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Kake Subsistence Salmon Harvest Use Pattern

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FINAL REPORT SUMMARY PAGE

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Information Type: Traditional Ecological Knowledge (TEK)

Issue(s) Addressed: The Southeast Regional Advisory Council has identified Traditional Ecological Knowledge (TEK) as a priority information need. The council requested information on subsistence fishing patterns in the Tongass National Forest at Falls Creek, Gut Bay and Bay of Pillars in order to address regulatory proposals pertaining to these fisheries.

Study Cost: \$70,590.00

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Abstract: This report describes traditional, historic and contemporary use of sockeye or red salmon (*Oncorhynchus nerka*) resources by the people of Kake, Alaska at Kutlaku Creek in Bay of Pillars on Kuiu Island, and Gut Bay and Falls Creek on southern Baranof Island. These three systems are the principal sources of sockeye salmon for the people of Kake. Research topics include the historic and contemporary methods of harvest and processing, traditional management regimes, location of sockeye fisheries, and aspects of competition, distribution and exchange of salmon. Traditional fisheries management maintained healthy stocks of sockeye salmon. Some aspects of traditional fishing practices remain. Respect for salmon, high harvesting households, and multi-household fishing groups with a commitment to sharing resources with those who cannot fish are traditional elements that continue to influence local fishing patterns. Contemporary Kake sockeye salmon harvest practices are community and family-based. The work groups are households and families. The men do most of the fishing while the women process the fish. Nets and other gear are often shared between households. Beach seines, set nets and gill nets are the most common gear used for subsistence sockeye fishing. Regulations and management practices have recently incorporated traditional practices and needs into management plans or regulatory systems. Regulations pertaining to ceremonial needs, customary trade, designated fishers and community harvest permits have begun to address these issues. Methods for data collection were key respondent interviews, participant observation, and archival research.

Key Words: subsistence fishery, Traditional Ecological Knowledge (TEK), traditional management practices, Sockeye Salmon or Red Salmon Southeast Alaska, Falls Creek, Gut Bay, Bay of Pillars, Tongass National Forest.

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TABLE OF CONTENTS

	Page
FINAL REPORT SUMMARY PAGE.....	i
TABLE OF CONTENTS.....	iii
LIST OF FIGURES.....	iv
INTRODUCTION.....	1
Background.....	3
OBJECTIVES.....	7
PROJECT ADMINISTRATION.....	7
METHODS.....	8
RESULTS.....	9
DISCUSSION.....	11
Keex' Kwaan Historical Overview.....	12
Description of Bay of Pillars.....	15
Description of Falls Creek and Gut Bay.....	16
Sockeye as a Food Resource.....	18
Early Keex' Kwaan Salmon Fishing Practices.....	19
Historic Means of harvesting Sockeye Salmon in Southeast Alaska.....	21
Traditional Tlingit Stream Tenure and Fish Management.....	23
Tlingit Traditional Property Law, Conservation and the Commercial Fishery.....	24
Development of the Commercial Salmon Fishing Industry in the Kake Area.....	25
Regulatory Impacts on Kake's Traditional Sockeye Fisheries.....	27
Contemporary Sockeye Salmon Harvest, Use and Distribution.....	29
Harvest, Methods, Gear and Amounts Needed.....	31
Timing, Travel and the Weather.....	33
Processing and Preservation.....	35
Distribution and Sharing.....	37
Passing on Traditional Knowledge and Values.....	38
Customary Trade.....	39
Estimated Subsistence Sockeye Salmon Harvests, Kake.....	40
Sport and Subsistence Fishing.....	41
CONCLUSIONS.....	43
RECOMMENDATIONS.....	44
ACKNOWLEDGEMENTS.....	46
LITERATURE CITED.....	47
APPENDIX A. KAKE SUBSISTENCE SALMON FISHERIES, 2001.....	50
APPENDIX B. ESTIMATING SUBSISTENCE SALMON HARVEST QUANTITIES.....	53
List of Tables.....	53
APPENDIX C. KEY RESPONDENT INTERVIEWS SAMPLE PROTOCOL.....	75

LIST OF FIGURES

Figure 1. Map of Southeast Alaska showing location of Falls and Kutlaku lakes, Gut Bay Lake, and the village of Kake.....	4
Figure 2. Bay of Pillars, Kutlaku Creek and Lake.....	16
Figure 3. Falls Lake, Creek and Gut Bay, Baranof Island.....	17

INTRODUCTION

The project originated from a variety of different sources. The Southeast Regional Advisory Council (Council) identified Traditional Ecological Knowledge (TEK) as a priority information need, and specifically requested information on subsistence fishing patterns at Falls Lake, Gut Bay and Bay of Pillars in order to address regulatory proposals pertaining to these fisheries. The Alaska Board of Fisheries also requested information on subsistence fishing patterns at Falls Creek, Gut Bay and Bay of Pillars. The Organized Village of Kake (OVK) submitted a fisheries research proposal to the Federal subsistence program (#01-089) proposing monitoring of Bay of Pillars sockeye salmon (*Oncorhynchus nerka*) harvests. Residents of Kake have expressed concerns about competition from sport fishers submitting a regulatory proposal to the Federal Subsistence Board (FP01-31) to address information concerning subsistence fishing patterns.

This project focuses on Falls Creek, Gut Bay and Bay of Pillars subsistence sockeye harvest information needs. The report describes the village of Kake's historic and contemporary subsistence sockeye salmon harvests at Bay of Pillars on Kuiu Island (Figure 2) and Falls Creek and Gut Bay on Baranof Island (Figure 3). The goal of the research was a qualitative, descriptive analysis of the historic and contemporary subsistence sockeye harvests. Elements of the project include; (1) A description of historic methods of harvesting non-commercial salmon in Southeast Alaska; (2) A description of the historic methods of harvesting non-commercial salmon at Falls Creek, Gut Bay and Bay of Pillars; (3) A description of the contemporary methods of harvesting non-commercial salmon at Falls Creek, Gut Bay and Bay of Pillars. Research methods included reviews of published books, reports, technical papers, existing harvest data and documents, interviews with key respondents, and field observations of the Falls Creek, Gut Bay and Bay of Pillars subsistence fisheries.

The project addresses the management of federal and state subsistence fisheries by providing basic information to respond to future requests to change Customary and Traditional Use determinations, as well as seasons and bag limits for sockeye salmon. The project attempted to identify causes of recent changes in sockeye abundance, subsistence fishers' effort and competition between subsistence, sport and commercial fisheries.

The geographic area of the study was central Southeast Alaska, Kupreanof, Kuiu and Baranof Islands. Subsistence sockeye fisheries located at Kutlaku Creek in Bay of Pillars on Kuiu Island, and Gut Bay and Falls Creek on southern Baranof Island were the primary field study locations. These three systems are the principal sources of sockeye salmon for the people of Kake. Fieldwork was also conducted in the village of Kake, located on Kupreanof Island.

Published literature on Southeast Alaskan subsistence salmon harvests is limited. The primary references consulted for this report are described below.

- *The Tlingit Indians* by George Thornton Emmons, offers general ethnographic information pertaining to traditional Tlingit fishing practices.
- *Haa Aaní, Our Land: Tlingit and Haida Land Rights and Use*, by Walter R. Goldschmidt and Theodore H. Haas, is a source of information specific to Tlingit and Haida fishing practices. *Haa Aaní* is the edited version of a 1946 report to the Bureau of Indian Affairs by anthropologist Goldschmidt and attorney Haas. Goldschmidt and Haas visited a number of Southeast Alaska communities in 1946 collecting information about land and resource uses by Tlingits and Haidas. *Haa Aaní* includes interviews conducted with local trappers, hunters and fishers in Kake.
- *The Great Father In Alaska: The Case of the Tlingit and Haida Salmon Fishery* by Robert E. Price, provided much of the information pertaining to the history of the commercial fishing industry and the role of Tlingits and Haidas in the development of the industry.
- Two Ph.D. dissertations were primary sources for this research. David F. Arnold's (1997), "*Putting Up Fish: Environment, Work, and Culture in Tlingit Society, 1780s-1940s*", includes research specific to Kake. Stephen J. Langdon's (1977), *Technology, Ecology, and Economy: Fishing Systems in Southeast Alaska*, although not specific to Kake, has a wealth of information on traditional salmon fishing traditions in Southeast Alaska.
- Alaska Department of Fish and Game, Division of Subsistence publications were also reviewed for this research. *Subsistence Resource Use Patterns in Southeast Alaska: Summaries of Thirty Communities*, Technical Paper 213, Betts, et al (1994), was reviewed to for information pertaining to the history of Kake, subsistence salmon harvest information and commercial fisheries information. Technical Paper No. 145, *Harvest and Use of Fish and Wildlife Resources by Residents of Kake, Alaska*, Firman and Bosworth (1990), was reviewed for information pertaining to subsistence salmon harvest and the history of the commercial fishery in Kake. *Use of Sockeye Salmon at Sitkoh Bay, Alaska*, Technical Paper No. 174, Thornton, et al.(1990), although not specific to Kake contains information pertaining to traditional Tlingit sockeye salmon harvest practices.
- Robert Wolfe's unpublished 1989 report to the Alaska Board of Fisheries, "Historic Methods of Harvesting Non-Commercial Salmon in Southeast Alaska," was another primary source for this report. Wolfe's 1989 report is a summation of information from primary resources. Wolfe's update, "Subsistence in Alaska 2000," was also referred to for subsistence salmon information in a statewide context.

- The Alaska Department of Fish and Game, Division of Subsistence, Community Profile Data Base (CPDB), is the statewide subsistence household harvest survey database. The CPDB was referred to for subsistence salmon harvest data. CPDB data are based on household harvest surveys.
- The Alaska Department of Fish and Game, Division of Subsistence, Alaska Subsistence Fisheries Annual Report (2003) and the Alaska Subsistence Fisheries Database (Caylor and Walker 2003) were referred to for subsistence harvest permit data.
- Several of the Alaska Department of Fish and Game, Commercial Fisheries Divisions' Petersburg – Wrangell Management Area Annual Reports were also reviewed. A number of The Division of Sport Fisheries, Harvest, Catch, and Participation in Alaska Sport Fisheries reports were also important resources for this work.
- Archival resources used in the research included two unpublished U. S. Department of the Interior reports. The first of these reports, Hearings Upon Claims of Natives of Alaska Pursuant to the Provisions of Section 201.21b of the Regulations for Protection of the Commercial Fisheries of Alaska, 1944, included information pertaining to salmon fishing in the vicinity of Kake. The second document, also known as the Judge Hanna Hearings, Hearings on Aboriginal Claims of the Indians of Hydaburg, Kake, and Klawock, Transcript of Proceedings, Volumes V and VI, Proceedings of September 22 and September 23, 1944, are specific to Kake and include testimony of hunters, trappers, and fishers.

Background

The community of Kake is located on the northwest shore of Kupreanof Island, facing Keku Strait, approximately one hundred miles south of Juneau, and forty miles northwest of Petersburg (Figure 1). Historically two Tlingit *kwaans*, the *Keex' kwaan* and the *Shtaax'een kwaan*, inhabited Kupreanof Island. The division between *kwaan* territories ran roughly from Portage Bay on the northeast to midway between Point Barrie and Totem Bay at the southwest end of Kupreanof Island (Goldschmidt and Haas 1998, Betts et al 1997).

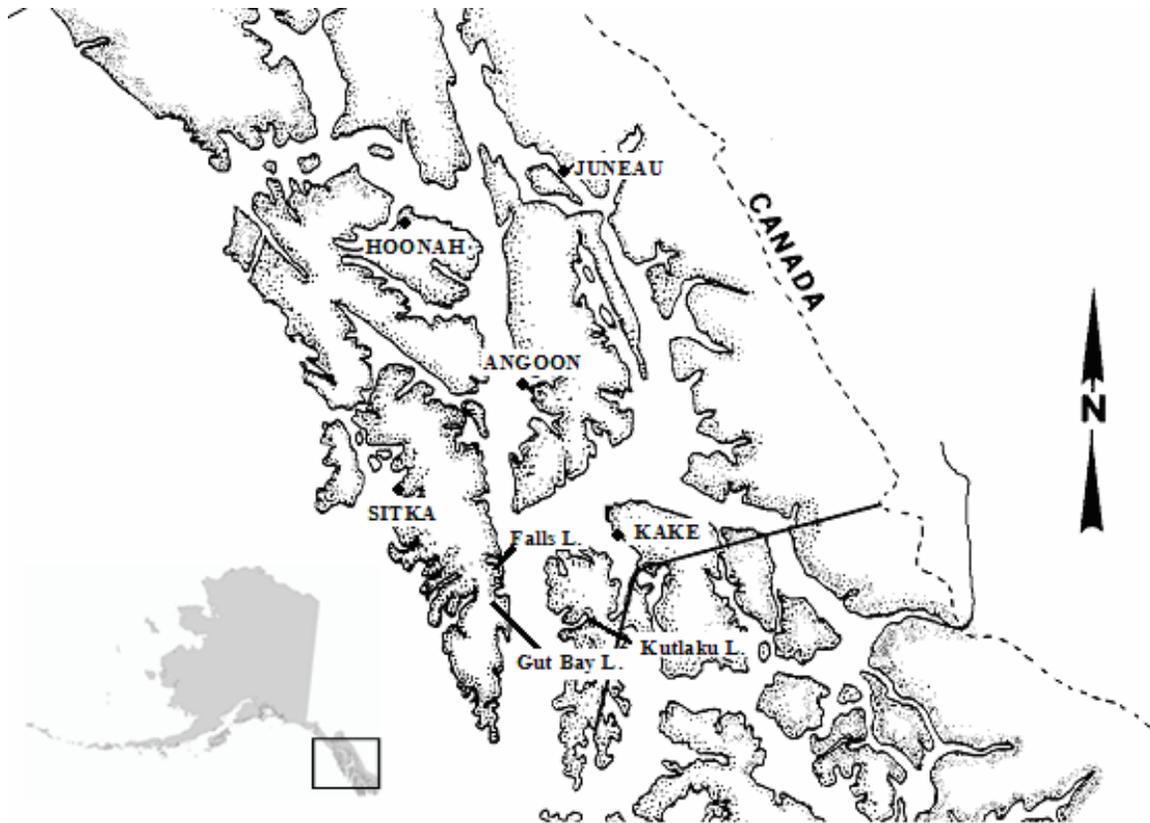


Figure 1. Map of Southeast Alaska showing location of Falls and Kutlaku lakes, Gut Bay Lake, and the village of Kake

Kake is the English spelling for the Tlingit word *Keex'*. There are several interpretations of the word Kake or *Keex'*. One is that *Keex'* is short for "town that never sleeps" (*Lxex'w Xu.aan*). This interpretation refers to an all-night potlatch given in Kake for clans from other Tlingit *kwaans*. The name Kake may also refer to a lake or geographic feature on Kupreanof Island mentioned in a Kake migration story. The community was also known as *S'ikanakhse*, which means "from a black bear town." There is yet another story about the naming of Kake which involved Raven, the creator, who compared the lines on his wrinkled claws to the numerous channels near Kake (Betts et al 1997).

According to Betts (1997) the *Keex'* Tlingit have about fourteen major clans, each clan belonging to one of the moieties, Wolf/Eagle or Raven. Historically each major clan claimed lands, waters and resources within the larger Kake territory. Clans claimed well-defined territories, including salmon streams, deer hunting areas, berry patches, bays for seal hunting, trapping areas and halibut banks (Goldschmidt and Haas 1998).

The oral history of the founding of Kake includes an account of a migration from Long Island, off the west coast of Prince of Wales Island, to Kupreanof Island. According to this oral history the *Keex'* Tlingit first settled in Hamilton Bay before moving to the present day site of Kake. From the late 1700s throughout the 1800s the *Keex'* Tlingit occupied many permanent and seasonal sites near Kake. *Keex'* Tlingit sites were located

at Saginaw and Tebenkoff bays and Port Camden on Kuiu Island, Rocky Pass and Hamilton Bay on northern Kupreanof Island, Pybus and Gambier bays on Admiralty Island, and on the mainland at Port Houghton and Cape Fanshaw (Betts et al 1997; Goldschmidt and Haas 1998). Following the purchase of Alaska by the United States in 1867 there were several confrontations between the *Keex'* Tlingit and the military, culminating in the bombing of three Kake villages in 1869 by American ships. Following this event, the *Keex'* Tlingit did not rebuild their bombed out villages, instead moving to the present town site of Kake on Keku Strait (Betts et al 1997).

By the late 1800s significant changes were taking place in Kake. Between 1880 and 1915 territorial government, Christian missions, commercial fishing enterprises and a larger non-native population arrived in *Keex'* Tlingit territory. Shortly after the turn of the century a government school was built in Kake and the government required that Native children attend. All of these developments resulted in the abandonment of several village sites on the mainland and Admiralty and Kuiu islands (Betts et al 1997).

In 1914 the Department of the Interior attempted to move residents of Kake to Klawock on Prince of Wales Island. Refusing to move to Klawock, the people of Kake requested that the government create a reserve for their exclusive use. Although the reserve was not created, by the 1920s, Kake had become a self-governing community with a mayor and police chief (Betts et al 1997).

In 1949 the Alaska Natives of Kake formed a tribal council, the Organized Village of Kake, under the Indian Reorganization Act of 1936. In 1952, Kake incorporated as a first class city. The passage of the Alaska Native Claims Settlement Act (ANCSA) in 1971 resulted in the establishment of the village corporation and selection of corporation lands near the community of Kake (Betts et al 1997).

The development of the commercial salmon fishing industry brought canneries to Kake and other locations in the area. Kake fishers became involved in the industry as both independent and company fishermen. Some Kake residents also worked in the canneries and on the fish traps. The tribal government eventually opened and operated the Kake cannery. Along with other tribally operated canneries at Angoon, Klawock and Hydaburg, the Kake cannery struggled over the years to survive in the changing economic climate facing the salmon fishing industry (Arnold 1997; Price 1990).

In the 1990s the ANCSA, village corporation, Kake Tribal, began investing in the fish processing industry, operating the community's cold storage facility and developing a fish smokery. Kake Tribal also invested in another Southeast Alaska community, Pelican, at the north end of Chichagof Island, which operates the cold storage plant.

A non-profit fish hatchery is operated by the City of Kake at Gunnock Creek, in the middle of the town.

Kake residents continue to work at integrating subsistence activities and commercial fishing in spite of a decline in the commercial fishing industry. The number of Kake

fishers holding limited entry salmon and halibut fishing permits has declined steadily over the years, from 103 in 1980 to 67 in 2000. The number of permit holders actually fishing declined even more dramatically, from 90 in 1980 to 21 in 2000. Income from commercial fishing increased during the 1980s and early 1990s, but has experienced a sharp decline since 1997. Salmon hand troll permits are the most common gear type held, although Kake salmon permit holders who fished are equally divided among purse seine, hand troll and power troll gear (ADFG, CFEC, 2000).

During the 1960s and 1970s several timber harvest operations existed on Kuiu Island. In 1968, the Soderberg Logging Company established a camp in Kake and began logging on Kupreanof Island on National Forest land. Soderberg continued operations on federal land into the 1980s. Soderberg also conducted timber operations on Kake Tribal Corporation lands from 1979 through 1982. Logging camps were established at Rowan Bay, south of Kake on Kuiu Island and at Saginaw Bay. Kake residents found employment in these camps, particularly the camp at Saginaw Bay (Firman and Bosworth 1990).

In the early 1980s, as the market for timber declined and timber harvesting from public lands became less profitable, Soderberg Logging Company ceased timber harvesting and began to build roads for Kake Tribal Corporation. At this time Kake Tribal Corporation was also beginning to harvest timber on corporation lands on northern Kupreanof Island. Corporation timber operations continued through the 1990s. When Kake Tribal timber resources dwindled, Sealaska Corporation started to log its timber resources on Kupreanof Island near Kake. This local logging provided steady employment near Kake, allowing many residents to remain in the community and work.

The population of Kake has fluctuated greatly during the last century. Prior to the late 1800s human populations were scattered and mobile. Counts for some places may have relied on the estimates or personal knowledge of missionaries or other special agents. Early decline in population may reflect the impact of new diseases (Firman and Bosworth 1990). Further, the low population numbers enumerated for Kake in the 1890, 1900 and 1910 census could be the result of absences due to subsistence hunting and fishing activities, working at salmon canneries in British Columbia, or picking hops in the state of Washington (Firman and Bosworth 1990).

In the last 30 years, Kake's population has grown by almost 37 percent, from 448 in 1970 to 710 in 2000 (US Dept of Commerce, 2000 Census). The growth of the timber and commercial fishing industries during this period contributed to the increase in population. The community remains predominately Alaska Native, with Alaska Natives comprising 75 percent of the population. In 2000 there were 246 households in Kake (U.S. Census 2002).

OBJECTIVES

The project had the following five objectives:

- A descriptive analysis of historic methods of harvesting non-commercial salmon in Southeast Alaska and Kake's historic subsistence sockeye salmon harvests at Falls Creek and Gut Bay on Baranof Island and Bay of Pillars/Kutlaku on Kuiu Island.
- A descriptive analysis of Kake's contemporary subsistence sockeye salmon harvests at Falls Creek and Gut Bay on Baranof Island and Bay of Pillars on Kuiu Island.
- Assessment of the current trends and characteristics of the subsistence fishery, describing and analyzing the relationships between subsistence, sport and commercial fishers, (issues of competition), local observation of abundance, and location of effort.
- A written report summarizing the subjects addressed by the research.
- Computer-accessible text files of key respondent interviews. These files will be included in the Subsistence Division's Southeast Alaska Sustainable Salmon Fund Project, Southeast Salmon Local Knowledge Database, Project Number 45250.

PROJECT ADMINISTRATION

The project is a descriptive, qualitative analysis of the historic and contemporary subsistence sockeye salmon harvest in Kake, Alaska based on review of ethnographic and historical literature, observations of subsistence fisheries and interviews with Kake residents. The project was proposed and developed jointly by the Alaska Department of Fish and Game, Division of Subsistence, and the Organized Village of Kake. The Federal Subsistence Board approved funding for the project. The United States Department of the Interior, Fish and Wildlife Service, Fisheries Information Service, Office of Subsistence Management, and the United States Department of Agriculture, Forest Service administered project funding. An agreement between the Division of Subsistence and the Organized Village of Kake subsequently transferred funds to the Organized Village of Kake for their work on this project. The U.S. Forest Service assisted the Subsistence Division by providing housing for division staff working in Kake.

Due to requests by the Organized Village of Kake that the project be a cooperative effort with extensive tribal involvement, the amount of work and the level of involvement in the project by the Organized Village of Kake was significantly greater than other cooperative projects between the Division of Subsistence, Region I office and tribal governments. The Organized Village of Kake was responsible for most of the fieldwork and all of the key respondent interviews and transcriptions. Elizabeth Cheney was responsible for the fieldwork, observing and documenting fisheries and conducting key respondent interviews. Ms. Cheney contributed to three sections of the report *Keex' Kwaan Historical Sources, Early Keex' Kwaan Salmon Fishing Practices, and Contemporary Sockeye Salmon Harvest, Use and Distribution*.

Ms. Dawn Jackson, tribal administrator oversaw the Organized Village of Kake part of the project. Tribal historian Charles Johnson contributed to the historical and cultural information contained in this report.

METHODS

During the summer of 2001 Division of Subsistence and the Organized Village of Kake staffs conducted field research. Division of Subsistence staff worked in Kake with tribal staff, training tribal staff in interview techniques and fieldwork. Division of Subsistence staff also made field trips to Gut Bay, Falls Creek, and Kutlaku Creek in Bay of Pillars during the summer. Elizabeth Cheney visited traditional fishing sites at Gut Bay and Falls Creek in mid-June 2001. Only one on-site observation occurred at Gut Bay due to timing of the fieldwork. Several visits were made to the Falls Creek area, including a visit by Division staff during the subsistence sockeye opening. Division of Subsistence and Organized Village of Kake staff made a single visit to Bay of Pillars after the close of the subsistence sockeye opening.

Ms. Cheney's work included description of contemporary harvests, including gear used, means of transportation to fishing sites and fish processing techniques. Ms. Cheney also noted sockeye abundance and location of fishing effort in her work. Ms. Cheney and Charles Johnson reviewed tribal files for historic references on the use of Gut Bay, Falls Creek and Bay of Pillars to provide context.

Staff of the Organized Village of Kake requested responsibility for identifying and interviewing key respondents. Tribal staff began the process by selecting key respondents who had a history of fishing at Gut Bay, Falls Creek and Bay of Pillars. Staff then decided which of these people were knowledgeable about traditional and contemporary fishing practices and willing to be interviewed. Based on these criteria, tribal staff selected nine Kake residents for in depth interviews. Subsistence Division staff developed the interview protocols used by tribal staff (Appendix C).

All interviews were taped and transcribed by tribal staff. Transcriptions of the interviews and material selected for use in the report were brought to each of the key respondents for confirmation of accuracy. Both the Organized Village of Kake and the Division of Subsistence have copies of transcripts in their files. Division of Subsistence staff entered interview materials into the AskSam database.

Two roundtable discussions with Kake residents were organized and moderated by Elizabeth Cheney. One session was held with members of the Alaska Native Sisterhood, Nathan Soboleff, Division of Subsistence staff, assisted with this session. Elizabeth Cheney also held a second round table discussion with members of the Alaska Native Brotherhood. These discussions were not as structured as the individual key respondent interviews. Round table discussions were not tape-recorded. Staff took notes during the discussions and material pertinent to the research has been included in the final report.

The final report is a descriptive analysis of historic, traditional, and contemporary methods of harvesting non-commercial salmon at Gut Bay, Falls Creek and Bay of Pillars. Tribal staff contributed materials on the customary and traditional harvest and use of sockeye salmon, including observations of the fishery and key respondent interviews. Division of Subsistence staff contributed materials on the history of Kake's commercial fisheries and assessment of current trends and characteristics of the subsistence fishery.

RESULTS

Based on the work conducted for this project, it appears that residents of the village of Kake have continuously harvested sockeye salmon from Falls Lake, Gut Bay and Pillar Bay (Figure 1) for at least several hundred years. Although harvest techniques have changed especially with the development of commercial fisheries and federal and state regulatory regimes, the value of the subsistence fisheries to residents remains high.

Because sockeye runs are concentrated in a few river and lake systems these streams have always been highly valued by residents of Southeast Alaska. Most prominent Tlingits traditionally had rights over at least one sockeye stream by virtue of clan ownership (Emmons 1991; Langdon 1977; Price 1990). Productive sockeye streams tended to be claimed by a clan house with summer camps and smokehouses nearby (Emmons 1991; Langdon 1977; Wolfe 1989).

Traditional sockeye salmon harvest methods, principally weirs and traps, were used to catch salmon in rivers, at river mouths, or along shallow stretches of shore where fish schooled (Emmons 1991; Langdon 1977; Wolfe 1989). Fishing with weirs and traps was a relatively large-scale operation, involving construction and maintenance of large fixed facilities by a group of people (a clan group) (Langdon 1977; Wolfe 1989). Weirs and traps were used throughout Kake territory. The large numbers of fish harvested were

split among participating members. Although harvest techniques have changed, the social patterns of clan and or family based work groups and sharing of salmon continue in Kake. These sockeye salmon fishing techniques and patterns of harvest and sharing were observed and documented during the course of this project.

Laws and regulations arising from the need to manage the growing commercial salmon fishing fleet have significantly influenced subsistence fishing methods and patterns in Southeast Alaska. Subsistence fishing methods have been limited over time by federal and state management (Price 1990; Wolfe 1989). Traditional Tlingit harvest techniques, principally weirs and traps, were outlawed by the federal and state governments, which effectively forced Native fishers out of stream mouths and into marine waters. Another result of this regulatory history is that current subsistence salmon fishing regulations in Southeast Alaska are among the most restrictive in the state (Wolfe 1989).

With the development of the commercial salmon fishing industry Tlingits and Haidas lost ownership and control of salmon streams (Arnold 1997; Price 1990). Once lost, it was less likely that the traditional network could control harvest practices (Arnold 1997; Price 1990). Although loss of control of some salmon fisheries has resulted in a loss of salmon harvest traditions in Kake, certain elements of these traditions remain. Interviews with key respondents in Kake confirmed an emphasis on a respect for salmon and the tradition of sharing subsistence harvests continues.

Since the 1890s, it has been common for Southeast residents to fish for commercial sale, and to remove subsistence fish from their commercial harvests. For the Kake Tlingit, commercial fishing arose as the major cash generating segment of the local economy.

Commercial fishing households in Kake have the equipment, personnel, and skills with which to fish and hunt efficiently. These households generally have commercial fishing boats, which are larger and more seaworthy than non-commercial boats. These larger boats allow for travel in inclement weather and rough seas and they also allow people to stay out longer on trips. The larger boats can carry more people and gear, and bring larger harvests back to the community. Commercial fishing households have greater quantities of equipment, such as nets, skates, pots, longlines, troll gear, guns, and secondary skiffs. Members of commercial fishing households are also familiar with their communities' traditional subsistence use areas and are skilled in efficient harvest techniques (Betts et al 1994; Wolfe 1989).

While fewer households in Kake are involved in commercial fishing today, fieldwork confirmed that this pattern of commercial fishing boat use in subsistence harvesting continues. The decline of the commercial salmon fishing fleet has resulted in fewer large commercial fishing boats and crews home ported in Kake. In response to this loss of commercial boats the communities' larger non-commercial boats, cabin cruisers and large skiffs, are taking the place of the commercial boats in the subsistence fishery. On fishing and hunting trips crews on the larger boats, both commercial and non-commercial, commonly harvest for several households, distributing the subsistence foods on return to the community. This is an efficient use of labor and equipment for the

community as a whole. In addition to these factors, commercial fishers commonly retain a portion of their commercial harvest for home use by the family. Research conducted by the Division of Subsistence indicates that both state and federal permitting systems in Southeast Alaska fail to account for much of the subsistence fish caught by high harvesters. Division of Subsistence household harvest surveys conducted in Southeast Alaska communities have documented substantially higher salmon harvest levels than those reported on the subsistence salmon harvest permits (ADFG 2003).

Residents of Kake have concerns about competition from the growing sport fishery, and charter boat industry at Falls Creek, Gut Bay, and Bay of Pillars, in all the waters of Frederick Sound, Security Bay, and Chatham Strait in the vicinity of Kake. This study documents the local perceptions of their impacts on Kake's subsistence salmon harvests.

DISCUSSION

Salmon has been and continues to be the most important subsistence resource in many communities of Southeast Alaska, especially Native communities (Emmons 1991; Wolfe 2000). Sockeye salmon in particular, are a highly prized, valuable resource for both symbolic and economic reasons. Due to spawning habitat requirements and streams associated with fresh water lakes, sockeye runs are relatively rare and widely distributed throughout the Alexander Archipelago, and the Southeast Alaska mainland, making them a valuable but limited resource. Historically, most prominent Southeast Alaska Native groups claimed rights to at least one sockeye stream (Emmons 1991; Langdon 1977; Wolfe 1989; Thornton et al 1990). The Kake Tlingit claimed rights to sockeye streams in Gut Bay, Falls Creek and Bay of Pillars (Goldschmidt and Haas 1998).

This report describes traditional, historic and contemporary uses of the sockeye salmon resources by the people of Kake, Alaska at Kutlaku Creek in Bay of Pillars on Kuiu Island, and Gut Bay and Falls Creek on southern Baranof Island. These three systems are the principal sources of sockeye salmon for the people of Kake, and although they are small stocks, they are extremely important for Kake families. Several other streams, including Alecks Creek, flowing into the northeastern area of Tebenkof Bay, south of Bay of Pillars on Kuiu Island, and False Pt. Pybus, across Frederick Sound on south Admiralty Island, also support runs of sockeye salmon, which Kake people have used over the years (Goldschmidt and Haas 1998).

Throughout the 20th century Kake residents have continued to hunt, fish, and gather resources for subsistence use. Salmon, halibut, rockfish, other bottom fish and numerous marine invertebrates, seaweeds and other plants, seals, waterfowl and upland birds, deer, bear, and furbearers have provided residents with food and materials through yearly seasonal cycles. Salmon and sockeye in particular continues to be one of Kake's primary subsistence resources.

The Division of Subsistence has conducted three different household harvest surveys in Kake. Surveys were conducted for the 1985, 1987, and 1996 study years. Data from these surveys reveals that fish comprise the largest resource category harvested by Kake households for home use. Salmon comprised half or more of the total pounds of fish harvested in all three study years (Appendix B.) Estimated harvest and use of sockeye salmon shows that sockeye use has increased over this time period. In 1985, 41 percent of Kake households reported using sockeye salmon, in 1987, 50 percent reported using sockeye, and in 1996 almost 96 percent of Kake households reported using sockeye salmon. The percent of households harvesting sockeye salmon also increased between 1985, 1987 and 1996. In 1985, 34 percent of Kake households reported harvesting sockeye salmon, in 1987, 32 percent reported harvesting, and in 1996, 41 percent reported harvesting sockeye salmon (Appendix tables B-6, B-7, B-8).

Household harvest survey data, subsistence permit data (Appendix A.) and results from the research conducted for this report all indicate that salmon, sockeye salmon in particular, continues to be one of the most important subsistence resources for residents of Kake.

Keex' Kwaan Historical Overview

Gut Bay, Falls Creek, and Bay of Pillars are part of the *Keex'* Kwaan traditional history. The *Keex'* Kwaan traditional history has been passed down through oral family histories that predate written records. These oral histories are consistent with the archaeological record for all three areas. Although archaeological research is important for academics, the state and federal governments, the people of Kake have not expressed any deep desire to disturb traditional areas in order to conduct such research (Cheney 2001).

For the Kake Tlingit, history is not a matter of time, but of process, event, and story. The most common elements recalled in the collective conscience of the Kake Tlingit are those events that deeply affected their lives. In the cyclical world of the Kake Tlingit traditional stories do not contain dates but rather references to the events that shaped the time and the deep moral lessons that have been learned. For example, Tlingits may not know the specific date that Europeans landed on their shores but they do remember the effects and lessons that were learned. The historical record on the Tlingit side does not refer to dates but rather to events that shaped their world (Cheney 2001).

One example of an event that shaped Tlingit history is the story of the destruction of a village that was just outside Gut Bay. The village was a clan home where many families lived inside the protected bay. At some time in the past an avalanche occurred covering the entire village. Following the avalanche the village was never rebuilt. The clan that owned the bay and the rest of the people of Kake continued to use Gut Bay as part of their customary and traditional grounds (Cheney 2001).

Many cultures have stories about a great flood as do the Kake Tlingit. Kake families tell stories of how their ancestors evacuated the coast to ride out the flood. One key respondent told of how her family went far into what is now Canada. When the flood receded some families returned to Kake, others went elsewhere. This event and the responses to it may account for her clan's wide ranging territories. Another story about the flood concerns a clan or house group from Kake who went into the mountains of Baranof Island to wait out the flood. Once the water receded they were able to return to their coastal home. According to key respondents, the family group associated with the Falls Creek area and the southern tip of Admiralty Island may be the descendants of those who fled to the interior of Baranof Island (Cheney 2001).

Bay of Pillars on Kuiu Island was also the home of a Tlingit village prior to European contact. After contact Bay of Pillars continued to be used as a village site but was no longer inhabited year round. It became a seasonal fishing camp. One key respondent recalled going to Bay of Pillars with her family during the summer fishing season (Cheney 2001).

The seasonal fishing camps were efficient at harvesting and processing large quantities of salmon. Fish camps also included permanent family caches where food, materials for a shelter and other equipment were stored the year round. Caches were available for anyone caught in bad weather and forced to wait out a storm. If you used someone else's cache, upon return to the village you were obligated to go to the owner of the cache and thank them for their hospitality. One key respondent said that when you thanked the owner of the cache the owner would respond by thanking you. The person who used the cache was also obliged to replenish it (Cheney 2001).

A story about sockeye salmon relates the history of Tebenkof Bay, just south of Bay of Pillars. Tebenkof is also known as 'sockeye bay', however its distance from Kake and the proximity of other sockeye streams to Kake make it less convenient for residents today. Tebenkof is considered part of the Kake Tlingit customary and traditional use area and sockeye are harvested there if the other areas near Kake are not fruitful. Alecks Creek is the stream located in the back of the bay and there is an extensive tide flat that makes access to this area difficult. According to two key respondents Tebenkof Bay had several village sites prior to European contact. The area was rich in resources and the people lived well. However, a Tlingit *Ixt* (Prophet), received word from *Dee Kei Aan Kaawu* (God, the Higher Spirit) that he was going to deal with the people of Tebenkof. *Dee Kei Aan Kaawu* instructed the *Ixt* to tell the people that he was holding back the sockeye from the stream so they would not touch the first run. The people were not to harvest sockeye until after the first fish started moving in. Only after this could the people take what they would need for the winter. However, there would be one sockeye with a red fin that was not to be harmed. The *Ixt* told the people what *Dee Kei Aan Kaawu* had told him but the people did not believe him. When the fish came into the stream the people took what they needed as well as the red-finned sockeye. Soon afterwards things began to go bad for the Tebenkof people (Cheney 2001).

In one version of the story a great epidemic, perhaps smallpox, spread among the people. In another version, the Tebenkof villages began to fight each other eventually killing almost everyone. Both versions of the story come together at this point. After many deaths there were only a few survivors, some moved north to Kake. Since that time there have been no villages in Tebenkof Bay. This tragedy is still remembered by people in Kake. One key respondent recalled learning the story from his father when he was a child. He remembers that they were commercial fishing along the west coast of Kuiu Island when his father decided to take his sons into Tebenkof Bay to share the story with them. His father became very still and quiet as they moved deeper into the bay and before telling his sons the story, he prayed. He took them to the back of the bay and showed them the old wooden fish traps that were used by the people of 'sockeye bay' long ago (Cheney 2001).

At all three of the study locations, Gut Bay, Bay of Pillars and Falls Creek, clan and family have significant roles in harvesting and preparing the fish. Fish camps were semi-permanent villages, used mostly from June through October. The people moved out to the fish camps in the spring, fishing through the summer and into the fall. They would move back to the Kake winter village site in the fall. By the early 1900s this began to change when the government began to pressure the people to send their children to school. After this point the history of the three areas began to change. Families could no longer leave for months at a time, the seasonal cycle began to lose its hold on the people's activities and the winter village of Kake became a year round home (Cheney 2001).

Prior to the early 1900s and the introduction of gas boats, canneries and the commercial fishing industry, everything took longer, people traveled to fish camps in canoes, living there weeks, harvesting and processing fish. Family groups were quite large and required hundreds, if not thousands of fish. Key respondents recalled stories of hundreds of fish being put up by large groups consisting of eight or ten families. With the arrival of Europeans and the development of canneries, fish camps became less important and the seasonal cycle began to revolve around commercial fishing. Fish camps were still being used into the 1940s but began to disappear after World War II (Cheney 2001).

Organized Village of Kake staff, village residents, and key respondents were not comfortable using the term "subsistence" to describe their customary and traditional gathering practices. Residents of Kake commented that the use of the word subsistence was inappropriate. Subsistence is too limited to describe the rich traditions and history of Alaska Native cultures. In Tlingit "*Haa Kusteeyi*" or Our Way of Life, is the concept which best describes these practices. Consequently, many Tlingit residents of Kake prefer to use "customary and traditional gathering" to describe their hunting and fishing traditions. Tribal staff described customary and traditional gathering as a community activity linking extended families and generations into complex networks of association. Customary and traditional gathering is part of the economy of the community, based on interdependence and sharing (Cheney 2001).

Description of Bay of Pillars

Bay of Pillars is located on the west coast of Kuiu Island, south of Point Sullivan and Rowan Bay, and north of Point Ellis and Tebenkof Bay (Figure 2). The southernmost sockeye system for Kake residents, Bay of Pillars requires fishers to make a long trip west past Cornwallis Point around the northeast end of Kuiu, past Security Bay, and south down Chatham Strait. The distance from Kake, as well as unpredictable weather and seas, can make travel to Bay of Pillars difficult. Numerous small, rocky islands are scattered just north of the mouth of the bay. Bay of Pillars has many deep-water narrows separating the bay into several areas: the mouth of the bay, east of the old cannery site to “the narrows,” the “salt chuck lake,” and the arm of the salt chuck lake into which Kutlaku Creek empties. Bay of Pillars narrows to a tight mile long channel – “the narrows”, and then opens again, - the “salt chuck lake.” The north arm of salt chuck lake extends approximately eight miles eastward, almost cutting Kuiu Island in half. A short one and a half mile portage leads to the head of Port Camden on the east side of the island. At this eastern head of the bay, a shallow two-mile long arm extends southward.

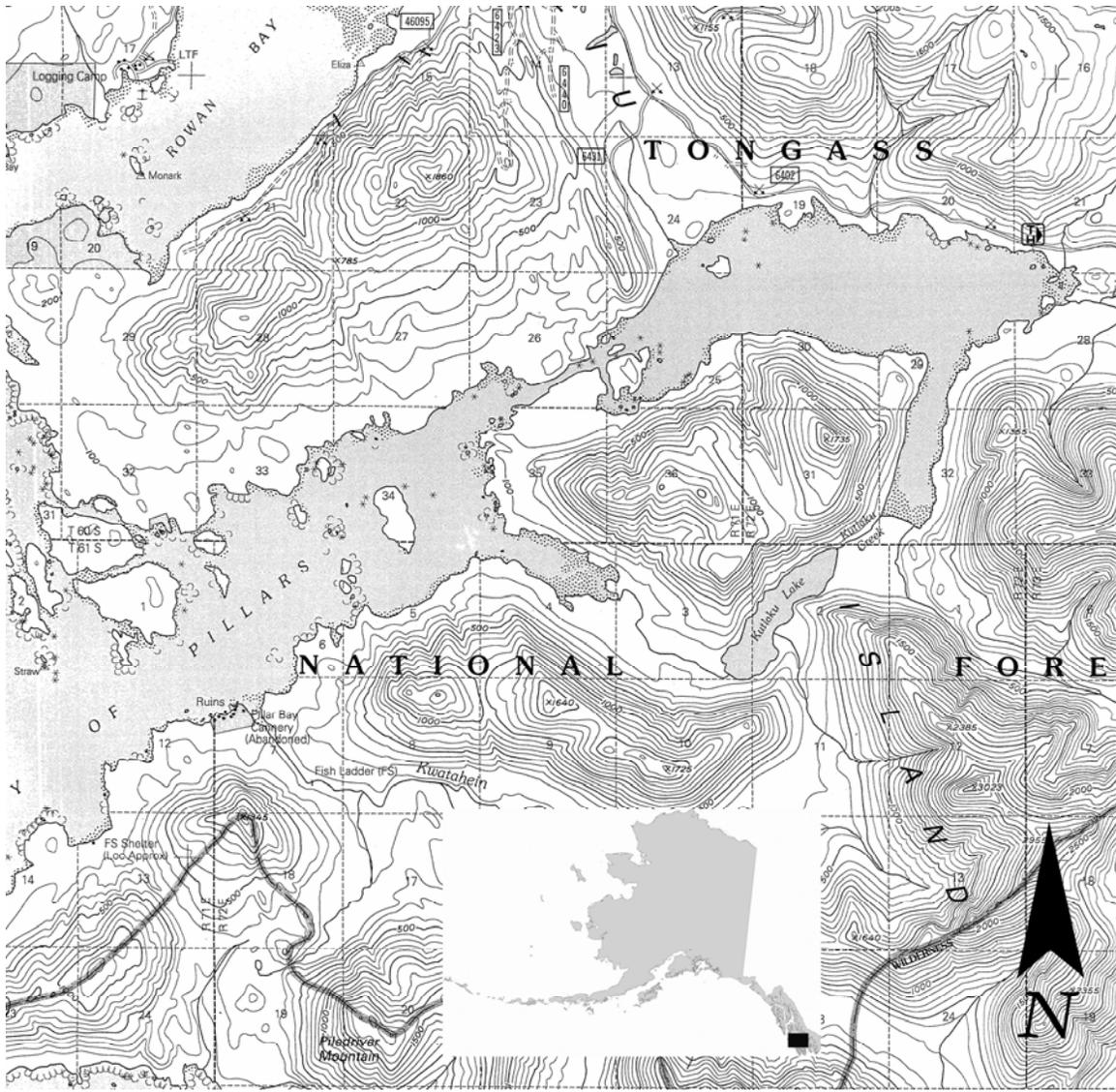


Figure 2. Bay of Pillars, Kutlaku Creek and Lake

One lake and creek system, Kutlaku Lake and Creek, flows into this end of the bay, supporting a small sockeye run and runs of coho, pink, and chum salmon.

Description of Falls Creek and Gut Bay

Falls Creek flows out of Falls Lake on the east coast of Baranof Island just south of the entrance to Red Bluff Bay on Chatham Strait. This short creek flows over a low falls into a shallow, open cove. The cove offers limited protection from the winds and seas of Chatham Straits. Falls Lake lies little more than one hundred yards from the head of the

cove. The lake was at one time inaccessible to salmon and a fish pass was built to allow salmon to reach the lake. Both Falls Creek and Gut Bay are located in the South Baranof Wilderness Area of the Tongass National Forest within the boundaries of the City and Borough of Sitka.

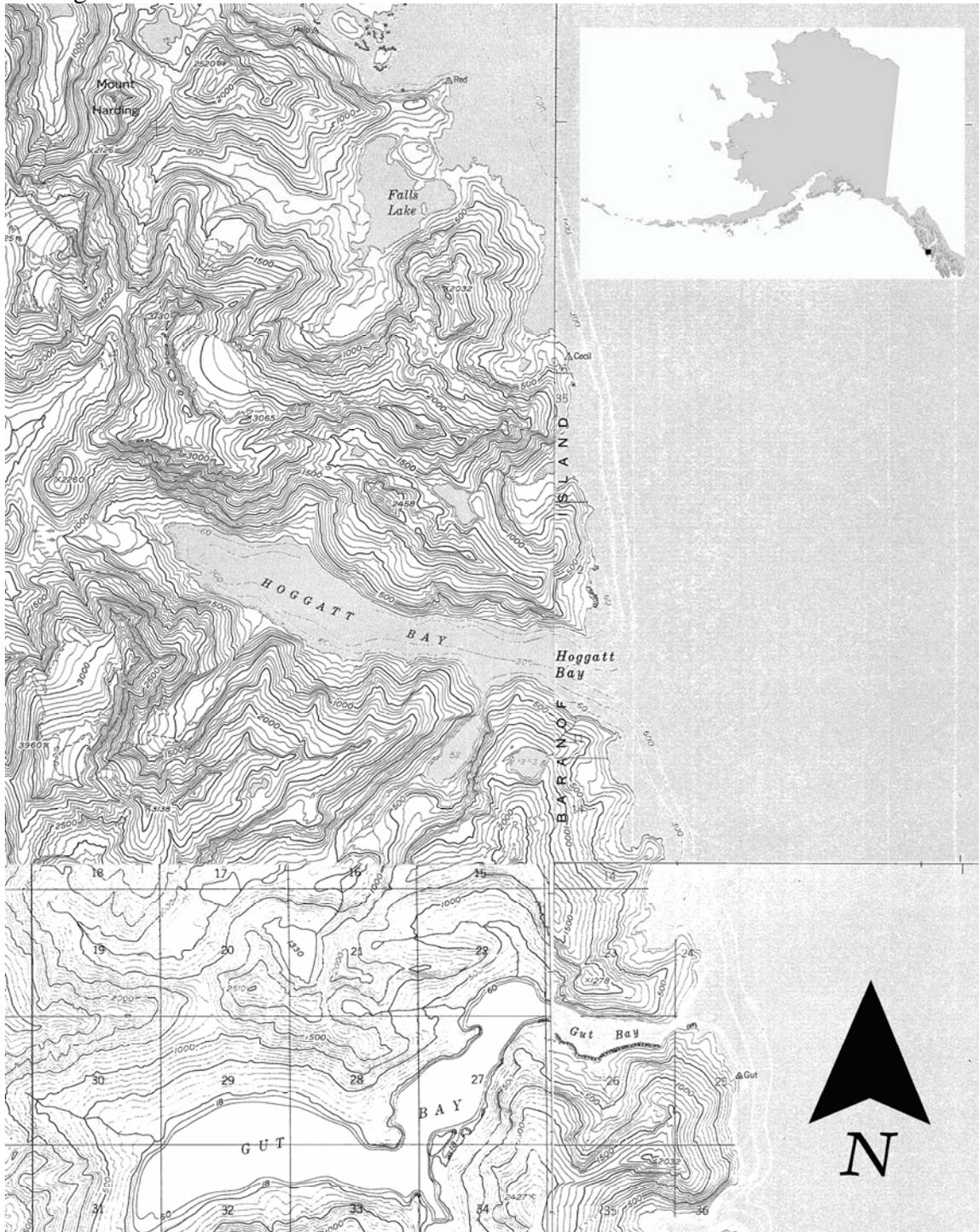


Figure 3. Falls Lake, Creek and Gut Bay, Baranof Island

Gut Bay is approximately six and a half miles south of Falls Creek past Hoggatt Bay. Several small lakes drain into a narrow and sinuous bay stretching three and a half miles westward through the steep, rocky, forested cliffs on southern Baranof Island. The bay offers protection from the winds and currents of Chatham Strait. The entrance to Gut Bay is so small (a few hundred feet wide) that it is difficult to see from a passing boat. The steep rock walls almost completely enclose the bay, offering few landing opportunities on the beach.

Sockeye as a Food Resource

Salmon has been the primary subsistence resource of Southeast Alaska Natives for generations (Emmons 1991; Langdon 1977). Today, sockeye salmon are the most important subsistence salmon species in Southeast Alaska, comprising the largest share of all the salmon species harvested by subsistence fishers (ADFG 2002).

Sockeye are valuable for a variety of reasons. They are the most predictable and consistent (in numbers) of all salmon stocks in Southeast Alaska. Sockeye are available for the longest period of time, returning gradually over several months unlike the short bursts and large numbers of coho, pinks, and chums. Sockeye's fat content is the highest of any species except kings and sockeye retain their nutritional value better than other salmon returning to their spawning grounds (Langdon 1977).

Sockeye salmon require streams associated with fresh water lake systems for spawning habitat. Fresh water lake and stream systems are relatively rare and widely distributed throughout Southeast Alaska. Subtracting further from the sockeyes' limited habitat in Southeast Alaska are the historic depletions of sockeye stocks by commercial fishing following the establishment of canneries in the late 19th century (Langdon 1977; Price 1990).

In most of Southeast Alaska, sockeye are the first salmon to return to freshwater spawning grounds, appearing in late June and early July in southern Southeast Alaska and late July, early August in central Southeast Alaska. Sockeye are harvested both before and after spawning. Rich and filled with fat, Salmon caught before the spawn are difficult to preserve. They are eaten fresh. Leaner sockeye harvested after spawning are preferred for preserving. In the past, these fish were often caught with gaffs in fresh water, and were smoked to last until the following season (Thornton 1990).

Because sockeye runs are concentrated in only a few river and lake systems, these streams have always been highly valued by Southeast residents. Most Tlingit groups traditionally had rights over at least one sockeye stream (Goldschmidt and Haas 1998; Langdon 1977, 1989; Olson 1967). Sockeye streams were vigorously defended and considered clan property. Due to the relative abundance of streams with pink and dog salmon runs clans rarely claimed them (Langdon 1989; Olson 1967). Additionally, pink

and dog salmon runs are less stable (subject to higher degrees of variability year to year and breeding cycle to breeding cycle), more concentrated (fish return in a compressed time period, normally two to three weeks), and their nutritional value as measured by oil content is relatively low at the time they enter fresh water (Langdon 1989). Consequently, for most Southeast Alaska residents, pink and dog salmon are not as valuable as sockeye salmon.

Early Keex' Kwaan Salmon Fishing Practices

The Hearings on Aboriginal Claims of Natives of Hydaburg, Kake and Klawock held in 1944 included testimony from Kake residents on their use and occupancy of Kupreanof and Kuiu islands (U.S. Department of the Interior 1944). In describing how salmon fishing occurred in times past, Frank G. Johnson noted that, with the exception of king salmon, most salmon fishing was done near the mouths of the streams. Johnson also mentioned the practice of fishers going up streams some distance, such as the sockeye stream at Point Barrie (on the southern tip of Kupreanof Island), to locations below the lakes where salmon could be harvested from pools, or deep holes below a falls. He described traditional Kake practices of locating fish traps - weirs or barricades - in the streams (U.S. Department of the Interior 1944).

Northern and central Kuiu Island has been used by the Kake Tlingit for many generations. In 1946 Goldschmidt and Haas recorded the testimony of Kake elder Fred Friday, of the *Sukteeneidí* clan:

There is an island off the north arm of Pillar Bay called Shánk'w. ...The north arm of Pillar Bay was used for purse seining and there are quite a few fish streams in that area. There used to be a camp and garden site just inside of the north arm of this bay. There are no houses there now but the bay is used for hunting deer. The people do not camp but sleep in their boats. On the island in the southern arm of Pillar Bay there is a trolling camp with quite a few cabins which all the people from here use. In general the bays were owned by the different clans but the area in between was used by all the Natives together for trapping. There was a camp on the north shore of the southern arm of Pillar Bay which was claimed by our clan but is not here any more. Now our people trap there and get deer there. It is also a good place for fishing for sockeyes. Some of the Native people have houses near the Fidalgo Packing Company. The area around Point Ellis is used for trapping and for gathering gumboots (Goldschmidt & Haas 1998: 176).

Testifying at the Hearings on the Aboriginal Claims of the Indians of Hydaburg, Kake and Klawock, Frank G. Johnson stated that the Kake people had many villages in the northern areas of Kuiu Island and Kupreanof Island, including a small village at Bay of

Pillars. Different clans and extended families used Bay of Pillars as their sockeye harvesting grounds (U.S. Department of the Interior 1944).

Some of the key respondents interviewed for this project agreed that the *Tsaagweidi* Clan was one of the most frequent users of Bay of Pillars. One key respondent said that the *Sukteeneidi* also had some ownership rights to the bay due to the short portage between Bay of Pillars and Port Camden. During the sockeye run Bay of Pillars became a village with campsites located near fresh water sources (Cheney 2001).

When asked why different clans used Bay of Pillars one of the key respondents said that intermarriages between clan members contributed to sharing of resources. Clan affiliation was not shed by either partner in a marriage. Thus each marriage strengthened inter-clan relationships. Another key respondent said that all of Kake's sockeye harvesting areas were used by all of the people because unlike the more common chum and pink salmon streams, there are only a few sockeye streams available to the people of Kake. Sockeye resources were shared amongst clans (Cheney 2001).

Although particular clans owned and controlled sockeye streams, people from other clans could request permission from the owners to fish there. Key respondents said that the clans always had someone designated to watch the activity of these other clan members. These stream watchers always knew who was fishing and how many fish were caught. These visiting families acted appropriately, taking the fish they caught back to their own camps for processing (Cheney 2001).

According to one key respondent, Bay of Pillars' harvest locations were not at the mouth of the bay. Sockeye were harvested in the salt chuck at the head of the bay. The salt chuck connects Bay of Pillars to Kutlaku Creek and is only accessible at high tide when the narrows connecting the bay to the salt chuck flow like a river. When the fish were harvested in the salt chuck they were often already turning red. This is in contrast to the harvests at Gut Bay and Falls Creek and current harvesting at Bay of Pillars. Most people today prefer bright sockeye. The sockeye arrive in Bay of Pillars after they have arrived at Gut Bay and Falls Lake and the fish are smaller. One key respondent stated that the sockeye here are sometimes no larger than a trout (Cheney 2001).

According to testimony recorded by Goldschmidt and Haas in 1946, both Kake and Angoon witnesses agreed that the east coast of Baranof Island from Red Bluff Bay south to Cape Ommaney was hunted and fished by both Kake and Angoon people (Goldschmidt and Haas 1998).

In the past there were smokehouses at Hoggatt and Gut Bays, but by 1946 the area was primarily being used for seining and trapping (Goldschmidt and Haas 1998). Fred Friday told Goldschmidt and Haas that in the past people from Kake used the southern end of Baranof Island for trolling and that there was a good sockeye stream at Gut Bay where people used to catch and smoke fish. Friday added that the *Sukteeneidí* people claimed the area which was good for trapping, hunting, and fishing (Goldschmidt and Haas 1998).

According to Charles S. Johnson's testimony at the hearings in 1944, sockeye salmon were caught in native fish traps in Gut Bay where his grandfather used to fish (U.S. Department of the Interior 1944).

Gut Bay, once home to a Tlingit village, has been a Kake sockeye fishery for many years. The clan, believed to be *Shungukeidi*, owned the rights to the fishery and used it as a fish camp. The Tlingit name *Gaat* means sockeye. The first run of sockeye salmon for the people of Kake appears at Gut Bay in June. Not only do the sockeye come to Gut Bay first, the fish are the largest of the sockeye in the three areas. People used to harvest the fish in the front of the bay where the fish are much brighter. In more recent times they have harvested the fish closer to the mouth of the creek (Cheney 2001).

Prior to the widespread use of nets in the late 19th century, fish traps were used to harvest sockeye at Gut Bay. One key respondent interviewed for this project recalls stacks of rocks put across the front of the creeks making it easier to corral the sockeyes and spear them. A similar system was also used to trap chums and pinks - rocks were piled in a ring when targeting these species. People started using beach seines prior to having gas engine powered skiffs. A larger powered boat would tow rowboats across the strait and the rowboats would be used to make beach seine sets. The process required a large group of people (Cheney 2001).

Sockeye usually reach Falls Creek after Gut Bay and the fish here are known for being bright and of a decent size, but smaller than the fish at Gut Bay. Due to the topography people can only fish in front of the falls. It was easy to spear the fish at this location because of the short falls at high tide and the clarity of the water. At low tide the fish school around the area in front of the falls and are also easy to catch. Although uncommon, people did sometimes walk up the creek to the lake to harvest sockeyes. The clan who owned Falls Creek, the *Shungukeidi*, had a camp on the north side of the creek in the same area where the Alaska Department of Fish and Game creel survey camp was located during the summer of 2001 (Cheney 2001).

The Falls Creek and Gut Bay sockeye salmon runs were two of only three sources of sockeye salmon accessible to the *K'eex K'waan* people, and all are located at some distance from historic settlements. The other source was the Alecks Creek run at the northern end of Tebenkof Bay.

Historic Means of Harvesting Sockeye Salmon in Southeast Alaska

Southeast Alaska Natives harvested fish using a variety of methods and gear, depending on where they were fishing. People fished for salmon in open marine waters, at tidally-influenced stream mouths, and in freshwater streams. Different techniques were developed for harvesting salmon at different locations. These fishing techniques have

evolved over time, with modifications and innovations introduced by Euro-American settlers. Fishing techniques have also evolved due to Native involvement in commercial fishing and the influence of federal and state fishing regulations.

Three principle types of gear were used by Tlingit, Haida, and Tsimshian for harvesting salmon in Southeast Alaska (1) trolling for Chinook and coho with a hook and line; (2) weirs, stone and wood, or basket fish traps for sockeye, coho, chum and pink salmon; (3) gaffs, spears, and leisters (a three-pronged spear). A fourth method, nets (including seine nets and set nets) was known in the region, but used primarily by the Haida and Tsimshian until the early cannery period (1880s) (de Laguna 1972; Emmons 1991; Langdon 1977; Wolfe 1989).

Weirs and traps were used to catch salmon in rivers, at river mouths, or along shallow stretches of shore where fish schooled. They were the principle means for catching salmon ascending streams to spawn (de Laguna 1972; Emmons 1991; Langdon 1977; Wolfe 1989). The tide-water weir was a stone or wood fence constructed in the tidal mouths of streams to guide fish into a holding area from which the salmon were speared, clubbed, or dipped. The river weir was built in shallow rivers guiding the fish into wooden basket traps where they were speared or netted from the holding areas. Fishing with weirs and traps was a large-scale operation, involving construction and maintenance of large fixed facilities by a group of relatives (a clan group). The large numbers of fish harvested were shared among participating members (de Laguna 1972; Emmons 1991; Langdon 1977; Wolfe 1989).

Gaffs, spears, and leisters were used for taking salmon in marine waters and fresh water streams. In marine water, they were used with trolling gear and weirs to capture fish. In fresh water streams, gaffs were used from canoes, the shore, or platforms to harvest salmon, especially near or after spawning (de Laguna 1972; Emmons 1991; Langdon 1977; Wolfe 1989). The gaff, consisting of a barb-less hook about 4 inches across the bend and secured to a pole 10 to 12 feet long, was thrust into the water, and when the fish was felt or seen, it was impaled and dragged to shore (Emmons 1991; Wolfe 1989). Spears and harpoon darts were used for taking salmon in marine waters and in clear fresh water streams. The dart head detached except for a leather thong fastening it to the shaft (Emmons 1991; Wolfe 1989).

At historic contact nets were known and used for harvesting salmon primarily by the Tsimshian and Haida (Emmons 1991; Langdon 1977; Wolfe 1989). Nets were made of fiber from the stinging nettle, willow sapling, and the inner bark of cedar. Several types of nets were used for taking salmon. Beach seines were used in marine waters at the mouths of streams. Gill nets were set in marine waters and from riverbanks. Dip nets were used to dip salmon caught in weirs and traps (Emmons 1991; Langdon 1977; Wolfe 1989).

With the development of commercial salmon fisheries in the 1880s, nets became a primary method for catching salmon (Langdon 1977; Price 1990; Wolfe 1989). Cotton twine beach seines were operated at relatively sandy and shallow river mouths. Beach

seines were commonly used at the mouths of streams. Purse seines were introduced by the mid-1890s for harvesting fish in deeper water. By the 1910-20s gasoline powered, commercial purse seine vessels were being used in Southeast Alaska (Langdon 1977; Price 1990; Wolfe 1989).

Traditional Tlingit Stream Tenure and Fish Management

Tlingits had well-developed concepts of private property rights for land, water, and harvest locations (Emmons 1991; Thornton 1990). Fishing areas at the mouths or along the banks of salmon-producing streams were considered private property owned by a particular clan group, represented by a local extended family (Emmons 1991; Thornton 1990). Sockeye streams were particularly valuable due to their limited availability (Goldschmidt and Haas 1998; Langdon 1977, 1989; Olson 1967). Clan areas could be bought, sold, leased, transferred to others, or taken by force. Although rights to the areas were jealously guarded, ownership could and did change (Thornton 1990).

Agreements permitting other clans to use resource areas were common. Trade networks could be exploited to alleviate shortages (Oberg 1973). People may have intentionally harvested fewer sockeye than possible and supplemented their supply through trade or by negotiated access to another fishery. Such networks may have enabled Tlingits to conserve and protect their fisheries by offering alternatives to over-harvesting. Elders often refer to these kin and trade networks when discussing history. These networks are still utilized in distributing subsistence resources today (Thornton 1990).

Under present federal and state management regimes, subsistence privileges are accorded to residents that meet the criteria established by state or federal law, regardless of ethnicity. But for many Tlingits subsistence privileges are based on ethnicity, moiety, clan or house ties, and other principles of traditional social organization (Thornton 1990).

For Tlingits ownership and control of resources implied rights, privileges, and prestige. Ownership also implied responsibilities. Tlingits knowingly practiced resource conservation through traditional management of stream conditions, escapements, harvest levels, and other aspects of the fishery (Thornton 1990). Tlingits had the technology and expertise to deplete salmon streams through over-harvesting. Weirs blocked migrating salmon from spawning grounds and could destroy an entire run if not operated properly. Tlingit salmon management included the concept of escapement, allowing enough fish to return to the spawning grounds to maintain run strength (Langdon, 1989). In smaller streams, such as found in the Kake Tlingit territory, weirs and traps were pulled following the harvesting of sufficient quantities of fish required for subsistence and ceremonial needs. This traditional practice continued even into the early commercial period prior to federal regulations (Langdon, 1989).

Tlingit elders interviewed for oral histories also recalled conservation practices. Arnold cited one elder who remembered that Tlingits “never made a practice of taking all the fish, . . . , because it was the custom to always leave some behind for seeding” (Arnold 1997: 42). Clan leaders were responsible for the health and productivity of their territories and they employed biological, social, cultural and spiritual methods to meet their obligations. Thornton (1990:24) cited another elder, “Many Tlingit elders use the English phrase “take care of” when referring to a relative’s or ancestor’s relationship to a stream or bay as in, “My uncle used to take care of that creek”. Such terminology emphasizes the responsibilities involved in stream possession and control. Concepts of “ownership and stewardship were important components of Tlingit land and resource tenure” (Thornton 1990: 25).

Tlingit resource management included more than clan and house group property rights. Spiritual beliefs guided and proscribed specific interactions with the natural world, especially with regards to fishing. Salmon were believed to be ancestors who demanded proper respect through rituals and proper treatment. If the salmon people were not treated with respect they would not return to tribal salmon streams. House and clan leaders oversaw the proper methods of salmon harvesting, preparation, and disposal (Arnold 1997).

Stories and myths illustrate traditional “conservation” ethics. Perhaps the primary lesson in these stories for every hunter and fisher was to take only what is needed, and to treat the animals with respect. Tlingit elder Lydia George explained her ancestors’ beliefs: “Since fish was our main food, we were very careful; the fish were treated well. If a man broke any of our laws, his fishing equipment was taken from him; sometimes his spear was broken up” (Arnold 1997: 36).

Neither canneries nor the federal government recognized traditional Tlingit and Haida stream ownership or their conservation traditions. By the late 1870s outside fishing interests had begun establishing salmon canneries in Southeast Alaska (Arnold 1997; Price 1990). In 1889 federal legislation, lobbied for by cannery owners, was enacted outlawing aboriginal traps and weirs. Several years later cannery owners successfully lobbied for legislation permitting them to install commercial fish traps at the mouths of salmon streams (Price 1990). By 1889, 12 salmon canneries were already operating in Southeast Alaska and fishing stations were established at almost every productive salmon stream (Price 1990). Once Tlingit ownership of a stream was lost it was less likely that the traditional network could control harvest practices.

Tlingit Traditional Property Law, Conservation and the Commercial Fishery

Canneries, salteries and non-Native commercial fishermen refused to recognize the traditional property law of the Tlingit, Haida, and Tsimshian (Arnold 1997; Price 1990),

which had regulated access to salmon streams. Individual Natives controlled access to streams owned by their clan. Native stream “owners” sometimes used threats of violence to force other fishermen, white or Native, to pay for the right to fish (Arnold 1997). Shoutshoun Stuteen described such an incident near Kake in 1903. Stuteen’s grandfather confronted a trespassing commercial fisherman, giving him two alternatives: pay one hundred dollars or “If you put your seine out, I will cut it with a knife” (Arnold 1997: 115). The trespassing fisherman eventually paid Shoutshoun Stuteen one hundred dollars. Native victories such as Stuteen’s were rare, commercial fishermen frequently trespassed on Native fishing grounds or promised to pay user fees, only to take their fish and leave without payment (Arnold 1997).

Natives also objected to the depletion of salmon stocks on which villages were dependent, believing that commercial fish traps were destroying salmon runs (Arnold 1997; Price 1990). The industry responded by insisting that the supply of fish in Alaskan waters was endless and that traps were a harmless, efficient method of harvesting salmon (Arnold 1997). The government supported the industry and suppressed Tlingit opposition to cannery practices (Arnold 1997; Price 1990).

The industry’s practices, in spite of government support, incited Tlingit resistance. In the early 1900s a clan leader tried to stop a cannery fisherman from using the clan’s fishing grounds in Bay of Pillars, reminding the fishermen of the importance of the salmon: “That is what we live by, and when the fish go up the stream we dry them for our food” (Arnold 1997: 117). The Tlingit allowed the fishermen to fish for two days for a fee. In another incident involving Kake Tlingits, a fisherman trespassed on a Tlingit fishing site in Security Bay. When he refused to leave, the Tlingits armed themselves and forced him to retreat (Arnold 1997). Tlingits working at the canneries who objected to cannery practices often lost their jobs. In 1894 the Klawock cannery superintendent fired a Kake Tlingit fisherman who demanded that the company remove its fish trap: “We are catching the fish for you. Now you are going to block the creek. The creek is not going to last” (Arnold 1997: 117,118).

Development of the Commercial Salmon Fishing Industry in the Kake Area

With the settlement of Southeast Alaska by fishermen from Russia, Europe and the continental U.S., Native fishing techniques underwent modifications during the 19th and 20th centuries. Changes to fishing techniques were due primarily to impacts from the developing commercial salmon fisheries, which began about 1880 (Price 1990; Wolfe 1989). Canneries harvested salmon with company crews, or bought salmon from independent fishermen, including Tlingits and Haidas. After the 1880s, commercial salmon were taken at the mouths of streams using beach seines and river blockades. Chinook and coho were harvested for commercial sale by trolling (Price 1990; Wolfe 1989). By the 1890s, stationary traps were being used. These traps consisted of a frame

of power-driven pilings surrounded by wire webbing which formed a pot for trapping salmon (Price 1990; Wolfe 1989). In 1907, the floating trap was introduced, which by 1932 was catching 74 percent of commercial salmon (Price 1990; Wolfe 1989). The purse seine was introduced in 1893, eventually becoming the main method for harvesting commercial pink salmon. Drift nets were also used, first introduced at Chilkat Inlet, Taku Inlet, and Stikine river mouth (Wolfe 1989).

One of the earliest salmon canneries built in Southeast Alaska was located in the Bay of Pillars, at the mouth of Kwatahein Creek, in 1890 (Moser 1902). The Astoria and Alaska Packing Company moved its Pavlov Harbor, Freshwater Bay cannery from the east side of Chichagof Island to a site near the mouth of Kwatahein Creek. Several fish traps were located in the Bay of Pillars. In 1891 35,000 sockeye, as well as 5,000 cohos, and 100,000 pinks were reported harvested from Bay of Pillars stream, Kuiu stream at the head of Tebenkof (or Kou Bay), as well as from streams as far away as Sitkoh Bay and several other small streams on Baranof Island. The facility, known as the Point Ellis Cannery, operated for only two years before being destroyed by fire (Moser 1902). A second cannery, a salmon saltery, and a herring reduction plant also operated in Bay of Pillars from the early 1900s through the 1940s (Firman and Bosworth 1990).

By 1890 canneries, salteries, and herring reduction plants were being built in bays on Kupreanof, Kuiu, Admiralty and Baranof islands. Canneries were also established at the village of Kake, near Gunnock Creek and at Saginaw, Pybus, and Washington bays (Moser 1902). Tyee, originally home to a whaling station, became a cannery site in 1919, operating into the 1950s. Sockeye runs at Falls Lake and Gut Bay were harvested by the Baranof Packing Company from their cannery on the west coast of Baranof Island at Redfish Bay, 35 miles south of Sitka. In addition to these fish, the Redfish Bay cannery also took fish from streams as far away as Point Barrie on the southwest tip of Kupreanof Island (Firman and Bosworth 1990).

Canneries provided employment and income for the people of Kake. Men fished on cannery and privately owned boats, cut logs for lumber, built boats, operated and maintained fish traps. Women and children worked in the canneries, processing salmon (Arnold 1997). Kake fishers also sold their catch in Port Alexander, at the southern tip of Baranof Island, once a busy commercial fishing center. In the 1920s, 1930s and 1940s people from Kake owned homes in Port Alexander and Ketchikan fish packers came to the community to buy fish from Kake trollers. Trollers would fish from Port Alexander all the way up Chatham Strait to Kake (Firman and Bosworth 1990).

Frank Johnson testified at federal hearings held in Kake in 1944, recounting his families' involvement in the commercial salmon fishing industry. In 1900, at the age of six, he recalled hunting and fishing with his parents at the south end of Rocky Pass. By 1910 or 1912 he was working with his father, a commercial fisherman. Although both of his parents were born in Kake, the family lived and worked in Klawock and at the Shakan cannery. Mr. Johnson stated that many Kake people went to Klawock and the Shakan canneries for work (U.S. Department of the Interior 1944).

Although traditional harvests continued in the mid 1940s, Natives were now intimately involved in the commercial fishery, spending more of their time working for wages. The primary source of income was fishing, either for the canneries or as independent fishermen - followed by working for wages for the canneries or other commercial interests. Some commercial trapping took place in the winter when the salmon canneries were inactive (Goldschmidt and Haas 1998).

Natives owned their own boats, worked on cannery-owned boats or crewed for independent fishermen. Crews worked for wages or a percentage of the catch. Independent fishermen sold fish to the canneries, cold storage plants and fish buyers. The fishing fleet ranged from one-man operations, hand-trollers in rowboats, to crews manning fifty-foot purse seiners (Arnold 1991; Goldschmidt and Haas 1998). Successful Native fishermen with their own boats were admired and respected. Following World War II commercial fishing had become the primary economic focus of the villages but harvesting fish and wildlife for subsistence continued (Goldschmidt and Haas 1998).

In the mid 1980s Firman and Bosworth interviewed long-term Kake residents about the Kuiu and Admiralty islands trolling camps. Until the late 1940s families were still spending the fishing season in these camps or at canneries. By the early 1960s most of the canneries in the Kake area had gone out of business and few families were spending the season at fish camps.

The Kake cannery closed in 1979. The Kake Tribal Corporation built a fish processing and cold storage plant in 1980 (Firman and Bosworth 1990). In 1996 the salmon cannery building was designated a National Historic Landmark, one of two standing Native owned canneries in Southeast Alaska. The Organized Village of Kake is currently engaged in efforts to obtain funding for restoration of the cannery buildings.

Regulatory Impacts on Kake's Traditional Sockeye Fisheries

As stated above, state and federal laws and regulations have had a major influence on fishing methods in Southeast Alaska. The major regulatory restrictions included traditional fish weirs and traps prohibited in rivers in 1889, and fish weirs and traps in tidal mouths prohibited in 1924 (Price 1990; Wolfe 1989). Most other types of fish weirs and traps were prohibited at statehood. As a result, the primary traditional Southeast Alaska methods for taking salmon (other than Chinook) were disallowed as legal gear types. These regulations effectively eliminated traditional non-commercial weirs and traps, forcing most Southeast Alaska residents to fish for salmon in marine waters. Trolling and seining in marine waters became the primary techniques used for non-commercial fishing by Southeast Alaska residents (Wolfe 1989).

Non-commercial salmon fishing was placed on a state permit system in 1961, under this system area biologists determined areas, gear types, and harvest levels (Wolfe 1989). In general, permit allowances were very stringent, and many of these restrictions became codified in regulation in subsequent years. Permits for Chinook and coho were prohibited in by the state in 1969, except for one or two limited areas. Set gill nets were prohibited in 1975, except for one river. Trolling with a rod was prohibited by the state as subsistence gear in 1977 (Wolfe 1989).

The result of these regulatory restrictions was that for most communities, there was no way to harvest Chinook or coho after 1969, except by retaining fish from commercial catches from fishers with limited entry permits, or by sport fishing. Similarly, the historic harvests of sockeye, chum, and pink salmon were reduced in rural Southeast communities, primarily because of low bag limits and restrictive area and gear allowances on permits.

Although low bag limits and restrictive area and gear allowances on permits were originally instituted because of conservation concerns (some of which are shared by Kake fishers), these restrictions often conflict with traditional harvest practices and gear. One effect of restrictive individual household bag limits on Kake fishers is illustrated by the Gut Bay subsistence sockeye permit regulations in 2001. The sockeye limit for Gut Bay was 10 per household with an annual limit of 20 fish. In an effort to harvest enough fish to make the long and sometimes hazardous trip worthwhile and to provide the community with fish, fishers often collect subsistence permits from households in Kake before leaving for Gut Bay. People in Kake and much of rural Southeast Alaska misunderstand the regulations, believing that this practice of fishing with several permits is legal. The state's subsistence fishing by proxy regulations are much more restrictive however.

Alaska's subsistence fishing by proxy regulations require that the beneficiary be either blind, 70 percent disabled, or 65 years of age or older. Both the beneficiary and the proxy must be residents of Alaska. A proxy or the beneficiary must obtain and complete a proxy information form from the Department of Fish and Game. A subsistence fishing permit issued by the department may be substituted for the proxy information form. The proxy must have in his or her possession a valid resident sport fishing license. A proxy that allows one to take subsistence fish on behalf of a beneficiary may also fish for the proxy's own use but the proxy may not take more than twice the bag limit and may not fish with more than one legal limit of gear (Alaska Fish and Game Laws 2003-2004; 5 AAC 01.011).

Subsistence salmon fisheries in the waters traditionally used by the Tlingit people of Kake are under the management responsibility of two area offices of the Alaska Department of Fish and Game, Division of Commercial Fisheries – the Petersburg/Wrangell and Sitka area offices. In 1989 the Alaska Board of Fisheries adopted a positive finding for “customary and traditional use” of salmon in the waters of Section 9-A and 9-B in waters north of the latitude of Swain Point, in waters of District 10 west of a line from Pinta Point to False Point Pybus, and in waters of District 5 north of a line from Point Barrie to Boulder Point. Principal salmon waters and streams used by Kake fishers

include Gut Bay and Falls Creek flowing into Chatham Strait on the southwest coast of Baranof Island, as well as Saginaw, Security (Salt Lake), Pillar (Kutlaku Creek) and Tebenkof Bays (Alecks Creek) on Kuiu Island.

The 2001 subsistence salmon permit for the Kake area waters of District 9 provided for an open season for sockeye salmon in Alecks Creek in Tebenkoff Bay, and Bay of Pillars (Kutlaku) from June 1 through July 31. For Falls Creek and Gut Bay the season ran from June 1 through July 20. The open season for pink salmon in all streams in the Kake subsistence area ran from July 15 through August 31. The 2001 season for fall chum in Port Camden was August 15 – September 30, and for Security Bay, from September 1 through October 31. Allowed subsistence gear included gaffs, spears, beach seines and dip nets. Possession limits for sockeye from Alecks Creek and Bay of Pillars were 15 per person and 25 per household. The limit for fish from Gut Bay and Falls Creek was 10 per person and per household.

The Federal Subsistence Board has also made a customary and traditional use determination for salmon, Dolly Varden char, trout, smelt and eulachon for the residents of Kake in District 9-Section 9-A. In recent years residents of Kake have expressed concerns about state and federal fishing regulations, management practices, and the health and viability of these salmon stocks. Proposals concerning salmon stocks have been submitted to both the Federal Subsistence Board (FSB) and Alaska Board of Fisheries. In 2001 the Organized Village of Kake submitted a proposal to the Federal Subsistence Board requesting a closure of sport fishing for sockeye salmon at Falls Creek, Gut Bay and Bay of Pillars streams and increased subsistence bag limits (FSB Proposal 2001-31). As a result, since March 1, 2001 only Federally-qualified subsistence users may harvest sockeye salmon in streams draining into Falls Lake, Creek and Bay, Gut Bay, or Bay of Pillars. At Falls Creek and Gut Bay, the possession limit is 10 sockeye per household. At Kutlaku Creek in the Bay of Pillars, the individual possession limit is 15 sockeye salmon, with a household possession limit of 25 sockeye salmon (Subsistence Management Regulations, Effective March 1, 2003 – February 29, 2004).

Contemporary Sockeye Salmon Harvest, Use and Distribution

Knowledge of the contemporary subsistence sockeye salmon harvest by the people of Kake, on which this section is based, was collected and amplified by Elizabeth Cheney.

Today, the customary and traditional gathering of sockeye is still a highly social event to the Tlingit people of Kake and the euroamericans who live amongst them. The excitement of the first run of the season is still very much alive. Throughout winter, the people of Kake look forward to news of the first run. Typical mealtime conversations

usually revolve around the upcoming sockeye fishery, how much fish will be needed for the coming year, what families will be putting up extra for sharing, planned parties, and potlatches, what went well last year, and what may be tried in the upcoming season. The sockeye that were harvested in the previous season will usually last a family right up to the first run of the next season. One key respondent noted that they were on their last jar of their winter supply of Gut Bay sockeye when they got news that the sockeye were moving back into the bay.

Preparations for the coming salmon harvest begin during the winter, long before the fish arrive. Because of Kake's remote location it is often necessary to buy many of the products needed for the salmon harvests from outside. Equipment costs in Kake are prohibitive. Most fishers order from down south and have their gear brought up by barge, or else purchase as much as possible when out of town on other business. Coincidentally, most Kake people still plan travel for the winter and early spring before the customary and traditional gathering season even begins. Job responsibilities and the harvest leave little time for travel once the salmon run begins. All of this must be taken into consideration in preparation for the harvest.

When Tlingit people go out to harvest sockeye, they are not just going fishing. Sockeye, to the Tlingit people, have always been and continue to be more than a meal. Tlingit customs and values are imparted with special care as part of customary and traditional gathering practices. In the context of subsistence activities, cultural values - how to care for one another, how to treat the environment, how to share, and how to listen - are all learned not by lecture or discussion, but by participation, by watching, and by example.

These days, as in the past, the fishing parties are primarily comprised of men. Although women have always traveled to fish camps, the men did most of the harvesting. This has been changing as more women participate in the harvesting, but in general, most of the women stay at home, in Kake, and prepare for the men's return. Children can and do accompany the men on the harvesting trip, but those too young to help are left at home. The children who stay home can play to their hearts' content, but when they are big enough to carry a fish, they are big enough to work. During the processing phase of the harvest children usually carry water, wash the fish, baby sit the youngest children, entertain the adults, wipe down jars, and generally provide extra help.

One key respondent enjoyed recalling how her youngest grandson insists on helping. He would get upset with anyone who tried to get his or her own water because he saw it as a usurpation of his duty. He told his grandmother that even though he was little, he could still carry water for her. Another young grandchild, just three years old at the time, told the interviewer that fish is 'very important'. When asked what kind of fish he caught, he said that they had harvested sockeye, cleaned it, and put them in the smokehouse.

From child to adult, everyone pitches in. Even the Elders look forward to whatever job they are able to do. One key respondent, the elder in her family, still looks forward to her job of putting fish into the jars. She enjoys being a part of the process, even if only to tell stories and share recipes.

One common thread linking past to present is that no one works on the fish when they are in a bad temper or having bad thoughts. Someone else will always notice and tell them to take a break. It is not only a safety measure, as angry people often make mistakes, it is also out of respect for the fish themselves. It is a common belief that you should not put bad feelings into what you work on. Also, at all times, respect for the sockeye must be shown in action, thought, and deed. Long ago and today, the word ‘respect’ was used to describe a situation, correct behavior, remind everyone what was happening, and was, in general, a very powerful word.

In Tlingit that word is *Ligaas*, an all-inclusive concept referring to something sacred, requiring utmost respect, and the very idea of ‘the sacred’. It is a complicated term to try to define in English. But among Tlingit people, it has the power to silence and to subdue, to explain and restrain. Some use it to encapsulate the Tlingit worldview. It is always uttered in hushed tones. To tell a child not to poke fun at the fish is *Ligaas*. To describe where they got their sockeye from and its importance is *Ligaas*. To share reverence is *Ligaas*.

Sockeye is a very oily fish and spoils quickly. Being wasteful and careless with the fish is frowned upon by everyone. Consequently time is of the essence because many people’s employers do not give vacations to get sockeye and process it. While the majority of the men make up the actual harvesting party, the women are busy preparing for their return. There is much to do on shore to ensure that processing goes smoothly, quickly, safely, and efficiently. It is never a good idea to wait to do any of this until the men return with the fish. Preparing ahead of time makes the whole process effective and more enjoyable.

Most of the male key respondents agreed that a sockeye-harvesting trip is better when shared with more hands. Although the men still go out in family groups, non-relatives are also encouraged to participate.

Harvesting gear is also shared throughout the village. One key respondent acknowledged that his family has gotten into the practice of borrowing a non-Native’s beach seine because they always do so well with it. Most of the Kake harvesters prefer to use a beach seine, as opposed to a gillnet. With more hands and a beach seine, the harvest can usually be accomplished faster. With a gillnet, it only takes a few hands, but usually more sets are required. Depending on how many people can fish, the appropriate gear type will be selected.

Participants in the harvest have different responsibilities, exhibiting distinct division of labor. The youngest men do the hardest physical work, not because they are asked, but because it is the right way. Laziness is not an attribute young men want to show off to their uncles. The same goes for the younger women who are preparing to process the fish. They know their aunties are keeping a close eye on them. Whether it is preparing the smokehouse, chopping wood, boiling the jars, making lunch, or sharing a funny story, the various tasks coalesce, whether out on the grounds or at home, to make the work easier, safer, happier, and more productive.

Harvest, Methods, Gear and Amounts Needed

For all three of the study areas, the same methods and gear are used. Although the timing is different in each place, the process of harvesting sockeye is the same in each location. The only discrepancy may be in the size of the catch. Fish traps, ponds, gaff hooks, spears, and dip-netting were used in the past to harvest sockeye. These methods are no longer employed for customary and traditional gathering at any of the locations. The most efficient, and therefore, widely used means of harvesting is by beach seine or gillnet.

Beach Seines: With a beach seine some people hold the line on shore and a small skiff is used to set the net on the fish jumps. The whole process is done as quietly as possible so as not to spook the sockeye. Once the set is made, those in the skiff throw off the tow line and come around the outside of the net. Those onshore begin pulling in the net. The people in the boat use rocks and plungers to keep the fish inside the net. Once the net is pulled in, the skiff usually pulls up next to it and all hands help to load the fish into the skiff. After a few hauls it is necessary to take the fish over to the larger vessel and put them into the totes or coolers. If the family is only using one boat, the boat is used to set the net and the fish are loaded directly into the totes on board. In the event that the crew is very efficient, harvesting more than they need, it is not uncommon for them to share the surplus with any of the other harvesters who are in the area at the time.

On one observation trip, a family that was harvesting in Falls Creek was the only one in the area and they were on the last set of the day. A local boat came in from the Strait just in time to benefit from an extra large haul. The family that came into the area happened to be close relatives of the successful harvesters and there was no question of whether or not to share.

Gillnets: Gillnetting is preferred by some families, and mostly used by smaller fishing parties. One key respondent said that it was much easier for a man to handle the gill net by himself, so when he can't get any help, gillnetting is his preferred method of harvesting. Another key respondent recalled that in the previous year, only he and one of his uncles could make it out to get the sockeye. They used a gill net because a beach seine is far too cumbersome for two men to successfully manipulate.

A gillnet, like the beach seine, is run directly off of the boat. The net is let out as straight as possible so the boat doesn't burn unnecessary fuel by hauling water. When a jump is spotted, a round haul is made. The men on the boat grab the loose end of the net and begin pulling it directly into the boat. It is very difficult to keep the net balanced and even harder to keep it from getting tangled. The fish must be removed from the netting and often thrash about causing quite a few snarls. This process is repeated until the harvester has caught all that is needed.

Beach seines and gillnets are expensive pieces of equipment. Net owners restring and patch their own nets. This must be done well in advance of the harvesting trip. It is a time consuming process, so it is better to avoid ripping up your net in the first place. The most expensive piece of equipment, by far, is the boat. The cost of fuel and oil and the safety gear required by the Coast Guard makes customary and traditional gathering of sockeye an expensive proposition.

Amount Needed: Families get the amount of sockeye needed, unless circumstances beyond their control make it impossible to do so. Sometimes, key respondents agreed, it only takes one good set to be finished harvesting sockeye for the year. Other times, it may take endless amounts of sets catching one or two fish at a time, or worse, hauling water. Although families try to time everything perfectly so they only have to make one trip, it is often necessary to make up to three trips to get the necessary number of sockeye.

During one observation trip to Falls Creek, a local vessel pulled in and the crew said that they had gone to Gut Bay and there was nothing. So they headed back across Chatham and down to Bay of Pillars where they caught a few. Since the weather was good and the tides cooperative they traveled to Falls Creek. It is extremely rare for a boat to make such a long trip in one day.

It takes a great deal of knowledge and equipment to engage in customary and traditional harvesting. In order to be efficient, the harvesters must be familiar with the regional topography, as running on rocks or snagging the seine would be costly mistakes. It is also necessary to ensure the safety of the vessel, the harvesting equipment, and the crew. Skippers must be aware of all things and more at all times. It does not behoove anyone to be lackadaisical, careless, or slow when trying to harvest sockeye. Subsistence harvests are serious work.

Timing, Travel and the Weather

Timing: The harvesting of seaweed in May heralds the return of the sockeye. This is an exciting time for the people of Kake; once again they will begin the intense customary and traditional gathering season that they have followed since time immemorial. In a year measured more by the seasons than calendar dates, the spring run of sockeye marks the beginning of a new year. In order to harvest the sockeye, many things must be taken into consideration such as timing, weather, and transportation.

The first run of sockeye usually hits in mid to late June and the season extends through July. Sometimes, it is even possible to harvest sockeye in August but the chums and pinks far outnumber the few straggling sockeye. The first sockeye to return are those from Gut Bay. One key respondent commented that when he was commercial fishing north of Kake, the sockeye would hit Icy Strait approximately one week before they arrived in Gut Bay.

Shortly after Gut Bay, the Falls Creek sockeye return. Those who do not harvest what they need in Gut Bay or who prefer to wait for the Falls Creek sockeye usually head across in early to mid July. One key respondent said that his family prefers to wait until the 4th of July to head over to Falls Creek since most people stay in Kake for the holidays. He stated the fish were easier to catch because Falls Creek was not crowded with other harvesters.

Everyone interviewed agreed that sockeye are fast and easily spooked so appropriate timing is essential. In harvesting, you need to act quickly and efficiently. Although many prefer Gut Bay sockeye because of their size, they would rather not risk a wasted trip by going over too early, so they wait until the sockeye hit Falls Creek. This way, if they strike out in Gut Bay, acknowledged to be a hit or miss spot, they can cruise up to Falls Creek without wasting time, fuel, or good weather.

Travel and Weather: The weather is an essential part of the harvesting process. When the weather is good there is nothing more enjoyable, but when the weather is bad, it can be quite a harrowing experience. Chatham Strait must be crossed to reach Gut Bay and Falls Creek. It is usually pretty bumpy at least one way, either going or coming back. Not too many people can recall a smooth trip both to and from these grounds. When the tides are perfect and coincide with a beautiful day, there is no better time to get sockeye. However, these days are few and far between even in the Kake area, commonly referred to as the banana belt of southeast Alaska.

In order to go to all three of the sockeye areas, it is necessary to travel between Cornwallis and Kingsmill on the west coast of Kuiu Island. When the ocean swells mix with tiderips and wind, Chatham becomes impassable to most of the Kake's fishing boats. This area is known for its tidal chop and fog, and crossing Chatham Strait can be the worst part of the trip. One key respondent told a story about a local fishing crew that got fogged in at Red Bluff Bay. They waited patiently for the fog to lift but to no avail. The skipper decided to try to make it to the mouth of the bay to see how the rest of the Strait looked. Once they got to the mouth, he said that it was like a curtain had been lifted, the sun was shining bright and the Strait was relatively calm.

Even the larger commercial seine boats from Kake are affected by the tiderips in this area. However, the Kake seine fleet is not as large as it was twenty years ago. Most of the vessels used by the people these days are cabin cruisers and open skiffs. Kake men are experienced boaters and know their limits, recognizing when it is too risky to attempt a crossing. Even so, on one observation trip, two boats went out together but became separated in the fog and the skippers had to rely on their Global Positioning Systems to get across Chatham. Another local source admitted to getting caught up in some bad weather on his way to Gut Bay and ended up on the southern end of Baranof Island.

Bay of Pillars is the sockeye harvesting site farthest away from Kake, and the most difficult of the three locations to reach. Therefore it is crucial that conditions are perfect or nearly so, including weather, tides, timing, and transportation if one intends to harvest there. Its distance from Kake makes Bay of Pillars a dangerous place to fish.

Of the three study areas, the sockeye hit Bay of Pillars last. Usually in mid to late July people start fishing at Bay of Pillars. Luckily, this is also the time of year when the weather is better. Not too many open skiffs or smaller boats head to Bay of Pillars even in good weather because the weather can change suddenly. After passing Kingsmill on the west side of Kuiu, heading south, there is no shelter should a storm arise. There is no protected cove from Kingsmill to Rowan Bay, a distance of approximately 15 miles, which is directly north of Bay of Pillars. If the weather is bad and mixed with tides, chop, and ocean swells the vessel, its passengers and cargo will take a pounding. After leaving Kake's harbor, it takes approximately four hours to run to Bay of Pillars. For example, a 24 foot open skiff with a 45 horse power engine can make the trip in four to six hours, on a good day. The roundtrip, assuming that the weather and tides cooperate, is a matter of eight to twelve hours. This does not include harvesting time or waiting for the right tide.

In order to access the salt chuck in Bay of Pillars where the majority of harvesting occurs, you must enter the bay while the tide is high and leave before it gets too low. Gathering trips to Bay of Pillars are usually overnights, especially if you've gone all the way down there and the fish are coming in one or two at a time. One key respondent said that he used to harvest at Bay of Pillars, but decided to start going to Gut Bay out of convenience. He said that cutting across the waves of Chatham Strait to get to Gut Bay was preferable to having to fight the tides, running with or against the seas, all the way down to Bay of Pillars. Despite its distance and danger, Bay of Pillars remains an important customary and traditional food-gathering place.

Many of the families that use Bay of Pillars today go through the difficulty of getting there because their ancestors fished there and they want their children to fish there in the future. It is not so much a matter of convenience as it is ingrained into their cultural being, their identity. However, sockeye must be harvested for winter and if all things do not add up for a family to get to Bay of Pillars, they must realize this well before hand since, as was mentioned earlier, the sockeye at Bay of Pillars are the last run to hit. If they do not get their sockeye from Bay of Pillars, then any chance they have of harvesting will be pretty much gone. On the other hand, if the people who usually harvest at Gut Bay and Falls Creek strike out and do not get what they need, they still have Bay of Pillars to try. The families throughout the village are keenly aware of where and when the fish are hitting. Sockeye harvesting is an opportunity to actively participate in history and culture, it is also a necessary step in ensuring sustenance throughout the winter, when employment and money are scarce.

Processing and Preservation

Once the men have harvested the salmon, the most common practice is to clean them out on the grounds. It is a sign of respect to the fish to wash them and clean them where they were caught. Giving back to the area is one way of saying "*Gunalcheesh!*" (Thank You!). However, when weather and tide do not permit this, the men bring the fish home

to be cleaned as part of the processing. The guts of the fish and other parts that are not used are taken down to the beach and given back to the creatures in the sea, the ravens and the eagles.

Most of the key respondents who harvest sockeye agreed that processing is often harder than gathering. There are many minute details that go into processing the sockeye. And depending on the way it is preserved, it can be quite time consuming. How much to use for each method must be determined before any cutting can begin. Although all the sockeye must be cleaned, each preservation technique has its own intricacies.

Fresh: Eating fresh sockeye is one of the preferred ways of preparation. As was done long ago, the first fish of the season is always thrown in the pot for boil fish. This process is by far the easiest and provides instant gratification for the family, who may not have had fresh fish since last season.

Canned: Fresh-packed sockeye is the least labor intensive. The jars or cans must be cleaned. Everything in this process must be very sanitary. The fish are not de-boned for this process because the cooking softens the bones enough to be eaten. The bones and skin are highly prized for their nutritional value. The fish are cut in a specific way to fit exactly into the jar or can. One key respondent said that she always gets a special feeling when the fish and the jar make a perfect fit. She said it makes a certain sucking noise as the fish slides into the jar. She always tries to achieve this fit with every single cut of the sockeye. It is rewarding and personally satisfying to do a good job. She said this was taught to her when she was very young and began working on fish.

Smoked: If sockeye are half-smoked and jarred or canned, the process becomes more time consuming and labor intensive than simple canning. After the fish are cleaned, the backbone is removed, brined, cracked in half and placed in the smokehouse. A cutting table with nails pointing up is used to cut the sockeye into strips. A brine solution is made to coat the sockeye. Many families have their own secret brine recipes and a specific family member who makes the brine. The length of time in the brine depends upon the salt content and the preferred taste. All of this varies from family to family. Even in these days an individual's reputation can be made or lost because of their brining process.

After the strips are brined they are tied with cotton string and hung in the smokehouse. Strips are also left attached to the tail, brined, separated with bamboo skewers and hung by the tail in the smokehouse. Depending upon personal preference and/or family tradition, specific woods are used at different stages of seasoning. For instance, some families prefer alder smoke to hemlock, while others might prefer green wood to dry wood, and some might even use only the inner core of the wood for their smokehouse. Wood must be prepared well in advance of the harvesting trip. Due to the length of time it takes to smoke the fish, it is usually not time or cost effective to smoke only a few fish at a time. It is better to do it all in one bunch with a full smokehouse. Again, depending upon family preference, the sockeye is smoked for a specific amount of time, in a very specific fashion.

Once the sockeye have been smoked, they are taken back to the table to be cut. They must all be of a uniform length and fit perfectly into the jar. One key respondent uses a small piece of wood as a measuring device. Others mark the table, use string, or even eyeball it. Whichever method is used, it is generally agreed that uniform cuts are the best. The tips and jagged edges that are cut off during this process are all put together in their own jars. The backbones and tails are scraped down and the scrapings are preserved as well. They make excellent fish spread according to most of the key respondents. It must be noted that some families do not use the backbones. Some give it to other members of their families who prefer the backbone meat. One key respondent said that her family and others in the village always give their backbones to her daughter's family because it is her daughter's favorite part. She then smokes them herself, scrapes them down, and jars it. Other families who choose not to use the backbone return them to the beach, giving them to the sea creatures or leaving them on shore for the birds.

Pressure cookers on propane burners can be used to cook and seal the jars, but they are rather expensive, especially when you get into the industrial sized ones needed for preserving the amounts most families must process. A big pot on a propane burner can also be used. This process takes a lot longer than pressure-cooking, but is equally effective at cooking the fish and sealing the jars. If cans are used, a special tool to seal the cans must be used before the cans are boiled.

Dried: One of the key respondents said that she loved to fully dry her sockeye because it was so tender and rich. The full drying process takes quite a long time and the sockeye must be cut a certain way so that it will not go rancid in the smokehouse as it is drying. The oils in the flesh keep it very tender and flavorful. Older people find it easier to chew than the chum salmon, which tends to dry harder.

Frozen: Another way to preserve sockeye is to freeze it. Since sockeye, like king salmon, is a very rich fish, most people do not like to freeze it fresh, although some do. Due to harvest times and the inability to take leave from work to participate in customary and traditional gathering, many families are forced to freeze their sockeye until they have enough to work on. Since this usually happens before the end of the season, many do not mind freezing their sockeye for short amounts of time. It is far more feasible to freeze two or three fish at a time and then work on it when you have at least ten. Most like to half-smoke the sockeye and then freeze it. This way the flavor and the flesh are preserved without having to fully cook it. Once it is taken out of the freezer it can be cooked and prepared many different ways.

Salmon Eggs: One key respondent used sockeye eggs to make Indian Cheese. She had never made it before but remembered watching her grandmother do it. She decided to give it a try and it worked. She said that the eggs had to be left in the membrane, cleaned thoroughly, left to age for a few days and then hung in the smokehouse where they were smoked for a few more days. After the eggs are smoked she ground them up, put them in jars and froze them. She likened the whole process to what it must be like to make regular cheese.

Sockeye is a delicious fish no matter how it is preserved. There are many ways to prepare sockeye. High on the list of favorites is half-smoked spread, boil fish, fresh baked, fresh fried, fish patties, fish loaf, Cajun blackened, boiled strips and potatoes, plain strips with seal grease, stir-fried, and creamed.

Distribution and Sharing

The uses for sockeye extend further than the dinner table. Most of the key respondents agreed that they make a special effort to give sockeye to those who could not make it out to the grounds. Key respondents also agreed that where customary and traditional gathering is concerned, there is no such thing as getting more fish than you need because there is always someone in the community who can use it. Families' sockeye needs also include fish shared at social events during the year.

Fishers must harvest enough for their family's pantries and for the special events that make up the ceremonial life of the Tlingit people. Sockeye is prepared in various dishes, as mentioned earlier, and taken to potlucks, potlatches, Forty Day Parties, weddings, receptions, birthday parties, naming parties, dedications and christenings. The processed fish is also given as gifts to visiting family, friends, guests, and sent far away to families who cannot make it home or friends who miss their traditional foods.

Fish is also distributed amongst the families and friends that participated in the harvest. Sockeye is equally distributed to the families. However, this equality is based upon the factors that make up a family. For instance, a large family will get more sockeye than a small family but it will be split evenly, meaning that the smaller family usually takes what they need out of the whole amount and leaves the rest to be distributed. It wouldn't make sense for each family to take one hundred fish each if that family only consists of two people. The largest distribution in one family, as told by a key respondent, went to his mother's house and from there it split out along the line. In this case, the gifting of the sockeye was by the entire family instead of one household. In the event that the other households ran out of their supply, they would go their mother's house to restock.

Passing on Traditional Knowledge and Values

It can be said that sockeye harvesting is to Tlingits what textbooks are to schools. Children participating in customary and traditional gathering learn how to work together with family and friends, putting up their winter food supply. Children learn how to listen and pay attention because it is necessary for safety reasons, and it is also necessary in order to learn the importance of participating in your culture.

During the customary and traditional harvesting season, children learn the geography of the area in relation to their families use and to the *Keex' Kwaan* use, historically and currently. Children are also taught about weather patterns, the tides, how tidal currents

and tide rips work, where to find shelter, and about the harvest seasons, especially how the seasons relate to each other. For instance, children learn that it is time to harvest seaweed before sockeye. Or that if they wait too long to get their sockeye, the incoming pinks and chums might make it quite difficult to get the sockeye they need. Children are told stories of the past, relating the history of the Tlingit people, the Kake people, and clan histories).

Children are shown through example and participation how to share with one another and how to give to others who are in need. Children are encouraged to give things away at a young age. Parents and families send the children to give gifts and give gifts in their children's names. Children also learn about caring for and respecting their environment. They learn not to be wasteful by watching how carefully the sockeye are handled and how important the fish are to everyone. Most importantly, the children learn their role in the process. To harvest, gather, process, and prepare the sockeye affords each individual a strong sense of self and self-worth. It is very difficult to place a value on this and even more difficult to summarize it as "subsistence".

Most of the key respondents stated that their families are currently harvesting much less sockeye than in the past. Many agreed that they have to fish harder and longer to catch enough fish.

Although many families work together to process their fish, there are also some families who distribute fish amongst themselves, take it to their own homes and process it there. This also allows for more specialized methods of preserving and preparing the fish since individuals are free to experiment with new recipes and try new techniques. It would seem, as one key respondent noted, that people are becoming more individualistic. What impact this may have on subsistence practices in the future is difficult to know. This is a problem for further research.

Customary Trade

Some of the respondents were indifferent to using sockeye for trade, others still participate in it, and still others really made an effort not to have to do it. They all stressed the importance of protecting their right to engage in trade if they so desired. Tlingit people have always relied on trade. Whether they were seeking a specific kind of fish that their family did not prepare or they needed something from a neighboring tribe that was difficult for them to get, they freely engaged in barter and trade. There was no stigma or shame attached to trading before money was around. It was not only an accepted way of life, but a necessary one. Today, there is confusion regarding the customary trade laws.

While some see customary trade as their right, others are afraid of prosecution. However, as the cash economy has become the standard, the scope of trading and bartering has steadily narrowed to encompass fewer sorts of transactions. One key respondent felt that

in the future trading likely will become less important. However, those that still participate in the trade system see no problem with continuing it.

Customary trade is an important link in preserving access to traditional items. For instance, the herring that once spawned out in front of Kake, no longer provide a viable harvest. Many Kake people rely on relatives or friends in the Sitka area to get their herring eggs. This form of trade amongst families remains very common. The Kake people are known for specific items, such as black seaweed, a valuable trade item.

Kake Estimated Subsistence Sockeye Salmon Harvests

The Alaska Department of Fish and Game, Division of Subsistence has conducted three different household harvest surveys in Kake - 1985, 1987 and 1996. The 1985 survey is described and analyzed in *Harvest and Use of Fish and Wildlife by Residents of Kake, Alaska* (Firman and Bosworth, 1990). The 1987 survey is described and analyzed in *Subsistence Resource Use Patterns in Southeast Alaska: Summaries of Thirty Communities*, (Betts, et al, 1994). While these and subsequent harvest surveys have not directly linked harvested resources to specific land areas or water bodies, households interviewed were asked to locate harvest areas on a map. These were combined to show the areas most commonly used by residents of Kake for the various resource categories. The 1985 study asked respondents to indicate the areas they had used "during their lifetime". Later studies asked respondents to indicate areas used "in the past five years." All of these studies have shown that Kutlaku Creek in Bay of Pillars on Kuiu Island, and Gut Bay and Falls Creek on southern Baranof Island are of great importance to the people of Kake.

Salmon made up almost a quarter of the total subsistence harvest in Kake in 1996, the most recent harvest survey year. Data is based on 1997 interviews with randomly selected Kake households. Survey interviews were conducted by staff of the Division of Subsistence with assistance from the Organized Village of Kake. Measured in pounds of useable weight, salmon contributed 32,602 pounds to the community, or about 131 pounds per household. Sockeye salmon comprised the largest portion of the Kake salmon harvest both in terms of numbers of fish and pounds of useable weight, providing 4,902 fish and 23,233 pounds for the community, about 20 fish per household. See appendix B., tables B-4, B-5, and B-6. Prior to the 1980s more fish were harvested at seasonal camps by Kake households because families were larger and other food options were limited. Too, the logging and commercial fishing industries kept people from engaging in traditional subsistence activities. One key respondent drew attention to this change, commenting that today a family in Kake may harvest 50 sockeye but in the past a family would typically harvest closer to 400 sockeye.

The Alaska Department of Fish and Game, Division of Subsistence maintains subsistence salmon harvest permit data estimates in the Alaska Subsistence Salmon Database.

Although the harvest permit data may be under reported the data is a good indicator of harvest trends. Kake subsistence permit data indicates that Falls Creek, Gut Bay and Pillar Bay are the three primary sources of sockeye for the village (see Appendix B Tables B2 – B5). The average number of sockeye per permit has ranged from a low of eleven sockeye in 1985 to a high of seventeen in 1996. Estimated numbers of sockeye harvested have ranged from lows of approximately 1,000 to highs over 2,500 salmon. Contrary to some key informants' observations, the trend appears to be an increasing harvest of sockeye in the Kake subsistence fisheries. Falls creek in particular has generally had increasing harvests since 1992 (Appendix B. figures B-1 through B-5 and tables B-1 through B-5). Descriptions and discussions of harvest survey and permit data are included in appendix A and B.

Sport and Subsistence Fishing

To understand how sport fishing activity and harvests affect the subsistence sockeye fishing of Kake residents and others at Falls Creek, Gut Bay, and Bay of Pillars, it helps to recognize the changing characteristics of sport fishing in the state and region. The Department of Fish and Game uses a mail-out survey to estimate the number of people who actually fish each year. The number of Alaska sport fishing licenses issued has risen eightfold over the past 40 years - from 55,564 in 1961 to 441,870 in 1999. In 1961, 74 percent of sport fishing licenses were issued to residents of Alaska, while 26 percent were issued to nonresidents. By 1999, nearly the inverse ratio had developed; of a total of 441,870 Alaska sport fishing licenses issued; 172,717, or 39.1 percent were held by Alaska residents, while nonresidents held 269,153, or 60.9 percent. In the past ten years the number of Alaskan sport fishers has dropped by 23 percent, while the number of nonresident sport fishers has risen by almost 22 percent. (Howe et al. 2001). This trend is even more dramatic for Southeast Alaska, where the number of resident sport fishers has dropped by more than 34 percent in the past ten years (Howe et al. 2001).

Fishing patterns tend to differ between nonresident and resident fishers (Wolf 1989). Nonresident fishers are likely to be more mobile and willing to travel to various fishing areas. Resident sport fishers are likely to travel shorter distances and fish closer to their home communities. Based on the presumption that sport fishing from charter boats is conducted primarily by nonresident sport fishers, the growth of sport fishing charter operations in Southeast Alaska reflects the greater numbers of nonresident sport fishers.

There is a perception among residents of Kake that there has been an increase in the level of boating activity related to charter operations near Kake. According to estimates for areas of Southeast Alaska between 1990 and 1999 based on the mail-out survey, increases appear to be in the Sitka, Prince of Wales Island, Juneau, Ketchikan, Glacier Bay, and Yakutat areas. Numbers of all anglers have actually dropped for the Kake, Petersburg, Wrangell, Stikine, and the Haines-Skagway areas. Of the estimated 9,536 anglers who fished in this area in 1999, an estimated 739 fished in the Kake Area. A

small portion of the Sitka area sport fishing activity occurs in saltwater along the west side of Chatham Strait, and the freshwater streams and lakes of southern Baranof Island. How much of this activity occurs in the vicinity of Gut Bay and Falls Lake/Creek is not clear from the available data (Howe et al 2001).

Of the five principal salmon species harvested by sport fishers over the past 10 years in Southeast Alaska, cohos, pinks and Chinooks consistently topped the list, with only chums showing lower harvest estimates than sockeyes. Based on the statewide harvest survey, the southeast sport harvest of sockeye salmon represents only about 7 percent of the statewide sport harvest of sockeye. Of the estimated 26,476 southeast sport harvest of sockeye for 1999, an estimated 754 came from the combined Kake, Petersburg, Wrangell, Stikine Area, and of that only 162 were taken in the saltwater areas near Kake. The mail-out survey reported no harvests of sockeye salmon in 1999 from the saltwater areas of Chatham Strait (Howe et al 2001).

The mandatory logbook reporting system for saltwater sport fishing charter vessel operators provides information on area/s fished, number of trips, number of clients, number of rods and hours fished for salmon, and species of salmon harvested and released by both clients and crew. Similar information is recorded for halibut, rockfish and other bottom fish.

Three years of logbook data are available for the Kake Area waters. The areas fished are identified by the commercial fisheries statistical areas, which are not precise enough to link the harvests with the salmon stocks of concern in this study. In 2000 charter vessel operators logged 22 salmon fishing and 49 bottom fish fishing trips in the Red Bluff Area to the north of Falls Lake/Creek, with 60 clients targeting salmon and 115 clients targeting bottom fish, primarily halibut and rockfish. This represents a decline from numbers of fishers in 1999 when 32 salmon were harvested. Charter vessels operating in the Rowan Bay and Bay of Pillars area report increasing levels of activity, with number of clients reported at 125 in 2000, up from 80 in the previous year, but zero harvest of sockeye salmon. Overall, the three years of sport fishing charter vessel log book data indicates an increase in both numbers of clients, vessels, fishing trips and time spent fishing in the general vicinity of Kake. Salmon harvest levels have also increased there, but species targeted are kings, cohos and pinks. Reported sockeye salmon harvests are low in comparison (ADFG Sport Fish Division 2000).

The numbers of charter boat operators, sport fishing lodges and guiding businesses operating in the Chatham Strait/Baranof Island, Frederick Sound and Kuiu Island areas have also increased in recent years. Seven operators listed Kake as their business location, including a resort situated nearby in Rocky Pass. Charter vessel operators located in other communities, such as Port Alexander, Petersburg, Point Baker, and Sitka, also bring clients into the Bay of Pillars, Gut Bay and Falls/Lake Creek (<http://www.sf.adfg.state.ak.us/statewide/sfguides/html/>)

CONCLUSIONS

The customary and traditional harvest of sockeye salmon at Falls Creek, Gut Bay and Bay of Pillars has taken place for many generations. These traditional fisheries continue to be the primary source of sockeye salmon for residents of Kake, Alaska.

The village of Kake's sockeye salmon harvest patterns and fishing techniques have changed over the past century largely due to the development of the commercial fishing industry and federal and state management regimes. In spite of these changes, sockeye salmon remains a primary subsistence resource for residents of Kake. Fishing work groups based on families, extended households, and friends harvest the majority of sockeye for home use. Sharing of salmon between fishing and non-fishing households is a tradition that continues.

Subsistence and commercial salmon fishing are intimately linked, with a portion of salmon for home use coming out of the commercial harvest. Since the early 1970s and the implementation of the limited entry permit system for commercial salmon fishing there has been a steady decline in the number commercial salmon fishing boats home porting in Kake. There has also been a decline in the commercial salmon market which has also affected Kake's salmon fishing households and the communities' fish processing facilities. The decline in the commercial salmon fishing industry has led to changes in Kake's subsistence salmon harvest patterns.

Changes in the commercial salmon industry have led to a decline in the amount of salmon taken from the commercial harvest for home use. This has resulted in a growing reliance on the subsistence net fisheries at Gut Bay, Falls Creek and Pillar Bay. This trend will likely continue into the near future. Fisheries managers should prepare for this continuing reliance on these traditional sockeye fisheries.

Although there are fewer commercial fishing boats in Kake than there were twenty years ago, there continue to be high harvesting households in the subsistence sockeye fishery. These high harvesting households contribute significantly to the overall subsistence harvest. Traditionally these high harvesting households were primarily commercial fishing families. This has changed over the past three decades. Instead of the commercial seine and gillnet boats, today many of the high harvesters use non-commercial cabin cruisers and skiffs. Present state and federal harvest estimates based on subsistence permits fails to capture sockeye harvests coming from either the commercial fisheries or the non-commercial high harvesters. Fish taken from commercial salmon harvests are not reported on subsistence permits. High harvesting fishers are reluctant to report the actual number of fish harvested on their permits due to fear of enforcement actions.

Kake residents report that increasing numbers of sport fishing vessels, charter aircraft, and tour boats are interfering with subsistence activities. It is difficult to measure the affects of the growing charter, tour, and sport fishing industries on residents of Kake and

their subsistence fishing practices. Nevertheless, residents of Kake perceive these activities as detrimental to their subsistence fishing. A proposal submitted by the Organized Village of Kake to the Federal Subsistence Board requested that streams draining into Falls Lake Bay, Gut Bay, and Bay of Pillars be open only to federally qualified subsistence users. The Federal Subsistence Board responded by closing these streams to all but federally qualified fishers.

This report should afford federal and state subsistence fishery managers a better understanding of Kake Tlingit cultural values and the history of their use of these fisheries. Kake Tlingits actively managed their fisheries prior to the development of the commercial fishing industry in the late 19th century. Traditional fisheries management maintained healthy stocks of sockeye salmon. Some aspects of traditional fishing practices remain. A respect for salmon, high harvesting households, and multi household fishing groups with a commitment to sharing the resource with those who cannot fish are traditional elements that continue to influence local fishing patterns.

RECOMMENDATIONS

Communications between federal and state fisheries managers could be improved. The yearly subsistence fisheries meetings between federal and state managers and Kake subsistence harvesters have contributed to better communications. These meetings should continue.

Subsistence regulations could be presented in a form that local people can easily understand. The community needs to be more fully involved in the development of the permit and harvest data collection system. As long as harvest data collection systems appear to be linked to enforcement actions people will be reluctant to report any number of fish harvested over permit limits. Confidential face-to-face harvest survey data usually captures more of these “illegal” fish. See Appendix B. for a detailed discussion of the different harvest assessment techniques used in Southeast Alaska and their effectiveness. Working closely with the community and hiring local people to conduct harvest surveys has proven to be an effective means of collecting more accurate harvest data.

A Kake community harvest permit should be developed. The permit should be based on the communities’ sockeye salmon needs, contemporary harvest practices and sockeye stock assessments. The federal designated fisherman and state proxy fishing permits do not adequately address the communities’ sockeye salmon needs and contemporary harvest practices. A community harvest permit administered by the Organized Village of Kake with federal and state oversight would more adequately address sockeye salmon needs and contemporary harvest practices. OVK would be responsible for accurate reporting of community harvests.

Further research needs to be conducted in Kake concerning impacts due to the decline in the commercial salmon fishing industry and its effects on the subsistence sockeye salmon fishery. Since it appears that the number of commercial salmon fishermen in Kake will not increase in the near future managers must prepare for continuing reliance on net fisheries at the subsistence sockeye harvest locations of Gut Bay, Falls Lake and Bay of Pillars. These fisheries will remain the primary source of Kake's subsistence sockeye needs in the near future.

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APPENDIX A. KAKE SUBSISTENCE SALMON FISHERIES, 2001

Excerpt from: ADF&G Division of Subsistence. 2003. Alaska Subsistence Fisheries 2001 Annual Report. Juneau, Alaska. September 2003

PETERSBURG/WRANGELL MANAGEMENT AREA

KAKE SUBSISTENCE SALMON FISHERIES

KAKE/KADAKE BAY/KEKU STRAIT GUT BAY, FALLS LAKE CREEK (BARANOF ISLAND)

Background and History

Subsistence salmon fisheries in the waters traditionally used by the Tlingit people of Kake are under the management responsibility of two area offices of the Division of Commercial Fisheries – the Petersburg/Wrangell office. In 1989 the Alaska Board of Fisheries adopted a positive finding for “customary and traditional use” of salmon in the waters of Section 9-A and 9-B in waters north of the latitude of Swain Point, in waters of District 10 west of a line from Pinta Point to False Point Pybus, and in waters of District 5 north of a line from Point Barrie to Boulder Point. Principal salmon waters and streams used by Kake fishers include Gut Bay and Falls Lake Creek flowing into Chatham Strait on the southwest coast of Baranof Island, as well as Saginaw, Security (Salt Lake), Pillar (Kutlaku Creek) and Tebenkof Bays (Alecks Creek) on Kuiu Island (Figure XIII-3). The residents of Kake are the principal subsistence users of the salmon stocks in Gut Bay and Falls Lake Creek on Baranof Island, and Saginaw, Security, Pillar, and Tebenkof Bays on Kuiu Island. In 2000 Kake had a population of 710 in 246 households. Thirty-three percent of Kake households are estimated to use subsistence methods to harvest salmon for home use (ADFG Division of Subsistence, Community Profile Database 2003). Kake residents shared the use of the southern coastal waters of Admiralty Island with people of Angoon and Petersburg. In recent years principal subsistence salmon fishing by Kake residents occurs in Gut Bay, and Falls Creek on Baranof Island, and at Kutlaku Creek in Pillar Bay.

Regulation

The 2001 subsistence salmon permit for the Kake area waters of District 9 provided for an open season for sockeye salmon in Alecks Creek in Tebenkoff Bay, and Pillar Bay (Kutlaku) from June 1 through July 31. For Falls Creek and Gut Bay the season ran from June 1 through July 20. The open season for pink salmon in all streams in the Kake subsistence area ran from July 15 through August 31. The 2001 season for fall chum in

Port Camden was August 15 – September 30, and for Security Bay, from September 1 through October 31. Allowed subsistence gear included gaffs, spears, beach seines and dip nets. Possession limits for sockeye from Alecks Creek and Pillar Bay was 15 per person and 25 per household. The limit for fish from Gut Bay and Falls Creek was 10 per person and per household.

Harvest Assessment Program

Annual subsistence salmon harvest assessments have been in place since 1985. As reported in Table XIII-31 the estimated salmon harvest in the Kake subsistence fisheries in 2001 was 2,431 salmon, including 2,216 sockeye (91.1 percent), 38 coho (1.6 percent),

Table XIII-31. Kake Area Subsistence Salmon Permit Estimated Harvests [District 9]*, 2001

YEAR	Community	Permits Fished		Estimated Harvest						Percent of Total
		Reported	Estimated	Chinook	Sockeye	Coho	Chum	Pink	Total Salmon	
2001	Kake	144	150	8	2,126	8	88	75	2,305	94.8%
2001	Sitka	3	3	0	31	0	0	0	31	1.3%
2001	Angoon	1	1	0	0	30	0	0	30	1.2%
2001	Juneau	1	1	0	11	0	0	0	11	0.5%
2001	Ketchikan	2	3	0	28	0	0	0	28	1.2%
2001	Petersburg	1	1	2	20	0	0	4	26	1.1%
		152	160	10	2,216	38	88	79	2,431	100.0%
Percent of Total				0.4%	91.1%	1.6%	3.6%	3.3%	100.0%	

*Includes Point White Creek, Salt Chuck-Security Bay, Kutlaku Creek, Alecks Creek, Gut Bay, Falls Creek-Baranof Is

88 chum (3.7 percent), and 79 pink (3.7 percent). Most permits were issued to Kake residents, and Kake residents harvested most of the salmon reported (94.8 percent). Some Kake residents fish in waters beyond these traditional use areas. In 2001 most of the subsistence salmon harvests reported on the permits fished by Kake residents occurred in the waters of Falls Creek, Gut Bay, and Alecks Creek in Tebenkof Bay (Table XIII-32).

Table XIII-32. Kake Subsistence Salmon Permit Estimated Harvests by Stream, 2001

YEAR	Fishing Location	Permits Fished		Estimated Harvest					Total Salmon
		Reported	Estimated	Chinook	Sockeye	Coho	Chum	Pink	
2001	District 6	1	1	0	0	13	0	0	13
2001	Crystal Creek	1	1	0	0	13	0	0	13
2001	District 9	142	148	8	2,106	34	88	75	2,285
2001	Gut Bay Head	44	46	2	571	0	5	0	579
2001	Falls Creek- Baranof Is	80	84	6	1,285	7	57	39	1,394
2001	Point White Creek	2	2	0	0	1	0	37	38
2001	Salt Chuck-Security	1	1	0	0	0	21	0	21
2001	Kutlaku Creek	6	6	0	98	0	0	0	98
2001	Alecks Creek	9	9	0	151	0	4	0	156
All Districts Total				8	2,106	21	88	75	2,298

Source: ADFG Division of Subsistence, Alaska Subsistence Fisheries Database, Ver. 3.10

The numbers of sockeye salmon harvested by residents of Kake in 2001, as estimated based on amounts reported on the permits, are below the 5-year and 10-year averages, and chum salmon reported harvests were way down in 2001. Chinook harvests reported on the permits returned in 2001 were above the 5-, 10- and all-year average (Table XIII-33).

Table XIII-33. Historic Kake Community Subsistence Salmon Harvests 1985-2001

Community	YEAR	Permits*		Estimated Harvest**					Total Salmon
		Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
Kake	1985		95	0	1,026	0	958	0	1,984
Kake	1986		100	0	1,269	0	283	0	1,552
Kake	1987		91	0	1,503	0	941	0	2,444
Kake	1988		90	0	1,332	0	310	30	1,672
Kake	1989		98	2	1,702	28	676	120	2,528
Kake	1990		54	0	909	0	65	92	1,066
Kake	1991		68	0	1,208	0	263	55	1,526
Kake	1992		116	0	2,611	8	659	241	3,519
Kake	1993		116	0	2,198	0	388	53	2,639
Kake	1994		100	0	1,982	9	146	99	2,226
Kake	1995		96	1	1,606	6	118	63	1,794
Kake	1996	180	152	2	2,842	15	186	68	3,113
Kake	1997	211	176	1	2,267	19	453	86	2,827
Kake	1998	212	189	3	2,771	0	234	204	3,212
Kake	1999	214	191	1	2,573	2	222	103	2,902
Kake	2000	180	176	3	1,629	0	330	45	2,007
Kake	2001	191	183	8	2,126	21	88	75	2,318
1997 - 2001 Average				3	2,273	8	265	103	2,653
1992 - 2001 Average				2	2,260	8	282	104	2,656
All Years Average				1	1,856	6	372	79	2,313

Source: ADFG Division of Subsistence, Alaska Subsistence Fisheries Database, Ver. 3.10

* Number prior to 1996 represent permits returned with harvest data. From 1996 onward, numbers represent all returned permits with or without data.

** Harvest figures prior to 1996 represent reported harvest only. From 1996 onward, harvest figures are expanded from reported harvest to account for non-returned permits.

APPENDIX B. ESTIMATING SUBSISTENCE SALMON HARVEST QUANTITIES

LIST OF TABLES

- Table B-1. Kake Community Subsistence Salmon Permit Estimated Harvest by Location, 1985 - 2001
- Table B-2. Kake Community Subsistence Salmon Permit Estimated Harvest, Falls Creek, 1985 – 2001
- Table B-3. Kake Community Subsistence Salmon Permit Estimated Harvest, Gut Bay, 1985 – 2001
- Table B-4. Kake Community Subsistence Salmon Permit Estimated Harvest, Kutlaku Creek, 1985 – 2001
- Table B-5. Kake Community Subsistence Salmon Permit Estimated Harvest, Other Streams, 1985 - 2001
- Table B-6. Estimated Harvest and Use of Salmon Resources, Kake, 1985
- Table B-7. Estimated Harvest and Use of Salmon Resources, Kake, 1987
- Table B-8. Estimated Harvest and Use of Salmon Resources, Kake, 1996
- Table B-9. Estimated Salmon Harvest by Gear Type, Kake, 1996
- Table B-10. Estimated Percentages of Salmon Harvest By Resource, Gear Type, and Salmon Total Harvest, Kake, 1996
- Table B-11. Percentage of Households Harvesting Salmon By Gear Type And Species, Kake, 1996

List of Figures

- Figure B-1. Kake Estimated Number of Subsistence Sockeye Salmon Harvested 1985 - 2001
Number of Sockeye per Year and Number of Sockeye per Permit
- Figure B-2. Kake Community Subsistence Salmon Permit Sockeye Salmon Harvests Estimated by Stream, 1985 - 2001
- Figure B-3. Kake Community Sockeye Salmon Estimated Harvests at Falls Creek-Baranof Island, 1985 – 2001 Estimated Harvests at Gut Bay-Baranof Island, 1985 - 2001
- Figure B-5. Kake Community Sockeye Salmon Estimated Harvests at Kutlaku Creek/Pillar Bay - Kuiu Island, 1985 – 2001

ESTIMATING SUBSISTENCE SALMON HARVEST QUANTITIES

There are currently four methods of estimating the numbers of salmon harvested for home use: (1) the harvests reported on the Subsistence/Personal Use Permits, (2) harvests reported on the Subsistence/Personal Use Permits expanded to account for unreturned permits, (3) in-season daily access-point creel surveys, and (4) post-season household harvest surveys.

Subsistence/Personal Use Permit: Salmon harvest numbers, species, date and locations are collected from the calendar record on permits returned each year. The permit form shows the relevant regulations, the list of streams covered by the permit, the open dates and individual and household season and possession limits, for each stream. Only one permit is issued per household, and no permit is issued unless the permit from the previous season has been returned. People fishing at Falls Creek, Gut Bay and Bay of Pillars/Kutlaku have been required to obtain these permits each year since the start of the permit program. Data from returned permits are entered into the salmon catch and effort database, and data can be retrieved by stream, statistical area, or district, and by community. The data entered represents only the harvests reported on the returned permits, and are not expanded to permits not returned.

Subsistence/Personal Use Permit – Expanded: Based on harvest data on permits returned, and number of permits issued, expanded to unreturned permits. The Alaska Subsistence Fisheries 2001 Annual Report uses this method for southeast Alaska subsistence salmon fisheries.

Daily access-point creel surveys: Typically used for estimating sport fishing in the more populous communities, access-point, daily creel surveys have been done in a few of the smaller communities of the region. Anglers are randomly surveyed at the dock, or at other sites where fish are being "landed". The survey documents fishing effort, species, sex and age of fish harvested. Scale samples may be taken, and harvests of tagged fish are noted. The sampling period information is expanded to estimate the total harvest. During the 2001 fishing season at Falls Creek, the Division of Commercial Fisheries conducted a special access-point creel survey of all sport fishing and subsistence salmon fishing groups as part of its stock assessment work on the sockeye run at Falls Creek and Falls Lake. This survey attempted to include 100 percent of the fishing activity at Falls Creek on two randomly selected weekdays and every Saturday and Sunday from June 4 through Sept 16.

Post-season household harvest surveys: Another source of information on quantities of salmon harvested for home use are the household harvest surveys conducted by the Division of Subsistence. Face-to-face interviews are conducted with a random selection of households in a community, and households are asked to recall all species harvested for home use during a preceding 12-month period. These face-to-face surveys seek to establish a baseline of quantitative data on the amounts of the entire range of wild resources used by the randomly selected households. Estimated harvests for all households in the community are calculated based on the sampled households. For fish, gear used for harvests are recorded, including fish retained from commercial catch, fish

caught with rod and reel, and fish harvested with recognized "subsistence gear", such as set nets, beach and purse seines, etc. Specific resource harvests generally have not been linked to a specific harvest site or location on such surveys conducted in Southeast Alaska communities. While relative abundance, availability of wild resources, harvest effort, and other factors affecting resource uses may vary somewhat from year to year, surveys repeated in subsequent years have produced similar results, in terms of the overall quantities of wild resources harvested annually by the community. It is not unusual, however, to see some variation in the composition of the resources used.

This type of survey was conducted in Kake in 1986, collecting information on harvests in the 1985 calendar year. Key respondents were asked to locate and name areas on a map where he/she had hunted, fished or gathered throughout his/her lifetime in Kake, by resource categories (salmon, deer, intertidal resources, furbearers, waterfowl and seal). Additionally, all sampled households were asked to indicate the years they had used each of 35 geographical areas identified by the researchers within the Kake traditional use area described by Goldschmidt and Haas (1998).

Kake Household Harvest Surveys, ADFG Division of Subsistence 1985, 1987, 1996			
	<u>1985</u>	<u>1987</u>	<u>1996</u>
Number of Households in the Community	171	193	249
Number Randomly Sampled Households	70	52	66
Percent Interviewed	40.90%	26.90%	26.50%
Estimated Population	<u>625</u>	<u>642</u>	<u>747</u>

Similar surveys were conducted in Kake in 1988 for the 1987 calendar year, and again in 1997 covering harvests during the 12-month period February 1, 1996 - January 31, 1997. Community harvest estimates are calculated from the sampled households. Again, harvest amounts are not linked to specific sites. However, in that year, households were also asked to identify the areas members of the household used for harvesting land mammals, salmon, non-salmon fish, marine invertebrates and intertidal resources, and marine mammals in the previous five years.

Subsistence/Personal Use Permit Data - Expanded

The following discussion pertains to salmon harvest data reported on permits for Kake fishing households in the Alaska Subsistence Fisheries Database (ASFDB) developed by the Division of Subsistence with data drawn from the Alexander database. Reported harvests are expanded using information on number of permits issued, number returned, and number reporting harvests. The data pertains to data for residents of Kake (Appendix Table B-1, Appendix Figure B-1).

Falls Creek-Baranof Island. A review of the data reported on the Kake subsistence permits shows an overall increase in the number of permits reporting sockeye salmon harvests at Falls Creek (Appendix Table B-2, Appendix Figure B-2). In 1985 one Kake permit reported harvest of a total of 10 sockeye salmon. In 2001 an estimated 85 permits

reported an estimated 1,295 sockeye harvested at Falls Creek. At Falls Creek the average yearly harvest reported for the period 1985-1995 was 361 sockeye. The average yearly harvest reported for the period 1996-2001 was 1,107. (Appendix Table B-2). The major portion of the harvest at Falls Creek was reported on permits held by residents of Kake. Fishers from the communities of Sitka, Petersburg, Juneau, Hydaburg, and Coffman Cove also reported some salmon harvests at Falls Lake Creek.

Gut Bay-Baranof Island. The number of subsistence permits reporting and the number of salmon harvested at Gut Bay since 1985 has been uneven (Appendix Table B-3, Appendix Figure B-2). The number of permits reporting ranges from a low of 12 in 1991 to a high of 58 in 1986. The estimated sockeye harvest ranged from a low of 128 in 1991 to a high of 795 in 1993. The average number of sockeye harvested annually during the period 1985-1995 was 439, and the average yearly harvest reported for the period 1996-2001 was 484 (Appendix Table B-3). As was true for Falls Creek, the major portion of the harvest at Gut Bay was reported on permits held by residents of Kake. Fishers from the communities of Petersburg, Sitka, Juneau and Craig also reported some salmon harvests at Gut Bay.

Kutlaku Creek-Bay of Pillars. Since 1985, all subsistence sockeye fishing in Pillar Bay has been entered in the database as occurring at Kutlaku Creek. The number of Kake subsistence permits reporting and the number of salmon harvested at Kutlaku Creek has ranged from a low of 10 in 1995 to a high of 60 in 1992. The estimated number of sockeye salmon harvested ranges from a low of 218 in 2000 to 1,333 in 1992. The average number of sockeye harvested annually during the period 1985-1995 was 845, and the average yearly harvest reported for the period 1996-2001 was 618. (Appendix Table B-4) Between 1985 and 2001, the major portion (from 86 to 100 percent) of the salmon harvest at Kutlaku Creek was reported on permits held by residents of Kake. Fishers from other communities such as Petersburg, Juneau, and Sitka also reported some sockeye salmon harvests at Kutlaku Creek.

Although Kake fishers account for the large majority of the fish reported on the subsistence permits at Kutlaku, in addition, a few people from Petersburg, Klawock, Craig and Hydaburg, as well as from Sitka and as far away as Juneau, have reported salmon harvests from Kutlaku Creek. In 1999 one permit holder listing Anchorage as the address reported harvesting salmon at Kutlaku Creek.

Kake Community Permits. Another way to look at these data is by community. A review of the harvests reported on permits returned by Kake households makes it possible to review the relative importance of the several fishing locations to the community over the years. The importance of the several streams has shifted over the years. For instance, Kutlaku Creek subsistence sockeye harvest for Kake households has varied from a high of 84.6 percent of all sockeye salmon reported in 1987, to a low of 4.6 percent in 2001 (Appendix Table B-1).

In 1985 thirty-three Kake subsistence permits reported harvests of 697 sockeye salmon at Kutlaku Creek in Bay of Pillars. This represented 68 percent of all sockeye salmon reported on Kake permits that year. Gut Bay supplied 319 sockeye to Kake permit holders (31 percent of all Kake sockeye reported that year), while the 10 sockeye reported from Falls Creek represented only 1 percent of all Kake sockeye reported in 1985.

In 1996 the Gut Bay, sockeye harvest represented only 20 percent of all the sockeye salmon Kake permit holders reported that year – an estimated 47 permits harvested an estimated 566 sockeye there. Kake's 1996 harvests at Falls Creek accounted for the major portion of Kake's sockeye harvests – an estimated 73 permits harvested an estimated 1,273 sockeye, representing about 45 percent of all sockeye salmon reported on Kake permits that year. Kutlaku Creek in Bay of Pillars accounted for 34.3 percent - the second highest proportion of the sockeye harvest, with an estimated 38 Kake permits harvesting an estimated 822 sockeye there.

Since 1985 these three sockeye salmon stocks account for from 80 percent to 100 percent of all sockeye salmon harvests reported on Kake residents' permits. Other streams providing small numbers of sockeye harvests for Kake residents have included Alecks Creek in Tebenkof Bay, south of Bay of Pillars, and False Pt. Pybus Creek, across Frederick Sound at the southern tip of Admiralty Island. A combination of factors likely is influencing these shifts in effort and harvest. Abundance of salmon, weather and other travel conditions, timing of the runs relative to other activities, including wage employment opportunities, health, family preferences for fish from one or another of the streams and other factors may all play a part in directing the focus of an individual's or a household's fishing efforts.

It is not clear how well these harvest numbers reflect actual harvests of salmon. The possession limits set on the permits do not fit well with the reality of the fishery. Regulations define "possession limit" as "the maximum number of fish a person (or household) may have in his (its) possession if the fish have not been canned, salted, frozen, smoked, dried or otherwise preserved so as to be fit for human consumption after a 15-day period". The distance of all three Kake sockeye salmon runs from the community and the hazards of the trip across the expanse of open water of Frederick Sound and Chatham Strait, make these limits unsuitable to these fisheries. Contemporary practices of the subsistence sockeye fishery are described in the report.

Post -season household survey data:

In results from all three, 1985, 1987, 1996 study years, fish have comprised the largest resource category harvested for home use, in terms of edible weight. In 1985 fish provided over 53 percent of the total pounds of wild resources harvested (32 percent salmon and 21 percent non-salmon), in 1987 42 percent (22 percent salmon and 20 percent non-salmon), and in 1996 48 percent (25 percent salmon and 23 percent non-salmon). Of fish, salmon are clearly the most importance species for Kake households.

The 1985 household harvest survey estimated 6,987 salmon harvested by 61 percent of the households. "Non-commercial" or "subsistence" gear was used to harvest over half of these, (3,581) salmon. The 1985 household harvest survey estimated 1,185 were sockeye taken with subsistence gear. This is significantly higher than the numbers reported by Kake fishers on the Department's subsistence permits for that year - 1,984 salmon, of which 1,026 were sockeye. (Appendix Tables B-6, B-7, B-8)

The results of the household harvest survey for 1987 show an estimated 3,921 salmon were harvested by 56 percent of the Kake households. Subsistence gear was used to harvest an estimated 1,216 sockeye salmon in that year. This compares with 2,444

salmon reported on the 91 Kake subsistence permits returned for 1987. Of these 1,503 were sockeye salmon.

The results of the household harvest survey for 1996 show an estimated 6,187 salmon of all species were harvested by 62 percent of the Kake households. Of those salmon subsistence gear was used to harvest an estimated 4,247 sockeye salmon in that year (Appendix Table B-9, B-10, and B-11). This compares with the 3,113 salmon reported on the estimated 166 Kake subsistence permits for 1996. Of these just 2,842 were sockeye salmon (Appendix Table B-1).

In all three study years, 1985, 1987, and 1996, almost all households in the community reported using salmon, (87, 88 and 99 percent respectively), while a smaller number of households actually harvested salmon (61, 56 and 62 percent respectively). Harvest and use of sockeye salmon is somewhat more limited in Kake, reflecting the distance to sockeye fishing locations, and the extra effort needed to harvest sockeye salmon. Most sockeye are harvested using subsistence gear - seines, set gill nets, and floating nets, while a small number of sockeye were removed from commercial catch, or caught with rod and reel (Appendix Tables B-6, B-7, B-8).

In 1985 41 percent of Kake households used and 34 percent harvested sockeye salmon. In 1987 50 percent of Kake households used and 32 percent harvested sockeye salmon. In 1996 96 percent of Kake households used and 41 percent harvested sockeye salmon. For households engaged in harvesting with subsistence gear in 1996, the average numbers of sockeye salmon per harvesting household is estimated at 52. While these fish cannot be linked to a particular stream, if the estimated 4,902 sockeye salmon caught with subsistence gear were distributed among the several streams according to where Kake households reported harvesting sockeye on their subsistence permits in 1996, approximately 2,196 (45 percent) might have been harvested from Falls Creek, 1,679 (34 percent) from Kutlaku Creek, and 976 (20 percent) from Gut Bay.

Appendix Table B-1. Kake Community Subsistence Salmon Permit Harvest Data, 1985-2001

YEAR	STREAM	Number of Permits Reporting	Estimated Number Permits Fished	Stream Percent of Permits Fished [1]	Chinook	Sockeye	Coho	Chum	Pink	Total Salmon	Average Number of Sockeye Salmon Per Permit [1]	Stream Percent of Sockeye Salmon Harvested	Percent Sockeye Change from Previous Year
1985	Kake Gut Bay Head	35		36.8%	0	319	0	0	0	319	9.1	31.1%	
1985	Kake Falls Ck Baranof Is	1		1.1%	0	10	0	0	0	10	10.0	1.0%	
1985	Kake Kutlaku Creek	33		34.7%	0	697	0	0	0	697	21.1	67.9%	
1985	Kake Other Steams	26		27.4%	0	0	0	958	0	958	0.0	0.0%	
1985	Kake Total All Streams	95		100.0%	0	1,026	0	958	0	1,984	10.8	100.0%	
1986	Kake Gut Bay Head	58		58.0%	0	566	0	0	0	566	9.8	44.6%	
1986	Kake Falls Ck Baranof Is	1		1.0%	0	10	0	0	0	10	10.0	0.8%	
1986	Kake Kutlaku Creek	29		29.0%	0	693	0	0	0	693	23.9	54.6%	
1986	Kake Other Steams	12		12.0%	0	0	0	283	0	283	0.0	0.0%	
1986	Kake Total All Streams	100		100.0%	0	1,269	0	283	0	1,552	12.7	100.0%	19.1%
1987	Kake Gut Bay Head	22		23.9%	0	211	0	0	0	211	9.6	14.0%	
1987	Kake Falls Ck Baranof Is	1		1.1%	0	10	0	0	0	10	10.0	0.7%	
1987	Kake Kutlaku Creek	48		52.2%	0	1,272	0	0	0	1,272	26.5	84.6%	
1987	Kake Other Steams	21		22.8%	0	10	0	941	0	951	0.5	0.7%	
1987	Kake Total All Streams	92		100.0%	0	1,503	0	941	0	2,444	16.3	100.0%	15.6%
1988	Kake Gut Bay Head	30		31.9%	0	349	0	0	0	349	11.6	26.4%	
1988	Kake Falls Ck Baranof Is	13		13.8%	0	128	0	0	0	128	9.8	9.7%	
1988	Kake Kutlaku Creek	41		43.6%	0	835	0	0	0	835	20.4	63.2%	
1988	Kake Other Steams	10		10.6%	0	10	0	310	30	350	1.0	0.8%	
1988	Kake Total All Streams	94		100.0%	0	1,322	0	310	30	1,662	14.1	100.0%	-13.7%
1989	Kake Gut Bay Head	34		26.0%	0	649	0	1	0	650	19.1	38.4%	
1989	Kake Falls Ck Baranof Is	24		18.3%	0	290	20	0	0	310	12.1	17.1%	
1989	Kake Kutlaku Creek	40		30.5%	0	730	8	25	20	783	18.3	43.1%	
1989	Kake Other Steams	33		25.2%	2	23	0	650	75	750	0.7	1.4%	
1989	Kake Total All Streams	131		100.0%	2	1,692	28	676	95	2,493	12.9	100.0%	21.9%

Appendix Table B-1. Kake Community Subsistence Salmon Permit Harvest Data, 1985-2001

YEAR	STREAM	Number of Permits Reporting	Estimated Number Permits Fished	Stream Percent of Permits Fished [1]	Chinook	Sockeye	Coho	Chum	Pink	Total Salmon	Average Number of Sockeye Salmon Per Permit [1]	Stream Percent of Sockeye Salmon Harvested	Percent Sockeye Change from Previous Year
1990	Kake Gut Bay Head	16		26.2%	0	182	0	0	0	182	11.4	20.3%	
1990	Kake Falls Ck Baranof Is	12		19.7%	0	120	0	0	0	120	10.0	13.4%	
1990	Kake Kutlaku Creek	27		44.3%	0	593	0	0	0	593	22.0	66.3%	
1990	Kake Other Steams	6		9.8%	0	0	0	65	92	157	0.0	0.0%	
1990	Kake Total All Streams	61		100.0%	0	895	0	65	92	1,052	14.7	100.0%	-89.1%
1991	Kake Gut Bay Head	12		19.4%	0	128	0	0	0	128	10.7	13.1%	
1991	Kake Falls Ck Baranof Is	8		12.9%	0	109	0	0	0	109	13.6	11.2%	
1991	Kake Kutlaku Creek	34		54.8%	0	738	0	0	0	738	21.7	75.7%	
1991	Kake Other Steams	8		12.9%	0	0	0	188	30	218	0.0	0.0%	
1991	Kake Total All Streams	62		100.0%	0	975	0	188	30	1,193	15.7	100.0%	8.2%
1992	Kake Gut Bay Head	45		28.5%	0	748	8	78	0	834	16.6	28.6%	
1992	Kake Falls Ck Baranof Is	32		20.3%	0	515	0	0	2	517	16.1	19.7%	
1992	Kake Kutlaku Creek	60		38.0%	0	1,333	0	0	80	1,413	22.2	51.1%	
1992	Kake Other Steams	21		13.3%	0	15	0	581	159	755	0.7	0.6%	
1992	Kake Total All Streams	158		100.0%	0	2,611	8	659	241	3,519	16.5	100.0%	62.7%
1993	Kake Gut Bay Head	52		38.8%	0	795	0	0	0	795	15.3	36.3%	
1993	Kake Falls Ck Baranof Is	48		35.8%	0	952	0	0	0	952	19.8	43.5%	
1993	Kake Kutlaku Creek	21		15.7%	0	451	0	0	0	451	21.5	20.6%	
1993	Kake Other Steams	13		9.7%	0	0	0	388	53	441	0.0	0.0%	
1993	Kake Total All Streams	134		100.0%	0	2,188	0	388	53	2,629	16.3	100.0%	-19.3%
1994	Kake Gut Bay Head	32		27.8%	0	432	0	0	0	432	13.5	21.8%	
1994	Kake Falls Ck Baranof Is	51		44.3%	0	911	4	0	47	962	17.9	46.0%	
1994	Kake Kutlaku Creek	24		20.9%	0	629	5	1	14	649	26.2	31.7%	

Appendix Table B-1. Kake Community Subsistence Salmon Permit Harvest Data, 1985-2001

YEAR	STREAM	Number of Permits Reporting	Estimated Number Permits Fished	Stream Percent of Permits Fished [1]	Chinook	Sockeye	Coho	Chum	Pink	Total Salmon	Average Number of Sockeye Salmon Per Permit [1]	Stream Percent of Sockeye Salmon Harvested	Percent Sockeye Change from Previous Year
1994	Kake Other Steams	8		7.0%	0	10	0	145	38	193	1.3	0.5%	
1994	Kake Total All Streams	115		100.0%	0	1,982	9	146	99	2,236	17.2	100.0%	-10.4%
1995	Kake Gut Bay Head	35		32.4%	0	445	0	0	0	445	12.7	27.7%	
1995	Kake Falls Ck Baranof Is	54		50.0%	1	916	3	3	22	945	17.0	57.0%	
1995	Kake Kutlaku Creek	10		9.3%	0	218	0	0	0	218	21.8	13.6%	
1995	Kake Other Steams	9		8.3%	0	27	3	115	41	186	3.0	1.7%	
1995	Kake Total All Streams	108		100.0%	1	1,606	6	118	63	1,794	14.9	100.0%	-23.4%
1996	Kake Gut Bay Head	40	47	28.6%	0	566	0	0	0	566	12.0	19.9%	
1996	Kake Falls Ck Baranof Is	62	73	44.3%	2	1,273	4	6	37	1,322	17.3	44.8%	
1996	Kake Kutlaku Creek	32	38	22.9%	0	973	0	2	7	983	25.7	34.3%	
1996	Kake Other Steams	6	7	4.3%	0	30	12	178	24	243	4.2	1.0%	
1996	Kake Total All Streams	140	166	100.0%	2	2,842	15	186	68	3,113	17.1	100.0%	43.5%
1997	Kake Gut Bay Head	23	27	16.7%	0	343	0	0	0	343	12.5	15.1%	
1997	Kake Falls Ck Baranof Is	64	77	46.7%	1	1,105	8	25	18	1,158	14.4	48.8%	
1997	Kake Kutlaku Creek	31	37	22.7%	0	735	0	0	18	753	19.7	32.4%	
1997	Kake Other Steams	19	23	13.9%	0	84	11	428	50	573	3.7	3.7%	
1997	Kake Total All Streams	137	164	100.0%	1	2,267	19	453	86	2,827	13.8	100.0%	-25.3%
1998	Kake Gut Bay Head	51	57	32.5%	1	768	0	0	4	773	13.4	27.7%	
1998	Kake Falls Ck Baranof Is	58	65	37.0%	2	1,180	0	54	64	1,300	18.1	42.6%	
1998	Kake Kutlaku Creek	31	35	19.8%	0	703	0	0	0	703	20.2	25.4%	
1998	Kake Other Steams	17	19	10.8%	0	120	0	180	136	436	6.3	4.3%	
1998	Kake Total All Streams	157	176	100.0%	3	2,771	0	234	204	3,212	15.7	100.0%	18.2%
1999	Kake Gut Bay Head	24	27	15.2%	1	260	2	4	7	275	9.7	10.1%	
1999	Kake Falls Ck Baranof Is	71	79	45.0%	0	1,072	0	39	13	1,125	13.6	41.7%	

Appendix Table B-1. Kake Community Subsistence Salmon Permit Harvest Data, 1985-2001

YEAR	STREAM	Number of Permits Reporting	Estimated Number Permits Fished	Stream Percent of Permits Fished [1]	Chinook	Sockeye	Coho	Chum	Pink	Total Salmon	Average Number of Sockeye Salmon Per Permit [1]	Stream Percent of Sockeye Salmon Harvested	Percent Sockeye Change from Previous Year
1999	Kake Kutlaku Creek	42	47	26.7%	0	1,006	0	0	0	1,006	21.5	39.1%	
1999	Kake Other Steams	21	23	13.1%	0	235	0	179	83	497	10.2	9.1%	
1999	Kake Total All Streams	158	175	100.0%	1	2,573	2	222	103	2,902	14.7	100.0%	-7.7%
2000	Kake Gut Bay Head	35	36	28.2%	3	387	0	17	0	408	10.8	23.8%	
2000	Kake Falls Ck Baranof Is	51	52	41.1%	0	715	0	42	12	769	13.7	43.9%	
2000	Kake Kutlaku Creek	14	14	11.3%	0	194	0	29	2	225	13.6	11.9%	
2000	Kake Other Steams	24	25	19.4%	0	333	0	242	31	606	13.5	20.4%	
2000	Kake Total All Streams	124	127	100.0%	3	1,629	0	330	45	2,007	12.8	100.0%	-58.0%
2001	Kake Gut Bay Head	45	47	31.0%	2	581	0	5	0	589	12.4	27.3%	
2001	Kake Falls Ck Baranof Is	81	85	55.9%	6	1,295	7	57	39	1,404	15.3	60.9%	
2001	Kake Kutlaku Creek	6	6	4.1%	0	98	0	0	0	98	15.7	4.6%	
2001	Kake Other Steams	13	14	9.0%	0	151	14	25	37	227	11.2	7.1%	
2001	Kake Total All Streams	145	151	100.0%	8	2,126	21	88	75	2,318	14.0	100.0%	23.4%

Source: ADFG Division of Subsistence, Alaska Subsistence Fisheries Database, 2003

Note: Harvest figures prior to 1996 represent reported harvest only. From 1996 onward, harvest figures are expanded from reported harvest to account for non-returned permits. Total number of permits may be higher than number of Kake permits reported since more than one harvest location may be reported on one permit.

[1] Based on reported number of permits for 1985-1995; based on estimated number of permits fished for years 1996-2001

**Appendix Table B-2. Kake Community Subsistence Salmon Permits,
Estimated Harvest, Falls Creek, 1985 -2001**

YEAR	STREAM	Reported	Estimated	Chinook	Sockeye	Coho	Chum	Pink	Total Salmon
1985	Falls Ck Baranof Is	1		0	10	0	0	0	10
1986	Falls Ck Baranof Is	1		0	10	0	0	0	10
1987	Falls Ck Baranof Is	1		0	10	0	0	0	10
1988	Falls Ck Baranof Is	13		0	128	0	0	0	128
1989	Falls Ck Baranof Is	24		0	290	20	0	0	310
1990	Falls Ck Baranof Is	12		0	120	0	0	0	120
1991	Falls Ck Baranof Is	8		0	109	0	0	0	109
1992	Falls Ck Baranof Is	32		0	515	0	0	2	517
1993	Falls Ck Baranof Is	48		0	952	0	0	0	952
1994	Falls Ck Baranof Is	51		0	911	4	0	47	962
1995	Falls Ck Baranof Is	54		1	916	3	3	22	945
1996	Falls Ck Baranof Is	62	73	2	1,273	4	6	37	1,322
1997	Falls Ck Baranof Is	64	77	1	1,105	8	25	18	1,158
1998	Falls Ck Baranof Is	58	65	2	1,180	0	54	64	1,300
1999	Falls Ck Baranof Is	71	79	0	1,072	0	39	13	1,125
2000	Falls Ck Baranof Is	51	52	0	715	0	42	12	769
2001	Falls Ck Baranof Is	81	85	6	1,295	7	57	39	1,404
	Average 1985-1995	22		0	361	2	0	6	370
	Average 1996-2001	65	72	2	1,107	3	37	31	1,180
	All Years Average	34	69	0	582	2	11	13	609

**Appendix Table B-3. Kake Community Subsistence Salmon Permits,
Estimated Harvest, Gut Bay, 1985 -2001**

YEAR	STREAM	Reported	Estimated	Chinook	Sockeye	Coho	Chum	Pink	Total Salmon
1985	Gut Bay Head	35		0	319	0	0	0	319
1986	Gut Bay Head	58		0	566	0	0	0	566
1987	Gut Bay Head	22		0	211	0	0	0	211
1988	Gut Bay Head	30		0	349	0	0	0	349
1989	Gut Bay Head	34		0	649	0	1	0	650
1990	Gut Bay Head	16		0	182	0	0	0	182
1991	Gut Bay Head	12		0	128	0	0	0	128
1992	Gut Bay Head	45		0	748	8	78	0	834
1993	Gut Bay Head	52		0	795	0	0	0	795
1994	Gut Bay Head	32		0	432	0	0	0	432
1995	Gut Bay Head	35		0	445	0	0	0	445
1996	Gut Bay Head	40	47	0	566	0	0	0	566
1997	Gut Bay Head	23	27	0	343	0	0	0	343
1998	Gut Bay Head	51	57	1	768	0	0	4	773
1999	Gut Bay Head	24	27	1	260	2	4	7	275
2000	Gut Bay Head	35	36	3	387	0	17	0	408
2001	Gut Bay Head	45	47	2	581	0	5	0	589
	Average 1985-1995	34		0	439	1	7	0	446
	Average 1996-2001	36	40	1	484	0	4	2	492
	All Years Average	34	39	0	447	1	6	1	455

Source: ADFG Division of Subsistence, Alaska Subsistence Fisheries Database, 2003

**Appendix Table B-4. Kake Community Subsistence Salmon Permits,
Estimated Harvest, Kutlaku Creek, Bay of Pillars, 1985 -2001**

YEAR	STREAM	Reported	Estimated	Chinook	Sockeye	Coho	Chum	Pink	Total Salmon
1985	Kutlaku Creek	33		0	697	0	0	0	697
1986	Kutlaku Creek	29		0	693	0	0	0	693
1987	Kutlaku Creek	48		0	1,272	0	0	0	1,272
1988	Kutlaku Creek	41		0	835	0	0	0	835
1989	Kutlaku Creek	40		0	730	8	25	20	783
1990	Kutlaku Creek	27		0	593	0	0	0	593
1991	Kutlaku Creek	34		0	738	0	0	0	738
1992	Kutlaku Creek	60		0	1,333	0	0	80	1,413
1993	Kutlaku Creek	21		0	451	0	0	0	451
1994	Kutlaku Creek	24		0	629	5	1	14	649
1995	Kutlaku Creek	10		0	218	0	0	0	218
1996	Kutlaku Creek	32	38	0	973	0	2	7	983
1997	Kutlaku Creek	31	37	0	735	0	0	18	753
1998	Kutlaku Creek	31	35	0	703	0	0	0	703
1999	Kutlaku Creek	42	47	0	1,006	0	0	0	1,006
2000	Kutlaku Creek	14	14	0	194	0	29	2	225
2001	Kutlaku Creek	6	6	0	98	0	0	0	98
Average 1985-1995		38		0	845	2	5	4	856
Average 1996-2001		26	30	0	618	0	5	5	628
All Years Average		32	34	0	738	1	4	9	751

**Appendix Table B-5. Kake Community Subsistence Salmon Permits,
Estimated Harvest, Other Streams, 1985 -2001**

YEAR	STREAM	Reported	Estimated	Chinook	Sockeye	Coho	Chum	Pink	Total Salmon
1985	Other Streams	26		0	0	0	958	0	958
1986	Other Streams	12		0	0	0	283	0	283
1987	Other Streams	21		0	10	0	941	0	951
1988	Other Streams	10		0	10	0	310	30	350
1989	Other Streams	33		2	23	0	650	75	750
1990	Other Streams	6		0	0	0	65	92	157
1991	Other Streams	8		0	0	0	188	30	218
1992	Other Streams	21		0	15	0	581	159	755
1993	Other Streams	13		0	0	0	388	53	441
1994	Other Streams	8		0	10	0	145	38	193
1995	Other Streams	9		0	27	3	115	41	186
1996	Other Streams	6	7	0	30	12	178	24	243
1997	Other Streams	19	23	0	84	11	428	50	573
1998	Other Streams	17	19	0	120	0	180	136	436
1999	Other Streams	21	31	0	235	0	179	83	497
2000	Other Streams	24	25	0	333	0	242	31	606
2001	Other Streams	13	14	0	151	14	25	37	227
Average 1985-1995		20		0	9	0	628	21	658
Average 1996-2001		17	20	0	159	6	205	60	430
All Years Average		16	21	0	56	2	364	53	475

Source: ADFG Division of Subsistence, Alaska Subsistence Fisheries Database, 2003

Appendix Table B-6. Estimated Harvest and Use of Salmon Resources, Kake, 1985

resource	Percent of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
All Resources	98.6		92.9			136,034	795.5	217.5	136,033		21
Salmon	87.1		61.4		34.3	43,260	253.0	69.2	6,987		27
Salmon [CF Retention]			30.0		14.3	11,108	65.0	17.8	1,932		59
Salmon [Rod and Reel]			32.9			11,862	69.4	19.0	1,473		42
Salmon [Other Gear]			40.0			20,289	118.7	32.4	3,581		32
Chum Salmon	47.1		40.0		14.3	13,471	78.8	21.5	1,981		31
Chum Salmon [CF Retention]			12.9		4.3	2,259	13.2	3.6	332		66
Chum Salmon [Rod and Reel]			2.9			332	1.9	0.5	49		106
Chum Salmon [Other Gear]			31.4			10,881	63.6	17.4	1,600		36
Coho Salmon	40.0		30.0		12.9	7,888	46.1	12.6	1,177		40
Coho Salmon [CF Retention]			15.7		7.1	2,847	16.7	4.6	425		55
Coho Salmon [Rod and Reel]			18.6			3,798	22.2	6.1	567		54
Coho Salmon [Other Gear]			2.9			1,243	7.3	2.0	186		148
Chinook Salmon	60.0		35.7		18.6	9,487	55.5	15.2	650		43
Chinook Salmon [CF Retention]			20.0		8.6	2,924	17.1	4.7	200		54
Chinook Salmon [Rod and Reel]			24.3			6,563	38.4	10.5	449		53
Chinook Salmon [Other Gear]			0.0			0	0.0	0.0	0		
Pink Salmon	38.6		31.4		10.0	4,887	28.6	7.8	1,810		47
Pink Salmon [CF Retention]			14.3		5.7	2,202	12.9	3.5	816		93
Pink Salmon [Rod and Reel]			11.4			1,036	6.1	1.7	384		65
Pink Salmon [Other Gear]			10.0			1,648	9.6	2.6	611		62
Sockeye Salmon	41.4		34.3		5.7	7,524	44.0	12.0	1,368		30
Sockeye Salmon [CF Retention]			10.0		2.9	874	5.1	1.4	159		81
Sockeye Salmon [Rod and Reel]			1.4			135	0.8	0.2	24		154
Sockeye Salmon [Other Gear]			27.1			6,517	38.1	10.4	1,185		31

Source: ADF&G Division of Subsistence household surveys 1986

Appendix Table B-7. Estimated Harvest and Use of Salmon Resources, Kake, 1987

resource	Percent of Households					Pounds Harvested			Amount Harvested	
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH
All Resources	97.1		91.4	91.3	66.4	104,541	542.9	162.8	104,541	
Fish	95.6		79.9	83.3	44.0	43,851	227.7	68.3	43,851	
Fish [CF Retention]			32.6			11,957	62.1	18.6	11,957	
Fish [Rod and Reel]			57.5			19,248	100.0	30.0	19,248	
Fish [Other Gear]			46.1			12,646	65.7	19.7	12,646	
Salmon	87.7		55.6	57.3	34.7	22,510	116.9	35.1	3,921	
Salmon [CF Retention]			26.1			6,922	35.9	10.8	1,135	
Salmon [Rod and Reel]			28.1			5,590	29.0	8.7	744	
Salmon [Other Gear]			35.3			9,999	51.9	15.6	2,042	
Chum Salmon	46.7		31.7	23.6	13.7	6,860	35.6	10.7	1,106	
Chum Salmon [CF Retention]			18.0			1,841	9.6	2.9	297	
Chum Salmon [Rod and Reel]			5.7			442	2.3	0.7	71	
Chum Salmon [Other Gear]			13.7			4,576	23.8	7.1	738	
Coho Salmon	51.8		36.8	27.9	15.2	3,720	19.3	5.8	483	
Coho Salmon [CF Retention]			21.8			1,838	9.5	2.9	239	
Coho Salmon [Rod and Reel]			17.3			1,882	9.8	2.9	244	
Coho Salmon [Other Gear]			0.0			0	0.0	0.0	0	
Chinook Salmon	54.7		27.5	35.9	18.2	4,271	22.2	6.7	279	
Chinook Salmon [CF Retention]			11.7			1,556	8.1	2.4	102	
Chinook Salmon [Rod and Reel]			17.3			2,715	14.1	4.2	177	
Chinook Salmon [Other Gear]			0.0			0	0.0	0.0	0	
Pink Salmon	29.4		20.9	10.1	10.8	1,222	6.3	1.9	555	
Pink Salmon [CF Retention]			8.7			477	2.5	0.7	217	
Pink Salmon [Rod and Reel]			10.1			551	2.9	0.9	250	
Pink Salmon [Other Gear]			5.7			193	1.0	0.3	88	
Sockeye Salmon	50.3		31.7	20.9	15.8	6,438	33.4	10.0	1,497	
Sockeye Salmon [CF Retention]			15.8			1,208	6.3	1.9	281	
Sockeye Salmon [Rod and Reel]			0.0			0	0.0	0.0	0	
Sockeye Salmon [Other Gear]			28.1			5,229	27.2	8.1	1,216	

Source: ADF&G Division of Subsistence household surveys, 1988

Appendix Table B-8. Estimated Harvest and Use of Salmon Resources, Kake, 1996

resource	Percent of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
All Resources	98.6	89.0	84.9	95.9	75.3	133,794	537.32	179.1	133,794		25
Fish	98.6	72.6	68.5	84.9	54.8	63,702	255.83	85.28	63,702		29
Fish [CF Retention]	8.2	8.2	8.2		4.1	11,255	45.2	15.07	11,255		81
Fish [Rod and Reel]			61.6			26,010	104.46	34.82	26,010		32
Fish [Other Gear]			41.1			26,436	106.17	35.39	26,436		38
Salmon	98.6	67.1	61.6	75.3	42.5	32,602	130.93	43.64	6,187	24.85	31
Salmon [CF Retention]	5.5	5.5	5.5		4.1	4,186	16.81	5.6	825	3.31	95
Salmon [Rod and Reel]			46.6			5,783	23.22	7.74	798	3.20	54
Salmon [Other Gear]			32.9			22,633	90.9	30.3	4,564	18.33	39
Chum Salmon	39.7	12.3	12.3	28.8	12.3	2,573	10.33	3.44	372	1.49	64
Chum Salmon [CF Retention]	4.1	4.1	4.1		1.4	425	1.71	0.57	61	0.24	107
Chum Salmon [Rod and Reel]			6.8			1,440	5.78	1.93	208	0.84	77
Chum Salmon [Other Gear]			1.4			708	2.84	0.95	102	0.41	168
Coho Salmon	46.6	20.5	19.2	30.1	12.3	2,134	8.57	2.86	392	1.57	56
Coho Salmon [CF Retention]	4.1	4.1	4.1		2.7	427	1.71	0.57	78	0.31	103
Coho Salmon [Rod and Reel]			11.0			1,429	5.74	1.91	263	1.06	77
Coho Salmon [Other Gear]			5.5			278	1.12	0.37	51	0.20	86
Chinook Salmon	84.9	46.6	41.1	50.7	13.7	4,239	17.02	5.67	334	1.34	33
Chinook Salmon [CF Retention]	2.7	2.7	2.7		0.0	303	1.22	0.41	24	0.10	128
Chinook Salmon [Rod and Reel]			32.9			2,552	10.25	3.42	201	0.81	33
Chinook Salmon [Other Gear]			5.5			1,384	5.56	1.85	109	0.44	86
Pink Salmon	11.0	8.2	8.2	2.7	4.1	402	1.61	0.54	184	0.74	85
Pink Salmon [CF Retention]	1.4	1.4	1.4		1.4	89	0.36	0.12	41	0.16	168
Pink Salmon [Rod and Reel]			5.5			201	0.81	0.27	92	0.37	126
Pink Salmon [Other Gear]			1.4			112	0.45	0.15	51	0.20	168
Sockeye Salmon	95.9	42.5	41.1	61.6	34.2	23,233	93.31	31.1	4,902	19.69	36
Sockeye Salmon [CF Retention]	5.5	5.5	5.5		4.1	2,943	11.82	3.94	621	2.49	99
Sockeye Salmon [Rod and Reel]			2.7			162	0.65	0.22	34	0.14	120
Sockeye Salmon [Other Gear]			32.9			20,129	80.84	26.95	4,247	17.06	40
Unknown Salmon	2.7	1.4	1.4	1.4	0.0	22	0.09	0.03	3	0.01	168
Unknown Salmon [Other Gear]			1.4			22	0.09	0.03	3	0.01	168

Source: ADF&G Division of Subsistence household surveys, 1997

Appendix Table B-9. Estimated Salmon Harvest by Gear Type, Kake, 1996

	Harvest Units	Subsistence Gear										Removed					
		Gill Net		Beach Seine		Other		Any Method		Commercial Catch		Rod and Reel		Any Method			
		Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean		
Salmon	numbers	170.55	0.68	1,531.52	6.15	2,824.27	11.34	37.52	0.15	4,563.86	18.33	825.45	3.32	798.16	3.21	6,187.48	24.85
	pounds	817.95	3.28	7,134.16	28.65	14,503.06	58.25	177.85	0.71	22,633.01	90.90	4,186.20	16.81	5,782.87	23.22	32,602.08	130.93
Chum Salmon	numbers	0.00	0.00	0.00	0.00	102.33	0.41	0.00	0.00	102.33	0.41	61.40	0.25	208.07	0.84	371.79	1.49
	pounds	0.00	0.00	0.00	0.00	708.12	2.84	0.00	0.00	708.12	2.84	424.87	1.71	1,439.83	5.78	2,572.82	10.33
Coho Salmon	numbers	13.64	0.05	0.00	0.00	37.52	0.15	0.00	0.00	51.16	0.21	78.45	0.32	262.64	1.05	392.26	1.58
	pounds	74.22	0.30	0.00	0.00	204.11	0.82	0.00	0.00	278.33	1.12	426.78	1.71	1,428.78	5.74	2,133.90	8.57
Chinook Salmon	numbers	0.00	0.00	0.00	0.00	109.15	0.44	0.00	0.00	109.15	0.44	23.88	0.10	201.25	0.81	334.27	1.34
	pounds	0.00	0.00	0.00	0.00	1,384.03	5.56	0.00	0.00	1,384.03	5.56	302.76	1.22	2,551.81	10.25	4,238.59	17.02
Pink Salmon	numbers	0.00	0.00	51.16	0.21	0.00	0.00	0.00	0.00	51.16	0.21	40.93	0.16	92.10	0.37	184.19	0.74
	pounds	0.00	0.00	111.54	0.45	0.00	0.00	0.00	0.00	111.54	0.45	89.23	0.36	200.77	0.81	401.54	1.61
Sockeye Salmon	numbers	156.90	0.63	1,476.95	5.93	2,575.27	10.34	37.52	0.15	4,246.64	17.05	620.79	2.49	34.11	0.14	4,901.55	19.68
	pounds	743.73	2.99	7,000.72	28.12	12,206.80	49.02	177.85	0.71	20,129.09	80.84	2,942.57	11.82	161.68	0.65	23,233.34	93.31
Unknown Salmon	numbers	0.00	0.00	3.41	0.01	0.00	0.00	0.00	0.00	3.41	0.01	0.00	0.00	0.00	0.00	3.41	0.01
	pounds	0.00	0.00	21.90	0.09	0.00	0.00	0.00	0.00	21.90	0.09	0.00	0.00	0.00	0.00	21.90	0.09

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1997

Appendix Table B-10. Estimated Percentages of Salmon Harvest By Resource, Gear Type, and Salmon Total Harvest, Kake, 1996

Resource	Percent Base	Subsistence Methods																
		Gill Net		Set Net		Beach Seine		Other		Subsistence Gear Any Method		Removed from Commercial Catch		Rod and Reel	Any Method			
		No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.			
Salmon	geartype	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00		
	resource	2.76	2.51	24.75	21.88	45.64	44.49	0.61	0.55	73.76	69.42	13.34	12.84	12.90	17.74			
	total	2.76	2.51	24.75	21.88	45.64	44.49	0.61	0.55	73.76	69.42	13.34	12.84	12.90	17.74			
Chum Salmon	geartype	0.00	0.00	0.00	0.00	3.62	4.88	0.00	0.00	2.24	3.13	7.44	10.15	26.07	24.90			
	resource	0.00	0.00	0.00	0.00	27.52	27.52	0.00	0.00	27.52	27.52	16.51	16.51	55.96	55.96			
	total	0.00	0.00	0.00	0.00	1.65	2.17	0.00	0.00	1.65	2.17	0.99	1.30	3.36	4.42	6.01	7.89	
Coho Salmon	geartype	8.00	9.07	0.00	0.00	1.33	1.41	0.00	0.00	1.12	1.23	9.50	10.19	32.91	24.71			
	resource	3.48	3.48	0.00	0.00	9.57	9.57	0.00	0.00	13.04	13.04	20.00	20.00	66.96	66.96			
	total	0.22	0.23	0.00	0.00	0.61	0.63	0.00	0.00	0.83	0.85	1.27	1.31	4.24	4.38	6.34	6.55	
Chinook Salmon	geartype	0.00	0.00	0.00	0.00	3.86	9.54	0.00	0.00	2.39	6.12	2.89	7.23	25.21	44.13			
	resource	0.00	0.00	0.00	0.00	32.65	32.65	0.00	0.00	32.65	32.65	7.14	7.14	60.20	60.20			
	total	0.00	0.00	0.00	0.00	1.76	4.25	0.00	0.00	1.76	4.25	0.39	0.93	3.25	7.83	5.40	13.00	
Pink Salmon	geartype	0.00	0.00	3.34	1.56	0.00	0.00	0.00	0.00	1.12	0.49	4.96	2.13	11.54	3.47			
	resource	0.00	0.00	27.78	27.78	0.00	0.00	0.00	0.00	27.78	27.78	22.22	22.22	50.00	50.00			
	total	0.00	0.00	0.83	0.34	0.00	0.00	0.00	0.00	0.83	0.34	0.66	0.27	1.49	0.62	2.98	1.23	
Sockeye Salmon	geartype	92.00	90.93	96.44	98.13	91.18	84.17	100.00	100.00	93.05	88.94	75.21	70.29	4.27	2.80			
	resource	3.20	3.20	30.13	30.13	52.54	52.54	0.77	0.77	86.64	86.64	12.67	12.67	0.70	0.70			
	total	2.54	2.28	23.87	21.47	41.62	37.44	0.61	0.55	68.63	61.74	10.03	9.03	0.55	0.50	79.22	71.26	
Unknown Salmon	geartype	0.00	0.00	0.22	0.31	0.00	0.00	0.00	0.00	0.07	0.10	0.00	0.00	0.00	0.00			
	resource	0.00	0.00	100.00	100.00	0.00	0.00	0.00	0.00	100.00	100.00	0.00	0.00	0.00	0.00			
	total	0.00	0.00	0.06	0.07	0.00	0.00	0.00	0.00	0.06	0.07	0.00	0.00	0.00	0.00	0.06	0.07	

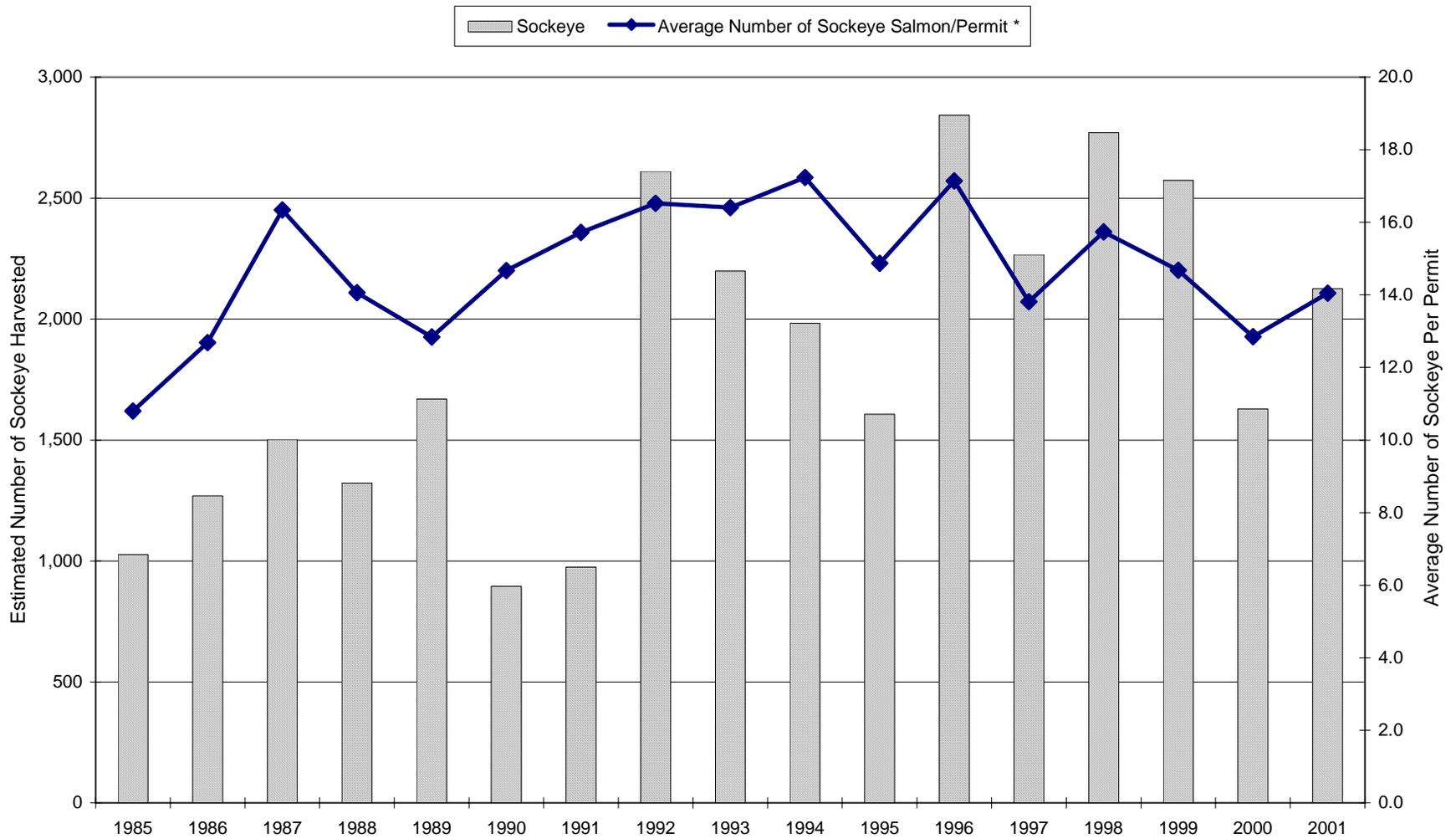
SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1997

Appendix Table B-11. Percentage of Households Harvesting Salmon By Gear Type And Species, Kake, 1996

	Subsistence Gear						Removed		
Resource	Gill Net	Set Net	Beach Seine	Dip Net	Other	Any Subsistence Gear	from Commercial Catch	Rod and Reel	Any Method
Salmon	12.3%	2.7%	17.8%	0.0%	1.4%	32.9%	5.5%	46.6%	61.6%
Chum Salmon	0.0%	0.0%	1.4%	0.0%	0.0%	1.4%	4.1%	6.8%	12.3%
Coho Salmon	0.0%	1.4%	4.1%	0.0%	0.0%	5.5%	4.1%	11.0%	19.2%
Chinook Salmon	0.0%	0.0%	5.5%	0.0%	0.0%	5.5%	2.7%	32.9%	41.1%
Pink Salmon	1.4%	0.0%	0.0%	0.0%	0.0%	1.4%	1.4%	5.5%	8.2%
Sockeye Salmon	12.3%	2.7%	16.4%	0.0%	1.4%	32.9%	5.5%	2.7%	41.1%
Unknown Salmon	1.4%	0.0%	0.0%	0.0%	0.0%	1.4%	0.0%	0.0%	1.4%

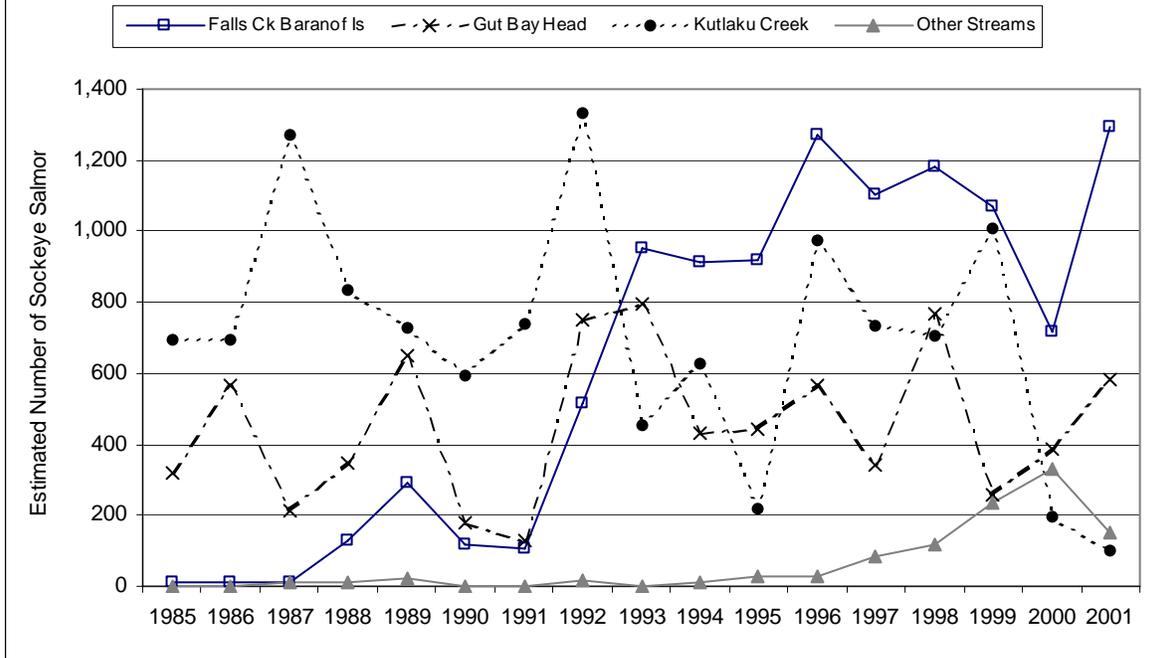
SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1997

Appendix Figure B-1. Kake Estimated Subsistence Sockeye Salmon Harvest 1985 - 2001

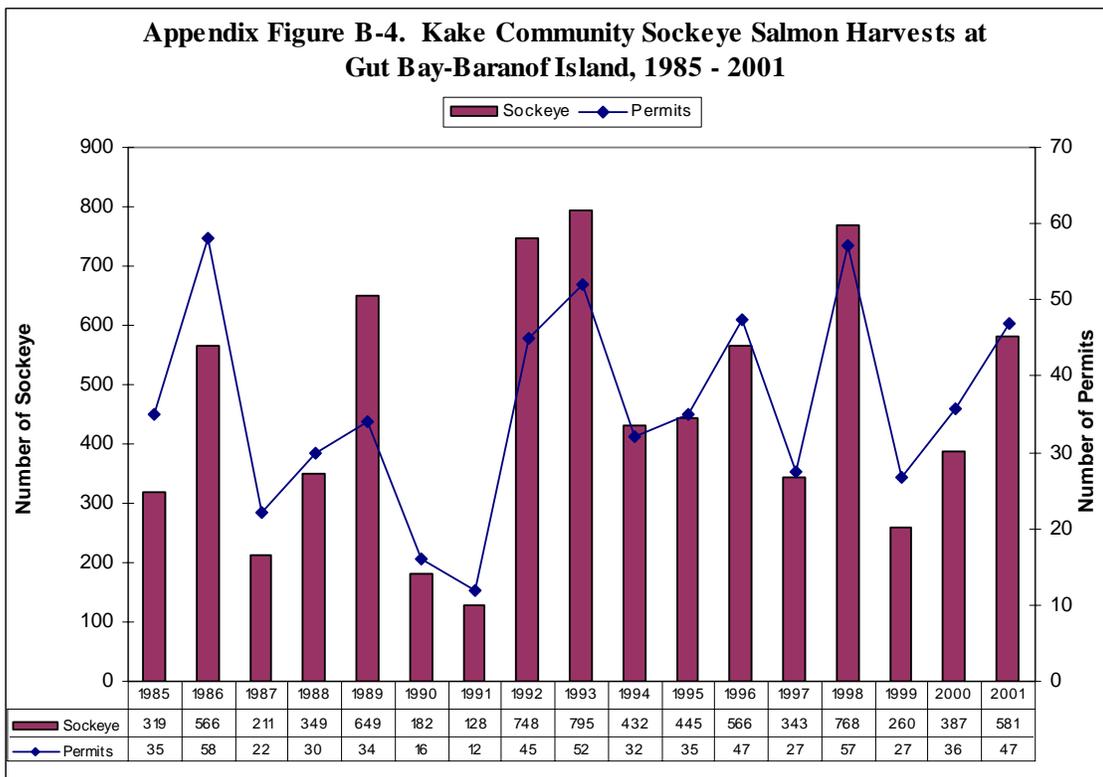
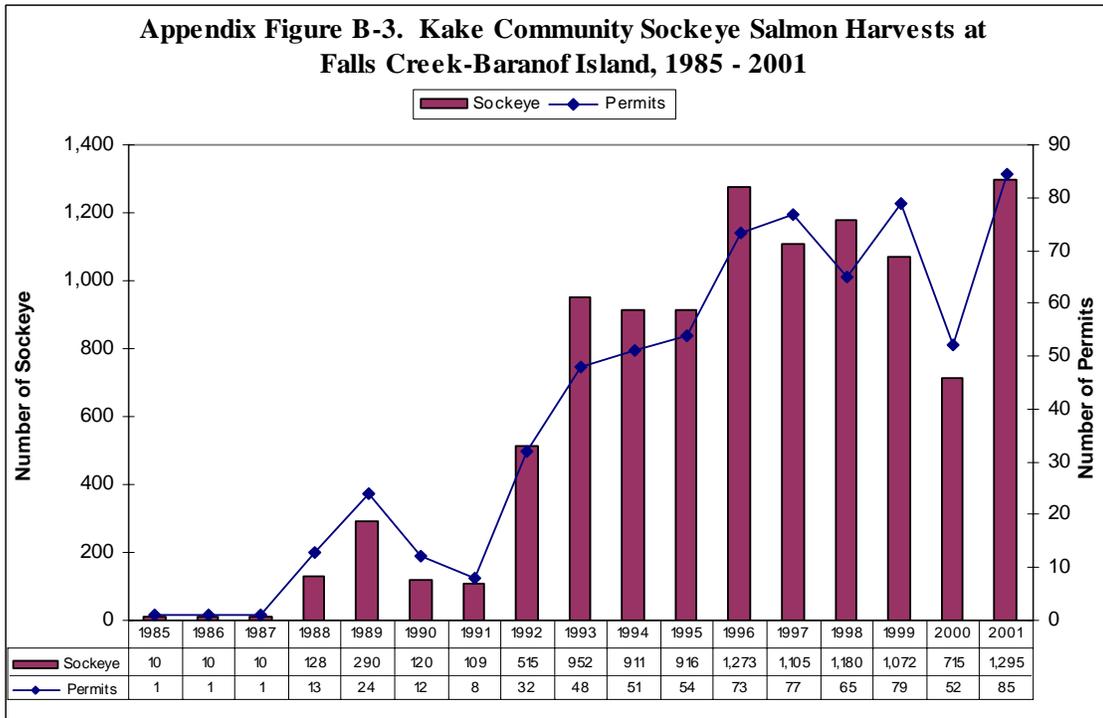


Source: ADFG Division of Subsistence, Alaska Subsistence Fisheries Database, Ver. 3.20, based on Alexander: Integrated Fisheries Database for SE Alaska and Yakutat
 * Average Number of Salmon Per Permit 1985-1995 based on permits reporting; 1996-2001 based on estimated permits fished.

Appendix Figure B-2. Kake Community Subsistence Salmon Permit Sockeye Salmon Harvests Estimated by Stream, 1985 - 2001



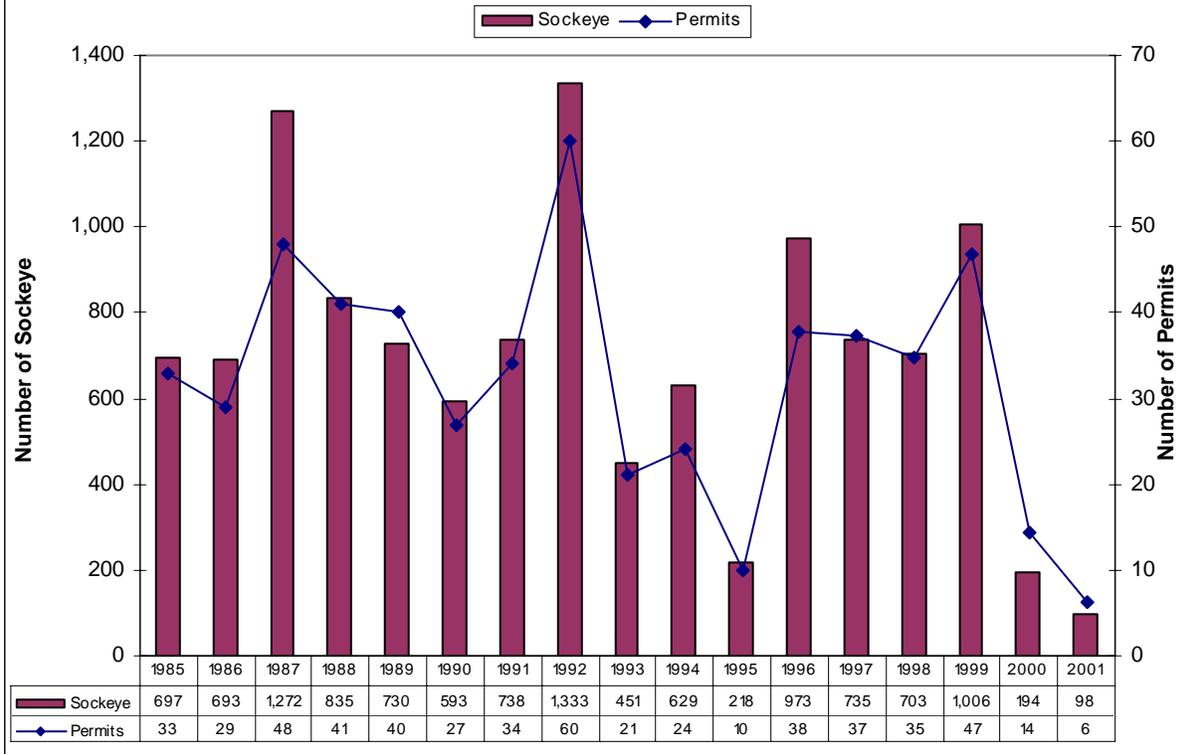
Source: ADFG Division of Subsistence, Alaska Subsistence Fisheries Database, based on Alexander: Integrated Fisheries Database for Southeast Alaska & Yakutat, Ver. 2.3, ADFG Commercial Fisheries Division



Source: ADF&G Div. of Subsistence, Alaska Subsistence Fisheries Database, Ver. 3.2 based on Div. Of Comm. Fish, Alexander database

Note: Numbers of permits and numbers of salmon prior to 1996 represent permits returned with harvest data. From 1995 onward numbers represented all returned permits with or without data, and harvests are expended from reported harvest to account for non-returned permits

Appendix Figure B-5. Kake Community Sockeye Salmon Harvests at Kutlaku Creek/Pillar Bay - Kuiu Island, 1985 - 2001



Source: ADF&G Div. of Subsistence, Alaska Subsistence Fisheries Database, Ver. 3.2 based on Div. Of Comm. Fish, Alexander database

Note: Numbers of permits and numbers of salmon prior to 1996 represent permits returned with harvest data. From 1995 onward numbers represented all returned permits with or without data, and harvests are expended from reported harvest to account for non-returned permits

APPENDIX C. KEY RESPONDENT INTERVIEWS SAMPLE PROTOCOL

Cooperating village tribal government staff will develop an initial list of individuals knowledgeable about the subsistence fishing at the sockeye salmon systems of concern. This should include individuals currently engaged in salmon fishing at these locations, as well as those with past experience fishing there, or others knowledgeable about different aspects of the subsistence salmon fisheries. Other individuals may also be interviewed who possess unique knowledge pertinent to the project.

Staff will arrange visits with individuals describe the project and how the information will be used. Issues of confidentiality and availability of information to resource managers and the general public will be discussed. For more information refer to discussion of "informed consent" in Appendix C of the Traditional Ecological Knowledge Handbook.

Interviews with knowledgeable individuals in the community, together with observation of fishing activity, are designed to gather information to help answer these questions:

- How did people fish for salmon, sockeye salmon in particular, at Gut Bay, Falls Creek, and Pillar Bay **in the past?** (methods, gear, organization, etc)
- How do people fish for salmon, sockeye salmon in particular, at Gut Bay, Falls Creek, and Pillar Bay **today?** (methods, gear, organization, etc)
- Who fished for salmon , at Gut Bay, Falls Creek, and Pillar Bay **in the past?**
- Who fishes , at Gut Bay, Falls Creek, and Pillar Bay **today?**
- What rules did people observe when fishing there **in the past?**
- What can today's managers learn about the life cycle of sockeye salmon from the local people who depend on these salmon for their food needs?
- How can local knowledge of the life cycle of salmon be incorporated into the decision-making processes?
- How can today's rules be made to better reflect the traditional practices of Tlingit and other rural subsistence users?
- What are the activities, if any, which conflict with subsistence use of the salmon resources?
- How can salmon resources be better protected from activities which threaten their abundance and availability to subsistence users?

Before the Interview

Determine the area of expertise of the individual, and review the topics you wish to cover.

Maintain a list of key respondents with ID numbers assigned, date of interview, and person conducting the interview.

Conducting the Interview

Arrange a time and place. Be sure the time arranged to conduct the interview is convenient for the key respondent, and select a location with adequate privacy and without distractions.

Introduce yourself and the project. Describe the project and the report, and how the person's knowledge will be integrated into the report. Describe the source of funding, involvement of the tribal council, and the opportunity for the respondent and the council to review the draft report. Review confidentiality and voluntary participation. Discuss stipend and permission to release information.

Recording the interview. A notebook is provided for recording the key respondent interview. Before you start you will want to record the date/time of interview, the community, your name or initials; the respondents ID, and any special circumstances of interview. A written summary will follow the format needed to enter the information into a text database. Instructions for this are provided elsewhere in the training packet.

Tape Recording the interview. If you wish to record the interview you will need to ask permission from the respondent. Tapes of interviews will be used to assist in understanding notes taken during the interview and in writing the interview summary. Funds may not be available for complete transcriptions of taped interviews.

The Interview. Since we want these interviews to elicit as much information as possible from the key respondent, we are not preparing a list of specific questions. If you have determined that the respondent has a particular area of expertise, you will want to focus the interview on that area. You will want to make note of some basic information about the person being interviewed, depending on the area of the person's knowledge. For example, you may wish to note the age, sex and residency, as well as such things as involvement in commercial fishing or other employment or activities which clarify the basis for their knowledge or their particular perspective on the issues being discussed.

On the next page you will see a list of topics useful to cover dependent upon the knowledge of the respondent. Obviously, different individuals will have more knowledge about different aspects of salmon fishing, different fishing locations or historic time periods.

We can suggest a few variations on how you might want to open up the discussion:

Can you tell me about your(your family's) salmon fishing at Gut Bay, in the Bay of Pillars-Kutlaku Creek?

I understand you have lived here all your life. Can you talk about how (where) you fished when you first started fishing?

How has the sockeye salmon fishing at Falls Creek, Gut Bay, and Pillar Bay changed since you started fishing there?

GENERAL TOPICS TO COVER

1. PATTERNS OF USE

When respondent or his family/clan started to use the area, how long they used it, and whether they continue to use it. The variety of activities and resources found at the fishing site under discussion. Respondent's knowledge of use by other individuals, families, clans or communities

2. NAME of Stream or Fishing Area

The landmarks and geographic features at the fishing site under discussion, Tlingit and local names in the area.

3. LOCATION of Salmon Fishing Activity

Locations where respondent and members of his/her family fished for salmon on this stream from the earliest days

4. RESOURCE ABUNDANCE

Changes in salmon abundance, size, quality or other characteristics of the several salmon species during time span he/she used the area, including factors responsible for any changes noted. (i.e. operation of commercial fisheries, including location of canneries, salteries, other fish processing facilities or location of fish buyers; any logging or other development activities, including changes in settlement patterns and population changes).

5. MEANS AND METHODS

Mode of access, general harvesting methods and strategies, such as gear used, location of gear, duration of harvesting periods, whether fishing took place in conjunction with other harvesting activities, including commercial fishing, hunting, trapping, berry-picking etc. Include discussion of changes in means and methods over time.

6. TLINGIT MANAGEMENT OF SALMON STREAMS

Clans/families who managed salmon fisheries, respondent's knowledge of how clan avoided over-fishing, maintained health of salmon stocks and spawning grounds, etc. How rules were made and enforced.

7. REASONS FOR CHANGE IN USE

Reasons for any changes in fishing patterns or intensity of use of the area, including factors affecting abundance of fish at the stream/lake system, (logging, roads,

competition from other users) and alternative resources available - i.e. hatchery fish closer to home, more use of non-salmon species

8. COMPETITION AND CROWDING

Respondent's impressions of competition for fish. Has competition increased, decreased or remained about the same? If competition has increased what user group(s) have increased? Sport? Sport Charter? Commercial? Subsistence?

9. CONCERNS AND ISSUES

Explore respondent's concerns and issues with the salmon fishing in the sockeye salmon systems under study

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