Technical Paper No. 307

Local Knowledge, Harvest Patterns, and Community Use of Sockeye Salmon in Hoonah, Alaska

by

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and

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December 2006

Alaska Department of Fish and Game **Division of Subsistence**

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Weights and measures (metric)

centimeter	cm
deciliter	dL
gram	g
hectare	ha
kilogram	kg
kilometer	km
liter	L
meter	m
milliliter	mL
millimeter	mm

Weights and measures (English)

cubic feet per second	ft^3/s
foot	ft
gallon	gal
inch	in
mile	mi
nautical mile	nmi
ounce	oz
pound	lb
quart	qt
yard	yd

Time and temperature

day	d
degrees Celsius	°C
degrees Fahrenheit	°F
degrees kelvin	K
hour	h
minute	min
second	s

Physics and chemistry

all atomic symbols	
alternating current	AC
ampere	A
calorie	cal
direct current	DC
hertz	Hz
horsepower	hp
hydrogen ion activity (negative log of)	pH
parts per million	ppm
parts per thousand	ppt, ‰
volts	V
watts	W

General

Alaska Administrative Code	AAC
all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.
all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.
at	@
compass directions:	
east	E
north	N
south	S
west	W
copyright	©
corporate suffixes:	
Company	Co.
Corporation	Corp.
Incorporated	Inc.
Limited	Ltd.
District of Columbia	D.C.
et alii (and others)	et al.
et cetera (and so forth)	etc.
exempli gratia (for example)	e.g.
Federal Information Code	FIC
id est (that is)	i.e.
latitude or longitude	lat. or long.
monetary symbols (U.S.)	$, ¢
months (tables and figures): first three letters	Jan,...,Dec
registered trademark	®
trademark	™
United States (adjective)	U.S.
United States of America (noun)	USA
U.S.C.	United States Code
U.S. state	use two-letter abbreviations (e.g., AK, WA)

Measures (fisheries)

fork length	FL
mideye-to-fork	MEF
mideye-to-tail-fork	METF
standard length	SL
total length	TL

Mathematics, statistics

all standard mathematical signs, symbols and abbreviations	
alternate hypothesis	H_A
base of natural logarithm	*e*
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics	(F, t, χ^2, etc.)
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	*E*
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	$\log_2$, etc.
minute (angular)	'
not significant	NS
null hypothesis	H_O
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	"
standard deviation	SD
standard error	SE
variance	
population	Var
sample	var

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The Division of Subsistence Technical Paper Series was established in 1979 and represents the most complete collection of information about customary and traditional uses of fish and wildlife resources in Alaska. The papers cover all regions of the state. Some papers were written in response to specific fish and game management issues. Others provide detailed, basic information on the subsistence uses of particular communities which pertain to a large number of scientific and policy questions. Technical Paper Series reports are available through the Alaska State Library and on the Internet: http://www.subsistence.adfg.state.ak.us/

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SUMMARY

Local Knowledge, Harvest Patterns, and Community Use of Sockeye Salmon in Hoonah, Alaska.

This report describes the contemporary subsistence sockeye salmon harvest and use by the Tlingit of Hoonah, Alaska at Hotktaheen Cove and Neva River, Excursion Inlet. Topics include local ecological knowledge of the sockeye salmon runs in these areas, harvest patterns, issues of competition, distribution of salmon, continuity of traditional practices, and related trends. Local and traditional ecological knowledge was collected through interviews with Tlingit key respondents who reside in Hoonah and actively participate in the fisheries. Observation of the fisheries also provided information on which the report is based.

Keywords: Subsistence fishery, traditional ecological knowledge (TEK), local knowledge, sockeye salmon, red salmon, Southeast Alaska, Hoonah, Neva Creek, South Creek, Excursion Inlet, Hoktaheen Cove, Tongass National Forest

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INTRODUCTION

This report describes the contemporary fisheries at Hoktaheen Cove and the Neva Creek watershed for sockeye salmon, *Oncorhynchus nerka*, by the Tlingit community of Hoonah. A community of 860 residents comprised of 300 households, Hoonah is located on the northeast shore of Hoonah Harbor in Port Frederick on the south side of Icy Strait (Appendix Figure A-1). According to the 2000 U.S. census, 61% or 521 Hoonah residents are Alaska Native or American Indian (Alaska Department of Labor website).

This work was part of a larger project under the direction of the Central Council of Tlingit and Haida Indian Tribes of Alaska and Dr. Steve Langdon, Professor of Anthropology at University of Alaska Anchorage. This project was a cooperative effort between the Hoonah Indian Association and the Alaska Department of Fish and Game, Division of Subsistence, partially funded by the United States Fish and Wildlife Service (USFWS) Office of Subsistence Management, Fisheries Resource Monitoring Program.

The Tlingit people of Hoonah have utilized the salmon resources of Icy Strait and the outer coast of the Southeast Alaskan mainland and Yakobi Island since time immemorial. Human presence in Ground Hog Bay near Point Couverden dates to at least 9,000 years ago, although the archeological record does not tell us whether the very early inhabitants of Icy Strait were the ancestors of present day Tlingits or an earlier people. The history of the Huna people states that they have occupied the Icy Strait area for thousands of years (Schroeder and Kookesh 1990; Ackerman 1968).

Sockeye salmon constituted a significant component of the Huna diet. Prior to the arrival of Europeans in Southeast Alaska, the Tlingit people had a sophisticated system of fisheries management based on a strategy of limited access with resources allocated according to clan membership (Thornton 1990). Each child inherited the clan of his or her mother and the rights to clan property, which included fishing and hunting territories and other sacred property, called *at.óow* in Tlingit (Dauenhauer 2000). Traditionally, the territory of the *Xunaa Ḵáawu*, the "People from the Direction of the Northwind" (Hope and Thornton 2000), was divided between four main clans: the *T'akdeintaan* of the Raven moiety and the *Chookaneidí*, *Wooshkeetaan*, and *Kaagwaantaan*, all of the Eagle moiety (Belton, pers.comm., 2005, Goldschmidt and Haas 1998). Each clan controlled access rights to sockeye salmon streams from which household groups harvested enough salmon to smoke and dry for the winter.

The allocation of sockeye salmon from a particular stream was proportional to the abundance of the resource. A large sockeye system could support an entire clan, whereas less abundant sockeye runs provided salmon for smaller house groups. In this way, most of the sockeye streams in the Huna territory were utilized by at least one family and fishing effort was dispersed among all the streams in the territory. Families dwelled and maintained smokehouses on site for processing during the harvest season (Goldschmidt and Haas 1998). The clan leader or head of the household carried the responsibility to

monitor the salmon run and ensure a sustainable harvest. Living near a stream enabled families to observe run timing and abundance, and thus to harvest accordingly.

Sustainability required a healthy spiritual relationship with salmon in addition to the careful qualitative observations of run strength. Traditional customs required respectful behavior toward salmon, and stories often illustrated the thin veil between physical and spiritual reality, and reinforced conformity to the cultural norms demanding that salmon enjoy respect. The Salmon Boy story not only provided information about salmon biology, but also expressed a Tlingit "code of regulations," communicated verbally by the elders to younger generations.

> *These legends and depictions of happenings long past are not merely the chronological heritage of the Tlingit. Each contains illustrations of the cultural values to be passed from generation to generation. They are not intended to be entertaining so much as instructional.* (Peck 1986: preface)

Due to the spiritual connection between the Tlingit people and the resources they harvested, the *íx̲t'*, referred to as a shaman by the Russians, played an important role in the subsistence activities of his clan. For example, the *íx̲t'* might be called upon to ask his *yéik*, or spirit helper, to ensure a successful harvest (Kamenshii 1906).

Strictly speaking, clans did not "own" salmon streams, but were responsible for their well-being. Clan leaders held the ultimate responsibility as caretakers of clan territory. In essence, the clan leaders functioned as the area management biologists for their clan territories to ensure a sustainable yield of resources. They monitored the abundance of salmon on clan streams and determined if the run was sufficient to harvest salmon from a particular stream. Clan leaders had the power to grant permission to harvest salmon from their streams to members of other clans. If a salmon run was insufficient to support a harvest, then people went elsewhere to get their fish and gave the creek's salmon stock a chance to replenish. Clan leaders recognized different salmon stocks and identified the migration patterns of salmon stocks returning to local streams and passed this traditional ecological knowledge on to their maternal nephews (Charles Demmert testimony, U.S. Department of Interior 1944; Langdon 2003; Peck, pers. comm., 2001).

The Huna traditional territory is currently managed or owned by federal, state, community and private concerns (Appendix Figure A-2). The Glacier Bay National Park and Glacier Bay National Preserve encompasses land traditionally owned by all four clans, and stretches from the west shores of Excursion Inlet to the outer coast north to Dry Bay. The majority of the remaining lands are in the Tongass National Forest, with the exception of large chunks of land around Hoonah owned by native corporations and pockets of private land elsewhere, most notably in Excursion Inlet. Two privately owned hunting and fishing lodges, a fish processing plant, and homesites from a state land lottery, are located on non-park land in the inlet. Additionally, the Haines Borough extended its jurisdiction to include the mainland from Haines to Point Couverden, including the eastern shore of Excursion Inlet, creating a contentious situation given the traditional association of Excursion Inlet with the Huna people (Belton, pers.comm.

2005). All of the land surrounding Neva Lake and its outlet stream is owned by the state; most has been selected by Haines Borough and will become patented municipal land following the completion of a survey. Alaska Department of Fish and Game (ADFG) area management biologists are responsible for managing subsistence fisheries in salt water and at the mouth of steams. Federal fisheries managers have management jurisdiction over freshwater within the Tongass National Forest.

General Hoonah Harvest Patterns

Historic Fishing Areas

Subsistence harvest activity for sockeye salmon was widespread throughout the Hoonah traditional territory in the early 1900s and processing frequently occurred near fishing locations. Most of the area's sockeye salmon streams had one or more smokehouses onsite and accommodations ranging from temporary fish camps to year-round homes. Probably every sockeye stream in the area was used to some degree, but elders interviewed in 1946 specifically mentioned Dundas River, Surge Bay, Hoktaheen Creek, Takanis Bay, Excursion Inlet, Berg Bay, a stream at Cape Spencer (west of Dicks Arm), a stream that empties into the head of Lisianski Inlet and a sockeye stream east of Porcupine Island (Goldschmidt and Haas 1998). A smokehouse previously located on a sockeye salmon stream in Dicks Arm suggests that this may have also provided sockeye salmon in addition to other salmon species (Goldschmidt and Haas 1998; ADFG anadromous fish atlas). There is also a small sockeye run on Neka River, occasionally fished in recent years, although elders in 1946 only mentioned Neka River as a source for dog salmon, pink salmon and coho salmon, (Goldschmidt and Haas 1998; ADFG Alexander Integrated Fisheries Database; ADFG Anadromous Stream Atlas). For a map of fishing sites and other points of interest mentioned in this report, see (Appendix Figure A-3).

In the past, settlement patterns were more dispersed with several villages and numerous summer camps throughout the region. Dundas Bay had a village called *L'istee*. Glacier Bay was widely used with permanent residences at Berg Bay, Point Carolus, and Bartlett Cove. There was a *Wooshkeetaan* village at the present cannery site in Excursion Inlet called *L'ux̲'uhéen*, or sockeye salmon stream. Sockeye salmon and halibut were dried at a summer camp on the east side of Idaho Inlet. There used to be smokehouses at Hoktaheen, and houses and smokehouses at Surge Bay (Goldschmidt and Haas 1998).

> *Surge Bay belonged to the Chookaneidí people. A man who died recently had two houses there. Got sockeye and humpies there and smoked them. This man left that place when his wife died, and since then the whites have begun to settle there.* [Statement of Mrs. Lonnie Houston, Mrs. Oscar Williams, and Mrs. Eliza Lawrence, June 1946 in Goldschmidt and Hass 1998]

George Carteeti fished with a gillnet at Dundas Bay and stated that it was once one of the best sockeye streams, until it was depleted by a commercial floating trap (Goldschmidt and Haas 1998).

Albert Greenwald listed locations of smokehouses in 1946 (Goldschmidt and Hass 1998).

> *I've seen smokehouses in the following places: Salt Chuck (the stream east of Dundas Bay)—two; at Point Carolus—three; in Berg Bay—three; in Bartlett Cove—many, for it used to be a whole village; Sandy Cove (north of Beartrack Cove on Glacier Inlet—two. One smokehouse on Berg Bay broke down under the snow last winter because we could not maintain it. The smokehouses in this area were used each year until the area was made a National Monument. There is also a smokehouse up Dicks Arm on Cape Spencer. There is a smokehouse in Icy Passage, on the mainline shore between Gustavus Point and Excursion Inlet.*

Pavlov Harbor also contains a sockeye salmon stream and had a village called "*Asaank'i*".

> *These were Angoon people, but their wives were mostly from Hoonah.*
> (Elsie Greenwald, June 1946 in Goldschmidt and Hass 1998:131)

Most of the residents had passed away by the mid 1940s, but some lived in Tenakee. A smokehouse still existed by the creek near Pavlov Harbor in the mid1940s.

Other Hoonah salmon fishing areas included: Inis Bay, creeks throughout Port Frederick, Neka Bay, Game Creek, Humpback Creek, Hillman's Bay, Spasski Creek, Howard Bay, various pink salmon streams between Pinta Cove and Eagle Point, Beartrack River, Carolus River (across from Bartlett Cove), Homeshore Creek, and *Chatlhéeni* Creek, Seagull Creek, Soapstone Cove, Sea level Bay and Mud Bay] (Goldschmidt and Hass 1998).

Recent Harvest Patterns

Salmon continues to an important food for the Hoonah community, and a majority of Hoonah households harvest, receive, and share salmon resources. The results from household surveys conducted by Division of Subsistence, ADFG in 1997 indicated that 86% of Hoonah households utilized salmon in 1996; seventy four percent of the households harvested salmon; and 64% households received salmon from another household (Appendix Table B-1). Over half of the Hoonah households (57%) shared their catch with other households. Sockeye salmon ranked first in the numbers and pounds of salmon harvested by Hoonah households (Appendix Figures B-1 and B-2); however, more households utilized chinook salmon (73%) and coho salmon (69%) than sockeye salmon (65%) (Appendix Table B-1) (ADFG, Subsistence Division 2003, Community Profile Database).

Forty-three percent of Hoonah households harvested sockeye salmon in 1996. More Hoonah households (27%) utilized subsistence gear, particularly nets, to harvest sockeye salmon than other gear types. Fifty-six percent of Hoonah households harvested chinook salmon mostly using rod and reel (42%). Slightly fewer Hoonah households (55%) harvested coho salmon, also predominantly using rod and reel (38%). Only twenty-six percent of Hoonah households removed salmon, mostly chinook (21%) and coho salmon (19%), from their commercial catch for home use in 1996. Only nine percent of the households removed sockeye and pink salmon from their commercial catch and ten percent removed chum salmon (Appendix Tables B-1 and B-2). These numbers reflect the substantial decline of Hoonah owned purse seine permits, which typically target pink, chum and sockeye salmon.

Study Sites

Hoktaheen Watershed

Hoktaheen Cove is a small open cove exposed to the Pacific Ocean. It is located on the northwest side of Yakobi Island about 1.2 miles south of Cross Sound. The name Hoktaheen is Tlingit. *Haakta-* refers to the wake of a small bird and *héen* means water, river or creek (Langdon and Austin 2005; NRfieldnotes62704; Sheldon Jackson College 1996). The cove is approximately 56 miles from Hoonah via Icy Strait and Cross Sound. Marine access to Hoktaheen Cove from Hoonah requires good local knowledge and expert boating skills, in particular at South Inian Pass, the passage that connects Cross Sound and Icy Strait. The current can approach nine knots during the ebb and the Coast Pilot warns that "severe tide rips and swirls occur, especially at the west entrance, with an ebb current and a west or southwest wind" (U.S. Department of Commerce 1988). Cross Sound is open to westerly ocean swells that can become steep and dangerous during the ebb when the current opposes the wind and swells.

The Hoktaheen watershed traditionally belonged to the T'akdeintaan clan according to interviews conducted in 1946 (Goldschmidt and Haas 1998) and is within the traditional and customary use area of the Huna people.

> *Hoktaheen Creek is a good sockeye stream. Used to smoke fish there. Nobody lives there now, but there used to be smokehouses there. We believe it belonged to T'akdeintaan. People from here go there every year to get seaweed and sockeyes, but we don't know of anyone who went last year, on account of the fire.* (Statement of Mrs. Lonnie Houston, Mrs. Oscar Williams, and Mrs. Eliza Lawrence in 1946; Goldschmidt and Haas, 1998)

Hoktaheen Creek drains a two-lake system, connected by a short half-mile stream. The lakes provide rearing habitat for sockeye salmon which spawn in the main inlet stream of the larger, upper lake (Van Alen 2004). The United States Forest Service manages the Hoktaheen watershed as part of the West Chichagof Yakobi Wilderness Area. Coho salmon also spawn in Hoktaheen Creek. There is a second unnamed creek entering

Hoktaheen Cove just north of Hoktaheen Creek. See Appendix Figures A-4 for an aerial photograph of Hoktaheen.

Neva Watershed

Neva Creek supports significant populations of pink salmon (Onchorhynchus *gorbuscha),* chum salmon *(O. keta),* sockeye salmon (*O. nerka),* coho salmon (*O. kisutch)* and steelhead (O. mykiss). Native fish species also include cutthroat trout (*Oncorhynchus clarki* spp.) and Dolly Varden char (*Salvelinus malma).* Wolves and bears have been observed fishing for salmon on the creek. An aerial photograph of the Neva Creek watershed and Excursion Inlet can be found in Appendix Figure A-5.

Neva Creek flows from Neva Lake for about 1.2 km before joining with glacial South Creek and flowing approximately 1 km to Excursion Inlet just south of the cannery complex (Van Alen 2004). The subsistence fishing using beach seines or gillnets occurs at the mouth of what is technically South Creek, but called Neva Creek on the subsistence permits and by Hoonah residents. Most of the gaffing occurs at Neva Creek in the slower tributary below the lake (Appendix Figure A-2; Thomas Mills, pers. comm., 2005).

Land ownership in the Neva Creek watershed is complicated due in part to the occupation of the area by the military during World War II. The present cannery operates in former military buildings and tidelands filled by the military (P.V.T. Consulting, LLC 2001). The land surrounding Neva Lake and the outlet creek is currently outside the boundaries of the Tongass National Forest and was selected by the Haines Borough or retained by the State of Alaska (Appendix Figure A-6). The Hoonah Indian Association has informed the Haines Planning Commission of its concerns regarding the selection and intended development of land with significant cultural, historical and economic ties to Hoonah (Belton, pers. comm. January 2005). Additionally, there remain unresolved native land claims.

> *Speaking specifically of areas around Neva Lake and Neva Creek, unresolved yet are issues involving Hoonah's war/combat veterans and their lack of opportunity to select homestead land of their own prior to the abolishment of the Homestead Act under the Alaska Native Claims Settlement Act of 1971. Vietnam War era veterans who were born and raised in Excursion Inlet have indicated their interest in securing land in this area and have been patiently waiting for some resolution for many years. (*Belton, pers. comm., January 2005:3*).*

OBJECTIVES

The purpose was to describe the current trends and characteristics of Hoonah's subsistence salmon fishery. The project objective was to provide: a descriptive analysis of Hoonah's historic and contemporary subsistence salmon harvests on Excursion River, Gartina Creek, Neva Creek, Game Creek, Bear Creek and other locations. The project

made use of previously published reports, technical papers, other public documents, key respondent interviews, and observation of contemporary fisheries.

Due to funding limitations and the importance of Hoktaheen Creek and Neva Creek for providing sockeye salmon for the community of Hoonah, the fieldwork and interviews focused on these two sites. The intent of the fieldwork was to: 1) provide an overview of the fishery including how, where and when it occurs; 2) describe the fisheries from a local perspective including social, economic, environmental and regulatory factors affecting the fishery, and 3) document the continuity of traditional practices and/or knowledge in the customary harvest of sockeye for home use.

METHODS

Fieldwork

This study documents and summarizes local or traditional knowledge concerning current trends and characteristics of the Hoonah sockeye subsistence fishery based on the subsistence experiences of key respondents from Hoonah and observations of the fisheries. "Current trends" was loosely defined as since statehood or within the lifetime of the key respondents. In addition to the fieldwork, documents concerning regulatory policy from the ADFG archives were reviewed, analyzed and summarized for historical perspective on subsistence fisheries management, and relationships between fishing regulations and Hoonah harvest patterns.

Fieldwork began in the summer of 2003 and was completed during the fall. Participant observations were conducted at Hoktaheen Cove in early July 2003 and at Neva/South Creek in early September 2003 and July 2004. Interviews with key respondents were conducted during September 2003. Fieldwork included participant observation of subsistence fisheries at both Hoktaheen and Excursion Inlet, and semi-structured interviews with key respondents who had expertise in one or both locations.

Between September 4th and 7th interview sessions were conducted involving eight harvesters who actively participate in the fisheries at either Hoktaheen Cove or Excursion Inlet. An additional, unstructured interview occurred during participant observations at Hoktaheen Cove from July 5th through 7th with a key respondent who was interviewed again later using the same interview form as the other respondents. A second respondent was also interviewed twice, first using the interview form in conjunction with participant observation on Neva Creek and later in an unstructured interview while being video-taped creating a traditional gaff hook. Two of the interviews took place with married couples that actively fish together. Married fishing partners who were interviewed concurrently were given the same identification number.

Criteria for identifying and selecting key respondents included: 1) high harvesters who provide a significant amount of sockeye salmon for the community and 2) harvesters who have expertise in a particular gear type at Hoktaheen or Excursion Inlet and who actively

participate in the fishery most years. The Hoonah Indian Association provided the list of key respondents to be interviewed. One of the respondents was chosen because he was from Hoonah and spent the summer at Neva observing the subsistence and sport fisheries. Limited funding restricted the number of interviews that could be conducted.

A list of interview questions was provided to key respondents prior to the interview (Appendix C). The interview form guided the interview, but was not strictly adhered to, and the flow of the interview was largely determined by the key respondents' answers and expertise. The questions covered a range of topics related to the subsistence fishery organized into the following categories: 1) demographics and personal fishing history, 2) sockeye population trends, 3) timing of sockeye salmon fisheries, 4) fishing gear and equipment, 5) harvest methods, 6) description of fishing groups, 7) distribution of salmon, 8) products and processing, 9) conflict with other uses, 10) continuity of traditional knowledge and practices, 11) fisheries management, regulations and permits, and 12) a general category for other information including importance of subsistence salmon.

Following the interview, the key respondents were given the option to choose the amount of confidentiality desired based on three levels: 1) keep the interview confidential, but acknowledge the interviewee's participation in the study, 2) total anonymity (respondent is not mentioned in report's acknowledgement section) and 3) full credit (respondent's name and interview date is cited each time specific information that s/he provided is used). The key respondent names, interview dates, and reference codes used in the report are provided under Interview Codes in the Literature Cited section. Respondents who wished to have their interview remain confidential are identified by interview code number only.

With permission from the key respondents, interviews were recorded with a digital recorder. Initially, we planned to hire a local research assistant through Hoonah Indian Association to help with the interviews. The locally hired assistant provided the list of key respondents and aided initial contact with them, but was not able to conduct interviews due to other commitments. As a result, the lead ADFG researcher, Nancy Ratner, conducted all interviews and key respondents were hired to help guide the research and review the results and draft reports. The final draft report was also reviewed by Dave Belton, Natural and Cultural Resources Director for the Hoonah Indian Association.

The interviewer administered the questions orally and took notes of the responses in addition to digitally recording all interviews, except two that took place on site during participant observations. The interviews were transcribed and each interview was coded with a sequential number, location and date. Informal discussions with other harvesters not specifically identified as key respondents took place at both fishing sites and were recorded as field notes during the participatory observations.

Analysis

Analysis of qualitative data is generally inductive by nature; individual observations combine to create a general description of a phenomenon, in this case the current trends and characteristics of the Hoonah subsistence sockeye salmon fisheries. An outline was prepared for the report based on the questions asked in the interview. The interview transcripts and field notes were meticulously reviewed. Each paragraph or point that helped describe the current trends and characteristics of the subsistence salmon fishery was either paraphrased or electronically copied and pasted verbatim into the appropriate section of the report draft. To avoid cross-cultural or research bias, the standard for inclusion was whether the respondent was attempting to answer an interview question, not whether the answer fit into any preconceived notions held by the interviewer.

The decision to paraphrase a section of the interview was based on whether 1) a quote could be paraphrased without losing a critical detail or important contextual information or 2) if the verbatim quote would be confusing without knowing the context. Potential subjectivity in the summary and reporting of interview transcripts was controlled in part by frequently providing verbatim interview excerpts as supporting evidence. The decision concerning which quotations to include in the report was made based on whether the quote contained critical details and whether the summary would be enriched by the contextual details contained in the excerpt. Interview quotes have been occasionally repeated in the text if they serve to illustrate multiple points addressed in the results.

Setting standards for reporting and summarizing the five and one-half hours of interviews helped control for potential researcher and intercultural bias. The editing process was inclusive rather than exclusive to increase research reliability. The following criteria were used:

- Did the excerpt help to describe current trends and characteristics of the Hoonah subsistence fisheries?
- Would the excerpt help the reader better understand the perspective of Native people living Hoonah in relation to the traditional, customary and contemporary harvest of salmon for home use?
- Those excerpts that did not at first appear to be directly related to the research questions were given additional scrutiny to avoid intercultural research bias: Was the respondent knowingly digressing or were they providing information that they felt was important to share as part of the project?

RESULTS

General Patterns and Trends

Use of Commercial Gear

Commercial fishing still provides subsistence fish for the community, although there are only a few remaining purse seine vessels in Hoonah. Richard Dalton Jr. (2003) fished on his dad's seine boat from the time he was about fourteen until he was thirty years old, and remembers that they used to get their subsistence sockeye from their commercial catch. The crew also took sockeye out of the catch for home use. Major changes in Alaska's commercial fisheries occurred after the institution of the Limited Entry program.

> [How did limited entry affect you dad? Did it work out ok for him?]
> *For him, yea it worked out ok, but anyone else who wanted to get into the fishing game wasn't able to get into it unless they had the money to buy a permit.* [Hoonah02-01-090803]

One respondent told us that the attrition of seine boat permits in Hoonah occurred due to fishermen failing to qualify for a limited entry permit, an inability to finance buying a permit, and a confiscation of permits by the Internal Revenue Service to pay off outstanding tax bills. In the old days, the Ward's Cove Cannery withheld money and paid the taxes for captains and crew fishing for them. After the company policy changed, fishermen were unaware of the change, or simply failed to pay their income and social security taxes. Those fishermen who had already spent their earnings were unable to pay off their tax bills [Hoonah02-01-090803-NR].

The few remaining Hoonah seine boat captains have a larger responsibility to provide for the community. If salmon prices are too low, captains will share the "money" fish with the community rather than sell quality fish at prices below what the captains feel they are worth. In years with poor sockeye salmon prices, smoke houses around town are full with sockeye getting smoked [Hoonah02-03-090503-NR].

One seine boat captain gets a special permit from Alaska Department of Fish and Game every year to seine 700 chum salmon for the community of Hoonah. On September 9, 2003, a Hoonah purse seine vessel tied up to the city float in the evening after spending the day seining in Excursion Inlet. People learned of the arrival of the salmon via the CB radio and arrived with coolers and totes to receive the free fish donated by the captain and his crew. Some fish were gutted and cleaned by volunteers for the senior center. People were allowed to take as many salmon as they needed [NRfieldnotes071803].

Hoonah residents with salmon trolling licenses also use and share their commercial catch for home use. One couple said that at least once a season, they plan a day that they will use their commercial catch for home use instead of selling them that day. The catch is

distributed to their uncle's and aunt's households as well as reserving some for their own home use [Hoonah02-04-090703].

Case Examples

The life experiences described by respondents provide a more detailed personal description, adding substance to harvest surveys and statistical trends in the Hoonah subsistence fisheries measured (rather sporadically) since statehood. The general pattern reflects a move away from fishing in freshwater with gaffs or snagging with treble hooks during the lifetime of the respondents. Several respondents described their first subsistence experience as harvesting salmon in fresh water using gaff hooks or treble hooks with their fathers or grandfathers. Only one respondent continues to use a gaff; the others have switched to using beach seines or gillnets in marine waters. One respondent grew up in Hoonah, but returned to Kake in the summers to subsistence fish for his grandparents.

Case Example 1: Richard Dalton Jr.'s story of his subsistence life (age 53 in 2003) mirrors the changes in fishing methods and locations the fishery has experienced since Alaska became a state [Hoonah02-01-070503; Hoonah02-01-090803]. Richard learned to subsistence fish from his grandfather when he was about eight or nine years old using a homemade gaff in freshwater. They harvested dog and pink salmon from local streams. Most of the family's sockeye salmon came from his father's commercial purse seine catch.

> *And most of the fish we got was through seine caught. That's how we always got it... We used to get it, each of the crew members used to take about five or so fish, sockeye, dog salmon, cohos, for putting up for winter. And that was the top quality salmon from out in the Inian Islands that we used to keep.*

The family put up about forty cases of sockeye salmon from Richard's father's commercial catch, which they shared with others. Richard began commercial fishing on his father's boat in the mid 1960s when he was about 14 years old. Following limited entry in the late 1970s, the Inian Island fishery was shut down, but Richard's father continued to fish the remaining local areas open to purse seining. The open areas were closer to the stream mouths with poorer fish quality than what the family was used to getting from the Inian Island fishery adjacent to Cross Sound.

> [What did your dad do after that (Limited Entry)? Did he go south to seine?]
> *Just around in here, now the only places that they are allowed to fish now is right by the streams and out here and by the time the salmon get in close to the streams, the skin starts to turn dark color. …Versus when you get them out there at the islands you know they are all bright, bright salmon...*

Richard's father continued to fish in the Hoonah area, but was getting less money for the lower quality salmon.

And what I can't get is why they settle for that terminal fishery. This is what they call it. They have the creeks here and they got the markers here and sometimes you only have one little area to fish and now the fish are watermarked and the quality of that salmon is really way down versus where you go out at Inian Islands. The fish there, the quality of that is so high, big difference.
[In what ways did that lower quality affect you guys? Did it affect the amount of money he (your dad) was able to make?]
Pretty much, yeah, because... I don't know how the canneries work it but they grade the fish. You know they have to grade them and the quality of fish caught out on Inian Island was high quality salmon versus you get them by the stream or just before the stream and the grade goes down.

Although, the sockeye meat was softer, the family continued to use it for themselves.

[Did that lower quality affect your ability to put up the fish? Was it harder to smoke them in strips or did it impact the...]
Sometimes, it gets soft but most of the time we used to get our fish from the creeks to smoke them like dog salmon. That one thing I never learned how to do; watching my grandma, I used to just get the fish for her and all the wood. She'd work on the fish and I never paid attention watching how she did it. I've been trying it and the meat just falls off the skin, so I don't know if I have the heat, the smoke too hot or what I'm doing wrong...
[Were these the strips she was making with the dog salmon? Or was it dry fish?]
She'd make newspaper style dry fish out of it.

After high school, Richard moved out of Alaska to pursue an education and a career. He returned to Hoonah in 1980 and went to Basket Bay to beach seine for the first time with his six year old son and uncle. That was the last year he commercial seined with his father. Richard began going to Hoktaheen later in the 1980s with his father who was familiar with the area.

Case Example 2: Respondent # 4 [Hoonah02-04-090703] grew up in Tenakee Springs. His first subsistence fishing experiences were at Basket Bay beach seining in the salt water and gaffing or snagging salmon in the river when he was five or six years old. The homemade gaff hooks were constructed from a piece of bent iron and attached to a spruce pole about ten to fifteen feet long. The respondent still has a similar gaff at home made by his grandfather.

Maybe ten, fifteen feet long? Spruce pole trimmed down with a big hook on the end, big iron hook, made out of a piece of bent iron.
[He (your grandfather) made this one?]

Yes, I've still got that one at home, and you can get a lot of fish that way, but you've got to go after them, you've got to chase them. Big treble hook, you sit there and "boom, boom, boom."

His grandfather made the large treble hooks used for snagging from three halibut hooks tightly woven together with a piece of lead in the middle and attached with an eight foot line to an eight foot piece of alder. The line and the alder pole were always of the same length, so if they had a ten-foot piece of alder, they would use a ten-foot line. Sometimes the barbs of the halibut hooks were filed off to facilitate easy removal of the fish from the hook.

Ever since time began, they won't let you do it now legally, but ever since I was small they used to take big halibut hooks, take three of them, wrap them real tight with wire and get a piece of lead in between, someplace to get the wire in real tight, you take a piece of alder, you got an eight foot line and a eight foot piece of alder, just a comfortable hold and you use it like a whip, you take it and just push it down and when you hit the water pull her back and just, there is no playing no nothing about it, when you hit it down over the fish, you jerk him right out of the water. If you really want to work at it fast you file the barbs off so when he hits the beach he'll just flop off and you go get another one.
[And you were still able to catch them ok without the barbs?]
Oh yeah because they get jerked out of the water they don't do anything.
[So you used a big alder that is kind of like a whip...]
If you have a ten-foot line, you put a ten-foot piece of alder.

The respondent's first job while beach seining was to hold one end of the beach seine on shore while the net was brought around.

[When you first learned to beach seine, what was your job?]
The anchor!
[The anchor? The anchor on shore you mean?]
Yep. [Hold the...] *Hold the end.*
[Did you tie it onto shore as well?]
Sometimes if you find a rock or a stick, push it down into the ground and use it, tie one end around it.

In those days, they didn't have outboard motors and fishing was done with row boats.

Back in the days before we didn't even have outboards then. We'd row across the bay, we had double-ender skiffs, my grandpa had one that must have been eighteen feet long, big boat, double set of oar locks, two people could row, we traveled all over Tenakee Inlet with that boat. Just rowing and then the Coast Guard came along and told him it was over sixteen feet long and he had to put numbers on it. He got mad and said the white man is not going to tell him what to do! So he took a cross cut saw and cut two

feet off the end of it and put a transom on it, of course. …He just cut it off and that is what we used, we'd row that thing all over the bay.

At age 19, the respondent moved to Portland, Oregon for 23 years and returned to Hoonah in 1989. After the respondent moved to Hoonah, he fished Hoktaheen using a 30 fathom long beach seine, about 8 to 10 feet deep, which was hauled onto shore.

The respondent switched to using a gillnet at Hoktaheen about five years ago, preferring to go late in the season for the second run of sockeye because the fish are larger than the earlier first-run of sockeye to come in. He switched to a gillnet, because he and his wife can handle it themselves, whereas the beach seine requires at least three, but usually four people to operate.

The respondent has only returned to Basket Bay once after moving to Hoonah, but he is considering fishing there again now that he has a bigger boat. Currently, he uses his commercial trolling permit to harvest king and coho salmon for home use. He takes one day from his commercial season and devotes the day's catch to provide salmon for two uncles, his wife's aunt, and his own household.

Case Example 3: Thomas Mills Sr. grew up in Excursion Inlet and Hoonah [Hoonah02-02-090403-NR; Hoonah02-02-091803-NR]. He was born in Excursion Inlet at the "Indian Village" and spent the first couple years of his life behind the fence constructed by the military where the local native population was interned during World War II. The Native people were not free to leave the impoundment without permission and armed guards posted around the fence ensured their compliance (P.V.T. Consulting, LLC 2001). The Native people were only allowed to conduct their subsistence activities during certain approved hours. The Mills family remained in Excursion Inlet after the military left. Most of the military land was transferred to the Bureau of Land Management in 1946.

When he was four or five years old, his Uncle "Shorty" handed Mills a gaff and said to go get a fish. Mills figured his uncle wanted to see how much he had observed and also get a good laugh. After his failed attempts, his uncle showed him how to do it.

Thomas Mills Sr. started learning how to make gaff hooks from another uncle and from his father when he was five or six years old. They used to make the hooks inside the smoke house, two at a time so one was heating in the coals of the wood stove while the other was being worked on. His uncle dressed him in leather, completely covering his body, to protect him from getting burned.

Although, Mills and his siblings attended school in Hoonah, they spent about half the year in Excursion Inlet getting traditional foods.

By this time of the year, September, sometimes we would still be up the river getting dog salmon and silver salmon, sometimes clear up until Thanksgiving. And then we'd go back to Hoonah and go to school and

> *cram like crazy to catch up and keep on cramming to stay ahead. Then come Easter time or something, if the Father of the church was not staying with us, all of us came over [*to Excursion Inlet*]before Easter, but if he was staying with us we came shortly after Easter.*

The large Mills family lived in two houses near one another in the Indian Village. Nearly sixty years later, they continue to maintain and live in the same dwellings during the salmon subsistence season. Tom stayed with his grandparents in their house while some of his other siblings stayed with his parents in another house down the street.

The family could dry about 300 salmon at a time in their smoke house in Excursion Inlet and stored them in bundles of 25 to 35 under the house in Hoonah.

> [How many salmon did you get to feed the family?]
> *I really couldn't say, I'm not sure, but I know it took a lot. Because the smokehouse itself, when grandmother was operating it, it could hold three hundred fish at a time, drying the fish. And when the fish was dried it was stacked. When they were dried they were tied into big bundles of twenty five to thirty five fish per bundle. When we got to Hoonah we all carried it up to the house and stacked it under the house where it was cold and dark. Grandfather had a great big box under there where we put all our dried fish in it. Kept all the dogs and cats out from underneath there. Plus underneath grandmother's house was all animal proof so that nothing could sneak in there.*

Thomas Mills has fished at the same fishing hole using traditional gaffs for most his life except during the years he was in the Navy. He is passing the knowledge on to his children and is also teaching them how to make the traditional gaff hook. His children are learning the traditional harvest methods in the same fishing hole that Mills learned in, including the customary rules governing respectful harvesting.

Site Selection Factors

Respondents reported various factors that influenced where they currently harvest their subsistence sockeye salmon including: distance from Hoonah, economic and safety considerations, state regulations, ancestral connection to the area, knowledge of how to fish a site, timing of the run, environmental conditions at the site, avoidance of other user groups, bag limits and impromptu opportunities. According to respondents and 2003 field observations, most Hoonah harvesters take day trips to fishing sites in skiffs and small cabin cruisers and the distance of a site from Hoonah impacts not only how much travel time is required, but also the cost of gas for the round trip. The site needs to be close enough to Hoonah to be able make a round trip and fish the tide during daylight hours. Distance also affects how much fuel needs to be carried, not just the cost of gasoline, but also the weight of the fuel. More fuel means less capacity for fish.

Weight concerns are one reason day trips are the norm. The extra weight and room that would be taken up by gear required for camping out of a skiff reduces the amount of fish

that can be carried. Secondly, promptly returning to Hoonah with the catch reduces the need for carrying enough ice to cool the fish for an extra day. Respondents also expressed concerns about dangerous waters with rapidly changing sea conditions in Chatham Straits, and prefer to travel to fishing sites that afford decent anchorages along the travel route where they can wait out unexpected foul weather. Economic and efficiency factors included whether possession bag limits at a site are sufficient to justify the cost of gasoline and time invested in getting there, the ability to fish a site without damaging equipment, and the knowledge to effectively fish a site.

Some respondents specialized in one site, while others used both Hoktaheen and Neva/ South Creek. In 2003, some respondents reportedly fished Hoktaheen in the early season, and also fished Neva between July 21 and July 31 when Hoktaheen was closed. Harvesters without their own boat and equipment may take advantage of opportunities that arise to join a fishing group. One respondent reported:

> [So do you always go to Excursion Inlet for your fish now? Or do you go other places?]
> *I fish other places, Excursion is of course always in the mix, but if there is fishing going on somewhere else, and I hear about it and there is space for me, I'll hop on the boat or the river…nothing is real cut and dry, if the opportunity arises I grab it.* [Hoonah02-03-090503-NR]

On occasion, harvesters have fished Neva/South Creek very early in the morning, about four or five o'clock and then gone to Hoktaheen on the same day when they were unsuccessful at Neva/South Creek [Hoonah02-06-091903-NR]. Other respondents used one site exclusively for sockeye salmon. One respondent has fished only at the Neva Creek watershed his entire life, except the six years when he was in the Navy [Hoonah02-02-090403-NR]. Other respondents said they avoided Neva Creek area, because of competition from other user groups.

> [What sites are you fishing at?]
> *Usually Hoktaheen, you have too much hassle going over to Neva Creek anymore or Excursion Inlet. They have tourists over there; they'll watch you. A lot of cannery people over there getting fish. They are being over fished there pretty much…* [Hoonah02-04-090703]

Other harvesters chose to fish Hoktaheen over Neva/South Creek in the past due to lower annual possession limits at Neva Creek.

> [But why there (Hoktaheen) as opposed to fishing Neva?]
> *At Neva you are only allowed so much per season, annually, and I'll look at it and if there is enough there to make it worth my while to get it, I'll get it; but if there isn't then I'll leave it alone and not even fish it.*
> [Hoonah02-01-090803-NR]

Respondents reported several reasons why they don't currently harvest salmon at Berg Bay including intense Park Service surveillance which makes them feel uncomfortable. Other reasons include the presence of sport fishermen.

> *Berg Bay that's all been taken over by sport fishing.* [Hoonah02-03-090503-NR]

One respondent described the controversy with the National Park Service and a Hoonah people's response. The timing of the interaction wasn't clear from the interview.

> [Did you ever go over to Berg Bay?]
> *Yes, yeah we did, we went to Berg Bay, we as a matter of fact,* [name] *when his boat was running and* [name of boat]*, we one day hit five rivers trying to create a problem but we found out from a report that the Park Service was ordered from DC to leave us alone. See how easy it is to leave us alone! Gee, and yet we still must be watched that way, we had to fight to get to that position with the Park Service we had to challenge them and challenge them. And they were going to be up on it except that they didn't know what to do with us. Ok we got them, but now what? What are we going to do with them; all we want to do is eat.* [Hoonah02-03-090503-NR]

There were also logistical reasons why Hoonah harvesters avoid going to Berg Bay. One couple said that they tried to go to Berg Bay, but the required speed limit reduction in Glacier Bay makes the trip longer than going to Hoktaheen. The Park Service required check-in also means that they can't go into the park before 8am, and dangerous tidal currents at the mouth of Glacier Bay necessitate that they enter and leave at certain stages of the tide [Hoonah02-05-090703-NR].

Dundas Bay is also rarely used today according to returned permit data. Two respondents who generally harvest sockeye at Hoktaheen reported going to Dundas Bay, but the mouth of the creek was extremely turbid with lots of submerged snags that they couldn't see. They tried to inventory the snags during low water on one weekend, but by the next weekend there were new and repositioned snags. They also said that the water was shallow and the area better accessed with a flat bottom skiff, which they didn't have [Hoonah02-05-090703-NR].

Respondents, who used to fish at Basket Bay, said they stopped going there, because they considered it too far and too dangerous from Hoonah. There are few bays or coves to escape foul weather between Point Augusta and Basket Bay. Other reasons why it is no longer used included complaints concerning overcrowded conditions and crab pots at the mouth impeding the fishery.

> *Basket Bay I used to go to Basket Bay but I don't go there no more.*
> [How come?]

It's so far away and it is dangerous with the weather, Chatham and Icy Straits, and every time I go down there I never catch any more. Plus I don't know who has all their crab pots in the bay there, so you can't even fish for the sockeye.
[They have their crab pots set...]
All in the front of the stream and out. There are so many people fishing there; Sitka, Angoon, Juneau people will go there...
[HOONAH002-01-070503-NR]

It's so far away and the weather changes so fast in Chatham's stormy… it gets pretty rough trying to get home. I've gone through it a couple of times with my son, so I won't go there anymore. And at least at Hoktaheen you can anchor up in there or tie up in Elfin Cove; or along the way you can tie up along the way or in Earl Cove, anchor up and wait out the weather. Over here there is so little places to anchor up between...only so far in you can go. [Hoonah02-01-090803-NR]

A few Hoonah families still go to Basket Bay for sockeye salmon, particularly those with family ties to the area [NRfieldnotes061103]. One respondent is considering returning to Basket Bay for sockeye salmon now that he has a big enough boat that he can make the trip safely and keep the fish in good condition on ice, even if the weather delays them from getting home.

We've been thinking about making a run to Basket Bay, make a run over there. We've got a bigger boat now; we've got a thirty-two foot boat. We'll take that and we'll tow the skiff out, and then we'll load up the skiff and go back to the boat and clean our fish and heads, then we'll ice them down. That way when we get home the fish are good yet.
[Yeah you have some options with a bigger boat for sure.]
I've seen people go out with skiffs and they got caught with the weather and they didn't clean their fish until they got home and, it makes an altogether different…you know you've fished, if you don't clean them, it changes the quality. Ice them down...that way when we get home the fish are good yet. [Hoonah02-04-090703]

Only a few Hoonah harvesters reported getting sockeye salmon from Surge Bay on returned permits in recent years. Hoonah permit harvest data for the years 1997 through 2001 indicated one household harvested twenty sockeye salmon each year in 1999 and 2000 and two households harvested a combined fifty sockeye in 2001. No sockeye harvests from Surge Bay were reported in 1997 though 1999.

Several factors have affected the contemporary use of Surge Bay for subsistence harvests including the distance and danger of getting to the site, the fact that there is no longer a residence there, and the timing of the sockeye run. Surge Bay is further south along the outer coast than Hoktaheen and is open to ocean swells. Gaining access to Surge Bay requires traveling in unprotected ocean waters from Cross Sound. Richard Dalton Jr., a descendant of Surge Bay Joe, has gone there for sockeye salmon in the past, but missed

the run. He said the sockeye move very quickly between saltwater and the lake due to the short distance of the outlet stream.

> *I've gone several times with my dad to try to get sockeye down at Surge Bay and you have to be right on top of them to get them because the short distance of the lake and the river that comes down to the saltwater; so short that when the tide comes up, it's easy for the sockeye to move up. You have to be right there to get them.* [Hoonah02-090803-NR]

Greater possession limits at one site versus another site influence where people fish. More people started to go to Hoktaheen for their sockeye when Neva Creek was restricted to ten sockeye salmon per household.

> *...and just when they made the restriction of only ten annually from Neva, a few years ago, a lot of people said, "not even going to bother going there, I'm going to go out to Hoktaheen." A few more people are going out to Hoktaheen then there was before.* [Hoonah02-05-090703-NR]

Differences in seasonal closures also influenced harvesting patterns. Since 1999, Hoktaheen Cove's seasonal closure date (July 20) has been earlier than the seasonal closure at Neva/South Creek (July 31 in 2003 and August 15 in 2004) prompting some harvesters to take salmon from Hoktaheen first, and then from Neva/South Creek after Hoktaheen closed, in order to meet their sockeye salmon needs.

Gear Selection Factors

Respondents reported using subsistence, commercial, and sport fishing gear to harvest salmon for home use. Respondents with commercial troll permits reported using them to harvest coho salmon. None of the respondents were currently commercial purse seining or commercial gillnetting, but one respondent grew up commercial seining on his father's boat and reported that he hadn't learned to "subsistence" fish for sockeye salmon until later in his life, because they removed their salmon for home use from their commercial catch [Hoonah02-01-090803-NR]. Coho salmon for home use was also caught with sport rod and reel gear by respondents:

> *We go out in the skiff and play sport fishing for our own. It's a lot of fun catching cohos with a rod and reel...* [Hoonah02-05-090703-NR]

Subsistence gear used by Hoonah fishers to harvest sockeye included gillnets, beach seines, gaffs and according to permit returns, occasionally dip nets. Factors that affected the choice of gear included: personal experience or family tradition, availability of gear, distance from Hoonah, weight of the gear, site characteristics, regulations, number of people required to operate the gear and size of a fishing group.

Two respondents said they used sport gear to harvest salmon for the first five years after they moved to Hoonah in the early 1980s; they then began to use a beach seine, but for the past five years have used a gillnet. Thomas Mills, Sr. used a gaff exclusively in

freshwater at Neva Creek to get his sockeye and coho salmon, because that was the customary way his family had always fished. Other respondents fished in marine waters at the mouth of creeks using gillnets or beach seines. One respondent observed some groups snagging for sockeye salmon in marine waters using sport gear at the mouth of Neva/South Creek. Homemade treble hooks are also used in freshwater following a tradition that has been passed down in some areas for at least three generations [Hoonah02-05-090703-NR; Hoonah02-02-090403-NR; Hoonah02-04-090703].

Most respondents used either a beach seine or a gillnet for sockeye salmon. Factors affecting their choice between the two methods included efficiency, weight of gear, selectivity, safety, and availability of materials to make a net. Gillnets weigh less than beach seines when wet, making them easier to handle, safer to carry in bad weather, and more fuel-efficient. One couple reported switching over to using a gillnet five years ago for Hoktaheen, but still used a small beach seine for getting salmon from streams near Hoonah [Hoonah02-05-090703]. The physical characteristics of some sites, however, make it more difficult to use a gillnet at those locations because the net snags on underwater obstacles. Harvesters may own both types of nets and select the gear for a fishing trip, in part, depending on how many people and boats will be traveling and fishing together.

> *Some people have a gillnet and a beach seine, it just depends on what stream they are going to and what they are going to take and how many people are going. If you have less people going, or if you only have one boat going, or two small boats, it's sometimes easier to just use the gillnet. Where if you have two or three boats going and a lot of help, you can use the beach seine.* [Hoonah02-05-090703]

Some harvesters have a considerable investment in their gear, sometimes spending over a thousand dollars for their nets, while others make their nets from recycled commercial nets. Two Hoonah residents, one a commercial fishermen, didn't think cost was a factor in deciding which gear type to own, because either purse seine or gillnet webbing could be scrounged from commercial fishermen. It may be easier to get purse seine webbing in Hoonah, however, as one respondent indicated when asked why she used a beach seine instead of a gillnet [NRfieldnotes062703; Hoonah02-03-090503; Hoonah02-01-090803; Hoonah02-05-090703].

> *We don't use the gillnet around here as much as they do in Haines; we use seine... And some people do have gillnets, I'm not saying doesn't happen around here, but we primarily lean towards beach seine because we live in a community of seiners. That makes all the difference; the material is there and the know-how. All that makes a difference. If we were in gillnet country, there would be more gillnets available to us than seine.*
> [And yours, did it come from commercial web?]
> *Yeah, one of the seiners here built it for me from his stuff.*
> [So the seiners, just give you extra stuff?]

> *They always have extra line; or any of the fisheries they are in, there is extra materials or supplies and they are always more than willing to just provide it to us. They don't sell it they, if they've got it they give it to us freely. And we use it.* [Hoonah02-03-090503-NR]

Respondents with gillnets bought them from out of state businesses, because it was cheaper than buying it from Haines or another gillnet community. The purchased gillnets were typically 50 fathoms, the maximum length allowed. In some cases, respondents reported borrowing or lending beach seines, but respondents with gillnets said that they generally wouldn't lend out their gillnets without being there, because gillnets tear too easily when snagged on the bottom [Hoonah02-01-090803-NR; Hoonah02-05-090703-NR]

Beach seines varied in length, partially depending on where and how they would be fished. One respondent estimated that her scrounged beach seine was 60 feet long and maybe 30- or fewer -feet deep [Hoonah02-03-090503-NR].

One Hoonah resident said gillnets had the advantage of size selectivity, besides being easier to use. You can match the mesh size for the desired size fish. A net with a larger mesh size could be used to avoid getting the smaller sockeye, which could slip through the mesh. On the other hand, beach seines allow for species selectivity, because non-targeted salmon species can be released unharmed [NRfieldnotes062703; Hoonah02-05-090703]. The means and methods used for specific sites are presented under the description for Hoktaheen and Neva fisheries that follows.

Hoktaheen Cove Subsistence Sockeye Fishery

Regulations

Hoktaheen Cove and Surge Bay are listed on both the Juneau and Sitka Subsistence Salmon permit, but are managed by the Sitka area management biologist with input from the Juneau area management biologist.

On May 28, 1999, ADFG issued a news release from the Sitka area office announcing reduced season and possession limits for Hoktaheen Cove and Surge Bay from August 15 to July 20, and 25 to 20 sockeye salmon. The news release stated:

> *Harvest records show the annual harvests averaged over the 5-year period, 1994-1998, compared to the 5-year period, 1989-1993, have more than doubled at Hoktaheen (from 396 to 964 sockeye)...* (Commercial fisheries news release, ADFG, May 28, 1999)

The trend of increasing harvest coupled with the department's inability to quantify escapement levels necessitated a conservative approach to managing Hoktaheen.

> *Assessment of run strength is based on periodic aerial observations during the season. These observations consist of noting the number of "jumps"*

> *or, if conditions allow, counting schooled sockeye in the terminal marine waters prior to the sockeye escaping to the spawning grounds. Once the sockeye enter freshwater they are typically not visible for aerial counts. Aerial observations often do not give a clear indication of run strength, especially when runs are not exceptionally strong or weak. The inability to quantify the escapement to these systems and the trend of increasing harvest make it necessary to take a more conservative approach in the management of these fisheries. The department will be monitoring these fisheries using aerial surveys and may make in-season adjustments to the season dates in response to stronger or weaker returns.* (Commercial fisheries news release, ADFG, May 28, 1999)

The possession limits and seasonal opening dates remained the same from 1999 through 2001. In 2002, following complaints by Hoonah harvesters that a 20 sockeye salmon limit was too low to warrant the costs of a trip to Hoktaheen, the Sitka area management biologists raised the possession limit to 50 sockeye salmon, but changed the bag limit to an annual limit. The seasonal opening dates remained June 1 until July 20 through the 2004 season, and the annual bag limit remained unchanged at 50 sockeye salmon annually. Despite these adjustments, Hoktaheen harvesters have communicated informally to the Subsistence Division that the annual limits are inadequate to fulfill the needs of the large number of households that high harvesters customarily provide with salmon.

Further complicating matters, the regulations are not well understood. For example, a Hoonah fishing group, observed at Hoktaheen in 2003, had several misconceptions about the regulations. They thought that Hoktaheen Cove was closed outside the island in the middle of the cove, which is not the case, and that a "set" gillnet was referring to making a "set" as in seining. To date, no efforts have been made to clarify these regulations.

Sockeye Seasonal Movements

Respondents readily admit that their knowledge concerning run timing and abundance is limited to the days when they are on-site. One respondent said the Hoktaheen run typically starts in May.

> [What is the general timing of the run out there?]
> *May, it usually starts in May. I know because that one time they gave out the permits on May 15th, I don't remember what year that was, must have been about two to three years ago they gave out the permits on the 15th, and the next morning as soon as we got our permits my buddy and I loaded up our boats and took off and got some sockeye.* [Hoonah02-01-090803-NR]

Other respondents thought that sockeye run timing is earlier than in the past at Hoktaheen, particularly in 2003.

It seems like the runs are coming in earlier, especially this year when we went out. Usually we're out there around fourth of July and after the fourth getting sockeye in the middle of July. This year they seemed to be earlier, because we were out there towards the end of June getting sockeye. [Hoonah02-05-090703-NR]

Respondents described two sockeye runs at Hoktaheen [Hoonah02-01-090803-NR; Hoonah02-04-090703]. The first run is composed of smaller sockeye and begins as early as May in some years and continues into July. The second run, composed of larger sockeye, begins around the end of June and continues into August. One respondent reported some mixing between the runs during the latter part of July.

[Does the run have one or more peaks? How does the run go?]
It's just one right after the other, pretty steady, as they keep moving in. [Hoonah02-01-090803-NR]

Another respondent said there was a pause between the two runs.

The big tides will come in and they will all run up the creek with the big tides, and then the next set of tides will be smaller and then the second run will usually start. But it's all governed by the tides and the rain; if we get a lot of rain with the high tides the fish go up there.
[A lot of rain and the fish might go up even if the tide's not big? Or does it have to coincide with the big tides?]
It's got to coincide with the big tides at Hoktaheen because they can't get up the beach, just the creek itself. If you look at it, it's not even a creek until the tides are big, it's just a little tiny rivulet through the rocks…
[Do the fish come in with the big tide or are they hanging out there?]
I think they hang out until the big tides come. If you get there when the fish are there, just right at…then when the big tide comes the fish are going to leave, they'll be gone when you get out there.
[So you need to get there right before the big tides?]
UmHumm. [Hoonah02-04-090703-NR]

The fish disappear; there is a complete, two different (runs). *The first one is gone, and then somebody will come in and say, "there is no more fish. The fish are all done running, you missed it. How come you didn't go out? You missed the fish." Some people worry about it.* [Hoonah02-04-090703-NR]

The sockeye salmon fishery was closed on July 20th in 2003, but people reported seeing sockeye in Hoktaheen Cove in August.

And some people went to look and in August there were still sockeye running in there.
[That was this year? Was that normal?]

Pretty much. [Hoonah02-01-090803-NR]

In 1999, Wilbur W. James Sr. wrote this letter to ADFG concerning the relationship between creek water levels and salmon migration:

> *Sirs: A short note on Hoktaheen sockeye fishing for home use. 1998-1999 winter very heavy snow pack. Lots of river water.*
>
> *Sockeyes never stay in salt water. They always go up if enough water.*
>
> *No snow pack and no rain. River very shallow. Fish will build up several thousand, start turning red. <u>This is when it should be closed.</u>*

One respondent suggested that weather might delay the sockeye run at Hoktaheen and impede harvest success. Sockeye waiting for the river levels to rise hung out in the kelp patches and deeper water in Hoktaheen Cove in 2003 where harvesters had a difficult time capturing them with in their nets.

> [Were you able to get all the sockeye that you need from Hoktaheen this year?]
> *I got most of them, but not like I'd like to. Because of the weather too that's why. You know that dry season that really put a damper on the fish moving in, and that seemed like all the fish were pretty late this year because of the weather; that coho finally moved in.*
> [HOONAH02-01-070503-NR]

Sockeye Population Trends

Respondents reported that the abundance of sockeye at Hoktaheen appears to be stable, but mentioned that it is difficult for them to monitor the run, because they are not there every day [Hoonah02-05-090703-NR].

> [In that time that you have been going to Hoktaheen have you noticed any change in the number or amount of sockeye coming up? Or any changes in the quality of anything about the sockeye?]
> *No I haven't, it's been always good.* [Hoonah02-01-090803-NR]

Timing of Harvest

Some harvesters go to Hoktaheen in early June after the season opens; others wait until the second run when the sockeye salmon are bigger.

> *Yep, they watch them, there are a lot of people here that go out the first week in June. I always go out late; we are always the latest ones to go out...There is two runs, first run's smaller fish and she [*respondent's wife*]*

gets a little bit antsy at me because people are bringing in fish and we're not going yet (laughter!). I'll tell her, we wait and wait, and then okay then the second run starts and you can go out and get bigger fish and we always get ours, I shouldn't say always; we do well. [Hoonah02-04-090703-NR]

[How do you know when the second run is in?]
I look at what other people are doing, first batch of people go out and bring in fish and then usually they will say, "there's no more, they are all gone, you guys missed it." Everyone's saying that all the fish are gone, and I just wait and that next week I usually go out and we get ours.
[There is like a pause?]
Yeah, there's just a gap there, we'll go out and get ours and then everyone will come out try to get the last gasp, get the bigger ones.
Some people go out pretty regular and you hear about how they are doing, and you can tell by the numbers whether it's…how it's doing, of course it varies from year to year, although sockeye are pretty regular...
[Hoonah02-04-090703]

One couple said they go when they have time off from work, if the weather cooperates. They begin checking the weather on Wednesday for Saturday's forecast. They try to make the round trip in one day, usually departing Hoonah at 3:30 am. Once, the weather was calm, the fish were there and they got back from a Hoktaheen trip at 5 pm; but usually they don't get back to Hoonah until eight or nine and sometimes as late as eleven o'clock at night. That's just the time they arrive back at the dock, then they need to unload the fish and distribute it. They resume working on the fish about five o'clock am the next morning.

[So you pretty much try to do it in one day. Do you try to time it with the tides?]
We try to, but it usually doesn't work out that way. Because we are watching the weather on Wednesday to see what it's going to look on Saturday, and watching it Thursday, the weather is a big factor.
[Hoonah02-05-090703-NR]

Ten sometimes eleven, that's the time getting to the dock, that's not including unloading the boat, distributing the fish. And then get started again about five in the morning. And get them filleted out, depending on what we are going to do with them, for fresh packing or plain smoking, or if we are making dry fish, or half dry. [Hoonah02-05-090703-NR]

The number of trips, respondents take to Hoktaheen varies depending on how successful the fishing is; several respondents mentioned sometimes having to make five or six trips to Hoktaheen in a season.

[How many trips do you usually go out to Hoktaheen?]

Depends on the catch, if we catch them all in that one trip then I don't need to go back out, but if its sparse then I have to go back. Then again if we make it out there and the weather isn't good, then we just have to come back. [Hoonah02-01-090803-NR]

[What are the most times you have had to go to get your fish in? How many trips?]
Sometimes up to six trips just to get the salmon, because sometimes you go there and there is nothing there, you know because of the tide or the weather or the dry season. Or you've seen it this year, these guys went over and there was nothing. [Hoonah02-01-090803-NR]

Work schedules and weather affect the timing of the harvest. Respondents who had regular employment could only make it to Hoktaheen on their days off and then only if the weather was good. Good weather was defined by one respondent as less than four or five foot seas [Hoonah02-01-090803-NR]

Sometimes you don't even make it as far as Point Adolphus. That is usually the checkpoint there. If it's rough there, it's rough all the way down. You just turn around. I've run into that a couple of times already. [Hoonah02-01-090803-NR]

The trip has to be timed with the tide also.

*The tide too, if you don't hit the tide right at Cross Sound it's pretty tough to get over there, especially if it's an incoming tide. It's like a river; you've got that big ocean coming into that little Cross Sound. And I'll use an illustration. My dad and I were going out there and I forgot my bathometer [*instrument used to measure water depth*] and I was timing it just right so that I could get there right at slack water so that I could zoom across and I forgot my bathometer, so I had to run home and get it and run back, it took about fifteen minutes, and in that fifteen minutes of lost time, man it was bang!, bang!, bang! all the way to Hoktaheen, because it's like a flood you know. My dad was in his thirteen-foot whaler and was [*sound effect*] It took us a while to get there.*
[Was the wind blowing? Or...]
No just the tide...So there are all these factors you got to figure around to get to the sockeye, you can't just get up and "I gotta go right now". You have to listen to the weather.
[What point in the tide do you try to time getting in? You are talking about making that corner right by Yakobi Rock...Three Hill?]
*Three Hill [*Island*]...to Hoktaheen, at least get there at slack water either way. I like to leave here when the tide is going out. That way you run with the tide, you don't burn as much fuel, and I like to time it to get to Three Hill right at slack water. And then that way everything is calm and*

you can zoom right across to Hoktaheen, and that way you can fish the incoming tide that will bring the fish in. [Hoonah02-01-090803-NR]

Ideally, harvesters leave Hoonah during the ebb, travel through South Inian Pass during low water slack and arrive at Hoktaheen at the tide change. They then fish the incoming tide and try to return to Hoonah while the tide is still flooding to avoid having to buck the ebb all the way home.

[What part of the tide do you want to head back for?]
Incoming. Sometimes it doesn't work, there's not that much fish in there you have to kind of wait and see if the fish will show up. With the incoming, sometimes it is always right at the tail end of the incoming.
[Right at the top of that flood I bet...So then what?]
*We just work our way back home (*against the tide*).* [Hoonah02-01-090803-NR]

Besides delays in time and higher fuel costs, tidal currents can be dangerous going through South Inian Pass, especially with a west swell opposing an outgoing tide.

Boy it was rough, tough, I took it through there but... I was towing my cousin's Lund; they almost passed us up, the Lund with the waves behind us. We were going with the waves, but we were bucking the ebb all the way and it's tough; it's dangerous. [Hoonah02-01-090803-NR]

In 1999, Wilbur W. James Sr. wrote this letter to ADFG concerning the relationship between Hoktaheen Creek water levels and harvest timing:

Sirs:

A short note on Hoktaheen sockeye fishing for home use. 1998-1999 winter very heavy snow Pack. Lots of river water.

Sockeyes never stay in salt water. They always go up if enough water.

No snow pack and no rain. River very shallow. Fish will build up several thousand, start turning red. <u>This is when it should be closed.</u>

Three of us still alive at present that pursed seined a special sockeye season every year about 14 to 20 Hoonah boats would fish May 1st thru June then we'd put on summer gear and still fish most of the Sockeye areas.

Please remember, lots of rain or snow pack, no fish hardly in salt water (subsistence fish area).

When dry, and creek very low lots of fish in salt water. Very few people go out for sockeye cause of small amount allowed, and danger of bad weather out there.

Respectfully
Wilbur W. James Sr.

Factors that affect harvesting dates besides the presence of sockeye salmon included respondent work schedules and weather [Hoonah02-05-090703-NR]. Other activities conducted while traveling or at Hoktaheen included gull egg gathering, seaweed and chiton harvesting. In the case of a gull egg harvest trip, the eggs were the main reason for the trip and the fishing occurred because the respondents were in the area and stopped to see if there were sockeye salmon in Hoktaheen Cove yet.

Most Hoonah harvesters go to Hoktaheen and return to Hoonah in the same day [Hoonah02-01-090803-NR; Hoonah02-05-090703-NR]. Respondents with access to larger boats with sleeping accommodations and the capacity to store the fish on ice may stay overnight or longer at Hoktaheen.

Means and Methods

Permit data shows both gillnets and beach seines are used at Hoktaheen Cove. Occasionally, dip nets have also been used. Harvesters rarely reported using dip nets at Hoktaheen—only eight times total in 1995, 1996 and 2002, according to permit data (Alexander Integrated Fisheries database).

Respondents reported numerous variables to be considered when deciding the means and methods used at Hoktaheen on a particular day. The choice of gear, beach seine or gillnet, is made prior to leaving Hoonah. On site, a harvester must decide where and when to try a set, what direction to set the net, how much net to put out and how far to bring the net around. In the case of both gillnets and beach seines, there are at least two ways that they can be fished.

All the high harvesters interviewed for this study utilized gillnets at Hoktaheen. Some respondents also used beach seines under certain conditions. The lighter weight of gillnets was the main reason given for choosing a gillnet over a beach seine.

> [What determines which type of gear you use?]
> *The gillnet is a little bit lighter to carry, especially if you are in a small boat. Where as the beach seine gets heavier when it gets wet. Because you've got to weigh those factors if you are going to be carrying some fish back home. Plus you catch them with the gillnet, but a beach seine is pretty good, too.* [Hoonah02-01-090803-NR]

Beach Seines: There are two methods for fishing beach seines at Hoktaheen. Beach seines can be used as drag nets on the beach or as a purse seine in deeper water. As a beach drag net, one end of the net is attached to the beach--either by anchoring it, tying it to an immovable object or having a crew member hold the end. Then a skiff is motored around a school of salmon near the beach, enclosing the fish next to the beach with the net. After the second end of the net is brought ashore, crew members on the beach drag the web onto shore, with the lead lines scraping the ocean bottom. The salmon are trapped in the belly of the net.

A couple of respondents suggested several reasons why Hoktaheen is a poor site for pulling a seine onto the beach. These reasons fall under the broad categories of safety, difficulty and efficiency. The site is open to a west swell from the Pacific Ocean and the surge and big rocks make it difficult and dangerous to get on and off the beach. There also is the risk of damaging the boat or motor far from Hoonah. In addition, the beach seine tends to snag on the rocks and there is an abundance of kelp and seaweed, which get pulled in with the seine, making the work more difficult. With numerous boulders scattered at the head of the cove and an orientation open to the west swell, Hoktaheen Cove does not lend itself to beach (drag) seining.

> *Hoktaheen it's hard to get off on the beach because you have the surge and ground swells coming right into there...with that you have all the big rocks and everything right in front of the river and you end up snagging up with the beach seine. And pulling out big bags of kelp and weed and it's just a real hard spot to beach seine.* [Hoonah02-05-090703]

In the right tidal and weather conditions, however, a beach seine can be used as a drag seine at Hoktaheen according to one respondent who used them at Hoktaheen before switching over to a gillnet [Hoonah02-04-090703]. The seining is done at the top of the flood during the big tides to avoid the rocky boulders of the low and middle intertidal zones. At the high tide line the beach is a steep uniform gravel substrate and a beach seine can be dragged onto shore across the submerged gravel during this stage of tide. The respondent who described this technique used a thirty fathom long beach seine which was about 8 to ten feet deep.

Another Hoonah resident told us that he had used a beach seine as a drag net at Hoktaheen. He thought a gillnet was easier to fish, but not as much fun. He said they end up getting soaking wet, because they submerge themselves in the water to haul the net and the fish splash when they pull in the net. They don't use chest waders, but instead just bring an extra set of clothes [NRfieldnotes072703].

The second beach seining method is similar to hand purse seining, except a beach seine doesn't have rings in which to cinch the lead line and close the bottom like an inverted string purse, hence the name "purse seine". To compensate for the inability to close the bottom of the net and trap the salmon, harvesters must very carefully, evenly and quickly haul the net into one of the boats while attempting to keep the salmon from escaping under the net.

The second beach seine method was observed once during the fieldwork. Two skiffs, a Lund with a 50 hp Honda four stroke engine and a second aluminum skiff with a 100 hp engine, were observed in Hoktaheen Cove at 7:30 am. At 0805 the fishing group of three men set the beach seine near the creek mouth. The Lund held the beach seine and was used to bring the net around in a circle. At 8:20, the net was hauled back on board the Lund. The group only got one sockeye. They said their net got snagged on the bottom.

Beach seines require more people to operate than a gillnet.

> *With a beach seine you've got to have somebody on the beach. You have to have at least four people to help hold the ends. Plus you have to have somebody in the boats, somebody hold the ends, two people in the boat to get it out and around; then you got to pull it in, and it takes—it's a lot of work.* [Hoonah02-04-090703]

> [What is the minimum number of people with a beach seine?]
> *I would say three at the very minimum, and they'd better be pretty good, strong... Usually four, four is a good number, you can do it with three but usually four, where with a fifty fathom gillnet, her and I go out and we can handle it ourselves, takes less time, its a lot more efficient.* [Hoonah02-04-090703]

The extra weight of a wet beach seine as compared to a gillnet was the predominant reason given for not using a beach seine at Hoktaheen.

> [Do you decide before you go: "are we going to take a beach seine or a gillnet?]
> *Yeah it kind of depends on how we are feeling I guess, we'll just decide we'll take the* [gill] *net because it's lighter and that beach seine gets pretty heavy on the boat.* [Hoonah02-01-090803-NR]

The beach seine does have some advantages over a gillnet, including being able to pick the net quicker, because the salmon are not entangled with the web like in a gillnet.

> [Is there a reason why you would use a beach seine?]
> *Sometimes the beach seine is easier because the gillnet you have to snap them out of there, you know, take them out of the web.* [Hoonah02-01-090803-NR]

> *Gillnet has it's advantages, but it's also got it's disadvantages because it takes more time to get the fish out of the net, so with a beach seine you could…they don't really get gilled in the net, so you can make another set sooner. But they kind of disperse once you have made a set and then you have to sit there and wait for them to school back up—about the same I think.* [Hoonah02-05-090703-NR]

Generally, the gillnet seemed to be favored by respondents with access to both types of nets, except later in the season when there might be mixed salmon stocks in the cove. Then beach seines offered the advantage of being able to release untargeted salmon unharmed.

Although not usually a problem in rainy Southeast Alaska, a beach seine must be moistened before setting or the whole net is too buoyant, especially if a relatively light lead line is used.

> *One time I made a set with my beach seine out there and my buddy and I we let it go! I forgot to wet the net down because it was so dry out; my whole net was dry and my whole leads and net were floating in the water! ... My buddy calls me says, "Hey Richard look behind you!" And here is the web flat on top of the water.* [Hoonah02-01-090803-NR]

Gillnets: Respondents reported that the success rate was about the same between using a gillnet or a beach seine used like a hand purse seine [Hoonah02-01-090803-NR; Hoonah02-05-090703-NR]. The disadvantage of a gillnet is that it takes more time to remove the salmon from the net. Harvesters can usually make another set faster with a beach seine because the fish are generally not gilled in the net. The advantage of being able to pick the net quicker is diminished, however, because fish tend to disperse after a set and harvesters often have to wait for them to school back up before setting either gear type again.

Respondents with gillnets used nets 50 fathoms long, the maximum allowed by regulation, which they transported in a plastic tote or 32 gallon garbage can. The depth and size of the net mesh varied among respondents. In one case, the net mesh was monofilament, five and a half inches on the diagonal or two and three-fourths inches measured square. The net was twenty feet deep. Respondents chose the net depth so that they could fish further away from the stream mouth and avoid the beach surge [Hoonah02-05-090703-NR]. Another respondent used a shallower net, he estimated only about six or ten feet deep, and a smaller mesh, only 2 3/8 inch measured straight across on the square. Although respondents chose to buy the maximum net allowed by regulation, they don't always use the entire length of the net for every set [Hoonah02-01-090803-NR].

Gillnets come in monofilament or multi-strand mesh. The advantage of multi-strand mesh is "*if one strand breaks you still have six more strands to catch fish*" [Hoonah02-05-090703-NR]. The net size options can be more limited with multi-strand, however. In one case, the desired depth wasn't available from the chosen distributor, so the respondents bought a monofilament net instead of a multi-strand mesh.

Means of Transportation: One couple said it took 2.5 hours to travel from Hoonah to Hoktaheen in their 19 foot skiff with a 90hp motor. They have an 8hp auxiliary engine for safety and trolling, but they use the main engine for gillnetting. Harvesters with four

stroke engines can idle their motors down low enough for trolling, so many have opted not to have an extra motor and save on weight. Another respondent uses a sixteen foot Glassply boat with 75hp and 9.9hp engines. One fishing group uses a 32 foot boat, and another respondent occasionally goes with a friend from Juneau who has a pleasure boat in the same size range.

Sharing of Equipment: Beach seines and gaff hooks were sometimes lent out, but rarely gillnets because they tear so easily.

> [Do you lend out your gear?]
> *I try not to—in fact I had one fellow ask me this year and—because they just don't take care of that, you know. If I know the person I will, but if I don't know how they treat their gear or I do know how they treat it, I won't. Just put it that way, because they are so expensive to get. That gillnet I have now is over a thousand bucks.*
> [Would you be more likely to loan out a beach seine?]
> *If it was just a beach seine I would probably lend it out.*
> [Is it something that happens regularly?]
> *No if they ask me and I know how they take care of their gear and their boat I'll let it go; but if I know how they are even with their own boat, you can almost bet that that gear will be treated the same way. I can't allow that. Because they won't fix it up they'll just say "thanks." …Rip it all up and then I'm done for.* [Hoonah02-01-090803-NR]

Net size: Harvesters using both beach seines and gillnets indicated that choosing net depth is a tradeoff. Ideally, the net is deep enough to reach the bottom, because salmon can see the mesh of both a gillnet or beach seine at Hoktaheen and will escape under the net; but not so deep that it gets snagged. Success depends in part on where in Hoktaheen Cove the sockeye happen to be schooled and holding in relation to the depth of the net. Sockeye can easily escape under a net that is too shallow for the depth of the water column. Or the lead line can snag on the bottom tearing the net or providing avenues of escape, if the net is too deep for the bottom contour.

A Hoonah fishing group observed beach seining reported that their net snagged on the bottom, fouling their set in 2003. The previous year, they traveled to Hoktaheen with a shallower net and the sockeye were out in deep water. So, this year they brought a 100 mesh deep net and the fish were near the creek mouth where they hung up on the bottom.

Fishing Techniques: Harvesters watch for sockeye salmon jumps to determine where to set their net.

> *We'll sit around and drift, or tie off to kelp, or anchor up and wait for them to jump. Sockeye don't jump that much. Usually when you see one or two you know they are somewhere around. We go over where we saw the jump, and the next jump we know where to set. There are really a lot there when you see four or five jumping at a time.*
> [HOONAH02-05-090703-NR]

> *You have to watch and see the where the fish are jumping or where they are finning. You have to watch where the fish are. You can sit out there all day and if the fish aren't jumping than what good are you doing? You watch for the jumps or you watch for the finners or watch for the bubbles.*
> [And then you set? Rather than leaving the net...]
> *Yea you are targeting not being haphazard.* [Hoonah02-04-090703-NR]

Both gillnets and beach seines were used to encircle a school of salmon at Hoktaheen. Respondents reported that drifting a gillnet straight across the cove, in front of the creek mouth was inefficient.

> *You will pick up three, maybe four, if you're lucky five to ten, but as soon as they* [the salmon] *see it, they'll dive or swim around it. Well you can't do it that way; you'd be out there for days. You've got to make a circle around them and they swim around* [inside the net]. *But they are still able to dive underneath.* [Hoonah02-05-090703-NR]

Out of the three Hoktaheen fishing groups interviewed, all encircled the school of salmon with gillnets, but they each had different techniques for scaring the salmon into the net or keeping the salmon from escaping including doing nothing but waiting, tossing small stones, and using the engine or a plunger to create bubbles. Only one fishing group used a plunger, similar to the ones used when purse seining. The plunger was thrust into the water at various locations along the sides of the skiff. The bubbles created by the plunger worked to keep fish from escaping under the boat in the gap of the net and helped to scare fish into the net. A second fishing group said they revved their engine to create bubbles and scare the fish and occasionally tossed stones into the circle. The final group occasionally tossed stones but generally avoided throwing objects to scare the encircled salmon into the net, because of concerns that they might stress the salmon or give the appearance of harassing them [Hoonah02-01-070503-NR; Hoonah02-04-090703; Hoonah02-05-090703-NR]. See Appendix D for a series of photographs illustrating the harvest of sockeye salmon with a gillnet at Hoktaheen Cove.

A school of sockeye salmon encircled by the gillnet generally do not attempt to escape all at once. First, several of the sockeye will attempt to escape the net in one direction and become gilled in the web. The next group will try a different direction from the first group already entangled in the web. After they become entangled, the next group will attempt a different escape route and so forth. When the net is hauled in, if the set has been successful, there will generally be sections with multiple sockeye entwined in the net and other areas of the net with none [NRfieldnotes6-27-03; Hoonah02-01-070503-NR].

Harvesters watch for salmon jumps and then set the net against the tide, because the salmon generally move with the current. If the tide is flooding, harvesters set against the current towards the open ocean; and if it is ebbing, they set towards the creek.

> [What about the direction that you let it go at?] *You look which way the tide is running, or going out, if it's going out you set against it, if it is coming in you set against it coming in.* [Hoonah02-01-090803]
>
> *Usually we see the jumps, that is usually what I look for is the fish jumping*
> [Are you looking for the direction that the fish are jumping?]
> *If I see the fish jump in here and I know that the tide is coming in. I'll let the net go there and come around like that.* [Hoonah02-01-090803]

Whether fishing with a beach seine or gillnet, both require a lot of skill and knowledge of the area to be successful. Fishing techniques are shared within a fishing group or among close friends or relatives or sometimes people just have to learn on their own through trial and error.

> *Since I taught my buddy how to fish; he's the captain now on his boat. …he's learned quite a bit since we've been hanging out. It's not easy; you have to think about a lot of things. I've seen a lot of people go out there that didn't know what they were doing. Make their sets go and they get nothing. And I just don't let my secrets out.*
> [So you should let me know if there is anything you don't want—]
> *Oh this is fine. I'm not telling everything…This is common knowledge stuff.* [Hoonah02-01-090803]

Salmon were gutted and the heads removed on-site at Hoktaheen to save weight for the trip home. Due to the dangerous waters and distance from Hoonah, it is a challenge at Hoktaheen to balance how much weight can be safely carried given weather conditions, number of people, and amount harvested.

Harvest Success

Success rates at Hoktaheen were highly variable, ranging from filling the needs of all permits in the fishing group, to returning to Hoonah empty-handed. One fishing group using a beach seine with three people in two skiffs, traveled to Hoktaheen during field observations, fished all morning, and returned to Hoonah with only one sockeye salmon. Another group with an aluminum skiff and a gillnet made the trip to Hoktaheen for six sockeye salmon. During the participant observations (July 4-7, 2003) with one gillnet and five harvesters (from four households), we stayed on site for two days plus the following morning, and harvested 100 sockeye using the gillnet like a purse seine.

In seining terms, each time we encircled the school of sockeye salmon and hauled in the net constitutes a "set". Much time was spent watching and waiting for the sockeye to school in a place where a set could be made successfully. We harvested 42 sockeye in four sets on the first day, 41 of them in the first set, then nothing in the next two sets. The second day, we only harvested one sockeye salmon in the first set, and snagged the net on the bottom attempting to make a set too close to the beach. The second successful set yielded 37 sockeye salmon and two pink salmon. Three more sets were made that day without catching any fish. On the third morning, we harvested twenty sockeye salmon in

one set before departing. The final average was ten sockeye per set. According to one respondent, it was not unusual for a group to travel to Hoktaheen and leave after an unsuccessful morning [Hoonah02-01-070503-NR].

Success depends on where the sockeye are schooled and the depth of the net. If the salmon are schooled in front of the creek in water shallower than the net, the net will snag on the bottom and the fish will escape. We also observed successful fishing when the location and the depth of the net were complementary. For example, one fishing group harvested 81 sockeye salmon in one set in late June.

Respondents said they don't bother putting out their nets unless the sockeye are concentrated in a school. Fishers generally wait to observe at least four or five sockeye jumps before beginning a set. The bigger tides generally bring in more fish, however sometimes although the sockeye salmon are present, they hide out in kelp beds or deeper water where they are difficult to catch. The lead lines of the nets won't sink in the thick kelp, and there is the danger of clogging the engine with kelp and overheating. It is possible to partially encircle the kelp with a gillnet, but almost pointless to bother setting a beach seine when the salmon are hiding in the kelp [Hoonah02-01-070503-NR].

> [Is it correct to say they can't be hanging in the kelp either?]
> *They can be, but if you have a beach seine in there and they are in the kelp, it is pretty hard to catch them. Because the leads will come up over and the fish are pretty smart, if they see an opening they're gone.*
> [Hoonah02-01-090803-NR]

> [So beach seine, forget it. Can you sometimes set a gillnet off to one side?]
> *Yeah. One year we went fishing there and the sockeye were (you know where I picked the gumboots), they were right there in that kelp and they would not move out of there for nothing. One whole trip we went out there and waited and waited, they were jumping all in that kelp.*

Description of Harvesting Groups

Respondents indicated that there is a small group of harvesters who travel to Hoktaheen regularly for their sockeye. During the years when Neva was restricted to only 10 sockeye annually, previous Neva salmon harvesters were more dependent on Hoktaheen sockeye. Regular Hoktaheen harvesters accommodated the increased need by bringing members of those households with them to fish.

> *You pretty much know who usually goes. Only a few guys go but they take different household members from different houses out so they can go get their sockeye, because they are not bothering to go down to Neva—because you are only allowed ten.* [Hoonah02-05-090703-NR]

Some respondents reported that they usually fished with six people and two boats. They could set their gillnets with two people—one driving one boat, the other putting the net

out—but needed three people to bring it in. Two people bring in the net, one on the cork line and the other on the lead line; the third person uses an oar to keep the net from getting caught on the motor. Generally, the second boat was anchored and used as a cleaning station. The catch was off loaded into the other boat and those group members who were not working the net gutted and stowed the salmon. Harvesters kept an accurate count of their catch and divided the harvest evenly between all harvesters after returning to Hoonah. The boat owners do not get an extra share, but members of the fishing group contribute money for gas if they have it or help out in other ways [Hoonah02-05-090703-NR].

> *It's not just the boat trip; sometimes they'll help you in other ways on a different day, so it's not just about the fish at that moment. We aren't all focused on that, depends on who has a party that year, who has a forty-day dinner, who's having a rough year, it just depends… It works out.* [Hoonah02-05-090703-NR]

Another respondent reported that while he often fishes with the same group, a mixture of family and friends, he sometimes takes other people out depending on who is available.

> [Do you take different people out with you? Or do you usually just fish with the same people?]
> *Usually I like to fish with the same people because then I know how they work. And this year I had a different crew, but it worked out pretty good. Cause everybody was working this year, but normally I like to take out the same crew, you know what to do all the time. That is important because on the [*name*] I fell overboard a couple of times.* [Hoonah02-01-090803-NR]

Respondents said that the distribution of labor within their fishing groups just works itself out without any specific job designations.

> *The best thing I like about working with the Tlingit people when it comes time to do anything is that there is never a plan that says you do this—a long dragged out thing—it just happens. Though the person that is the most experienced in any anything, let's say fishing, will take the lead without saying I'm the leader you listen to me. They just take the lead and everyone else will follow. Someone will start cleaning because they have the sharp knife. Somebody else will grab a scraper to scrape out the kidney blood, somebody else will take it and clean it or take the eggs and be responsible for gathering the eggs. We all become organized without planning it—you see what needs to be done, you hop in there and start doing that. Someone needs a helping hand you go over there and help them. It's all done without designation; you all see what needs to be done and everyone pitches in to make it happen. Without any specific designation. The one that has the most experience in catching the fish or leading in the catch of that fish will naturally be the leader. You saw it with [Name], he knows how to do it; he'll take the lead and tell you how,*

quietly and calmly, let you try it if you want. But he was the one in the lead. That is basically the way it works. [Hoonah02-03-090503-NR]

Land and Marine Use Conflicts

Hoktaheen Cove is utilized by both sport and commercial fishermen and occasionally by recreational boaters, but its remoteness and open exposure to the west ocean swells serves as a limiting factor for more intensive use. Respondents reported few conflicts between the subsistence fishery and other users in the area. The two commonly reported conflicts were due to boaters who sped through the fishery dispersing the sockeye, and an occasional boat anchored in the cove.

Sport fishing boats from Elfin Cove and elsewhere come into Hoktaheen Cove to land on shore for freshwater angling or other reasons—for example, during field observations a small cabin cruiser came into the cove to walk their dogs. Boaters that speed through the cove to shore disrupt the subsistence fishery by scattering a school of sockeye salmon. Respondents described waiting and watching in Hoktaheen Cove for a school of sockeye to gather, only to have a fishing boat speed into the cove and scatter the school of sockeye moments before they were about to put out their net. Respondents reported having to wait another 45-60 minutes for the sockeye to re-school before they could make their set. The delay caused by the unintentional scattering of the sockeye by other boaters can pose a hardship to subsistence harvesters in a day fishery limited by tides and daylight hours and constrained by the long and dangerous round trip journey to the site. Although, the disruption of the subsistence fishery did not appear to be a frequent occurrence, there has been a recent increase of sport fishermen out of Elfin Cove and elsewhere in the region. Respondents indicated that if sport boats would slow down as they came into the cove, the problem could be alleviated [Hoonah02-01-070503-NR].

Commercial salmon trollers sometimes use Hoktaheen Cove as an anchorage. Generally, the trollers have not been a problem; most trollers anchor in three to four fathoms behind larger islands just south of Hoktaheen Cove. Occasionally, especially when there is a large trolling fleet present and the main anchorage is full, a troller might opt to anchor in Hoktaheen Cove. The anchorage is in about two and a half fathoms of water in the middle of the small cove, and probably only provides enough swinging room between rocks and shore for one thirty to forty foot long boat. A commercial salmon troller's day begins early, usually at daybreak, so generally the anchorage would be vacated before subsistence users arrive. Harvesters did, however, relay one story about a salmon troller who impeded the subsistence fishery when he remained anchored in the middle of the cove where the harvesters wanted to put out their net [Hoonah02-01-070503-NR].

Neva Sockeye Salmon Subsistence Fishery

There are two creeks in the vicinity of the cannery site at Excursion Inlet: North Creek at the north end of the cannery site and South Creek, south of the cannery. Neva Lake flows into South Creek via an outlet stream, which biologists call Neva Creek. At times, Neva/South Creek has also been known as Cannery Creek.

Regulations

Sockeye salmon at Excursion Inlet was included on the subsistence permits in the 1960s. In the 1970s ADFG closed Excursion Inlet to subsistence sockeye fishing and only allowed chum and pink salmon on the permits. This policy continued into the mid-1980s. A summary table entitled "Southeastern Alaska Subsistence Sockeye Catch by Area and Year" for 1961 through 1984, found in archived ADFG files, listed sockeye salmon harvests for Excursion Inlet for 1967 through 1970, 1972 and 1977.

A sockeye harvest was allowed for June 1 through July 31 in 1985, but limited to 6 fish per person or 12 per household maximum, according to a June 17, 1985 memorandum from the Assistant Area Management Biologist (Ken Imamura, memorandum subject: "Updated Subsistence Fishing Permits and Guidelines for the Juneau Management Area" to Southeast Alaska Region Area Management Biologists). A copy of a permit application in the files, however, only lists Basket Bay and Kanalku Bay for sockeye salmon. It is unknown if the application archived in our files was the one used for the 1985 season or was updated by the June 17, 1985 memorandum.

Although Neva/South Creek may have been open for a few sockeye in 1985, a 1987 memorandum indicated that "Cannery Creek" was "open for sport fishing and closed to subsistence fishing". (Memorandum to Don Ingledue, Juneau Area Management Biologist from Ken Imamura, Assistant Area Management Biologist, January 9, 1987). Excursion Inlet was also not listed under locations open for sockeye salmon in the 1988 guidelines. The Board of Fisheries passed the Customary and Traditional Use Determination for Hoonah, which included sockeye salmon at Excursion Inlet in 1989. We did not find copies of any permit guidelines for 1989, but no one reported sockeye catches from Neva or "Cannery" Creek until 1990 when one permit reported harvesting sockeye salmon from Neva Creek.

The 1991 guidelines allowed for an individual possession limit of six sockeye salmon and a household limit of twelve sockeye salmon from Neva Creek. The opening dates were July 1 through July 31. In 1992, the Neva subsistence fishery opened a month earlier on June 1, and the subsistence salmon permits were changed to allow ten Neva Creek sockeye in possession for both individuals and households. These opening and possession limits remained the same for 1993 through 1997. In 1998, the opening dates remained the same (June 1 through July 31), but the bag limits of ten sockeye for individuals or households became annual limits rather than the number allowed in possession prior to processing. At the time, Neva was the only system in the Juneau management area to have annual limits and these guidelines remained in effect through the 1999, 2000, and 2001 seasons. In 2002, the possession and annual limit was raised to 25 sockeye salmon, and annual limits were placed on all the sockeye streams in the Juneau management area. The open dates remained the same for the Neva fishery. There were no changes in 2003, but in 2004 the possession and annual limit was raised to 40 sockeye salmon and the opening dates for the Neva fishery were extended to August 15. The fishery opened again on the same June 1st date.

The harvesting restrictions detailed above were established at the authority and discretion of the ADFG Juneau area management biologist. Currently, as of 1999, state management of subsistence fishing applies to marine waters where most subsistence fishing occurs throughout Southeast. The Neva fishery is an exception, however, because there are still harvesters that get all their sockeye salmon from freshwater. There remains considerable confusion even among state and federal subsistence staff concerning whether the state regulations apply on freshwater at Neva Creek. As of 2004, the federal government was responsible for the subsistence fishery on fresh water in Neva Creek, but had deferred to the state permit rather than issue their own permit. Federal subsistence fisheries were only open to federally qualified users based on their residence in a community with a customary and traditional use finding for the area. In this case, only Hoonah residents can legally subsistence fish on the freshwater at Neva. But the State permit does not restrict the harvest based on residency, and the permit makes no statement concerning its applicability on freshwater. The federal subsistence rules stipulate that any fishery is open unless closed by permit restrictions; this leaves significant uncertainty about whether the freshwater on Neva Creek is governed by the State subsistence closures on Neva Creek (Conversations with Mike Turek, Subsistence Resource Specialist, ADFG Subsistence Division and Ben Van Allan, Subsistence Biologist, U.S. Forest Service, July 23, 2004).

Sockeye Seasonal Movements

Local observers say the sockeye run didn't arrive at the mouth of Neva/South Creek until June in 2003 [Hoonah02-06-091903-NR]. Only eight sockeye had been counted past the weir by June 26 (Van Alen 2004).

One respondent said that the salmon wait for a "few hard rains" before moving up the creek into the lake. The rain raises the water levels and also cleans out debris and algae from the spawning gravel [Hoonah02-06-091903-NR].

> *…The fish usually depend on the rain, during the rainy season when it rains hard for like a day or two, it washes everything out of the creek, and gives the fish more time to sit there and it gives them a little more depth to swim in.*
> [So it washes out debris and stuff?]
> *Debris yes, and it washes out the algae that is growing inside there.*
> [Hoonah02-06-091903-NR]

There is also a traditional belief that the first salmon to run into the stream prepare the stream by cleaning out vegetative growth.

> *Yeah, fish will let you know when they are coming in and the elders have told us that the first fish of any run that comes in are like the scouts or they are the ones that prepare the stream for the rest of the run. So usually it is the smaller salmon and not as many of them, maybe the younger salmon are the ones. A better way to see it—the younger salmon move ahead and prepare the stream.*

[Did they talk about how they prepare it?]
I've heard removed the grass or you know just— [Hoonah02-03-090503-NR]

[Were there rules about not taking those fish?]
No. The respect is there, that they are to be respected. How I heard that was in the eighties, I volunteered with the council and I wasn't the only one; there were others my age (we were young, younger) and they referred to us as those—we paved the way for the elders to come forward to do what they have to do. So they used that likeness, they compared us to those fish, the first run of fish coming in; the young ones preparing the way. That is how I first heard about it. I can't remember the Tlingit name they used or the term, but that is how it was explained to us. We were like those fish . . . [Hoonah02-03-090503-NR]

Local residents recognize two runs of sockeye salmon in Neva Creek. The smaller ones are called Neka Bay sockeye [Hoonah02-02-090403-NR]. Biologists also separate the Neva sockeye run into two stocks, main inlet stream (MIS) spanners and lake beach spawners.

The radio tagging results show that most MIS spawners entered the lake before the beach spawners did. All the adult sockeye salmon that were radio tagged in the first quarter of the run (on or before July 7) spawned in the MIS and all the sockeye radio tagged after 40% of the run (after July 25) were tracked to beach spawning areas. The adult sockeye that passed through the weir between 25 and 40% of the run were a mixture of MIS and beach spawners. The radio tag results suggest that lake spawners comprised over half of the run. (Van Alen, 2004:40)

There was no mixing of marked fish observed between the MIS and beach index areas. There was a geographic and temporal separation in the sockeye spawning in these two areas. Sockeye spawned in the MIS from late July through late September and on the beaches from mid-September through November. (Van Alen, 2004:34)

Before the rains, the sockeye schooled at the mouth of the creek. During the top half of the flood, the salmon tended to concentrate in the estuary below the bridge

Around half tide they like to hang out right inside here. This area, that's where the fish like to hang out and relax. Of some would come up in here and there is a bridge inside here and they just like to sit under that bridge area and relax behind the rocks. This is where most of the sport fisherman would be, right by the bridge and most of the subsistence fisherman would be at the mouth… [Hoonah02-06-091903-NR]

Schools of sockeye also gathered at the confluence between Neva Creek and South Creek and in eddies and pools where people fish. One of the respondents described the fish hiding in undercut banks in the calm water adjacent to swift water.

> *The elbow part here, kind of right inside of this area—*
> [Those are all places where there are pools?]
> *Yes, places here they can hide and the current is kind of strong or you can't get to them. The brush has kind of overgrown the holes, logs are there—*
> [Current is swifter there or calmer?]
> *Kind of swifter, but they're sitting right in the spot where it's not so strong, kind of right up against the rocks.*
> [In the eddies?]
> *Yes.* [Hoonah02-06-091903-NR]

Sockeye salmon were observed milling around the inlet including the mouth of the river and cannery docks during the ebb and low tide.

> [Where do the fish (sockeye salmon) hang out during the ebb?]
> *Low tide? Just basically out here or up here by the docks or up here...all over by the beach area.*
> [So they are more spread out during the ebb?]
> *Yes.* [Hoonah02-06-091903-NR]

One respondent estimated that seventy-five percent of the sockeye run came in to the creek after the subsistence sockeye closure at Neva/South Creek in 2003 [Hoonah02-02-090403-NR]. According to the weir counts, 53% of the run passed by the weir after the closure (Van Alen 2004).

Local harvesters reported that in general, the female sockeye salmon come into Neva Creek first, followed by a group of male sockeye, then a school of females and so forth. Occasionally, both genders come in together [Hoonah02-02-090403-NR].

As for run timing, one respondent suggested that natural conditions affect whether the run is early or late, but noted a trend of drier conditions, possibly due to global warming.

> *It all depends on Mother Nature. Totally, whether it's [the run] late or early, it all depends on Mother Nature. And forces that we don't know about, but when we listen about the conditions up north as well as down around us we hear it is happening up there too. Everything is getting warmer, look around you we don't have snow peaked mountains again . . . only in the gullies where the snow is. So last year in Juneau was the very first year I ever heard the word drought in connection with Juneau. And then you look around at the mountains and you don't see all the water flowing off the mountains that you used to. And you look at the streams not only in Juneau, but here around us; they are less than half of what they were even ten-fifteen years ago… Water levels are down.*

[Just this year, have you noticed?]
Oh no, this has been happening—now you take the warming of the climate and how we haven't had a lot of snow in the last several years, so that is making a difference. [Hoonah02-03-090503-NR]

Sockeye Population Trends

When asked if the abundance of sockeye in Excursion Inlet appeared to be increasing, decreasing, or staying about the same, one harvester responded:

I think they are decreasing. Everything is decreasing.
[Did you notice anything about the abundance specifically from when you used to go there?]
Of all species, every time the salmon came in it was black with it—and I commercial fished on the seiners, one of the seiners here, the [name of seiner], *and you could see, you could see the big black schools coming in— now there are just little sparse things here and there. Yeah there is a big difference.* [HOONAH-02-03-090503-NR]

Another respondent reported that the Neva sockeye runs had declined significantly in the 1970s. One year, the runs were so diminished that a respondent only harvested ten salmon from the stream [Hoonah02-02-090403-NR]. Local people told us they removed beaver dams, which were blocking the outlet stream, and then the salmon run began to recover. A respondent also noted that the sockeye run at Neva Creek in 2003 appeared to be healthier than in previous years, because there was less impact by cannery workers taking significant amounts of salmon [Hoonah02-02-090403-NR].

Impacts to Sockeye Abundance

Past activities near Neva Creek, including a cannery and military occupation during World War II, have resulted in considerable development in the area. The site is under investigation as a superfund site due to hazardous chemicals left in the area by the military (P.V.T. Consulting, LLC 2001). During the 1940s, the creek was believed to be unsafe and elders warned their families not to eat the salmon [Hoonah02-02-091803-NR].

Over at the graveyard at the end of the airstrip there is one family, the McKinley Family, from the littlest kids to the grandparents they all died. And nobody knew why, except probably all the chemicals and garbage that the military had dumped into the rivers there. There was no landfill or anything when the army was here, everything was just dumped into the fish creeks. All the garbage was dumped into the fish creeks, they had ramps along the bridges where the dump trucks could just go down and dump everything in. They had ramps going down to the river on the way up to the lakes. Just all over around here they had places where all the garbage was dumped into water.
[And they just dumped it right into the river?]

> *Into the river and into the bay. And all their chemicals from their dry cleaning camps and everything was just dumped into the fish creeks as well. And right now we are kind of suspecting that the army had gone into the lake to get all the sand and gravel for all their concrete fixtures around here because they had to get it from someplace. And that was the easiest thing for them to do was drive dump trucks up to the lake and load up with all the washed gravel and stuff for the concrete. All the concrete foundations and stuff that is around here yet.*
> [Do you think that there is still some impact on the fish from that or do you think they have recovered?]
> *Hum humm. All these rivers were diverted, the river in back of us used to run right were the superintendent's house is now* [Hoonah02-02-091803-NR].

Other past pollution sources included lead deposited by a military rifle range that was near one of the inlet spawning creeks [Hoonah02-02-091803-NR]. Other military impacts included killing of salmon and other wildlife.

> *...when the army was here they killed everything that was alive that would be a problem to them. Everything. All the fish, all the bear, all the deer, all the porcupines, all the animals. And that was real hard on us because all the rivers were already polluted with all their garbage and waste and we were restricted on places we could go and couldn't go on hunting* [Hoonah02-02-091803-NR].

One respondent remembered an incident in the mid-to-late 1970s when someone shot a 9 mm Uzi just to see how many fish he could kill, polluting the stream with lead and wasting fish [Hoonah02-02-090403-NR].

Current concerns include pollutants entering the lake from campfire rings at the end of the road. Thomas Mills Sr. reported picking up nails from the shore and lake left over from wooden pallets burned for campfire wood [Hoonah02-02-090403-NR].

Past construction activities have also caused some habitat destruction. The road used to stop short of the lake and access to the lake was by a trail. During those days, the sockeye spawned on the shore at the end of the trail. In the mid 1960s, cannery workers bulldozed fill to extend the road to the lake and the lakeshore spawning habitat was destroyed. Previously, the lake shore consisted of a steep bank; now the beach is shallow at the end of the road [Hoonah02-02-090403-NR].

The fish processing plant located near the mouth of South Creek presently gets most of its water from the main inlet spawning creek to Neva Lake. The current cannery owner, Ocean Beauty, has applied to increase its water rights three-fold from 400,000 to 1,200,000 per day (800,000 additional gallons per day). The water system was originally constructed by the military in the early 1940s. The current water right was issued in 1970 and predates the Alaska Coastal Management Plan. According to the DNR staff member reviewing the current permit, "*there is nothing in the file indicating that there was any*

consideration of fisheries" when the water rights were originally granted in the 1970s (John Dunker, Department of Natural Resources, pers. comm. 2004). Ben Van Alen, project leader for the Neva stock assessment, has expressed concerns about an additional withdrawal of water from the system, particularly during a hot, dry summer as occurred in 2004.

> *I'm concerned that the sockeye production in the Neva Lake system will be compromised if the amount of water drawn out of the inlet stream is not moderated, especially during warm and dry summers like this one. On August 13 [2004], the weir operator counted 130 sockeye salmon that died trying to migrate through the shallow, braided section of stream below the weir. (Ben Van Alen, email message to John Dunker, DNR).*

It isn't clear whether the current fish processors are asking for additional water or attempting to legalize the amount of water they are already using (Ben Van Alen, pers. comm. September 13, 2004).

In general, though, respondents reported improved sockeye abundance at Neva Creek as compared to the 1970s and 1980s, but the long-term health of the system is uncertain due to the unprotected land status surrounding the lake. The watershed surrounding the northwest corner of Neva Lake, Neva Creek and South Creek is currently under management authority of the Haines Borough. After the Haines Borough completes a survey, the land will be formally transferred from the state to patented municipal land (Scott Hanson, Administrative Assistant, Haines Borough, pers.comm., November 29, 2004 and Brady Scott, ADNR, Division of Water, Lands and Minerals, pers.comm., November 30, 2004). The rest of the land surrounding the lake is owned by the state. The Haines Borough has selected additional lands in the northwest corner of Neva Lake, unit H36 on the Northern Southeast Area Plan map (Appendix Figure A-6). The management intent of the state is to develop state lands in unit H-35 and H-36 for residential purposes with steep slopes surrounding the lake to be reserved for general use (ADNR 2002). The intent of the Haines Borough in selecting lands is to increase revenue, and the Haines municipal property is also being considered for residential development, probably recreational lots. The Haines planning commission is in the process of developing a comprehensive plan and has not yet addressed zoning for the Excursion Inlet property (Scott Hanson, pers. comm. November 29,2004). The state requires a 50-foot habitat protection easement on all anadromous streams (Brady Scott, ADNR, pers. comm., November 30, 2004).

Timing of Harvest

Harvesters from Hoonah travel to Excursion Inlet in June to check on the sockeye run after the fishery opens. The status of the run is reported to others in Hoonah. News of the arrival of sockeye salmon to the stream circulates via word-of-mouth in the community.

> [So they first showed up in June, is that when you first saw people coming? Or were people coming over to check and then going back to Hoonah?]
> *Just coming over and checking to see how the run's doing so far, I actually don't think we got any sockeye up into the weir until July.* [Hoonah02-06-091903-NR]

> *We know that there is fish in the streams or at the mouth of the river. We'll hear about it and start making preparations. And of course when you see the fish jumping you know what fish it is. Which ones are heading there. Fish jumps tell us what kind of fish is there.* [Hoonah02-03-090503-NR]

One respondent reported spending most of the summer beginning in early July living and fishing at Excursion Inlet where the family still maintains two homes and a smokehouse [Hoonah02-02-090403-NR]. Most Hoonah residents who fish Neva/ South Creek travel to the site from Hoonah and return the same day. Some harvesters come in boats with sleeping arrangements and use the dock facilities, but it is not clear if any of these boats were Hoonah residents. In 2004, two boats, a cabin cruiser and wooden fishing boat, were tied up at the Excursion dock for multiple days. Both parties had been observed subsistence fishing by the ADFG technician working on the Neva stock assessment project. One boat, from Juneau, had also been observed on multiple days throughout the summer in 2003. The residence of the other boat crew was unknown. A third cabin cruiser, also from Juneau, was anchored in the cove near South Creek. When observed, the occupants were sport fishing, but had also brought a dip net and had subsistence permits [NRfieldnotes072404].

A respondent reported that the best time for beach seining was during the big tides at the top of the flood, but not during the biggest minus tides because the fish would be moving into the river at that time.

> *When you are doing this* (beach seining)*, again the tide makes all the difference—you want to do it at the peak tide like we talked about because the bigger the tide the better. You know when the highest tide is going to be for that period. You don't want to go there at the highest tide that day because that's the day those salmon are moving into the river. When the tide has peaked out as far as it can go those fish are going to move into that river… You want the tide to push them in, but you don't want the tide to be so high that they run past; they are already going into the river.* [Hoonah02-03-090503-NR]

Methods and Means

Most types of subsistence gear are used at Neva/South Creek including beach seines, gillnets, gaff hooks and dip nets. The use of dip nets by Hoonah residents, however, has rarely been recorded. Hoonah harvesters only reported using dip nets at Neva/South

Creek four times in 1996, and once in 1997, according to permit data. Other instances may have occurred, but have been recorded as unknown gear type in the database (Alexander Integrated Fisheries Database). A fish technician for the Neva stock assessment project observed one Juneau resident using a dip net in 2004. Gaffs and dip nets were used in freshwater; gillnets and beach seines were fished at the mouth of the creek.

Beach Seine: The beach at Neva Creek is more suited for fishing a beach seine as a drag net than the beach at Hoktaheen Cove, although fish and game technicians conducting a catch sampling seldom saw them being used in this way [NRfieldnotes072404]. One respondent described using a beach seine as a drag net at the mouth of Neva Creek. The method was essentially the same one as described for Hoktaheen. One end of the net was anchored to the beach, usually tied around a tree. The other end was brought around the school of salmon with a skiff and brought back to shore. One end of the net was subsequently pulled onto shore closing the belly of the web around the school of salmon. The beach seining is done at the top of the flood tide near high tide, but before the tide reverses and begins ebbing. The respondent owned a 60 foot beach seine. She had not used her own beach seine at Excursion Inlet, but was fairly sure others who had borrowed her seine had used it there [Hoonah02-03-090503-NR].

Generally, there are 2-6 people on shore pulling in the net. It takes a minimum of three people to operate a beach seine in this manner, one in the skiff and two on shore. If there is only one person on the skiff, the net is kept in the bow and the captain backs the skiff away from shore and lets the net play out.

> *Yes, the seine was on the skiff and then this end is tied or whatever, it is secured and the boat backs out and the seine came out of the bow as it backed out. And then when that was done you hooked it around and it went to the person on the beach. The skiff is able to back out and be out of the way and not get tangled.* [Hoonah02-03-090503-NR]

Things that can go wrong include running over the beach seine and getting it caught in the engine prop [Hoonah02-03-090503-NR].

> *You just have to be careful and, anything can go wrong if you're not used to it. And then there is the tide and the weather, any amount of things.* [Hoonah02-03-090503-NR]

Gillnets: Respondents who normally fished a gillnet at Hoktaheen reported that Neva Creek was better suited for beach seines than gillnets. Respondents reported that fishing gillnets at Neva Creek can be problematic because of strong tidal current and the difficulty getting close to the stream mouth due to old pilings, big rocks and snags and tree roots deposited by the river. Even so, some fishers have switched to using gillnets, because they are lighter when wet. Beach seines soak up more water and the extra weight can be more dangerous crossing Icy Strait, especially when the weather turns nasty. The lighter weight also burns less fuel [Hoonah02-05-090703-NR].

> [Are you doing both (Neva and Hoktaheen) these days?]
> *Yea, we keep trying Neva, but Neva is a hard one to fish [with gillnets] because of the tide is so stronger in there and you can't get up close to the mouth because of all the old pilings and same thing you have big rocks, and you've got snags and tree roots, that have come down the river because the river is pretty strong, so they end up piling up there in front of the mouth. Beach seine you can do it, but gillnets are real hard there.*
> [So people can do more beach seine there?]
> *More beach seine there than gillnetting. I think a lot of it too—people switching over to gillnets—is its lighter, where a beach seine soaks up so much water, gillnets are so much lighter, again the safety factor basically.*

A technician for the stock assessment project said he mostly saw gillnets being used at Neva Creek in 2003. Most of the harvesters fished their gillnets from a single skiff. On one occasion a group with two boats were observed at Neva Creek, but they only used one of the boats to actually do the fishing. The size of the gillnets varied from about 20 to 50 feet. Fishing was usually done on the incoming tide between mid-tide to high tide. One harvester stayed on-site for twelve hours, watching for fish jumps, setting his net, pulling in the net and then watching for schools of fish before setting again. The nets are usually set off the north point "just inside of the creek mouth" in the intertidal zone at mid-tide during the flood [Hoonah02-06-091903-NR].

One gillnet method stabilized one end of the net with an anchor while the other end of the net remained attached to the boat in the current. A second method was to hold the net out in the current with two boats and then close the circle bringing the ends together. The first method was used more frequently in 2003. Fishing occurs off to the side toward the north point, not in the middle of the river mouth.

> *When they set the gillnets out they would come up through here and then go along this point here [*north side of mouth*] and they would have one going at this end, they would either have this side anchored down or have another boat at this end. And when they were ready to close it they would just come and do a circle. Put it to one boat.*
> [Let me see if I have this right? They have a skiff here and they're kind of holding it out somehow and then sometimes they actually use two boats?]

Yea. But that is the way they used to do it, but now when they go over there; they use a permanent spot like anchor to hold it down, like anchor here—and then the boat there. They just sit there and hold it steady so that they don't drift around or anything. Let the fish kind of swim into it instead of chasing them around.
[They're kind of stabilizing one end?]
Yes. [Hoonah02-06-091903-NR]

Harvesters use various techniques for scaring salmon into the gillnet ranging from nothing to splashing with an object near the boat with paddles to tossing an object away from the boat—as in the fishermen who used a rope with a "monkey's fist" tied on the end of about a fifty foot piece of anchor line. He could throw the monkey's fist, a knot that is shaped like a tennis ball, as much as twenty-five to forty feet away from the net. The knot was thrown upriver toward the river mouth, the same side that harvesters splashed the water with paddles [Hoonah02-06-091903-NR].

When there were two boats, one boat was used as the cleaning station. In a group of four, one person drove the boat, one tossed out the lead line or anchor, the third crewmember tossed out the cork line and the fourth cleaned fish on the second boat or on shore. In a group of only two harvesters, one drove the boat and kept the net positioned at an angle to the current and the second person worked the net. The driver attempted to keep the net as steady and straight as they could while they waited for salmon to become gilled in the web. When they picked the net, they kept the engine running and attempted to pick the net in a straight line to keep the net from collapsing into itself [Hoonah02-06-091903-NR]. There was also one person who fished alone by anchoring one end of the net and tossing the rope with the "monkey's fist" while he kept the net in position with his boat and motor.

Gaffs: One respondent reported using traditional gaffs exclusively to harvest salmon on Neva Creek. The gaffs have a large hook attached to a shaft usually 10 to 12 feet long and up to 16 feet. The longer gaffs are used in the swift water of South Creek. A rusted gaff hook and broken shaft were also found in the lower section of the main inlet stream where much of the sockeye salmon spawning occurs, suggesting use of this tributary as well (Van Alen, pers. comm. 2005). Some people currently use manufactured barbed shark or "J-hooks" attached to shafts, but Thomas Mills Sr. and his children used barb-less traditional gaff hooks that the respondent made himself (Appendix Figure E-1). Friends and other family members also sometimes borrow Thomas Mills' gaffs and motor scooter to fish Neva Creek [Hoonah02-02-090403-NR].

Features of the traditional gaff hook design are [Appendix Figure E-2; Hoonah02-02-090403-NR; Hoonah02-02-091803-NR]:

- The diameter of the hook is sized to puncture the salmon backbone and immobilize it. Sockeye salmon hooks are smaller than those made for coho salmon, approximately three to three-and-a-half finger widths versus four to four-and-a-half finger widths for coho salmon, according to Thomas Mills, Sr.

- The point of the hook is filed into a cutting edge. It functions by shearing into the flesh and backbone.
- The curve of hook is designed to protect the point when the hook is resting on creek bottom.
- The hook has flat sides, because this design is stronger than the standard tubular design.
- Metal is tempered to harden it. (Respondent dips the hook in oil and tempers the metal with a blow torch until it starts to turn brown. If it is overheated might become too brittle.)
- The end of the hook that connects to the shaft is wedge-shaped, so it holds on the shaft when wrapped with string.
- Wrapping extends up the shaft; in case hook end breaks, the fish could still be retrieved.
- Shaft is 16-20 feet long and made of wood or aluminum pipe. The latter is stronger than wood, nor does it deteriorate. The advantage of wood is flexibility; it feels better and is easier to hook salmon under logs.
- Shaft is painted dark on the hook end. Alternatively, bark is left on a wooden shaft for at least four (to six) feet. This makes the gaff hook resemble a twig in the river.

The technique for gaffing is different for the quiet pools of Neva Creek versus the swift running water of South Creek. In fast water stretches of South Creek, Thomas Mills Sr. puts his gaff into the creek and waits until he feels a salmon bump against the hook, then he pulls back and hooks the fish. A properly sized gaff hook, measured by finger widths across the opening between the shank and the sharpened point (larger for coho, smaller for sockeye) will pierce the backbone and immobilize the salmon [Hoonah02-02-090403-NR].

Gaffing salmon requires that the harvester "stalk" the chosen target. During the field work, Thomas Mills Sr. demonstrated his technique for gaffing salmon in the slower pools of Neva Creek, where the salmon are resting (Appendix Figure E-3). Tom moved quietly and slowly into position by crossing a log in order to reach a bar in the pool. He waited until the salmon calmed down and slowly positioned the gaff hook sideways in the upper column of water. Tom surveyed the fish and picked out a salmon that he wanted to harvest. The hook was turned with the point facing downwards as Tom pierced the salmon by quickly pulling back, impaling the salmon with the hook just behind the head and swinging the gaff toward shore or shallow water. With a barbless hook, the salmon was easily slipped off the gaff.

Thomas Mills Sr. shared the following tips concerning the technique of gaffing salmon:

- The harvester needs to quietly and slowly get into position; wait until salmon calm down and return to pool; then slowly position the gaff hook and quickly draw back.

- It is easy to miss the salmon; one must take into account the refraction of light in water.
- If a salmon is wounded, wait and watch and get the wounded salmon as it weakens.

Snagging: Snagging is also sometimes used in salt and freshwater at South and Neva Creeks, despite restrictions against its use in fresh water. Harvesters were observed snagging in saltwater where it is legal under sport fishing regulations [Hoonah02-06-091903-NR]. In freshwater, the method sometimes serves as a substitute for gaffing by Native people who report that this method has been used for at least a two generations, and therefore qualifies as a customary and traditional means of harvesting subsistence foods. Three halibut hooks are wrapped together with twine or wire to make a large treble hook. One respondent, who no longer snags, described the methods he learned as a child at Basket Bay.

> [What kind of methods did you use?]
> *Beach seine or else we'd go up the river with gaff hooks and we'd make treble hooks out of big halibut hooks. We'd wire them together to make snaggers, go snag a whole pile of fish.*
> [So snagging has been around...]
> *Ever since time began. They won't let you do it now legally, but ever since I was small they used to take big halibut hooks—take three of them, wrap them real tight with wire and get a piece of lead in between, someplace to get the wire in real tight. You take a piece of alder; you got an eight foot line and an eight foot piece of alder—just a comfortable hold—and you use it like a whip. You take it and just push it down and when you hit the water pull her back and just—there is no playing no nothing about it. When you hit it down over the fish, you jerk him right out of the water. If you really want to work at it fast, you file the barbs off so when he hits the beach he'll just flop off and you go get another one.* [Hoonah02-04-090703]

> [When did snagging become a method that people used?]
> *Ever since I remember, as far back as I remember... Our dad made us our big snaggers, I don't know when it started or what but as far back as I can remember and probably as far back as he can remember.* [Hoonah02-04-090703]

The reason for the shift from gaffs to snagging wasn't known, but it was suggested that snagging required less skill than hooking a salmon with a gaff.

> [Why did you choose to use snagging over the gaff hook?]
> *Yes, I've still got that one [*a gaff hook his grandfather made*] at home, and you can get a lot of fish that way, but you've got to go after them, you've got to chase them,* [with a] *big treble hook you sit there and "boom, boom, boom."* [Hoonah02-04-090703]

Means of Transportation: One respondent uses a skiff with a 25 hp engine to travel between Hoonah and the cannery site at Excursion Inlet. He then walks, bikes or uses a motor scooter on the road system to get from the saltwater to his fishing site approximately two miles upriver. It is a short walk through the woods to his regular fishing hole from the road system where he leaves the motor scooter. When walking, the catch is carried back to the smokehouse at the old "Indian Village" in a five gallon bucket placed inside a daypack. When transporting the fish via the motor scooter, the bucket of fish is balanced at his feet and sometimes fish is also carried on his back. These forms of transportation limit the number of salmon that can be harvested at one time [Hoonah02-02-090403-NR].

The most common boat and motor size for harvesters making daytrips from Hoonah, and using their boats to net salmon at the mouth, was observed to be a 16 foot skiff with a 25 hp engine in 2003 [Hoonah02-06-091903-NR].

Land and Marine Use Conflicts

When asked if there were any land or marine activities that interfered with their subsistence fishing, respondents described competition and illegal fishing by cannery workers. One respondent said that 2003 was the first year that he didn't have to compete with cannery workers for fish. Respondents reported that up until the past two years, more cannery workers than local natives fished the river, even snagging with treble hooks in some years. In 2003, a respondent found two homemade gadgets—a trident like spear and wood harpoon gun—designed for harvesting salmon. These were hidden in a stump adjacent to a favorite fishing hole used for gaffing fish by subsistence harvesters.

In 2003, cannery workers were observed sport fishing on Sundays, their only day off, but mostly they fished for crabs at the mouth of the river with crab posts. The fish technician on the stock assessment project only observed three sockeye salmon caught by cannery workers with sport gear at the mouth of the river. On one occasion, the respondent saw a family group of twelve people from "down south" sport fishing at the mouth of South Creek. The technician monitoring the subsistence fishery also found a pole with a treble hook attached to the end [Hoonah02-06-091903-NR].

In past years, respondents found old seine nets blocking the river. They turned the nets over to enforcement officers, thereby helping to curtail the practice. At other times, enforcement has been inadequate due to corruption. It was reported that a previous enforcement officer would call the cannery manager to warn of an impending patrol ahead of time, and the manager would then alert the cannery workers to put their gear away. Webbing with small plastic mesh (not typical beach seine or gillnet material) was found on the creek in 2004 by respondents.

Aside from enforcement irregularities, other problems have affected subsistence activities in the area. For example, in 1982 a Hoonah resident called the Division of Subsistence and expressed concern about activities that might impact continued use of their

smokehouses in Excursion Inlet, because the land had been conveyed to Haines and the cannery was purchasing the property. A more egregious abuse was described by a respondent. According to the respondent, the cannery previously allowed each cannery worker a 200# box of fish, which they could keep in the company freezers. They were charged only 15 cents per pound to ship south. According to one respondent, one of the workers in charge of fish quality at the plant got the names of all the people who didn't want fish and made boxes with their names on it. He used nets to catch fish, froze, glazed and stored the fish at the cannery, then sold the fish to restaurants in San Francisco for $5.99 a pound and made enough money to buy a Cessna airplane. The plane was then used to bootleg at Excursion Inlet. He did this for years until he was transferred to Ketchikan in the 1980s. At the time, he bragged about what he had been doing to the respondent who told us this story [Hoonah02-02-090403-NR].

The cannery has recently changed management and it isn't known what their policy is regarding freezer space for workers. Also, as the workforce changes from predominantly Filipino workers to mostly Mexican workers, it remains to be seen if this will affect the amount of fish harvested by cannery workers, and/or the means by which fish are caught.

Local harvesters say they can tell when cannery workers have harvested salmon from their fishing hole by the way the fish are gutted. Cannery workers leave eggs and the fish collars, and cut the heads off in the same fashion as at the cannery. This is wasteful and contrary to the norms of native harvesters.

Local "homesteaders," those with property in Excursion Inlet from the state land dispersals, have been observed fishing in pools in the creek, but mostly for sport according to one of the fish technicians.

> *There are some people that live in the Inlet who would go up there, and do some regular fishing, sport fishing, kind of, but they'd go up by the holes and stuff, inside the creek. They'd only catch a couple and then they would go back home, put it away.* [Hoonah02-06-091903-NR]

Although the respondent who worked as a fish technician in 2003 didn't actually observe fishing competition on the site, he heard about conflicts from harvesters, and of the attitude often expressed by non-natives living in Excursion Inlet.

> *And the homesteaders and the caretakers actually come up to me and they want me to do this and tell them they can't fish there, and they can't do stuff there, and I told them straight up that these natives here that have lived here a whole lot longer than you have and they know this land a whole lot better than you do, they have any right to fish in their own territory 'cause it's their home area.*
> [So you actually had homesteaders, meaning that live in cabins, seasonally in cabins, and I guess the caretaker, complain to you?]
> *About the people that were fishing at the creek*
> [The subsistence guys?]
> *Yes.*

> [And if you don't mind, what was their complaint?]
> *They [*the subsistence harvesters*] were snagging, and that they had set nets out, or somebody would be sitting at the mouth of the creek anchored up, and they'd tell me to go down there and tell them that they can't do that. And I'd tell them I can't do that because it's not my job to do that.*
> [You mean they were complaining about these guys doing their gillnetting out there or something different?]
> *They'd complain saying that they don't want them to catch too much fish out of their creek, saying it's their creek! They are taking claims on something that is not theirs already.* [Hoonah02-06-091903-NR]

Other complaints about Ward Cove Packing when it was running the cannery included wasting dog salmon when they told one of their tenders to dump dog salmon a few years ago. They got fined for dumping 1 million pounds of dog salmon, but had actually dumped closer to 4 million pounds, according to one respondent [Hoonah02-02-090403-NR].

There are two private sport fishing lodges operating in Excursion Inlet that are beginning to have a greater presence in the Neva Creek watershed, according to one of the Fish and Game technicians observing the fishery in 2004 (Ben Van Alen, USFS, pers. comm. 2004). One of lodges is a non-resident fishing camp in Excursion Inlet south of the cannery, which caters to tourists by providing skiffs, gear, and fishing tips, but doesn't provide guides. One respondent observed fourteen people "sliming" (cleaning) fish on the outfit's dock at one time. With a fleet of over fifteen skiffs, much of the impact has been felt in Icy Straits and Excursion Inlet, but there is the fear that they are spreading onto the shore and into the Neva Creek watershed.

> *They are in the streams, not only on the water, they are in the streams on the islands, and they are now thinking they can move in on that pond, that lake up there that hold our salmon, the sockeye and the coho, and the humpies. They are moving in everywhere in the few years they have been there; they are infiltrating every place that we use, freely, unrestricted.* [Hoonah02-03-090503-NR].

Some Hoonah harvesters resent non-resident fishermen taking fish away from local residents, especially considering that non-resident sport fishermen are able to continue fishing after the subsistence fishery has been shut down. Complaints also centered on the lack of direct monitoring of fish harvested by non-residents from the camp, in stark contrast to the detailed reporting required of the subsistence fishers.

Fish technicians conducting a creel census of sport and subsistence harvests at Neva and South Creeks have observed an increased use of these creeks by two commercial operators in 2004 as compared to previous years (Ben Van Alen, pers. comm. 2004). Initially in 2003, they had reported few sockeye harvested by fishermen from the fishing camp, and suggested that thus far their impact might have been greater on the marine waters [NRfieldnotes072404].

Two non-resident fly fishers, on a day off from their job at the fish camp, were observed fishing at the mouth of South Creek in July 2004. They intended to keep sockeye salmon, but the only sockeye landed during the two hours of observation was released, because it had been snagged. The anglers said they occasionally brought clients to the creek, if it was requested, but most visitors fished in marine waters in the skiffs the camp provided [NRfieldnotes072404].

One respondent suggested that there needed to be more careful monitoring of the number of boxes of fish non-local sport fishers take out of Excursion Inlet [Hoonah02-03-090503-NR]. Competition for salmon resources is likely to increase in the future, particularly if the State of Alaska and Haines Borough develop their lands into residential lots. User conflicts may also increase if a new lodge is developed on private land near the mouth of South Creek.

None of the respondents mentioned any concerns about the commercial fishery's impact on subsistence harvests. Commercial salmon trollers rarely catch sockeye salmon; there are few seiners left in Hoonah and there remain only minimal areas open for seining in Icy Strait. The seine fishery at Inian Islands, located at the western extent of Icy strait and the ocean passages leading into Cross Sound, has been closed to commercial purse seining since the 1970s. In Icy Straits, commercial purse seining continues in the Point Sophia area, a sub-district near Hoonah on the southern side of Icy Strait, and Homeshore on the north shore of Icy Strait near the mouth of Excursion Inlet.

Catch data for the Point Sophia area shows substantial numbers of sockeye salmon caught in the commercial purse seine openings in Icy Strait in some years (Appendix Table F-1 and Figure F-1). In 2001, 41,824 sockeye salmon were caught at the Point Sophia area (114-27). Most of these (29,313) were harvested during statistical week 31 (July 29 through August 4).

The Homeshore (114-25) purse seine fishery is located near the mouth of Excursion Inlet. Although, sockeye salmon have been reported in purse seine catches from Homeshore since 1975, the peak catches are far smaller than Point Sophia's, with a high of 1,571 sockeye salmon harvested during 1993. No commercial purse seine harvests have been reported for Homeshore during 2002-2003, with the second highest harvest during the past decade recorded for 1999 (616 sockeye salmon).

Distribution and Sharing

Sharing is a central value in Tlingit culture, and Hoonah subsistence harvesters distribute salmon harvests to numerous households within Hoonah, Juneau, Sitka and beyond. Most of the respondents reported that they annually provide salmon for seven to fourteen households and often more, depending on need and their harvest success. Respondents regularly provide salmon to their extended families—parents, aunts, uncles, siblings, and cousins—living in Hoonah, Juneau, Sitka, Anchorage, Washington and Oregon. They also provide fish to tribal relations, elders, single mothers, and others in need.

Aunts and uncles have a special status in Tlingit culture, particularly on the maternal side. Emphasizing the role of the Uncles, one Hoonah resident told us that although he was in his fifties, if his uncle told him to get a haircut, he would go out and get one. It wasn't surprising then that respondents often provided fish for their aunts and uncles, and some indicated that it was a responsibility that the recipients expected of them.

Appendix Figure G-1. diagrams the distribution of salmon by one husband and wife harvesting team based on information provided during interviews. The majority of their catch goes to primary recipients—family members that count on and in some cases, expect to receive salmon from this couple each year. In Hoonah, they regularly provide unprocessed sockeye and other salmon to at least four households, mostly aunts and uncles related to either the husband or wife, in addition to supplying their own household with fish. Commonly, these recipients provide the harvesters with a subsistence permit on which to record their catch.

The husband and wife team also regularly provide processed salmon for at least five other households, including their parents, siblings, and other relatives living in Anchorage and Sitka. Before the husband's mother passed away, they also provided salmon for her in Juneau. The wife's mother also shares some of her salmon with members of her church. Typically, the recipients who do not live in Hoonah do not furnish the harvesters with a permit. As such, the sockeye harvests for these recipients are either reported on the harvester's personal household permits or they go unreported.

In addition to these primary recipients, the couple share their catch with other elders and non-elders, wherever they perceive a need. The husband and wife team listed seven additional households that receive salmon from them most years, four households of elders and three non-elder households [Hoonah02-04-090703-NR]. Other households receive salmon when the harvesters perceive a need on a year by year basis. These harvesters also provide salmon and other traditional foods to ceremonial gatherings.

Another respondent generally shares his catch with at least five households in Hoonah and two in Juneau, not counting the fish he provides for memorial parties. His fish are often then passed on to other Native elders in the community.

> [How many households do you fish for?]
> *Mostly the elders, the handicapped, and some don't have the means to get the fish, I'll take their permits for them.*
> [Are there other family households that you know count on your fish, a number of households that count on your fish every year?]
> *I'll just ask. Like if I know that someone is going to have a pay-off party and they don't have the means or because they are an elder or handicapped in some way, I'll approach them and see if they'd like me to get them some sockeye for their party. And if they do, I tell them to be sure to put my name on there [*the subsistence salmon permit*] so that I can get the sockeye for them.* [Hoonah02-01-090803-NR]

[How many households are you providing salmon for?]
Gosh that is hard to say. It varies so much—the first one you think of again is our elders or those that are ill. You want them to be stronger, so that goes without question it just happens. You want your family members to have these goods too—again it depends to how big is your family, some people have big family, some have little family… Family members and then your friends, I mean those that are close to you. . . you know they need this, they haven't had this taste yet; you want to make sure that they have it. There is hardly any distinction between family and friends… I've walked by the beach down this way and someone will say—"hey, you want some of this"—and that is the end of my store visit. I'm off and running with dinner.
[It sounds like when you were a single mother you were on the receiving end a lot?]
A lot, as well as the giving because I became—I was the one hanging around the fisherman, got to hang around the fisherman and be part of it; but then there are those times when you are absolutely not involved or not allowed to be and here it comes in many forms. It will come as whole salmon or it will come filleted and bagged up for you, many different ways it will come to you. And it always did when I had my girls at home and it was deer meat, seal meat, all kinds of salmon, shellfish; all come walking to my door. Sometimes I would not even know who left it till later, when they would ask if I got it. [Hoonah02-03-090503-NR]

Traditionally, the fish in the first harvest is given away. The book, *Beginning Tlingit* lists traditional taboos including, "Don't keep all of your first catch or kill" (Dauenhauer and Dauenhauer 2000:221).

Yeah whether it is given as whole or in part or as a final product or all of it. It is all distributed in many various ways. Sometimes you say here take it and they will have five, ten, twenty fish to give to somebody. Another person, they'll give them a fillet or the eggs so someone can make kaháakw (fish eggs). *Or after you get done jarring it fresh then you make sure there is another distribution to those— if you make strips out of it even before it gets into final process of packing away you share it again. Or when it is in the jars you distribute it again or you save it for a pay-off party, potlatch.*
[So pretty much, that whole first catch is pretty much given away?]
Usually. We just can't help it, we want everybody to be able to taste it and share it with us.
[So really you are not putting up fish for yourself until you do another catch?]
Right. Yes. Everybody wants to taste it. [Hoonah02-03-090503-NR]

One respondent also mentioned the traditional custom of honoring those who hold the Tlingit name of deceased family members by sharing traditional food with them.

> [Are there any other traditional rules that you still follow?]
> *I like [*name*], I take him stuff because he's named after my dad. He's not really related to me, other than just being from the Snail House tribal wise, he's named after my dad, so I take him stuff just because he's got my dad's name.*
> [His Tlingit name is named after your dad?]
> *Yeah, so I take him stuff. We've brought him in some fish eggs and we'll probably take him some crab today or whatever, if we take dry fish… I've got friends and family here like [*name*] he's eighty years old, he calls me—I'm his grandpa.* [Hoonah02-04-090703-NR]

One respondent noted that, in a small village like Hoonah, everyone is related through tribal or traditional connections on either the mother's or father's side of the family. Members of the same clan are all considered tribal relations.

> *Everybody's related one way or another, there's your father's people...* [Hoonah02-04-090703-NR]

One respondent, who has a small family living in Juneau, said she predominantly gave and received fish from friends in Hoonah [Hoonah02-03-090503-NR].

In addition to giving salmon or salmon products away to family or tribal relations, all respondents described sharing salmon that they kept for their own household use when they observed a need. One couple said they actively kept a list of elders and others who needed traditional food. Respondents favored giving salmon to elders, single mothers and people with illnesses, but anyone without the ability to get salmon themselves could be on the receiving end. Sometimes harvesters perceived a need and other times, someone approached them for salmon.

> *We try to not just do our friends or relativities that we would normally do but where there really is a need . . . Because sometimes somebody will keep coming to mind; it happens for a reason, why they keep coming to mind . . .* [Hoonah02-04-090703-NR]

> [Do people come up and ask you, or do you ask them because you kind of know. . .]
> *If I know them—it's almost like a barter thing—most of the time I'll just do it because I know that they love the food and I kind of hate to see them go with out, so I'll get it for them.* [Hoonah02-01-090803-NR]

Most of the respondents indicated that certain people depended on them to provide salmon. The list of recipients is not static; elders pass on and others age and become more dependent. For example, one respondent now provides salmon for a clan relation with complications from diabetes.

[Are there a certain number of family or tribal houses that kind of expect you to provide food?]
Now it is, like [name], because of his diabetes, I get it for him almost every year now. Because he is blind in one eye and can only see out of one eye a little bit. So now I'm getting his sockeye for him.
[Hoonah02-01-070503-NR]

People who are too busy working regular jobs to get out and get their own fish sometimes rely on others to give it to them.

There was one summer maybe four years ago I worked all summer and I had nothing, nothing in my cupboards, so it was very important when the pay-off parties came. I relied on it. We all do, we don't always have opportunities to go out and do what we want to do, so we really must rely on the generosity of our friends and family. [Hoonah02-03-090503-NR]

In addition to supplying salmon to individual households, all respondents provided salmon to the native community at-large through memorial parties. One respondent said that there were on average 150 to 250 guests at a typical memorial party. Another said there could be as low as 100 people or as high as 1,000 at one of these ceremonial gatherings. Salmon is used for meals and gifts. Sometimes guests are served four meals over the course of the party and jarred or dried salmon is frequently distributed to guests as gifts. For some, these parties are the main way they get to eat traditional foods.

Maybe the main person who initiated that kind of activities passed away or moved out of town—went somewhere else. So that spark plug, so to speak, is no longer available; now we turn and rely on the pay off parties for foods that we love so much.
[But somebody must still be doing the dry fish, to provide it for the pay off party?]
Oh yes. Everybody that knows how to do it will be making that dry fish for the party.
[So if they know how to do it it's like a responsibility to make it for these parties?]
Oh yes, it is a responsibility and we're all vested with that responsibility to make sure that that party is pulled off the best that we can. If we have—for instance, I have not harvested a whole lot this year; but what little of it I have put up, the bulk of it is going to the party. That's just the way it is. It's made for the party. We want to honor those people that way. And that's the way, I know I'm not the only one that way. We'll give everything we can. [Hoonah02-03-090503-NR]

Culturally we've gone out one year seven times, we paid for that fuel seven times, that was over a thousand dollars, not to mention the hours we put in heading and gutting and setting. We gave that to permit holders to distribute for their party, the opposite clan. I think we got a hundred twenty bucks back. Culturally we did what we were required to do so

> *there was no benefit to us, we went way into the hole to help them. It just goes that way sometimes.* [Hoonah02-05-090703-NR]

In addition to providing salmon to relatives, people in need, and memorial parties, respondents said they shared salmon with people as a gift—either by inviting them to dinner, offering a jar of salmon, or sharing what they have with others, such as fellow employees on a job site.

> *We work the log ships and so we'll either take a jar of strips for lunch and then maybe a package of dry fish or hard strips, coho, and you share it*. [Hoonah02-04-090703-NR]

> *I worked with a Polish guy at the cold storage this year and they like fish. They don't have fish in Poland so we just gave it to him so he could eat [salmon]... This sharing thing, it's not just limited to our own people; it's whoever will appreciate it.* [Hoonah02-05-090703-NR]

These are the more casual, informal distributions of salmon. Respondents reported that sometimes, people request salmon and other times they will approach someone to see if they have a need. In a small community like Hoonah, harvesters will often know who has a need and provide salmon, sometimes anonymously.

> *I'll just ask, like if I know that someone is going to have a pay off party and they don't have the means or because they are an elder or a handicapped in some way I'll approach them and see if they'd like me to get them some sockeye for their party. And if they do I tell them to be sure to put my name on there [the permit] so that I can get the sockeye for them.* [Hoonah02-01-070503-NR]

Distribution takes place both before and after processing. Generally, respondents delivered fresh, gutted salmon to their primary Hoonah recipients, local households that gave the harvesters their subsistence permits to fill. Cell phones are sometimes used to inform recipients when the harvesters would be arriving back into Hoonah with a catch. If recipients can't pick up the fish on the same day that it is harvested, respondents iced down the catch and recipients picked up their fish the next day [Hoonah02-05-090703-NR].

Most respondents also regularly provided salmon for family members living outside of Hoonah, but it varied whether these salmon were delivered fresh or were processed prior to delivery. These non-Hoonah households are less likely to provide the harvester with a permit to fill. Without a permit from the recipient household, fish given away to these non-local recipients will need to be counted on the harvester's household permit or go unreported. Only one respondent admitted that more fish is harvested and given away than gets reported.

There are additional layers of sharing that occur within these complex distribution networks when recipients give away salmon or salmon products to a second or third

generation of recipients. A detailed examination of the complex layers of distribution networks was beyond the scope of this study, but respondents mentioned giving salmon to recipients who then share the gift with others.

> *That's just the people we share with, and then they share with others, and it goes on down.* [Hoonah02-04-090703-NR]

> *And usually some of my fish that I fix up I'll send to my father-in-law and he'll give to the elders over there [*Juneau*]...And I was going to take some fish over so that he could give out to the elders, the elderly ladies over there. I went out with him one time and I thought I was going to walk in there with him and he said "just sit here." What?! My mother-in-law said, "See I don't even get out of the car either" because they are his girlfriends!" [Laughter!] So you see why, sometimes he does a lot of work you know, my father-in-law [name], he's pretty busy all the time and I like to do that for him. It gets his mind off all the business that he does. He enjoys giving it to them.* [Hoonah02-01-090803-NR]

Respondents described the sharing of harvests as both a cultural responsibility and a personal joy.

> *That's it, just the main focus is my getting the fish for the elders and parties and those who can't get it—especially those that are handicapped and don't have the means to get it. You know, we should be able to go out and get that for them. I'd like to see that day when you can put their name down there and I can get it for them and bring it in. Without having to worry about that.*
> [So more than just a special permit for parties, kind of a permit that allows you to provide for other households]
> *Yeah if I'm going to go out there just for myself that is a lot of expense, might as well get some for other people who need it. Instead of hogging all that; that is the way I look at it. I don't like that. I always like to get food for other people. It makes me feel good to see them happy. It makes me feel good in here. . . And that is my medicine. I give it to them and—like when I gave you that pickled sockeye and you started bubbling inside, it makes me happy to see other people happy, that is just the way I am.*
> [Hoonah02-01-090803-NR]

> *It's important to share, we're blessed with what God gives us, and it's real important to share, and I truly believe that is why it keeps coming. And that is not why we do it, but it's just part of how you were raised, like I know my grandmother when they were alive, they fed a lot of people, and sometimes—say they didn't have any place to go, she always cooked extra because, well somebody could, well you always had extra, so somebody could come—and people knew, they helped a lot of people with that.*
> [Hoonah02-04-090703-NR]

Two respondents mentioned that it was customary to give the best of what you have away.

> *You give your best* [fish eggs] *away and take care of it very well...* [Hoonah02-04-090703-NR]

Amount of Salmon Needed

Prior to the harvest season, respondents generally know the amount of salmon they will need to provide to their primary recipients and the number of memorial parties to be held in the fall; but they can not always anticipate what other needs they may be called upon to meet. Examples include salmon for the forty-day memorial parties for someone who dies unexpectedly, or any unanticipated need by a clan relation or someone else in the community.

One couple suggested that they probably harvested three hundred salmon on average.

> *R1: I bet it would be over three hundred fish because if you count the cohos, the sockeyes, and all that, everything, it would be over three hundred fish, easy.*
> *R2: At least, we do a whole lot of fish.*
> *R1: And that is not counting the halibut....* [Hoonah02-05-090703-NR]

Another respondent indicated that in 2003, he provided at least five households including his own with the "limit" allowed by the permits. If the salmon were all from Hoktaheen that would be fifty sockeye per household, more if he was including sockeye salmon from Excursion Inlet as well.

Amounts taken during a trip are limited to what the harvester and people who will receive fish can process in their smokehouse. One couple indicated that they can efficiently process sixty salmon at one time in their smokehouse, but prefer to get two hundred salmon in one trip, so that they have fish to distribute to others. They prefer to use fresh salmon in their smokehouses, because freezing it puts too much moisture into the flesh [Hoonah02-04-090703-NR].

Respondents know how much fish recipients need and can handle at one time based on the size of their smokehouses and how much time they have to work on fish.

> *Some of them are happy with, if they get twenty, for the whole time we go out. Some of them are happy with ten, they say, "That's all we need because we are able to go out and catch our own halibut and cohos and king salmon" and they are happy with ten sockeye—just for some variety.* [Hoonah02-05-090703-NR]
>
> [Do people actually tell you what they need? Do they say I could use twenty sockeye?]
> *R1: Yeah some of them do, some of them are happy with what ever we bring them, so…R2: We know what they can handle, what they can work*

with, some of them are too old to work on it. They just need five; that's good enough. R1: Some of them don't have as large a smoke house as we do. Ours is eight by eight, some have maybe four by four or four by six smoke house and it all depends. R2: Some of them are working and can't work on fish . . . [Hoonah02-05-090703-NR]

Respondents had a difficult time articulating how much salmon they needed each year, because needs change from year to year depending in part on the size of the memorial parties and menu being planned.

How many sockeye do you usually need to get to cover the needs of these households?]
R1: In the end it depends on what is happening in the household, if they got a party coming up in the fall time you know depending on what meals they are going to serve, if they want to serve half dry fish and you are expecting 250 guests, that's, you are looking at that one family needing at least 100 fish just for one meal, not counting they want to distribute jarred fish or smoked fish, are they going to do it in half pints? Or pints? Are they going to do it just for the invited guests? Or are they going to distribute it to all the guests? It just varies on what is happening in the community at the time.
R2: And that also depends on how big your family is, how big the party is going to be. Some parties are small; some parties are huge, six to eight hundred people, some parties are a hundred guests...
One year we only went out on a few trips and got what we needed and then my brother died, so the whole work we did went to the forty day dinner, the memorial dinner...it's hard to say how much is enough, it's almost impossible. We can't predict life or death. [Hoonah02-05-090703-NR]

[And I'm hearing from a lot of people that salmon gets shared for the community ceremonials.]
Big time, big time it will make a difference. Right now a lot of people are gathering for the parties that are coming up—and because there is a big party coming up we will most likely harvest more than we normally would—because now we are looking at paying our Raven family and friends off with the goods we gather and there is nothing better than giving what you've done. Fruits of labor and of course that's our food. [Hoonah02-03-090503-NR]

Preservation and Processing

All of the cleaning and gutting was done on site, sometimes on the shore if harvesters didn't have room in their skiffs or boats to clean fish. All of the Hoktaheen catches were taken back to Hoonah for processing. At Excursion Inlet, two of the respondents had smokehouses in the area, either in the old "Indian Village" site or on private land south of

the cannery. Most Hoonah harvesters, however, return to their smokehouses and homes in Hoonah to process their Neva salmon.

Both male and female respondents harvested fish and also worked on processing the catch.

> *Once you get the fish out of the river, that is the fun part, it actually all is fun, but the learning how to properly cut fish and the different cuts of fish, the different styles of how to make it, and how you put it up in the smokehouse, you don't just hang it there, it is a process from beginning to end and I learned that through [name] in Excursion Inlet.* [Hoonah02-03-090503-NR]

Salmon Products

The traditional products made from salmon are diverse, make use of all the salmon species, and utilize salmon in all life stages. Respondents reported knowledge of how to make most of the traditional products including traditional dry fish, which fewer and fewer people know how to do as elders pass away. Flesh and eggs are processed and preserved. Certain salmon species and specific body parts are also sometimes eaten raw. One Hoonah resident reported eating the cheeks, nose and tail of sockeye and coho raw, but said pink salmon and chum salmon were not eaten raw. Other products include fermented eggs, smoked salmon strips, jarred or canned, plain or fresh pack and half dried salmon, *náayadi* (partially smoked salmon), and dry fish. For most salmon products, fresh fish is preferred over frozen, so work on the fish begins right away after the harvesters return to their homes. Freezing salmon before smoking it changes the quality of the flesh, it "puts too much moisture in it." [Hoonah02-04-090703-NR].

Smoked salmon is a common processing method; fillets are sometimes cut into strips, smoked and pressure jarred or canned. Processors also pressure jar or can fresh (not smoked) salmon, which is called "plain- or fresh pack" salmon.

A few people still make dry fish the traditional way. There are two ways to cut the fish, either lengthwise from head to tail or along the back. One processor explained that she makes dry fish and smoked strips at the same time. She opens her fish from head to tail then they hang it, like a necktie. A second respondent said she learned to make the "newspaper style" of dry fish [Hoonah02-03-090503-NR]. It is called newspaper style because the flesh is cut laterally along the back and opened into flaps like newspaper pages. Both styles of dry fish involve thinning the flesh on fillets to make it easier to dry. Processors said they dried these thin strips, which have no bones or skin on them.

> *You've got your fillet, and you cut thin dry fish, you cut it off to make it thinner, so you've got the flesh on the skin, real thin, so you have these real thin pieces that you set on the racks and either smoke it or just dry it. That's dry fish.* [Hoonah02-04-090703-NR]

Oh yeah, the inside strips so its just the thin dry fish with no bones, no skin, you know when you fillet a salmon you take the back bone out. You take the rib bones out and then you cut again and make thin strips and then you dry those, it's a process. [Hoonah02-03-090503-NR]

Smokehouse capacity is maximized by using racks to lay fish flat, and then using a skewer to hang it after it is partially dry.

And you do the dry fish, too, to make the strips. Then you thin it down a little bit so you have the dry fish on top of the strips, so you don't just have the strips—which I'll make them a little thinner, especially when you are doing the hard kind—and then you have the jerky fish.

Yeah, well we have these little racks of screen that we lay them flat down on there and once they get firmer then you skewer them so they dry the rest of the way, so that just the dry fish on top of the thin strips. It makes a lot…
[So the strips are hanging from hooks or something and the dry fish is on the racks?]
Yeah so you can fit a lot of—so that fish will go a long ways too. That's just the náayadi way. Usually you do cut it down a little bit to thin it down, especially doing the náayadi, so you will have a lot of dry fish on top of the náayadi, on top of the strips, so that it does add up.[Hoonah02-04-090703-NR]

The backbones left over from filleting the salmon are also smoked.

[Do people do something special with the backbone?]
They end up in the smokehouse. When you are filleting you leave a little bit of meat on them and then you put them in the smokehouse and then boil it up with potatoes, yumm it's good. [HOONAH02-03-090503-NR]

Respondents occasionally fillet their fish on site and leave behind the head and backbone. For example, if they have too much weight to physically pack the salmon down from the fishing hole at Neva Creek to Excursion Inlet.

. . . Separating the eggs and making them safe, sometimes you want to leave, not only the guts but also the backbone and the head, lighten the load that you have to carry. [Hoonah02-03-090503-NR]

Traditionally, mature salmon were boiled, especially the male pink salmon. Most of the elders that relished boiled spawned out "humpies" are gone now. Wanda Culp recalled going to get a nearly dead male pink salmon for an elder. To the best of her recollection, the elder boiled the salmon whole without gutting it. This makes sense given that the salmon probably didn't have much left in its digestive tract after being in fresh water and fasting.

At one point Gilbert had Tommy and I go up to one of the small streams in Excursion Inlet and get him a big male, almost dead humpy, and it was just pale and barely twitching alive, and it was the best boiled fish I ever tasted.
…Just almost dead, he said you want it, so that when you pick it up it can't get away from you. That dead…And he boiled it in the whole round... It was good! [Hoonah02-03-090503-NR]

Salmon eggs are considered a delicacy and there are several ways to prepare these. One couple described saving coho salmon eggs from their commercial troll catch, boiling them and distributing the eggs to people in town. The eggs could be kept on ice perhaps two or three days.

Keep them cool, as long as they are cool and ventilated, of course when they are on ice, they are okay. [Hoonah02-04-090703-NR]

[How are you preparing the fish eggs?]
I'll just boil them, cook them so they can be sent over. And they will mix it with probably some seaweed, maybe a little seal oil and seaweed and have it with rice. [Hoonah02-04-090703-NR]

Salmon eggs are also brined into caviar. One respondent prefers eggs brined with soy sauce rather than straight salt. To remove the membrane from the skeins, respondents reported rolling them over commercial egg trays, which have square holes the size of ripe salmon eggs.

You lay the skein and you just roll it, of course you have a container underneath it, just roll it and they come right out. [Hoonah02-04-090703-NR]

Another way to prepare eggs is to ferment them.

[And do you do the fermented eggs too?]
Kaháakw, yes. I haven't done any lately, I love to do those.
[Is that mainly what they do with the eggs? Other stuff they do...]
Certain people do, not everybody craves fermented eggs and a lot of the older people that always required it are gone now so either you have taste for it or you don't. A lot of us still have the taste for it.

Besides being a favored food by some, fermented eggs are understood to have medicinal value.

They are very healthy, Gilbert Mills, Tom's dad ran across a situation in Pelican where a young boy, maybe six years old was dying from worms, pin worms, and the doctor had no hope for this child, and Gilbert fed him

kaháakw cleaned him right out, saved that boy's life. All of our food is healthy, makes you healthy and strong. [Hoonah02-03-090503-NR]

Management of Subsistence Fisheries

The permit system does not adequately accommodate the level of harvest and widespread distribution of salmon. All respondents expressed some level of frustration in this regard. They also described a variety of strategies for getting around the rules to meet their traditional and customary needs for wild salmon. Strategies included pooling permits, spreading the catch out to other sites not fished, and not reporting some of the catch. But regardless of how people circumvent rules that interfere with customary and traditional practices, biologists are not getting accurate information from the permit system concerning who harvests, where they harvest, and how much gets harvested.

In one case, the permit was perceived to be so irrelevant to the customs and practices commonly engaged in, that the respondent stated they weren't going to bother getting a permit. "Until the laws become even representative of reality" said the respondent, "I can't buy into it." Another respondent said he has to fish over the permit limit to provide salmon for elders.

> [What do you think would be a better household bag limit to accommodate your family?]
> *To be changed, just leave us alone. They start putting guidelines and everything on us over there and we're going to be dishonest on giving the answers they want. Like right now I could probably say that on cohos, I'm only allowed twenty, twenty-five cohos, too, and I've already gotten over seventy-five and I think I have kept five for myself and the rest I've given away.*

Local harvesters gather permits from community members and harvest fish for them; the fish are recorded on recipient household permits as if they themselves had done the fishing. This is a common practice in other native communities where ADF&G Subsistence Division has conducted research on the subsistence salmon fisheries. This is the only way that harvesters can fulfill their obligations to provide fish for family members, ensure that the community's salmon needs are met, and comply with regulatory bag limits. Although, the proxy rules are more restrictive than this common practice, we did not hear of anyone having problems with enforcement over this loose interpretation of the rules. In short, this is such a widespread practice that harvesters may not be aware that the proxy rules only allow them to fish for beneficiaries who are blind or over 65 years old.

The proxy system and annual limits don't accommodate the large number of households that respondents are providing for. Harvesters may not report these fish or may report them for a site other than the one they fished. For example, when ADF&G increased the Hoktaheen bag limit to fifty sockeye; they also made the possession limit an annual limit. It is generally conceded by ADF&G biologists, social scientists, and native harvesters that salmon are underreported on the subsistence salmon permits (ADFG 2002).

However, the extent of erroneous location reporting on the permits is not well documented.

Respondents say the current permit system is ill-suited for the widespread harvesting that they do for memorial parties; sometimes they start fishing for them a year in advance.

> *It would be really nice if they would work something out . . . there is only a few of us who really, really help for the parties here in town. And if they could work something out so we could get it for them, just specifically for the parties; that would be fantastic. Then that way I can at least have my share and I can still share with the elders and whoever comes to visit and stuff; I always give it to them. You know stuff like that and if we can, if they could work something out, that would be fantastic.* [Hoonah02-01-090803-NR]

Annual limits on the permits create a hardship for harvesters who provide fish for memorial parties. Respondents said if they were to follow the household annual limits, they wouldn't have any fish left for their own household. One couple said they pool all their family permits together throughout Alaska to put together enough annual limits to provide salmon for a memorial party.

> [If you could change one thing about current fisheries management what would it be?]
> *R2: The permit process is constantly changing….*
> *R1: The changing of the number per household, I know they changed this last year it was twenty five, year before it was twenty five per day per household and this last year it was fifty per household annually; and if you got a party that is going to go on, fifty is not going to get you anywhere. I mean that's—you'd have to pool the whole family permits together just to be able to put on, provide for a party...then you wouldn't have any... …anything left for yourself for the rest of the year, we wouldn't have anything left…*
> *R2: It just kills the whole process of distributing and sharing. And no matter what, it won't change the amount of fish…because we reach out to family throughout the whole state of Alaska to get what we need, paperwork wise, just need more paper and [family] ties. It makes it harder for us, but it's still going to happen.* [Hoonah02-05-090703-NR]

One consistent complaint is that the permit system is inflexible. It doesn't accommodate changing needs from year to year, or recognize the different needs of the various communities.

> *And also if there is a party coming up that dictates how much we will take, there are so many variables within our realm; we need the freedom to make the decision ourselves on how many we are going to take for this situation or that. But with the federal and the state they have no concept of the seasons or how we operate, they have it in their minds sport, sport,*

sport. These are the regulations and mind set of these regulations, whether it applies or not does not matter; it applies to everyone of you. That is unrealistic when you have every situation is different. We are as different from Excursion Inlet and Hoonah as we are from Gustavus. Each community is very different and yet all these regs come down upon us that are straight across the board for everybody. And it doesn't apply most times when you get it down to the real people, the real user, its way different from the way the regulations are. [Hoonah02-03-090503-NR]

Respondents also expressed frustration at the inflexibility of the preset openings and closings and harvest limits.

Seasons dictate to us, Mother Nature dictates to us the seasons; that doesn't coincide with Fish and Game usually—what are some other contractions, it seems that regulations are always in direct contradiction to reality, and how it is to be handled. [Hoonah02-03-090503-NR]

And how can you tell me what we need to live on? How can they tell me from June first to June thirty, that's when you can go get your subsistence foods? What if the run's late? There is no fish? Weather? There is a lot of things that can restrict your time to go or ability to get the food, and yet we have to try to live within these guide lines they have set up, and I don't believe originally there were any guidelines. [Hoonah02-04-090703-NR]

At Neva/South Creek in 2003, the annual limit was only 25 sockeye salmon; an amount considered absurdly small by some respondents given their personal and community needs. Generally, respondents seemed to get most of the salmon that they needed for others despite the permit limits. But they were not always successful at harvesting what they needed for their own households. In short, the permit system made it more difficult or stressful to get the necessary salmon.

We can get permit for coho and sockeye, twenty five (25) each. That should make somebody ashamed. Really should. So we steal the rest. We are good at stealing for our food. To feed our families and that is what we have to do, that is what these laws have done to us. Made us illegal in our own mists, we are getting really tired of it because they are continuing to pile the regulations on us that make no sense that do not apply. [Hoonah02-03-090503-NR]

There is a general sense of the regulations being foisted on the Native people without their involvement and without acknowledgement of their traditional knowledge and expertise in sustainable management.

Can you find another expert around this state that knows more about sustained yield that an Alaska Native? There is not a scientist that can claim the knowledge that we have. On sustained yield, we know how to

> *protect and keep our food coming; we know how to respect it and yet we are eliminated from the process, of the decision making process, and of the regulation process. We get these regulations that make no sense to us. Why should we honor them?* [Hoonah02-03-090503-NR]

One respondent pointed out that they have four layers of enforcement watching over their activities: city, state, Glacier Bay National Park Service, and the Forest Service. There was also an expression of resentment toward the nonresident sport fishers coming in to take salmon, and what is perceived to be excessive scrutiny of subsistence fisheries while nonresident sport fishing activities have comparatively little oversight.

> *You see we have enforcement all around us, we are so familiar with enforcement it's not even funny. Now the enforcement is looking at us all the time, rather than looking at the ones that come to visit our area that just have free run over. Oh it's just so wonderful let's just take, take, take. You know, how have we come to the situation with the state and the federal management that we are under scrutiny and these ones that are freely taking have free reign to do so? The state and the federal can not get us to conform when these ones all around us, majority bunch all around us, is just taking. How can they justify pulling the food back out of our mouth when we are taking just a very little percentage? And it will be consistent—our percentage has already been taken down by the laws that are on us, and there are no laws for these other people and we are feeling picked on. Cause that is exactly what we are. When they look at us, any of these enforcement people—whether it be they, the forest service, the state, the municipal—they look at us with suspicion. And here these ones just walk off the ferry, drive on by with their four wheelers and everything that they have to their advantage.* [Hoonah02-03-090503-NR]

> *No, not with customary and traditional use, one percent of the resource, that is so minute, and yet the sports world is out there freely and uninhibited using and taking all this stuff and nobody counting, why would we want to be counted when nobody else is being counted? Or even being enforced on their bag limits?* [Hoonah02-03-090503-NR]

The recent changes to the Federal Regional Advisory Committees for subsistence that required representation by commercial and sport fishing interests was seen as a dilution of the Native voice. Suggestions for positive changes to management or policy included more credibility and consideration given to traditional ecological knowledge.

> *Science, I looked it up; it is the observation and experimentation and results of that. Through out the generations I'm talking about thousands upon thousands upon thousands of generations my relatives in this area they have watched and observed and experimented and tried and to the point that it is our action have evolved to be the best I think we can be. But we are getting to a point now where our culture is being so interfered*

on that we're going to forget our culture because it's forced. And all of this beautiful knowledge is going to go. At fifty-five (55) years old I feel absolutely desperate that my elders are dying or mostly gone. I can count five elders right now in my life, and that is going to put me very shortly in the position of being an elder and I know nothing. So you can see how, this will make a lot of people happy, how quickly our culture can be shed like that. But there are going to be those of us that are not going to shed what little of it we know. And we are going to continue to observe, we are going to continue to experiment, and we are not going to hurt anything around us and we are going to continue to coexist with nature. That is what we are going to do. Regulations be damned. [Hoonah02-03-090503-NR]

In terms of land management, the respondents had mixed attitudes about the impact of logging on salmon streams. One thought the logging hadn't impacted fish or wildlife, but others spoke strongly against the devastation caused by logging around Hoonah salmon streams.

The clear cutting, oh yes, it is major. I mean really, it's ruined a couple of streams here. We drive around and we look at the—what no humpies, no dogs, what's going on here? I mean there should be nothing but fish in this stream, should stink. And you don't even smell it. [Hoonah02-03-090503-NR]

Removal of the Dorsal Fin

Respondents, who sometimes ice their fish and do multi-day trips to Hoktaheen didn't like the regulation requiring them to remove the dorsal fin, because it opens the flesh to bacteria.

Take the fin off, we don't like that because I think it makes the fish—it's not good for it. Why do you want to expose the flesh right away right; it's not protected. I've disagreed with that. [Hoonah02-04-090703-NR]

Other respondents didn't have a problem with cutting off the dorsal fin for quality reasons, because they attempted not to cut into the flesh when they removed the fin.

R1: Oh...well...usually we try to make the cut small enough where it takes off just the fin, but some time you end up...when you are tired and sore…R2: Or bouncing around…R1: We end up taking off more and then we don't like that. Usually we try to take just the very fin off without cutting into the back. Sometimes it doesn't work because you got ground swell out there, even behind the rock you still end up with a swell. R2: Or it's raining on you…

Instead, they complained that it was a time consuming process and an unnecessary burden.

> *It's just a time consuming thing out there where you have to remember "oh we've got to do this" and it dulls the knife so you've got to sharpen your knife more often, too, because you're cutting through mainly bone…It's a timing factor for sure, adds an extra step to do out there. I mean when you are out there and all you have is a beach seine or a gillnet and you have no rods or reels on board it, to me it would seem apparent as to what you are doing! You can't sport fish with a gillnet! Or a beach seine as far as I know, unless they changed something.*
> [So you think that regulations are...]
> *R2: And then we have our permits with us,so it seems silly...*
> [And it's time consuming?]
> *It is time consuming because it adds an extra step when you are heading and the gutting and usually the first couple of trips we make out, it's like, "Oh don't forget to cut the fin off."* [Hoonah02-05-090703-NR]

The act of removing the dorsal fin does not appear to impact salmon processing, in most cases the fin has to be removed eventually anyways.

> [Do you have any problem with it as far as you processing? Does it impact your dry fish or anything?]
> *No, people do it different ways, though. Like I fillet mine lengthwise and hang them from the tail. Some of them fillet them and lay them by the back. For them it makes it easier, but for me it doesn't matter.*
> [It makes it easier or harder if they take the dorsal fin off?]
> *They would have to cut it off anyway if you are going to lay it on it's back, but I hang it by the tail so mine filleting it I'd take it out anyway to get the back bone so it wouldn't matter.* [Hoonah02-05-090703-NR]

Sources of Regulatory Information

Respondents were asked how they get their information concerning subsistence regulations. Mostly, it appears that people get their information from "word of mouth" or from the officials handing out the permits. A few respondents read the regulation book; most, but not all the respondents, read the permits.

> *Usually you read the regs and they let you know, one year they came out, this gal came out and gave me a permit and she says "now you can go get fish", and I say "No I can go get fish yesterday but I do this for your benefit, so you can count them." That's about all it is. I have a problem with them saying "well you can't do this until you do this."* [Hoonah02-04-090703-NR]

One respondent complained that they are not informed soon enough about changes in the regulations. Particularly, he was referring to changes in coho regulations. He was happy

with the changes allowing him to net coho, but would have appreciated hearing about them sooner to give him time to prepare his gear. He needed to prepare a shorter beach seine than the one he uses for sockeye salmon, to fish coho near the local stream mouths, and would have liked time to prepare his coho gear before the active summer harvesting season [Hoonah02-01-090803-NR]. Another respondent had not heard that the coho regulations had changed [Hoonah02-04-090703-NR].

There was some concern among harvesters that ADF&G doesn't deliver the permits to the community until after the fishery has already opened, effectively shortening the number of days that the sockeye salmon fishery is open.

The source for regulatory information was explored and generally respondents indicated most residents got their information by "word of mouth". Some of the respondents said they had never read the regulation booklet and one who did read it said that people come to her for information.

> [One thing I was kind of curious is how do people get their...do you ever read the reg books? How do people know what is legal and not?] *Word of mouth, not a whole lot of our people read the regulations or even begin to understand them. You know a lot of people do come and ask me because they know I know how to read them, and that makes a difference, because I used to work in Juneau reading regulations… A lot of people are afraid of them, and it confuses a lot of people. They will seek someone like me out who they trust and say, "what do they say?" "What does it mean?" And I'll try to explain the best that I can. What it means and what it says, if I haven't read it; they most often have it for me to look at. But a lot of people do come up to me because I read them.* [Hoonah02-03-090503-NR]

Other Concerns

Respondents expressed concern about the potential for a negative impact of hatcheries on salmon. They were particularly anxious about the possibility of wild salmon stocks intermixing with hatchery stocks.

> *They [*hatchery salmon*] get a virus and they can kill off the natural species and then what do we have? The quality of that hatchery fish is much...they send a whole big bin over from Juneau's hatchery, cohos, couldn't do nothing with it. The meat was just all mush. That's not good. Can't make nothing out of it, the way, why they keep doing that. And it scares me to death because I had a fish aquarium and all my fish were nice and healthy big swimming in my thirty gallon aquarium and so I decided to get another fish to color it up a little more, and the people that I bought my fish from didn't tell me that it had an illness, so I put that fish in the water, swimming around, "ahh looks pretty." Well went to sleep and I woke up and all my fish were floating up and the one that was sick*

was swimming around. You see that concept there? That hatchery fish versus our natural species? They are playing with fire—sure they may be watching them close, but there is always one that will get away… [Hoonah02-01-090803-NR]

There was concern about the danger of having a hatchery release a diseased smolt. Too, there were rumors of someone seeing a strange looking hybrid salmon that appeared to be half sockeye and half pink salmon.

Every now and then I see some fish that looks weird. One looks like a humpy and a sockeye mixed together, one unit. I caught one like that.
[What did the fish look like? You mean it had spots on one half and not on the other?]
And bright, you know the blue back, it was weird. Looked like they glued it together. Cut it in half and glued it together, the head was the sockeye and the tail was the humpy.
And I've heard several people talking about that too already But you know that hatchery fish scares me, because if they send out that fish with a virus, and it spreads in the water it's going to kill all of our natural species and what are we going to have. [Hoonah02-01-090803-NR]

Hatchery fish was considered to be poorer quality than wild salmon, generally mushier, impacting its utility for dry fish and even its desirability when plain packed.

[Can you plain pack hatchery fish?]
I wouldn't mess with it, it's so mushy it's just…Like a dead fish in the water; it's been sitting there awhile, that's the way it looks. So I wouldn't fool with it. I wouldn't even mess with it.

[Can you tell the difference when you look at it, or is it only when you get it in the smokehouse?]
Yeah when you get...it's just solid mush
[So when you get them they look the same, but when you get them in the smokehouse...]
They just turn mush and there is no quality. [Hoonah02-01-090803-NR]

Although respondents have not noticed problems with the quality of wild sockeye salmon, dog salmon and coho salmon have caused concern. The flesh is too "mushy" and does not produce acceptable dry fish. Elders tell them it is because the wild salmon are interbreeding with hatchery stock. Dog salmon falls apart and will "actually rot before it's dry" enough for newspaper style dry fish.

Some will work and some won't, so you are gambling when you do newspaper style. And we don't do newspaper style, but our girlfriend, one of our partners does and it's always a gamble if it's good fish or not, sometimes even before you do the cuts you pick the fish up and the skin slides off.

[. . . So the elders just think it's interbreeding with hatchery?]
R2: Don't know. R1: Some of them say, "don't get dogs from this stream" because the flesh will slide right off the skin when you start putting smoke to it, good for plain pack or fresh pack— it's good for freezing for boil fish later in the year during winter. Don't try to use it for… R2 náayadi R1:…fish and smoking. You can try it if you want, but…
[So certain streams you have to avoid if you want to do certain products?]
Yeah but sockeye has been consistent. We haven't had to worry about that. Cohos and everything else…
[You've noticed changes in coho too? What kind of stuff?]
R2: Mushy, soft, lack of…color. Just changes, you can tell the difference of hatchery… R1: Outwardly they are nice and bright, you get them home and get them in the smokehouse and that is usually when you really notice it, is when you start to put smoke through it. It won't let go of the moisture basically; what it is doing is—it just mushes up and slides off. R2: The quality is different, it's not good . . .it's something we never have to worry about with the sockeye. We know that when we do it for our family to give as gifts, we know what we do and how it worked…
[Hoonah02-05-090703-NR]

Value of Subsistence Salmon

Tlingit people value wild foods not only for their nutrition, but also more importantly for the spiritual connection to their land, culture, and ancestors. Some in Hoonah are also economically dependent on getting food from the land.

> *It's a treat for them because they can't get it down there. But they don't depend on it like the households here do. Down there they can go to the store and get hamburger and pork chops for a dollar something on the pound, where down here you pay three something a pound for it. Trade-off is we go out and get fish because we're physically able to do it and we know how to do it. R2: Its not an inexpensive proposition when you use the word subsistence. The connotations is that it is just enough to get you by and the reality, we go into the hole getting the so call" just to get by". It's very expensive and time consuming, a lot of energy to do it, more so than if we went to Costco and bought hamburger. It has less to do with trying to get by than it does with cultural and spiritual values. If you never catch a fish then you don't know what it is to go through the whole process. How do you know how to respect it and how to treat it? It has no value to it. It's a cultural event.* [Hoonah02-05-090703-NR]

The ability to harvest wild salmon provides the opportunity to share the catch.

> *You share, when you share it brings back blessings to you. And it may not be tangible…To the Tlingit,.to the Native people intangibles are as valuable as the tangible. Those aren't the words; they don't sit down like a college student and teach us word for word. They don't spend hours*

drilling it into our heads and brainwashing us. They usually do it by telling us to pay attention and watch; something you learn over years of being interactive with your own people. [Hoonah02-05-090703-NR]

The entire process of harvesting, processing and sharing salmon is considered healthy, medicine for the spirit.

Especially the elders when I go out to see them, to see them cheer up. It's just like medicine to them to work on it, because they can't get it there no more because of their health. And you take it to the elders and you give it to them, and boy right now they (sound effect) working on it, it's medicine for them. Just like my dad when I used to take him out every year he was like a teenager when we would come back home, getting our subsistence. Sometimes we would just go out for a joyride, but most of it was getting fresh deer, seal, sockeye, king salmon. I'd come down to his house and say, "I'm thinking about going out in my boat," (sound effect); he'd jump out of his recliner! I didn't say I was ready; I'm just thinking about it, yet. [Laughter!] [Hoonah02-01-090803-NR]

Continuity of Traditional Beliefs, Customs and Knowledge

Traditional Ecological Knowledge

Much of the Tlingit traditional knowledge is contained in stories that convey both knowledge and traditional "regulations" in the sense that the story conveys information about the ecology of salmon and also proper behavior toward salmon. The Salmon Boy story is an example with both Tlingit and Haida versions.

Because there are different legends of people that abused fish and stuff, and there are stories of them turning into fish, getting pulled into water and turning into fish. Talk of this one child that his mother gave him a copper necklace around his neck and he always abused fish, didn't want to use fish, didn't want to preserve it right, got moldy and real wasteful and one day he was playing down by the water and the fish took him. And a few years later he was up the river and his parents caught him. And his mom was going to cut the head off like they did over there and she recognized when she tried to cut it, she was cutting on that copper necklace, so she looked at it, looked at why the knife wouldn't cut the head off the fish and she recognized the necklace as her son's. So she took him down to the medicine man and the medicine man brought him back to human form again. And he told, related all the different countries he went to while he was migrating. And today when the scientists back in the sixties started tagging fish and stuff over there the story… The migration that the federal and state officials were keeping track of just verified what the Tlingits were talking about the fish migrating into the ocean and going all over the world for a few years and coming back again. The Tlingits

knew that a long time ago before they even started that fish tagging thing. [Hoonah02-02-091803-NR]

Monitoring Salmon Runs: One respondent recalled that his father knew which years were going to be good salmon runs by keeping track of the brood year.

*I know my dad did [*monitored salmon runs*] because he could tell you, "ok this year is going to be a good year for cohos. This year, this year, this year, were good years, so this year must be a good year", because cohos come back every so many years.*
[So he kept track of past years' runs?]
Yeah and he was an uneducated person, he had the eighth grade, he wasn't very worldly you might say, he knew that. He could tell you, "ok don't worry about it, as soon as it starts raining the fish will be here." Or he knew when they were going to come. We always went by what he would tell us, "Ok this is when it's going to happen." I don't know; we always managed to get our fish. [Hoonah02-04-090703-NR]

Some of the respondents reported that the Hoonah Tlingit used "indicators", long-term observations about nature that correlated with the timing or abundance of certain resources, to make in season predictions about the salmon runs.

There is indicators that go on in nature that tell us what is happening, "Oh yeah here comes the salmon because this, this, and this." I can use one example that does not have anything to do with salmon but it will give you an idea about how we know what's happening. When the pussy willows come out in the spring we don't hunt seal anymore. Unless we can determine which is the male and which is the female. Because the pussy willows on the branch is telling us that the seal is carrying pups. Those are the kind of indicators that we use. What's happening around us coincides with other happenings. And those are our indicators, rather than the calendar. [Hoonah02-03-090503-NR]

Two respondents mentioned associations between certain berries and salmon abundance, or run timing. One respondent said the sockeye run peaks when the elderberries turn red [Hoonah02-01-070503-NR]. It wasn't clear if he was speaking about sockeye runs in general or specifically the run at Hoktaheen. Another respondent remembered elders talking about a correlation between abundance of salmon and salmonberries.

[Did elders ever share any ways that they predicted or monitored the abundance of salmon coming back to the streams?]
I've heard a couple of different things, one being a whole lot of salmonberries, a whole lot of salmon coming back. And it's been true.
[Hoonah02-03-090503-NR]

Thunder was thought to have an affect on the berries and thus, might indirectly affect salmon indicators.

> *I have also heard, but not witnessed it enough to know if it's true or not that, this is mainly with salmon, but like if there is a thunderstorm at a certain time in the summer it can affect the berries.* [Hoonah02-03-090503-NR]

Observing salmon jumps at the mouth of creeks provides information about the salmon species and abundance. Each salmon species has a characteristic way it jumps and respondents described the differences.

> *Humpies jump higher, they land closer in the water from where they left.* [Hoonah02-04-090703-NR]

> *Humm… humpies are sort of a ker-plunk, ker-plunk bum plunk…[Laughter]*. [Hoonah02-03-090503-NR]

> *Coho's jump almost as high but land further away from where they started from.* [Hoonah02-04-090703-NR]

> *Coho's leap way out of the water and they land sideways or in such a way that you see this certain spray, I mean they have a certain spray when they land that other salmon don't have.* [Hoonah02-03-090503-NR]

> *Dog salmon don't jump at all, they just sort of flop.* [Hoonah02-04-090703-NR]

> *The dog salmon they are kind of heavy, I mean they are heavy so when they come out of the water they kind of flop on their side, in kind of a big circle or arc, dog salmon.*
> [What do they do?]
> *They are heavy so there're barely coming out of the water and then they'll hit on their side and then they'll jump again, go down, come up, jump again, kind of in a circle or an arc.*
> [You mean arc this way, you mean arc around?]
> *Yeah, water circle not up in the air.*
> [So they kind of come out…]
> *Sideways* [Hoonah02-03-090503-NR]

> *King salmon just sort of surge out of the water.* [Hoonah02-04-090703-NR]

> *King salmon, let's see if I can…they are just sleek the way they jump. That's about all I can say*
> [They make an arc?]

Yeah they are pretty fish to watch jump
[Do they jump like dogs *(dog salmon)* in a way?]
No they more jump like a silver or coho but they don't land like them; it's like you see on TV the way they're supposed to look [Laughter]. Really pretty.
[So they kind of arc out but they don't…]
Yeah not side ways or you know they be going straight. [Hoonah02-03-090503-NR]

Sockeye's jump pretty much like dog salmon, kind of flop. [Hoonah02-04-090703-NR]

And sockeye seem to like to dance on their tails. [Hoonah02-03-090503-NR]

Harvesters can tell the difference between male and female salmon when they jump by the size and the shape of their heads and bodies. Females tend to have smaller, pointed heads with heavier looking bellies. Males tend to be bigger with bigger heads and hooked noses. Dog salmon genders are particularly easy to distinguish [Hoonah02-03-090503-NR].

The frequency of salmon jumps can provide an indicator of abundance.

You can tell the abundance of it when a school comes in, used to be—I haven't see this in ten years or so—you could like when the humpies would come in, there would be so many of them ten years ago that it would sound like raindrops you know. Almost there were so many of them at the head of the inlet or something. You don't see that anymore; they're kind of sparse jumping here and there not all in a bunch and you know, hardly ever. Where you could see several fish in the air at once, you don't hardly see that any more. Another sign of the scarcity of our runs. [Hoonah02-03-090503-NR]

Stock Separation: The Tlingit people have stories that describe salmon migration routes. Elders know how the fish traveled to reach a particular stream. One way that Tlingit people identified different salmon stocks was by taste.

People know the taste of salmon; they all taste different. Not saying that makes a difference whether they are good or bad, but people can tell the difference and our elders are more able to tell the difference. They can tell when a salmon doesn't come from Excursion or from somewhere else. They can taste that. And as far as the migratory routes go the elders know where the salmon are going to be, they know how they migrate, where they—our local fisherman are smart, the sport fisherman would give their eyeteeth to know what our people know about fishing and the migratory routes, which way they go, which corridor they take, where do they hit, when they hit the beach and which way are they going when they get to the

beach. Our people know all of this, what the tides are doing to them. Bringing them where and when and how the rains, when they are going to go upstream, because of the rains, all this is observed by our elders, watched and passed it on to us which we see and know. [Hoonah02-03-090503-NR]

There are also size differences between different salmon stocks and preferences that people have for one stock over another.

[Is there, do fish look different from different streams?]
No, I think maybe in some streams you may be able to see a difference in size. More than a difference in looks. I have heard that the Neva stream in Excursion doesn't produce as large a humpies as does up in Homeshore, the stream farther up shore in Icy Straits. And that is not just restricted to that, there is, you hear it a lot, I'd rather get my fish out of here than there. And they have their reasons for it. Glacier Bay, all the people that ate food out of there say you can not match it anywhere else. They know when it comes out of Glacier Bay; they know when it comes out of somewhere else. [Hoonah02-03-090503-NR]

The elders say the first salmon to arrive back at the streams are usually younger, smaller salmon that have a special role to play in preparing the stream for the rest of the run. One respondent said there were no special rules regarding these early fish beyond the usual respect.

Yeah, fish will let you know when they are coming in and the elders have told us that the first fish that any run that comes in are like the scouts or they are the ones that prepare the stream for the rest of the run. So usually it is the smaller salmon and not as many of them, maybe the younger salmon are the ones. A better way to see it: the younger salmon move ahead and prepare the stream.
[Did they talk about how they prepare it?]
I've heard removed the grass or you know just… [Hoonah02-03-090503-NR]

[Were there rules about not taking those fish?] *No. The respect is there that they are to be respected. How I heard that was in the eighties I volunteered with the council and I wasn't the only one, there were others my age, we were young, younger, and they referred to us as those; we paved the way for the elders to come forward to do what they have to do. So they used that likeness. They compared us to those fish, the first run of fish coming in, the young ones preparing the way; that is how I first heard about it. I can't remember the Tlingit name they used or the term, but that is how it was explained to us. We were like those fish, the first.* [Hoonah02-03-090503-NR].

One respondent, who grew up in Tenakee reported that other salmon besides sockeye formed a greater part of his family diet when he was young. They ate dog salmon in all stages of the fish's life cycle. The spawned out salmon was used for boil fish. Each stage in the life cycle had a different term of reference.

> *They have about seven different names for dog salmon … there is a dog salmon that is out in the ocean, there is a dog salmon that comes inside, there is a dog salmon that they call "has tasted fresh water." He has gone into the river by the mouth of the stream and he starts to change color and comes back out in the salt water. There is a dog salmon that is in the river when he first gets in there, there is a dog salmon when he gets his big nose and starts turning real dark, and there is a dog salmon when he starts turning white and is getting ready to die.* [Hoonah02-04-090703-NR]

Traditional Rules and Customary Practices

Traditional values still function in contemporary subsistence fisheries. Each of the key respondents was asked if they followed any traditional rules when harvesting, handling or distributing their catch. The customary rules expressed by respondents included maintaining a deep respect for the fish and what nature provides, not to waste, to share, and to always leave something for tomorrow. Gratitude is central to the traditional practices and harvest.

> [What kind of traditional rules or are there any that you can think of that you follow in your harvesting, handling, distributing?]
> *The first thing that comes to mind is our gratitude for the fish that is given their life to us that we could continue to live. Then the gratitude to the water for bringing us those fish and sometimes it's even a matter of picking it up, Gunalchéesh (thank you), letting it run through your hands. But there is the thanking whether we are picking berries, even if we are hunting, we are grateful because we know that is life giving and we are taking that life while it gives life. So we must be grateful for the offering of the life we have been given, and not take for granted. Which also compels us not to waste.* [Hoonah02-03-090503-NR]

Traditional values are passed to the younger generation as part of learning how to harvest salmon. When asked what traditional rules he was passing on to his children, Thomas Mills Sr. replied:

> *Basically is that we don't waste anything. And that we won't wound a fish and we always keep an eye out for it and when we are all through dressing out our fish and stuff is that we'll go walk up the river and walk down the river and find the wounded fish that's if it's ready to die we bring it down and add it to the pile. And the other thing is you always respect the fish. Respect the fish like every other living animal. You didn't go over there and mutilate it before you killed it. That was one of the things we were*

taught never to do is to waste them. And the Tlingit stories that we were told for years and years and years that some of the fish might have human sprits in them, they may have come back as fish, or our relatives may be coming back as fish and maybe the animals that we are pursuing to put on our tables and in our freezers. So most of the time it's basically to treat it with respect, not to waste it, not to kill it for nothing. Because the fish is there for a reason and most of it's the reason we want the fish over there is to keep us fed. To keep our bodies nourished.

Mills said he shows respect to the salmon by positioning the fish so the head is facing up river, to let the spirit go upstream, when he cuts off the head of the salmon [Hoonah02-02-091803-NR].

Yes the kids all understand it, that when you first catch a fish they'll thank the fish for it and when you are starting to cut the head off fish over there the body is always pointing up river. And that is to insure that the fish's spirit will continue going up the river with the rest of the fish. There won't be a fish with its spirit wondering where it's supposed to go. And we just feel that it's intentions that Mother Nature wanted it to do is to go up the river, lay it's eggs, it's offspring goes down the river, circles thru the Pacific Ocean for a few years and then it comes back up to it's original spot where it's at. And in between times there's predators, whether it be humans, fish, or other mammals that are always feeding on them. And most of the time it's that they teach us to have respect for it being alive and it's nourishing us, food and things. Our way of life is that we are always harvesting food, harvesting something that is alive and we are putting it up for food.

Tlingit customs of respect and gratitude are linked to traditional spiritual beliefs.

I think traditionally, too, people have respect for everything; it wasn't abused. They take what they needed and they didn't waste it, didn't dare waste it because that was survival, as far as not wasting and taking what you needed. Plus being thankful, I think, this is my opinion anyway. I think God was more involved back then, than he is now, but to our people Dikáan<u>k</u>áawu that was God, that wasn't quote unquote missionary God. They knew of God long before missionaries ever came, ever, ever… there is old, old stories; there is all the love songs. There are so many love songs that sing about God, and this is way before, pre-missionary and there is a lot of having the missionaries push religion on our people made them veer away from it I think. And I'm not just blaming it on the missionaries, but that's part of it—and so as far as living off the land and being more attuned to nature, connected and getting things to where all these come from—it was God given and I think that the Tlingit people were more of a God fearing people long ago. And I'm not saying there isn't now but somewhere in between there was a big gap that happened.

There was a lot of damage; I think it turned a lot of people off, the true… [Hoonah02-04-090703-NR]

Respondents emphasized the close Tlingit relationship to nature and suggested that the clan crests gave them a sense of connection.

I think we think about it subconsciously we are so related to the ecosystem, you know, I'm Chookaneidí, I'm eagle, brown bear, we also have a coho clan, sockeye clan, dog salmon clan as well, so we are not merely thinking of fish. We feel a connection with that, we look at a dog salmon and we think oh I know so and so who is of the Dog Salmon Clan. We don't say that to ourselves but we have that respect and know that, that also helps enable us to always be grateful for this salmon because we are connected to them, we are related. We are all part of the ecosystem. [Hoonah02-03-090503-NR]

There were certain rules about how to treat salmon that illustrate the traditional culture of respect including not blocking the salmon from migrating upstream and avoiding bothering them while they were spawning.

Never stop them fish from going home. As a matter of fact when they are in the stream we are taught not even to bother them, because that is their quiet time, they are getting ready to spawn, they are getting ready to die. And you don't want to terrorize them.
[Other than gaffing and getting what you need?]
Right. You don't bother them anymore than that. Out of respect for what they are doing. They come back to spawn and die. [Hoonah02-03-090503-NR]

Some Tlingit people object to fish weirs for research, such as the one on the outlet stream of Neva Creek. They feel that the weirs interfere with the salmon returning to their spawning grounds, and the way fish are handled and marked for research contradicts traditional concepts of respect.

That's playing with the fish again that's against what I have just told you, you leave them alone, it's their quiet time, they have to do what they gotta do. And what are they doing, not only are they bothering them, but also they are touching them. Keep your damn hands off of them! And then cutting off that little fin in the back they are not just counting them, they are touching them. And removing a part of them. Our elders would be angry. [Hoonah02-03-090503-NR]

One respondent said they would harvest one fish from the stream and then wait until there was a sufficient amount of fish in the stream before harvesting the rest of their salmon.

> [Did you wait for a certain amount of fish to be in the stream?]
> *Oh yeah, you try to get the first one, see who could get the first fish of the year, and then afterwards you'd say don't worry about it. That was my dad's favorite saying, "don't worry about it, we'll get 'em."* [Hoonah02-04-090703-NR]

Another respondent said they got more than one salmon in their first harvest, but had the tradition of giving most of those salmon away. They would cook one salmon for their own sustenance, and prepare others for elders or whoever needed the fish.

> [Is there anything special that you were taught to do with the first fish caught of the season?]
> *The first, the very first? It's hard to say, it's hard to say one fish, you don't get just one fish, the first thing you do in preparing it is cook it up. You satiate your taste. And also while we are eating that first caught fish we are also working and preparing feeding us and giving us the energy to properly handle it all the way to preparation.*
> [So the first ones are eaten not smoked?]
> *Oh yes eaten and then assuming, and should be rightfully so that we have more than just one it will go to someone important, someone important in our family, either our mom or sick relative or even younger people, whoever, whatever the situation calls for, comes to mind right off, this person needs this fish it will go to them. Usually it's elders, could be somebody who is ill, could give them strength, but primarily it will be the elders who are thought of first. And distribution, single parents, you know you take care of the ones that are not able to go out and take care of themselves.* [Hoonah02-03-090503-NR]

Traditionally, when someone acquires an ancestral name at a *koo.éex'* (memorial party), they become the caretakers of the spiritual essence of the ancestor, and in some cases are considered to be the ancestor reincarnated. One respondent explained how he follows traditional customs by honoring the man who has his father's Tlingit name by sharing subsistence foods with him.

> [Are there any other traditional rule that you still follow?]
> *I like [*name*], I take him stuff because he's named after my dad. He's not really related to me, other than just being from the Snail House tribal wise. He's named after my dad, so I take him stuff just because he's got my dad's name.* [Hoonah02-04-090703]

Strategies for Ensuring Abundance: The Tlingit people had strategies for ensuring a sustainable yield of salmon. In addition to the traditional practices of not wasting and sharing harvests, people monitored the abundance of salmon in a particular stream, and if

there was insufficient abundance they got their salmon from somewhere else, or substituted other subsistence foods in place of salmon.

> [Did they ever pass down any way to insure that enough salmon are going to return for future years?]
> *If there is not a lot of salmon we will not harvest. That is just the way it is. This is the way we were told; it's been tried and true. If there is not a lot of salmon we will not bother with it. We'll get more deer meat or offset it another way, and there's been that, we've seen it. I'm not talking all species diminish at once, but sometime there is not a whole lot of dogs, we'll leave it alone. We'll go on, we have other foods. But there just will not be a lot of usage of that particular salmon. If it doesn't make a good showing we will take some, it depends again on the showing. But as usually if the run is small we will not take them.* [Hoonah02-03-090503-NR]

> [How much to you have to see to know that it is ok? What is the sign that it is ok to take?]
> *If we go look in the streams right now, we're not going to do a whole lot of fishing because there is not a whole lot of fish in there and we know that is not normal. I'm talking Hoonah side, there is not even a whole lot in the streams in the Excursion but there are salmon there, harvestable salmon. Here we won't touch them; we've been looking around at them and it looks like the humpies, one here, one there, I mean you can see spread out a few, compared to a whole lot that are ready to be harvested. We won't touch them, you don't see people harvesting them in the rivers right now; they won't. The fish haven't returned really.*
> [So what you are looking for to know it is ok?]
> *You saw the stream yesterday you knew that it was ok to harvest. You felt it, you saw it, you know. Same when we see that there is not many we're going to say ooh wow, and the word will be out that there is not many fish. Don't bother looking forward to it.* [Hoonah02-03-090503-NR]

Selective Harvests: Gaffing salmon is more like stalking a desired quarry and harvesters can pick and choose which individual salmon to harvest [Hoonah02-03-090503-NR]. When gaffing, harvesters can assess the ratio of males to females and harvest accordingly, taking the gender which is most abundant or most needed.

> *When we are harvesting like the way you saw yesterday* [with a gaff], *you pick which one you want, how many males you want if there is even—sometimes there is more males than females and you naturally just get more males than you would females— if there is even number then you know we're going to go for the eggs as well. The males provide, yield more meat, the females yield the eggs. They're all very important.* [Hoonah02-03-090503-NR]

A beach seine also allows harvesters to release unwanted fish.

In a beach seine what's there is there, and if we happen to get more fish in the seine than we need we will let them go we won't even tamper with them. We'll just take what we need and leave the rest, let them go. [Hoonah02-03-090503-NR]

Population Controls: One respondent reported that they used to eat mergansers, trout and Dolly Varden char as a form of predator control.

I've heard stories if you take, they have these what they call mergansers, red headed ducks, I've heard stories where you go out and kill, you shoot them get rid of them. If you can kill and kill 'em because they eat fish eggs. Same way a trout, you kill a trout and you can make dry fish out of trout. They eat fish eggs; if there are too many trout there won't be any fish, too many of those birds there won't be any fish.
[Do they eat the mergansers as well after they...]
Oh yeah.
[They eat them, but also part of the process was to...]
Get rid of them, because they're population control… Keep the population down. [Hoonah02-04-090703-NR]

When asked if predator control is still practiced now, the respondent answered:

I don't think so...There used to be an old, old man, [name]... he'd sit there and say, "I like redhead sonny boy...bring me a redhead!" That's what he wanted, merganser ducks, so I'd go out and bring him one once and a while. He liked them. There're fishy but I've eaten them; they are fishy. [Hoonah02-04-090703-NR]

Role of Elders: Many of the elders have passed on and those elders still in Hoonah are not in good enough health to travel to Excursion Inlet or Hoktaheen any more. Traditional knowledge is still transferred between harvesters and elders, however. One respondent said that when they bring elders salmon to share, this often sparks a story or memory, and in that way knowledge gets passed on.

[What kind of role do elders play in today's fishery?]
They sit and wait. [Laughter] And just be so grateful when it comes to their door. And through that process we could also gain information without seeking it. It will bring a story to mind or another something, we will get a peek into the past that we've never been privilege to because we were too young. So sometimes it will just bring stories of wisdom, without soliciting, just because we brought this.
[So then they share a piece of traditional knowledge…]
Yeah they will say so and so used to do this and we hear about it and we become privileged to information in that way, not because we are seeking it but because it reminded them of wanting to share it with us. We gain that knowledge. [Hoonah02-03-090503-NR]

[Do elders ever play a role in what is happening on the creeks?]
Not any more because the very sad part about it all is those elders are gone now, we only have a very few left and the few that we do have left are not physically able to go to those streams anymore so we learn from what they offer us in the telling. [Hoonah02-03-090503-NR]

Enforcement of Rules: Traditionally, elders served as the enforcement agents within the village. They still do to a certain extent, if they see someone disrespecting the salmon or being wasteful.

We operate the way it's been instilled and we wouldn't think of… I know of young people, young people go out and maybe goof off and do more killing then they intend, then should be, but that comes with any young group and as age comes on so does responsibility and all these other instilled things kick into place.
[When that happens do they ever get chewed out by the elders?]
Oh yes! Oh you don't see the young ones doing it in front of elders, never, never that would be so disrespectful they would get reprimanded so fast it wouldn't even be funny.
[So the elders don't find out about it?]
No it's like mischief making; that's what it is. [Hoonah02-03-090503-NR]

The Term Subsistence

Most of the respondents commented on the inadequacy of the English word "subsistence." It fails to convey the rich cultural and personal meanings associated with the practice of harvesting and sharing salmon and other wild foods. Moreover, for some, the word "subsistence" has negative connotations which elide the significant financial investment necessary in order to harvest and process the fish.

It's not an inexpensive proposition when you use the word subsistence, the connotations is that it is just enough to get you by and the reality we go into the hole getting the so call "just to get by". It's very expensive and time consuming, a lot of energy to do it, more so than if we went to Costco and bought the hamburger. It has less to do with trying to get by than it does with cultural and spiritual values. If you never catch a fish then you don't know what it is to go through the whole process; how do you know how to respect it and how to treat it? It has no value to it. It's a cultural event. [Hoonah02-05-090703-NR]

It's like his mom, she was raised on it, and she gets tired of the store food. I know it has a lot to do with her health, there is no preservatives, no oil; this is more health for her, and it's a healing thing I believe. It takes her back and she'll go off into memories, "Oh I haven't had this since..." and she'll go off into memories of her childhood, or what ever, cause since we have been married I try to give her different foods and things that she

hasn't had in a while, and you can just see her going down memory lane and it just lifts her spirit. It's just life. [Hoonah02-04-090703-NR]

DISCUSSION

Hoonah Harvest Patterns

The contemporary Hoonah subsistence sockeye fishery has been reduced to two streams, Hoktaheen Creek and Neva/South Creek. These provide most of the sockeye salmon for Hoonah, as reported on the permit data (ADF&G Alexander Integrated Fisheries database). In the past, traditional harvest patterns were more dispersed and the Hoonah people utilized many, if not all, sockeye streams within their territory. Streams, such as Berg Bay, Dundas River, and Surge Bay, which are barely used today, provided sockeye for families and clans prior to the mid-1900s. A review of subsistence permit information—as well as interviews conducted during this project and other relevant documents—all suggest that land management, fisheries regulations, and environmental conditions have historically contributed to changes in the Hoonah subsistence fisheries and continue to influence contemporary harvest patterns.

Exclusionary land management policies have contributed to the loss of traditional on-site salmon processing facilities. Interviews conducted in 1946 indicated that in spite of the consolidation of traditional villages to Hoonah in the early 1930's, families maintained smokehouses and fish camps or houses on sockeye streams in the Hoonah traditional area until the mid-1900s (Bosworth 1988; Goldschmidt and Hass 1998). U.S. Forest Service land management policies that favored white settlers, such as fur farmers, and National Park Service policies that favored non-consumptive uses of wildlife within the boundaries of national parks both contributed to the loss or forced abandonment of smokehouses and dwellings at the various fish camps (Goldschmidt and Hass 1998). Two respondents who harvest salmon at Neva/South Creek have smokehouses in Excursion Inlet; all other respondents and most Hoonah harvesters return to Hoonah to process their salmon.

The loss of on-site smokehouses may well have been a critical factor in the consolidation of fishing sites. At Surge Bay for example, the sockeye salmon pass quickly up the short outlet stream into the lake. Permit data shows Surge Bay is rarely used in the contemporary fishery. This is because Surge Bay is further from Hoonah than Hoktaheen Cove and requires travel through waters exposed to the west swell, but also because successful harvest at Surge Bay depends on timing one's arrival to perfectly coincide with the brief sockeye run. Were one able to remain on site, a successful harvest would be far more likely. One respondent suggested that he would return to his family's traditional area at Surge Bay, if through a native land allotment, his family could reside on-site during the fishing season [Hoonah02-01-090803-NR]. Respondents also indicated that tide and boat speed restrictions into Glacier Bay make Berg Bay logistically difficult to reach, fish, and then return to Hoonah within one day.

In the past subsistence sockeye harvests at more remote streams on the outer coast may have been combined with other activities such as trapping and seal and sea otter hunting, which aren't as prevalent. Some of the 1946 informants also mentioned hunting seals and sea otters and trapping on Yakobi Island and along the mainland as far north as Icy Point. Subsistence harvests may also have been conducted in conjunction with commercial fishing activities, particularly on the coast north of Cape Spencer. Also, people had fish camps with smokehouses and seasonal residences at particularly important locations, and processed the fish on site, making the distance and danger of the waters between Hoonah and the sockeye streams less of an obstacle. Today, even if people have boats with berths allowing them to stay on-site for longer harvesting periods, most processing takes place in Hoonah, with the exception of Excursion Inlet where a few residents have private cabins and smokehouses.

Subsistence and commercial fisheries management and policy have also influenced subsistence harvest patterns. The absence of Hoonah sockeye salmon streams on subsistence permits during the 1970s and 1980s likely influenced what areas were fished; but the direct impact was not addressed by this study because review of permit restrictions and management policies was not conducted until after the key respondent interviews had occurred. Data from household harvest surveys conducted in 1985, 1986, and 1996 shows more salmon harvested per household in 1996 than in 1985 and 1987, (Appendix Figure B-3) during the era when Hoonah's traditional streams were closed to sockeye salmon fishing. The data shows a significant increase in sockeye salmon harvests in 1996 than 1985 and 1987 with the majority of the difference in the number of sockeye salmon harvested using subsistence gear (Appendix Figure B-4). Given that the number of households in Hoonah was the same in 1985 and 1996 with a dip in the population in 1987 (Appendix Figure B-5), it appears that Hoonah residents may not have been getting the subsistence needs met during the 1980s

Changes in harvesting quantities might also be explained by research bias or changes in research methodologies. It is also possible that one or more years were an anomaly. It is odd that commercial gear provided more sockeye salmon in 1996 than previous harvest survey years, although there had been a significant decline in purse seine permits in the community during that decade. If there was a poor sockeye price in that year, purse seine captains may have shared a greater proportion of their catch with the community.

Strategies for harvesting sockeye salmon during the 1980's, despite the closure of these streams, may have included 1) ignoring the subsistence permits and harvesting sockeye salmon at local streams anyway; 2) harvesting salmon with commercial gear; and 3) fishing sockeye streams in Chatham, mainly Basket Bay, to get the salmon they need. The findings suggest that all three of these strategies may have been employed.

It is clear, however, that at least by 1987, Hoonah voiced discontent with ADF&G fisheries policy closing all Hoonah area streams for sockeye salmon. An ADF&G memorandum describes efforts by Hoonah to open Neva Creek for subsistence, and a petition by subsistence users of Hoonah complaining of the lack of state permits for subsistence sockeye salmon in Icy Straits. Two changes occurred in 1986 that may have

made it more difficult for Hoonah residents to satisfy their subsistence sockeye salmon needs. First, ADF&G stopped allowing commercial purse seine gear to be used in the subsistence fisheries prior to the early July opening of the commercial purse seine fishery. Second, ADF&G reverted back to the management of subsistence fisheries as it was in 1984; apparently in 1985 all closed areas and restricted species, such as coho salmon, were curtailed for one year in 1985 due to a judicial challenge of the subsistence laws (ADF&G January 1987 memorandum).

The results of ADF&G Subsistence Division harvest surveys in Hoonah in 1985 and 1987 indicate a significant difference in how people were getting their sockeye between the two years (Appendix Figure B-4). In 1985, the majority indicated they were using other gear besides commercial or rod and reel. Generally, the "other gear" category refers to subsistence gear such as gaffs, gillnets and beach seines; but in this case it may have referred to commercial purse seines being utilized under the subsistence permits. In 1987 following the prohibition on using purse seines under a subsistence permit, more sockeye salmon for home use were retained from commercial purse seine openings than before. One respondent's father was a purse seine captain during this era and reported that they satisfied their sockeye salmon needs by retaining sockeye for home use from their commercial catch. He indicated that crew members also took home sockeye salmon from the catch [Hoonah02-01-090803-NR].

One would expect a reduction in the ability Hoonah residents to acquire sockeye salmon for home use with commercial purse seines due to the attrition of purse seine permit holders since the institution of the limited entry program and the drastic reduction of purse seine openings in Icy Strait in the 1970s, coupled with changes in ADFG policies curtailing the use of commercial seine gear for subsistence harvests. The number of purse seine permits held by Hoonah residents dropped from 15 in 1976 to eleven in 1987, and then down to only three remaining permits in 2003, according to limited entry permit data and local respondents [Hoonah02-03-090503-NR]. The 1996 harvest survey data, however, shows a slight increase in sockeye salmon retention (Appendix Figure B-4).

We found no permit data for any species at Hoktaheen Cove before 1989 or for sockeye salmon from Neva Creek, also referred to as Cannery Creek, before 1990, except for a brief period when sockeye fishing was allowed in the 1960s. Early permit data prior to 1985 (which is not included on the Alexander database) and other memorandums and materials archived in the Subsistence Division files suggest some possible trends, although a thorough analysis is beyond the scope of this study. Some possible explanations include: 1) these sites were being used, but not reported on permits, 2) the sites were not being used, because it was either prohibited or discouraged by the subsistence permits, 3) the traditional users of these streams were removing sockeye for home use from their commercial salmon catch, 4) the distribution of canneries in the region changed the customary pattern of stream use, because cannery employees fished at streams convenient to the cannery site, and 5) the ADF&G policy of allowing fishers to fish with commercial purse seines for home use prior to the start of the commercial season facilitated the use of commercial gear for subsistence salmon harvest prior to 1986 when the policy was suspended. There is evidence to suggest that all of these factors

may have influenced where and how Hoonah residents harvested their sockeye for home use in the 1960s, 1970s, and early 1980s.

Families that relied entirely on Neva Creek for sockeye salmon may have continued to harvest them and not report it, or they may have harvested other species there instead. In any case, the key respondent with close lifelong ties to this area did not mention any gaps in his personal history harvesting salmon from Neva, except when he was in the Navy during the Vietnam War, and as a small child during World War II when the military occupied the area and elders considered the salmon unfit to eat due to pollution [Hoonah02-02-090403-NR].

The 1985 sockeye return to Basket Bay and Kanalku was poor and ADF&G responded by disallowing commercial purse seines to fish for sockeye pre-season. According to a 1987 memorandum, the concern was that "hundreds of milling sockeye" could be harvested in only a few sets. The memorandum states that the disappointing return of sockeye to Basket Bay and Kanalku Bay in 1985 "illuminated the need for a more extended harvest of sockeye salmon for monitoring and evaluation of run strength than could be managed with the allowed use of commercial purse seine gear." Given these concerns, it isn't clear then why ADFG continued to allow a commercial purse seine opening at Point Sophia with over three thousand sockeye harvested during a two week period (Statistical week 27-28) in 1987.

Fisheries managers have continued to allow openings at Point Sophia with a peak number of over 41 thousand sockeye harvested during statistical weeks 30 through 35 in 2001. Although it is doubtful that these are Hoktaheen sockeye, and questionable even that Neva sockeye would mill across Icy Strait from Excursion Inlet, these sockeye could be heading south to Basket Bay or Kanalku or possibly north to the Chilkat.

This study suggests that bag limits imposed on one stream due to poor returns impact other streams as effort shifts. The fact that Native residents no longer maintain fish camps or smokehouses at most of the sockeye streams means that harvesters need to travel long distances, often in dangerous water. The bag limits need to be sufficient to make the trip worth their while; while weather and water conditions self-limit how much sockeye salmon a harvester can safely carry back to Hoonah.

Today, most Hoonah residents harvest salmon within the Hoonah traditional subsistence area. Respondents mentioned that more people began using Hoktaheen when Neva was restricted to ten fish. This may be changing due to increases in the allowable annual limit for Neva sockeye salmon in 2003.

Quantity of salmon harvested by Hoonah households at a particular stream is not the only measure of the importance of a sockeye stream to the community. Respondents maintain strong emotional and cultural ties to their ancestral fishing areas, although in some cases, such as Surge Bay, the logistics of traveling to the site from Hoonah make use of the site unlikely.

Distribution Networks

The sharing of salmon harvests described by respondents can be generalized into four patterns of distribution: formal arrangements, special requests, informal gifts and ceremonial uses. These patterns of distribution differ in the degree to which: 1) the sharing is prearranged before the season, prior to a fishing trip, or spontaneously occurs after harvesting; 2) the level of processing prior to distribution; and 3) how well the harvest can be accommodated by the current permit system. In some cases, respondents indicated that recipients of their fish passed some on to others, so there can be several levels of a distribution system, which were not explored in this study.

Formal Arrangements

The formal distribution network exists over multiple years and contains a certain expectation of sharing by both harvesters and recipient households over time. Respondents reported being responsible for providing salmon for up to seven households, usually part of an extended family or clan. Recipient households often name the harvester on their permit as the "alternate person other than member of household fishing for permit holder..." Respondents then carry their permits with them to the fishing site and "fill" the recipient's permit. The recipient households depend upon and expect the specific harvester to provide them with salmon for home use each year. Typically, the harvester provides whole gutted salmon and the recipient household processes the salmon into the desired product. In essence, harvesters begin a season with a certain quota of salmon they need to fill to satisfy the needs not only of their individual household, but for all the households of their formal distribution network.

Special Request

A second pattern of distribution exists when harvesters actively ask elders, single mothers or others who the harvester suspects may need help getting the salmon, if they want salmon prior to a fishing trip. Or sometimes a member of the community will request salmon from the harvester. If there is a request for salmon, the recipient household writes the harvesters name on their permit as the alternative person fishing for the household and the harvester brings the permit with them when they go to their fishing site to increase their allowable bag limit.

Special requests are similar to formal arrangements in that harvesters know prior to fishing who they will be sharing their catch with, however they may not know prior to the start of the harvesting season. This inquiry-based distribution network might change from year to year; whereas the distribution of salmon by formal arrangements would be expected to be stable over time as long as the needs of the recipients don't change. Although the subtleties and elaboration of distribution systems were not explored in this study, one could imagine that the distribution of salmon by special request might in some cases evolve into a formal arrangement. For example, if a harvester is consistently providing salmon to a particular household over several years, the relationship might evolve into the harvester assuming responsibility for providing salmon to the household every year and the recipient expecting to receive salmon without asking. The difference

is in the level of expectation by recipient households and the level of responsibility harvesters feel toward supplying the household with salmon, particularly in years of low abundance.

In a culture that places such a high value on sharing, the functional differences between formal arrangements and distribution by special request may be superficial given that the high harvesters interviewed all expressed a sense of responsibility toward providing salmon to community members who otherwise did not have a means for getting their own salmon. In this case, Native harvesters will likely strive to fulfill their cultural obligations with or without formal sharing arrangements, even at the risk of exceeding annual harvesting limits. Given the reciprocal nature of these transactions, however, the harvester has the opportunity to request a permit from the recipient and assign their portion of the catch to the recipient's permit.

Informal Gifts

Harvesters also spontaneously share their catch and finished products with elders, single mothers and others in need, and as gifts for visitors to their homes. This is sometimes done anonymously with recipients having no knowledge of who left the finished salmon product on their doorsteps. Although the individuals receiving salmon do not expect to receive salmon from the source, sharing is a cultural value and respondents harvest salmon knowing that they will be sharing a portion of their catch with households who neither request nor expect to receive salmon from them. Any reporting of these salmon would have to occur as part of the harvesters' allowable bag limit.

The informal distribution network is a result of Tlingit traditional values and the imperative to take care of those in need. Respondents identified elders and single mothers as the likely recipients of this informal network. The informal distribution system is described in the following quote:

> *I see the senior citizen van and I know those people don't have relatives helping them out and they are too old to go over there an get their own fish and do it themselves now so most of the time I just automatically give them what I have.* [Hoonah02-02-091803-NR]

Ceremonial Use

A fourth means by which salmon from Hoonah gets distributed is through memorial parties and other ceremonial events. Harvesters generally know prior to the fishing season which memorial parties are coming up during the fall, and seek to harvest sufficient quantities of salmon to accommodate the need. Within the current permit system, any reporting of these salmon would essentially have to occur as part of the harvesters' allowable bag limit. Forty-day parties, which typically are held forty days after the death of a family member, can happen unexpectedly and respondents reported utilizing all the salmon they had put up for the year for such a party, leaving themselves with no salmon until the next season.

The results of this study suggest a strong cultural continuum of the Tlingit traditional value of sharing exercised by high harvesters. The nature of sharing in the Tlingit community appears to differ from the mainstream culture at-large in that those members of the native community with the means to harvest salmon will often give away significant portions of their catch, sometimes to the point where they do not have sufficient stores to accommodate their own household needs. Further, the act of sharing is an integral component of the customary and traditional harvest of salmon and is currently not being accommodated within the regulatory regime governing these fisheries.

Fisheries Management Concerns

Respondents and biologists described two distinct runs at Neva, calling the run with smaller sized sockeye "Neka Bay sockeye". Results from an ongoing stock assessment project at Neva suggest a difference in run timing between inlet stream spawners and beach (lake) spawners. Results from radio-tagging seventeen adults at the Neva weir in 2002 showed that main inlet stream (MIS) spawners entered the lake before beach (lake) spawners.

> *All the adult sockeye salmon that were radio tagged in the first quarter of the run (on or before July 7) spawned in the MIS and all the sockeye radio tagged after 40% of the run (after July 25) were tracked to beach spawning areas. The adult sockeye that passed through the weir between 25 and 40% of the run were a mixture of MIS and beach spawners. The radio tag results suggest that lake spawners comprised over half of the run.* (Van Alen 2004:40)

According to the above information, the escapement past the weir was a mixture of inlet stream spawners and beach spawners between July 16 and July 26 in 2002.

Weir data for Neva Creek in 2002 indicates that only 49% of the sockeye escapement had passed the weir while the system was open for subsistence fishing (Van Alen 2004). Neva/South Creek was closed after July 31st in 2003, but the season was extended in 2004 through August 15th.

Implications of the above information to the subsistence fishery, which was open from June 1 to July 31 in 2002, were that 1) there are two distinct sockeye runs at Neva Creek; 2) subsistence harvesters fishing prior to July 16 targeted main inlet stream spawners in 2002; 3) subsistence harvesters fishing between July 16 until July 26 targeted mixed stocks; and 4) the subsistence fishery exploited only the first half of the Neva run. These results suggest that the subsistence fishery was disproportionally targeting the main inlet stream spawners, assuming an insignificant travel time between the mouth of outlet stream where much of the subsistence fishing occurs, and the weir site at the beginning of the outlet of Neva Lake. In 2004, the Neva subsistence fishery the season was extended and remained open through August 15.

Generally, the subsistence sockeye fisheries have only been opened during a segment of the total sockeye runs at Hoktaheen and Neva Creeks. In recent years, Hoktaheen Cove fishery has closed after July 20, although sockeye have been observed in Hoktaheen Cove in August according to respondents.

The benefits of doing this include concentrating the fishery during the peak return of the run and precluding harvests of coho during the initial stages of that run in August. The disadvantage of this in the long term, could be a selection process that encourages survival of the sockeye coming in at the later part of the run. If there is a temporal separation in the arrival of sockeye that spawn in different inlet streams, then over time this management practice could diminish a segment of the run while maintaining a healthy population overall. In 2003, harvesters reported that the majority of the Neva run came in after the subsistence fishery closed. Whether this is an anomaly or a trend remains unknown.

Previous management philosophy has allowed commercial seine openings in inside waters after the majority of sockeye were expected to have entered area streams. Unfortunately, if the subsistence management protocol is changing the historic temporal rhythm of the sockeye run in favor of the latter segment of the run, then seine openings intended to harvest pink salmon may also be intercepting significant numbers of sockeye salmon.

Appendix Table F-1 shows the sockeye salmon catches by the commercial purse seine fleet at Point Sophia Area, Subdistricts 114-27 between 1960 and 2003. Catches of over 1,000 sockeye in a single statistical week occurred during every year except 1960, 1967, 1975, 1980, 1982, 1988, and 2000. The highest numbers of sockeye (41,824) were harvested from the Point Sophia Area in 2001, predominantly during statistical weeks 30 and 31. ADF&G management have expressed concern that if subsistence harvesters were allowed to fish mixed sockeye stocks in Icy Straits using commercial gear, there was the potential to overharvest one particular stock unknowingly. This concern would also seem to apply to the commercial fishery.

Historically, the purse seine fishery has been managed only for pink salmon, but catch statistics suggest that consideration should be given to potential impacts on local sockeye stocks. By-catch of sockeye salmon by the commercial purse seine fleet could have deleterious effects on subsistence sockeye stocks, if not at Neva Creek, then down the channel at Kook Lake, Kanalku Creek or perhaps north at Chilkat River. Our knowledge of the spatial and temporal patterns in which specific sockeye stocks move through the inside waters to their natal streams needs to be better refined to enable purse seiners to harvest surpluses of pink salmon in inside waters without impacting the less abundant sockeye stocks.

It is difficult to understand how high harvesters can meet their family, cultural and community obligations while still remaining in compliance with the current annual limits. Although few respondents in this study admitted to harvesting more salmon than reported, it is commonly understood by ADF&G management and subsistence staff that

permit numbers are underreported. Household surveys conducted by the Division of Subsistence have consistently shown higher harvests than the permit data would suggest. Subsistence fishers that harvest greater than allowable amounts generally only report the legal limit for their households, and depend on the households that are given salmon from their catch to report amounts received. As such, the permit data can't describe trends in the amount of salmon harvested because the bag limits cap the amount reported. While the numbers of reporting permits provide some trend information about fishing activity per site, the numbers do not distinguish between the numbers of harvesters who fished a particular site versus the number of households who received fish from the site and then reported it on their permits through the informal proxy system practiced in most Native communities.

Given the distance and dangerous waters that must be traveled to reach sockeye streams utilized by Hoonah and the relatively small boats used to travel between sites, the number of sockeye salmon taken by a party during a trip is self-limited not only by need and processing capacity, but by the weight that can be carried on the boat. Results from this study, suggest that fishing group size varies from one to six people in one or two boats, but generally a minimum of three harvesters per fishing group is required for gillnetting or beach seining. Whether the 50 sockeye possession limit for Hoktaheen is reasonable would depend on the number of households represented in the fishing group and their combined smokehouse capacity. We did not hear any complaints about the 50 sockeye possession limit for Hoktaheen during the study year. However, the twenty-five salmon allowed at Neva was considered insufficient, considering the gasoline and time investment required to travel from Hoonah to Excursion Inlet. In 2004, the bag limit was increased to 40 salmon, which should help to alleviate those concerns.

In 2002, when management biologists raised the possession limits at Hoktaheen from 20 to 50 sockeye salmon, they also instituted a 50 sockeye salmon annual limit. This annual limit may be too restrictive for high harvesters who provide sockeye to multiple households in several communities through formal, informal, and ceremonial distribution networks. Annual limits are also difficult to enforce and probably result in poorer reporting rather than serving to restrict harvests. We know of one situation where salmon caught at one site were reported to have been caught at another to avoid exceeding the annual and possession limits.

Hoktaheen Cove Subsistence Fishery

The danger and distance of traveling to Hoktaheen, in particular, serves to limit the number of trips, harvesters would take to the site. Harvesters who are consistently providing for Native communities through formal, informal and ceremonial distribution systems need to be able to accurately report their catches without fear of legal reprisals.

For those harvesters who characteristically make day trips to Hoktaheen, adding extra time to the cleaning and gutting process by requiring the removal of the dorsal fin can be a safety consideration, because generally they are trying to get back through South Inian Pass into Icy Straits during the slack water, before the tide changes and begins ebbing.

Neva Subsistence Salmon Fishery

Both local subsistence harvesters and biologists recognize two runs at Neva Creek. The earlier sockeye salmon run at Neva spawn in the inlet streams. The later segment of the run spawns on the beach fringes of the lake, according to Ben Van Alen, USFS project director for the biological assessment project at Neva (pers. communication 7/22/04). Seasonal closures around the end of July as in 2003, target the early part of the run or the inlet spawners. In the past two years while there has been a weir at Neva, only about half the escapement had been realized when the subsistence season was closed. The 2003 seasonal openings concentrated the harvest of sockeye on the leading edge of the run, causing a higher exploitation rate on the inlet stream spawners.

Proxy fishing

Restrictive proxy regulations are not conducive to accurate catch reporting. The pattern of collecting permits from other households unable to fish for themselves is common in Native communities. It isn't clear if these fish are getting reported, and even if they are, the permit data does not reflect how many people are actually doing the harvesting versus how many are receiving fish that they report on their permits. A system where the harvesters can legally report how many salmon they catch and the number of households to which they distribute salmon would better reflect trends over time. For example, the data shows a steady increase in the number of permits and reported sockeye salmon harvests from Hoktaheen from a low of two permits in 1990, peaking at 45 permits in 1997, when there were strong sockeye returns to Southeast Alaska, then a drop in permits reporting Hoktaheen through 2000 (Appendix Table H-1 and H-2). It is unclear if this trend reflects more people harvesting sockeye salmon at Hoktaheen, or rather a wider distribution of sockeye from higher harvests.

CONCLUSIONS

This research provided an in depth inquiry into the contemporary Hoonah subsistence fishery. Although the respondents were not chosen randomly, precluding direct generalization to the overall population of Hoonah subsistence harvesters, the personal insights and stories shared during this research reflect general trends that have been observed and quantified in past harvest surveys and in ongoing data collected from subsistence permits. The value of qualitative research is in the details provided by in-depth interviews. The research suggests the following findings concerning harvest patterns, management concerns, and traditional ecological knowledge:

Harvest Patterns

Hoonah residents are more dependent on using subsistence gear to harvest sockeye for home use than in the recent past when there were more residents involved in commercial purse seining.

Dog salmon is provided free of charge to the community by a purse seine captain and crew that get a special permit for Excursion Inlet every year, a practice that has been documented on permit data as early as the 1960s.

A few high harvesters seem to be providing sockeye salmon for most of the community. Sockeye salmon is predominantly harvested from Hoktaheen and Neva/South creeks utilizing subsistence gear. There was less subsistence gear utilized on specific area streams when ADFG policy allowed harvesters to pool permits and utilize commercial gear to harvest sockeye salmon from mixed stocks in Icy Straits up until 1986.

Although, the trend has been away from using gaffs in streams in favor of net fisheries at stream mouths, gaffs are still used and are the predominant method relied upon by at least one family at Neva Creek. A past ADFG policy discouraged the use of gaffs in the 1970s and 1980s.

Some Hoonah residents harvest sockeye salmon only at Hoktaheen Cove.

Neva Lake which outflows into Neva Creek and then South Creek is one of the most important subsistence sockeye salmon systems for Hoonah residents, second only to Hoktaheen Cove in terms of permits fished and numbers of sockeye salmon reported on subsistence permits.

Some Hoonah residents are entirely dependent on Neva Creek for their subsistence salmon needs. These residents grew up in Excursion Inlet, learned to fish at Neva Creek, still fish in the same fishing holes where their ancestors fished, and still use the traditional gaff technology, essentially unchanged since before Europeans arrived in Southeast Alaska.

The Haines selected land encompasses access routes to traditional fishing holes on Neva Creek and South Creek.

Some residents depend on harvesting sockeye salmon from both Neva/South Creek and Hoktaheen to fulfill their subsistence needs, especially given the annual bag limits currently imposed by the subsistence permits at each site. The Neva Creek fishery stays open longer, so some harvesters go first to Hoktaheen Cove and then finish their season at Neva/South Creek. Most of these harvesters use gillnets or beach seines at the mouth of South Creek.

A relatively small group of high harvesters provide sockeye salmon for the native community in Hoonah. Harvesters may regularly provide for seven to fourteen households, in addition to informally distributing salmon to elders, single mothers and others in the community whenever they recognize a need. The actual number of sockeye salmon harvested for home use from Neva/South Creek and elsewhere is underreported on the subsistence permits due largely to the individual household focus of these permits, which does not accommodate the widespread sharing and distribution that occurs.

Sockeye salmon from Hoonah harvesters is distributed to the Tlingit community at-large in the form of gifts of salmon during traditional memorial parties held in Hoonah. These ceremonial events are often attended by 150 to 250 guests from Hoonah and other native communities.

Both beach seines and gillnets are used at Hoktaheen Cove and Neva/South Creek. Gear selection is largely based on weight and site conditions.

Gillnets are the preferred method by some harvesters because they are lighter when wet than beach seines, and therefore easier to handle and safer to transport in rough weather, and they can also be operated with fewer people than beach seines.

Beach seines are less fragile than gillnets, cheaper when made from remnants of commercial purse seines, easier to remove the catch from, and preferred when the stocks are mixed so as to easily release undesired species.

Gaffs continue to be made and used in the traditional manner. The barbless gaff hooks are species specific, designed to minimize loss and damage to the flesh and require skill to operate. Stream conditions and customs facilitate the retrieval of struck salmon.

Homemade treble hooks for snagging salmon in fresh water have been used by at least two generations, and continue to be used on a limited basis. Snagging with treble hooks made from manufactured halibut hooks, requires less skill to make and operate than traditional gaff hooks.

High harvesters provided salmon for numerous native households within Hoonah and other communities including Juneau. Salmon, both processed and unprocessed, is distributed within Hoonah to family, clan relations, friends, elders, single mothers and others in need of salmon. Processed salmon was also distributed to relatives in other Southeast Alaska communities and other states. Harvesters also provided significant numbers of salmon, both processed and unprocessed, for ceremonial gatherings.

In one case study, respondents distributed salmon to recipients representing fourteen known households in addition to ceremonial celebrations and other casual sharing that occurred.

Harvesters generally know, prior to the fishing season, which ceremonial events are coming up during the fall and seek to harvest sufficient quantities of salmon to accommodate the need. However, unexpected deaths in the family have resulted in unexpected distribution of harvesters' entire subsistence salmon harvest to provide for the "forty day memorial party".

Management Concerns

The current subsistence salmon permitting system does not accommodate the harvest and distribution patterns of Hoonah. To compensate, harvesters gather permits from other

households and fish their permits for them, neglect to report their entire catch, or where annual limits apply, they may report the catch for another site.

If subsistence salmon managers want more accurate reporting of harvest numbers and harvest locations, as well as who is doing the actual harvesting, the permit system needs to be adjusted to accommodate the significant sharing of salmon that occurs within the Native community.

Patterns of use between areas shift in response to management policies such as possession and annual limits. Changes in bag limits do not, however, fully explain patterns of use, including a spike in the number of permits reporting fishing at Neva/South Creek every four years since 1992.

Word-of -mouth is a predominant source of information about subsistence regulations in Hoonah. Among the high harvesters interviewed, few read the regulation book, and one respondent reportedly did not read the information contained in the permits.

Erroneous ideas about fishing regulations are held by some harvesters, including a misunderstanding about what constitutes a "set" gillnet, and the boundaries of the open area at Hoktaheen Cove.

Confusion exists concerning dual state and federal management at Neva/South Creek, in particular whether state or federal subsistence rules apply in freshwater.

Respondents perceived no impacts to sockeye salmon abundance at Hoktaheen Cove and significant impacts to Neva Creek sockeye salmon dating back to the military occupation and continuing with cannery operations in the area.

Only one account concerning a conflict between subsistence harvesters and commercial fishermen was reported for Hoktaheen. Disturbances of the subsistence fishery by recreational boaters, often sport fishermen, occur at Hoktaheen when sport boats scatter school of sockeye salmon within Hoktaheen Cove. These incidents could be avoided if boaters slowed down when entering the cove.

Illegal fishing occurs at Neva Creek, as evidenced by a homemade harpoon gun and trident spear hidden near the main gaffing hole. Because these are so unlike fishing implements used by local harvesters, respondents suspect cannery workers are mostly to blame. Respondents reported that past cannery management practices allowed workers to freeze fish. This resulted in competition for salmon resources between local Hoonah harvesters and non-resident workers.

Traditional Ecological Knowledge

The continuity of traditional values and customary rules includes sharing the catch, respecting the resource and avoiding waste.

Traditional customs still practiced by some harvesters include facing a salmon upstream during gutting to facilitate the upstream migration of the salmon spirit.

Traditional beliefs include a correlation between the timing and abundance of certain berries and salmon runs.

A high value is placed on the traditional and customary harvest of salmon for home use, which is poorly described by the word "subsistence" – a word that for many Native people reduces the process to the procurement of sustenance, impoverishing the rich cultural meaning and value entwined with the process of harvesting, processing, eating and sharing salmon.

RECOMMENDATIONS

Research

Additional studies in these areas would help inform our understanding of subsistence sockeye harvest patterns and sockeye salmon stocks.

- Conduct more detailed analysis of potential impacts subsistence fisheries management has had on the sockeye salmon stocks, concerning the timing and abundance of sockeye stocks in relation to seasonal openings and closures and possession limits and the interrelationship of how a limited bag limit or seasonal openings on one stream might affect the other sockeye streams within the traditional area of Hoonah and other nearby communities such as Angoon and Haines.

- Conduct further studies on the interrelationship between locally owned purse seine permits and subsistence fishing activities including the impacts on subsistence salmon harvest patterns related to the decrease of purse seine permits owned by Hoonah residents.

- Conduct genetic or other stock separation studies to determine the sockeye salmon stocks being caught in Icy Strait and Chatham Strait commercial fisheries.

- Monitor competition between subsistence harvesters and cannery workers or nonresident sport fishermen at Neva/South Creek. The amount of Neva salmon being shipped out of Excursion Inlet by nonresident harvesters should be quantified.

- Conduct a more in depth study on distribution networks including second and third generations of sharing by recipients.

Management

- The land surrounding Neva Lake and its outlet should be protected to maintain salmon habitat and access to the subsistence fishery. The state should reserve water rights for the watershed to ensure adequate water levels for salmon.

- Restrictions and better enforcement should be considered for nonresident sport fishing and potential illegal harvests by cannery workers if determined to be impacting the subsistence fishery.

- Remove regulations requiring the removal of the dorsal fin to mark subsistence caught fish to avoid prematurely exposing salmon flesh to bacteria and to help accommodate the need for Hoktaheen harvesters to return quickly and safely to Hoonah by the tide change. If enforcement is concerned about recognizing subsistence caught salmon, require the removal of the dorsal fin only if the fish are being transported by boat without the subsistence gear used to catch them.

- Subsistence harvesters need to be able to accurately report their catches without fear of legal actions, and managers need to know the actual catches and sites being fished in the Hoonah area.

- Harvesters catch more fish than they report, but these salmon are widely distributed to numerous households. The permit system needs to be adapted to the customary and traditional practices of the Hoonah Tlingit people and managers need accurate information concerning amounts needed for subsistence use. This might be accomplished in several ways: 1) adapt the permit system to accommodate the significant customary and traditional sharing that occurs within and beyond Hoonah; 2) remove the annual limits from Hoktaheen and Neva Creek sockeye salmon; or 3) allow for special commercial purse seine openings to accommodate increased need for memorial parties on a year to year basis.

The best option to manage for both the native and n]on-native cultures may be to have special community harvester permits, designed to accommodate the widespread distribution of sockeye through the community by a small group of high harvesters in Hoonah. This permit could perhaps be available and administered through the Hoonah Indian Association, which would have the responsibility to report the number of sockeye caught on these permits by statistical week.

> *It would be really nice if they would work something out that would… you know…there is only a few of us who really, really help for the parties here in town. And if they could work something out so we could get it for them, just specifically for the parties that would be fantastic, then that way I can at least have my share and I can still share with the elders and whoever*

comes to visit and stuff I always give it to them. You know stuff like that and if we can, if they could work something out that would be fantastic.
*[*Maybe some kind of special permit or something through H.I.A?]
Yeah.
[Some special...]
Needs permit for <u>k</u>u.éex', potlatch, memorial potlatch.

It is the legal responsibility of managing agencies to provide for the traditional and customary use of wild resources. On the other hand, it is the personal responsibility of harvesters to help establish the amount of salmon needed. Without this information, managers are ill equipped to provide a subsistence priority in times of shortage. We recommend that the Hoonah people work through the regulatory process, and directly with federal and state managers, to address the management problems identified in this study.

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Interview Codes

Hoonah02-01-070503-NR: Richard Dalton Jr., interviewed by Nancy Ratner during participant observations at Hoktaheen Cove, July 5, 2003. Not recorded.

Hoonah02-01-090803-NR: Richard Dalton Jr., interviewed by Nancy Ratner in Hoonah, September 8, 2003. Transcript by Mathew Brock.

Hoonah02-02-090403-NR: Thomas Mills Sr. interviewed by Nancy Ratner at Neva Creek in Excursion Inlet, Alaska during participant observations, September 4, 2003. No recording.

Hoonah02-02-091803-NR: Thomas Mills Sr. interviewed by Nancy Ratner at Excursion Inlet, Alaska on September 18, 2003 while video-taping the making of a traditional gaff hook. Transcribed by Mathew Brock.

Hoonah02-03-090503-NR: Wanda Culp interviewed by Nancy Ratner in Hoonah, Alaska on September 5, 2003. Transcribed by Mathew Brock.

Hoonah02-04-090703-NR: Confidential, interview conducted by Nancy Ratner in Hoonah, Alaska on September 7, 2003. Transcribed by Mathew Brock.

Hoonah02-05-090703-NR: Confidential, interview conducted by Nancy Ratner in Hoonah, Alaska on September 7, 2003. Transcribed by Mathew Brock.

Hoonah02-06-091903-NR: Lyle James, interview conducted by Nancy Ratner in Douglas, Alaska on September 19, 2003.

Personal Communications

Belton, D. 2005. Hoonah Indian Association, Natural and Cultural Resources Director, Letter to Haines Planning Commission, Dated January 5, 2004, but actually sent January 5, 2005.

Belton, D. 2005. Hoonah Indian Association, Natural and Cultural Resources Director, Letter to Nancy Ratner, Subsistence Resource Specialist, Division of Subsistence, ADFG, August 17, 2005.

Fifield, T. 2003.U.S.Forest Service, Craig Ranger District archeologist, personal communication, October 2003.

Mills Sr., T. 2005. Longtime Tlingit resident of Excursion Inlet, personal communication, September 7, 2005.

Peck, C. Jr. 2001. Tlingit elder. Personal Communication.

Van Allan, B. 2003. Subsistence Biologist, US Forest Service. Principal investigator for Stock Assessment of Neva Creek. Personal Communication, June 2003.

2004. Personal Communication, September 13, 2004.

2005. Personal Communication, September 8, 2005.

APPENDIX A. SITE MAPS AND AERIAL PHOTOGRAPHY

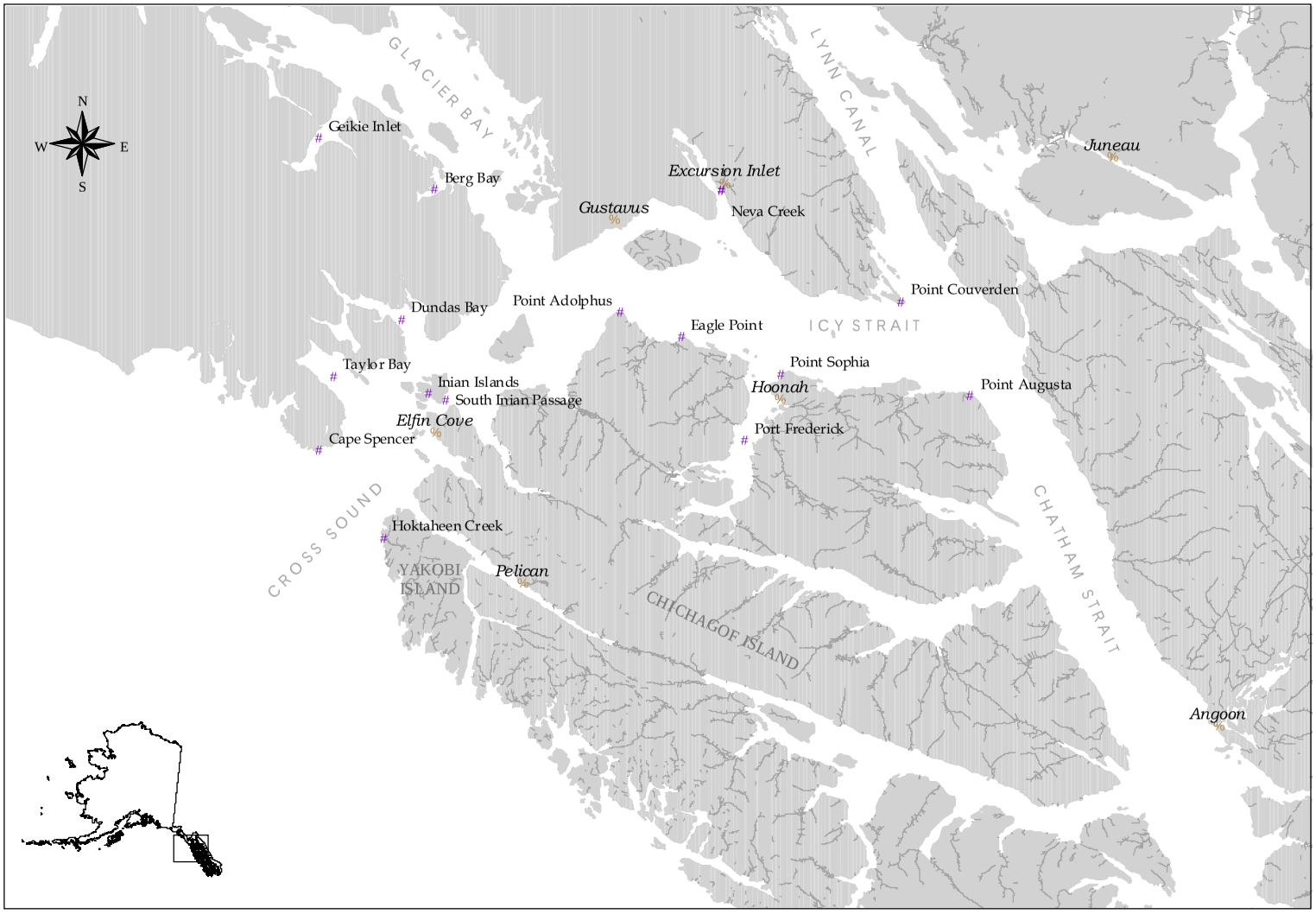


Figure A- 1. General Hoonah Area Map

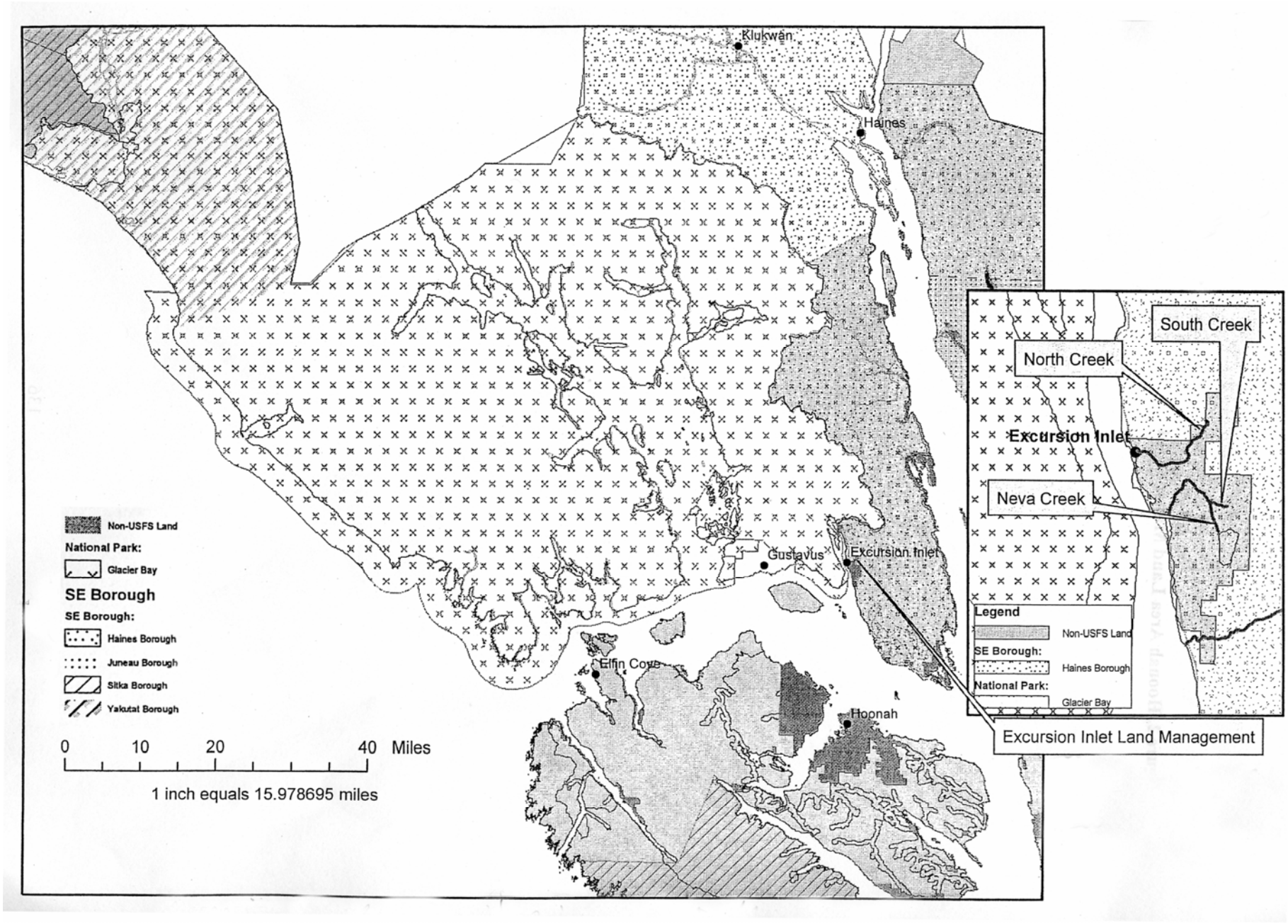
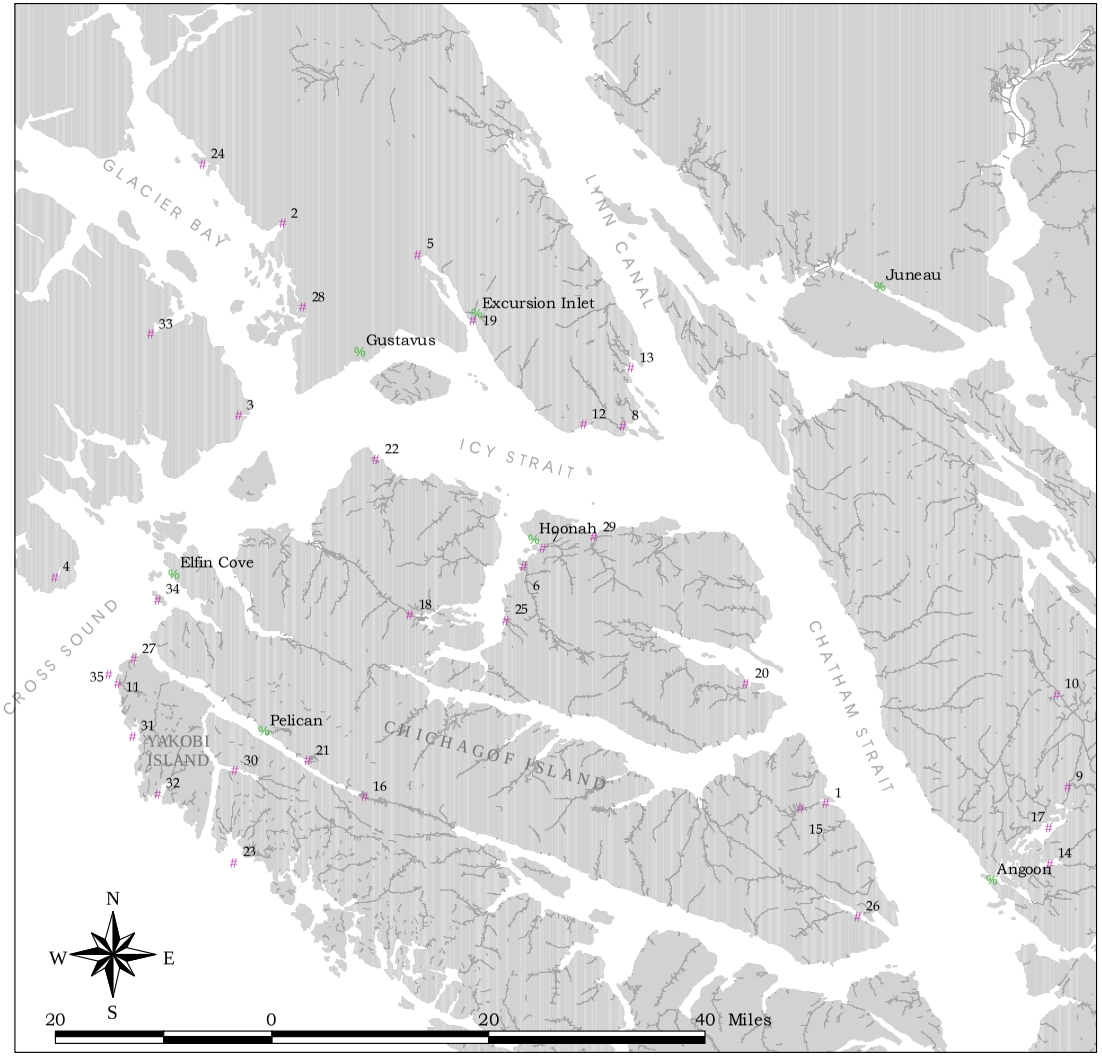
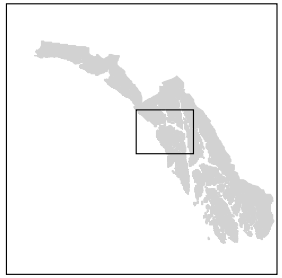


Figure A- 2. Hoonah Area Land Management



Legend:
1. Basket Bay
2. Beartrack River
3. Carolus River
4. Dicks Arm
5. Excursion River
6. Game Creek
7. Gartina Creek
8. Groundhog Bay
9. Hasselborg Creek
10. Hasselborg Lake
11. Hoktaheen Cove
12. Homeshore Creek
13. Howard Bay
14. Kanalku Bay
15. Kook Lake
16. Lisianski River
17. Mithchell Bay
18. Neka River
19. Neva Creek
20. Pavlof Harbor
21. Phonograph Creej
22. Pinta Cove
23. Porcupine Islands
24. Sandy Cove
25. Seagull Creek
26. Sitkoh Bay
27. Soapstone Cove
28.Sockeye Creek
29. Spasski Creek
30. Stag Bay
31. Surge Bay
32. Takanis Bay
33. Tall Grass Creek
34. Three Hill Island
35. Yakobi Rock



Map layout and design: ADFG Division of Subsistence, Juneau, AK

Figure A- 3. Hoonah Fishing Sites and Other Points of Interest

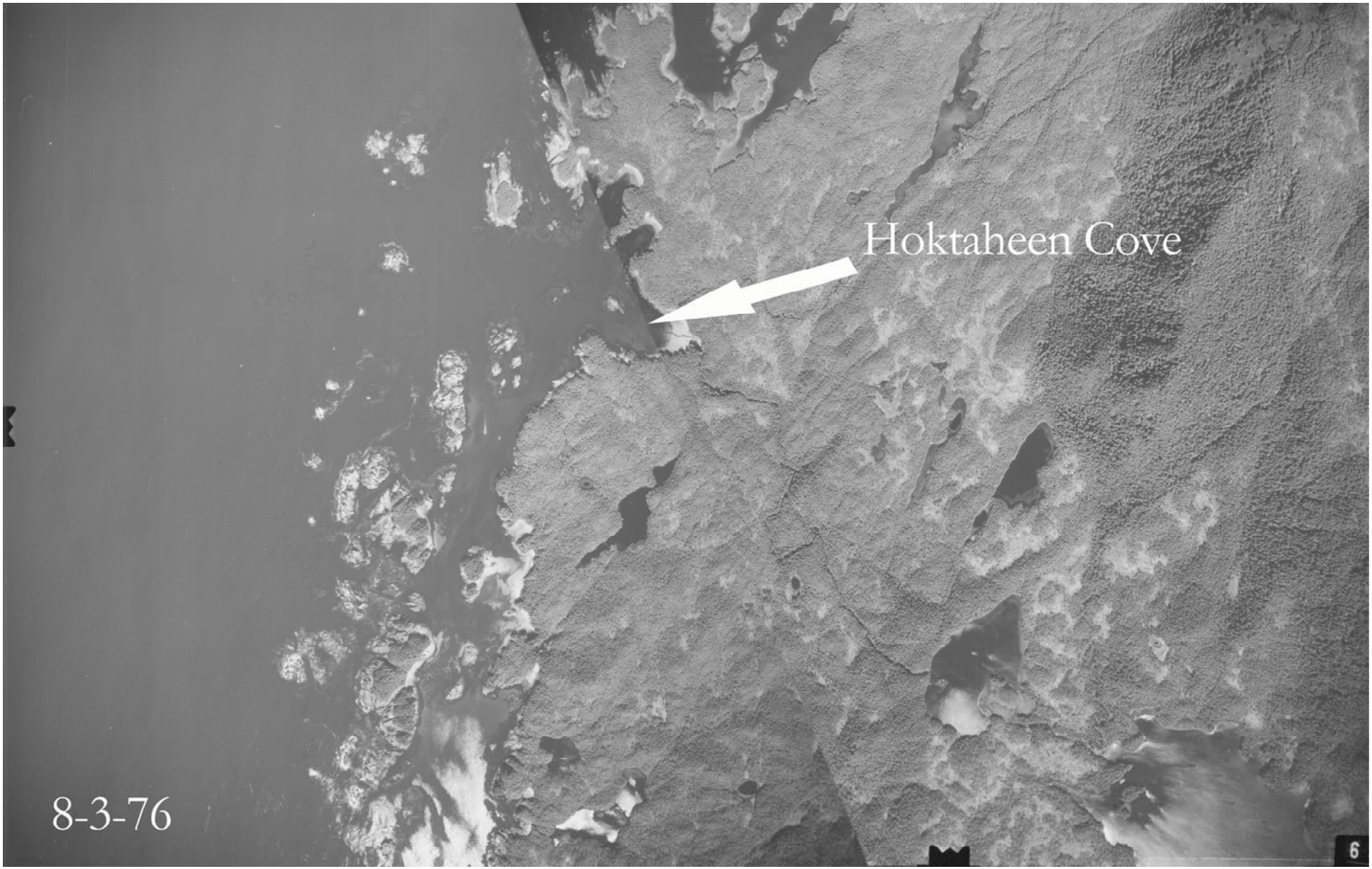


Figure A- 4. Aerial Photograph of Hoktaheen Cove

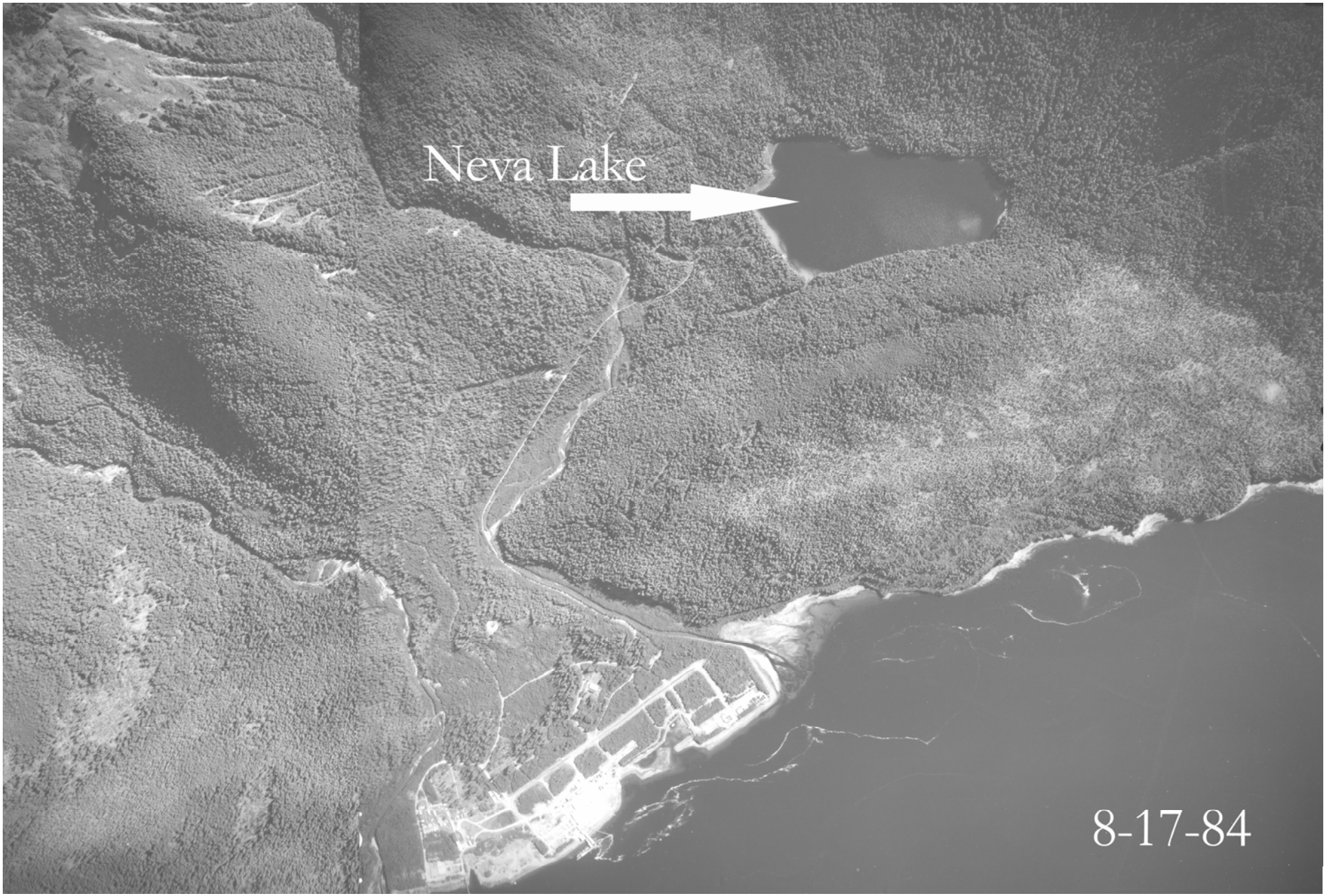


Figure A- 5. Aerial Photograph of Excursion Inlet and Neva Lake Watershed

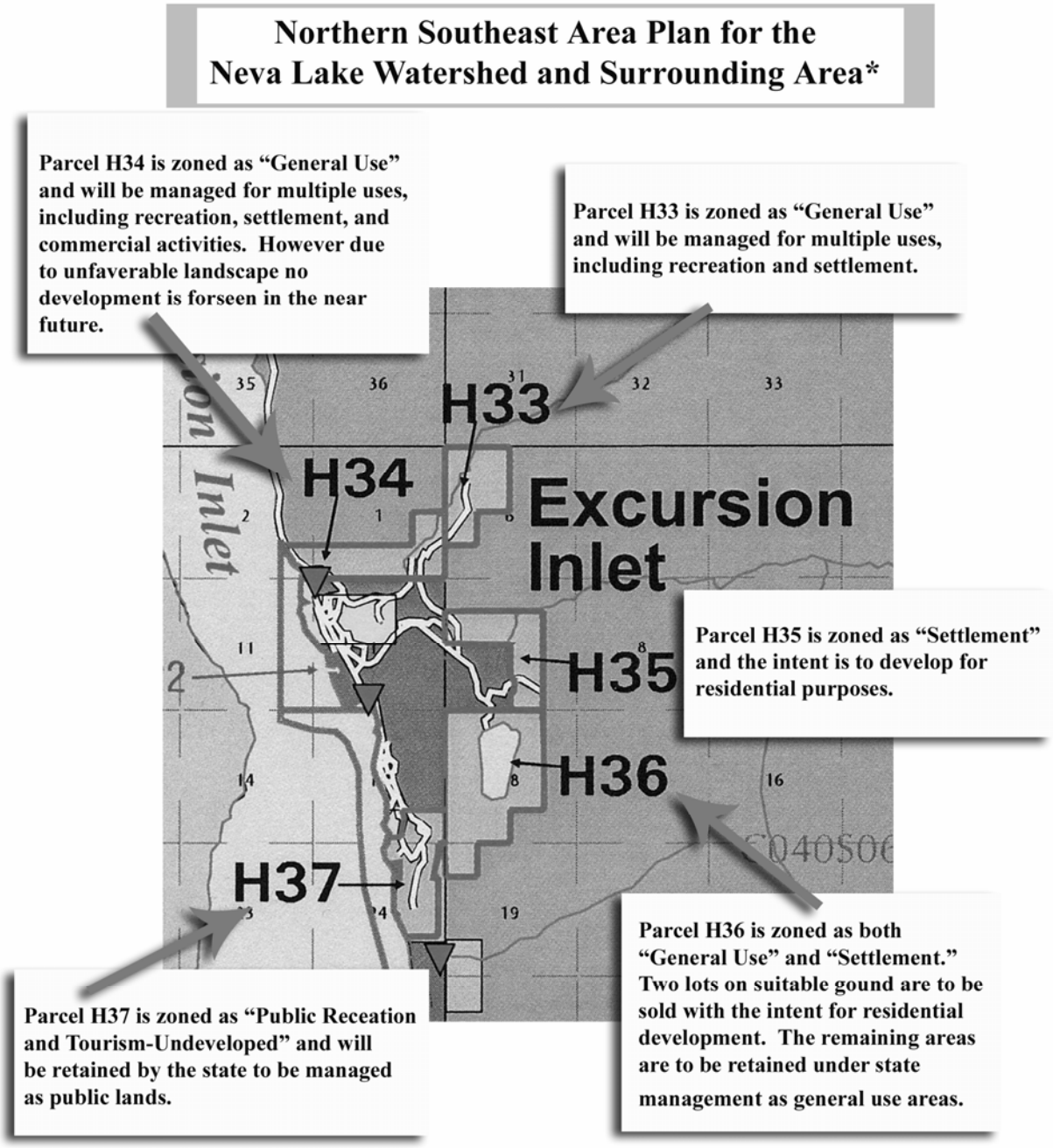


Figure A- 6. Northern Southeast Area Plan for the Neva Lake Watershed and Surrounding Area

APPENDIX B. HOONAH SUBSISTENCE HARVEST SURVEY DATA

Table B- 1. Hoonah Households using, harvesting and sharing wild resources in 1996, expressed as a percentage of total Hoonah households.

Resource	Using	Trying	Harvesting	Receiving	Giving
All Resources	97.4	94.8	94.8	89.50	77.9
Fish	90.9	85.7	81.8	80.5	66.2
Salmon	85.7	76.6	74.0	63.6	57.1
Chum	50.6	39.	35.1	27.3	24.7
Coho	68.8	58.4	54.5	32.5	37.7
Chinook	72.7	63.6	55.7	41.6	41.6
Sockeye	64.8	46.8	42.9	36.4	28.6
Unknown	1.3	1.3	1.3	0.	1.3

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

Table B- 2. Percentage of Hoonah Households Harvesting Salmon by Gear Type, 1996

Resource	Subsistence Methods					Removed from Commercial Catch	Rod and Reel	Any Method
	Set Net	Floating Net	Seine	Other	Any Subsistence Gear			
Salmon	5.19	2.60	19.48	2.60	32.47	25.97	54.55	74.03
Chum Salmon	2.60	0.00	5.19	1.30	12.99	10.39	15.58	35.06
Coho Salmon	2.60	1.30	2.60	1.30	9.09	19.48	37.66	54.55
Chinook Salmon	0.00	0.00	1.30	1.30	2.60	20.78	41.56	55.84
Pink Salmon	0.00	0.00	1.30	2.60	3.90	9.09	20.78	32.47
Sockeye Salmon	3.90	2.60	19.48	0.00	27.27	9.09	12.99	42.86
Unknown Salmon	0.00	0.00	1.30	0.00	1.30	0.00	0.00	1.30

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

Table B- 3. Top Ten Resources Used by the Most Households in Hoonah, 1996

	Hoonah 1996	% HH
1	Halibut	75.3%
2	Deer	74.0%
3	Chinook Salmon	72.7%
4	Coho Salmon	68.8%
5	Sockeye Salmon	64.9%
6	Clams	62.3%
7	Dungeness Crab	61.0%
8	Black Seaweed	59.7%
9	Harbor Seal	55.8%
10	Chum Salmon	50.6%

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

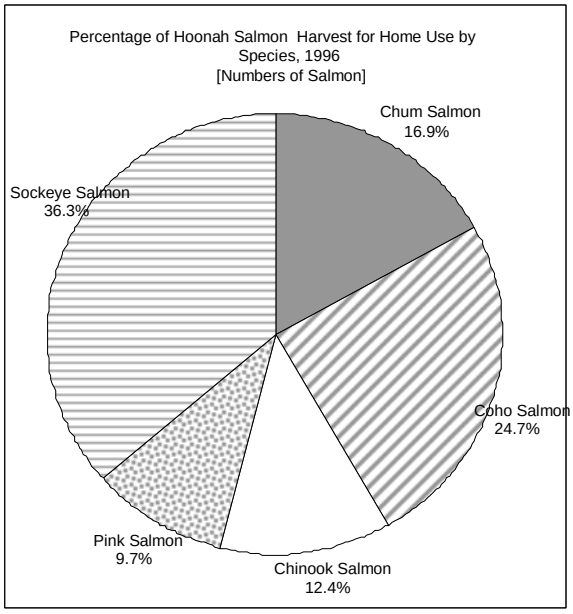


Figure B- 1. Numbers of Salmon by Species Harvested by Hoonah in 1996 for Home Use, as a Percentage.

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

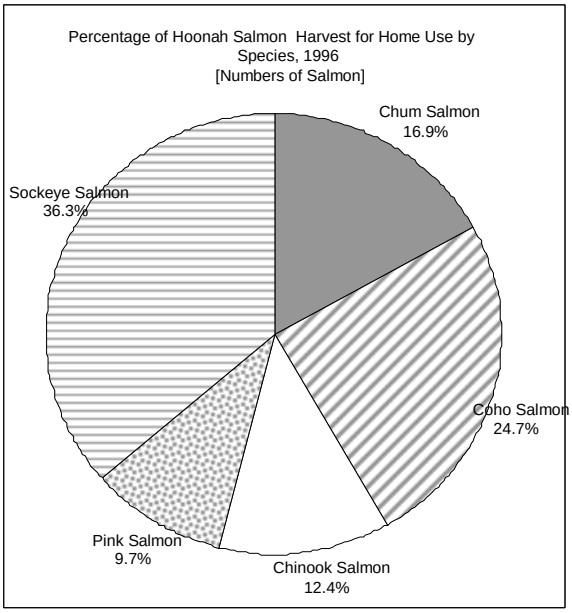


Figure B- 2. Pounds of Salmon by Species Harvested by Hoonah in 1996 for Home Use, as a Percentage

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

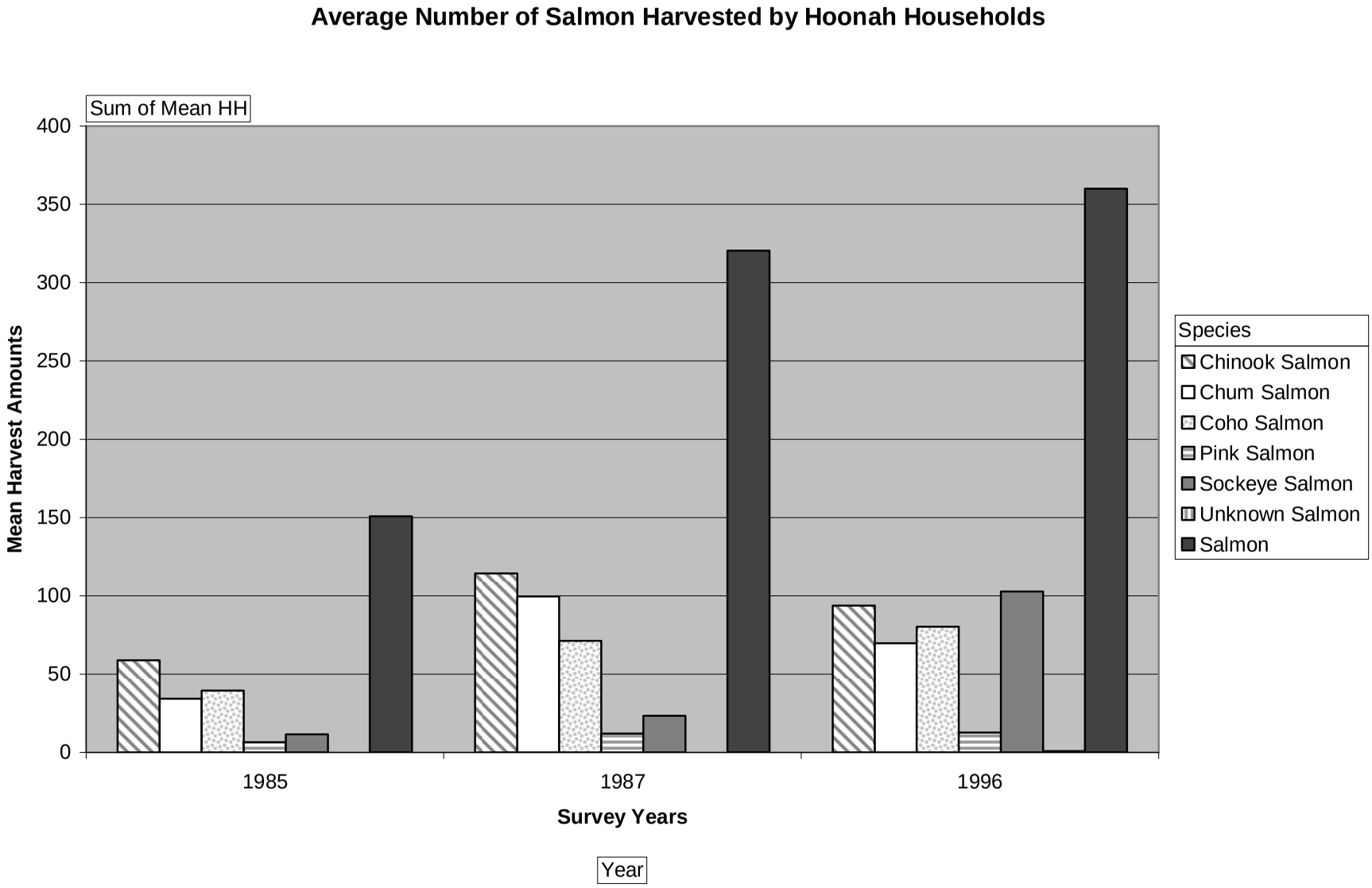


Figure B- 3. Average Number of Salmon Harvested by Hoonah Households Based on Surveys in 1985, 1987 and 1996.

Source: ALEXANDER, Alaska Department of Fish and Game, Commercial Fisheries Division, Version 3.8, Build 147

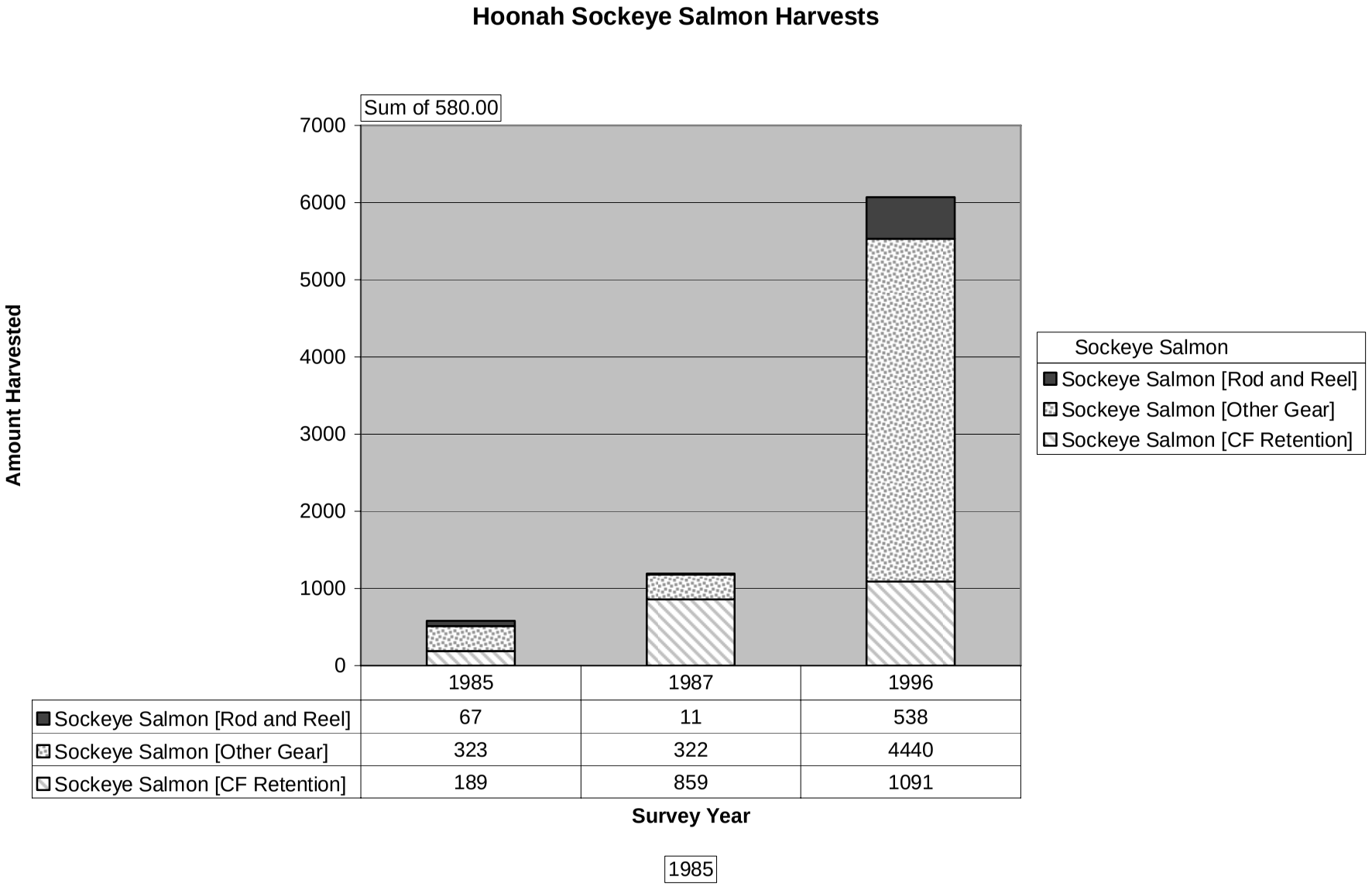


Figure B- 4. Hoonah Sockeye Salmon Harvests based on Households Surveys in 1985, 1987 and 1996

Source: ALEXANDER, Alaska Department of Fish and Game, Commercial Fisheries Division, Version 3.8, Build 147

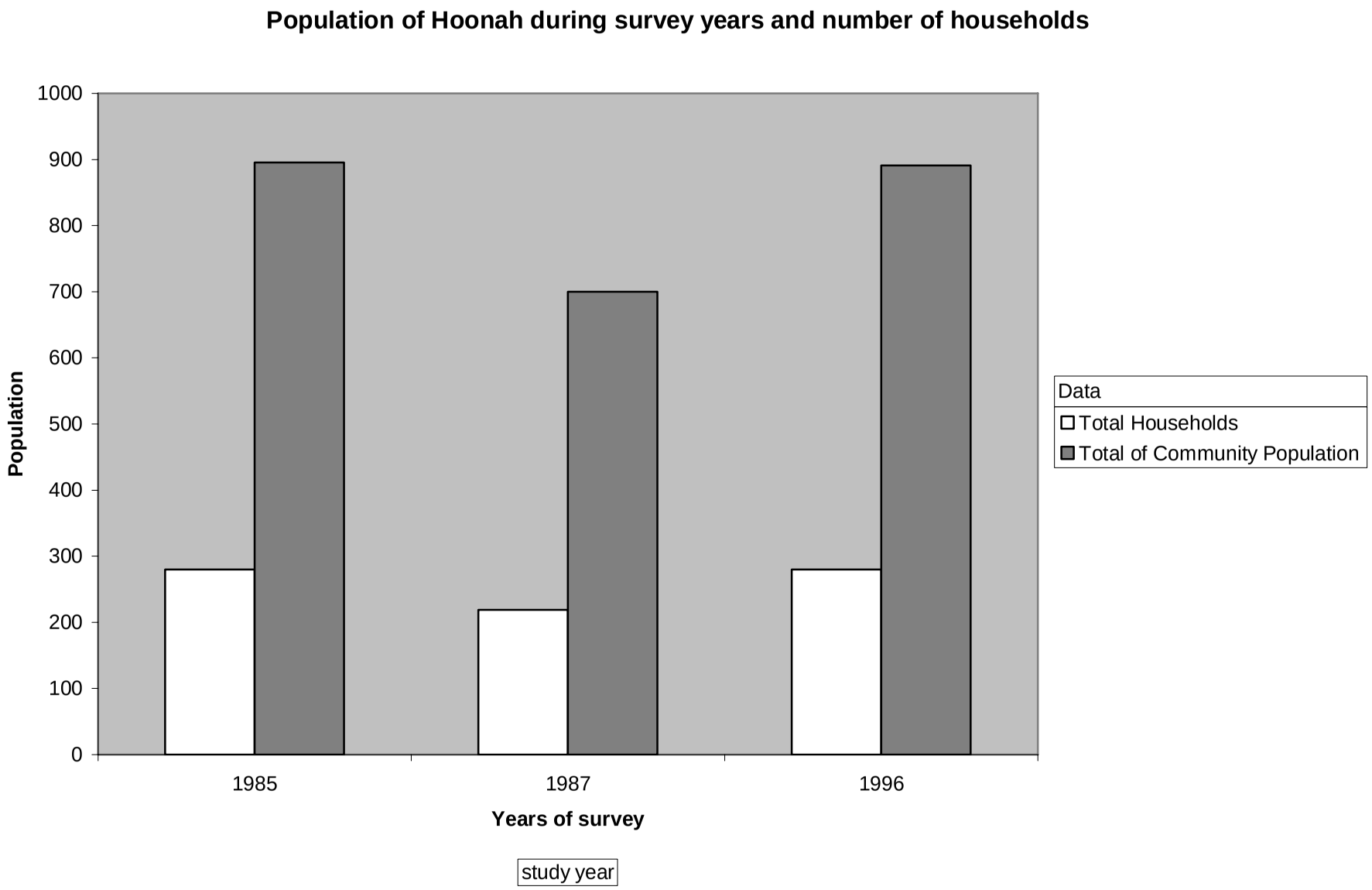


Figure B- 5. Population of Hoonah during Survey Years and Number of Households.

Source: ALEXANDER, Alaska Department of Fish and Game, Commercial Fisheries Division, Version 3.8, Build 147

APPENDIX C. INTERVIEW QUESTIONS

Interview Guide for Hoonah Contemporary Harvesters

The following questions will guide the interview. All questions are optional. Please feel free to discuss information not covered that you feel is important. The interview will remain confidential unless you request to have your name credited for the information you provide.

A. Demographics and Personal Fishing History

Age, gender, clan, number of years in Hoonah

Please describe how, when and where you first learned to subsistence fish for sockeye.

Where do you go to harvest sockeye salmon for home use and why do you choose to go there over other streams in the Hoonah territory?

How long have you been going there?

B. Sockeye Population Trends

Do you think that the number of sockeye are increasing, decreasing or about the same as in the past at Hoktaheen? Excursion Inlet? Other?

Have you noticed any changes in habitat or human activities that are affecting sockeye abundance?

C. Timing of Sockeye Salmon Fishery

What can you tell us about the seasonal movements of sockeye to Hoktaheen or Excursion Inlet?

When do you go to [Hoktaheen/ Excursion Inlet] to get your sockeye?

How often do you typically go to [Hoktaheen/ Excursion Inlet] in one season? How much time do you spend there for each trip?

D. Fishing Gear and Equipment

What fishing gear (type and size) and methods do you use to get sockeye?

What size and type of boat(s) do you use to get to the fishing site and to operate the gear?

Do other fishing groups share the fishing nets, gear, boats, motors etc. that you use?

Why do you use a certain kind of gear over other options?

E. Harvest Methods

How is the above gear used to catch sockeye? Do you always use the same methods?

What do you need to consider to successfully harvest sockeye at Hoktaheen/ Excursion Inlet? What can go wrong?

Was it easier for you to get sockeye now or in the past?

Have you ever changed how, where or when you fished because of a low or high abundance of sockeye?

F. Description of Fishing Groups

How many people do you fish with and do you fish with the same people each year at [Hoktaheen/ Excursion Inlet]?

What are the different jobs needed for your fishing method and how do you divide them up amongst members of your fishing group?

G. Distribution of Salmon

How many families do you provide sockeye salmon for (i.e. number of households, town where they live, relations)?

Do you provide these same households with other salmon or other subsistence foods?

Is any of your sockeye catch used for community ceremonial purposes?

Could you help us create a visual diagram following the distribution of a load(s) of sockeye from [Hoktaheen/ Excursion Inlet] that shows how your salmon get dispersed within Hoonah and beyond?

H. Products and Processing

Do you do any processing of your fish on-site?

Who processes the salmon that you catch?

Are your sockeye processed before being distributed to other households?

What salmon products do you make from sockeye?

I. Conflict with Other Uses

Are there any land or marine activities that interfere with your subsistence fishing?

If so, what changes would you like to see to reduce conflicts?

J. Continuity of Traditional Knowledge and Practices

What is the role of elders in the subsistence fishery?

Do you follow any traditional rules when harvesting, handling and/or distributing your catch?

Have your elders ever mentioned migratory routes of salmon or traditional ways to predict or monitor abundance of salmon returning to a stream?

What do you learn from observing salmon jumps?

Are there differences in appearance of sockeye from different streams?

Have you learned or practiced any traditional methods for making sure enough salmon return to your stream in future years?

Do you do anything different or special with the first sockeye of the season?

K. Fisheries Management, Regulations and Permits

How do you find out about current state or federal subsistence regulations? Have you ever seen the statewide regulation booklet published by ADFG? The federal subsistence booklet?

Do any of the current salmon subsistence regulations conflict with your customary and traditional way of getting sockeye?

If you change something about the current way fisheries are managed, what would you change?

Do you feel it is important for fisheries manager to know how many salmon are being harvested? If so, what do you feel would be the best way to record harvest numbers?

Do you feel comfortable accurately recording your catch on the permits?

Has the commercial fishing limited entry program had any impact on your ability to get salmon for home use?

L. Other

Why is getting sockeye for home use important to you or your family?

How have you gotten coho salmon for home use in the past? Do you plan to use "subsistence gear" for coho salmon this year?

Is there any other information you would like to share?

APPENDIX D. PHOTOGRAPHS OF FISHING METHODS AT HOKTAHEEN COVE

Figure D- 1. Encircling a School of Sockeye Salmon

L-R: Richard Dalton, Jr., Nancy Ratner, Robert Schroeder, Fishing group attempts to encircle a school of salmon with a gillnet. Dalton holds onto one end of the net while Schroeder maneuvers the skiff toward the buoy on the other end. Ratner plunges water to keep salmon from escaping. Note salmon jumping outside of net radius where the water depth was too shallow to set the net. Photograph by Stephen Actor, July 6, 2003.

Figure D- 2. Scaring Salmon into Net

L-R: Richard Dalton, Jr., Robert Schroeder, Nancy Ratner. The net has been set in a circle with both ends attached to the skiff. Schroeder plunges the water to scare the salmon into the net and keep them from escaping under the boat. Photograph by Stephen Actor, July 6, 2003.

Figure D- 3. Releasing One End of Net

After encircling a school of sockeye salmon, the fishing group releases the end of the net tied to the buoy and begins to haul the net into the skiff. Photograph by Nancy Ratner, June 28, 2003.

Figure D- 4. Hauling Net into Skiff

L-R: Steven Langdon, Richard Dalton Jr., and Friend. Langdon and Dalton untangle a salmon in the boat while a second salmon dangles in the net outside the skiff. Photograph by Nancy Ratner, June 28, 2003.

Figure D- 5. Untangling Salmon from Net

The fishing crew continues to untangle salmon. Beyond the cliff in the background the cove is open to the Pacific Ocean. Photograph by Nancy Ratner, June 28, 2003

Figure D- 6. Storing Catch in Stern of Boat

The salmon are stored in the aft area of the skiff while the net is being hauled. Photographs by Nancy Ratner, June 28, 2003

Figure D- 7. Preparing to Clean and Gut Harvested Sockeye Salmon.

Salmon are loaded onto a larger boat, anchored in Hoktaheen Cove, where the crew guts the catch and removed the dorsal fin. Photographs by Nancy Ratner, June 28, 2003.

APPENDIX E. PHOTOGRAPHS OF FISHING METHODS AT NEVA CREEK

Figure E- 1. Making a Traditional Gaff Hook

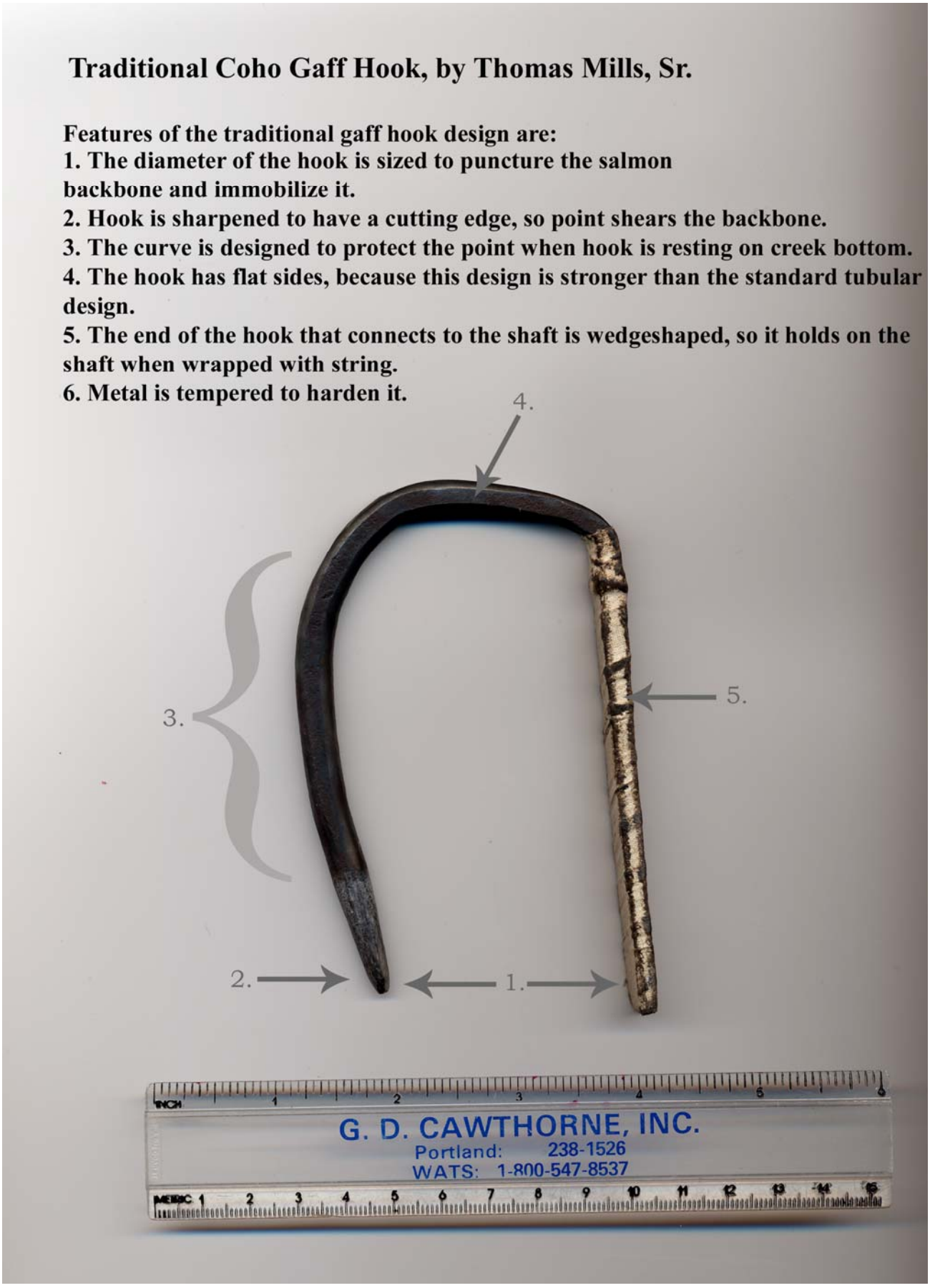


Figure E- 2. Traditional Gaff Hook by Thomas Mills Sr.

Thomas Mill, Sr. gaffing and processing coho salmon at Neva Creek,

1. Tom waits in position.

2. Tom pierces a salmon with a traditional gaff

All photographs by Nancy Ratner, September 4, 2003.

3. The gaff hook pierces the backbone of the salmon, immobilizing it.

4. Tom guts the day's catch on the shore of Neva Creek.

5. The salmon are cut into strips and smoked in the Mills family smokehouse in the old "Indian Village" site at Excursion Inlet.

6. Patrick Mills holding strips of smoked salmon in the doorway of the Mills family smokehouse.

Figure E- 3. Thomas Mill Sr. Gaffing and Processing Coho Salmon at Neva Creek, Excursion Inlet

APPENDIX F. COMMERCIAL FISHING HARVEST DATA FOR ICY STRAITS

Table F- 1. Sockeye Salmon Harvested by Commercial Purse Seine in Point Sophia Area, Subdistrict 114:27

Sum of SOCKEYE	STAT_WEEK												
YEAR	26	27	28	29	30	31	32	33	34	35	36	37	Total
1960	0	95	7	179	1	0	0	0	0	0	0	0	282
1961	504	959	2122	14810	3131	858	15	0	0	0	0	0	22399
1962	422	650	1441	0	1024	240	0	0	0	0	0	0	3777
1963	0	1415	2889	2316	1853	1629	604	433	26	0	0	0	11165
1964	0	2014	2117	4039	1757	1095	501	537	233	51	0	0	12344
1965	0	633	1580	2968	1914	1778	656	327	326	167	0	0	10349
1966	0	163	1069	2384	2620	1945	366	170	63	0	0	0	8780
1967	160	843	745	855	714	593	42	283	65	0	0	0	4300
1968	0	415	1545	1987	462	367	206	155	59	0	0	0	5196
1969	0	0	2108	2380	1763	1047	1089	454	0	0	0	0	8841
1970	0	0	447	1394	1856	886	0	858	0	0	0	0	5441
1971	0	0	0	0	940	1147	860	190	98	194	0	0	3429
1972	0	0	1275	1121	1214	1010	441	497	343	60	0	0	5961
1973	0	0	2882	2144	911	673	700	243	0	0	0	0	7553
1974	0	0	1448	0	0	0	0	0	0	0	0	0	1448
1975	0	0	0	884	0	0	0	0	0	0	0	0	884
1980	0	0	23	5	0	0	0	0	0	0	0	0	28
1981	0	0	0	6426	3596	311	39	0	0	0	0	0	10372
1982	0	0	0	0	0	0	0	0	0	134	100	0	234
1983	0	0	0	0	324	1886	35	0	0	0	0	0	2245
1984	0	14	2615	271	0	0	0	0	0	0	0	0	2900
1985	0	0	0	446	1008	520	0	0	195	0	0	0	2169
1986	0	9	64	1238	0	0	0	0	0	0	0	0	1311
1987	0	517	2522	0	83	0	0	0	0	0	0	0	3122
1988	0	0	0	39	27	52	0	0	0	0	0	0	118
1989	0	5	388	313	5000	0	0	0	0	0	0	0	5706
1990	0	228	0	83	25	0	1477	0	0	0	0	0	1813
1991	0	89	334	268	0	0	916	262	1101	0	0	0	2970
1992	0	17	11	0	0	3527	0	0	0	0	0	0	3555
1993	0	0	0	0	527	1863	5039	0	0	0	0	0	7429
1994	0	0	0	0	0	2377	3729	1265	1288	1436	441	0	10536
1997	0	0	0	0	0	2305	120	846	762	383	0	0	4416
1999	0	0	0	0	0	7366	5721	2740	614	131	0	0	16572
2000	0	44	51	606	0	0	0	0	0	0	0	0	701
2001	0	0	0	0	10181	29313	1988	336	3	3	0	0	41824
2002	0	0	0	0	337	2594	1011	309	293	2	0	0	4546
2003	0	0	175	3227	4952	2166	547	13	0	0	0	0	11080
Total	1086	8110	27858	50383	46220	67548	26102	9918	5469	2561	541	0	245796

Source: ALEXANDER, Alaska Department of Fish and Game, Commercial Fisheries Division, Version 3.8, Build 147

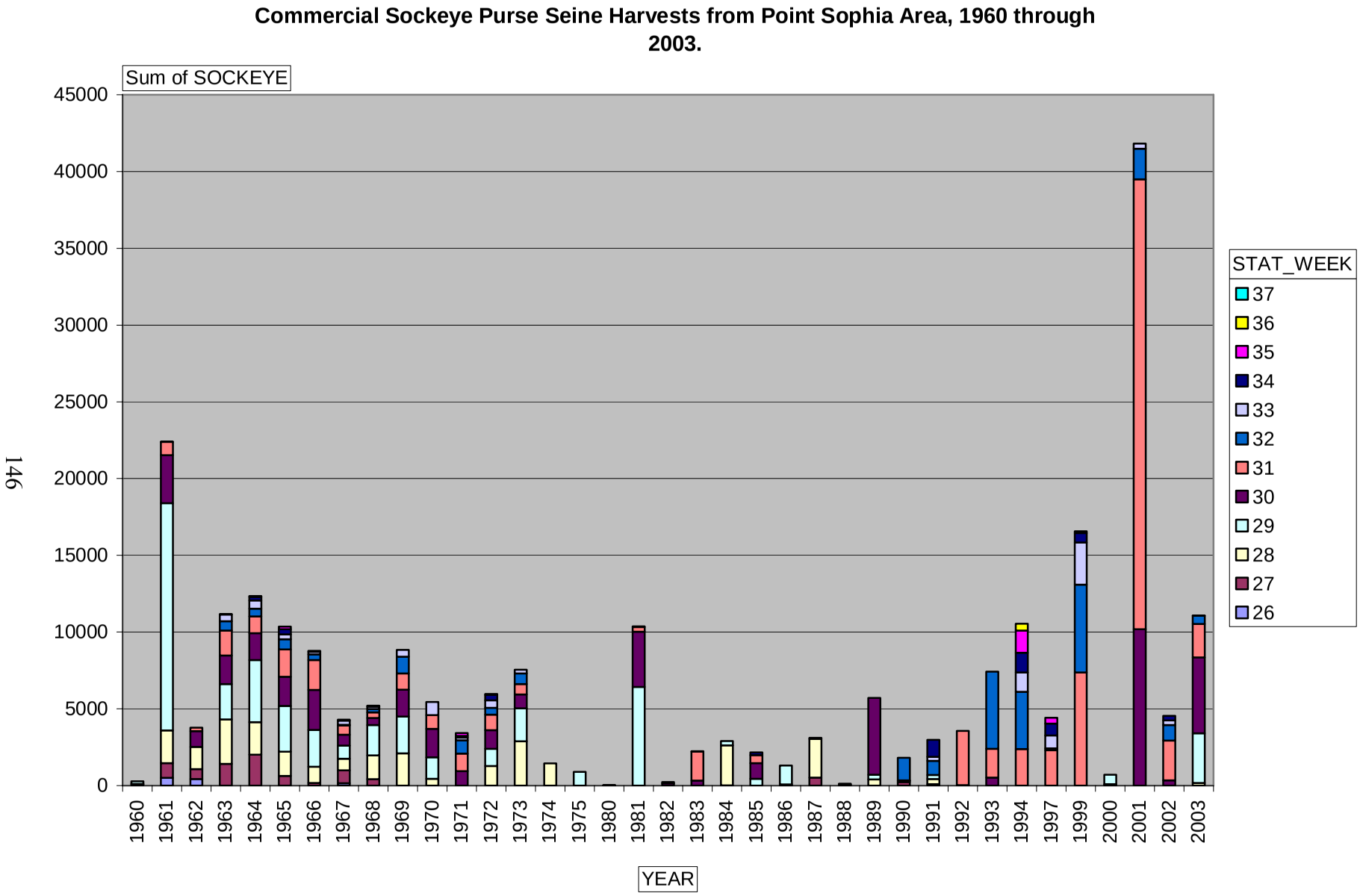


Figure F- 1. Commercial Sockeye Purse Seine Harvest from Point Sophia Area, 1960-2003

Source: ALEXANDER, Alaska Department of Fish and Game, Commercial Fisheries Division, Version 3.8, Build 147

APPENDIX G. EXAMPLE OF DISTRIBUTION NETWORK

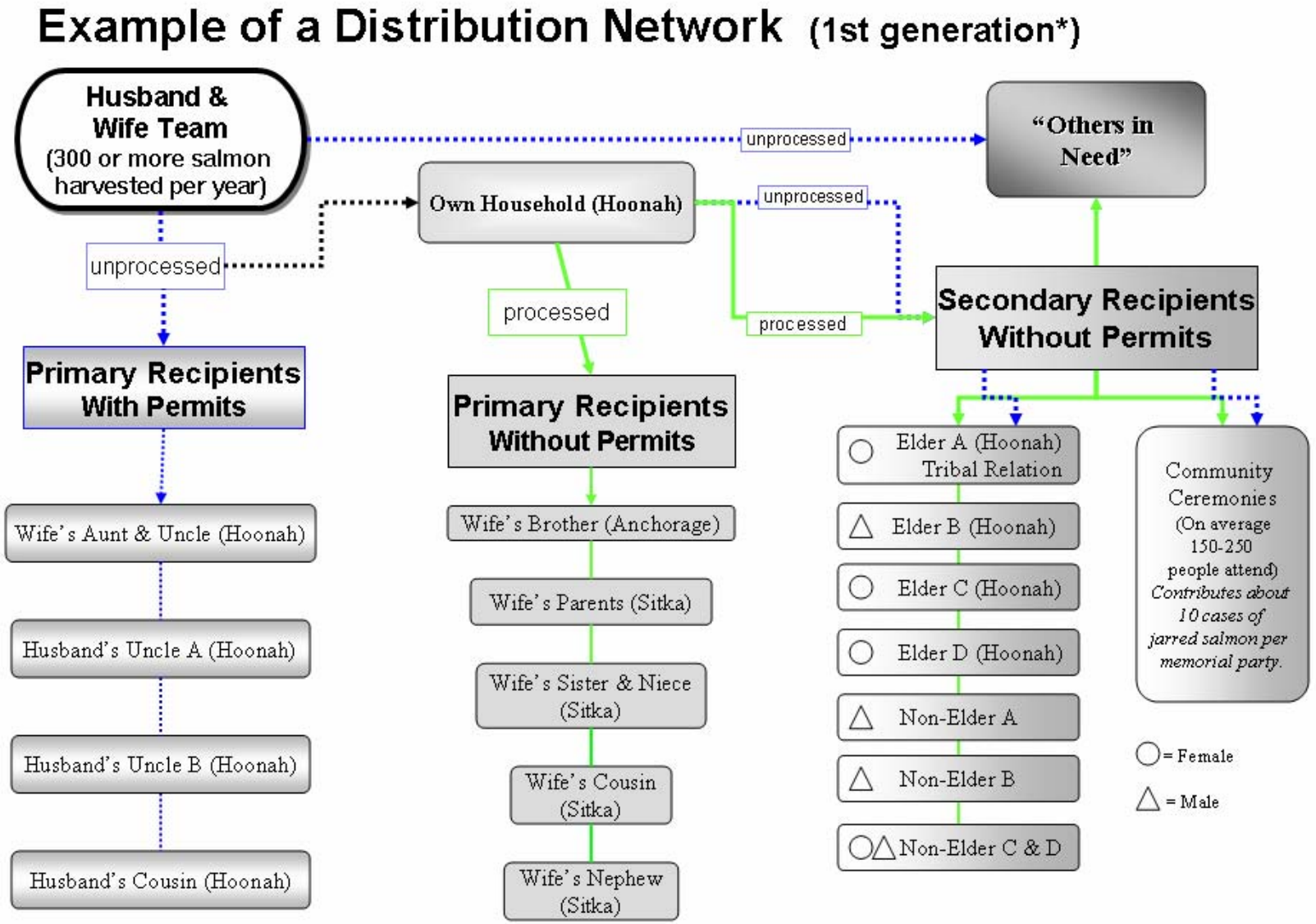


Figure G- 1. Example of a Distribution Network (First Generation)

APPENDIX H. SUBSISTENCE PERMIT DATA FOR SOCKEYE SALMON

Table H- 1. Total Hoonah Permits Reporting Harvesting Sockeye by Location, 1985-2003

	YEAR																			
STREAM	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Total
Hokatheen Cove					8	2	7	11	11	22	27	35	45	32	30	20	22	23	14	309
Neva Creek						1	1	15	5	3	5	15	8	1	3	16	6	4	5	88
Kook Lake Outlet		18	6	7	3	4	3	1		1	5	1		1		4	2			56
Neka River [a]	2	5				1	1	1	2	1	3	1	1	2	3	2		1	1	27
Spasski Creek [b]		1	2	1	1	2	1	1	6						1		3			19
Surge Bay					4		2		2	2					1	1	2	2		16
Kanalku Bay			1							3		4	5		1		1			15
Pavlof River [c]									1	2	2			2	4	2	1		1	15
Berg River						3										2				5
Dundas River															1	3	1			5
Chilkat River	1	1				1	1													4
Fish Camp -Klag Bay				1														1	1	3
No Stream Named					3															3
Taku River										1				2						3
Hasselborg River			1							1										2
Takanis Bay								1						1						2
Admiralty Creek																	1			1
Eek Creek															1					1
Favorite Creek										1										1
Gut Bay Head														1						1
Hetta Inlet															1					1
Klawock River				1																1
Kook Creek (Inlet)																1				1
Necker Bay Lake																		1		1
Sitkoh Lake Creek			1																	1
Situk RIver							1													1
Sweetheart Creek																		1		1
Wolverine Creek															1					1
Total	3	25	11	10	19	14	17	30	27	37	42	56	59	42	47	51	39	33	22	584

[a] Neka River: Sockeye landings only reported for three years, 1985, 1991, 2003 for a total of 32 fish

[b] Spasski Creek: Sockeye landings only reported for one year, 2001, for a total of 6 fish

[c] Pavlof River: Sockeye landings only reported for one year, 1994, for a total of 25 fish

Source: ALEXANDER, Alaska Department of Fish and Game, Commercial Fisheries Division, Version 3.8, Build 147

Table H- 2. Total Number of Sockeye Harvested as Reported by Hoonah Permit Holders, by Location, 1985-2003

	YEAR																			
STREAM	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Total
Hokatheen Cove					265	30	193	281	252	472	655	704	1488	878	626	442	513	658	528	7985
Neva Creek						25	30	308	84	28	50	235	18	5	30	137	148	25	86	1209
Kook Lake Outlet		352	147	82	42	87	37	10		10	120	10		20		65	15			997
Surge Bay					169		75		50	50					20	20	50	22		456
Kanalku Bay			50							80		50	32		0		0			212
Berg River						150										6				156
Dundas River															10	65	40			115
Fish Camp -Klag Bay				5														50	50	105
Favorite Creek										50										50
Necker Bay Lake																		50		50
No Stream Named					50															50
Chilkat River	24	9				7	9													49
Hasselborg River			20							25										45
Takanis Bay								25						10						35
Neka River	12	0				0	5	0	0	0	0	0	0	0	0	0		15	0	32
Gut Bay Head														31						31
Taku River										10				20						30
Pavlof River									0	25	0			0	0	0	0		0	25
Sitkoh Lake Creek			25																	25
Sweetheart Creek																		25		25
Admiralty Creek																	20			20
Eek Creek															20					20
Hetta Inlet															20					20
Klawock River				20																20
Wolverine Creek															20					20
Kook Creek (Inlet)																16				16
Situk RIver							16													16
Spasski Creek		0	0	0	0	0	0	0	0						0		6			6
Total	36	361	242	107	526	299	365	624	386	750	825	999	1538	964	746	751	792	845	664	11820

Source: ALEXANDER, Alaska Department of Fish and Game, Commercial Fisheries Division, Version 3.8, Build 147