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Kaktovik 2000-2002 Subsistence Fishery Harvest Assessment

Final Report for FIS Study 01-101

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ABSTRACT

This two-year domestic fishery harvest study in Kaktovik, Alaska, a small arctic non-road connected Inupiat community, was undertaken in response to local and government concerns regarding lack of current resource management information available to manage a small but economically and culturally important fishery. Records of annual community fish catches for Kaktovik are scarce, but those available show that community fishers produce significant annual catches of *Dolly Varden (Salvelinus malma) and Arctic cisco (Coregonus autumnalis)* and to a lesser degree Arctic grayling, Lake trout, salmon and Arctic cod.

A community-based, household interview study from October 2000 through September 2002 produced seasonal ("Winter" and "Summer") and annual community, household and per capita harvest estimates for all reported fish species, as well information on community fishing effort and sharing of harvested fish between households. Information on catches of marine *Dolly Varden* was of special interest to agencies, and whenever possible those catches are identified in this report.

In 2000-2001 the estimated community fish harvest was 5,970 lbs, comprised of Dolly Varden (82%), Arctic cisco (16%) and lake trout (2%). The estimated community per capita harvest was 27.2 lbs and mean household harvest 74.6 lbs. Eight individual harvest locations were reported for the harvest period, with two reported locations (inland) being used during "Winter" and four coastal locations reported for the "Summer" season.

The 2001-2002 estimated community fish harvest was an estimated 9,418.3 lbs comprising Dolly Varden (79%), Arctic cisco (17%) and lake trout (4%). Per capita harvest for the 12-month period was estimated at 42.9 lbs and the estimated mean household harvest was 117.7 lbs. Eleven individual harvest locations were reported used in the study period with five being reported for the "Winter" 2001-2002 and six for the "Summer" 2002.

"Summer" was the most productive season for Dolly Varden harvests in both study years with estimated community harvests of 4,847.4 lbs in 2000-2001 and 6,906.7 lbs in 2001-2002. Inland "Winter" harvest estimates of Dolly Varden were very low in comparison, 22.4 lbs and 511 lbs respectively.

Harvest sites on Barter Island and in the lagoon system immediately east of Barter Island were the most productive "Summer" sites. Of the two recorded inland "Winter" Dolly Varden harvest sites in the study period, the 1st Fish Hole located in the lower reaches of the Hulahula River, was the most productive.

The majority of Dolly Varden reported harvested in the "Summer" fishery were caught in beach-set nets whereas all reported "Winter" harvests of Dolly Varden were taken by jigging through holes drilled in river ice.

One to three households in Kaktovik reported undertaking “Winter” fishing in the study period whereas in “Summer” up to 47 households reported successful fish harvests at Barter Island and adjacent coastal lagoon system fishing sites.

Use and sharing of locally harvested fish was common among community households in the study period. For instance, though only 16 percent of households harvested fish in “Winter” 2001-2002, an estimated 69 percent of community households used fish from that harvest, and in “Summer” 2002 an estimated 79 percent of community households harvested fish with 83 percent using locally harvested fish.

Though estimated community fish harvests in the study period were comparatively low, they were still within the range observed in previous studies. Inclement winter and summer weather in the two study years, reducing fishing opportunity, especially in Study Year 1, rather than low fish abundance was reported as the main reason for the comparatively low fish harvest observed in this study.

This study has confirmed that fish, and in particular Dolly Varden, continue to play a significant role in the annual subsistence economy in Kaktovik and that fishing as a traditional seasonal round of activity among Kaktovik households remains intact.

Local participation in and contribution to this study demonstrates that local capacity exists to effectively participate in resource monitoring and the documentation of local knowledge, both of which are key areas in shaping effective resource management and planning.

Vulnerability of the community fishery to disturbance, global warming and more conservative regulation due to limited information on the stocks being harvested are expressed local concerns. In addition, limited availability of temporal, quantitative and descriptive (TEK) subsistence harvest information in the face of increased government effort to encourage energy resource exploration within the community’s subsistence use area, also are voiced as community concerns.

In light of environmental uncertainties, community concerns, and potentially increasing industrial activity within the community subsistence use area, it is recommended that efforts be made to implement a longitudinal community subsistence fishery harvest assessment project, to update local ethnographic (descriptive) information on the fishery, and to significantly improve area fish stock management information. Ideally recommended projects would build on local project participation capacity developed in the course of this study and thus allow for increased local participation in local fish studies, stock management and planning efforts.

Key Words: Kaktovik, Arctic National Wildlife Refuge, harvest monitoring, harvest assessment, subsistence fishery, local knowledge, capacity building, Arctic grayling (*Thymallus arcticus*), sulupaugaq, Dolly Varden, (*Salvelinus malma*), iqaluqpik, lake trout (*Salvelinus namaycush*), iqaluaqpak, Arctic cisco (*Coregonus autumnalis*), qaaktaq, and DNA sampling.

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INTRODUCTION

This study was designed in response to local issues and information needs identified by Arctic/Kotzebue/Norton Sound Regional Subsistence Advisory Councils during February 2000 (U.S. Fish and Wildlife Service 2000: 4-5; Stock Status and Trends, and Subsistence Harvest Monitoring). The need for updated community subsistence fishery harvest assessment information, with emphasis on Dolly Varden ("char"), first came up at a North Slope Borough Fish and Game Management Committee (NSBF&GMC) meeting in December 2000 meeting at Barrow, Alaska. The committee endorsed the idea, as did the North Slope Regional Advisory Council (NSRAC) at its January 2001 meeting in Barrow. NSBF&GMC and NSRAC support for this work focused on the need for updated baseline information useful in resource management and planning on refuge lands. Following project approval by the Federal Subsistence Board, the USFWS, Office of Subsistence Management, provided a total of $134,000.00 for this project to ADF&G ($71,125.00) and the Kaktovik Inupiat Corporation ($61,875.00).

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.1). The island lies close to the mainland, separated from the coastal plain of the Arctic National Wildlife Refuge (ANWR) by a narrow channel connecting Arey Lagoon on the island's west side with Kaktovik Lagoon on its east side. The community is not road connected, accessible by marine barges for a limited time in summer, and depends mainly on year-round air service for delivery of goods and services.

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 pre-contact 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 Chance 1990, Jacobson and Wentworth 1982, Libbey 1981, Nielson 1977, and North Slope Borough 1977). 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. The 2000 Census placed the community population at 293 with 85.3 percent Alaska Native (US Bureau of the Census 2000). The economy in Kaktovik is best characterized as mixed cash-subsistence with recently documented per capita subsistence harvests ranking among the highest in Alaska (Scott et al. 2000), suggesting a continuing dependence on the surrounding land and ocean for sustenance.

Fish are an important resource in the subsistence economy of the Arctic Region, and North Slope Borough (NSB) communities are no exception (Chance 1966 and 1990; Craig 1987; Patterson 1974; Scott et al. 2000; Stoker 1983). In Kaktovik, *Dolly Varden* (*Salvelinus malma*), locally

referred to as *iqalukpik and "char"*, and *Arctic cisco* (*Coregonus autumnalis*), locally referred to as *qaaktaq*, typically provide the largest component of the annual subsistence fish harvest, although twenty species of fish have been reported as harvested over time (Fall and Utermohle 1995; Griffiths et al. 1977; Jacobsen and Wentworth 1982; Pedersen 1985, 1986, 1987, 1990) (Table 1). According to a 1993 community harvest survey, these two species contributed over 21,000 pounds, or close to 95 percent, of the annual fish catch (Table 2) (Fall and Utermohle 1995).

The earliest formal fish harvest assessments from Kaktovik place the total annual subsistence fish catch as averaging approximately 7,000 pounds for the period 1962-1982 (Stoker 1983). Based on three systematic community harvest surveys conducted in the late 1980's, the Division of Subsistence estimated Kaktovik's total annual subsistence fish harvest to be about 10,600 pounds (Pedersen 1990). In the 1990's, two systematic surveys placed the annual estimated subsistence fish harvest at about 23,000 pounds per year, with *Dolly Varden* and *Arctic cisco* comprising 67 and 24 percent, respectively, of the overall harvest (Brower and Opie 2000; Fall and Utermohle 1995). Grayling, lake trout, salmon and arctic cod also contribute to the annual community fish harvest (Jacobsen and Wentworth 1982; Pedersen 1990); in 1993 these three species contributed about 2000 pounds, or 9 percent, to the total estimated community fish harvest (Fall and Utermohle 1995; Scott et al. 2000).

Kaktovik residents confirm systematic household survey findings that *Dolly Varden (*char) is one of the most significant fish species caught, shared and used locally (Jacobsen and Wentworth 1982; Pedersen 1990). Two recent studies estimated that between 92 to 96 percent of the households in Kaktovik used locally harvested char (Fall and Utermohle 1995; Pedersen 1990). The majority of these fish are anadromous *Dolly Varden* (char) harvested in mixed stock fisheries within and outside of Federal conservation units on the North Slope (Craig 1987; Fall and Utermohle 1995; Pedersen 1990). These stocks migrate to and from federal conservation units for spawning and over-wintering.

Kaktovik subsistence fishing takes place within a large coastal and inland area (Brower and Opie 2000; North Slope Borough 1977; Pedersen 1979, 1990; Pedersen et al.1985) (Figure 2). Documentation of fishing sites used by Kaktovik residents indicates that substantial coastal/marine and inland riverine/lakustrine areas are actively fished each year (Brower and Opie 2000; Pedersen 1990). Major coastal summer fishing sites are located within the coastal lagoon system immediately east and west of Kaktovik, with winter river fishing concentrated on the Hulahula and Sadlerochit Rivers, and winter lake fishing focused on Peters and Schrader Lakes (Fall and Utermohle 1995; Jacobsen and Wentworth 1982; Pedersen et al.1985; Pedersen 1990) (Figure 3).

Kaktovik residents have consistently voiced their concern over maintaining a sustainable *Dolly Varden* (char) population for local, domestic, use in the face of changing environmental conditions and nearby industrialization. Secondly, as was noted in the subsistence fisheries, determining the importance of char subsistence harvests for different villages is needed (U.S. Fish and Wildlife Service 2000). Due to the local importance of these stocks and absence of current stock assessment or harvest information for these stocks, this harvest assessment project was undertaken.

OBJECTIVES

The following six objectives provided the framework for this study:

1.) Review and summarize available information on the Kaktovik subsistence fishery, with emphasis on data concerning the harvest of *Dolly Varden (*char).
2.) Estimate total annual subsistence harvest by Kaktovik residents of all fish species, including *Dolly Varden* (char) in each study year.
3.) Compile information on fishing effort, gear types, harvest sites and participation rates in each study year with a specific focus on the marine harvest *of Dolly Varden (*char).
4.) Collect descriptive information on historical abundance and distribution *of Dolly Varden* (char) in the Kaktovik area.
5.) Collect an annual sample of about 200 *Dolly Varden (*char) fin clips from the coastal Kaktovik subsistence harvest for genetic analysis, estimation of stock composition of harvest, investigation of seasonal movement patterns and stock origins of the subsistence harvested *Dolly Varden* (char).
6.) Develop study and research participation capacity in Kaktovik. Training of one or more community staff to systematically collect household and key informant information, review results of data collection, assist in data analysis and reporting of study findings, and facilitate community review of the draft report.

METHODS

A. Harvest Assessment

Community subsistence fish harvest data for Study Years 1 and 2 (October 2000 through September 2001, and October 2001 through September 2002) were collected through four separate systematic seasonal household surveys (”Winter” 2000-2001, “Summer” 2001, “Winter” 2001-2002, and “Summer” 2002; “Winter” surveys covered the period October through June, and “Summer” surveys covered the period July through September). In the survey conducted from October 2000 through June 2001 a census approach was used; all households in the community, at the time of the survey and resident for the study period, were contacted. The original goal was to complete all four surveys using this approach. However, because of a late start of this project the “Winter” 2000-2001 household survey was completed just as “Summer” 2001 surveys were to begin the decision was made to employ a stratified sample for the “Summer” survey effort in order to reduce household survey burden in Study Year 1. In Study Year 2 random sampling of households resident in the study period was the sampling method used to obtain community subsistence fish harvest data. In terms of final community harvest

estimates, the data collection methods used in this study each produce results that are fully comparable.

Household survey information was based on retrospective recall for a period of up to eight months. The two annual survey periods used in each study year were devised based on community representative recommendations on the logic that we would obtain better information if we contacted fishers after the end of each local fishery "season." Winter was locally defined as generally beginning in October and lasting well into June – a period when snowmobiles were the principal mode of transportation. "Summer" was then basically the snow-free season (late June through September) when boat and wheeled types of transportation predominated. The survey instrument used in this study is found in Appendix 1.

This study was conducted in accordance with the Division of Subsistence policy on research ethics. A local resident, Mr. Alfred Linn, Jr., was identified and hired by the Kaktovik Inupiat Corporation (KIC) to participate in the project as the local research assistant. Mr. Linn was trained by division staff to administer and carry out the four systematic household survey efforts, key informant interviews and the collection of fin-clip samples. Households contacted in the course of the project survey efforts were provided information about the voluntary and confidential nature of their participation. In addition, households were given contact information for people involved in the study in the event that they wanted additional project information.

a. Survey Approach

An updated community household listing drawn from local sources was prepared in late Spring 2001. For each subsequent survey the previously used community household listing was reviewed and updated as needed by the local research assistant prior to each household survey effort.

At the time this study began there were less than 100 households in Kaktovik. Based on study objectives it was determined that a census approach (i.e. contacting all households) would be used to obtain community fish harvest information. However because of timing and financial constraints which developed in the course of the project, both stratified and random sampling of community households were employed in this project. The standard for including a community household in any survey approach was as follows: any community household present at the time of a survey effort, and who had been resident during the respective survey period, would be an eligible census or survey participant.

b. Pre-Fieldwork Training Sessions

Pre-fieldwork training sessions with Mr.Linn, the local research assistant, were conducted in June 2001 in preparation for the "Winter" 2000/2001 and immediately prior to each subsequent

seasonal survey effort. The initial training session focused on the census approach, and follow-up sessions were held to review stratified and random sampling.

Training sessions accomplished the following:

1. Provide the local research assistant with information on previous fishery research in the community; only reviewed during the first session.
2. Review of procedures and goals for each survey session.
3. Improved the local research assistants' understanding of basic survey administration and record keeping.
4. Afforded realistic practice in contacting households and conducting successful household interviews.

After the comprehensive training session for the first survey effort ("Winter 2000-2001) there was a brief training session before each subsequent survey. The brief training sessions built on the first and extended training into practical experience in recording general observations of community fishing activity during each survey period.

Mr. Linn was supplied with a training and support packet which included: a training manual to guide the local research assistant in survey administration and other project record keeping, a fish identification guide, and specific information regarding survey administration and implementation to be provided to participating households to support the informed consent process and ensure that the households understood that their responses would remain confidential.

c. Data Collection Phase

Data were collected from four time periods. Harvest and use data for the period October 2000 through June 2001 (referred to as "Winter " 2000-2001) were collected in August and September 2001, in locally conducted, face-to-face interviews between the local research assistant and a knowledgeable household representative. Using the same approach, data for "Summer" 2001 (July through September 2001) were collected during October 2001, "Winter" 2001-2002 were obtained in June and July 2002, and "Summer " 2002 harvest surveys were conducted in late September and through October 2002. Division of Subsistence staff in Fairbanks and KIC staff carefully monitored the local research assistant to help answer questions or provide additional information and clarification on survey implementation.

Subsistence harvest data collected based on face-to-face household surveys have consistently resulted in harvest estimates that far better characterize rural community harvest levels than those derived from more formal instruments (i.e. harvest tickets). Furthermore, harvest surveys administered by local research assistants are thought to make community residents more comfortable with the interviewer, and therefore generate better information and can lead to higher levels of participation.

B. Collection of Natural History Information (TEK)

Associated with obtaining quantitative measures of community subsistence fish harvests in Kaktovik, a modest effort was undertaken to obtain highly focused local natural history information, or Traditional Ecological Knowledge (TEK), about Dolly Varden in the Barter Island area. A one-page interview guide was developed with the assistance of KIC staff and the local research assistant received hands-on training in this information collection method from the Principal Investigator (Appendix 2).

Interviews with key informants in Kaktovik were carried out by the research assistant in late winter 2001-2002 but were not continued into Study Year 2 due to lack of funding from KIC to complete this objective. Individuals considered as particularly knowledgeable about fish species in the Beaufort Sea, as well as local rivers and lakes inland from Kaktovik, were identified with the assistance of city and KIC personnel. Key informant interviews were taped and transcribed by Mr. Linn. KIC retained all original tapes as part of their project archive.

All key informant interviews were semi-structured in format, meaning that the interviewer only outlined general areas of inquiry and considerable flexibility was given to the respondent in providing answers. Interviews were carried out in a quiet office area provided by KIC and tape recorded using a small non-invasive audio cassette recorder, and supplemented with interview notes. During interviews, maps, and in some cases pictures were used as prompts. Interview tapes were dated and marked with the key informant's name. Individual interviews were transcribed and the respondent was given a copy to review to provide additional information or comments.

Interviews sought respondent insights into the following general areas: natural history information including habitat preferences, spawning and rearing areas, seasonal movements of fish; timing of harvest, gear used; and relative abundance and population trends. Emphasis of the natural history information focused on Dolly Varden.

C. Biological Sampling

Fin-clipping (taking a small portion of the dorsal fin) of a sample of "Winter" and "Summer" subsistence harvested Dolly Varden for stock (DNA) assessment, was an important part of this project. The local research assistant, Mr. Linn, received general and practical training in field identification of Dolly Varden, the method of taking a fin-clip sample, sample treatment and care, and record-keeping from project staff. The approach and procedures for this work were documented in a field manual kept by the research assistant. Sample vials, fish measuring and sampling equipment and record-keeping forms for the 2000-2001 and 2001-2002 study years were provided.

Throughout the project community fishers were notified (by CB radio and through notices placed at the post office, store and in the City Office) that the local research assistant was seeking samples from Dolly Varden. To encourage participation fishers were offered token compensation by KIC for each sample obtained by the local research assistant. A maximum number of 50 samples from each of three designated summer harvest locations (east of Barter Island, Barter Island area, west of Barter Island), and all winter locations were set as a sampling goal for each of the two study years.

Each fin-clip sample obtained from a locally harvested Dolly Varden was placed in a sequentially numbered vial, recorded on a sample sheet where date and location of harvest, and a fork length (in mm.) of the fish was recorded. Each sample vial was placed in a specially designed plastic box capable of holding up to fifty samples.

As sampling progressed, record sheets and sample vials were provided to the PI from-time-to-time. After review by the PI, sample boxes and associated documentation were turned over to Fairbanks ADF&G-Sport Fish biologist, Mr. Tim Viavant, and sent out for analysis by the USFWS' Fisheries Genetics Laboratory.

D. Capacity Building

Training a local resident to effectively and substantially contribute to this study through hands-on activity was the central capacity building goal of this project as outlined in Project Objective #6. The selected community research assistant received training to prepare for, carry out, and document household fishery harvest assessment surveys in the community with little direct oversight. The research assistant was also trained to obtain and organize key respondent natural history (TEK) information on the local subsistence fishery and received practical experience in taking and systematically recording DNA (genetic) samples (fin clips), determining and recording the sex of fish, as well as taking and recording physical measurements (length and weight) of locally harvested Dolly Varden. In addition, the project was designed to provide the local research assistant with a wide experience in community-based research projects ranging from systematic household interviews, key informant interviews, biological sampling and participating in discussions of project findings and review of draft project reports.

Community capacity to undertake and monitor local resource-related projects was enhanced through engaging staff from KIC and the local Tribal Office in review and development of the project's harvest survey instrument, in monitoring survey progress and performance, assisting in the design and implementation of biological sampling of subsistence harvested Dolly Varden, and in monitoring project research assistant performance through regular project reporting to the KIC board. Consultation with staff from KIC, the City of Kaktovik and local Tribal officials during project report preparation and inviting their staff to review the report draft also served to support local capacity-building.

RESULTS

A. Harvest Assessment

Four discreet periods of subsistence fishery harvest assessment ("Winter" 2000-2001, "Summer" 2001, "Winter" 2001-2002, and "Summer" 2002) representing two 12-month study years (October through September) were completed in Kaktovik. All household surveys from each survey period underwent careful review, data entry and processing. Entry of completed household interview forms, and statistical analyses of entered data from each of the four survey periods was carried out by division Information Management staff.

Household sampling and participation rates for each of the four survey periods are summarized in Table 3.

The "Winter" 2000-2001 survey was carried out as a census with all community households (100%; N=77) participating. Prior to start-up of the "Summer" 2001 survey KIC's fiscal officer noted that staffing costs were exceeding what was projected, and cost controls were instituted. As a result, the second survey was designed as a stratified sample, with two strata (known fishing households = 30, and random (known little or no fishing) households = 47). Emphasis was placed on sampling harvesting households, with 22 of 30 (73%) randomly selected, and the known low/non-harvesting household stratum was sampled lightly with 6 of 47 (13%) households randomly selected.

In Study Year 2, KIC continued to economize on project participation. To ensure continued collection of representative data on the community subsistence fishery, KIC carried out face-to-face random sample household surveys with 32 of 80 (40%) of community households for the "Winter" 2001-2002 survey. For the "Summer" 2002 harvest assessment KIC settled on a mail-out household survey (random sample) to obtain community information. In all 24 of 80 (30%) households responded to the "Summer" survey.

In each seasonal survey effort there were always households either out of town, not available for a variety of other reasons (working, never home, etc.) or refusing to participate while surveys were taken. When carrying out sample-based surveys, randomly selected households not available to interview were substituted with pre-selected alternatives to maintain community sample goals.

Estimated community harvests by survey period were derived by statistical extrapolation from the known, random, household sample to all community households. Estimated edible weight, not live fish weight, was used to derive harvest estimates by species. North Slope resource studies established average edible weights for fish documented in this study as follows: Dolly Varden 2.8 lbs, Arctic cisco 0.70 lbs, Arctic grayling 0.90 lbs and lake trout 4.0 lbs (Scott et al. 1992: Table 1).

Fishing sites reported used for each study year and their season of use (Table 4) were identified according to existing site numbering in the Kaktovik area (Figure 4).

a. Study Year 1 (October 2000 – September 2001)

Two distinct (and named) community fishing sites (65 and 73) were reported for the "Winter" 2000-2001 subsistence fishery, and five (91, 94, 98, 113, and 200) were reported for the "Summer" 2001 fishery (Tables 4 and 5). Reported harvest locations for Study Year 1 are presented in Figures 5, 6 and 7.

Fish harvests in Kaktovik during Study Year 1 (October 2000 through September 2001) comprised three species (Dolly Varden, lake trout, and Arctic cisco). The "Winter" 2000-2001 estimated harvest comprised two species: Dolly Varden (22.4 lbs) and lake trout (148.0 lbs), for a total estimated fish harvest of 170.4 lbs or 0.7 lbs per capita (Table 7). Two species were reported in "Summer" 2001 subsistence fishing households, where Dolly Varden provided the greatest estimated edible harvest contribution (3,684.6 lbs) and whitefish (Arctic cisco) providing an estimated catch of 952.6 lbs (Tables 8 and 9).

The estimated total "Summer" fish harvest was 4,637.2 lbs and the estimated per capita "Summer" harvest of fish was 46.0 lbs for known fishing households in 2000-2001 (Table 8). For randomly selected households in the survey period the estimated "Summer" harvest was 1,162.5 lbs, comprised solely of Dolly Varden, and the estimated per capita edible harvest was 8.2 lbs (Table 9).

Combining results of the two surveys provides an annual (October 2000 through September 2001) estimated community edible fish harvest of 5,970.0 lbs, or 27.2 lbs of fish per capita. Dolly Varden was the most commonly harvested fish species, comprising 82 percent of the estimated harvest (22.2 lbs per capita). Arctic cisco and lake trout comprised 16 and 2 percent of the estimated harvest and contributed 4.3 and 0.7 lbs per capita, respectively (Table 10).

In Study Year 1 fish were harvested in all but five months (December to March, and May), with Dolly Varden harvests occurring in six of seven months fished, Arctic cisco in four months and lake trout in two months (Tables 5, 14, 16 and 18).

Only one "Winter" Dolly Varden harvest site was reported in Study Year 1, 1st Fish Hole (Site Id #65), where a single household reported an estimated 14.0 lbs was landed in October by means of jigging through holes drilled in the river ice (Tables 5, 16 and 18).

Households fishing in the "Winter" 2000-2001 accessed sites solely by snow machine.

"Summer" 2001 harvests of Dolly Varden were recorded for six sites (of which three were located on Barter Island), with the most productive being Kaktovik (Barter Island) and in descending order Griffin Point, Arey Island and Bernard Spit; all high harvest locations identified in previous studies, located in the lagoon system west and east of the community (Table 5 and Figures 4 and 6). The majority of Dolly Varden harvested at these sites were caught

in beach-set nets (30’ to 60’ long, 6’ deep and with mesh sizes from 2.5’ to 3.5’), and a small number taken through hook and line from beaches around Barter Island.

Access to “Summer” 2001 Dolly Varden harvest sites was reported to include by boat, ATV, pickup truck and on foot. The most commonly reported access method to summer fishing sites was by boat.

The reported number of households active in the “Winter” Dolly Varden fishery in 2000-2001 was one, whereas an estimated 43 households participated in the “Summer” fishery, specifically in July of 2001 (the month of most household fishing effort in Study Year 1; Tables 14 and 18).

Tables 7, 8, and 9 provide an insight into how harvested fish were shared among Kaktovik households in Study Year 1. It is notable that even the small “Winter” fish harvest was shared with an estimated 27% of Kaktovik households and “used” by 31% of households

All “Summer” 2001 fishing households (100%) in Kaktovik reported using fish that season and an estimated 96% shared their harvest with another household (Table 8). For randomly selected “Summer” 2001 community households (those not known with certainty to have fished that season) an estimated 50% of households harvested fish and an estimated 67% of households reported receiving fish from other households. An estimated 83% of random selected community households used fish harvested that season (Table 9).

b. Study Year 2 (October 2001-September 2002)

Five distinct (and named) community fishing sites (65, 73, 81, 84, and 200) were reported for the “Winter” 2001-2002 subsistence fishery, and six (61, 94, 98, 110, 113 and 200) were reported for the“Summer” 2002 fishery (Figures 8 and 9; Tables 4 and 6). All fish harvest sites reported used in Study Year 2 are presented in Figure 10. Figure 11 summarizes all harvest sites reported in both study years.

Fish harvests in Study Year 2 comprised three species (Dolly Varden, lake trout, and Arctic cisco). The “Winter” 2001-2002 estimated harvest comprised two species: Dolly Varden (511.0 lbs) and lake trout (800.0 lbs), for a total estimated community fish harvest of 1311.0 lbs or 5.3lbs per capita (Table 11). Two species were reported in the “Summer” 2002 subsistence fishery, with Dolly Varden providing the greatest estimated edible harvest contribution (6,906.7 lbs) and whitefish (Arctic cisco) providing an estimated catch of 1,530.7 lbs. The estimated community harvest total for the “Summer” fishery was 8,437.3 lbs, or 38.9 lbs per capita (Table 12).

The annual (October 2001 through September 2002) estimated community edible fish harvest in Study Year 2 was 9,418.3 lbs, or 42.9 lbs of fish per capita in Kaktovik. Dolly Varden was the most commonly harvested fish species, comprising 79 percent of the estimated harvest (33.9 lbs per capita). Arctic cisco comprised 17 percent (7.3 lbs per capita) and lake trout an estimated 4 percent (1.6 lbs per capita) of the estimated annual community fish harvest (Table 13).

In Study Year 2 fish were harvested in all but four months (January through April) with Dolly Varden harvests occurring in seven of eight months fished (November 2001 was the only month recorded in which no Dolly Varden were reported harvested)(Table 6). Arctic cisco harvests were reported in three months (July, August and September), and lake trout harvests were noted in November 2001 and May 2002 (Tables 6 and 17).

In the "Winter" of 2002 fishers from Kaktovik reported Dolly Varden harvests at two inland harvest sites (1st and 2nd Fish Holes, sites number 65 and 81) and one coastal site (West Kaktovik, part of site no. 200). An estimated 280.0 lbs and 63.0 lbs of Dolly Varden was obtained by means of jigging through holes drilled in river ice at the 1st and 2nd Fish Holes respectively, and an estimated 168.0 lbs of Dolly Varden was harvested through hook-and-line fishing during break-up (May) in the lagoon on the west side of Barter Island (West Kaktovik)(Tables 6 and 17).

The most productive Dolly Varden harvest sites in Study Year 2 were at Kaktovik (200) with an estimated 2,977.2 lbs, Bernard Spit (98) with an estimated 1,306.8 lbs, and Anderson Point (61) with an estimated 1,036.0 lbs (Table 6 and 17); all three were "Summer" harvest sites.

Kaktovik households fishing in the 'Winter" 2001-2002 accessed sites solely by snow machine.

"Summer" 2002 harvests of Dolly Varden were recorded for six sites, two of which were located on Barter Island (Table 6 and Figure 9). In terms of productivity (amount of Dolly Varden harvested) Barter Island (Kaktovik and Iglukpaluk) ranked highest with an estimated harvest of 2,986.5 lbs followed by Bernard Spit (est. 1306.8 lbs), Anderson Point (est. 1036.0 lbs), Tapqaurak Point (est. 420 lbs) and lastly Griffin Point with an estimated harvest of 410.8 lbs (Tables 6 and 17).

The majority of Dolly Varden harvest at these sites were caught in beach set-nets from 30-60' long, 6' deep and with mesh sizes varying from 2.5-3.5" (most often checked by boat), and only a small number of Dolly Varden were harvested on hook-and-line gear fished from beaches on both the east and west ends of Barter Island.

Access to "Summer" 2002 Dolly Varden harvest sites was reported to include: by boat, ATV, truck and on foot. The most commonly reported household access method to "Summer" 2002 Dolly Varden fishing sites was by boat.

The number of households fishing (jigging) for Dolly Varden during "Winter" 2001-2002 (on the Hulahula River) was estimated at two to three, while in August, at the height of "Summer" 2002 fishing, there were an estimated 47 households successfully netting and hooking Dolly Varden at coastal sites on, as well as east and west of, Barter Island (Tables 15 and 19).

Extent of household sharing and use of fish in Study Year 2 is summarized in Tables 11 and 12. An estimated 16 percent of community households harvested fish during the "Winter" 2001-2002, and survey results indicate that an estimated 69 percent of community households used locally harvested fish in that season (Table 11). For "Summer" 2002 an estimated 79 percent of

households harvested fish, and 83 percent of households used locally harvested fish that season (Table 12).

B. Collection of Natural History Information (TEK)

Natural history (TEK) key informant interviews were carried out and recorded by Mr. Linn through the Spring of 2001. Interviews with four long-term fishers were completed (recorded, notes taken, questions and responses transcribed into English, and an interview summary prepared for each). However, due to lack of funds from KIC for this objective in Study Year 2, additional interviews were not completed and the goal of ten completed key informant interviews for this project was not met.

Raw data sets from the four completed interviews consists of transcription notes from taped interviews, ten edited pages of transcribed interview information (Appendix 3), and additions to the Kaktovik base map (USGS 1:250,000) with notations on contemporary fishing sites and known winter Dolly Varden concentration/over-wintering locations recorded as sites 65 and 81 on the Hulahula River (Figures 5 and 8). Seasonal movements, abundance and distribution of Dolly Varden described in key informant interviews, and description of predictable over-wintering areas for “char” and “old man fish” (Dolly Varden), coincided with common fishing locations marked on the USGS 1:250,000 scale field map.

Key informant observations on natural history of Dolly Varden represent a small but significant initial collection of cultural information accumulated through many lifetimes lived in the eastern part of the North Slope coastal plain and Brooks Range in Alaska. Inupiaq names of key species of fish harvested in the Kaktovik area used verbally are the same as those used across the North Slope, though in orthography there continue to be changes as the written language is gradually transitioning into unified spelling rules across the North Slope (Table 1).

Generally, key informants agreed that Arctic char, Dolly Varden, and “old man fish” all represent closely related fish types. Lake trout were considered to be distantly related to Dolly Varden, whereas the Arctic cisco encompass a separate group more closely related to other whitefish occasionally harvested within the loosely defined traditional subsistence fishery area for Kaktovik.

C. Biological Sampling

A total of 68 fin-clip samples from locally harvested Dolly Varden for DNA analysis by USFWS were collected during this two-year study.

Fin clip sampling of “Summer” 2000-2001 catches of “char” from Kaktovik fishers resulted in 50 samples from the Barter Island area. Summer fishing was sporadic and difficult to monitor due to unusually inclement weather. In addition, those fish harvested away from the community were put up on fish racks and dried before being brought back to the community. Because of time invested in processing, transportation and relatively low harvests, fishers contacted about sampling were unwilling to share such fish to (in their view) destructive sampling.

We obtained no samples from the “Winter” 2000-2001 or 2001-2002 “char” fishery, due mainly to low harvests in both years and resultant reluctance of contacted harvesters to “share” their harvest in that manner.

Eighteen fin-clip samples from two distinct areas (Barter Island and Anderson Point) were obtained from the “Summer” 2002 “char” fishery. The low sample success was not a function of catches being low, but concerned administrative and continuing inclement weather issues. Lack of funding to monitor fishers and to obtain samples from them either at, or upon returning from, their fishing sites was the principal cause. In spite of more challenging summer environmental conditions than in 2001, “char” fishing success was considered good in summer 2002, so it was particularly unfortunate that we were unable to obtain a more representative fin clip sample from Kaktovik area.

Samples and sample record sheets were turned over to ADF&G Sport Fish Division biologist Mr. Tim Viavant, in Fairbanks, for analysis and reporting as part of a separately FIS-funded project. At the time this project report was completed fin-clip samples collected from Dolly Varden harvested by Kaktovik fishers were still awaiting analysis. For more information on this contact the USFWS, Office of Subsistence Management, Fisheries Information Services, Fisheries Resource Monitoring Program, in Anchorage, Alaska.

DISCUSSION

The local subsistence fishery in Kaktovik continues to be an important cultural and economic activity. The estimated community harvest of fish in Study Year 1 (October 2000 through September 2001) was 5,970.0 lbs and 9,418.3 lbs for Study Year 2 (October 2001 through September 2002)(Tables 10 and 13). These annual harvest estimates clearly reflect the range of variation in success fishers in Kaktovik experience from year to year, but are in the low the range of estimates made of community harvests dating back to the early 1970’s (Patterson 1974), 1980’s (Craig 1987), and 1990’s (Fall and Utermohle 1995; Pedersen 1995; Brower 2000).

Household survey results and statements from key informant interviews in this study support the contention that fishing continues to be considered an integral cultural activity and that the harvest resulting from that activity makes a major contribution to overall household diets in Kaktovik today as in the last thirty or so years. Sharing of harvested resources is a key cultural value in Inupiaq society, and household sharing of fish harvests in the two study years continued at a high level (Tables 7-9, 11 and 12). All households harvesting fish reported sharing (“Giving” in

Tables) their catches with other community households, and even households that did not harvest fish reported giving away (sharing) some of what had been given to them. A very large percentage of Kaktovik households also reported receiving locally harvested fish from other households (Tables 7-9, 11 and 12), including households which themselves gave harvested fish away.

Although estimated community fish catches in the two study years fall within the range reported in other studies, it should be noted that per capita harvests in the community may have declined somewhat over time due to gradual community population growth. Craig (1987) reports per capita estimates as high as 131 lbs (Patterson 1974), and a long-term average in the 100 lbs range in the 1960's and 1980's (Stoker 1983). Per capita harvest in the 50 lbs range were also reported, but the long-term average was considerably higher (Craig 1987).

Wide fluctuations in the per capita fish harvest in Kaktovik during the 1990's (from a high of 118.9 lbs to a low of 35.0 lbs) were reported by Pedersen (1995), Fuller and George (1997), and Brower and Opie (2000), and reflect continuation of a trend seen in results from earlier studies.

In Study Year 1 (October 2000 through September 2001) and Study Year 2 (October 2001 through September 2002) Dolly Varden was the most commonly harvested fishery resource in terms of numbers and weight of harvest. Arctic cisco and lake trout ranked second and third in numbers harvested and in terms of estimated harvest weight (Tables 10 and 13).

The absence of Arctic grayling, Arctic cod and flounders, in recorded catches was unexpected. In previous studies the three species were reported as part of the annual community fish harvest (Brower and Opie 2000; Fall and Utermohle 1995; Pedersen 1990). Lack of these species in this study may have been due to a consistent reporting bias, a shift in fishery focus, selection of fishery locations, status of the resources, or simply due to the way the fishery was conducted during the study period. After careful consideration of these possible error sources the authors concluded that the most likely reason additional resources were not recorded, if they in fact had been harvested, could be attributed to a the random error of not reaching all households in every survey period. However, contribution of the missed households for the unreported species must have been very low, as during information review in the community no reference was made to any under-reporting of harvested resources.

Cold and windy winters in 2000 and 2001, and cool, windy, and unusually ice-infested coastal conditions in both the summer of 2001 and 2002 was the most widely held reason for the lack of species diversity in fish catches. Fishers remained puzzled, but not unduly concerned, by the lack of fish diversity and somewhat lower catches. As stated in key informant interviews, Kaktovik fishers are accustomed to significant variation in annual fish harvest levels and species representation and consider such events part of natural variation that can be compensated for in the annual harvest cycle. These two years demonstrate this case in point: other resource harvesting activities such as whaling and caribou hunting (neither of which were monitored by this project) were said by community members to have been quite successful in both study years and thus compensated for lower than expected annual community fish harvests.

Subsistence harvest production by “season” in 2000-2001 and 2001-2002 showed substantial variation in terms of total useable weight. In 2000-2001 the “Winter” harvest estimate was 170.4 lbs of mainly lake trout (Table 7), whereas in 2001-2002 the estimated harvest was 1,311.0 lbs (an increase by a factor of over 7x) (Table11). In contrast, the “Summer” 2001 harvest estimate of 5,799.6 lbs (of which Dolly Varden made up 84 percent of the estimated harvest by weight)(Tables 8 and 9) was, relatively speaking, close to the “Summer” 2002 harvest estimate of 8,437.3 lbs (in which Dolly Varden comprised 82 percent of the estimated harvest by weight)(Table 12).

We note that fishing effort in the two winters was not equal with only one household harvesting in October 2000 and April 2001, whereas an estimated 2.5 households harvested fish inland during October 2002, December 2001 and May 2002. This difference was probably due to relatively higher frequency of severe weather during the winter 2000-2001 and that the summer harvest effort was more comparable in the two study years as weather, but not ice, conditions were similar (Tables 14, 15, 17 and 19).

In “Winter” Kaktovik fishers ranged farther than in “Summer” as favored fishing locations are quite a ways inland (up to 70 miles), whereas coastal fishing can be carried out in close proximity to the community (most distant coastal fishing location was at Anderson Point some 20 miles west of Barter Island; Figure 11). In “Winter” fishers used fewer harvest locations, and there was not much difference in distance traveled to fishing sites between the two study years according to our records (Figures 5 and 8).

All recorded fishing sites used in the study period were within the community-based total subsistence harvest area (Figure 2), the community based fishing area (Figure 3) and were part of the most productive fish harvest sites previously defined by experienced community fishers (Figure 4) (Pedersen 1990; Pedersen et al. 1985).

In terms of production, “Summer” fishing in both study years yielded the highest catches (Tables 8, 9 and 12) with good catches reported at Barter Island (in both years) and Griffin Point/Uqsruqtalik (Site 113) (moderate harvest in 2001 and high harvest in 2002) (Tables 5 and 6). Harvests at most coastal sites were mainly of Dolly Varden, but at Griffin Point the situation was reversed with significantly higher catches of Arctic cisco (Tables 5 and 6).

Gear types used by fishers during the study period survey included beach-set nets (typically from 30’ to 60’ with 2.5” to 3.5” mesh) and rod-and-reel for the “Summer “ fishery and in ‘Winter” fishers exclusively used jigging gear through holes cut in river or lake ice. As mentioned above, the most productive fishery was in the “Summer”, but the “Winter” fishery was the only one producing lake trout (Tables 5 and 6), a highly prized seasonal subsistence food item in Kaktovik.

Household participation rates were highest in the “Summer “ fishery with up to an estimated 44 Kaktovik households actively catching fish in July 2001, and an estimated 47 households catching fish in August of 2002 (Tables 14 and 15). In both instances households were actively focusing their harvest effort on Dolly Varden (97 percent in 2001 and 100 percent in “Summer” 2002”).

In 2000-2001 Kaktovik households harvested fish in all but five months (Dec. to March and May), and Dolly Varden in six of seven months, Arctic cisco in four months, and lake trout in two months (Tables 14 and 18). In 2001-2002 Kaktovik fishers harvested fish in all but four months (Jan. through April). Dolly Varden were harvested in seven of eight months, Arctic cisco in three of eight months and lake trout in two of eight months (Tables 15 and 19). Clearly Dolly Varden is a key subsistence resource to Kaktovik households as not only is it harvested frequently but household participation is high and the annual community harvest levels are significant.

Modest descriptive information on traditional harvest and use by the Kaktovingmiut (Inupiat residents at Kaktovik) of fishery resources in the eastern North Slope and adjacent Brooks Range, emphasizing Dolly Varden, was obtained through natural history (TEK) interviews with Kaktovik elders and recognized fishing experts. Information obtained on seasonal movements and distribution of fish (especially Dolly Varden) was confirmed in results from this harvest assessment, and observations of area Dolly Varden spawning and over-wintering areas coincided with reported winter harvest sites for Dolly Varden.

Observations by several elders that, in their experience, there is much annual variation in community fish harvests, harvest composition (in terms of species) and considerable variation in size of harvested fish, and that such variation in time and space, as well as in species composition, is not unusual. Addition of such local long-term observations of the fishery will become increasingly valuable as support in interpreting baseline information on the local fishery.

There are elders residing in Kaktovik who are eager and willing to help shed further light on observed natural history of local fishery resources, and it is clear that additional effort should be focused in that direction. More in-depth ethnographic information would be especially useful to further inform ongoing policy and planning efforts at the national level to open the coastal plain in NE Alaska (“ANWR”) to oil and gas exploration and possible development.

Information from this study addresses core issues raised by the community and noted by the North Slope Regional Advisory Council at its January 2001 meeting in Barrow. Results from this work, taken together with what is already known from other studies on movements, distribution, abundance and ecological requirements of fishes in northeastern Alaska, help inform management of these resources that have been and continue to be, of key importance to residents of Kaktovik.

Furthermore, it is also clear from this work that area residents are concerned about these resources and possess a degree of intimate knowledge about them. Fishers often expressed interest in, and would welcome, active representation in local fishery management, planning, and policy-making.

Biological sampling of Dolly Varden in Study Year 1 (2000-2001) did not meet expectations for a variety of reasons, the most important of which was a late project start-up in 2001. This condition, caused by late arrival of study funding did not allow for any “Winter” sampling and inadequate time to inform fishers at remote sites of our desire to obtain samples from their

“Summer” 2001 catches. However, “Summer” sampling in and around Barter Island was successful, and a representative sample from Dolly Varden harvested both by hook and line as well as in gill nets in the lagoon system and along the coast was obtained. Lack of available transportation to reach major fishing sites east and west of the community at critical times (when the wind, fog and temperatures temporarily eased) was also a factor. As a result few samples of char from the summer coastal fishery away from Barter Island were obtained during the” Summer” of 2001.

Attempts to obtain samples of Dolly Varden from “Winter” 2001-2002 harvests were frustrated by modest catches and reluctance of contacted successful harvesters to “share” their limited harvest in that manner.

The eighteen fin clip samples obtained in the “Summer” of 2002 came from Barter Island and Anderson Point, a common community harvest site to the west. Again sampling to the east (Griffin Point was the selected area) was frustrated by weather, communication, and transportation as well as fiscal concerns limiting the research assistant hired by KIC. Better communication between the principal investigator and Mr.Linn could perhaps have mitigated the financial constraints, and better planning by KIC for transportation logistics when environmental conditions were favorable for travel to Griffin Point would have made possible sampling of Dolly Varden catches from that traditional harvest site.

Fishing households in Kaktovik generally supported the fin clipping component of this project and some made a special effort to “share” their catch with the scientific community. Residents expressed a keen interest in learning more about how Dolly Varden populations they rely on for cultural and nutritional sustenance, relate to others on the North Slope of Alaska and in the circumpolar Arctic. Findings of the fin clip (genetic) sampling that was undertaken as part of this project will be reported on in a separate report prepared by fisheries staff within the US Fish and Wildlife Service.

In terms of local “capacity building” the results of this project clearly demonstrate that training and initial practical guidance in systematic and informal data collection of several local Kaktovingmiut was successful. Furthermore, local institutions also demonstrated that they have the ability to locally recruit appropriate staff for an important area of resource management, as well as to manage agency contracts to support specific performance and product goals.

RECOMMENDATIONS

In light of possible oil and gas development within Kaktovik's fishing area, as well as in fish rearing, migration and feeding areas, it is recommended that community baseline harvest assessments continue to be undertaken on a regular basis and that detailed ethnographic context information is integrated in the effort. The ethnographic context effort should include a seasonal assessment of harvest effort, basis for fishing site selection, and environmental observations obtained from active harvesters in the assessment period.

As was the case in this project, an emphasis on local project administration and staffing needs to be an integral part of the recommended project in order to continue building local capacity to effectively participate in resource management from the ground up.

Future harvest assessments should adhere to the census survey approach, not the mail-out or stratified sampling methods used in part of this effort. Our experience has been that higher participation rates and better measures of community harvest activity, in communities under 100 households, is obtained through a census, as has been demonstrated in this study.

In any future harvest assessment efforts, application of discreet survey periods ("Winter" and "Summer") should be considered as the two periods are clearly different in terms of harvest production as well as household effort. Also, since the summer fishery is comparatively intense and much more productive, better information on that seasonal component is obtained while results are still fresh in the minds of fishers.

This study mainly produced information from the immediate surrounds of Kaktovik, yet it is well known that key informant information is obtainable on Dolly Varden over-wintering areas in places no longer regularly used, such as on the Kongakut River, the Canning River drainage, and the Shaviovik River. Furthermore, additional documentation of traditional ecological knowledge related to variability in seasonal harvest patterns from knowledgeable elders in the community is recommended. Little time was spent in this study to further document use and history of traditional fishery harvest sites; such an effort should be incorporated into the recommended project on ethnographic context of the Kaktovik subsistence fishery.

Minimal stock information exists on resources harvested in the Kaktovik subsistence fishery. Strengthened stock information on locally important subsistence fish species, such as Dolly Varden and Arctic cisco, would go a long way to assist in sustainable management and planning in a changing environment.

Capacity building needs to transition into capacity support and maintenance in this community, especially in light of heightened national interest in petroleum and gas exploration in ANWR. As this study has demonstrated, Kaktovik residents are interested in and, once trained and provided adequate funding, can effectively participate in, and indeed take major responsibility in the completion of project elements ranging from systematic household interviews to biological sampling.

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FIGURES

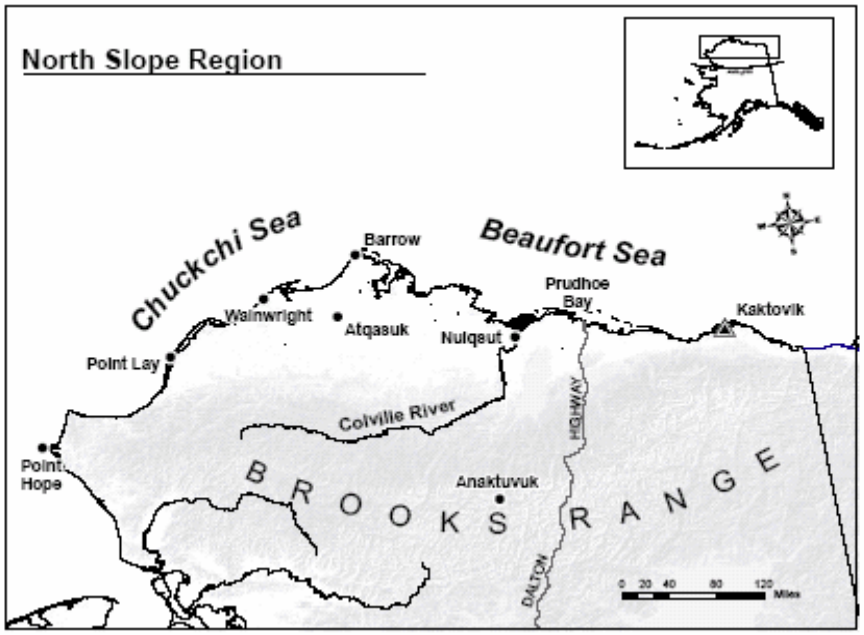

Figure 1. North Slope Region of Alaska and the Study Community.

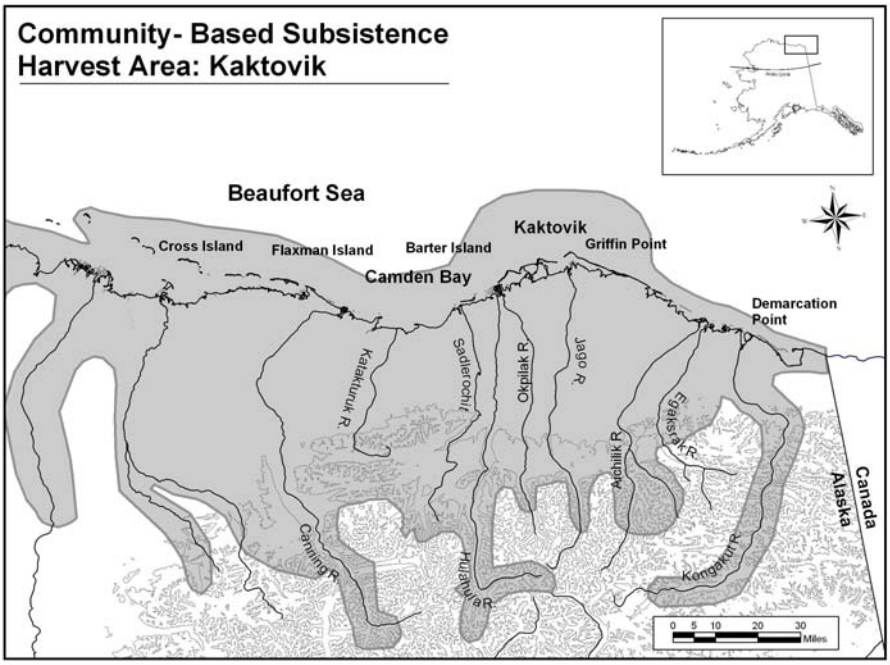

Figure 2. Contemporary Subsistence Harvest Area for All Resources: Kaktovik, Alaska.
Source: Pedersen et al. 1985 (re-verified in 2002).

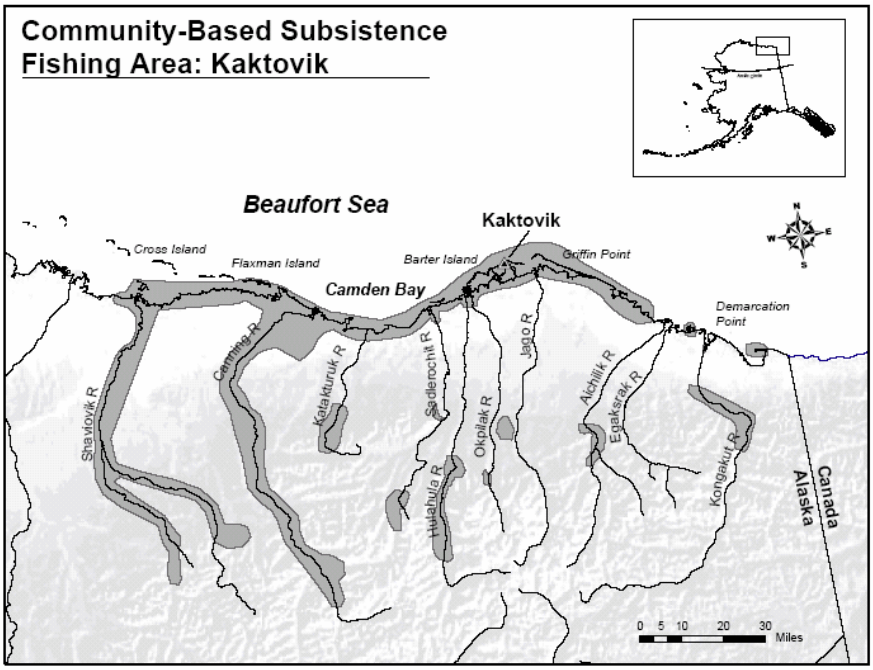

Figure 3. Contemporary Subsistence Fishing Area: Kaktovik, Alaska.
Source: Pedersen et al. 1985 (re-verified in 2002).

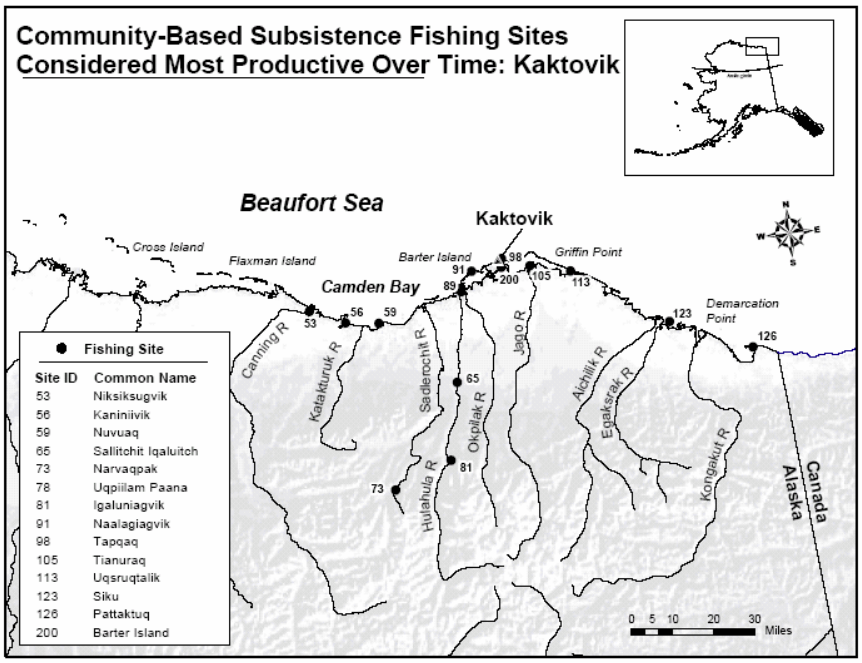

Figure 4. Primary Community-based Subsistence Fishing Sites*: Kaktovik, Alaska.

*Sources: Pedersen et al. 1985 and NSB 1977.

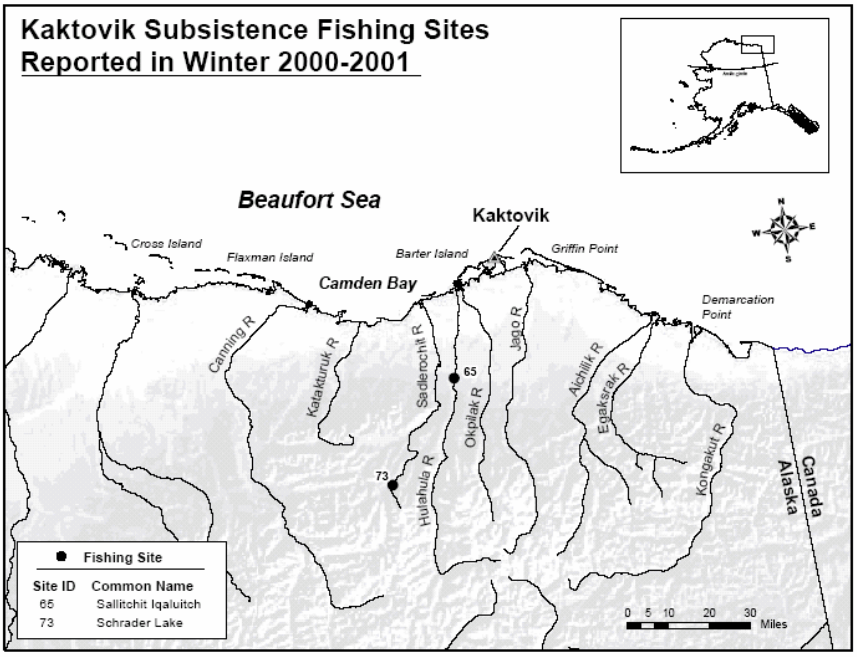

Figure 5. Reported October 2000 through May 2001 ("Winter") Subsistence Fishing Sites: Kaktovik, Alaska.

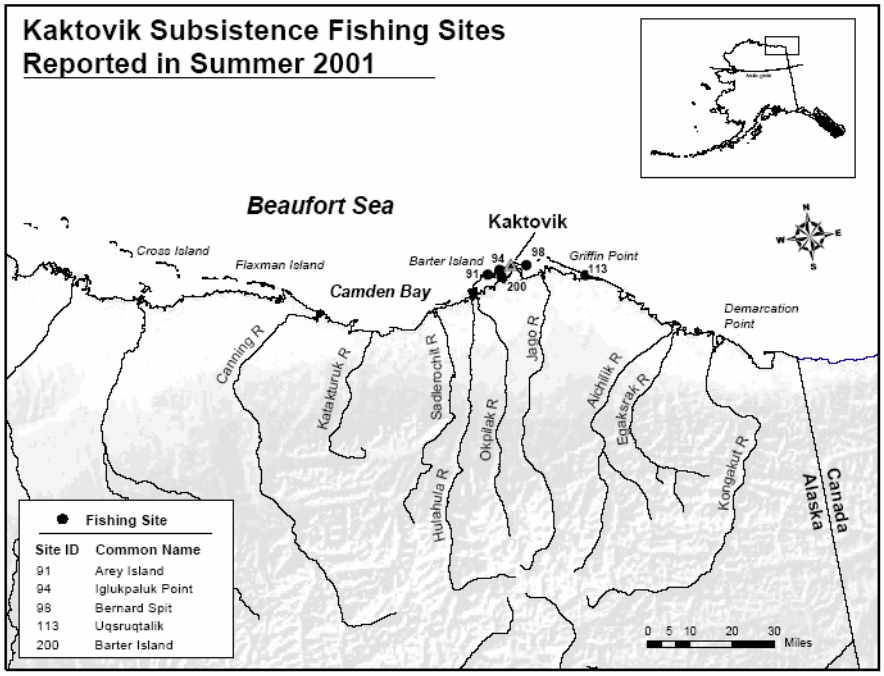

Figure 6. Reported June 2001 through September 2001("Summer") Subsistence Fishing Sites: Kaktovik, Alaska.

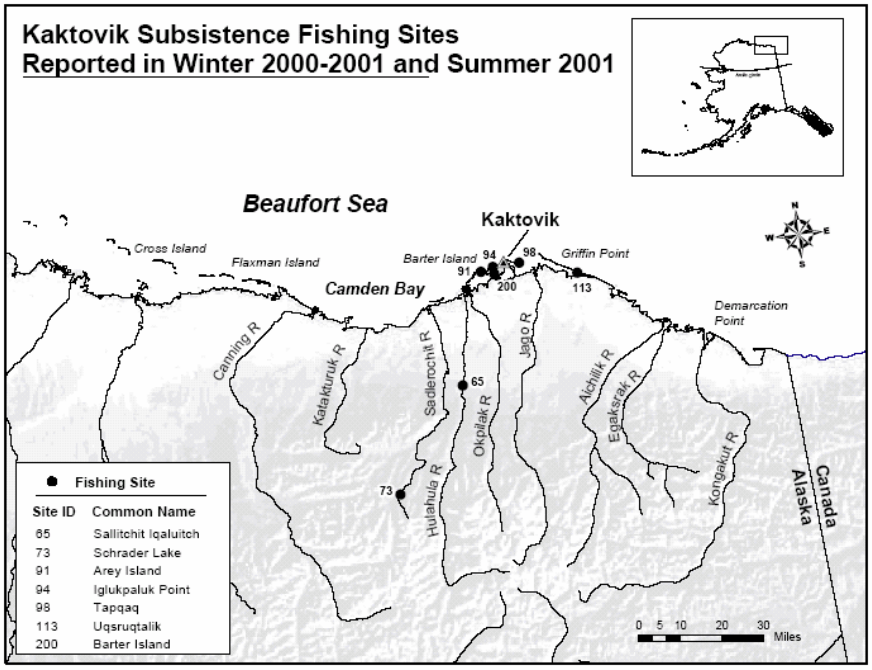

Figure 7. Reported October 2000 through September 2001 (Study Year 1) Subsistence Fishing Sites: Kaktovik, Alaska.

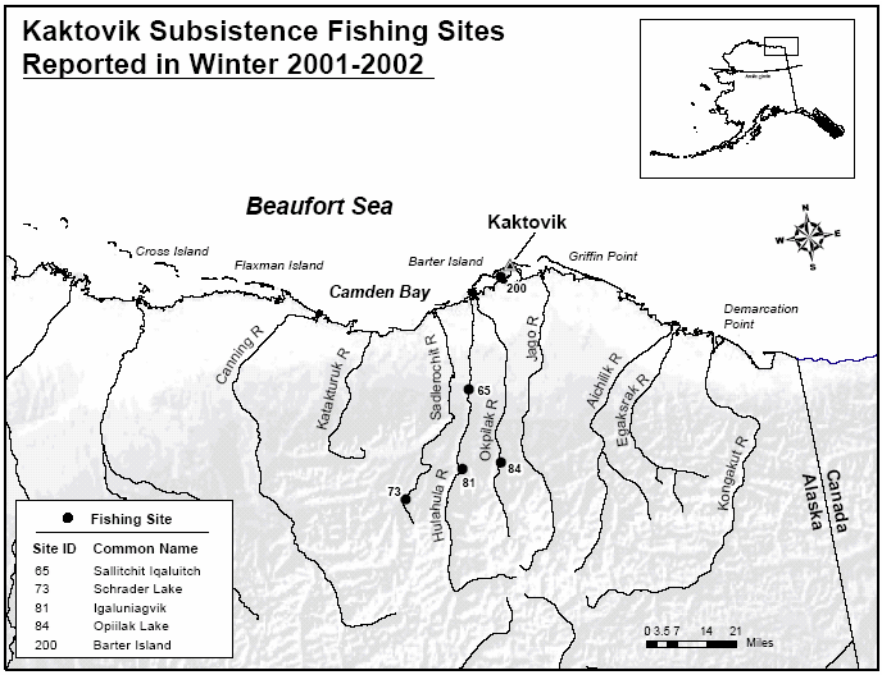

Figure 8. Reported October 2001 through May 2002 ("Winter") Subsistence Fishing Sites: Kaktovik, Alaska.

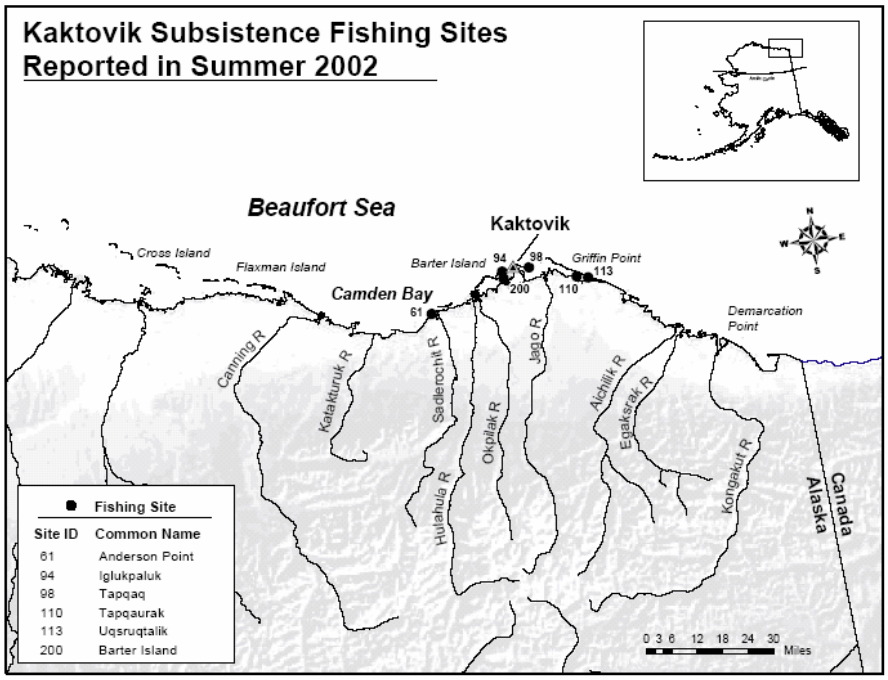

Figure 9. Reported June 2002 through September 2002 ("Summer") Subsistence Fishing Sites: Kaktovik, Alaska.

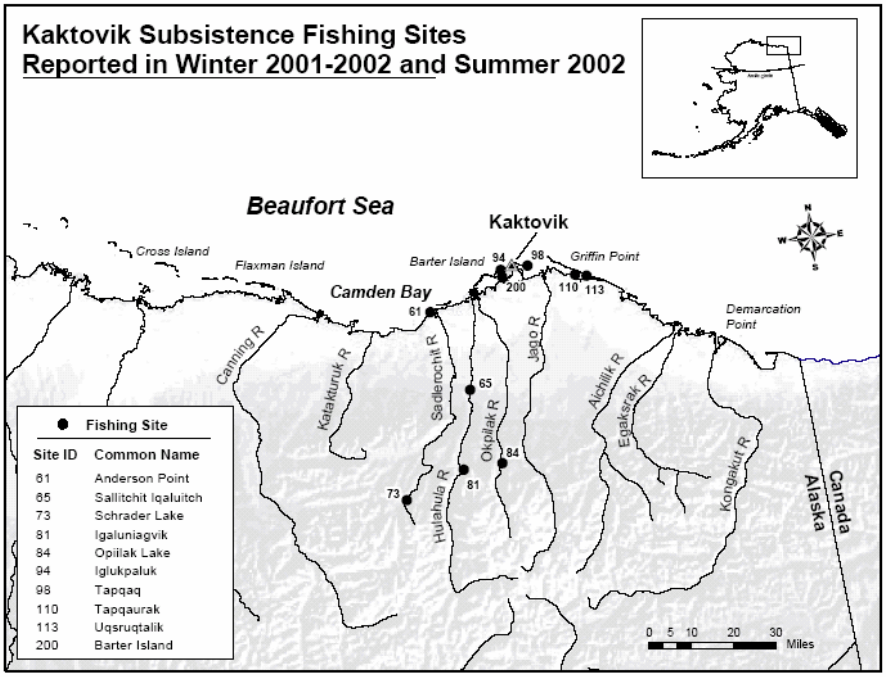

Figure 10. Reported October 2001 through September 2002 (Study Year 2) Subsistence Fishing Sites: Kaktovik, Alaska.

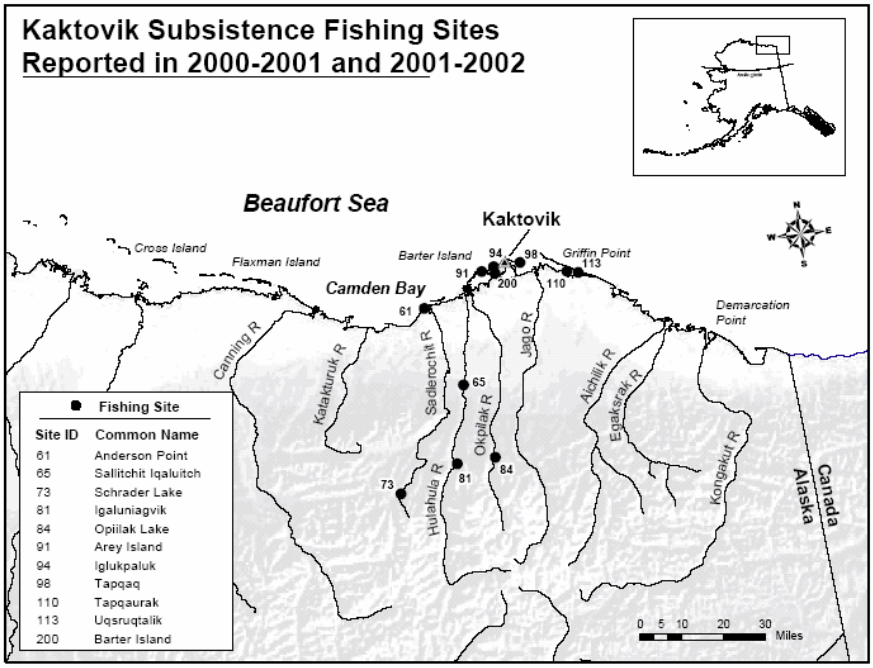

Figure 11. All Subsistence Fishing Sites Reported Used in the Study Period (October 2000 through September 2002): Kaktovik, Alaska.

TABLES

Table1. Fish Species Reported as Harvested by Kaktovik Residents.

Common	Inupiaq	Scientific (Linnaeus)
Chum salmon*	*Iqalugruaq*	Onchorynchus keta
Arctic char	***Iqalukpik***	Salvelinus alpinus
Arctic cisco	*Qaaqtaq*	Coregonus autumnalis
Arctic cod	*Iqalugaq*	Boreogadus saida
Arctic flounder	*Nataagnaq*	Liopsetta glacialis
Arctic grayling	***Sulukpaugaq***	Thymallus arcticus
Broad whitefish	*Aanaakliq*	Coregonus nasus
Burbot (Ling cod)*	*Tittaaliq*	Lota lota
Dolly Varden A	***Iqalukpik/Paigluk***	Salvelinus malma
(Dolly Varden B	***Aangayukaksurak***	Salvelinus malma/anaktuvukensis)
Humpback whitefish	*Pikuktuuq*	Coregonus clupeaformis
Lake trout	***Iqaluagpak***	Salvelinus naymacush
Least cisco	*Iqalusaaq*	Coregonus sardinella
Northern pike*	***Siulik***	Esox lucius
Pink salmon*	Amaqtuq	Onchorynchus gorbuscha
Round whitefish	*Savigunaq*	Prosopium cylindraceum
Sculpin	***Kanayuq***	Cottus cognatus
Rainbow smelt*	*Ilhuagniq*	Osmerus mordax
Silver salmon*	Iqalugruaq	Onchorynchus kisutch
Tom/Saffron cod	*Uugaq*	Eleginus gracilis

*Rarely harvested

Source: Pedersen et al. 1985

Table 2. Use and Harvest of Fish in Kaktovik, 1992.

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH
All Resources	95.7	89.4	89.4	91.5	83.0	170,934.82	2,713.25	885.58		
Fish	93.6	83.0	80.9	70.2	70.2	22,952.16	364.32	118.91	18,464.36	293.09
Salmon	25.5	8.5	8.5	19.1	10.6	105.14	1.67	0.54	49.60	0.79
Coho Salmon	2.1	0.0	0.0	2.1	0.0	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
Pink Salmon	2.1	2.1	2.1	0.0	0.0	17.05	0.27	0.09	8.04	0.13
Sockeye Salmon	2.1	0.0	0.0	2.1	0.0	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
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
Cod	42.6	36.2	34.0	29.8	27.7	299.99	4.76	1.55	3,672.77	58.30
Pacific Tom Cod	38.3	34.0	31.9	25.5	23.4	182.03	2.89	0.94	2,600.43	41.28
Arctic Cod	2.1	2.1	2.1	0.0	2.1	117.96	1.87	0.61	1,072.34	17.02
Burbot	8.5	0.0	0.0	8.5	6.4	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
Unknown Flounder	4.3	4.3	4.3	0.0	4.3	1.34	0.02	0.01	2.68	0.04
Grayling	21.3	14.9	14.9	10.6	14.9	158.04	2.51	0.82	175.60	2.79
Whitefish	83.0	70.2	70.2	55.3	59.6	6,050.55	96.04	31.35	8,822.68	140.04
Whitefish, Large	2.1	0.0	0.0	2.1	2.1	0.00	0.00	0.00	0.00	0.00
Whitefish, Broad	2.1	0.0	0.0	2.1	2.1	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
Least Cisco	17.0	8.5	8.5	12.8	12.8	348.51	5.53	1.81	697.02	11.06
Bering Cisco	76.6	61.7	61.7	44.7	57.4	5,672.01	90.03	29.39	8,102.87	128.62
Arctic Cisco	2.1	2.1	2.1	2.1	2.1	6.57	0.10	0.03	9.38	0.15
Unknown Whitefish	6.4	2.1	2.1	6.4	0.0	23.46	0.37	0.12	13.40	0.21
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
Char (general)	91.5	80.9	78.7	48.9	66.0	16,337.11	259.32	84.64	5,741.04	91.13
Arctic Char	91.5	80.9	78.7	44.7	66.0	15,463.15	245.45	80.11	5,522.55	87.66
Lake Trout	29.8	21.3	17.0	21.3	17.0	873.96	13.87	4.53	218.49	3.47

Source: Fall and Utermohle 1995

Table 3. Kaktovik Household Sampling, Participation Rates and Population Estimates.

Survey Period	Survey Design	Number of Households	Number of Surveyed Households	Percentage of Households Surveyed	Estimated Community Population***	Community Population (US Census 2000)
Winter 2000-01	Census	77	77	100%	246	293
Summer 2001	Stratified Random*	30	22	73%	246	293
Summer 2001	Stratified Random**	47	6	13%	246	293
Winter 2001-02	Random Face-to-Face	80	32	40%	256	293
Summer 2002	Random Mail-Out	80	24	30%	217	293

* Known Fishing Households
** Known No Fishing Households
*** Based on Census/Sample

Table 4. Kaktovik Subsistence Fishing Sites and "Season of Use" Reported in Survey Years 2000-2001 and 2001-2002.

Fishing Site Id.*	Fishing Site Name*	Survey Year and Season of Use**			
		2000W	2001S	2001W	2002S
1 (65)	1st Fish Hole	X		X	
2 (81/82)	2nd Fish Hole			X	
3 (200)***	Barter Island (Kaktovik)		X	(X)****	X
4 (61 and 62)	Anderson Point				X
5 (91)	Arey Island		X		
6 (98)	Bernard Spit (Tapqaq)		X		X
7 (113)	Griffin Point(Uqsruktalik)		X		X
8 (94)	Iglukpaluk Point		X		X
9 (84)	Opiilak Lake			X	
10 (73)	Schrader Lake	X		X	
11 (110)	Tapqaurak				X

*Sources: Pedersen et al. 1985 and NSB 1977.

** S = "Summer"; W = "Winter"

*** includes West Kaktovik and Iglukpaluk Point in discussion as both fishing sites are located on Barter Island

**** seasonally early "Summer" fishing as noted in Discussion

Table 5. Estimated Fish Harvest by Location, Resource and Month of Fishing, Kaktovik, Alaska, October 2000-September 2001.

Location	Resource	Total	October	November	April	June	July	August	September	Unknown month
All locations	All Resources	3,137.0	5.0	30.0	10.0	155.5	1,243.1	1,498.5	195.0	0.0
	Dolly Varden	1,739.1	5.0	0.0	3.0	121.4	675.8	801.6	132.3	0.0
	Lake Trout	37.0	0.0	30.0	7.0	0.0	0.0	0.0	0.0	0.0
	Arctic Cisco	1,360.9	0.0	0.0	0.0	34.1	567.3	696.8	62.7	0.0
1st fish hole	All Resources	5.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Dolly Varden	5.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kaktovik*	All Resources	1,704.6	0.0	0.0	0.0	0.0	780.8	777.8	145.9	0.0
	Dolly Varden	1,021.4	0.0	0.0	0.0	0.0	513.5	424.7	83.2	0.0
	Arctic Cisco	683.2	0.0	0.0	0.0	0.0	267.3	353.2	62.7	0.0
Arey Is.	All Resources	185.5	0.0	0.0	0.0	102.3	75.0	8.2	0.0	0.0
	Dolly Varden	126.8	0.0	0.0	0.0	68.2	54.5	4.1	0.0	0.0
	Arctic Cisco	58.6	0.0	0.0	0.0	34.1	20.5	4.1	0.0	0.0
Bernard Spit	All Resources	141.8	0.0	0.0	0.0	0.0	0.0	141.8	0.0	0.0
	Dolly Varden	95.5	0.0	0.0	0.0	0.0	0.0	95.5	0.0	0.0
	Arctic Cisco	46.4	0.0	0.0	0.0	0.0	0.0	46.4	0.0	0.0
Griffin Pt.	All Resources	709.1	0.0	0.0	0.0	53.2	257.7	349.1	49.1	0.0
	Dolly Varden	272.7	0.0	0.0	0.0	53.2	53.2	117.3	49.1	0.0
	Arctic Cisco	436.4	0.0	0.0	0.0	0.0	204.5	231.8	0.0	0.0
Iglukpaluk Pt.*	All Resources	272.7	0.0	0.0	0.0	0.0	129.5	143.2	0.0	0.0
	Dolly Varden	136.4	0.0	0.0	0.0	0.0	54.5	81.8	0.0	0.0
	Arctic Cisco	136.4	0.0	0.0	0.0	0.0	75.0	61.4	0.0	0.0
Schrader Lake	All Resources	37.0	0.0	30.0	7.0	0.0	0.0	0.0	0.0	0.0
	Lake Trout	37.0	0.0	30.0	7.0	0.0	0.0	0.0	0.0	0.0
West Kaktovik*	All Resources	78.3	0.0	0.0	0.0	0.0	0.0	78.3	0.0	0.0
	Dolly Varden	78.3	0.0	0.0	0.0	0.0	0.0	78.3	0.0	0.0
Missing	All Resources	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
	Dolly Varden	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0

*Barter Island

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2002.

Table 6. Estimated Fish Harvest by Location, Resource and Month of Fishing, Kaktovik, Alaska, October 2001-September 2002.

Location	Resource	Total	October	November	December	May	June	July	August	September	Unkn. month
All locations	All Resources	5,035.8	100.0	75.0	22.5	185.0	63.3	686.7	2,686.7	1,216.7	0.0
	Dolly Varden	2,649.2	100.0	0.0	22.5	60.0	63.3	586.7	1,100.0	716.7	0.0
	Lake Trout	200.0	0.0	75.0	0.0	125.0	0.0	0.0	0.0	0.0	0.0
	Arctic Cisco	2,186.7	0.0	0.0	0.0	0.0	0.0	100.0	1,586.7	500.0	0.0
1st fish hole	All Resources	100.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Dolly Varden	100.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2nd fish hole	All Resources	22.5	0.0	0.0	22.5	0.0	0.0	0.0	0.0	0.0	0.0
	Dolly Varden	22.5	0.0	0.0	22.5	0.0	0.0	0.0	0.0	0.0	0.0
Kaktovik*	All Resources	1,336.7	0.0	0.0	0.0	0.0	63.3	416.7	806.7	50.0	0.0
	Dolly Varden	1,063.3	0.0	0.0	0.0	0.0	63.3	383.3	566.7	50.0	0.0
	Arctic Cisco	273.3	0.0	0.0	0.0	0.0	0.0	33.3	240.0	0.0	0.0
Anderson Pt.	All Resources	740.0	0.0	0.0	0.0	0.0	0.0	0.0	73.3	666.7	0.0
	Dolly Varden	370.0	0.0	0.0	0.0	0.0	0.0	0.0	36.7	333.3	0.0
	Arctic Cisco	370.0	0.0	0.0	0.0	0.0	0.0	0.0	36.7	333.3	0.0
Bernard Spit	All Resources	633.3	0.0	0.0	0.0	0.0	0.0	66.7	66.7	500.0	0.0
	Dolly Varden	466.7	0.0	0.0	0.0	0.0	0.0	66.7	66.7	333.3	0.0
	Arctic Cisco	166.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	166.7	0.0
Griffin Pt.	All Resources	1,390.0	0.0	0.0	0.0	0.0	0.0	0.0	1,390.0	0.0	0.0
	Dolly Varden	146.7	0.0	0.0	0.0	0.0	0.0	0.0	146.7	0.0	0.0
	Arctic Cisco	1,243.3	0.0	0.0	0.0	0.0	0.0	0.0	1,243.3	0.0	0.0
Iglukpaluk Pt.*	All Resources	3.3	0.0	0.0	0.0	0.0	0.0	3.3	0.0	0.0	0.0
	Dolly Varden	3.3	0.0	0.0	0.0	0.0	0.0	3.3	0.0	0.0	0.0
Okpiilak Lake	All Resources	125.0	0.0	0.0	0.0	125.0	0.0	0.0	0.0	0.0	0.0
	Lake Trout	125.0	0.0	0.0	0.0	125.0	0.0	0.0	0.0	0.0	0.0
Schrader Lake	All Resources	75.0	0.0	75.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Lake Trout	75.0	0.0	75.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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Table 6 (cont.)

Location	Resource	Total	October	November	December	May	June	July	August	September	Unkn. month
Tapquauruk	All Resources	150.0	0.0	0.0	0.0	0.0	0.0	0.0	150.0	0.0	0.0
	Dolly Varden	150.0	0.0	0.0	0.0	0.0	0.0	0.0	150.0	0.0	0.0
West Kaktovik*	All Resources	60.0	0.0	0.0	0.0	60.0	0.0	0.0	0.0	0.0	0.0
	Dolly Varden	60.0	0.0	0.0	0.0	60.0	0.0	0.0	0.0	0.0	0.0
Missing	All Resources	400.0	0.0	0.0	0.0	0.0	0.0	200.0	200.0	0.0	0.0
	Dolly Varden	266.7	0.0	0.0	0.0	0.0	0.0	133.3	133.3	0.0	0.0
	Arctic Cisco	133.3	0.0	0.0	0.0	0.0	0.0	66.7	66.7	0.0	0.0

* Barter Island

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2002.

Table 7. Estimated Harvest and Use of Fish, Kaktovik, October 2000-May 2001.

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		
	Use	Att	Harv	Recv	Give	Total	Mean HH	Per capita	Total	-	Mean HH
Fish	31.2	16.9	6.5	27.3	3.9	170.4	2.2	0.7	45.0	ea.	0.6
Dolly Varden	0.0	0.0	2.6	0.0	0.0	22.4	0.3	0.1	8.0	ea.	0.1
Lake Trout	0.0	0.0	3.9	0.0	0.0	148.0	1.9	0.6	37.0	ea.	0.5
Arctic Cisco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ea.	0.0

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2002.

Table 8. Estimated Harvest and Use of Fish, Kaktovik, June 2001-September 2001 - fishing households.

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		
	Use	Att	Harv	Recv	Give	Total	Mean HH	Per capita	Total	-	Mean HH
Fish	100.0	100.0	100.0	90.9	95.5	4,637.18	154.57	45.95	2,676.82	ea.	89.23
Dolly Varden	0.0	0.0	95.5	0.0	0.0	3,684.55	122.82	36.51	1,315.91	ea.	43.86
Lake Trout	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ea.	0.0
Arctic Cisco	0.0	0.0	90.9	0.0	0.0	952.64	31.75	9.44	1,360.91	ea.	45.36

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2002.

Table 9. Estimated Harvest and Use of Fish, Kaktovik, June 2001-September 2001 - randomly selected households.

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		
	Use	Att	Harv	Recv	Give	Total	Mean HH	Per capita	Total	-	Mean HH
Fish	83.3	50.0	50.0	66.7	50.0	1,162.5	24.7	8.2	415.2	ea.	8.8
Dolly Varden	0.0	0.0	50.0	0.0	0.0	1,162.5	24.7	8.2	415.2	ea.	8.8
Lake Trout	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ea.	0.0
Arctic Cisco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ea.	0.0

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2002.

Table 10. Estimated Harvest of Fish, Kaktovik, Study Year 1: October 2000-September 2001.

Resource Name	Pounds Harvested			Amount Harvested		
	Total	Mean HH	Per capita	Total	-	Mean HH
Fish	5,970.0	74.6	27.2	3,137.0	ea.	34.9
Dolly Varden	4,869.4	54.1	22.2	1739.1	ea.	19.3
Lake Trout	148.0	1.6	0.7	37.0	ea.	0.4
Arctic Cisco	952.6	10.6	4.3	1,360.9	ea.	15.2

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2002.

Table 11. Estimated Harvest and Use of Fish, Kaktovik, October 2001-May 2002.

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		
	Use	Att	Harv	Recv	Give	Total	Mean HH	Per capita	Total	-	Mean HH
Fish	68.8	21.9	15.6	56.3	15.6	1,311.0	16.4	5.3	382.5	ea.	4.8
Dolly Varden	0.0	0.0	9.4	0.0	0.0	511.0	6.4	2.1	182.5	ea.	2.3
Lake Trout	0.0	0.0	6.3	0.0	0.0	800.0	10.0	3.2	100.0	ea.	1.3
Arctic Cisco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ea.	0.0

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2002.

Table 12. Estimated Harvest and Use of Fish, Kaktovik, June 2002-September 2002.

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		
	Use	Att	Harv	Recv	Give	Total	Mean HH	Per capita	Total		Mean HH
Fish	83.3	87.5	79.2	37.5	50.0	8,437.3	105.5	38.9	4,653.3	ea.	58.2
Dolly Varden	0.0	0.0	79.2	0.0	0.0	6,906.7	86.3	31.9	2,466.7	ea.	30.8
Lake Trout	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ea.	0.0
Arctic Cisco	0.0	0.0	37.5	0.0	0.0	1,530.7	19.1	7.1	2,186.7	ea.	27.3

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2002.

Table 13. Estimated Harvest of Fish, Kaktovik, Study Year 2: October 2001-September 2002.

Resource Name	Pounds Harvested			Amount Harvested		
	Total	Mean HH	Per capita	Total		Mean HH
Fish	9,418.3	117.7	42.9	5,035.8	ea.	62.9
Dolly Varden	7,417.7	92.7	33.9	2,649.2	ea.	33.1
Lake Trout	400.0	5.0	1.6	100.0	ea.	1.3
Arctic Cisco	1,600.7	20.0	7.3	2,286.7	ea.	28.6

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2002.

Table 14. Estimated Number of Households Fishing by Location, Resource and Month of Fishing, October 2000-September 2001, Kaktovik, Alaska.

Location	Resource	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Unkn. month
All locations	All Resources	1.0	1.0	0.0	0.0	0.0	0.0	3.0	0.0	6.8	44.0	37.5	5.5	0.0
	Dolly Varden	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	6.8	42.6	37.5	5.5	0.0
	Lake Trout	0.0	1.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0
	Arctic Cisco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	17.7	20.5	1.4	0.0
1st fish hole	All Resources	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Dolly Varden	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kaktovik*	All Resources	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	37.1	17.4	1.4	0.0
	Dolly Varden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	35.8	17.4	1.4	0.0
	Arctic Cisco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	10.9	8.2	1.4	0.0
Arey Is.	All Resources	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.4	1.4	0.0	0.0
	Dolly Varden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.4	1.4	0.0	0.0
	Arctic Cisco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.4	1.4	0.0	0.0
Bernard Spit	All Resources	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.1	0.0	0.0
	Dolly Varden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.1	0.0	0.0
	Arctic Cisco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.1	0.0	0.0
Griffin Pt.	All Resources	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.1	4.1	5.5	4.1	0.0
	Dolly Varden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.1	4.1	5.5	4.1	0.0
	Arctic Cisco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.1	5.5	0.0	0.0
Iglukpaluk Pt.*	All Resources	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.4	0.0	0.0
	Dolly Varden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.4	0.0	0.0
	Arctic Cisco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.4	0.0	0.0
Schrader Lake	All Resources	0.0	1.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0
	Lake Trout	0.0	1.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0
West Kaktovik*	All Resources	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.8	0.0	0.0
	Dolly Varden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.8	0.0	0.0
Missing	All Resources	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
	Dolly Varden	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0

*Barter Island

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2002.

Table 15. Estimated Number of Households Fishing by Location, Resource and Month of Fishing, October 2001-September 2002, Kaktovik, Alaska.

Location	Resource	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Unkn. month
All locations	All Resources	2.5	2.5	2.5	0.0	0.0	0.0	0.0	7.5	3.3	36.7	46.7	10.0	0.0
	Dolly Varden	2.5	0.0	2.5	0.0	0.0	0.0	0.0	2.5	3.3	36.7	46.7	10.0	0.0
	Lake Trout	0.0	2.5	0.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0
	Arctic Cisco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.7	23.3	6.7	0.0
1st fish hole	All Resources	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Dolly Varden	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2nd fish hole	All Resources	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Dolly Varden	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kaktovik*	All Resources	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	26.7	36.7	3.3	0.0
	Dolly Varden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	26.7	36.7	3.3	0.0
	Arctic Cisco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	16.7	0.0	0.0
Anderson Pt.	All Resources	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	3.3	0.0
	Dolly Varden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	3.3	0.0
	Arctic Cisco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	3.3	0.0
Bernard Spit	All Resources	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	3.3	3.3	0.0
	Dolly Varden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	3.3	3.3	0.0
	Arctic Cisco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	0.0
Griffin Pt.	All Resources	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	0.0	0.0
	Dolly Varden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	0.0	0.0
	Arctic Cisco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	0.0	0.0
Iglukpaluk Pt.*	All Resources	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	0.0	0.0	0.0
	Dolly Varden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	0.0	0.0	0.0
Okpiilak Lake	All Resources	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0
	Lake Trout	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0
Schrader Lake	All Resources	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Lake Trout	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 15 cont. on next page

Table 15 (cont.)

Location	Resource	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Unkn. month
Tapquauruk	All Resources	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	0.0	0.0
	Dolly Varden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	0.0	0.0
West Kaktovik*	All Resources	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0
	Dolly Varden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0
Missing	All Resources	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	3.3	0.0	0.0
	Dolly Varden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	3.3	0.0	0.0
	Arctic Cisco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	3.3	0.0	0.0

* Barter Island

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2002.

Table 16. Estimated Total Harvest of Dolly Varden by Month, October 2000-September 2001, Kaktovik, Alaska.

	October		November		June		July		August		September	
	Est. Harvest	% of Est. Total Harvest in Month	Est. Harvest	% of Est. Total Harvest in Month	Est. Harvest	% of Est. Total Harvest in Month	Est. Harvest	% of Est. Total Harvest in Month	Est. Harvest	% of Est. Total Harvest in Month	Est. Harvest	% of Est. Total Harvest in Month
1st fish hole	5.00	0.3%	5.00	100.0%	0.00	0.0%	0.00	0.0%	0.0	0.0%	0.0	0.0%
Kaktovik*	1,021.4	58.7%	0.0	0.0%	0.0	0.0%	513.5	76.0%	0.0	0.0%	0.0	0.0%
Arey Is./Soplus	126.8	7.3%	0.0	0.0%	68.2	56.2%	54.5	8.1%	424.7	53.0%	83.2	62.9%
Bernard Spit	95.5	5.5%	0.0	0.0%	0.0	0.0%	0.0	0.0%	4.1	0.5%	0.0	0.0%
Griffin Pt.	272.7	15.7%	0.0	0.0%	53.2	43.8%	53.2	7.9%	95.5	11.9%	0.0	0.0%
Iglukpaluk Pt.*	136.4	7.8%	0.0	0.0%	0.0	0.0%	54.5	8.1%	117.3	14.6%	49.1	37.1%
Schrader Lake	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	81.8	10.2%	0.0	0.0%
West Kaktovik*	78.3	4.5%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Missing	3.0	0.2%	0.0	0.0%	0.0	0.0%	0.0	0.0%	78.3	9.8%	0.0	0.0%
All locations	1,739.1	100.0%	5.0	100.0%	121.4	100.0%	675.8	100.0%	801.6	100.0%	132.3	100.0%

* Barter Island

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2002.

Table 17. Estimated Total Harvest of Dolly Varden by Month, October 2001-September 2002, Kaktovik, Alaska.

	October		December		May		June		July		August		September	
	Est. Harvest	% of Est. Total Harvest in Month	Est. Harvest	% of Est. Total Harvest in Month	Est. Harvest	% of Est. Total Harvest in Month	Est. Harvest	% of Est. Total Harvest in Month	Est. Harvest	% of Est. Total Harvest in Month	Est. Harvest	% of Est. Total Harvest in Month	Est. Harvest	% of Est. Total Harvest in Month
1st fish hole	100.0	100.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
2nd fish hole	0.0	0.0%	22.5	100.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Kaktovik*	0.0	0.0%	0.0	0.0%	0.0	0.0%	63.3	100.0%	383.3	65.3%	566.7	51.5%	50.0	7.0%
Anderson Pt.	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	36.7	3.3%	333.3	46.5%
Bernard Spit	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	66.7	11.4%	66.7	6.1%	333.3	46.5%
Griffin Pt.	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	146.7	13.3%	0.0	0.0%
Iglukpaluk Pt.*	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	3.3	0.6%	0.0	0.0%	0.0	0.0%
Okpiilak Lake	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Schrader Lake	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Tapquauruk	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	150.0	13.6%	0.0	0.0%
West Kaktovik*	0.0	0.0%	0.0	0.0%	60.0	100.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Missing	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	133.3	22.7%	133.3	12.1%	0.0	0.0%
All locations	100.0	100.0%	22.5	100.0%	60.0	100.0%	63.3	100.0%	586.7	100.0%	1,100.0	100.0%	716.7	100.0%

* Barter Island

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2002.

Table 18. Household use of Dolly Varden Fishing Locations by Month, October 2000-September 2001, Kaktovik, Alaska.

Harvest Location	October		April		June		July		August		September	
	Est. Number of Fishing HH's	% of HH's Fishing in Month	Est. Number of Fishing HH's	% of HH's Fishing in Month	Est. Number of Fishing HH's	% of HH's Fishing in Month	Est. Number of Fishing HH's	% of HH's Fishing in Month	Est. Number of Fishing HH's	% of HH's Fishing in Month	Est. Number of Fishing HH's	% of HH's Fishing in Month
1st fish hole	1.0	100.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Kaktovik*	0.0	0.0%	0.0	0.0%	1.4	20.0%	35.8	84.0%	17.4	46.4%	1.4	25.0%
Arey Is.	0.0	0.0%	0.0	0.0%	1.4	20.0%	1.4	3.2%	1.4	3.6%	0.0	0.0%
Bernard Spit	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	4.1	10.9%	0.0	0.0%
Griffin Pt.	0.0	0.0%	0.0	0.0%	4.1	60.0%	4.1	9.6%	5.5	14.6%	4.1	75.0%
Iglukpaluk Pt.*	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.4	3.2%	1.4	3.6%	0.0	0.0%
Schrader Lake	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
West Kaktovik*	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	7.8	20.9%	0.0	0.0%
Missing	0.0	0.0%	1.0	100.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
All locations	1.0	100.0%	1.0	100.0%	6.8	100.0%	42.6	100.0%	37.5	100.0%	5.5	100.0%

* Barter Island

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2002.

Table 19. Household Use of Dolly Varden Fishing Locations by Month, October 2001-September 2002, Kaktovik, Alaska.

	October		December		May		June		July		August		September	
LOCATION	Est. Number of Fishing HH's	% of HH's Fishing in Month	Est. Number of Fishing HH's	% of HH's Fishing in Month	Est. Number of Fishing HH's	% of HH's Fishing in Month	Est. Number of Fishing HH's	% of HH's Fishing in Month	Est. Number of Fishing HH's	% of HH's Fishing in Month	Est. Number of Fishing HH's	% of HH's Fishing in Month	Est. Number of Fishing HH's	% of HH's Fishing in Month
1st fish hole	2.5	100.0%	2.5	100.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
2nd fish hole	0.0	0.0%	2.5	100.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Kaktovik*	0.0	0.0%	0.0	0.0%	0.0	0.0%	3.3	100.0%	26.7	72.7%	36.7	78.6%	3.3	33.3%
Anderson Pt.	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	3.3	7.1%	3.3	33.3%
Arey Is.	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Bernard Harbor	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	3.3	9.1%	3.3	7.1%	3.3	33.3%
Griffin Pt.	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	3.3	7.1%	0.0	0.0%
Iglukpaluk Point *	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	3.3	9.1%	0.0	0.0%	0.0	0.0%
Okpiilak Lake	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Schrader Lake	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Tapquauruk	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	3.3	7.1%	0.0	0.0%
West Kaktovik	0.0	0.0%	0.0	0.0%	2.5	100.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Missing	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	3.3	9.1%	3.3	7.1%	0.0	0.0%
All locations	2.5	100.0%	2.5	100.0%	2.5	100.0%	3.3	100.0%	36.7	100.0%	46.7	100.0%	10.0	100.0%

* Barter Island

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 2002.

APPENDIX 1: Survey Form

HH ID _____-02W DATE_____ INTERVIEWER _____ COMMUNITY __177__

KAKTOVIK SUBSISTENCE FISH HARVEST SURVEY

A Cooperative Effort of the Kaktovik Inupiat Corportation and Alaska Department of Fish and Game, Division of Subsistence.

1. How many people lived in the household this past year? _____ INUPIAT HH? YES NO
2. Since freeze-up last fall (October 2001) through break-up this May/June (2002), did you or anyone in your household:

   GO FISHING? YES NO HOW MANY IN HH FISHED? _____ Catch Fish? YES NO

   RECEIVE FISH FROM ANOTHER HOUSEHOLD? YES NO

   GIVE FISH TO ANOTHER HOUSEHOLD? YES NO

   If NO to Go Fishing? ask Receive and Give questions then skip to Question 6
   If NO to Catch Fish? ask Receive and Give questions then skip to Question 5.

3a. How many iqalukpik (char), sulukpaugaq (grayling), iqaluaqpak (lake trout), tittaaliq (burbot) and other fish did all the people fishing in your household catch during winter (by month)?

Fish Type	2001			2002						Unknown	Overall Total
	Oct.	Nov.	Dec.	Jan	Feb.	March	April	May	June		
Iqalukpik											
Sulukpaugaq											
Iqaluaqpak											
Tittaliq											
Other Fish											

Please tell us where your household caught the fish reported in 3(a); turn the page to list by month, where, fish type, fishing method and how you got to the fishing area.

4. During the winter did you or anyone in your household catch any fish that were not used because they did not look healthy? YES * NO

   *If YES, what was wrong with them?

Symptom	What kind of fish, how many, which month(s) and where?	Symptom	What kind of fish, how many, which month(s) and where?
1.		3.	
2.		4.	

   Were these fish counted (reported) in question 3(a)? YES NO

5. If your HH did not catch any fish this winter - What was the reason that your household was unsuccessful?
6. DO YOU HAVE ANY COMMENTS OR CONCERNS ABOUT FISHING IN THE KAKTOVIK AREA?

Quyanaq!

APPENDIX 1 (continued; this part of form printed on back of previous page):

3b. FISH HARVEST LOCATION INFORMATION – WINTER 2001/2002

WHERE DID YOUR HOUSEHOLD CATCH FISH IN THE MONTHS REPORTED IN QUESTION 3a.

			KIND, NUMBER, AND FISHING METHOD			HOW DID YOU GET TO THE FISHING AREA?		
MONTH	WHERE (PLACE NAME)	Loc. Code	FISH KIND	NUMBER CAUGHT	FISHING METHOD	SNOWMACHINE? Y/N	ATV? Y/N	OTHER? DESCRIBE

APPENDIX 2: Key Informant Interview Form

Kaktovik Inupiat Corporation/Alaska Dept. of Fish & Game
Natural History Information/Traditional Ecological Knowledge

Recommended Interview Guide

Where does the iqalukpik come from when they are caught in the summer along the coast of the Kaktovik area?

Have they always been abundant or are there years when very few are caught? Do you know the reason why there were so few at the time?

Where are they going when they pass through the Kaktovik area during the summer and fall?

Has the size of iqalukpik being caught changed over time? If so how?

Are these fish predictably caught at certain times, if so, where are the sites located?

Do you know anything about how the appearance of these fish changes from season to season? If they change, describe how they change and why that may be due to?

Are there known spawning areas for these fish in local rivers? If so, locate where on the map and describe when the fish spawn there and do people fish there?

Are the iqalukpik that are caught at 1st, 2nd and 3rd fish hole in the winter related to the fish caught along the coast in the summer; if so, in what way?

Are there movements of iqalukpik into rivers and out of rivers during the year; could you describe how that works?

How far up the rivers are the iqalukpik found?

Are there places where really small but adult-looking iqalukpik can be found, if so, where?

Is there anything else about iqalukpik that you could tell us?

Do you have any old stories about iqalukpik?

APPENDIX 3: Key Informant Transcripts

Natural History/Traditional Ecological Knowledge
Kaktovik Inupiat Corporation/Alaska Dept. of Fish & Game

INTERVIEWS

Interview #1.

Alfred Linn Interview with Male #1, one of Kaktovik's senior citizens.

Where does the iqalukpik come from when they are coaught in the summer along the coast of the Kaktovik area?

Iqalukpik when they start running comes out of the river, for instance the iqalukpik coming out of Hula Hula river usually run along Ary Island near the point of it. The iqalukpik start running around June. When they atart running and you put a net out, you start catching them in June, and during the fall and winter when the iqalukpik start going back up the river you can always catch iqalukpik then. This is whwn they returning up the river in he fall.

Have they always been abundant or are there years when very few aar caught? Do you know the reason why there were so few at the time?

There have always been many iqalukpik everywhere. You can always start catching fish when they start running around Kakatovik area. Around June you can start catching with a rod and reel until you can no longer catch them except when you are using a net, than you can still catch them. When I used to fish with a net I usually fish until September and still catch iqalukpik. During the month of September you usually stop catching fish.

Where are they going when they pass through the Kaktovik area during the summer and fall?

They travel all along the ocean and the rivers. One time when I was fishing with a net I caught a fish that was tagged in Inuvik, N.W.T., Canada. Iqalukpik and other fish such as qaaktak travel everywhere. This I know because another time I caught a couple of qaaktak tagged at Inuvik too.

Has the size of iqalukpik being caught changed over time? If so how?

The size of iqalukpik have never been the same, they still come small, medium, and the large one sometimes come really large, demonsrating the size witth his hands showing that the large one may come at least 24" long. When you catch the fish in a net, the size of the iqalukpik or other fish are never the same, it has never changed over the years.

Are these fish predictably caught at certain times, if so, where are the sites located?

The iqalukpik can be harvest by net anywhere along the coast, At nay given time you set your net out to fish, you can catch iqalukpik along with qaaktak and other fishes you may catch

Interview #1 (cont.):

with your net. The iqalukpik and other fishes are all along the coast east or west of Kaktovik during the spring and summer.

Do you know anything about how the appearance of these fish changes from season to season? If they change, describe how they change and why that may be due to?

The iqalukpik have different colors, some are light in color and some are dark, almost black.

Are there known spawning areas for these fish in local rivers? If so, locate where on the map and describe when the fish spawn there and do people fish there?

I don't know, it seems that they spawn up the rivers. When you fish in the rivers you see small fish, and you catch some on Hula Hula river, catch the small iqalukpik. I guess they spawn in the rivers.

Are the iqalukpik that are caught at 1st, 2nd and 3rd fish hole in the winter related to the fish caught along the coast in the summer; if so, in what way?

Yes, I would say that they are related, cause when they come out of the rivers they are traveling along the coast.

Are there movements of iqalukpik into rivers and out of rivers during the year; could you describe how that works?

Probably, I imagine that they are traveling back and forth through the rivers, maybe at the mouth of the river? The ones in the river are probably going back and forth through the river after ice freeze up the river. They come out of the river when it is time, and this is around spring.

How far up the rivers are the iqalukpik found? Are there places where really small but adult-looking iqalukpik can be found, if so, where?

As far as 3rd dish hole, you can catch fish. I have never fished past 3rd fish hole. The only places as far as I know that we usually fish at are 1st, 2nd and 3rd fish hole.The small fish are found in our rivers, they are dark in color, and we call them old man fish. Tthey are never very big.

Do you have any old stories about iqalukpik? Do you know any more about iqalukpik that we should know?

When I was growing up, our elders who have lived before us already knew how to harvest the land around us. They would take us inland along Hula Hula river, for on the river there are fish. Fishing while the river start freezing, when it is almost time to trap for foxes, and other fur animals, this is sometimes around November they return to the coast. During the summertime after the fish start running, we fish along the coast with much traveling along the coast. We catch iqalukpik, qaaktaq and other kinds of fish. Around August they would travel inland again, sometimes by dog team and other by using the dogs for packers during the

Interview #1 (cont.)

summertime. Traveling all the time. In the summertime whenever we catch caribou inland we would use the dogs to help us pack the meat home.

(Towards the end of the interview George got off the subject and was talking about other animals and talked about how they traveled.)

Interview #2.

Alfred Linn, Jr., interview with Female #1, another one of Kaktovik's senior citizens.

Where does the iqalukpik come from when they are caught in the summer along the coast of the Kaktovik area?

The fish goes up the river during the fall time, and I don't know very well where it is that they come from. Usually when the ice from the river goes out, it usually at that time you start catching iqalukpik, and this is sometimes in June.This is about the time that you could catch the fish with rod and reel, while it isn't time to travel by boat.

Have they always been abundant or are there years when very few are caught? Do you know the reason why there were so few at the time?

Sometimes when you fish during the winter up the river you catch very few and its probably when there are very few that way. It varies with each year, sometimes there are lots and other times there few. You know we have 1st, 2nd, and 3rd fish hole and the fish are probably moving between these fish holes.

Where are they going when they pass Kaktvoik area in the summer and in the fall time?

I don't know, but when you are looking on the shoreline during the fall you can catch a glimpse of them traveling west, I don't know maybe some are going east too. I haven't really learned about which way they are going, but usually travel along the coast going west.

Have the sizze of iqalukpik being caught changed over time? If so, how?

No, the size of iqalukpik have never changed, some are very large and others are small, but the size have never changed.We usually catch different sizes, some big, some small.

Are these fish predictably caught at certain times, if so where are the sites located?

When Tommy (her brother) and his wife went to Pattaktuq (Demarcation Point) they caught a lot of fish. They said that there was sure a lot of fish. They went there this summer with a net and caught a lot of fish. We used to camp there in the summer and catch a lot of fish. These are the places where you can catch fish, the places where people used to fish before us. Those are some of the places to fish. This summer I did not go there. Usually a lot of qaaktak.

Do you know anything about how the appearance of these fish change from season to season? If they change, describe how they change and what that may be due to?
They never change. The iqalukpik never change in appearance.

Are there known spawning area for these fish in local rivers? If so, locate where on the map and describe when the fish spawn there and do people fish there?
I don't know.

Are the iqalukpik that are caught at 1st, 2nd, and 3rd fish hole in the winter related to the fish caught along the coast in the summer; if so, in what way?

Interview #2 (cont.)

I guess that they would be cause the iqalukpik go inland through the river during the fall time. After running along the coast the iqalukpik usually go up the river. I guess if you watch their movement you would know if they are part of the fish we catch.

Are there movements of iqalukpik into the rivers and out of the rivers during the year? Could you describe how that works?
The iqalukpik is always moving and during the winter when you are fishing you see them moving all the time.

How far up the rivers are the iqalukpik found? Are there places where really small but adult-looking iqalukpik can be found, if so where?

The fish usually only go as far as 3rd fish hole because from 3rd fish on the river is shallow. After it freeze the ice usually fall down to the bottom of the river because it is shallow. The fish only go as far as 3rd fish hole for it is too shallow for them to go any further.

The adult-looking iqalukpik are dark, almost black, and they are called old man fish.

Do you have any old stories about iqalukpik? Do you know any more about iqalukpik that we should know about?

No, I don't have any.

Interview #3.

Alfred Linn, Jr., interview with Male #2, one of Kaktovik's senior citizens.

Where does the iqalukpik come from when they are caught in the summer along the coast of the Kaktovik area?

The iqalukpik and other fish that we catch and use come from all over, like Canning River, and some of them from rivers west of Canning, also from Hula Hula River, Aichilik River have a lot of fish, and some from Kongakut River. The iqalukpik are not just from the rivers near here, they migrate from far away not just from near Kaktovik. Then after they migrate from all over, then they go into the Mackenie River, when they go into Mackenzie River they spawn. These are things that are passed onto us by our elders. The stroy is that the fish that hatched in the Mackenzie River are carried out of the river by its curent, and they migrate into the rivers. This is the way that I heard these stories. These are not only iqalukpik, but qaataq and other types of fish that we catch.

Have they always been abundant or are there years when very few are caught? Do you know the reason why there were so few at the time?

You people fish with a net right? Some years you people catch a lot of fish, and some years there aren't that many fish harvested. It's like that, some years the fish are abundant, and some years few. Some times you can catch fish but not that much and other times when you start catching fish you keep pretty busy. When we used to fish with a net, that the way we see it, and you know when you fish with a rod and reel there are times when you catch fish, and times when you hardly catch any.

Where are they going when they pass the Kaktovik area in the summer and fall?

They go up 2nd fish hole on the Hula Hula River, anyway this is what they tell me. Even the people who is doing some studies on the fish tells us that is how far they go inland, to 2nd fish hole.

Has the size of iqalukpik being caught changed over time? If so, how?

No, far as I know the size have never changed. We don't try to measure them, all we do is catch them and use them for food.

Are these fish predictably caught at certain times, if so, where are the sites located?

Long time ago the people who lived before our time found where to catch fish, and this is passed on so that we fish where they fished before us. Down at the Bernard Spit, and to the west of us is Nuvugaq (Pt. Collinson) is where they used to fish. Aanalaaq (the area west of Anderson Point) right on the Beufort Sea is another place to fish. Also when the fish is running right along the coast around July the people watch these fish moving along the shoreline and kaktok them. (seining) One of these peole was Ayaki (Alice Putogool) and we used to watch her kaktok fish. The place to the west of Kaktovik where she used Kaktok is no more, its blocked sand spit now.

Do you know about how the appearance of these fish changes from season to season? If they change, describe how they change and why that may be due to?

Interview #3 (cont.)

They are never the same. The young ones change as they grow. Everything is like that, as they grow they change, when first born tey are different and change as they grow, evry living thing. Never the same.

Are there know spawning area for these fish in local rivers? If so, locate where on the map and describe when the fish spawn there and do people fish there?

*Yes, they spawn in the rivers, there is one thing that I understand is that they spawn in the MacKenzie River to the east of us, I don't know about this to the west of Kaktovik, I imagine that there ar***e** *places where they spawn over that way. Like all the other animals such as whales, ducks, and others they know where to go to spawn. I have heard about them spawning at the MacKenzie River.*

Are the iqalukpik that are caught at 1st, 2nd, and 3rd fish hole in the winter related to the fish caught along the coast in the summer? If so, in what way?

They are related, The fish from Lakes Schrader and Peters usually migrate to the coast once in a while, but some of them are different in appearance. There are rivers flowing from these lakes so some of these fish probably migrate to the coast sometimes.

Are there movements of iqalukpik into the rivers and out of the rivers during the year? Could you describe how that works?

These fish comes out of the rivers, moving back and forth. But these small fish that are in the lakes don't come out and they are different. The fish that are in the lakes never come out, and they die in these lakes. We who hunt are not looking into these lakes so we don't know about them because we live on the coast, but these stuff we learn from those people who have lived before us. These fish that are in the creeks which are small never come out of the creeks, at least I think they don't come out. They freeze and in the spring when the creeks thaw out some that are still living can be seen.

How far up the rivers are the iqalukpik found? Are there places where really small but adult-looking iqalukpik can be found, if so where?

They go pass 3rd fish hole, Hula Hula River doesn't only have 1st fish hole, you have 2nd fish hole and 3rd fish hole. Some of our people say there is a fourth fish hole.

Do you have any old stories about iqalukpik? Do you know any more about iqalukpik that we should know about?

This one elder named Ahlalook used to tell the story about iqalukpik centered aroound the Canning River area, and there are many rivers west of Canning River that have iqalukpik too. There are fish in the Shaviovik River that winters there and these fish we have seen and caught when that area hardly had any people living around there this was before Prudhoe Bay. There are other rivers with fish, the iqalukpik and other species of fish is all over.

Interview #4.

Alfred Linn, Jr., interview with Male #3, another Kaktovik senior citizen living in Kaktovik.

Where does the iqalukpik come from when they are caught in the summer along the coast of the Kaktovik area?

Early spring around June, while the ice on the ocean still have not gone out and you can still hunt seals that come up on top of the ice, Hulahula River's ice goes out. The area around the west end of Arey Island is a place where small iqalukpik start coming out of Hulahula River. These are what we start catching on the net. The bigger ones I think comes from the other rivers. While we are hunting seals, when we set a net out right at the end of the island we start catching fish. I would guess that these fish comes out of Hulahula. Also further west when I used to work on the Dewline station called Pow-3 (Bullen Point) the fish start coming out. There was a lot of fish coming out of rivers near there. In the summer I used to fish with a rod and reel, I would catch iqalukpik that wasn't very big but they was abundant cause when I cast my hook I would catch a fish right away.

Have they always been abundant or are there years when very few are caught? Do you know the reason why there were so few at the time?

It's never the same, some years you can catch lot of fish, and some years you can't. I don't know why. Over on the Shaviovik River there usually is a lot of iqalukpik.

Where are they going when they pass the Kaktovik area in the summer and fall?

I don't really know, there are a lot of places where you catch fish, like east of here at Pattaktuq (Demarcation Point) the fish there is plentiful. To the west there are a lot places where you catch fish.

Has the size of iqalukpik being caught changed over time? If so, how?

I don't know if they ever change, you catch small, medium and large fish and as far as I know the size have never changed.

Are these fish predictably caught at certain times? If so, where aree the sites located?

There are a lot places where people fish, and these fish are always moving all over the coast, so I would say that they are going all aver the coast when they come out of the rivers.

Do you know anything about how the appearance of these fish changes from season to season? If they change, describe how they change, and why that may be due to?

Yes, they usually change. These iqalukpik that I see now are smaller than what we used to catch. Now a days the small iqalukpik is coming from somewhere. The big ones are not as many as the small ones.

Are there known spawning area for these fish in local rivers? If so, locate where on the map and describe when the fish spawn and do people fish there?

Yes, they spawn, and what I've been told was that they spawn around August, but they say they do not spawn all their roe.

Interview #4 (cont.)

Are the iqalukpik that are caught at 1st, 2nd, and 3rd fish hole in the winter related to the fish caught along the coast in the summer; if so, in what way?
They are not so different, although some of them are a little different. But some of them are not as big as those you catch at Pattaktuq. It isn't very many fish that you catch now a days, and most of the fish that you catch aren't that big anymore.

Are there movements of iqalukpik into rivers and out of rivers during the year; could you describe how that works?

The fish isn't moving in the winter. When Hulahula River freezes, some of the ice reaches down to the bottom in some places and it is shallow in some parts of it too. Except around the 1st, 2nd and 3rd fish hole where there are deep channels the fish are usually moving up river. At 1st fish there are usually a lot of fish. One time Perry (deceased brother) and Isaac (brother) was there and they looked in the part of the river where there was no ice and saw a lot of fish. They blocked the channel up river and down river of 1st fish hole, than let the water out down river and when the fish was high and dry they started throwing the fish up on the ice. Caught a lot of fish that way. I've done this before too.

How far up the rivers are the iqalukpik found? Are there places where really small fish but adult-looking iqalukpik can be found, if so where?

I think that beyond 3rd fish hole the ice goes down and the fish don't go pass there. Anyway, I don't know of any places towards the pass that have any fish. All I know is that the fish go as far as Katuk, beyond that I have not seen any fish pass there. (Nothing on adult-looking small fish.)

Do you have any old stories about iqalukpik? Do you know any more about iqalukpik that we should know about?

I always thought that the really big iqalukpik usually migrate from Canada. Having seen people in Canada catching the big ones on the MacKenzie River. These big ones must come there as I have seen them being caught there.

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