	142,621.28	2,263.83	738.89
Wholesale	0.00	0.00	0.00
Retail	142,621.28	2,263.83	738.89
Finance, Insurance, and Real Estate	422,234.04	6,702.13	2,187.50
Services	AMT UNK	AMT UNK	AMT UNK
Government	2,401,553.99	38,119.90	12,441.91
Federal	18,765.96	297.87	97.22
State	33,510.64	531.91	173.61
Local	2,349,277.39	37,290.12	12,171.08
Local Government	2,108,805.05	33,473.10	10,925.25
Local Education	240,472.34	3,817.02	1,245.83
Unknown	AMT UNK	AMT UNK	AMT UNK
Other Income	$538,462.34	$8,547.02	$2,789.65

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1993

Table XXI-6. Community, Household, and Per Capita Other Income by Source, Kaktovik, 1992/93

Source	OTHER INCOME			
	PERCENTAGE REPORTING	COMMUNITY TOTAL	AVERAGE HOUSEHOLD	PER CAPITA
All Sources		$538,462.34	$8,547.02	$2,789.65
Exxon Claims	0.00	0.00	0.00	0.00
Aid to Families with Dependent Children	0.00	0.00	0.00	0.00
Adult Public Assistance	0.00	0.00	0.00	0.00
Exxon Damages	0.00	0.00	0.00	0.00
Pension/Retirement	17.02	112,257.96	1,781.87	581.58
Longevity Bonus	14.89	40,212.77	638.30	208.33
Social Security	12.77	96,719.74	1,535.23	501.08
Workman's Comp./Insurance	2.13	6,980.94	110.81	36.17
Energy Assistance	4.26	3,334.98	52.94	17.28
Supplemental Security Income	4.26	15,216.51	241.53	78.83
Food Stamps	0.00	0.00	0.00	0.00
Unemployment	2.13	6,031.91	95.74	31.25
Native Corporation Dividend	85.11	74,334.64	1,179.91	385.11
Dividend/Interest	0.00	0.00	0.00	0.00
Child Support	2.13	5,919.32	93.96	30.67
Rental Income	0.00	0.00	0.00	0.00
Veteran Disability	0.00	0.00	0.00	0.00
Equipment Leasing	0.00	0.00	0.00	0.00
Rental Assistance	0.00	0.00	0.00	0.00
Fishing Permit Leasing	0.00	0.00	0.00	0.00
Per Diem	0.00	0.00	0.00	0.00
Disability	0.00	0.00	0.00	0.00
Alaska Permanent Fund Dividend	93.62	163,298.68	2,592.04	846.01
Weatherization	0.00	0.00	0.00	0.00
Veteran's Assistance	0.00	0.00	0.00	0.00
Investments/Stocks/Bonds	0.00	0.00	0.00	0.00
Bureau of Indian Affairs Grants	0.00	0.00	0.00	0.00
Housing Allowances/Off-Base Allowances	0.00	0.00	0.00	0.00
Women, Infants, and Children Program	0.00	0.00	0.00	0.00
General Assistance Grant	0.00	0.00	0.00	0.00
Foster Care	0.00	0.00	0.00	0.00
Inheritance	0.00	0.00	0.00	0.00
Contest Winnings	0.00	0.00	0.00	0.00
Capital Gains	0.00	0.00	0.00	0.00
ASRC Elder Trust	10.64	14,154.89	224.68	73.33
Other	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1993

Figure XXI-3. Employment by Industry, Kaktovik, 1992/93

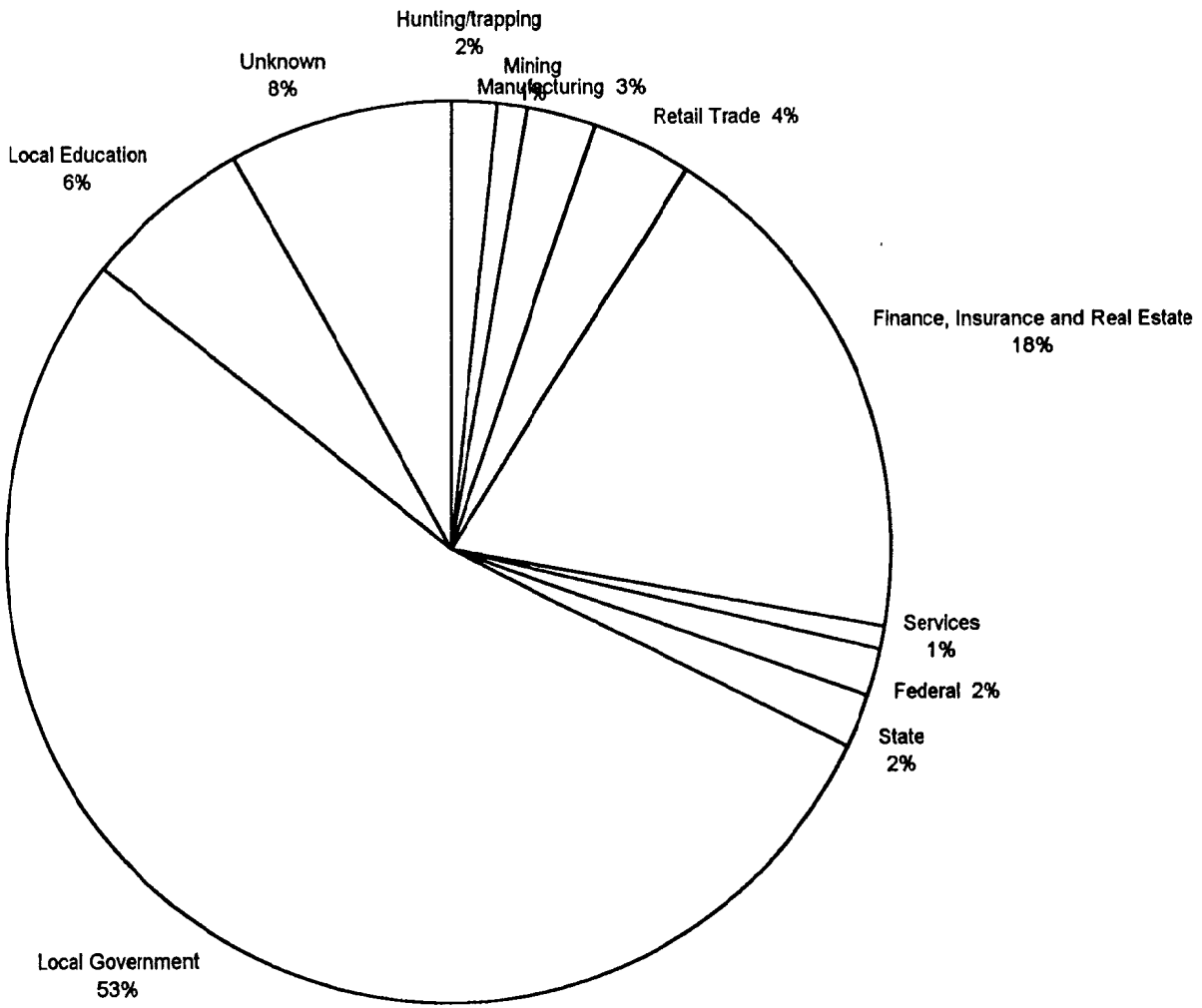


Table XXI-7. Characteristics of Resource Harvest and Use, Kaktovik, 1992/93

Study Year	1992/93
Mean Number Of Resources Used Per Household	16.04
Minimum	0
Maximum	33
95 % Confidence Limit (+/-)	7.26
Median	17
Mean Number Of Resources Attempted To Harvest Per Household	12.00
Minimum	0
Maximum	31
95 % Confidence Limit (+/-)	10.71
Median	12
Mean Number Of Resources Harvested Per Household	8.62
Minimum	0
Maximum	27
95 % Confidence Limit (+/-)	11.09
Median	8
Mean Number Of Resources Received Per Household	10.49
Minimum	0
Maximum	26
95 % Confidence Limit (+/-)	10.12
Median	11
Mean Number Of Resources Given Away Per Household	7.74
Minimum	0
Maximum	29
95 % Confidence Limit (+/-)	13.35
Median	6
Mean Household Harvest, Pounds	2,713.33
Minimum	0.00
Maximum	35,751.86
Total Pounds Harvested	170,939.50
Community Per Capita Harvest, Pounds	885.60
Percent Using Any Resource	95.74
Percent Attempting To Harvest Any Resource	89.36
Percent Harvesting Any Resource	89.36
Percent Receiving Any Resource	91.49
Percent Giving Away Any Resource	82.98
Number Of Households In Sample	47
Number of Resources Available	63

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1993

Table XXI-8. Participation in the Harvest and Processing of Wild Resources, Kaktovik, 1992/93

Study Year			1992/93
Total Number of People			193.02
GAME	Hunt	Number	88.47
		Percentage	45.83
		Missing	0.00
		Missing %	0.00
	Process	Number	111.26
		Percentage	57.64
		Missing	0.00
		Missing %	0.00
FISH	Fish	Number	131.36
		Percentage	68.06
		Missing	0.00
		Missing %	0.00
	Process	Number	134.04
		Percentage	69.44
		Missing	0.00
		Missing %	0.00
FURBEARERS	Hunt or Trap	Number	25.47
		Percentage	13.19
		Missing	0.00
		Missing %	0.00
	Process	Number	21.45
		Percentage	11.11
		Missing	0.00
		Missing %	0.00
PLANTS	Gather	Number	89.81
		Percentage	46.53
		Missing	0.00
		Missing %	0.00
	Process	Number	76.40
		Percentage	39.58
		Missing	0.00
		Missing %	0.00
ANY RESOURCE			
	Attempt	Number	146.11
		Percent	75.69
	Process	Number	146.11
		Percent	75.69

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1993.

Table XXI-9. Subsistence Harvests in Pounds Usable Weight per Person by Resource Category, Kaktovik, 1985/86, 1986/87, and 1992/93

	Pounds Usable Weight per Person		
	1985/86	1986/87	1992/93
Fish	60.7	35.8	118.9
Land Mammals	188.8	128.5	149.6
Marine Mammals	57.2	256.0	599.1
Birds and Eggs	21.3	12.3	16.8
Wild Plants	0.1	0.3	1.2
All Resources	328.0	432.8	885.6

Table XXI-10. Composition of Resource Harvests by Resource Category, Kaktovik, 1985/86, 1986/87, and 1992/93

	Percentage of Total Harvest		
	1985/86	1986/87	1992/93
Other Fish	18.5%	8.3%	13.4%
Land Mammals	57.6%	29.7%	16.9%
Marine Mammals	17.5%	59.2%	67.7%
Birds and Eggs	6.5%	2.8%	1.9%
Wild Plants	0.0%	0.1%	0.1%

Figure XXI-4. Harvests of Wild Resources for Home Use, Pounds Usable Weight per Capita, Kaktovik, 1985/86, 1986/87, and 1992/93

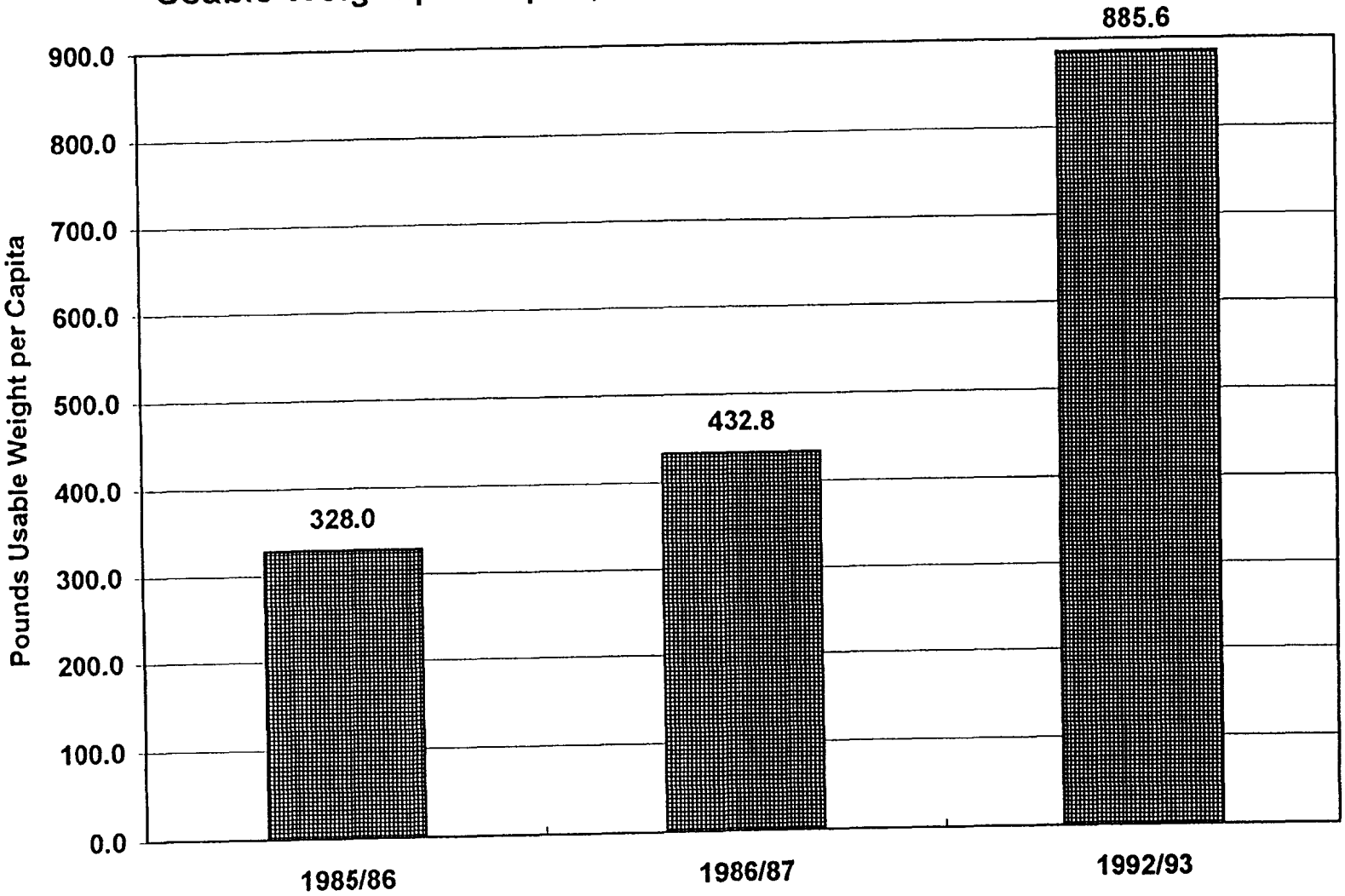


Figure XXI-5. Composition of Wild Resource Harvests by Resource Category, Kaktovik, 1992/93

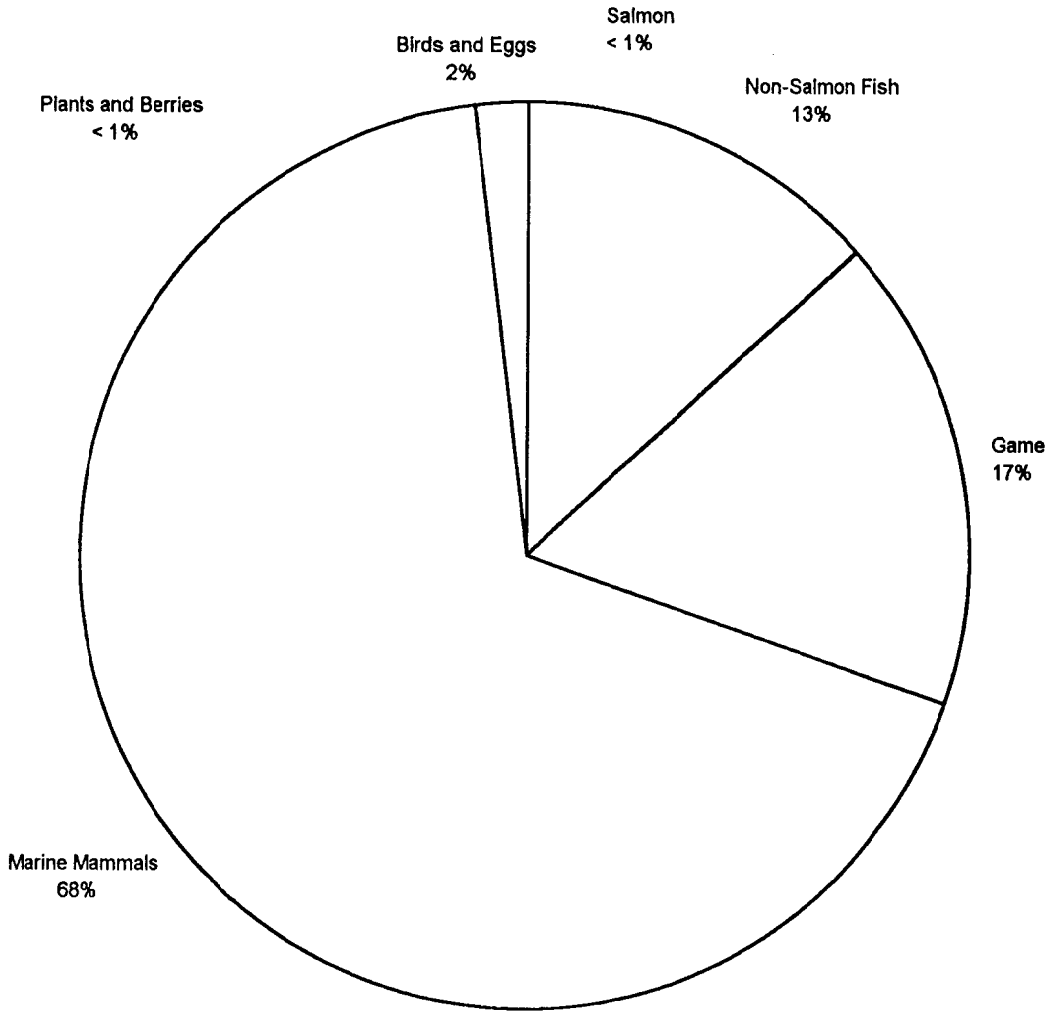


Figure XXI-6. Per Capita Harvests of Wild Resources by Resource Category, Kaktovik, 1985/86, 1986/87, and 1992/93

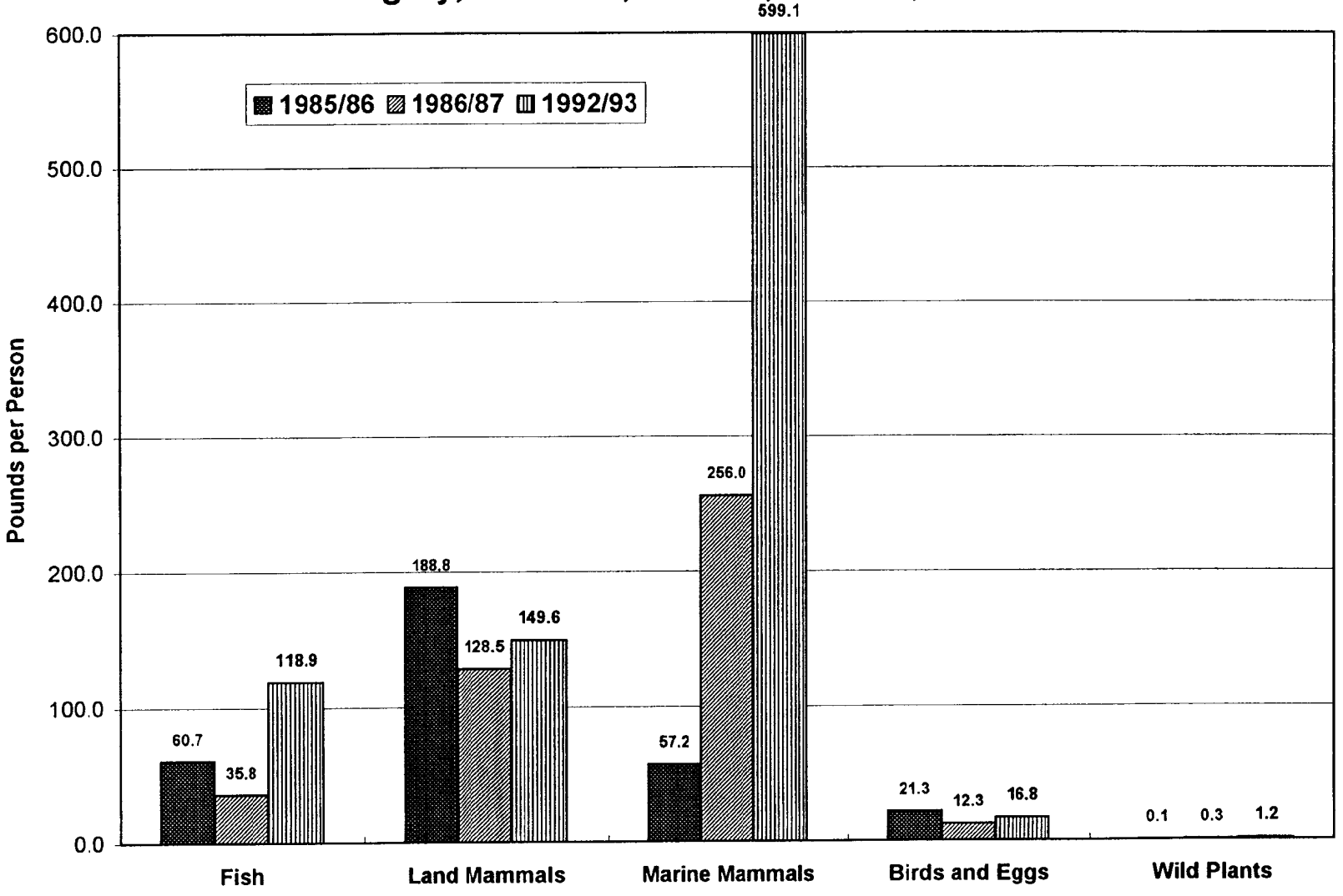


Table XXI-11. Estimated Harvest and Use of Fish, Mammal, Bird and Plant Resources, Kaktovik, 1992/93

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
All Resources	95.7	89.4	89.4	91.5	83.0	170,939.50	2,713.33	885.60			38.25%	38.64%
Fish	93.6	83.0	80.9	70.2	70.2	22,952.16	364.32	118.91	18,464.36	293.09	20.03%	20.66%
Salmon	25.5	8.5	8.5	19.1	10.6	105.14	1.67	0.54	49.60	0.79	60.71%	61.33%
Coho Salmon	2.1	0.0	0.0	2.1	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Chinook Salmon	4.3	0.0	0.0	4.3	2.1	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Pink Salmon	2.1	2.1	2.1	0.0	0.0	17.05	0.27	0.09	8.04	0.13	101.44%	102.80%
Sockeye Salmon	2.1	0.0	0.0	2.1	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Unknown Salmon	14.9	6.4	6.4	10.6	8.5	88.09	1.40	0.46	41.55	0.66	70.36%	70.63%
Non-Salmon Fish	93.6	83.0	80.9	68.1	70.2	22,847.02	362.65	118.37	18,414.77	292.30	20.03%	20.67%
Cod	42.6	36.2	34.0	29.8	27.7	299.99	4.76	1.55	3,672.77	58.30	37.78%	46.22%
Pacific Tomcod	38.3	34.0	31.9	25.5	23.4	182.03	2.89	0.94	2,600.43	41.28	35.80%	36.11%
Arctic Cod	2.1	2.1	2.1	0.0	2.1	117.96	1.87	0.61	1,072.34	17.02	101.44%	103.51%
Burbot	8.5	0.0	0.0	8.5	6.4	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Flounder	4.3	4.3	4.3	0.0	4.3	1.34	0.02	0.01	2.68	0.04	70.95%	70.33%
Unknown Flounder	4.3	4.3	4.3	0.0	4.3	1.34	0.02	0.01	2.68	0.04	70.95%	70.33%
Grayling	21.3	14.9	14.9	10.6	14.9	158.04	2.51	0.82	175.60	2.79	46.99%	49.20%
Whitefish	83.0	70.2	70.2	55.3	59.6	6,050.55	96.04	31.35	8,822.68	140.04	23.22%	25.15%
Whitefish, Large	2.1	0.0	0.0	2.1	2.1	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Whitefish, Broad/Akakiik	2.1	0.0	0.0	2.1	2.1	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Cisco	80.9	68.1	68.1	51.1	59.6	6,027.09	95.67	31.23	8,809.28	139.83	23.27%	25.24%
Least Cisco	17.0	8.5	8.5	12.8	12.8	348.51	5.53	1.81	697.02	11.06	56.55%	57.60%
Bering Cisco	76.6	61.7	61.7	44.7	57.4	5,672.01	90.03	29.39	8,102.87	128.62	23.98%	25.78%
Arctic Cisco	2.1	2.1	2.1	2.1	2.1	6.57	0.10	0.03	9.38	0.15	101.44%	98.45%
Unknown Whitefish	6.4	2.1	2.1	6.4	0.0	23.46	0.37	0.12	13.40	0.21	101.44%	103.51%
Trout and Char	91.5	80.9	78.7	48.9	66.0	16,337.11	259.32	84.64	5,741.04	91.13	20.40%	21.20%
Char	91.5	80.9	78.7	48.9	66.0	16,337.11	259.32	84.64	5,741.04	91.13	20.40%	21.20%
Arctic Char	91.5	80.9	78.7	44.7	66.0	15,463.15	245.45	80.11	5,522.55	87.66	21.15%	22.00%
Lake Trout	29.8	21.3	17.0	21.3	17.0	873.96	13.87	4.53	218.49	3.47	42.15%	44.14%
Game	95.7	76.6	68.1	83.0	66.0	28,866.85	458.20	149.55	424.91	6.74	19.32%	19.95%
Big Game	95.7	70.2	57.4	83.0	61.7	28,705.21	455.64	148.72	211.79	3.36	19.48%	19.95%
Brown Bear	8.5	6.4	0.0	8.5	4.3	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Caribou	95.7	70.2	55.3	74.5	53.2	19,135.91	303.74	99.14	158.17	2.51	19.11%	18.86%
Caribou, Bull	48.9	48.9	48.9	0.0	0.0	13,788.96	218.87	71.44	108.57	1.72	20.78%	21.71%
Caribou, Cow	25.5	25.5	25.5	0.0	0.0	4,876.47	77.40	25.26	45.57	0.72	30.96%	29.51%
Caribou, Sex Unknown	95.7	70.2	4.3	74.5	53.2	470.49	7.47	2.44	4.02	0.06	74.95%	71.19%
Moose	36.2	10.6	6.4	31.9	8.5	2,010.64	31.91	10.42	4.02	0.06	57.28%	56.29%

Table XXI-11. Estimated Harvest and Use of Fish, Mammal, Bird and Plant Resources, Kaktovik, 1992/93

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
Muskox	53.2	21.3	8.5	51.1	17.0	3,179.49	50.47	16.47	5.36	0.09	49.04%	46.99%
Sheep, Dall	70.2	36.2	27.7	63.8	31.9	4,379.17	69.51	22.69	44.23	0.70	28.79%	28.14%
Small Game/Furbearer	46.8	42.6	38.3	19.1	21.3	161.64	2.57	0.84	213.13	3.38	27.29%	53.40%
Fox	17.0	17.0	17.0	2.1	10.6	0.00	0.00	0.00	46.91	0.74	46.04%	0.00%
Arctic Fox	14.9	14.9	14.9	2.1	8.5	0.00	0.00	0.00	36.19	0.57	47.36%	0.00%
Red Fox	10.6	10.6	10.6	2.1	6.4	0.00	0.00	0.00	9.38	0.15	50.65%	0.00%
Cross Fox	2.1	2.1	2.1	0.0	2.1	0.00	0.00	0.00	1.34	0.02	101.44%	0.00%
Land Otter	0.0	2.1	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Marmot	14.9	8.5	6.4	8.5	0.0	107.23	1.70	0.56	21.45	0.34	78.11%	79.18%
Mink	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Weasel	2.1	2.1	0.0	2.1	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Wolf	4.3	17.0	2.1	2.1	0.0	0.00	0.00	0.00	2.68	0.04	101.44%	0.00%
Wolverine	14.9	23.4	12.8	4.3	6.4	0.00	0.00	0.00	9.38	0.15	41.32%	0.00%
Squirrel	29.8	25.5	25.5	8.5	12.8	54.41	0.86	0.28	132.70	2.11	31.76%	33.20%
Parka Squirrel (ground)	29.8	25.5	25.5	8.5	12.8	54.41	0.86	0.28	132.70	2.11	31.76%	33.20%
Marine Mammals	89.4	63.8	40.4	87.2	70.2	115,645.29	1,835.64	599.13	75.45	1.20	23.10%	56.04%
Whale	87.2	53.2	6.4	85.1	61.7	108,159.69	1,716.82	560.35	3.00	0.05	57.28%	59.81%
Belukha	29.8	17.0	0.0	29.8	12.8	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Bowhead	87.2	53.2	6.4	85.1	61.7	108,159.69	1,716.82	560.35	3.00	0.05	57.28%	59.81%
Seal	80.9	53.2	36.2	68.1	40.4	6,104.30	96.89	31.63	69.70	1.11	24.67%	24.59%
Bearded Seal	74.5	46.8	27.7	59.6	31.9	4,246.47	67.40	22.00	24.13	0.38	26.17%	28.71%
Ringed Seal	46.8	29.8	25.5	36.2	27.7	1,688.94	26.81	8.75	41.55	0.66	32.84%	33.48%
Spotted Seal	14.9	25.5	4.3	12.8	6.4	168.89	2.68	0.88	4.02	0.06	74.95%	75.50%
Walrus	29.8	8.5	2.1	27.7	14.9	51.61	0.82	0.27	0.07	0.00	101.44%	102.80%
Polar Bear	19.1	4.3	4.3	14.9	4.3	1,329.70	21.11	6.89	2.68	0.04	70.95%	72.37%
Birds and Eggs	89.4	68.1	63.8	76.6	59.6	3,248.66	51.57	16.83	1,796.17	28.51	19.64%	18.29%
Birds	89.4	66.0	61.7	76.6	57.4	3,240.21	51.43	16.79	1,739.87	27.62	19.55%	18.31%
Owl	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Snowy Owl	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Upland Game Birds	85.1	59.6	57.4	48.9	46.8	538.58	8.55	2.79	769.40	12.21	28.32%	25.32%
Ptarmigan	85.1	59.6	57.4	48.9	46.8	538.58	8.55	2.79	769.40	12.21	28.32%	25.32%
Migratory Birds	83.0	61.7	51.1	70.2	46.8	2,701.63	42.88	14.00	970.47	15.40	20.56%	20.29%
Waterfowl	83.0	61.7	51.1	70.2	46.8	2,701.63	42.88	14.00	970.47	15.40	20.56%	20.29%
Ducks	66.0	48.9	46.8	44.7	40.4	552.93	8.78	2.86	368.62	5.85	22.48%	21.85%
Eider	59.6	44.7	38.3	42.6	31.9	371.97	5.90	1.93	247.98	3.94	27.02%	25.20%
Eider, Large	59.6	44.7	38.3	42.6	31.9	371.97	5.90	1.93	247.98	3.94	27.02%	25.20%

Table XXI-11. Estimated Harvest and Use of Fish, Mammal, Bird and Plant Resources, Kaktovik, 1992/93

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
King Eiders	48.9	42.6	34.0	29.8	25.5	207.10	3.29	1.07	138.06	2.19	30.99%	29.61%
Common Eiders	46.8	34.0	27.7	36.2	25.5	164.87	2.62	0.85	109.91	1.74	30.09%	28.22%
Eider, Unknown	4.3	0.0	0.0	4.3	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Pintail	6.4	4.3	4.3	2.1	2.1	14.07	0.22	0.07	9.38	0.15	87.84%	88.82%
Oldsquaw	36.2	29.8	25.5	14.9	19.1	158.84	2.52	0.82	105.89	1.68	31.16%	32.78%
Ducks, Unknown	2.1	2.1	2.1	0.0	2.1	8.04	0.13	0.04	5.36	0.09	101.44%	102.09%
Geese	78.7	59.6	46.8	61.7	40.4	2,135.30	33.89	11.06	600.51	9.53	22.86%	21.62%
Brant	57.4	48.9	36.2	40.4	36.2	1,134.00	18.00	5.88	378.00	6.00	31.16%	29.41%
Snow Geese	8.5	19.1	4.3	6.4	2.1	42.22	0.67	0.22	9.38	0.15	87.84%	88.58%
White-fronted Geese	38.3	29.8	19.1	25.5	12.8	223.18	3.54	1.16	49.60	0.79	33.93%	32.09%
Canada Geese	48.9	48.9	31.9	38.3	23.4	735.89	11.68	3.81	163.53	2.60	35.49%	37.68%
Canada Geese, Unknown	48.9	48.9	31.9	38.3	23.4	735.89	11.68	3.81	163.53	2.60	35.49%	37.68%
Geese, Unknown	6.4	0.0	0.0	6.4	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Swan	2.1	2.1	2.1	0.0	0.0	13.40	0.21	0.07	1.34	0.02	101.44%	102.80%
Tundra Swan (Whistling)	2.1	2.1	2.1	0.0	0.0	13.40	0.21	0.07	1.34	0.02	101.44%	102.80%
Eggs	23.4	14.9	12.8	14.9	14.9	8.44	0.13	0.04	56.30	0.89	49.58%	49.12%
Seabird Eggs	6.4	0.0	0.0	6.4	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Gull Eggs	6.4	0.0	0.0	6.4	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Waterfowl Eggs	4.3	4.3	4.3	2.1	4.3	2.61	0.04	0.01	17.43	0.28	93.79%	93.47%
Duck Eggs	2.1	2.1	2.1	0.0	2.1	2.41	0.04	0.01	16.09	0.26	101.44%	101.37%
Eider Eggs	2.1	2.1	2.1	0.0	2.1	2.41	0.04	0.01	16.09	0.26	101.44%	101.37%
Geese Eggs	2.1	2.1	2.1	2.1	2.1	0.20	0.00	0.00	1.34	0.02	101.44%	98.45%
Unknown Eggs	12.8	10.6	8.5	6.4	10.6	5.83	0.09	0.03	38.87	0.62	59.91%	59.58%
Plants and Berries	42.6	38.3	31.9	29.8	17.0	226.53	3.60	1.17	62.66 gal	0.99	35.56%	34.62%
Berries	42.6	36.2	29.8	29.8	17.0	210.45	3.34	1.09	52.61 gal	0.84	34.29%	33.77%
Plants/Greens/Mushrooms	8.5	8.5	8.5	4.3	2.1	16.09	0.26	0.08	10.05 gal	0.16	59.68%	65.86%
Unknown Greens, from land	8.5	8.5	8.5	2.1	2.1	8.04	0.13	0.04	8.04 gal	0.13	57.28%	58.83%
Roots, Food	4.3	4.3	4.3	4.3	2.1	8.04	0.13	0.04	2.01 gal	0.03	74.95%	76.14%
Wood	74.5	63.8	63.8	21.3	12.8	0.00	0.00	0.00	40.21 crd	0.64	11.26%	0.00%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1993

Table XXI-12. Percentage of Salmon Harvest By Resource, Gear Type, and Total Salmon Harvest, Kaktovik, 1992/93

Resource	Percent Base	Subsistence Methods: Net No.	Net Lbs.	Seine No.	Seine Lbs.	Subsistence Gear Any Method No.	Subsistence Gear Any Method Lbs.	Removed from Commercial Catch No.	Removed from Commercial Catch Lbs.	Rod and Reel No.	Rod and Reel Lbs.	Any Method No.	Any Method Lbs.
Salmon	total	89.19	89.19	10.81	10.81	100.00	100.00	0.00	0.00	0.00	0.00		
Coho Salmon	gear type	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	resource	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chinook Salmon	gear type	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	resource	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pink Salmon	gear type	18.18	18.18	0.00	0.00	16.22	16.22	0.00	0.00	0.00	0.00		
	resource	100.00	100.00	0.00	0.00	100.00	100.00	0.00	0.00	0.00	0.00		
	total	16.22	16.22	0.00	0.00	16.22	16.22	0.00	0.00	0.00	0.00	16.22	16.22
Sockeye Salmon	gear type	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	resource	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Salmon	gear type	81.82	81.82	100.00	100.00	83.78	83.78	0.00	0.00	0.00	0.00		
	resource	87.10	87.10	12.90	12.90	100.00	100.00	0.00	0.00	0.00	0.00		
	total	72.97	72.97	10.81	10.81	83.78	83.78	0.00	0.00	0.00	0.00	83.78	83.78

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1993

Table XXI-13. Estimated Salmon Harvest by Gear Type and Species, Kaktovik, 1992/93

		Subsistence Methods						Removed from Commercial Catch		Rod and Reel		Any Method	
		Net		Seine		Subsistence Gear Any Method							
	Harvest Units	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Salmon	numbers	44.23	0.70	5.36	0.09	49.60	0.79	0.00	0.00	0.00	0.00	49.60	0.79
	pounds	93.78	1.49	11.37	0.18	105.14	1.67	0.00	0.00	0.00	0.00	105.14	1.67
Coho Salmon	numbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chinook Salmon	numbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pink Salmon	numbers	8.04	0.13	0.00	0.00	8.04	0.13	0.00	0.00	0.00	0.00	8.04	0.13
	pounds	17.05	0.27	0.00	0.00	17.05	0.27	0.00	0.00	0.00	0.00	17.05	0.27
Sockeye Salmon	numbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Salmon	numbers	36.19	0.57	5.36	0.09	41.55	0.66	0.00	0.00	0.00	0.00	41.55	0.66
	pounds	76.73	1.22	11.37	0.18	88.09	1.40	0.00	0.00	0.00	0.00	88.09	1.40

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1993

Table XXI-14. Percentage of Households Harvesting Salmon by Gear Type and Species, Kaktovik, 1992/93

Resource	Net	Seine	Any Subsistence Gear	Removed from Commercial Catch	Rod and Reel	Any Method
Salmon	8.51	2.13	8.51	0.00	0.00	8.51
Coho Salmon	0.00	0.00	0.00	0.00	0.00	0.00
Chinook Salmon	0.00	0.00	0.00	0.00	0.00	0.00
Pink Salmon	2.13	0.00	2.13	0.00	0.00	2.13
Sockeye Salmon	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Salmon	6.38	2.13	6.38	0.00	0.00	6.38

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1993

Table XXI-15. Estimated Harvest of Fish Other than Salmon by Gear Type, Kaktovik, 1992/93

	Harvest Units	Subsistence Gear		Removed From Commercial Catch		Rod and Reel		Ice Fishing		Any Method	
		Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Non-Salmon Fish	pounds	17,145.38	272.15	0.00	0.00	2,923.87	46.41	2,777.76	44.09	22,847.02	362.65
Least Cisco	pounds	321.70	5.11	0.00	0.00	0.00	0.00	26.81	0.43	348.51	5.53
Bering Cisco	pounds	5,413.98	85.94	0.00	0.00	258.03	4.10	0.00	0.00	5,672.01	90.03
Arctic Cisco	pounds	0.00	0.00	0.00	0.00	6.57	0.10	0.00	0.00	6.57	0.10
Grayling	pounds	0.00	0.00	0.00	0.00	91.69	1.46	66.35	1.05	158.04	2.51
Unknown Whitefish	pounds	0.00	0.00	0.00	0.00	23.46	0.37	0.00	0.00	23.46	0.37
Pacific Tom Cod	pounds	0.00	0.00	0.00	0.00	1.88	0.03	180.15	2.86	182.03	2.89
Arctic Cod	pounds	0.00	0.00	0.00	0.00	0.00	0.00	117.96	1.87	117.96	1.87
Unknown Flounder	pounds	0.00	0.00	0.00	0.00	1.34	0.02	0.00	0.00	1.34	0.02
Arctic Char	pounds	10,846.72	172.17	0.00	0.00	2,540.91	40.33	2,075.51	32.94	15,463.15	245.45
Lake Trout	pounds	562.98	8.94	0.00	0.00	0.00	0.00	310.98	4.94	873.96	13.87

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1993

Table XXI-16. Percentage of Fish Other Than Salmon Harvested by Gear Type, Kaktovik, 1992/93

Resource	Percent Base	Subsistence Gear Lbs.	Removed from Commercial Catch Lbs.	Rod and Reel Lbs.	Ice Fishing Lbs.
Non-Salmon Fish	resource	75.04	0.00	12.80	12.16
Least Cisco	resource	92.31	0.00	0.00	7.69
Bering Cisco	resource	95.45	0.00	4.55	0.00
Arctic Cisco	resource	0.00	0.00	100.00	0.00
Grayling	resource	0.00	0.00	58.02	41.98
Unknown Whitefish	resource	0.00	0.00	100.00	0.00
Pacific Tom Cod	resource	0.00	0.00	1.03	98.97
Arctic Cod	resource	0.00	0.00	0.00	100.00
Unknown Flounder	resource	0.00	0.00	100.00	0.00
Arctic Char	resource	70.15	0.00	16.43	13.42
Lake Trout	resource	64.42	0.00	0.00	35.58

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1993

Table XXI-17. Percentage of Households Harvesting Fish Other Than Salmon by Gear Type and Species, Kaktovik, 1992/93

Resource	Subsistence Gear	Removed from Commercial Catch	Rod and Reel	Ice Fishing	Any Method
Non-Salmon Fish	48.94	0.00	59.57	42.55	80.85
Least Cisco	6.38	0.00	0.00	2.13	8.51
Bering Cisco	46.81	0.00	31.91	0.00	61.70
Arctic Cisco	0.00	0.00	2.13	0.00	2.13
Grayling	0.00	0.00	8.51	6.38	14.89
Unknown Whitefish	0.00	0.00	2.13	0.00	2.13
Pacific Tom Cod	0.00	0.00	2.13	29.79	31.91
Arctic Cod	0.00	0.00	0.00	2.13	2.13
Unknown Flounder	0.00	0.00	4.26	0.00	4.26
Arctic Char	46.81	0.00	48.94	10.64	78.72
Lake Trout	6.38	0.00	0.00	10.64	17.02

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1993

CHAPTER XXII: NUIQSUT

by

Sverre Pedersen

COMMUNITY BACKGROUND

Nuiqsut is located on the west bank of the upper reaches of the Nechelik Channel in the Colville River delta, about 150 miles southeast of Barrow and 60 miles west of the initial Prudhoe Bay oil discoveries. Although located about 25 miles inland (upriver) from the Arctic Ocean, the climate is predominantly coastal and similar in many ways to that of Barrow in the west and Kaktovik in the east. The community, incorporated as a second class city in 1975, is one of eight communities within the municipality of the North Slope Borough (NSB).

Nuiqsut, listed in the 1971 Alaska Native Claims Settlement Act as one of three abandoned North Slope region Inupiat villages, was re-established in April of 1973. A group of 27 Inupiat families from Barrow traveled overland to the Colville River and established a permanent presence on the west bank of the upper Nechelik Channel. Initially the community was tent-based, and gradually permanent housing was constructed nearby (for a complete discussion of motives for re-establishment and community history see Libbey 1979 and Deakin 1985).

Many of the families making the move to Nuiqsut had roots in the Colville River and other nearby inland areas. The selected settlement location was at the permanent camp of Neil and Annie Allen, long-time residents of the Colville River delta (Libbey 1979).

Initially the community population numbered about 145 (Libbey 1979), but increased quickly due to further out-migration from Barrow. In the winter of 1982-83 the population numbered approximately 270 (Deakin 1985) and the 1990 U.S. Census estimated the population at 354 (Fig. XXII-1).

Access to the community is by air, as there are no permanent year-round roads to Nuiqsut, and ocean access is only available for a limited time in summer when the ice-pack in the Arctic Ocean moves away from the coast. There is now regular scheduled daily air service from Barrow and Deadhorse airport in Prudhoe Bay.

RESEARCH METHODS

The proposed Minerals Management Service (MMS) survey activity in Nuiqsut was first presented for comment to members of the North Slope Borough Fish and Game Management Committee (NSBF&GMC) at a meeting in Barrow in November 1992, and for project review on December 12, 1993. The NSBF&GMC is a formal group of community-appointed representatives from each North Slope Borough community and exists as an advisory body to the borough's Department of

Wildlife Management. The committee representatives from Nuiqsut, Mr. Philip Masuleak in 1992, and Mr. Lennard Tukle in 1993, were each present at the respective NSBF&GMC meetings.

A formal presentation on the project was made to the Nuiqsut City Council on December 6, 1993. Materials presented at the meeting by Mr. Sverre Pedersen of the Division of Subsistence included a project description, copies of draft survey instruments, and a summary of comprehensive harvest and socioeconomic data on Nuiqsut collected by the division in 1984-86. No formal record of approval was sought, but council members generally expressed support for the proposed effort. Mayor Lennard Lampe was concerned about a few questions on the social effects survey, and wanted some extra time to review these. Mr. Pedersen and Mayor Lampe decided to meet again in early January to review the question areas. The general, but informal, sentiment expressed by the council was that they did not object to the proposed community-wide surveys, as they believed information of value to the community would be gained from the work. Several council members offered to be among the first households surveyed in order to more fully understand the scope and intensity of the survey effort.

At the December 12, 1993, NSBF&GMC meeting, Mr. Sverre Pedersen presented a basic project description, an overview of the two Nuiqsut project components (harvest and social effects surveys), and the basic time-frame for the survey. Copies of the project description and draft surveys were made available to committee members at the time of the meeting. Though no formal committee action was taken on the proposed project (none was requested), the committee chairman, Mr. Nolan Solomon (from Kaktovik) suggested that Nuiqsut residents and the NSB Planning and Wildlife Departments would benefit from having this information available. Mr. Tukle from Nuiqsut stated that he supported the proposed work as did several other committee members. No committee members opposed the proposed project.

Mr. Sverre Pedersen traveled to Nuiqsut on January 3, 1994, to answer questions regarding the upcoming survey and to meet with Mayor Lampe to respond to questions he still felt were outstanding since the last (November 1993) council meeting. Other tasks performed during the visit included arranging survey staff housing, contacting two potential local assistants, initial mapping of the community lay-out, as well as determining household names and their community locations. The council meeting was canceled indefinitely due to a local flu epidemic that had incapacitated the community for better than a week. Mr. Pedersen and Mayor Lampe did meet, however, and final questions were cleared up. As of January 4, 1994, the project had the local support the Division had set as a criteria for proceeding with final field work planning and survey document preparation.

The core survey team (Sverre Pedersen and Clarence Alexander) and Ms. Raynita Opie (NSB Wildlife Department) arrived in Nuiqsut on February 3 and 5, 1994, respectively. The two local residents who had previously expressed an interest in participating were contacted, and after updating the community household location map and composition list, a survey training workshop was held on February 6. Only one of the local assistants (Ms. Bertha Sielak) participated in the training session. Several test surveys were carried out on February 6 as part of the training. The survey team reviewed

these surveys and found the instruments and coding instructions to perform well. An intensive survey effort began on February 7, unfortunately without the local assistant (who had fallen ill). Attempts to find a replacement for the local assistant (who became entirely unable to participate) were ultimately unsuccessful, but a local translator, Ms. Doreen Nukapigak, was assisting the team by February 10.

The survey team was joined on February 7 by Dr. Tracy Andrews of the U.S. Department of the Interior's Minerals Management Service. After a short refresher course in administering the surveys and some village familiarity, she began participating in survey work on February 8, and assisted in this effort through February 12.

As survey efforts got underway, public announcements were made on the local cable TV channel and over the local CB radio. The public was also made aware of the project through contacts with staff arranging survey appointments with community households.

Survey staffing varied from four in the beginning of the survey (February 8-12) and gradually dwindled to one person at the end of the first survey period on February 21. Surveying resumed on March 18 with one surveyor and a local translator. The Nuiqsut survey effort concluded on March 29, having reached the desired household sample level.

The lack of a consistent number of staff available, a larger household sample, inclement weather conditions, and lack of consistent local assistant support, contributed to a longer survey presence in Nuiqsut as compared to Kaktovik in 1993.

The Nuiqsut survey initially called for a census approach to data collection, but due to a higher number than expected of actual households (closer to 100 instead of the expected 65-70), a sampling scheme was invoked. The goal for this survey was set at 60 randomly selected households. On the basis of additional community household information, prepared with the assistance of the mayor, the city clerk, and one knowledgeable local resident, we identified 91 households in the community during the study period.

Over 70 Nuiqsut households were contacted during the survey process. Six households declined the offer to participate, and members of four households could never be found at the prearranged time for an interview (three separate attempts were made) (Table XXII-1).

A total of 62 Nuiqsut households were interviewed in the course of the project. However, two households which participated in the harvest portion of the survey declined to participate in the social effects questions, yielding a total of 62 harvest and 60 social effects surveys, fully meeting the desired sampling level for the community.

We selected February and March as the best time of the year for the Nuiqsut survey, and this worked well. Inclement weather and little sunlight in February kept subsistence activities at a very low level. A few households took short trips out of town to supplement their caribou stores, which were quite low due to a particularly early migration out of their resource area. Caribou left the Nuiqsut area already by late September, and very few were seen until late March. Inclement weather conditions continued through early April, keeping all households readily available for sample selection.

Though harvesting activities were low during the fieldwork periods, it seemed that many hunters, more than usual for this time of the year we were told, sought temporary work in the community (probably due to the recurring bad weather hampering subsistence activities, making temporary work a better alternative that just sitting idle, and concomitant increased household costs such as having to buy more food and increased home heating costs). Most selected households, therefore, were not readily available for interview on short notice--especially not during the day. For this reason, the majority of households had to be interviewed in the evening after work and sometimes quite late at night, after the interviewee had had an opportunity to work on subsistence hunting equipment that would be needed at any moment the weather conditions improved.

Household interviews took from one hour to several hours, depending on how much harvesting had taken place, how they expressed their opinions, and how curious they were in what we were doing and why. We often spent considerable time explaining the purpose of the project and how the surveys would be used. Most questions, and usually most time, was spent on the social effects questionnaire. Some surveys in particularly interested households took three to four hours and many, many cups of coffee to complete. The average length for harvest surveys was 0.82 hr. and the social effects survey took an average of 0.67 hr. to complete (Tables I-7 and I-8).

All-in-all, the survey process went smoothly in Nuiqsut. The vast majority of interviews went well, and many household members commented that they were glad we were there to document the sociocultural conditions of their community. This response was quite common, as community residents were experiencing a great deal of exploratory oil and gas drilling near the community, and the anxiety level of hunters and fishers was fairly high as a result (but not as high as among Kaktovik whalers when we carried out surveys there in the summer of 1993).

DEMOGRAPHY

In 1990 Nuiqsut had a population of 354 people in 90 households according to the federal census. The estimated community population during the 1993 survey was 361 people in 91 households (Table XXII-2). Household size ranged from 1 to 8 persons per household, with a mean of 3.97 persons per household. Of the total population, males constituted 56.9 percent and 43.1 were identified as female (Table XXII-2). Survey results indicate that Alaska Natives made up 89.0 percent of the population. Median age in the survey was 17.8 years and mean length of residency, for the total population, was 12.4 years (Table XXII-2). The population profile (Figure XXII-2 and Table XXII-3) is slightly skewed to the under 10-14 age-group, has an under-represented 20-24 age-group, but appears relatively balanced overall.

CASH ECONOMY

The economy of Nuiqsut is best described as mixed cash and subsistence. Though subsistence resources provide the mainstay of meat, dish, and fowl in the diet of most community residents, cash earned through employment is needed to provide housing, heat, and other basic living expenses including support of subsistence activities.

Employment figures from the 1993 survey (Table XXII-4) indicate that 81.4 percent of Nuiqsut adults had some form of employment during the study period. The average number of jobs held per employed person in the community was 1.6, and the average length of employment was 8.8 months. Only 41.7 percent of those employed had year-round work.

Of the 91 households in Nuiqsut 82, or 90.3 percent, had a household member working at least part of the year, that in each household and average of 1.7 adults were employed, and that there was an average of 2.7 jobs held in each household (Table XXII-4). Figure XXII-3 illustrates employment by industry in Nuiqsut during the 1993 study period. The major employment sector in Nuiqsut was local government (non-education) which accounted for 39 percent, followed by local education and construction with 16 percent share each, and finance, insurance, and real estate accounting for 8 percent. Retail trade provided 7 percent of 1993 jobs in the community and transportation, communication and utilities, trapping, fishing, and services made up the remaining 17 percent of all 1993 employment.

Income sources for the survey period are shown in Table XXII-5. For the study year 1993, the estimated per capita income from all sources in Nuiqsut was $14,301, and the resultant average household income was $56,743. Earned income accounted for $11,952 per capita, and other income such as the Alaska Permanent Fund Dividend, regional/village corporation dividends and social security added $2,348 per capita for the study year. The main sources of income were local government and local education which added $5,013 and $2,739 respectively to the per capita income. Other sources included finance, insurance, and real estate and construction, with services, trade, transportation, agriculture and mining. The Alaska Permanent Fund Dividend, Native Corporation Dividend, Social Security, and retirement incomes were the highest sources of non-employment income in Nuiqsut, but income from the Alaska Longevity Bonus and inheritances also contributed in a significant way (Table XXII-6). Interestingly, food stamps and unemployment contributed relatively small amounts to the unearned source of per capita income during the study period (Table XXII-6).

RESOURCE HARVEST AND USES

In all, Nuiqsut subsistence harvesters brought in 267,817 pounds of locally obtained fish, game, birds and plants for local use in 1993 (Table XXII-7). The mean household harvest was 2,943 pounds of useable (dressed) food, or 742 pounds per capita.

All households in the community used one or more locally harvested resource(s) in the study period, 94 percent attempted to harvest resources and 90 percent of households harvested one or more local resources (Table XXII-7). The mean number of resources used per household was 20 and the mean number of resources harvested per household was 11. Nuiqsut households gave away an average of 11 resources to other households, and received an average of 12 resources from other households during the study.

Ninety-one percent of Nuiqsut household reported sharing at least one resource with another household, and 98 percent reported receiving at least one resource from another household (Table XXII-9). Non-salmon fish was the most commonly shared resource category (87 percent), followed by game (80 percent) and marine mammals (79 percent). In terms of receiving, most households reported being given marine mammals products (96.8) percent, followed closely by game and fish (90 percent), and birds (69 percent). The resource category most commonly shared with households, and the resource most commonly reported as shared with Nuiqsut households was marine mammals from Barrow (54.8 percent) (Table XXII-9).

Composition of Nuiqsut's resource harvests by category is depicted in Figure XXII-4 and Table XXII-10. Fish rank highest with an estimated community harvest of 90,490 pounds, followed closely by Terrestrial Mammals and Marine Mammals at 87,390 pounds and 85,216 pounds. These harvests produced mean percapita harvests of 251, 242, and 236 pounds respectively (Table XXII-12). Together these three resource categories account for 98 percent of the community/percapita harvests, and birds/eggs and plants make up the remaining two percent of the community's harvest for 1993.

Among the fish harvested , non-salmon fish rank as the highest category with a percapita harvest of 248 pounds, or 99 percent of the catch (Table XXII-12). Salmon are sporadically available, but do never contribute in any major way in Nuiqsut fish harvests. It is the whitefish, burbot and grayling that Nuiqsut fishermen are so successful in harvesting. These three resources contributed 215, 16, and 11 pounds percapita to the household fish harvest in 1993. Among the whitefish, Broad Whitefish and Arctic Cisco, are the targeted fish in the summer and fall net-fishery on the Colville River. All households in Nuiqsut (100 percent) used and 80 percent of the households harvested fish during the study period (Table XXII-12).

Land mammals, the second largest source of Nuiqsut subsistence harvests in 1993, was mainly composed of caribou, moose and bear harvests. Caribou contributed 228 pounds (94 percent), moose 12 pounds (5 percent), and grizzly bear 2 pounds (0.8 percent) to the percapita harvest (Table XXII-12). Ninety-eight percent of Nuiqsut households used and 76 percent of the households harvested terrestrial mammals during the study period.

The marine mammal harvest is mainly composed of bowhead whale for Nuiqsut in 1993. The successful fall whaling season in the mid-Beaufort Sea added 213 pounds of meat and muktuk to each person in Nuiqsut during the study (Table XXII-12). The second largest source of marine mammal harvest was from ringed seals, 20 pounds percapita, taken mainly in the Harrison Bay area. Nearly 97

percent of Nuiqsut households used marine mammals during the study period, and the same number received marine mammal shares from other households, but only 37 percent of Nuiqsut households are responsible for this large, and widely shared, harvest.

Participation in the harvest and processing of wild resources in Nuiqsut during 1993 is reported in Table XXII-8. Seventy-three percent of Nuiqsut residents attempted to harvest one or more local resources in the study year, and 70 percent reported processing one or more locally harvested resources. The highest participation rate was in fishing where 61 percent of residents reportedly participated and 61 percent processed fish. The lowest participation rate was in furbearer hunting or trapping where only 15 percent of Nuiqsut residents reported pursuing foxes, wolves and wolverines, and a slightly higher number (19 percent) reported processing skins during the study period.

The mean household harvest of fish, other than salmon, was 983 pounds percapita in Nuiqsut for 1993. Of this catch the majority (89 percent) were taken with subsistence gear, 10 percent with hook-and-line through the ice (ice fishing) and the remaining 1 percent with rod-and-reel equipment (Table XXII-17). Whitefish and cisco, making up 82 percent of the fish harvest in Nuiqsut for 1993, were nearly exclusively caught in subsistence gill-nets (99 percent of the catch), whereas grayling are mostly taken on a lure either by rod and reel or hook and line through the ice (Table XXII-17). Lake trout was the only fish species exclusively caught in ice fishing, and rainbow smelt and broad whitefish were exclusively caught in subsistence gear (gill-nets). Salmon and other fish species harvested by Nuiqsut fishers were either taken by subsistence gear or ice fishing (Table XXII-13 and XXII-17).

Several species of salmon are harvested In low numbers by Nuiqsut fishermen. The most common, pink salmon, seem to be cyclic in the Colville River. Local fishermen state that they, in their experience, pink salmon are abundant every three years, and in years one and two they are available in modest numbers. Pink salmon harvests were considered low for the 1993 season. The community catch was estimated at 342 pounds. Virtually all pink salmon caught came from subsistence gill-nets, with only a small proportion from rod-and-reel (Table XXII-14). Other salmon species reportedly caught include chinook, chum, cohoe, and sockeye. In 1993 Nuiqsut fisher harvested more chum salmon than any other species (because it was a low pink year), but only about 90 pounds more than pinks. Relatively few chinook and cohoes were caught, but no sockeye salmon catches were reported (Table XXII-14).

Households that fished for salmon and non-salmon species in Nuiqsut during 1993 relied on subsistence gear for the bulk of their harvest. Seventy-three percent of Nuiqsut households harvested non-salmon species by subsistence gear, whereas 66 percent ice fished and 26 percent used rod-and-reel gear (Table XXII-18). Thirty-five percent of Nuiqsut households harvested salmon by net and five percent utilized rod-and-reel (Table XXII-15). In the Nuiqsut domestic fishery there is not a commercial catch, so in no instance is there removal of fish from commercial catches.

Resource harvests, and reliance on local resources, for food is high in Nuiqsut compared to other study communities (Table XXIII-14). Availability of store-bought food from the small local stores is limited and, according to residents, not reliable. When imported foods are available they are in short supply and cost about twice as much in Nuiqsut as compared to Anchorage, according to recent Cooperative Extension Service market basket surveys (CES 1993). Thus relying on local commercial options for sustenance is not really viable. According to our survey information the average Nuiqsut household spent close to $800 per month for food (Table I-102) during 1993, yet 63 percent of Nuiqsut households report that over half of the meat, fish, and birds consumed came from wild foods in 1993 (Table I-105). No households reported that wild resources were not part of their diet in 1993, and 37 percent stated that between one percent and half of their meat, fish, and birds consumed came from local harvests.

Individual household members asked whether or not they used/consumed locally harvested wild foods turned up one person (1.7 percent) who did not, whereas the remaining 59 (98.3 percent) responded that they certainly did (Table XXII-19). Nearly two-thirds of respondents mentioned that one reason they eat locally harvested resources is because they cannot afford to buy store food. Locally harvested food was considered healthier by 93.3 percent of respondents, and the consumption was considered part of the cultural heritage (tradition) by 85 percent. Wild resources are clearly an important part of the dietary regime in Nuiqsut households, and 63.3 percent of individuals responded yes to the question regarding having eaten any wild food the day before being interviewed (Table XXII-17).

In response to a line of questions concerning the safety of consuming locally harvested resources interviewed household representatives stated uniformly that locally harvested seals and whales do not present any human health hazards at this time (Table XXII-20. One individual did not know enough about local whitefish to answer the question, but the remaining 57 individual responses (98.3 percent) indicate that they believe whitefish from local harvest areas are safe to eat.

When asked regarding the population status of certain resources as compared to ten years ago Nuiqsut respondents stated that caribou seemed to be about as abundant, bowhead whales had increased, and that seals, whitefish and geese were about the same (Table XXII-21). Wolves on the other hand seemed to be more abundant now according to 18 interviewees (35.3 percent).

Processing and sharing of wild resources are important social mechanisms in all North Slope Inupiat communities. Nearly all Nuiqsut households (88.3 percent) process wild resources, and in 70 percent of households children assist in this important task (Table XXII-22. Survey results indicate that 91.7 percent of households sampled in Nuiqsut share resources regularly (Table XXII-23) and that during the survey year, 1993, sharing of wild resources, subsistence gear, money and labor was about the same as for the previous year.

In response to the question regarding the influence of elders in local politics over the last five years most residents (45.6 percent) stated that there had been no change, and roughly equal numbers of responses said that their influence had either increased or decreased (Table XXII-20). As far as reasons why there might have been a change 20 percent stated there had been no change, 16.7 percent said that the reason elders influence had decreased was simply due to elders gradually passing away and fewer and fewer are left, 10.0 percent said younger individuals are taking the authority away from the elders, and 20.0 percent said they thought elders were more effective now as their knowledge is more appreciated or recognized.

Concerning public meeting attendance in 1993 respondents gave responses varying from no attendance (13.3 percent) to having attended over 99 meetings (1.7 percent) (Table XXII-24). Fifty percent reported having attended from one to seven meetings and the remaining 35 percent reported having attended between eight and 48 community meetings during 1993. When asked about their voting record for 1993 88.3 percent responded they had cast a vote in the last State-wide election, 89.4 percent had voted in their last Regional Corporation election, and 97.9 percent said they had voted in the last Village Corporation election (Table XXII-24). In the sample 80 percent of respondents (48) stated they belonged to the Arctic Slope Regional Corporation, and 20 percent did not have a native corporation membership. Only two Village Corporations were represented in the sample. Twenty-one percent said they belonged to the Barrow corporation, Utgeagvik Inupiat Corporation, 77 percent said they belonged to the Nuiqsut corporation, Kuukpik Corporation, and two percent gave no response to this question (Table XXII-24).

When asked about the main reason they moved to Nuiqsut over half of the household respondents (65 percent) replied that they were either born or raised there, or that they had family there (Table XXII-25). One other common response to this question was that availability of work in the community had caused them to move there (11.7 percent). Over 80 percent stated that they lived in Nuiqsut because of the local hunting and fishing opportunities, and 73.3 percent said they stayed because of local job opportunities. The beauty of the Nuiqsut area was mentioned by 85.0 percent of the respondents as an additional reason for why they lived in the area. Necessary personal freedoms (83.3 percent), size of the community (81.7 percent), and recreational opportunities (70.0 percent) were also commonly expressed reasons for why sampled individuals lived in Nuiqsut (Table XXII-25). When asked why they remained in the community the most common response was because of subsistence opportunities (28.3 percent) and quality of life (16.7 percent). This feeling was further expressed in response to the next set of question which inquired about how conditions were in the community now (1993) as compared to ten years ago and if the person thought he, or she, would live in the region when they were old. Over 90 percent responded they liked the community as much or better than ten years ago and 75 percent expected they would be in the region in their old age (Table XXII-25).

Confidence that the area would be available for continued hunting and fishing into the future drew a mixed response. Of the 50 percent who either were unsure or who felt that there may be a

reason to be concerned over 92 percent expressed concern that increased oil and gas development in their area would somehow result in various types of local subsistence land-use and harvesting restrictions (Table XXII-25). Respondents were evenly divided as to whether or not they would move away if a situation arose which caused local wild foods to become unavailable.

Effectiveness of local institutions and businesses, as well as regional, state and federal agencies, in meeting community needs was evaluated by sampled household representatives. The results are summarized in Table XXII-26. Respondents felt that the local health clinic was effective (72.9 percent), that the City Council was somewhere between somewhat effective (39.0 percent) and effective (44.1 percent), the village corporations (Nuiqsut and Barrow) were fairly effective (between somewhat effective and effective), the North Slope Borough government was effective (73.3 percent), and the regional corporation (ASRC) was judged fairly effective (between the two effectiveness measures, but closer to effective). The effectiveness of two resource management agencies, the Alaska Department of Fish and Game and the U.S. Fish and Wildlife Service was also evaluated. Nuiqsut residents sampled indicate that 43.3 percent believe the department is effective, whereas only 16.9 percent feel that the FWS is effective in meeting community needs . The lowest effectiveness rating was assigned to Alaska Department of Environmental Conservation which earned a 45.0 percent not effective rating (Table XXII-26).

The final set of questions asked of sampled household representatives in Nuiqsut pertained to possible effects of Outer Continental Shelf (OCS) oil and gas exploration and development within the Nuiqsut area of interest in the Beaufort Sea. Insofar as there would be effects on subsistence resources 80 percent believed there would be lower populations of fish and 86.7 percent believed marine mammal populations would decrease (Table XXII-27). Respondents were not quite as certain about negative effects on terrestrial mammals or birds, but 55 percent believed that bird populations would decrease and 43.3 percent thought land mammal populations would decrease.

In response to the question regarding OCS development resulting in more local jobs respondents were divided (Table XXII-27). Nearly half of all respondents (48.3 percent) predicted more jobs would become available to community residents as a result of OCS development, 43.3 percent did not think so, and 8.3 percent were uncertain.

The threat of offshore oil spills is always on the mind of Nuiqsut hunters, and responses to two questions regarding their thoughts on industry's ability to clean up spills associated with OCS exploration and development reflects this concern. Asked if industry could effectively contain and clean up a small oil spill 60.0 percent of Nuiqsut respondents said no, 36.7 percent thought that it could be possible under some circumstances and 3.3 percent did not know how to answer this question (Table XXII-27). When asked the same question but this time concerning a large oil spill 80.0 percent said they did not think industry could effectively contain and clean it up, 11.7 percent said it might be possible, and 8.3 percent said they did not know.

In regards to the respondents opinion on the search for and development of oil in the OCS areas the opinions were nearly identical (Table XXII-27). Two-thirds of respondents were not in favor of either proposition, and less than one third of the respondents said they were in support. The major reasons stated for the opposition to OCS exploration or development rested in the concern for adverse impacts on local harvesting activities (41.7 and 51.7 percent respectively) and disruption of resource migration patterns (20.0 and 21.7 percent respectively). In both cases 10 percent of the respondents said that they would however be in favor of this activity if it was done in a careful manner (i.e., would not have any of the adverse effects respondents expressed concern about) (Table XXII-27).

COMPARISON WITH 1985 SURVEY

There have been few comprehensive quantitative harvest studies undertaken in Nuiqsut. The Division of Subsistence carried out a community baseline study of Nuiqsut in 1985 (Pedersen in prep.), and the North Slope Borough's Planning Department, as part of a borough-wide economic survey in 1992-93, collected some systematic harvest information from the community (Harcharek in prep.). Only data from the division's 1985 study are currently available for comparison with the 1993 data presented in this report. Sample selection for the division surveys in 1985 and 1993 were identical, and the percentage of households sampled was adequate in each survey to confidently assess community harvest and socio-economic conditions.

In 1985 the community population was 350 persons in 76 households and the mean household size was 4.61 (Pedersen in prep.). The division carried out a random survey of 40 households, representing a 53 percent sampling fraction, and covering some 211 persons. Households were 97.5 percent Inupiat and 2.5 percent Non-Native and mean length of residency for heads of households was 10.3 years. The age-sex ratio was 46 and 54 for females and males, respectively, and the community age-sex pyramid was skewed with the 20-29 year-old age-group being largest, but the age-groups from 0-19 were also well represented. Average household income was estimated to be $32,125 in 1985. Local government, trade and mining were the three top job categories in terms of income production, providing 52,28, and 15 percent of the total income, respectively.

The Nuiqsut residential base appears to not have changed much since the 1985 survey, only the number of households increased. Average household earned income increased by 32 percent since 1985, though when adjusted for inflation this figure would be lower, and the main income sources have changed some between 1985 and 1993. In 1993 local government still provides the greatest single source of income, but trade and mining which were the second and third largest income sources in 1985 have been replaced by construction and trade, respectively. The contribution from mining, actually oil industry-related jobs, have all but disappeared in Nuiqsut since 1985. This is significant since there has been a tremendous amount of work available in the Prudhoe Bay/Kuparuk development areas, but few if any were taken by, or are available to, Nuiqsut residents in 1993 it appears. Perhaps development of

more local employment options since 1985 accounts for most of this change, but recent cost-cutting (resulting in labor force cut-backs) in the Prudhoe/Kuparuk oil-fields may also have played a role.

In 1985 the total community harvest was estimated at 160,035 pounds. The percapita harvest of local resources was 399.19 pounds and consisted of fish (44 percent of harvest) , terrestrial mammals (42 percent; mainly caribou), with marine mammals and birds as distant third and fourth resource categories (8 and 5 percent contribution respectively) (Table XXII-10). In survey year 1993 the percapita harvest was up to 742 pounds, and the relative contribution of resource categories had changed somewhat. Fish still was the premiere resource category, but terrestrial mammals and marine mammals were close behind. Birds seemed to have fallen quite behind in 1993, both in terms of overall contribution to the community subsistence harvest and in numbers harvested. This may be due to the fact that in 1993 spring was late and cold, and when the birds finally arrived in the Nuiqsut area access was quite limited because of rapid melt-off of the snow-cover needed in the snowmachine transport of hunters to productive hunting areas (Table XXII-10, Table XXII-11, Figure XXII-5).

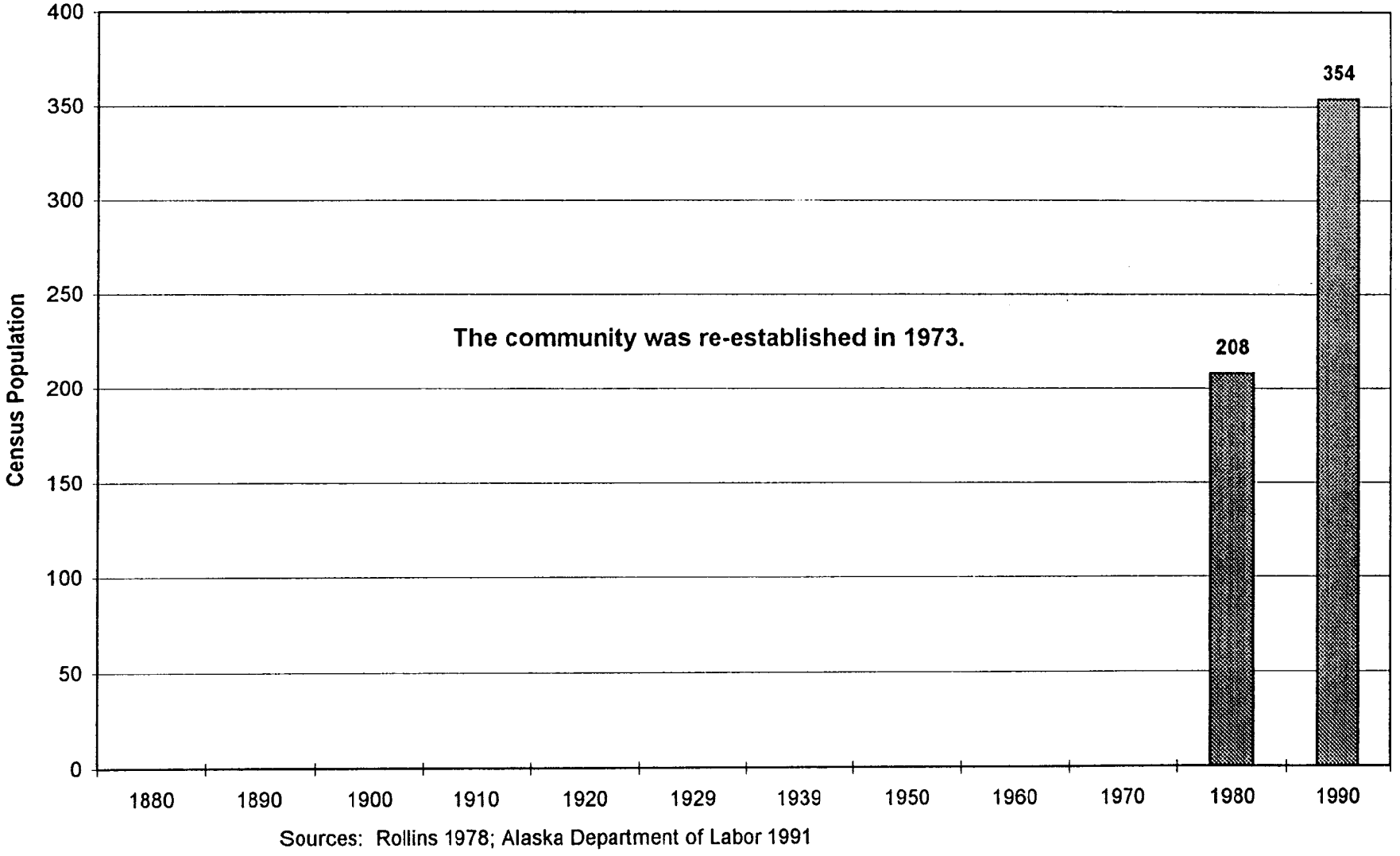
In addition, fall whaling for bowhead whales in the mid-Beaufort Sea has greatly increased in both time committed to, as well as number of people involved in, since 1985. One major reason may be that the quota set by the Alaska Eskimo Whaling Commission for Nuiqsut has gone from one to three landed whales since 1985. In 1985 Nuiqsut whalers harvested no whales, whereas in the 1993 study year three were landed. In addition to being more successful at fall whaling, Nuiqsut hunters have also increased their effort to take seals in the fall. With the added time and number of boats now out in the ocean, and a continuing interest in seals, it is not surprising that more seals are now being taken than back in 1985.

This brief comparison has shown that harvest of local resources to meet dietary and cultural needs in 1993 increased substantially since 1985. Though mean household income also increased in the same period, it is probably on-par with the 1985 figure considering inflation. As a resource category marine mammals changed the most in terms of percapita harvest between the two study years. In 1985 the percapita harvest was 33 pounds whereas in 1993 marine mammals had risen to 236 pounds. Harvests of terrestrial mammals, notably caribou, increased from 169 pounds percapita in 1985 to 242 pounds in 1993.

It is possible that Nuiqsut was in a phase of community re-establishment and hunters were still becoming re-acquainted with resources and the local geography when the 1985 survey was undertaken. Perhaps now that the community has become successful in harvesting marine mammals, it is at the point where percapita harvests level off. Recent percapita harvest figures from nearby whaling communities, Wainwright (Braund 1993) and Kaktovik (see Chapter XXI), are similar to those seen for Nuiqsut in 1993. The increased reliance on locally harvested resources is significant in the context of on-going expansion of near-by oil and gas development, and gradual loss of terrestrial harvest areas due to additional construction of pipelines, pump stations, roads and large oil/gas processing centers now taking place within 20 miles of Nuiqsut. Recent industry success with oil and gas exploration in the

Colville River delta is causing considerable concern among Nuiqsut residents, and is quite apparent in results from the social effects survey. How this cumulative development will shape the long-term sustainability of and access to locally harvested resources is unclear. Nuiqsut residents are acutely aware of this situation, and have an opportunity, through their village corporation in particular, to help shape any further oil and gas development nearby in a manner compatible with local resources and their use.

Figure XXII-1. Nuiqsut Census Population, 1880 - 1990



Sources: Rollins 1978; Alaska Department of Labor 1991

Table XXII-1. Sample Participation: Nuiqsut 1994

VARIABLE	TOTAL HOUSEHOLDS
Estimated Household Structures	91
Non-Residential Structures	0
Estimated Households	91
Interview Goal:	60
Households Interviewed	62
Failed to Contact/Unavailable	4
Refused	6
Vacant Residential Structures	0
Seasonal Households*	0
Non-Resident Household **	0
Invalid Households and Vacancies	0
Total Households Attempted:	72
Refusal Rate:	8.82%
Non-Perm. HH Rate ("Vacancy Rate"):	0.0%
Interview Goal (Percentage)	103.3%
Social Effects Surveys Completed	60
Total Permanent Households	91
Percentage Interviewed	68.13%
Percentage of Total Households	100.00%
Interview Weighting Factor	1.468

NOTES:

* Seasonal households are households which maintain a permanent domicile elsewhere where they spend the majority of their time.

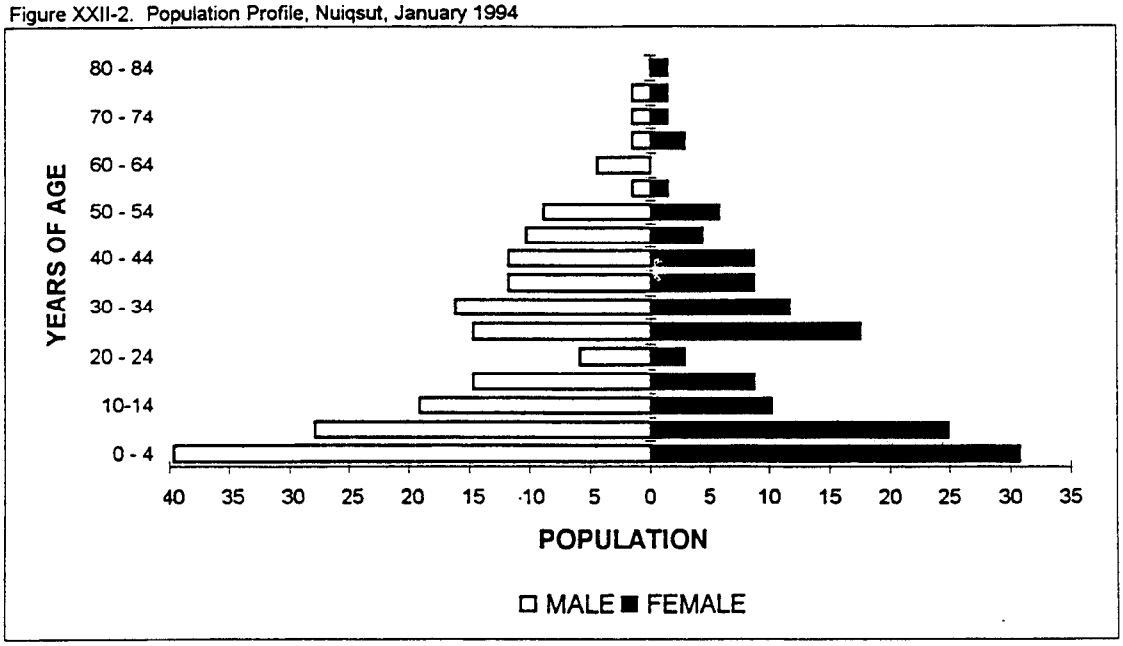
** Non-resident households are households which were not present during the study year or which were resident less than the required number of months.

Table XXII-2 . Demographic Characteristics of Households, Nuiqsut, January 1994

Characteristics	1993
Sampled Households	62
Number of Households in the Community	91
Percentage of Households Sampled	68.13
Household Size	
Mean	3.97
Minimum	1
Maximum	8
Sample Population	246
Estimated Community Population	361.06
Age	
Mean	23.30
Minimum	0.36
Maximum	83.06
Median	17.802
Length of Residency - Population	
Mean	12.39
Minimum	0.36
Maximum	94.00
Length of Residency - Household Heads	
Mean	17.57
Minimum	0.5
Maximum	94.00
Sex	
Males	
Number	205.48
Percentage	56.91
Females	
Number	155.58
Percentage	43.09
Alaska Native	
Households (Either Head)	
Number	76.32
Percentage	83.87
Estimated Population	
Number	321.44
Percentage	89.02

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1994.

Figure XXII-2. Population Profile, Nuiqsut, January 1994



SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1994

Table XXII-3. Population Profile, Nuiqsut, January 1994

AGE	MALE			FEMALE			TOTAL		
	NUMBER	PERCENT	CUM. PERCENT	NUMBER	PERCENT	CUM. PERCENT	NUMBER	PERCENT	CUM. PERCENT
0 - 4	39.63	19.29%	19.29%	30.82	19.81%	19.81%	70.45	19.51%	19.51%
5-9	27.89	13.57%	32.86%	24.95	16.04%	35.85%	52.84	14.63%	34.15%
10-14	19.08	9.29%	42.14%	10.27	6.60%	42.45%	29.35	8.13%	42.28%
15 - 19	14.68	7.14%	49.29%	8.81	5.66%	48.11%	23.48	6.50%	48.78%
20 - 24	5.87	2.86%	52.14%	2.94	1.89%	50.00%	8.81	2.44%	51.22%
25 - 29	14.68	7.14%	59.29%	17.61	11.32%	61.32%	32.29	8.94%	60.16%
30 - 34	16.15	7.86%	67.14%	11.74	7.55%	68.87%	27.89	7.72%	67.89%
35 - 39	11.74	5.71%	72.86%	8.81	5.66%	74.53%	20.55	5.69%	73.58%
40 - 44	11.74	5.71%	78.57%	8.81	5.66%	80.19%	20.55	5.69%	79.27%
45 - 49	10.27	5.00%	83.57%	4.40	2.83%	83.02%	14.68	4.07%	83.33%
50 - 54	8.81	4.29%	87.86%	5.87	3.77%	86.79%	14.68	4.07%	87.40%
55 - 59	1.47	0.71%	88.57%	1.47	0.94%	87.74%	2.94	0.81%	88.21%
60 - 64	4.40	2.14%	90.71%	0.00	0.00%	87.74%	4.40	1.22%	89.43%
65 - 69	1.47	0.71%	91.43%	2.94	1.89%	89.62%	4.40	1.22%	90.65%
70 - 74	1.47	0.71%	92.14%	1.47	0.94%	90.57%	2.94	0.81%	91.46%
75 - 79	1.47	0.71%	92.86%	1.47	0.94%	91.51%	2.94	0.81%	92.28%
80 - 84	0.00	0.00%	92.86%	1.47	0.94%	92.45%	1.47	0.41%	92.68%
85 - 89	0.00	0.00%	92.86%	0.00	0.00%	92.45%	0.00	0.00%	92.68%
90 - 94	0.00	0.00%	92.86%	0.00	0.00%	92.45%	0.00	0.00%	92.68%
95 - 99	0.00	0.00%	92.86%	0.00	0.00%	92.45%	0.00	0.00%	92.68%
100 - 104	0.00	0.00%	92.86%	0.00	0.00%	92.45%	0.00	0.00%	92.68%
Missing	14.68	7.14%	100.00%	11.74	7.55%	100.00%	26.42	7.32%	100.00%
TOTAL	205.48	56.91%		155.58	43.09%		361.06	100.00%	

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1994

Table XXII-4. Employment Characteristics, Nuiqsut, 1993

Characteristics		1993
ADULTS		
Total		173.19
Employed		
	Number	140.90
	Percentage	81.36
Jobs		
	Number	221.63
	Mean	1.57
	Minimum	1
	Maximum	5
Months Employed		
	Mean	8.83
	Minimum	1
	Maximum	12
	Year-Round	41.67
HOUSEHOLDS		
Total		91.00
Employed		
	Number	82.19
	Percentage	90.32
Jobs per Employed Household		
	Mean	2.70
	Minimum	1
	Maximum	9
Employed Adults		
	Mean	1.71
	Minimum	1
	Maximum	3

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1994.

Figure XXII-3. Employment by Industry, Nuiqsut, 1993

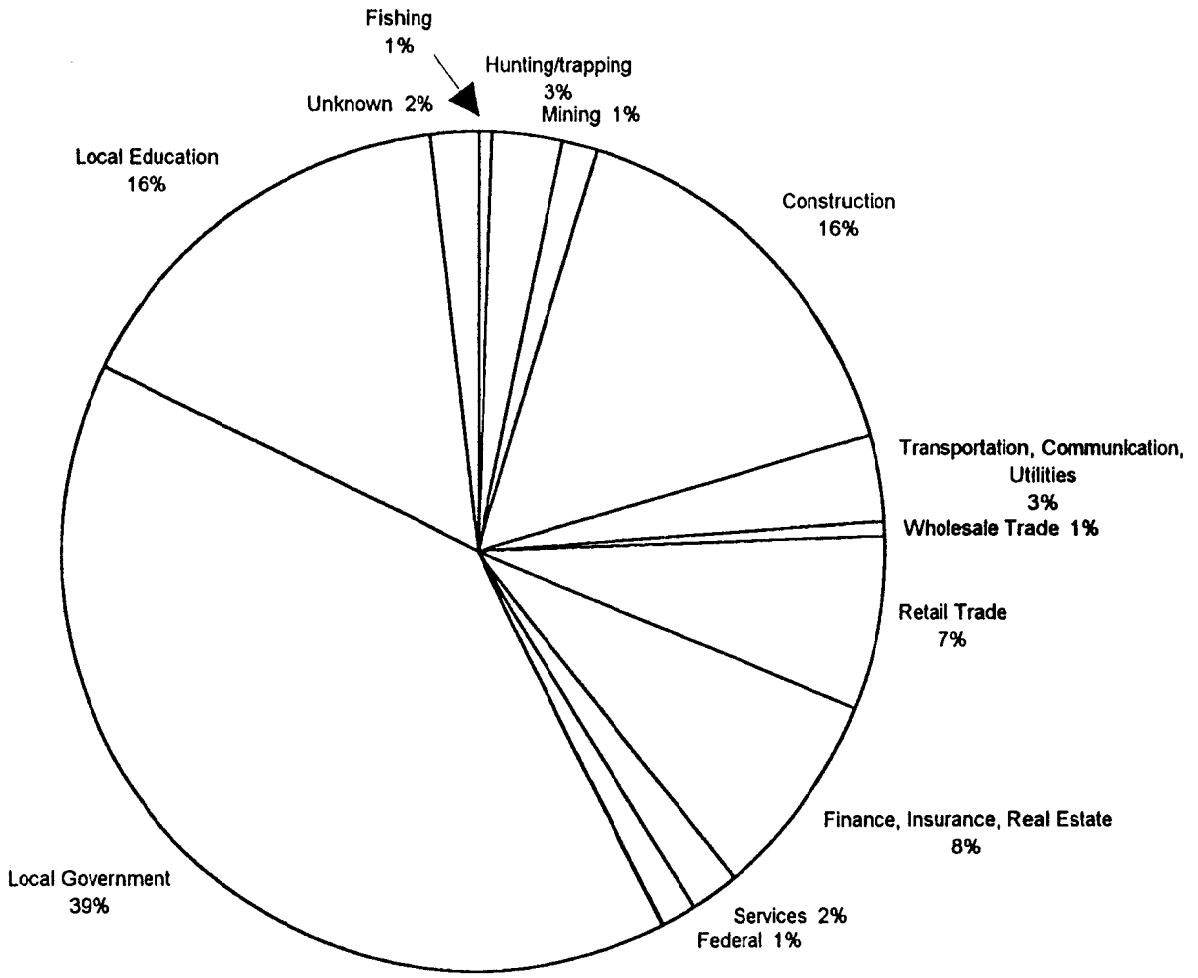


Table XXII-5. Community, Household, and Per Capita Income, All Sources and by Employer Type, Nuiqsut, 1993

INCOME SOURCE	INCOME		
	COMMUNITY TOTAL	AVERAGE HOUSEHOLD	PER CAPITA
All Sources	$5,163,620.03	$56,743.08	$14,301.10
Earned Income	$4,315,539.07	$47,423.51	$11,952.27
Agriculture, Forestry, and Fishing	23,777.42	261.29	65.85
Agriculture	0.00	0.00	0.00
Forestry	0.00	0.00	0.00
Fishing, Hunting, Trapping	23,777.42	261.29	65.85
Hatchery/Enhancement	0.00	0.00	0.00
Commercial Fishing	22,016.13	241.94	60.98
Hunting/Trapping	1,761.29	19.35	4.88
Mining	15,411.29	169.35	42.68
Construction	498,621.29	5,479.35	1,380.98
Manufacturing	0.00	0.00	0.00
Cannery	0.00	0.00	0.00
Other Manufacturing	0.00	0.00	0.00
Logging/Timber	0.00	0.00	0.00
Transportation, Communications, and Utilities	24,804.84	272.58	68.70
Trade	323,194.57	3,551.59	895.12
Wholesale	66,048.39	725.81	182.93
Retail	257,146.19	2,825.78	712.19
Finance, Insurance, and Real Estate	515,030.65	5,659.68	1,426.42
Services	66,048.39	725.81	182.93
Government	2,848,650.63	31,303.85	7,889.59
Federal	49,316.13	541.94	136.59
State	0.00	0.00	0.00
Local	2,799,334.50	30,761.92	7,753.00
Local Government	1,810,193.85	19,892.24	5,013.49
Local Education	989,140.65	10,869.68	2,739.51
Unknown	AMT UNK	AMT UNK	AMT UNK
Other Income	$848,080.96	$9,319.57	$2,348.83

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1994

Table XXII-6. Community, Household, and Per Capita Other Income by Source, Nuiqsut, 1993

Source	OTHER INCOME			
	PERCENTAGE REPORTING	COMMUNITY TOTAL	AVERAGE HOUSEHOLD	PER CAPITA
All Sources		$848,080.96	$9,319.57	$2,348.83
Exxon Claims	0.00	0.00	0.00	0.00
Aid to Families with Dependent Children	1.61	16,732.26	183.87	46.34
Adult Public Assistance	0.00	0.00	0.00	0.00
Exxon Damages	0.00	0.00	0.00	0.00
Pension/Retirement	8.06	66,422.66	729.92	183.96
Longevity Bonus	14.52	45,652.65	501.68	126.44
Social Security	19.35	124,614.81	1,369.39	345.13
Workman's Comp./Insurance	3.23	810.19	8.90	2.24
Energy Assistance	14.52	19,029.27	209.11	52.70
Supplemental Security Income	4.84	26,718.77	293.61	74.00
Food Stamps	4.84	6,384.68	70.16	17.68
Unemployment	6.45	6,458.06	70.97	17.89
Native Corporation Dividend	83.87	132,939.26	1,460.87	368.19
Dividend/Interest	1.61	5,870.97	64.52	16.26
Child Support	0.00	0.00	0.00	0.00
Rental Income	0.00	0.00	0.00	0.00
Veteran Disability	0.00	0.00	0.00	0.00
Equipment Leasing	0.00	0.00	0.00	0.00
Rental Assistance	0.00	0.00	0.00	0.00
Fishing Permit Leasing	0.00	0.00	0.00	0.00
Per Diem	0.00	0.00	0.00	0.00
Disability	0.00	0.00	0.00	0.00
Alaska Permanent Fund Dividend	90.32	319,185.44	3,507.53	884.01
Weatherization	0.00	0.00	0.00	0.00
Veteran's Assistance	0.00	0.00	0.00	0.00
Investments/Stocks/Bonds	0.00	0.00	0.00	0.00
Bureau of Indian Affairs Grants	0.00	0.00	0.00	0.00
Housing Allowances/Off-Base Allowances	0.00	0.00	0.00	0.00
Women, Infants, and Children Program	1.61	AMT UNK	AMT UNK	AMT UNK
General Assistance Grant	1.61	2,641.94	29.03	7.32
Foster Care	1.61	12,329.03	135.48	34.15
Inheritance	1.61	51,370.97	564.52	142.28
Contest Winnings	0.00	0.00	0.00	0.00
Capital Gains	0.00	0.00	0.00	0.00
ASRC Elder Trust	8.06	10,920.00	120.00	30.24
Supplemental Union Benefits	0.00	0.00	0.00	0.00
Gifts	0.00	0.00	0.00	0.00
Medicare/Medicaid	0.00	0.00	0.00	0.00
Other	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1994

Table XXII-7. Characteristics of Resource Harvest and Use, Nuiqsut, 1993

Study Year	1993
Mean Number Of Resources Used Per Household	20.26
Minimum	2
Maximum	36
95 % Confidence Limit (+/-)	6.27
Median	21
Mean Number Of Resources Attempted To Harvest Per Household	14.24
Minimum	0
Maximum	32
95 % Confidence Limit (+/-)	9.60
Median	15
Mean Number Of Resources Harvested Per Household	11.08
Minimum	0
Maximum	26
95 % Confidence Limit (+/-)	10.05
Median	11
Mean Number Of Resources Received Per Household	12.21
Minimum	0
Maximum	34
95 % Confidence Limit (+/-)	8.23
Median	11
Mean Number Of Resources Given Away Per Household	10.60
Minimum	0
Maximum	31
95 % Confidence Limit (+/-)	9.82
Median	9.5
Mean Household Harvest, Pounds	2,943.05
Minimum	0.00
Maximum	37,260.96
Total Pounds Harvested	267,817.81
Community Per Capita Harvest, Pounds	741.75
Percent Using Any Resource	100.00
Percent Attempting To Harvest Any Resource	93.55
Percent Harvesting Any Resource	90.32
Percent Receiving Any Resource	98.39
Percent Giving Away Any Resource	91.94
Number Of Households In Sample	62
Number of Resources Available	62

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1994

Figure XXII-4. Composition of Wild Resource Harvests by Resource Category, Nuiqsut, 1993

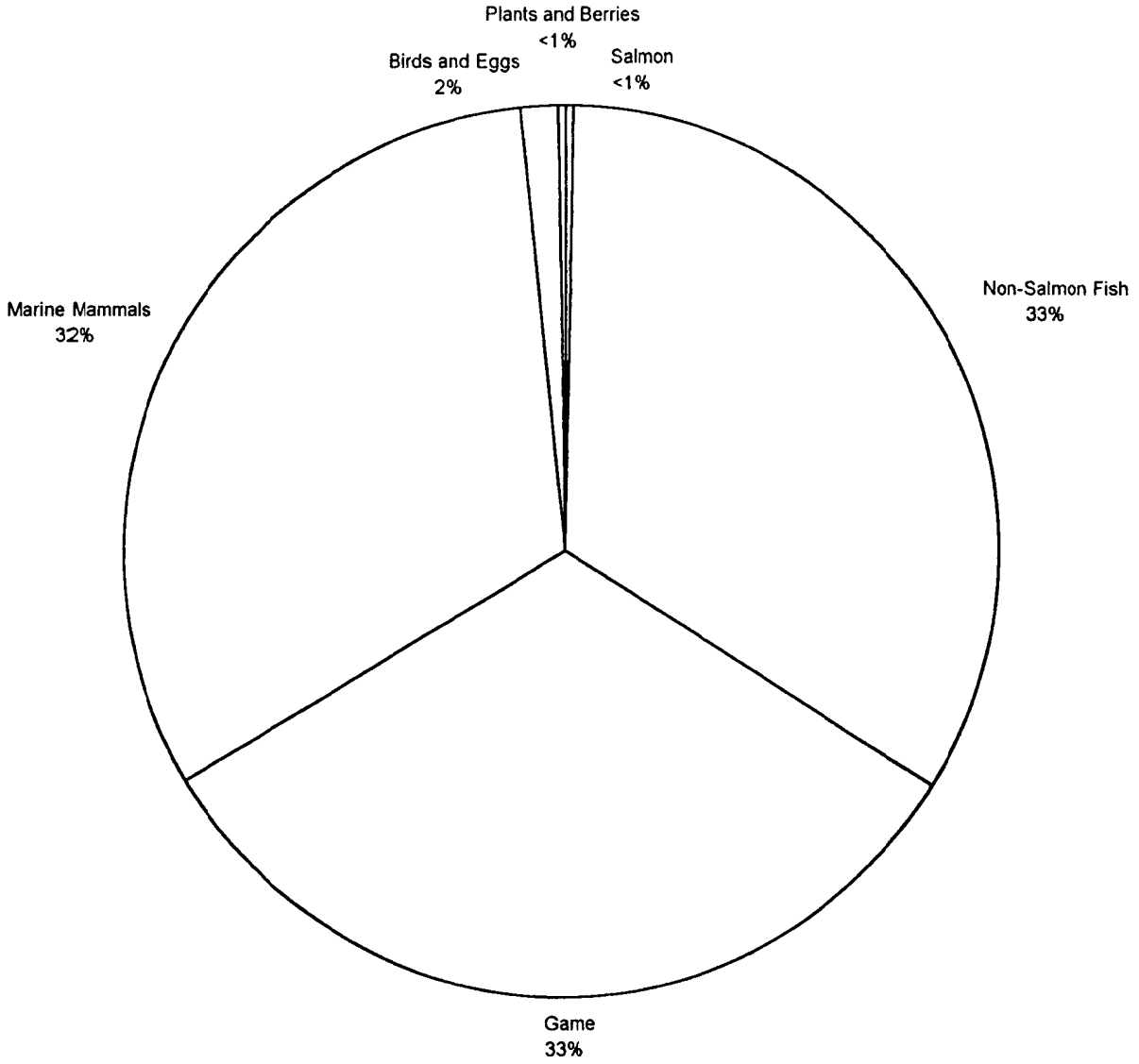


Table XXII-8. Participation in the Harvest and Processing of Wild Resources, Nuiqsut, 1993

Study Year			1993
Total Number of People			361.06
GAME	Hunt	Number	215.76
		Percentage	59.76
		Missing	0.00
		Missing %	0.00
	Process	Number	223.10
		Percentage	61.79
		Missing	0.00
		Missing %	0.00
FISH	Fish	Number	221.63
		Percentage	61.38
		Missing	0.00
		Missing %	0.00
	Process	Number	218.69
		Percentage	60.57
		Missing	0.00
		Missing %	0.00
FURBEARERS	Hunt or Trap	Number	54.31
		Percentage	15.04
		Missing	0.00
		Missing %	0.00
	Process	Number	68.98
		Percentage	19.11
		Missing	0.00
		Missing %	0.00
PLANTS	Gather	Number	183.47
		Percentage	50.81
		Missing	0.00
		Missing %	0.00
	Process	Number	152.65
		Percentage	42.28
		Missing	0.00
		Missing %	0.00
ANY RESOURCE			
	Attempt	Number	262.73
		Percent	72.76
	Process	Number	250.98
		Percent	69.51

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1994.

Table XXII-9. Percentage of Households Sharing Resources in Nuiqsut, 1993

Community	Salmon		Non-salmon Fish		Marine Invertebrates		Game		Marine Mammals		Birds and Eggs		Plants and Berries*		Any Resource	
	Recv	Gave	Recv	Gave	Recv	Gave	Recv	Gave	Recv	Gave	Recv	Gave	Recv	Gave	Recv	Gave
All Communities	45.16	38.71	90.32	87.10	0.00	0.00	90.32	80.65	96.77	79.03	69.35	72.58	40.32	27.42	98.39	91.94
Ambler	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61	0.00	0.00	0.00	0.00	0.00	1.61
Anaktuvuk Pass	0.00	1.61	8.06	27.42	0.00	0.00	17.74	0.00	1.61	22.58	0.00	3.23	4.84	0.00	22.58	32.26
Anchorage	4.84	0.00	0.00	20.97	0.00	0.00	0.00	11.29	0.00	14.52	0.00	1.61	1.61	0.00	4.84	25.81
Aniak	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61	0.00	0.00	0.00	0.00	0.00	1.61
Atqasuk	0.00	0.00	0.00	6.45	0.00	0.00	0.00	0.00	0.00	3.23	0.00	0.00	3.23	0.00	3.23	9.68
Barrow	0.00	6.45	8.06	58.06	0.00	0.00	4.84	33.87	54.84	24.19	25.81	27.42	1.61	4.84	62.90	61.29
Chitina	1.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61	0.00
Deadhorse	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61
Dillingham	0.00	0.00	0.00	1.61	0.00	0.00	0.00	0.00	0.00	1.61	0.00	0.00	0.00	0.00	0.00	1.61
Fairbanks	6.45	0.00	0.00	17.74	0.00	0.00	0.00	6.45	0.00	11.29	1.61	4.84	3.23	0.00	8.06	22.58
Kaktovik	0.00	0.00	0.00	11.29	0.00	0.00	6.45	1.61	4.84	0.00	0.00	0.00	0.00	0.00	9.68	12.90
King Salmon	1.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61	0.00
Kotzebue	1.61	0.00	3.23	0.00	0.00	0.00	0.00	0.00	1.61	0.00	0.00	0.00	3.23	0.00	8.06	0.00
Lake Louise	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61	0.00	1.61	0.00
Naknek	1.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61	0.00
Noatak	1.61	0.00	3.23	0.00	0.00	0.00	0.00	0.00	0.00	1.61	0.00	0.00	0.00	0.00	4.84	1.61
Nome	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61	0.00	0.00	0.00	0.00	0.00	1.61
Nondalton	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61	0.00	0.00	0.00	0.00	0.00	1.61
Noorvik	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61	0.00	0.00	1.61	0.00	1.61	1.61
Nuiqsut	29.03	37.10	88.71	72.58	0.00	0.00	88.71	74.19	91.94	72.58	67.74	66.13	22.58	25.81	98.39	85.48
Nunapitchuk	0.00	0.00	0.00	1.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61
Point Hope	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61	0.00	0.00	0.00	0.00	0.00	1.61	0.00
Point Lay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.35	0.00	0.00	0.00	0.00	0.00	19.35	0.00
Prudhoe Bay	0.00	0.00	0.00	1.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61
Selawik	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61	0.00	0.00	0.00	0.00	0.00	1.61
Wainwright	0.00	0.00	19.35	9.68	0.00	0.00	0.00	1.61	0.00	4.84	0.00	1.61	0.00	0.00	19.35	14.52
Wiseman	0.00	0.00	0.00	1.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61
Other U.S.	0.00	0.00	0.00	1.61	0.00	0.00	0.00	1.61	0.00	1.61	0.00	1.61	0.00	0.00	0.00	3.23

Plants and Berries includes sharing of wood and kelp for fertilizer

Note: Percentages are based upon valid responses.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1994.

Table XXII-10. Subsistence Harvests in Pounds Usable Weight per Person by Resource Category, Nuiqsut, 1985/86 and 1993

	Pounds Usable Weight per Person	
	1985/86	1993
Fish	176.1	250.6
Land Mammals	169.3	242.0
Marine Mammals	33.3	236.0
Birds and Eggs	20.0	12.0
Wild Plants	0.4	1.1
All Resources	399.2	741.8

Table 11. Composition of Resource Harvests by Resource Category, Nuiqsut, 1985/86 and 1993

	Percentage of Total Harvest	
	1985/86	1993
Fish	44.1%	33.8%
Land Mammals	42.4%	32.6%
Marine Mammals	8.3%	31.8%
Birds and Eggs	5.0%	1.6%
Wild Plants	0.1%	0.1%

Figure XXII-5. Wild Resource Harvests by Resource Category, Nuiqsut, 1985/86 and 1993

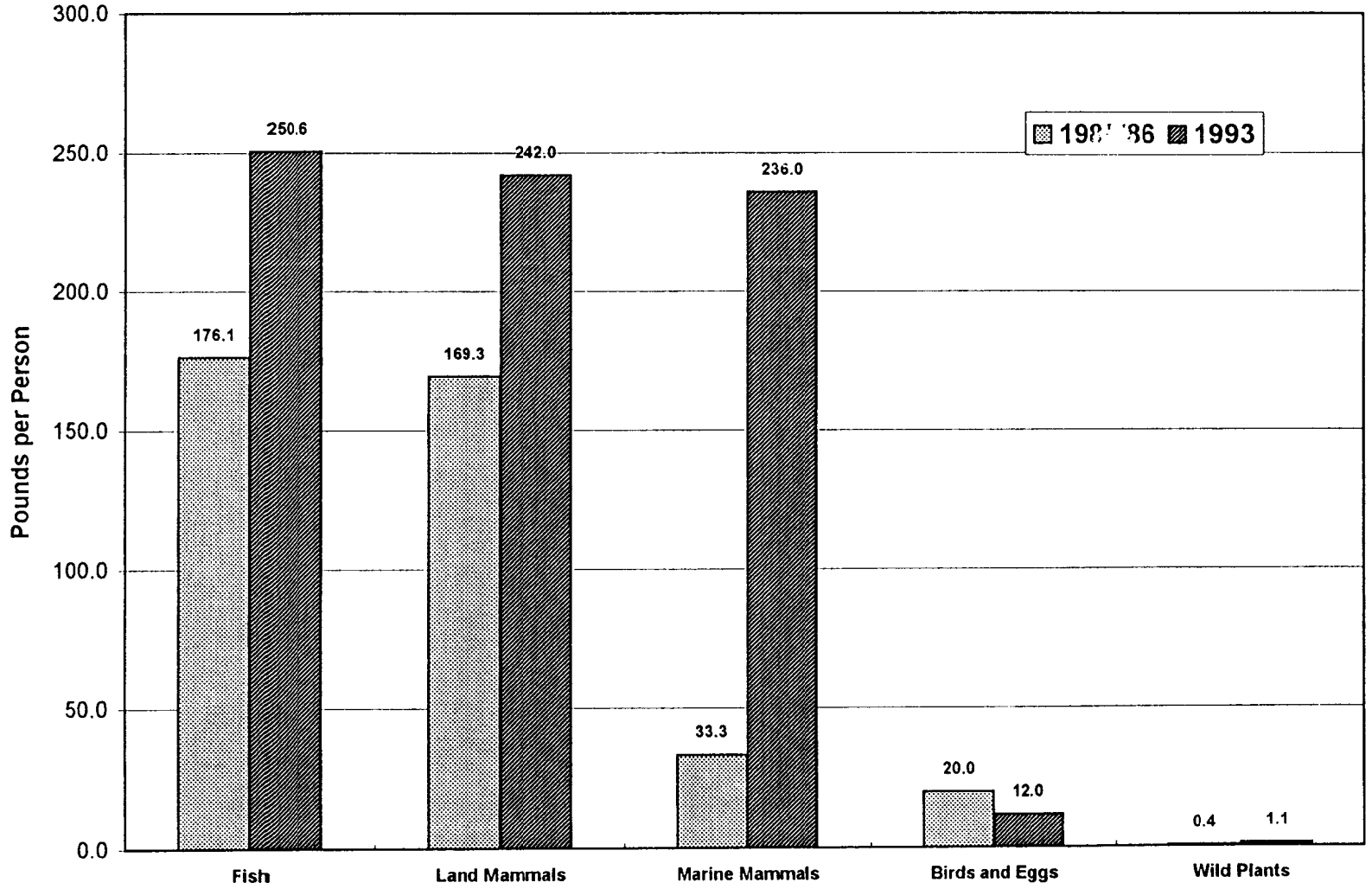


Table XXII-12. Estimated Harvest and Use of Fish, Mammal, Bird and Plant Resources, Nuiqsut, 1993

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
All Resources	100.0	93.5	90.3	98.4	91.9	267,817.81	2,943.05	741.75			26.14%	27.02%
Fish	100.0	80.6	80.6	93.5	90.3	90,489.71	994.39	250.62	71,897.34	790.08	20.88%	23.06%
Salmon	71.0	45.2	35.5	46.8	38.7	1,009.12	11.09	2.79	271.53	2.98	31.82%	32.85%
Chum Salmon	24.2	16.1	11.3	14.5	16.1	432.57	4.75	1.20	70.45	0.77	62.04%	60.67%
Coho Salmon	8.1	1.6	1.6	6.5	1.6	69.16	0.76	0.19	11.74	0.13	112.88%	114.09%
Chinook Salmon	9.7	1.6	1.6	9.7	6.5	98.43	1.08	0.27	10.27	0.11	112.88%	114.55%
Pink Salmon	38.7	30.6	24.2	19.4	16.1	342.37	3.76	0.95	159.98	1.76	46.87%	47.71%
Sockeye Salmon	6.5	0.0	0.0	6.5	3.2	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Unknown Salmon	14.5	8.1	6.5	8.1	6.5	66.59	0.73	0.18	19.08	0.21	56.92%	55.97%
Non-Salmon Fish	96.8	79.0	79.0	90.3	87.1	89,480.59	983.30	247.82	71,625.81	787.10	20.93%	23.20%
Cod	79.0	62.9	56.5	56.5	53.2	5,955.54	65.45	16.49	1,478.02	16.24	28.44%	28.22%
Arctic Cod	12.9	6.5	6.5	6.5	4.8	6.78	0.07	0.02	61.65	0.68	84.54%	84.93%
Burbot	79.0	62.9	56.5	54.8	53.2	5,948.76	65.37	16.48	1,416.37	15.56	29.24%	28.25%
Smelt	33.9	12.9	12.9	25.8	19.4	42.54	0.47	0.12	303.82	3.34	51.39%	51.21%
Rainbow Smelt	33.9	12.9	12.9	25.8	19.4	42.54	0.47	0.12	303.82	3.34	51.39%	51.21%
Grayling	79.0	69.4	64.5	27.4	43.5	4,063.30	44.65	11.25	4,514.77	49.61	29.87%	28.32%
Whitefish	95.2	74.2	74.2	82.3	83.9	77,671.44	853.53	215.12	64,711.27	711.11	22.00%	24.94%
Whitefish, Large	91.9	67.7	67.7	67.7	66.1	42,728.61	469.55	118.34	12,920.53	141.98	30.13%	31.07%
Whitefish, Broad/Akakiik	90.3	66.1	66.1	66.1	64.5	41,454.61	455.55	114.81	12,192.53	133.98	31.82%	32.00%
Whitefish, Humpback	32.3	25.8	24.2	11.3	9.7	1,274.00	14.00	3.53	728.00	8.00	59.57%	59.92%
Cisco	90.3	69.4	67.7	62.9	82.3	34,942.83	383.99	96.78	51,790.74	569.13	22.13%	22.92%
Least Cisco	62.9	51.6	46.8	27.4	35.5	3,276.73	36.01	9.08	6,553.47	72.02	31.02%	32.19%
Arctic Cisco	88.7	69.4	67.7	59.7	80.6	31,666.09	347.98	87.70	45,237.27	497.11	23.64%	23.97%
Cisco, Unknown	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Trout and Char	50.0	33.9	32.3	25.8	29.0	1,747.79	19.21	4.84	617.92	6.79	39.56%	40.03%
Char	50.0	33.9	32.3	25.8	29.0	1,747.79	19.21	4.84	617.92	6.79	39.56%	40.03%
Arctic Char	50.0	33.9	30.6	24.2	27.4	1,689.08	18.56	4.68	603.24	6.63	40.56%	41.22%
Lake Trout	9.7	3.2	1.6	9.7	8.1	58.71	0.65	0.16	14.68	0.16	112.88%	114.55%
Game	98.4	77.4	75.8	93.5	82.3	87,390.24	960.33	242.03	1,290.15	14.18	22.71%	15.38%
Big Game	98.4	75.8	74.2	91.9	82.3	87,305.84	959.40	241.80	691.31	7.60	16.18%	15.39%
Brown Bear	32.3	16.1	8.1	29.0	17.7	733.87	8.06	2.03	10.27	0.11	51.95%	49.23%
Caribou	98.4	74.2	74.2	79.0	79.0	82,168.74	902.95	227.57	672.23	7.39	16.19%	15.25%
Caribou, Bull	71.0	71.0	71.0	0.0	0.0	60,953.85	669.82	168.82	479.95	5.27	17.53%	17.30%
Caribou, Cow	40.3	40.3	40.3	0.0	0.0	15,861.89	174.31	43.93	148.24	1.63	26.53%	24.23%
Caribou, Sex Unknown	98.4	74.2	14.5	79.0	79.0	5,353.00	58.82	14.83	44.03	0.48	50.54%	50.43%
Moose	69.4	46.8	9.7	62.9	29.0	4,403.23	48.39	12.20	8.81	0.10	44.15%	45.45%

Table XXII-12. Estimated Harvest and Use of Fish, Mammal, Bird and Plant Resources, Nuiqsut, 1993

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
Muskox	8.1	0.0	0.0	8.1	3.2	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Sheep, Dall	12.9	0.0	0.0	12.9	8.1	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Small Game/Furbearer	53.2	45.2	41.9	17.7	27.4	84.40	0.93	0.23	598.84	6.58	41.63%	55.97%
Fox	29.0	29.0	25.8	4.8	11.3	0.00	0.00	0.00	202.55	2.23	68.35%	0.00%
Arctic Fox	16.1	16.1	12.9	1.6	8.1	0.00	0.00	0.00	139.44	1.53	91.60%	0.00%
Red Fox	27.4	25.8	22.6	4.8	9.7	0.00	0.00	0.00	48.44	0.53	31.50%	0.00%
Cross Fox	11.3	16.1	9.7	0.0	1.6	0.00	0.00	0.00	14.68	0.16	48.80%	0.00%
Marmot	1.6	1.6	0.0	1.6	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Mink	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Weasel	3.2	4.8	3.2	0.0	0.0	0.00	0.00	0.00	10.27	0.11	86.35%	0.00%
Wolf	21.0	25.8	11.3	9.7	8.1	0.00	0.00	0.00	30.82	0.34	51.95%	0.00%
Wolverine	22.6	27.4	16.1	8.1	11.3	0.00	0.00	0.00	19.08	0.21	35.31%	0.00%
Squirrel	17.7	16.1	16.1	1.6	8.1	84.40	0.93	0.23	336.11	3.69	48.91%	55.97%
Parka Squirrel (ground)	17.7	16.1	16.1	1.6	8.1	84.40	0.93	0.23	336.11	3.69	48.91%	55.97%
Marine Mammals	96.8	58.1	37.1	96.8	79.0	85,216.35	936.44	236.01	113.08	1.24	23.27%	70.93%
Whale	96.8	38.7	4.8	96.8	75.8	76,906.00	845.12	213.00	3.00	0.03	64.09%	78.54%
Belukha	32.3	4.8	0.0	32.3	17.7	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Bowhead	96.8	37.1	4.8	96.8	75.8	76,906.00	845.12	213.00	3.00	0.03	64.09%	78.54%
Seal	71.0	46.8	35.5	64.5	48.4	8,310.35	91.32	23.02	108.61	1.19	24.10%	22.74%
Bearded Seal	54.8	32.3	6.5	51.6	32.3	1,033.29	11.35	2.86	5.87	0.06	55.04%	53.68%
Ringed Seal	64.5	41.9	30.6	54.8	40.3	7,277.06	79.97	20.15	98.34	1.08	26.24%	25.21%
Spotted Seal	6.5	14.5	1.6	4.8	1.6	0.00	0.00	0.00	4.40	0.05	112.88%	0.00%
Walrus	58.1	11.3	0.0	58.1	25.8	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Polar Bear	51.6	12.9	1.6	50.0	21.0	0.00	0.00	0.00	1.47	0.02	112.88%	0.00%
Birds and Eggs	90.3	77.4	75.8	69.4	72.6	4,325.22	47.53	11.98	3,557.81	39.10	15.86%	13.53%
Birds	90.3	77.4	75.8	64.5	71.0	4,221.30	46.39	11.69	3,211.42	35.29	15.46%	13.75%
Owl	1.6	1.6	0.0	1.6	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Snowy Owl	1.6	1.6	0.0	1.6	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Upland Game Birds	59.7	45.2	45.2	25.8	41.9	681.18	7.49	1.89	973.11	10.69	27.27%	27.05%
Ptarmigan	59.7	45.2	45.2	25.8	41.9	681.18	7.49	1.89	973.11	10.69	27.27%	27.05%
Migratory Birds	87.1	74.2	72.6	64.5	62.9	3,540.12	38.90	9.80	2,238.31	24.60	16.00%	14.47%
Waterfowl	87.1	74.2	72.6	64.5	62.9	3,540.12	38.90	9.80	2,238.31	24.60	16.00%	14.47%
Ducks	62.9	43.5	38.7	43.5	41.9	1,152.25	12.66	3.19	772.03	8.48	22.71%	19.95%
Eider	61.3	40.3	35.5	43.5	40.3	1,059.12	11.64	2.93	661.95	7.27	23.70%	20.99%
Eider, Large	61.3	40.3	35.5	43.5	40.3	979.28	10.76	2.71	612.05	6.73	24.25%	21.78%
King Eiders	50.0	38.7	33.9	32.3	37.1	744.44	8.18	2.06	465.27	5.11	25.13%	22.19%

Table XXII-12. Estimated Harvest and Use of Fish, Mammal, Bird and Plant Resources, Nuiqsut, 1993

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest	Percapita
Common Eiders	35.5	21.0	16.1	29.0	16.1	234.84	2.58	0.65	146.77	1.61	39.20%	38.79%
Eider, Unknown	3.2	3.2	3.2	0.0	3.2	79.85	0.88	0.22	49.90	0.55	94.75%	93.61%
Pintail	6.5	4.8	4.8	1.6	3.2	19.96	0.22	0.06	24.95	0.27	99.82%	99.61%
Oldsquaw	19.4	8.1	8.1	12.9	9.7	62.23	0.68	0.17	77.79	0.85	58.56%	57.75%
Ducks, Unknown	1.6	1.6	1.6	0.0	0.0	10.93	0.12	0.03	7.34	0.08	112.88%	112.70%
Geese	87.1	74.2	72.6	48.4	59.7	2,314.48	25.43	6.41	1,458.94	16.03	15.23%	14.35%
Brant	48.4	37.1	37.1	21.0	27.4	355.78	3.91	0.99	296.48	3.26	33.48%	32.05%
Snow Geese	14.5	11.3	6.5	9.7	6.5	37.13	0.41	0.10	16.15	0.18	66.28%	67.40%
White-fronted Geese	48.4	37.1	37.1	25.8	25.8	1,092.00	12.00	3.02	455.00	5.00	28.15%	27.12%
Canada Geese	66.1	58.1	53.2	35.5	40.3	829.57	9.12	2.30	691.31	7.60	20.88%	20.06%
Canada Geese, Unknown	66.1	58.1	53.2	35.5	40.3	829.57	9.12	2.30	691.31	7.60	20.88%	20.06%
Geese, Unknown	1.6	0.0	0.0	1.6	1.6	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Swan	11.3	8.1	8.1	3.2	4.8	73.39	0.81	0.20	7.34	0.08	48.80%	47.93%
Tundra Swan (Whistling)	11.3	8.1	8.1	3.2	4.8	73.39	0.81	0.20	7.34	0.08	48.80%	47.93%
Eggs	40.3	21.0	19.4	22.6	14.5	103.92	1.14	0.29	346.39	3.81	47.81%	45.62%
Seabird Eggs	1.6	0.0	0.0	1.6	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Gull Eggs	1.6	0.0	0.0	1.6	0.0	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Waterfowl Eggs	38.7	19.4	17.7	22.6	14.5	98.19	1.08	0.27	327.31	3.60	50.36%	48.19%
Duck Eggs	4.8	3.2	3.2	1.6	3.2	22.90	0.25	0.06	76.32	0.84	104.42%	103.28%
Eider Eggs	4.8	3.2	3.2	1.6	3.2	22.90	0.25	0.06	76.32	0.84	104.42%	103.28%
Geese Eggs	37.1	17.7	16.1	22.6	12.9	75.30	0.83	0.21	250.98	2.76	58.40%	56.60%
Unknown Eggs	3.2	3.2	3.2	0.0	0.0	5.72	0.06	0.02	19.08	0.21	81.31%	81.00%
Plants and Berries	75.8	61.3	61.3	40.3	25.8	396.29	4.35	1.10	99.07 gal	1.09	19.30%	18.75%
Berries	75.8	58.1	58.1	37.1	25.8	336.11	3.69	0.93	84.03 gal	0.92	22.34%	21.75%
Plants/Greens/Mushrooms	21.0	14.5	14.5	9.7	1.6	60.18	0.66	0.17	15.04 gal	0.17	39.05%	39.17%
Unknown Greens, from land	14.5	12.9	12.9	3.2	1.6	42.56	0.47	0.12	10.64 gal	0.12	43.60%	43.95%
Roots, Food	12.9	6.5	6.5	6.5	0.0	17.61	0.19	0.05	4.40 gal	0.05	58.21%	57.85%
Wood	50.0	50.0	50.0	3.2	3.2	0.00	0.00	0.00	60.91 crd	0.67	33.07%	0.00%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1994

Table XXII-13. Percentage of Salmon Harvest By Resource, Gear Type, and Total Salmon Harvest, Nuiqsut, 1993

Resource	Percent Base	Subsistence Methods: Net No.	Net Lbs.	Subsistence Gear Any Method No.	Any Method Lbs.	Removed from Commercial Catch No.	Removed from Commercial Catch Lbs.	Rod and Reel No.	Rod and Reel Lbs.	Any Method No.	Any Method Lbs.
Salmon	total	94.59	95.53	94.59	95.53	0.00	0.00	5.41	4.47		
Chum Salmon	gear type	26.29	43.00	26.29	43.00	0.00	0.00	20.00	39.93		
	resource	95.83	95.83	95.83	95.83	0.00	0.00	4.17	4.17		
	total	24.86	41.08	24.86	41.08	0.00	0.00	1.08	1.79	25.95	42.87
Coho Salmon	gear type	4.57	7.17	4.57	7.17	0.00	0.00	0.00	0.00		
	resource	100.00	100.00	100.00	100.00	0.00	0.00	0.00	0.00		
	total	4.32	6.85	4.32	6.85	0.00	0.00	0.00	0.00	4.32	6.85
Chinook Salmon	gear type	4.00	10.21	4.00	10.21	0.00	0.00	0.00	0.00		
	resource	100.00	100.00	100.00	100.00	0.00	0.00	0.00	0.00		
	total	3.78	9.75	3.78	9.75	0.00	0.00	0.00	0.00	3.78	9.75
Pink Salmon	gear type	58.29	33.23	58.29	33.23	0.00	0.00	70.00	48.72		
	resource	93.58	93.58	93.58	93.58	0.00	0.00	6.42	6.42		
	total	55.14	31.75	55.14	31.75	0.00	0.00	3.78	2.18	58.92	33.93
Sockeye Salmon	gear type	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	resource	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Salmon	gear type	6.86	6.38	6.86	6.38	0.00	0.00	10.00	11.35		
	resource	92.31	92.31	92.31	92.31	0.00	0.00	7.69	7.69		
	total	6.49	6.09	6.49	6.09	0.00	0.00	0.54	0.51	7.03	6.60

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1994

Table XXII-14. Estimated Salmon Harvest by Gear Type and Species, Nuiqsut, 1993

		Subsistence Methods				Removed from Commercial Catch		Rod and Reel		Any Method	
		Net		Subsistence Gear Any Method							
	Harvest Units	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Salmon	numbers	256.85	2.82	256.85	2.82	0.00	0.00	14.68	0.16	271.53	2.98
	pounds	963.98	10.59	963.98	10.59	0.00	0.00	45.13	0.50	1,009.12	11.09
Chum Salmon	numbers	67.52	0.74	67.52	0.74	0.00	0.00	2.94	0.03	70.45	0.77
	pounds	414.55	4.56	414.55	4.56	0.00	0.00	18.02	0.20	432.57	4.75
Coho Salmon	numbers	11.74	0.13	11.74	0.13	0.00	0.00	0.00	0.00	11.74	0.13
	pounds	69.16	0.76	69.16	0.76	0.00	0.00	0.00	0.00	69.16	0.76
Chinook Salmon	numbers	10.27	0.11	10.27	0.11	0.00	0.00	0.00	0.00	10.27	0.11
	pounds	98.43	1.08	98.43	1.08	0.00	0.00	0.00	0.00	98.43	1.08
Pink Salmon	numbers	149.71	1.65	149.71	1.65	0.00	0.00	10.27	0.11	159.98	1.76
	pounds	320.38	3.52	320.38	3.52	0.00	0.00	21.99	0.24	342.37	3.76
Sockeye Salmon	numbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Salmon	numbers	17.61	0.19	17.61	0.19	0.00	0.00	1.47	0.02	19.08	0.21
	pounds	61.47	0.68	61.47	0.68	0.00	0.00	5.12	0.06	66.59	0.73

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1994

Table XXII-15. Percentage of Households Harvesting Salmon by Gear Type and Species, Nuiqsut, 1993

Resource	Subsistence Methods		Removed from Commercial Catch	Rod and Reel	Any Method
	Net	Any Subsistence Gear			
Salmon	35.48	35.48	0.00	4.84	35.48
Chum Salmon	11.29	11.29	0.00	1.61	11.29
Coho Salmon	1.61	1.61	0.00	0.00	1.61
Chinook Salmon	1.61	1.61	0.00	0.00	1.61
Pink Salmon	24.19	24.19	0.00	3.23	24.19
Sockeye Salmon	0.00	0.00	0.00	0.00	0.00
Unknown Salmon	6.45	6.45	0.00	1.61	6.45

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1994

Table XXII-16. Estimated Harvest of Fish Other than Salmon by Gear Type, Nuiqsut, 1993

	Harvest Units	Subsistence Gear		Removed From Commercial Catch		Rod and Reel		Ice Fishing		Any Method	
		Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Non-Salmon Fish	pounds	79,589.92	874.61	0.00	0.00	1,145.72	12.59	8,744.95	96.10	89,480.59	983.30
Burbot	pounds	314.39	3.45	0.00	0.00	73.97	0.81	5,560.39	61.10	5,948.76	65.37
Least Cisco	pounds	3,025.75	33.25	0.00	0.00	0.73	0.01	250.25	2.75	3,276.73	36.01
Arctic Cisco	pounds	31,648.63	347.79	0.00	0.00	0.00	0.00	17.47	0.19	31,666.09	347.98
Grayling	pounds	657.84	7.23	0.00	0.00	968.27	10.64	2,437.19	26.78	4,063.30	44.65
Whitefish, Broad/Akakiik	pounds	41,454.61	455.55	0.00	0.00	0.00	0.00	0.00	0.00	41,454.61	455.55
Whitefish, Humpback	pounds	1,268.86	13.94	0.00	0.00	0.00	0.00	5.14	0.06	1,274.00	14.00
Arctic Cod	pounds	1.94	0.02	0.00	0.00	0.00	0.00	4.84	0.05	6.78	0.07
Rainbow Smelt	pounds	42.54	0.47	0.00	0.00	0.00	0.00	0.00	0.00	42.54	0.47
Arctic Char	pounds	1,175.37	12.92	0.00	0.00	102.74	1.13	410.97	4.52	1,689.08	18.56
Lake Trout	pounds	0.00	0.00	0.00	0.00	0.00	0.00	58.71	0.65	58.71	0.65

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1994

Table XXII-17. Percentage of Fish Other Than Salmon Harvested by Gear Type, Nuiqsut, 1993

Resource	Percent Base	Subsistence Gear Lbs.	Removed from Commercial Catch Lbs.	Rod and Reel Lbs.	Ice Fishing Lbs.
Non-Salmon Fish	resource	88.95	0.00	1.28	9.77
Burbot	resource	5.28	0.00	1.24	93.47
Least Cisco	resource	92.34	0.00	0.02	7.64
Arctic Cisco	resource	99.94	0.00	0.00	0.06
Grayling	resource	16.19	0.00	23.83	59.98
Whitefish, Broad/Akakiik	resource	100.00	0.00	0.00	0.00
Whitefish, Humpback	resource	99.60	0.00	0.00	0.40
Arctic Cod	resource	28.57	0.00	0.00	71.43
Rainbow Smelt	resource	100.00	0.00	0.00	0.00
Arctic Char	resource	69.59	0.00	6.08	24.33
Lake Trout	resource	0.00	0.00	0.00	100.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1994

Table XXII-18. Percentage of Households Harvesting Fish Other Than Salmon by Gear Type and Species, Nuiqsut, 1993

Resource	Subsistence Gear	Removed from Commercial Catch	Rod and Reel	Ice Fishing	Any Method
Non-Salmon Fish	72.58	0.00	25.81	66.13	79.03
Burbot	6.45	0.00	1.61	50.00	56.45
Least Cisco	43.55	0.00	1.61	6.45	46.77
Arctic Cisco	66.13	0.00	0.00	3.23	67.74
Grayling	6.45	0.00	22.58	41.94	64.52
Whitefish, Broad/Akakiik	66.13	0.00	0.00	0.00	66.13
Whitefish, Humpback	22.58	0.00	0.00	1.61	24.19
Arctic Cod	4.84	0.00	0.00	1.61	6.45
Rainbow Smelt	12.90	0.00	0.00	0.00	12.90
Arctic Char	24.19	0.00	6.45	1.61	30.65
Lake Trout	0.00	0.00	0.00	1.61	1.61

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1994

Table XXII-19. Uses of Wild Foods, Nuiqsut

	STUDY YEAR
	1993
DO YOU USE WILD FOODS?	
No	
Count	1
Col %	1.7%
Yes	
Count	59
Col %	98.3%
CANNOT AFFORD TO BUY STORE FOOD?	
No	
Count	37
Col %	61.7%
Yes	
Count	23
Col %	38.3%
WANT TO EAT WILD FOOD?	
No Response	
Count	1
Col %	1.7%
No	
Count	1
Col %	1.7%
Yes	
Count	58
Col %	96.7%
WILD FOODS ARE HEALTHIER?	
No	
Count	4
Col %	6.7%
Yes	
Count	56
Col %	93.3%
EATING WILD FOODS IS PART OF TRADITION?	
No	
Count	9
Col %	15.0%

(continued)

Table XXII-19. Uses of Wild Foods, Nuiqsut

	STUDY YEAR
	1993
Yes	
Count	51
Col %	85.0%
ANY WILD FOODS EATEN YESTERDAY?	
No	
Count	22
Col %	36.7%
Yes	
Count	38
Col %	63.3%
WILD FOODS AS MAIN PART OF A MEAL	
No	
Count	22
Col %	36.7%
Yes	
Count	38
Col %	63.3%
HARVEST OF WILD FOODS BY RESPONDENT	
Do Not Know	
Count	2
Col %	3.3%
No	
Count	41
Col %	68.3%
Yes	
Count	17
Col %	28.3%
WF HARVESTED BY RELATIVE IN HH	
Do Not Know	
Count	1
Col %	1.7%
No	
Count	48
Col %	80.0%
Yes	

(continued)

Table XXII-19. Uses of Wild Foods, Nuiqsut

	STUDY YEAR
	1993
Count	11
Col %	18.3%
WF HARVESTED BY RELATIVE IN ANOTHER HH	
Do Not Know	
Count	1
Col %	1.7%
No	
Count	37
Col %	61.7%
Yes	
Count	22
Col %	36.7%
WF HARVESTED BY RELATIVE IN ANOTHER COMM.	
Do Not Know	
Count	1
Col %	1.7%
No	
Count	52
Col %	86.7%
Yes	
Count	7
Col %	11.7%
WF HARVESTED BY FRIEND IN HH	
Do Not Know	
Count	1
Col %	1.7%
No	
Count	56
Col %	93.3%
Yes	
Count	3
Col %	5.0%
WF HARVESTED BY FRIEND IN COMMUNITY	
Do Not Know	
Count	1

(continued)

Table XXII-19. Uses of Wild Foods, Nuiqsut

	STUDY YEAR
	1993
Col %	1.7%
No	
Count	51
Col %	85.0%
Yes	
Count	8
Col %	13.3%
WF HARVESTED BY FRIEND IN ANOTHER COMM.	
Do Not Know	
Count	1
Col %	1.7%
No	
Count	55
Col %	91.7%
Yes	
Count	4
Col %	6.7%

Table XXII-20. Safety of Using Subsistence Foods, Nuiqsut

	STUDY YEAR
	1993
DO YOU EAT SEAL OIL OR SEAL MEAT?	
No	
Count	9
Col %	15.0%
Yes	
Count	51
Col %	85.0%
ARE SEALS FROM HARVEST AREAS SAFE TO EAT?	
Safe	
Count	51
Col %	100.0%
DO YOU EAT MUKTUK?	
No	
Count	3
Col %	5.0%
Yes	
Count	57
Col %	95.0%
IS MUKTUK FROM HARVEST AREAS SAFE TO EAT?	
Safe	
Count	57
Col %	100.0%
DO YOU EAT WHITEFISH?	
No	
Count	4
Col %	6.7%
Yes	
Count	56
Col %	93.3%
IS WHITEFISH FROM HARVEST AREAS SAFE TO EAT?	
Do Not Know	
Count	1
Col %	1.7%
Safe	
Count	57

(continued)

Table XXII-20. Safety of Using Subsistence Foods, Nuiqsut

	STUDY YEAR
	1993
Col %	98.3%

Table XXII-21. Resource Population Statuses, Nuiqsut

	STUDY YEAR 1993
COMPARED TO 10 YRS. AGO: CARIBOU	
Do Not Know	
Count	3
Col %	5.9%
Less	
Count	20
Col %	39.2%
Same	
Count	22
Col %	43.1%
More	
Count	6
Col %	11.8%
COMPARED TO 10 YRS. AGO: MOOSE	
Do Not Know	
Count	7
Col %	13.7%
Less	
Count	12
Col %	23.5%
Same	
Count	18
Col %	35.3%
More	
Count	14
Col %	27.5%
COMPARED TO 10 YRS. AGO: POLAR BEAR	
Do Not Know	
Count	20
Col %	39.2%
Less	
Count	2
Col %	3.9%
Same	
Count	12

(continued)

Table XXII-21. Resource Population Statuses, Nuiqsut

	STUDY YEAR 1993
Col %	23.5%
More	
Count	17
Col %	33.3%
COMPARED TO 10 YRS. AGO: BELUKHA WHALE	
No Response	
Count	4
Col %	7.8%
Do Not Know	
Count	41
Col %	80.4%
Same	
Count	5
Col %	9.8%
More	
Count	1
Col %	2.0%
COMPARED TO 10 YRS. AGO: BOWHEAD WHALE	
Do Not Know	
Count	10
Col %	19.6%
Less	
Count	7
Col %	13.7%
Same	
Count	14
Col %	27.5%
More	
Count	20
Col %	39.2%
COMPARED TO 10 YRS. AGO: BEARDED SEAL	
Do Not Know	
Count	16
Col %	31.4%

(continued)

Table XXII-21. Resource Population Statuses, Nuiqsut

	STUDY YEAR
	1993
Less	
Count	10
Col %	19.6%
Same	
Count	23
Col %	45.1%
More	
Count	2
Col %	3.9%
COMPARED TO 10 YRS. AGO: RINGED SEAL	
Do Not Know	
Count	16
Col %	31.4%
Less	
Count	5
Col %	9.8%
Same	
Count	21
Col %	41.2%
More	
Count	9
Col %	17.6%
COMPARED TO 10 YRS. AGO: WALRUS	
Do Not Know	
Count	31
Col %	60.8%
Less	
Count	4
Col %	7.8%
Same	
Count	14
Col %	27.5%
More	
Count	2
Col %	3.9%

(continued)

Table XXII-21. Resource Population Statuses, Nuiqsut

	STUDY YEAR
	1993
COMPARED TO 10 YRS. AGO: SALMON	
Do Not Know	
Count	14
Col %	27.5%
Less	
Count	7
Col %	13.7%
Same	
Count	20
Col %	39.2%
More	
Count	10
Col %	19.6%
COMPARED TO 10 YRS. AGO: WHITEFISH	
Do Not Know	
Count	3
Col %	5.9%
Less	
Count	10
Col %	19.6%
Same	
Count	29
Col %	56.9%
More	
Count	9
Col %	17.6%
COMPARED TO 10 YRS. AGO: ARCTIC CHAR	
Do Not Know	
Count	21
Col %	41.2%
Less	
Count	5
Col %	9.8%
Same	
Count	21

(continued)

Table XXII-21. Resource Population Statuses, Nuiqsut

	STUDY YEAR
	1993
Col %	41.2%
More	
Count	4
Col %	7.8%
COMPARED TO 10 YRS. AGO: GEESE	
Do Not Know	
Count	5
Col %	9.8%
Less	
Count	9
Col %	17.6%
Same	
Count	27
Col %	52.9%
More	
Count	10
Col %	19.6%
COMPARED TO 10 YRS. AGO: EIDER DUCKS	
Do Not Know	
Count	13
Col %	25.5%
Less	
Count	8
Col %	15.7%
Same	
Count	22
Col %	43.1%
More	
Count	8
Col %	15.7%
COMPARED TO 10 YRS. AGO: PINTAIL DUCKS	
Do Not Know	
Count	22
Col %	43.1%

(continued)

Table XXII-21. Resource Population Statuses, Nuiqsut

	STUDY YEAR
	1993
Less	
Count	2
Col %	3.9%
Same	
Count	19
Col %	37.3%
More	
Count	8
Col %	15.7%
COMPARED TO 10 YRS. AGO: ARCTIC FOX	
Do Not Know	
Count	3
Col %	5.9%
Less	
Count	4
Col %	7.8%
Same	
Count	17
Col %	33.3%
More	
Count	27
Col %	52.9%
COMPARED TO 10 YRS. AGO: WOLVERINE	
Do Not Know	
Count	12
Col %	23.5%
Less	
Count	10
Col %	19.6%
Same	
Count	20
Col %	39.2%
More	
Count	9
Col %	17.6%

(continued)

Table XXII-21. Resource Population Statuses, Nuiqsut

	STUDY YEAR
	1993
COMPARED TO 10 YRS. AGO: WOLF	
Do Not Know	
Count	11
Col %	21.6%
Less	
Count	8
Col %	15.7%
Same	
Count	14
Col %	27.5%
More	
Count	18
Col %	35.3%

Table XXII-22. Children's Participation in Subsistence, Nuiqsut

	STUDY YEAR
	1993
DOES YOUR HOUSEHOLD PROCESS WILD FOODS?	
No Response	
Count	3
Col %	5.0%
No	
Count	4
Col %	6.7%
Yes	
Count	53
Col %	88.3%
DO CHILDREN HELP YOUR HH PROCESS WILD FOODS?	
No	
Count	18
Col %	30.0%
Yes	
Count	42
Col %	70.0%

Table XXII-23. Sharing, Nuiqsut

	STUDY YEAR
	1993
DID HOUSEHOLD SHARE?	
No	
Count	5
Col %	8.3%
Yes	
Count	55
Col %	91.7%
PREV. YEAR: SHARING OF WILD RES.	
Less	
Count	6
Col %	10.9%
Same	
Count	40
Col %	72.7%
More	
Count	9
Col %	16.4%
PREV. YEAR: SHARING OF HUNT/FISH GEAR	
Less	
Count	11
Col %	20.4%
Same	
Count	37
Col %	68.5%
More	
Count	6
Col %	11.1%
PREV. YEAR: SHARING OF MONEY	
Less	
Count	15
Col %	27.3%
Same	
Count	33
Col %	60.0%
More	

(continued)

Table XXII-23. Sharing, Nuiqsut

	STUDY YEAR
	1993
Count	7
Col %	12.7%
PREV. YEAR: SHARING OF LABOR	
Less	
Count	10
Col %	18.5%
Same	
Count	31
Col %	57.4%
More	
Count	13
Col %	24.1%

Table XXII-24. Political Activities, Nuiqsut

	STUDY YEAR
	1993
LAST 5 YRS.: ELDERS INFLUENCE	
Do Not Know	
Count	1
Col %	1.8%
Decreased	
Count	17
Col %	29.8%
Same	
Count	26
Col %	45.6%
Increased	
Count	13
Col %	22.8%
LAST 5 YRS.: ELDERS INFLUENCE: WHY	
No Response	
Count	6
Col %	20.0%
Fewer elders, traditional people passed away	
Count	5
Col %	16.7%
Elders not as active	
Count	2
Col %	6.7%
Younger individuals usurping authority	
Count	3
Col %	10.0%
Elders more aware of the power they hold	
Count	2
Col %	6.7%
Elders knowledge is not appreciated or recognized	
Count	2
Col %	6.7%

(continued)

Table XXII-24. Political Activities, Nuiqsut

	STUDY YEAR
	1993
Elders knowledge is more appreciated or recognized	
Count	6
Col %	20.0%
Change in the direction of the community	
Count	1
Col %	3.3%
Non-specific response	
Count	3
Col %	10.0%
LAST YEAR: ATTEND PUBLIC MEETINGS	
No Response	
Count	1
Col %	1.7%
Do Not Know	
Count	3
Col %	5.0%
Never	
Count	8
Col %	13.3%
1.00	
Count	2
Col %	3.3%
2.00	
Count	4
Col %	6.7%
3.00	
Count	4
Col %	6.7%
4.00	
Count	7
Col %	11.7%
5.00	
Count	7
Col %	11.7%

(continued)

Table XXII-24. Political Activities, Nuiqsut

	STUDY YEAR
	1993
6.00	
Count	4
Col %	6.7%
7.00	
Count	3
Col %	5.0%
8.00	
Count	2
Col %	3.3%
10.00	
Count	1
Col %	1.7%
12.00	
Count	5
Col %	8.3%
15.00	
Count	2
Col %	3.3%
20.00	
Count	3
Col %	5.0%
36.00	
Count	2
Col %	3.3%
48.00	
Count	1
Col %	1.7%
99.00	
Count	1
Col %	1.7%
VOTE IN LAST STATE-WIDE ELECTION?	
Do Not Know	
Count	1
Col %	1.7%

(continued)

Table XXII-24. Political Activities, Nuiqsut

	STUDY YEAR
	1993
No	
Count	6
Col %	10.0%
Yes	
Count	53
Col %	88.3%
BELONG TO NATIVE CORPORATION?	
No	
Count	12
Col %	20.0%
Yes	
Count	48
Col %	80.0%
REGIONAL NATIVE CORPORATION	
Arctic Slope Regional Corp.	
Count	48
Col %	100.0%
VOTE IN LAST REG. CORP. ELECTION?	
Do Not Know	
Count	1
Col %	2.1%
No	
Count	4
Col %	8.5%
Yes	
Count	42
Col %	89.4%
VILLAGE NATIVE CORPORATION	
No Response	
Count	1
Col %	2.1%
Utkiavik IC (Barrow)	
Count	10
Col %	20.8%
Kuukpik (Nuiqsut)	

(continued)

Table XXII-24. Political Activities, Nuiqsut

	STUDY YEAR
	1993
Count	37
Col %	77.1%
VOTE IN LAST NATIVE VILLAGE CORP. ELECTION?	
No	
Count	1
Col %	2.1%
Yes	
Count	46
Col %	97.9%

Table XXII-25. Significance of Place, Nuiqsut

	STUDY YEAR
	1993
MAIN REASON MOVED TO COMMUNITY	
No Response	
Count	3
Col %	5.0%
Born or reared here	
Count	26
Col %	43.3%
Relatives (family)	
Count	13
Col %	21.7%
Married a person born or reared here	
Count	2
Col %	3.3%
Subsistence opportunities	
Count	2
Col %	3.3%
Employment reasons	
Count	7
Col %	11.7%
Less drinking or drugs	
Count	1
Col %	1.7%
Pace of Life	
Count	1
Col %	1.7%
Quality of Life	
Count	2
Col %	3.3%
Religious Reasons	
Count	1
Col %	1.7%
Opportunity to be involved and make a difference	
Count	2
Col %	3.3%

(continued)

Table XXII-25. Significance of Place, Nuiqsut

	STUDY YEAR
	1993
LIVE HERE: WHERE PERSON IS FROM	
No	
Count	34
Col %	56.7%
Yes	
Count	26
Col %	43.3%
LIVE HERE: RELATIVES LIVE HERE	
No	
Count	16
Col %	26.7%
Yes	
Count	44
Col %	73.3%
LIVE HERE: MARRIED PERSON FROM HERE	
No Response	
Count	1
Col %	1.7%
No	
Count	47
Col %	78.3%
Yes	
Count	12
Col %	20.0%
LIVE HERE: ALWAYS LIVED HERE	
No	
Count	24
Col %	40.0%
Yes	
Count	36
Col %	60.0%
LIVE HERE: FRIENDS LIVE HERE	
No	
Count	21
Col %	35.0%

(continued)

Table XXII-25. Significance of Place, Nuiqsut

	STUDY YEAR
	1993
Yes	
Count	39
Col %	65.0%
LIVE HERE: HUNTING & FISHING HERE	
No	
Count	11
Col %	18.3%
Yes	
Count	49
Col %	81.7%
LIVE HERE: JOB OPPORTUNITIES HERE	
No	
Count	16
Col %	26.7%
Yes	
Count	44
Col %	73.3%
LIVE HERE: EDUCATIONAL OPPORTUNITIES	
No	
Count	27
Col %	45.0%
Yes	
Count	33
Col %	55.0%
LIVE HERE: COST OF LIVING	
No	
Count	48
Col %	80.0%
Yes	
Count	12
Col %	20.0%
LIVE HERE: HOUSING AVAILABLE	
No	
Count	24
Col %	40.0%

(continued)

Table XXII-25. Significance of Place, Nuiqsut

	STUDY YEAR
	1993
Yes	
Count	36
Col %	60.0%
LIVE HERE: STORES	
No	
Count	44
Col %	73.3%
Yes	
Count	16
Col %	26.7%
LIVE HERE: MEDICAL SERVICES	
No	
Count	36
Col %	60.0%
Yes	
Count	24
Col %	40.0%
LIVE HERE: OTHER SERVICES	
No	
Count	29
Col %	48.3%
Yes	
Count	31
Col %	51.7%
LIVE HERE: BEAUTY OF AREA	
No	
Count	9
Col %	15.0%
Yes	
Count	51
Col %	85.0%
LIVE HERE: SIZE OF COMMUNITY	
No	
Count	11
Col %	18.3%

(continued)

Table XXII-25. Significance of Place, Nuiqsut

	STUDY YEAR
	1993
Yes	
Count	49
Col %	81.7%
LIVE HERE: LESS CRIME	
No	
Count	23
Col %	38.3%
Yes	
Count	37
Col %	61.7%
LIVE HERE: LESS DRINKING/DRUGS	
No	
Count	26
Col %	43.3%
Yes	
Count	34
Col %	56.7%
LIVE HERE: NECESSARY PERSONAL FREEDOMS	
No	
Count	10
Col %	16.7%
Yes	
Count	50
Col %	83.3%
LIVE HERE: RECREATIONAL OPPORTUNITIES	
No	
Count	18
Col %	30.0%
Yes	
Count	42
Col %	70.0%
OTHER REASONS FOR LIVING IN COMMUNITY	
Pace of Life	
Count	2
Col %	11.8%

(continued)

Table XXII-25. Significance of Place, Nuiqsut

	STUDY YEAR
	1993
Quality of Life	
Count	9
Col %	52.9%
Cultural Reasons	
Count	5
Col %	29.4%
Location	
Count	3
Col %	17.6%
This is where they established their home	
Count	1
Col %	5.9%
Income opportunities	
Count	1
Col %	5.9%
MAIN REASON REMAINING IN COMMUNITY	
No Response	
Count	2
Col %	3.3%
Do Not Know	
Count	3
Col %	5.0%
Born or reared here	
Count	2
Col %	3.3%
Relatives (family)	
Count	4
Col %	6.7%
Married a person born or reared here	
Count	1
Col %	1.7%
Family has always lived here	
Count	1
Col %	1.7%

(continued)

Table XXII-25. Significance of Place, Nuiqsut

	STUDY YEAR
	1993
Subsistence opportunities	
Count	17
Col %	28.3%
Employment reasons	
Count	7
Col %	11.7%
Housing/property	
Count	1
Col %	1.7%
Pace of Life	
Count	2
Col %	3.3%
Quality of Life	
Count	10
Col %	16.7%
Cultural Reasons	
Count	2
Col %	3.3%
Religious Reasons	
Count	1
Col %	1.7%
Location	
Count	1
Col %	1.7%
Opportunity to be involved and make a difference	
Count	2
Col %	3.3%
This is where they established their home	
Count	2
Col %	3.3%
Income opportunities	
Count	2
Col %	3.3%

(continued)

Table XXII-25. Significance of Place, Nuiqsut

	STUDY YEAR
	1993
10 YRS. AGO: CHANGE IN LIKING COMMUNITY	
Less	
Count	4
Col %	8.0%
Same	
Count	20
Col %	40.0%
More	
Count	26
Col %	52.0%
10 YRS. AGO: WHY CHANGE IN LIKING COMMUNITY	
No Response	
Count	5
Col %	16.7%
Non-specific	
Count	1
Col %	3.3%
More stressful	
Count	3
Col %	10.0%
Financial situation worse	
Count	1
Col %	3.3%
Lived here longer	
Count	2
Col %	6.7%
Increased appreciation of surroundings	
Count	6
Col %	20.0%
Improved community cohesiveness	
Count	5
Col %	16.7%
Increased development	
Count	5

(continued)

Table XXII-25. Significance of Place, Nuiqsut

	STUDY YEAR
	1993
Col %	16.7%
This is where they have established their home	
Count	2
Col %	6.7%
RATHER LIVE IN ANOTHER COMMUNITY	
No	
Count	40
Col %	66.7%
Yes	
Count	20
Col %	33.3%
EXPECT TO LIVE IN REGION WHEN OLD	
Do Not Know	
Count	3
Col %	5.0%
No	
Count	12
Col %	20.0%
Yes	
Count	45
Col %	75.0%
CONFIDENT ABOUT HUNT/FISH/GATHERING	
No Response	
Count	1
Col %	1.7%
Do Not Know	
Count	1
Col %	1.7%
No	
Count	28
Col %	46.7%
Yes	
Count	30
Col %	50.0%

(continued)

Table XXII-25. Significance of Place, Nuiqsut

	STUDY YEAR
	1993
WHY UNCONFIDENT ABOUT HUNTING/FISHING/GATHERING	
No Response	
Count	1
Col %	3.6%
Increased restrictions	
Count	2
Col %	7.1%
Uncertainty about the future	
Count	1
Col %	3.6%
Increased development	
Count	26
Col %	92.9%
Population pressure	
Count	1
Col %	3.6%
Vulnerable to environmental damage	
Count	5
Col %	17.9%
Miscellaneous reasons	
Count	7
Col %	25.0%
Reduced resource availability	
Count	1
Col %	3.6%
CONTINUE TO LIVE HERE IF NO WILD FOOD	
Do Not Know	
Count	3
Col %	5.0%
No	
Count	25
Col %	41.7%
Yes	
Count	32

(continued)

Table XXII-25. Significance of Place, Nuiqsut

	STUDY YEAR
	1993
Col %	53.3%

Table XXII-26. Effectiveness of Organizations, Nuiqsut

	STUDY YEAR
	1993
EFFECTIVENESS NEEDS: ADEC	
Do Not Know	
Count	3
Col %	5.0%
Not Effective	
Count	27
Col %	45.0%
Somewhat	
Count	17
Col %	28.3%
Effective	
Count	13
Col %	21.7%
EFFECTIVENESS NEEDS: ADF&G	
Do Not Know	
Count	9
Col %	15.0%
Not Effective	
Count	8
Col %	13.3%
Somewhat	
Count	17
Col %	28.3%
Effective	
Count	26
Col %	43.3%
EFFECTIVENESS NEEDS: FWS	
No Response	
Count	1
Col %	1.7%
Do Not Know	
Count	32
Col %	54.2%
Not Effective	
Count	7

(continued)

Table XXII-26. Effectiveness of Organizations, Nuiqsut

	STUDY YEAR
	1993
Col %	11.9%
Somewhat	
Count	9
Col %	15.3%
Effective	
Count	10
Col %	16.9%
EFFECTIVENESS NEEDS: BOROUGH GOVERNMENT	
Not Effective	
Count	2
Col %	3.3%
Somewhat	
Count	14
Col %	23.3%
Effective	
Count	44
Col %	73.3%
EFFECTIVENESS NEEDS: CITY COUNCIL	
Not Effective	
Count	10
Col %	16.9%
Somewhat	
Count	23
Col %	39.0%
Effective	
Count	26
Col %	44.1%
EFFECTIVENESS NEEDS: COMMUNITY BUSINESSES	
Do Not Know	
Count	3
Col %	5.1%
Not Effective	
Count	11
Col %	18.6%

(continued)

Table XXII-26. Effectiveness of Organizations, Nuiqsut

	STUDY YEAR
	1993
Somewhat	
Count	16
Col %	27.1%
Effective	
Count	29
Col %	49.2%
EFFECTIVENESS NEEDS: HEALTH SERVICES	
Not Effective	
Count	1
Col %	1.7%
Somewhat	
Count	15
Col %	25.4%
Effective	
Count	43
Col %	72.9%
EFFECTIVENESS NEEDS: LOCAL LAW ENFORCEMENT	
Do Not Know	
Count	1
Col %	1.7%
Not Effective	
Count	15
Col %	25.4%
Somewhat	
Count	24
Col %	40.7%
Effective	
Count	19
Col %	32.2%
EFFECTIVENESS NEEDS: REGIONAL NATIVE PROFIT ORGAN.	
Do Not Know	
Count	5
Col %	8.5%

(continued)

Table XXII-26. Effectiveness of Organizations, Nuiqsut

	STUDY YEAR
	1993
Not Effective	
Count	3
Col %	5.1%
Somewhat	
Count	16
Col %	27.1%
Effective	
Count	35
Col %	59.3%
EFFECTIVENESS NEEDS: REGIONAL NATIVE NON-PROFIT ORGAN.	
Do Not Know	
Count	24
Col %	40.7%
Not Effective	
Count	9
Col %	15.3%
Somewhat	
Count	12
Col %	20.3%
Effective	
Count	14
Col %	23.7%
EFFECTIVENESS NEEDS: VILLAGE CORPORATIONS	
Do Not Know	
Count	1
Col %	1.7%
Not Effective	
Count	8
Col %	13.6%
Somewhat	
Count	22
Col %	37.3%
Effective	

(continued)

Table XXII-26. Effectiveness of Organizations, Nuiqsut

	STUDY YEAR
	1993
Count	28
Col %	47.5%

Table XXII-27. OCS Development Effects, Nuiqsut

	STUDY YEAR
	1993
OCS EFFECT: FISH	
Do Not Know	
Count	3
Col %	5.0%
Decrease	
Count	48
Col %	80.0%
No Change	
Count	7
Col %	11.7%
Increase	
Count	2
Col %	3.3%
OCS EFFECT: MARINE MAMMALS	
Do Not Know	
Count	2
Col %	3.3%
Decrease	
Count	52
Col %	86.7%
No Change	
Count	6
Col %	10.0%
OCS EFFECT: LAND MAMMALS	
Do Not Know	
Count	3
Col %	5.0%
Decrease	
Count	26
Col %	43.3%
No Change	
Count	31
Col %	51.7%
OCS EFFECT: BIRDS	
Do Not Know	

(continued)

Table XXII-27. OCS Development Effects, Nuiqsut

	STUDY YEAR
	1993
Count	5
Col %	8.3%
Decrease	
Count	33
Col %	55.0%
No Change	
Count	21
Col %	35.0%
Increase	
Count	1
Col %	1.7%
OCS DEVELOPMENT = MORE JOBS?	
Do Not Know	
Count	5
Col %	8.3%
No	
Count	26
Col %	43.3%
Yes	
Count	29
Col %	48.3%
CONTAIN AND CLEANUP SMALL OIL SPILL	
Do Not Know	
Count	2
Col %	3.3%
No	
Count	36
Col %	60.0%
Maybe	
Count	22
Col %	36.7%
CONTAIN AND CLEANUP LARGE OIL SPILL	
Do Not Know	
Count	5
Col %	8.3%

(continued)

Table XXII-27. OCS Development Effects, Nuiqsut

	STUDY YEAR
	1993
No	
Count	48
Col %	80.0%
Maybe	
Count	7
Col %	11.7%
ARE YOU IN FAVOR OF THE SEARCH FOR OIL?	
Do Not Know	
Count	3
Col %	5.0%
No	
Count	40
Col %	66.7%
Yes	
Count	17
Col %	28.3%
OPINION ON SEARCH FOR OIL	
No Response	
Count	2
Col %	3.3%
Do Not Know	
Count	4
Col %	6.7%
Reduce dependency on foreign oil/enhance national security	
Count	1
Col %	1.7%
Create more jobs in the community	
Count	2
Col %	3.3%
We can live in balance with the environment	
Count	1
Col %	1.7%
Increase state revenues	

(continued)

Table XXII-27. OCS Development Effects, Nuiqsut

	STUDY YEAR
	1993
Count	1
Col %	1.7%
Energy needed	
Count	3
Col %	5.0%
Generalized: good for everyone	
Count	2
Col %	3.3%
Beneficial to the economy	
Count	5
Col %	8.3%
Conditional upon technological advancement	
Count	1
Col %	1.7%
Enough technology to do it right	
Count	1
Col %	1.7%
Adverse experiences with other development	
Count	1
Col %	1.7%
Pollution concerns and impacts	
Count	8
Col %	13.3%
Adverse impact of security zones and traffic zones	
Count	2
Col %	3.3%
In favor of on-shore development instead of off-shore	
Count	4
Col %	6.7%
Should explore alternative energy sources, conservation	

(continued)

Table XXII-27. OCS Development Effects, Nuiqsut

	STUDY YEAR
	1993
Count	1
Col %	1.7%
Adverse impact on subsistence and commercial fishing	
Count	25
Col %	41.7%
Biological (non-pollution) - migration patterns	
Count	12
Col %	20.0%
Potential damage to renewable resources	
Count	2
Col %	3.3%
Against any development	
Count	1
Col %	1.7%
Disastrous - multi-faceted	
Count	1
Col %	1.7%
Adverse impact on Native traditions	
Count	1
Col %	1.7%
Technology needs improvement	
Count	1
Col %	1.7%
Conditional: in favor if done carefully	
Count	6
Col %	10.0%
ARE YOU IN FAVOR OF THE DEVELOPMENT AND PRODUCTION OF OIL?	
Do Not Know	
Count	4
Col %	6.7%
No	
Count	41

(continued)

Table XXII-27. OCS Development Effects, Nuiqsut

	STUDY YEAR
	1993
Col %	68.3%
Yes	
Count	15
Col %	25.0%
OPINION ON DEVELOPMENT AND PRODUCTION	
No Response	
Count	1
Col %	1.7%
Do Not Know	
Count	3
Col %	5.0%
Reduce dependency on foreign oil/enhance national security	
Count	1
Col %	1.7%
Create more jobs in the community	
Count	1
Col %	1.7%
We can live in balance with the environment	
Count	1
Col %	1.7%
Increase state revenues	
Count	1
Col %	1.7%
Energy needed	
Count	3
Col %	5.0%
Generalized: good for everyone	
Count	1
Col %	1.7%
Beneficial to the economy	
Count	5
Col %	8.3%

(continued)

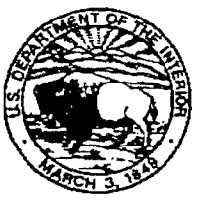
Table XXII-27. OCS Development Effects, Nuiqsut

	STUDY YEAR
	1993
Conditional upon technological advancement	
Count	1
Col %	1.7%
Enough technology to do it right	
Count	1
Col %	1.7%
Adverse experiences with other development	
Count	1
Col %	1.7%
Pollution concerns and impacts	
Count	11
Col %	18.3%
Aesthetic reasons	
Count	1
Col %	1.7%
Adverse impact of security zones and traffic zones	
Count	2
Col %	3.3%
In favor of on-shore development instead of off-shore	
Count	1
Col %	1.7%
Should explore alternative energy sources, conservation	
Count	1
Col %	1.7%
Adverse impact on subsistence and commercial fishing	
Count	31
Col %	51.7%
Biological (non-pollution) - migration patterns	
Count	13

(continued)

Table XXII-27. OCS Development Effects, Nuiqsut

	STUDY YEAR
	1993
Col %	21.7%
Potential damage to renewable resources	
Count	2
Col %	3.3%
Against any development	
Count	1
Col %	1.7%
No benefit to local economy	
Count	1
Col %	1.7%
Disastrous - multi-faceted	
Count	3
Col %	5.0%
Adverse impact on Native traditions	
Count	3
Col %	5.0%
Technology needs improvement	
Count	1
Col %	1.7%
Against population increases	
Count	1
Col %	1.7%
Conditional: in favor if done carefully	
Count	6
Col %	10.0%



The Department of the Interior Mission

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places;
and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

The Minerals Management Service Mission

As a bureau of the Department of the Interior, the Minerals Management Service's (MMS) primary responsibilities are to manage the mineral resources located on the Nation's Outer Continental Shelf (OCS), collect revenue from the Federal OCS and onshore Federal and Indian lands, and distribute those revenues.

Moreover, in working to meet its responsibilities, the Offshore Minerals Management Program administers the OCS competitive leasing program and oversees the safe and environmentally sound exploration and production of our Nation's offshore natural gas, oil and other mineral resources. The MMS **Royalty Management Program** meets its responsibilities by ensuring the efficient, timely and accurate collection and disbursement of revenue from mineral leasing and production due to Indian tribes and allottees, States and the U.S. Treasury.

The MMS strives to fulfill its responsibilities through the general guiding principles of: (1) being responsive to the public's concerns and interests by maintaining a dialogue with all potentially affected parties and (2) carrying out its programs with an emphasis on working to enhance the quality of life for all Americans by lending MMS assistance and expertise to economic development and environmental protection.