

Local Knowledge, Harvest Patterns, and Community Uses of Salmon in Wrangell, Alaska

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Division of Subsistence



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Weights and measures (metric)		General		Measures (fisheries)	
centimeter	cm	Alaska Administrative		fork length	FL
deciliter	dL	Code	AAC	mideye-to-fork	MEF
gram	g	all commonly accepted		mideye-to-tail-fork	METF
hectare	ha	abbreviations	e.g., Mr., Mrs., AM, PM, etc.	standard length	SL
kilogram	kg			total length	TL
kilometer	km	all commonly accepted			
liter	L	professional titles	e.g., Dr., Ph.D., R.N., etc.	Mathematics, statistics	
meter	m			<i>all standard mathematical</i>	
milliliter	mL	at	@	<i>signs, symbols and</i>	
millimeter	mm	compass directions:		<i>abbreviations</i>	
		east	E	alternate hypothesis	H _A
Weights and measures (English)		north	N	base of natural logarithm	<i>e</i>
cubic feet per second	ft ³ /s	south	S	catch per unit effort	CPUE
foot	ft	west	W	coefficient of variation	CV
gallon	gal	copyright	©	common test statistics	(F, t, χ^2 , etc.)
inch	in	corporate suffixes:		confidence interval	CI
mile	mi	Company	Co.	correlation coefficient	
nautical mile	nmi	Corporation	Corp.	(multiple)	R
ounce	oz	Incorporated	Inc.	correlation coefficient	
pound	lb	Limited	Ltd.	(simple)	r
quart	qt	District of Columbia	D.C.	covariance	cov
yard	yd	et alii (and others)	et al.	degree (angular)	°
		et cetera (and so forth)	etc.	degrees of freedom	df
Time and temperature		exempli gratia		expected value	<i>E</i>
day	d	(for example)	e.g.	greater than	>
degrees Celsius	°C	Federal Information		greater than or equal to	≥
degrees Fahrenheit	°F	Code	FIC	harvest per unit effort	HPUE
degrees kelvin	K	id est (that is)	i.e.	less than	<
hour	h	latitude or longitude	lat. or long.	less than or equal to	≤
minute	min	monetary symbols		logarithm (natural)	ln
second	s	(U.S.)	\$, ¢	logarithm (base 10)	log
		months (tables and		logarithm (specify base)	log ₂ , etc.
Physics and chemistry		figures): first three		minute (angular)	‘
all atomic symbols		letters	Jan,...,Dec	not significant	NS
alternating current	AC	registered trademark	®	null hypothesis	H ₀
ampere	A	trademark	™	percent	%
calorie	cal	United States		probability	P
direct current	DC	(adjective)	U.S.	probability of a type I error	
hertz	Hz	United States of		(rejection of the null	
horsepower	hp	America (noun)	USA	hypothesis when true)	α
hydrogen ion activity	pH	U.S.C.	United States	probability of a type II error	
(negative log of)			Code	(acceptance of the null	
parts per million	ppm	U.S. state	use two-letter	hypothesis when false)	β
parts per thousand	ppt,		abbreviations	second (angular)	“
	‰		(e.g., AK, WA)	standard deviation	SD
volts	V			standard error	SE
watts	W			variance	
				population	Var
				sample	var

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OF SALMON IN WRANGELL, ALASKA**

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IHP-02-102

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.

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ABSTRACT

This report presents findings from a project that examined the historical uses of fishing sites at Mill Creek, Thoms Place, Salmon Bay, and the Stikine River, by residents of Wrangell, Alaska. This project was a collaborative effort between the Wrangell Cooperative Association and the Alaska Department of Fish and Game, Division of Subsistence. Methods included key respondent interviews, reviews of available literature, and examination of harvest data about Pacific salmon *Oncorhynchus*. Historical and contemporary sockeye salmon *O. nerka* fishing patterns, methods and means, and processing methods are described.

Key words: Stikine River, Mill Creek, Thoms Place, Salmon Bay, Wrangell, Southeastern Region, sockeye salmon, *Oncorhynchus nerka*

INTRODUCTION

Knowledge and understanding of historical and contemporary use patterns of Pacific salmon *Oncorhynchus* is essential to fisheries management and providing a subsistence priority. The historical importance of salmon to residents of the Wrangell area of Southeast Alaska is well documented (De Laguna 1972; Emmons 1991; Goldschmidt and Haas 1998; Langdon 1977; Niblack 1890; Oberg 1973; Price 1990). Salmon were one of the most widely harvested and used resources in Wrangell (Community Profile Database¹; Wolfe 2000). However, detailed written descriptions of contemporary subsistence harvest locations and practices were lacking.

In March 2001, the federal Southeast Regional Advisory Council (Council) identified as a priority the needed to document contemporary and historical salmon subsistence harvest and use patterns and the traditional knowledge of Wrangell residents. The Council identified contemporary and historical locations, such as the Stikine River, Thoms Creek, Virginia Lake, Mill Creek, and Salmon Bay that should be included in the research. The U.S. Fish and Wildlife Service (USFWS) Office of Subsistence Management (OSM) funded this project through the Fisheries Resource Monitoring Program as study number FIS 02-049.

The primary purpose of this project was to document the historical and contemporary harvests of sockeye salmon *O. nerka* for subsistence uses in the Wrangell area. This was achieved by 1) reviewing and analyzing published reports and documents concerning historical methods of harvesting noncommercial salmon in Southeast Alaska and 2) conducting key respondent interviews with people possessing knowledge of gear types and areas used to harvest salmon, ecological observations, historical changes, and interactions between subsistence, commercial, and sport fishers. Field observations of subsistence fisheries and site visits were also included in this research.

The subsistence economy of Wrangell had been documented in previous studies. A harvest survey was conducted in Wrangell in 1987 (Cohen 1989), and Thornton et al. (1990) discussed the importance of salmon in the lives of rural Southeast Alaska residents. In 2000, the Alaska Department of Fish and Game (ADF&G) Division of Subsistence (Division), working with the Wrangell Cooperative Association (WCA), conducted household surveys in Wrangell covering a 12 month period (CPDB²). Analysis of that data showed that 77% of the salmon, in pounds usable weight, harvested for home use in Wrangell were taken either with rod and reel tackle (38%) or removed from commercial harvests (39%), while the remaining 23% were taken with subsistence gear.

¹ Scott, C., L. B. Brown, G. B. Jennings, and C. Utermohle. *Unpublished*. ADF&G Division of Subsistence Community Profile Database, 2001, for Microsoft Access 2000. Version 3.12. Alaska Department of Fish and Game Division of Subsistence, Juneau. Hereinafter cited as Scott et al. *Unpublished* and abbreviated as CPDB.

² ADF&G Division of Subsistence Community Profile Database (<http://www.subsistence.adfg.state.ak.us/geninfo/publctns/cpdb.cfm>).

DESCRIPTION OF STUDY AREA

PRESENT DAY WRANGELL

At the time of this research, Wrangell was a home rule city with a mayor, city council, and city manager (City of Wrangell 2004). Wrangell is located on the northern tip of Wrangell Island just south of the mouth of the Stikine River (Figures 1, 2, and 3). Wrangell's neighboring communities are Petersburg, located on Mitkof Island approximately 40 mi north, and Ketchikan, on Revillagigedo Island, approximately 85 mi south. At the time of this report, there was state marine ferry and daily jet service to Wrangell from Juneau, Petersburg, and Ketchikan. Several small air flight services also provided service to Petersburg and Kake on Kupreanof Island, as well as charter service to remote locations. Two barge lines and several smaller freight operators served the community. The small community of Telegraph Creek, about 160 mi up the Stikine River in British Columbia, shared a unique history of trade, mining and prospecting, and transport with Wrangell. Wrangell had 2 boat harbors in town, as well as a harbor at Shoemaker Bay, 5 mi south of town. At the time of this report, a new harbor was planned in order to accommodate the growing demand for slips. The island had many miles of single lane logging roads that provided access to much of the inland areas.

Demography

According to the U.S. Bureau of the Census, the population of Wrangell was 2,308 people in 2000 (U. S. Census Bureau 2000) (Figure 4). Wrangell's population was predominantly non-Native, and many families traced their roots to early trappers, prospectors, and commercial fishers of German, English, Irish, and Norwegian descent. The town's diverse Alaska Native population comprised about one quarter of the population, and included the original Stikine Tlingit, Natives displaced from Kuiu Island, and Native people from other parts of Southeast Alaska, many of whom moved to Wrangell during the early years of the salmon canning industry to take advantage of wage based employment opportunities. In 2000, there was also a small population of Asians, principally Filipinos. The total population size had declined from its historical peak of 2,754 people in 1994 (ADLWD 2009).

Employment

Since the beginning of the 20th century the timber and fishing industries, along with federal, state, and local governments have provided the town with its principal sources of wage based employment and income. Following downturns in both the logging and fishing industries, Wrangell experienced high unemployment as well as population loss (ADCCED 2009) (Figure 5). Wrangell commercial fishers have found it increasingly necessary to diversify into many fisheries in order to stay in business (Figure 6). The number of fishing vessels registered to Wrangell residents dropped from 261 in 1990 to 219 in 2000, a 16% decline (CFEC³). Three fish processing companies operated in Wrangell in the summer of 2003, and they employed about 125 people, including an estimated 35 foreign student workers. Wrangell Seafoods, Inc., the largest of the companies, processed salmon, crabs, halibut, groundfish, shrimps, herring, and sea cucumbers and sold much of its fresh, frozen and canned seafood products in the Japanese market. Sealevel Seafoods, Inc. froze salmon, halibut, bottomfish, and crabs. The G&G Alaska Smokery was a small, family operated business, providing fish processing and packaging to local and visiting sport fishers. The local fishing fleet included both salmon seiners and gillnetters, but many fishers also participated in the crab, shrimp, halibut, and bottomfish fisheries.

Some people found cash employment opportunities in the tourism industries, including offering sport charter, guide, and wildlife viewing services, and operating tourist accommodations. In 2002, two large cruise ships docked in Wrangell each week, as well as several smaller cruise vessels, and numerous

³ State of Alaska Commercial Fisheries Entry Commission commercial fishing permit database. 2009. Juneau, Alaska. <http://www.cfec.state.ak.us/publook/vessels.jsp?vessels=true>. Hereinafter cited as CFEC.

private yachts. The community is adjacent to the Stikine–LeConte Wilderness Area and the Anan Wildlife Viewing Area, both managed by the U.S. Forest Service (USFS), which also operates a Wrangell Ranger District office. There were several state agency offices in Wrangell in 2002 as well.

Salmon Resources in the Wrangell Area

Five species of Pacific salmon are found in the waters of the Wrangell area (Johnson and Weiss 2006). The Stikine River supports runs of Chinook salmon *O. tshawytscha*, as well as stocks of sockeye, coho *O. kisutch*, pink *O. gorbuscha*, and chum salmon *O. keta*, Pacific herring *Clupea pallasii*, eulachon *Thaleichthys pacificus*, and steelhead trout *O. mykiss*. On the mainland, the Virginia Lake watershed supports a small run of sockeye salmon, and pink salmon spawn in the intertidal area at the mouth of Mill Creek. Anan Creek, in Ernest Sound on mainland Alaska, has supported strong runs of pink salmon. Numerous streams flowing into Bradfield Canal and Ernest Sound, including the Bradfield, Harding, and Eagle rivers, and Aaron, Berg, Hoya, and Tyee creeks, support small runs of pink and chum salmon. Generally, Chinook salmon are the first to return, followed by sockeye, pink, chum, and coho salmon.

On Wrangell and Etolin islands, across Zimovia Strait from the mainland, several watersheds support salmon runs (Johnson and Weiss 2006). On Wrangell Island, Institute Creek, the Trout Lake watershed, McCormack Creek, Southeast Cove, and Thoms Creek support runs of salmon. Other watersheds supporting salmon included Kunk Creek and streams flowing into Anita Bay on North Etolin Island; and Kudah and Chum creeks on South Etolin Island.

The area is divided into 2 districts for commercial fishing, 106 and 108, which support commercial purse seine and gillnet fisheries for salmon.

MAJOR WATERSHEDS OF THE WRANGELL AREA

The Stikine River Watershed

The Stikine River is the largest of 6 great rivers flowing from the interior of British Columbia through the Coast Mountains into the Alexander Archipelago of Southeast Alaska. From its headwaters at Tuaton Lake, in the Spatsizi Plateau of the Cassiar district, the Stikine River winds about 400 mi, draining a large glaciated area. The upper portion of the river runs through a semiarid plateau of up to 6,234 ft in elevation, while the lower portion of the river drains the Coast Mountains, a steep, rugged range characterized by high precipitation. Just above the community of Telegraph Creek, 200 mi downriver from the headwaters, the river flows through the Grand Canyon, where rapids block river vessel navigation as well as migrating salmon (Alaska Geographic Society 1979).

As the river flows from the interior plateaus through the narrow valley of the Grand Canyon, the waters become muddy with glacial silt from the ice fields and glaciers flowing into the Stikine's many tributaries. In the last few decades, these glaciers have receded, resulting in important changes in vegetation, habitats, and fauna. Alpine vegetation is found at the upper elevations, while the lower mountain slopes near salt water support a dense spruce–hemlock rainforest. Closer to the Canadian border, the rain decreases and the vegetation changes to stands of Sitka spruce, cottonwood, alder, Alaska cedar, white fir, and western hemlock. Cottonwood trees are also common on the many islands of the Stikine. The valley floor is a combination of muskegs and dense alder and willow thickets (Alaska Geographic Society 1979).

The major tributaries of the Stikine include the Klappan, Chuckachida, Spatsizi, Pitman, Klastline, Tanzilla, Tuya, Tahltan, Chutine, Choquette, and Iskut rivers, all in British Columbia. The main tributary, the Iskut River, joins the Stikine 7 mi upstream from the Alaska border and accounts for about 25% of the river's flow. One hot and 2 warm springs are found along the river (Alaska Geographic Society 1979).

In its lower reaches, the river spreads out in a delta approximately 17 mi wide, with 3 main navigation channels, numerous smaller, shifting and shallow channels, grass flats, tidal marsh, and sand bars (USDA

2003) (Figure 2). The river delta located in the Stikine–LeConte Wilderness Area within the USFS Tongass National Forest. The delta provides a resting place for more than half a million migrating birds each spring and fall, as well as ideal habitat for deer, black bears, wolves, river otters, mink and weasels, and, in the willow flats, moose. Mountain goats inhabit the higher elevations, and seals abound in the waters of the Stikine River delta (Alaska Geographic Society 1979).

Sites in the Stikine River delta, along the main stem as far upriver as Telegraph Creek, and at the confluences of the tributaries have been documented as traditional Tlingit fishing locations (e.g., Goldschmidt and Haas 1998). Tlingit settlement at the mouth of the Stikine River assured their control of trade and traffic between the coastal peoples, including the Russian, British, and later American fur traders, and the Athabascan and Tahltan Indians of the Interior (Voss 1998).

Since 1985, the harvest of Stikine River Chinook, sockeye, and coho salmon has been managed under the terms of a treaty between the U.S. and Canada which, among other actions, directs fisheries management on the Stikine River. In addition, since the entire Alaskan portion of the Stikine River is within the USFS Stikine–LeConte Wilderness Area, there are also federal management guidelines. Thus, the salmon stocks of the Stikine River and its tributaries have been the focus of considerable study and assessment by ADF&G, and, in recent years, by the Pacific Salmon Commission’s Joint Transboundary Technical Committee of the Bilateral Transboundary Panel. Both agencies have been researching the health of the stocks in order to provide for an abundance based management plan (PSCJTTC 2000).

The Mill Creek and Virginia Lake Watershed

Mill Creek, the outlet stream for Virginia Lake on mainland Alaska, empties into a small, unnamed cove in the salt waters of the Eastern Passage approximately 5 mi east of Wrangell. Mill Creek’s short, steep falls present the only significant challenge to migrating salmon (Figure 1, Plates 1, 2, and 3). The approximately 1 mi long Mill Creek Trail provides access to Virginia Lake (Plate 4). The lake lies in a steep mountain cirque that climbs in elevation from sea level to over 3,280 ft. Porterfield and Glacier creeks flow into Virginia Lake at its eastern end, as part of the approximately 40 square mile watershed. Spruce and hemlock stands interspersed with pockets of muskeg comprise the majority of the subalpine terrestrial environment. Mountain goats, Sitka black-tailed deer, brown bears, wolves and a small population of moose live in the area. Martens occur at the lower elevations (Cady and Reed 2003).

The mid and lower reaches of Porterfield, Glacier, and Mill creeks, as well as the lake itself provide spawning and rearing habitat to anadromous and resident fish. Sockeye salmon are the most abundant salmon species in the Virginia Lake system, but chum, Chinook, coho, and pink salmon have also been documented in the system. The lake also supports populations of anadromous and resident Dolly Varden *Salvelinus malma*, cutthroat trout *O. clarki*, and resident populations of stickleback *Gasterosteus aculeatus* and sculpin *Cottus* spp. (Cady and Reed 2003). According to the USFS, “Virginia Lake is recognized as providing one of the top recreational cutthroat trout fisheries in Alaska” (USDA 2002). There is a USFS cabin on the northeast shore of Virginia Lake.

The Virginia Lake sockeye fishery was enhanced in 1986. Subsequent fishery enhancement projects included construction of a combination step pass and pool-and-weir fishway in 1988 to increase fish passage into Virginia Lake. Sockeye fry are released annually and the lake is fertilized as part of an enrichment program. (USDA 2002)

The Virginia Lake and Mill Creek drainage, and approximately 9 river miles of the Virginia lake and creek system have been recommended for designation as a federal Recreation River area (USDA [2003]). Commercial timber sales have been proposed in nearby areas: the Madan timber sale to the south of the lake, and the Crittenden timber sale to the north.

The Thoms Lake and Thoms Creek Watershed

The Thoms Lake watershed flows to a narrow bay off Zimovia Strait known as Thoms Place, on the southwestern tip of Wrangell Island, about 20 nmi from Wrangell. Thoms Lake is approximately 1.7 mi long, 108 ft deep at its maximum depth, and is accessible by a 1.4 mi trail from a trailhead 22 road miles south of Wrangell. The lake empties into Thoms Creek (Figure 3 and Plates 5, 6, and 7), which is approximately 6 mi upstream from the site of the old town of Wrangell at Thoms Place Bay. The bay is about 3 mi long, and there are 2 islets at the mouth as well as a cluster of islets on its northwestern side, near the outlet of Thoms Creek. The 2 main tributaries, East Creek and Little East Creek, empty into the north end of the lake; several small inflows are scattered along the shoreline (Lewis and Cartwright 2002:2). In 1985, the State of Alaska created the Thoms Place State Marine Park, which includes over 1,100 acres surrounding Thoms Lake, the upper portions of Thoms Creek, the lower 1 mi stretch of Thoms Creek, and the waters of Thoms Place Bay as well as surrounding lands to the east and west.

In addition to chum, coho, pink, and sockeye salmon, the system supports native fish populations of cutthroat trout, Dolly Varden, threespine stickleback, sculpin, and steelhead. East Creek is the primary sockeye and coho salmon spawning area (Lewis and Cartwright 2002:2). Thoms Lake and Thoms Creek offer the most productive noncommercial fisheries on Wrangell Island and support an important sockeye salmon subsistence fishery.

The Salmon Lake and Salmon Creek Watershed

The Salmon Lake watershed flows into Salmon Lake Bay on the northeastern side of Prince of Wales Island (Figure 1). The lake is approximately 3 mi long, and up to 200 ft deep. It empties into Salmon Bay Creek, which runs a relatively short 1.2 mi into salt waters. In addition to chum, coho, pink, and sockeye salmon, the lake supports cutthroat trout, Dolly Varden, stickleback, cottids, and steelhead. The primary sockeye and coho salmon spawning areas are located at the south end of the lake, in 3 unnamed tributaries locally referred to as Southwest Head, South Head, and East Head.

WRANGELL EARLY HISTORY AND TLINGIT CLAN GROUPS

Wrangell was located in the heart of the territory claimed by the *Shtax'héen Kwáan* Tlingits, a powerful and warlike tribe with a reputation for ferocity. Swanton, an early scholar, considered the *Shtax'héen Kwáan* the most populous and most important group in southern Alaska (Swanton 1908:411). “The first chief *Ceks* (commonly spelled ‘Shakes’) is credited with uniting the people to protect them from aggression by neighboring groups” (Campbell 1982:23). “Probably more than any other tribe [the Stikine Tlingit] were a riverine people and their settlements and summer camps extended upriver as far as Telegraph Creek or a little beyond” (Olson 1967:3).

Five clans of the Eagle/Wolf moiety, *Naanyaa.aayí*, *Sik'nax.ádi*, *Xook'eidí*, *Kayaashkiditaan*, and *Xilkweidí*, and 5 of the Raven moiety, *Kiks.ádi*, *Teeyhittaan*, *Kaach.ádi*, *Kaasx'agweidí*, and *Taalkweidí*; were represented among the Stikine Tlingit (Goldschmidt and Haas 1998:14). The origins of these several clans are complex. The *Naanyaa.aayí*, Wolf/Eagle moiety, were thought to be of Athabascan origin. According to oral history related by key respondents, the *Naanyaa.aayí* came down the Stikine River to the coast in ancient times, when resources in the interior became scarce, by floating down the river through a hole under a glacier. An elderly couple volunteered to take the dangerous and uncertain trip through what appeared to be a passageway under a glacier in an attempt to explore the possibility of finding a territory richer in resources. After weeks had passed, it was assumed they had perished, but when those left behind climbed to a high overlook, the couple was seen in the distance, safe, on the other side of the glacier. The rest of the people followed to the place now referred to as “Old Village” or “Old Town” (Figure 1), south of Wrangell.

Other histories described the *Naanyaa.aayí* as one of the *Sik'nax.ádi* Tlingit clans that traveled down the Taku River from the interior to the coast. The *Sik'nax.ádi* settled at the mouth of the Taku, while the

Naanyaa.aayí went south to Wrangell. According to the testimony collected in 1946 by Goldschmidt and Haas (1998:74), the *Naanyaa.aayí* clan claimed aboriginal use and ownership of the upper reaches of Stikine River from above Shakes Place to beyond Telegraph Creek.

The *Kiks.ádi*, Raven moiety, moved to the area from the south, near the border with the Tsimshian people. According to some accounts, the *Kiks.ádi* were the first to arrive at the Stikine coast. They explored the Stikine and settled at several locations on the mainland shores of the Eastern Passage. Other clans migrated to the area, including the Wolf/Eagle *Xook'eidí* clan, and the Raven *Kaach.ádi*, *Teeyhittaán*, *Taalkweidí*, and *Kaasx'agweidí* clans (Goldschmidt and Haas 1998).

Clan Use of Study Area

The mouth of the Stikine, its tidal flats and islands, and the main stem and subsidiary channels upstream of the Canadian border to Shakes Place were used by several Wrangell clans. The lands and waters claimed by the *Shtax'héen Kwáan* were more extensive than that of any Tlingit tribe, and included many rich salmon streams and lakes. Their territory stretched from Cape Fanshaw on Frederick Sound in the north, the east side of Kupreanof Island, including Portage and Totem bays, Duncan Canal, and Mitkof Island, and across Sumner Strait to Red Bay on the north coast of Prince of Wales Island, south along the coast of Prince of Wales Island to Thorne Bay, across Clarence Strait to Union Bay on the Cleveland Peninsula, and east up Ernest Sound to Bradfield Canal. Their territory also included Etolin and Zarembo islands, and extended up the Stikine River into Tahltan Athabaskan territory, to present day Telegraph Creek in British Columbia (Goldschmidt and Haas 1998:73).

Within this territory, the several clans claimed exclusive ownership of some hunting and fishing areas, and shared ownership and uses in other areas. Like their fellow Tlingits at the mouths of the Taku and Chilkat rivers, their position at the mouth of the Stikine River allowed the *Shtax'héen Kwáan* to monopolize the trade route to the interior, trading with the Tahltan Athabaskan, and Russian and Hudson Bay Company fur traders (Cohen 1989:13).

Tlingit and Tahltan territorial rights overlapped in the upper reaches of the river:

Here for a distance of some 15 miles, from just below Glenora to Telegraph Creek, the Tlingit claimed exclusive fishing rights on all the tributaries along the northern shore, as well as ownership of the adjacent berry patches, but not the hunting rights in the area, nor fishing rights on the Stikine itself. (Emmons 1991:7)

These interior areas offered the drier and sunnier climate needed for drying salmon, as well as abundant berries, which were not available on the coast.

According to testimony collected by Goldschmidt and Haas, the *Kaach.ádi* clan claimed the uppermost reaches of the Stikine River below Telegraph Creek. The *Kiks.ádi* claimed Wrangell Island itself as well as the south end of Etolin Island. Several clans claimed ownership of portions of Etolin Island, including the *Xook'eidí*, the *Kaach.ádi* and the *Teeyhittaán*. Also within the Wrangell territory, the *Kaach.ádi*, *Taalkweidí*, the *Kaasx'agweidí* clans claimed portions of eastern Kupreanof Island, and the *Taalkweidí* claimed Mitkof Island and the mainland area as far north as Farragut Bay on the mainland (Goldschmidt and Haas 1998:Appendix C).

Clan Trade in Area Wildlife Resources

The most prominent Tlingit groups traditionally had rights to at least 1 sockeye salmon stream. Productive sockeye salmon streams were most often claimed by a clan house, with summer camps and smokehouses established near the mouths of such streams (Emmons 1991). For Tlingits, ownership and control of resources implied rights, privileges, and prestige, as well as responsibilities. In the Stikine territory, this involved control of Stikine River traffic and trade. Several Wrangell clans shared the mainstem of the river, but certain sites, especially confluence areas, were claimed by different clans who

controlled use of the resources at those locales (Goldschmidt and Haas 1998). A U.S. government report on the area describes the trade relationship between the Wrangell Tlingit and the Tahltan Indians:

These fish they clean and dry in large quantities both for their own use and for trading with the Indians in the interior for furs, bear and deer meat. A regular trade is thus kept up by them with the interior tribes, and they are exceedingly jealous of any outside interference with it. Much of their antipathy to White people going up their rivers arises from this cause; the coast Indians fearing that the White will steal away their trade. (Scott 1953:81)

In the late 1940s, a researcher working in Wrangell noted a respondent's description of the early Wrangell Tlingit's control of Stikine River trade and traffic, control which excluded the Russians, the British, and the Americans:

No, only the natives. They would get things like clams, ulakan [candlefish] grease, dried seaweed, herring eggs — they used to like those — dried salmon, kelp, and all the things from the sea. They'd go up to Tahltan and get skins like bear, marten and lynx. [*Did the Tahltan people ever bring the furs down here or did the Wrangell group always go up there?*] The Wrangell people always went up there because they [Tahltan] didn't have any canoes. (Scott 1953:81)

By the 19th century, the Stikine people had established their principal settlement at Kotzlitzna, or "Old Town." Here, they continued to monopolize and control the trade with the interior Tahltan Athabaskan Indians, exchanging coastal marine products such as eulachon oil and sea mammal products for interior products such as moose and caribou hides (Oberg 1973:106).

Early EuroAmerican Contact

The Stikine Indians had "probably the longest and most continuous [contact with EuroAmericans] of any except the Sitka tribe" (Goldschmidt and Haas 1998:73). In 1833, during the Russian occupation of what is now Southeast Alaska, the Russian–American Company established a garrison at Wrangell, which they called Redoubt St. Dionysius, to protect the fur trade with the Stikine Tlingits. The garrison attracted people from Kotzlitzna and other settlements, and continued to serve as a gateway to the rich fishing grounds and trade routes of the Stikine River, as well as the waters of Frederick and Ernest sounds, and Sumner and Zimovia straits. The Russian garrison was transferred to the Hudson Bay Company as part of the terms of an 1840 treaty between Russia and Britain. The 1840 treaty also transferred control of the Stikine trade and changed the name of the garrison to Fort Stikine. Before Alaska was purchased by the United States, the garrison became known as Fort Wrangell, and then Wrangell. The community attracted settlers from camps and settlements across the territory of the Stikine Tlingit, as well as EuroAmerican gold seekers, fur trappers, and traders.

The arrival of EuroAmericans in Wrangell and the economic opportunities offered in town played a large role in altering the Native population and its social and cultural life. The establishment of salmon processors at Wrangell quickly altered the traditional Tlingit stream ownership patterns and the networks that controlled harvest practices. Key respondents reported that ever since contact with EuroAmericans, Tlingits have continually lost ownership and control of salmon streams.

Early Economy

Beginning in late 1870s, Christian missionaries arrived and settled in the community. In 1877, Presbyterian and Catholic missionaries established churches and schools in Wrangell. The gold rushes of the Stikine, Cassiar, and Klondike in the late 1800s brought successive waves of prospectors and surveyors. The local economy benefited from the mining industry, especially in the form of transportation services, with steamboats carrying passengers up the Stikine River as far as Telegraph Creek. By 1895, the salmon canning industry brought more people to the region, and Wrangell became the location of

several fish processing companies (City of Wrangell 2004). Salmon canneries and salteries required lumber for construction and shipping crates, resulting in construction of a sawmill in 1888 (Cohen 1989:14).

Commercial riverboat service on the Stikine as far upriver as Glenora provided access to the interior. The riverboat service continued, at a reduced level, through the 1960s, and ended in 1969. The Tongass National Forest was established in 1907, leading to the growth of the logging and timber processing industries. Prospecting, mining and trapping also contributed to the economic life of the community in those decades. During World War II, the Stikine River was used by the military to transport men and equipment used to build part of the Northwest Staging Route.

Early Population and Demography

In 1839, Wrangell District population studies recorded indigenous settlements at Etolin Island and Stikine Village, as well as at other unnamed locations. The study recorded an estimated total population of 1,510, of which only 20 were reported as non-Native (Veniaminov 1984:382). By 1880, the indigenous population in the nearby settlements had dropped to 317 (see De Laguna 1990:205), while the population of the town of Wrangell had risen to 106 (Figure 4). In the next decade, the population of the Native settlements experienced a sharp drop: by 1890, only 73 people were enumerated there, while the population of the town of Wrangell rose to 316 (see Boyd 1990:144 for discussion of epidemics among Tlingit). In the 10 years between the 1890 and 1900 censuses, the non-Native population of Wrangell increased from 71 to 434 (Rogers 1960).

The Tlingit population also rose, but more modestly, from 243 to 364. The district's population rose to 868 in 1900, with only 21 enumerated in "other" places in the Wrangell District. The City of Wrangell was incorporated in 1903. The population outside the town of Wrangell was low through the 1930s, while that of the town grew as Native people relocated there. In 1932, the Wrangell Institute, a U.S. Bureau of Indian Affairs school for Alaska Native children, opened 5 mi south of town, and was a major contributor to the increase to 207 of the population outside of town. The Wrangell Institute operated from 1932 to 1975. By 1939, 34% of Wrangell's population was Alaska Native. By 1950, the town population was 1,263, and the population outside Wrangell was 405. Wrangell continued to grow steadily throughout this period, reaching 1,275 by 1958 (Rogers 1960:Appendix B)(Figure 4).

Early Prosecution and Management of Salmon Fisheries in the Wrangell Area

In 1889, Congress adopted the Alaska Salmon Fisheries Act, which prohibited the "erection of dams, barricades and other obstructions," including Natives' uses of traditional traps and weirs (Arnold 1997:115). The Act was amended in 1896 to prohibit commercial fishing above tidewater in streams fewer than 500 ft in width. The 1924 White Act prohibited stationary fish weirs and traps in tidal river mouths. Salmon fishing for personal consumption gradually became subordinate to participation in the commercial salmon fisheries after the establishment of the canneries at Wrangell and other nearby locations (Arnold 2008:74). Fish and shellfish for subsistence uses could be retained from commercial catches for home use. There was no distinction between "commercial" and "personal use" and "subsistence" fishing in the management of the salmon fisheries (Bosworth 1991:27).

Since no regulations specifically allowed for "subsistence" fishing, many Wrangell residents believed that there were no openings allowing net fishing for home use. Arnold described the pressures on Tlingit people to assimilate during the first decades of the 20th century, and analyzed their adaptations to the new economic realities:

Commercial-minded and more conservative Tlingits renegotiated their cultural identities by asserting their power as producers, workers, and subsistence harvesters. If this process sometimes departed from "traditional" Tlingit culture, it by no means entailed the erasure of cultural traditions or the reinvention of "Tlingit identity." (Arnold 1997:137–138)

In Wrangell, local people worked through the Alaska Native Brotherhood and the unions to promote their economic rights.⁴

After statehood, bag and size limits and gear restrictions were implemented in personal use salmon fisheries at some Southeast streams, and on recreational marine fisheries targeting Chinook salmon. In 1960, the personal use fishery was changed to a subsistence fishery, and the permit system was initiated as a management tool (Bosworth 1991:34).

OBJECTIVES

The objectives of this project as described in the investigation plan were to:

1. Describe historical methods of harvesting salmon for noncommercial uses in Southeast Alaska.
2. Describe Wrangell's historical sockeye salmon subsistence harvests on the Stikine River, Thoms Creek, Virginia Lake, and Salmon Bay.
3. Describe Wrangell's contemporary sockeye salmon subsistence harvests on the Stikine River, Thoms Creek, Virginia Lake, and Salmon Bay.
4. Assess current trends and characteristics of the subsistence fishery by describing the relationships between subsistence, sport, and commercial fishers, harvest areas, and salmon abundance.

METHODS

This project was designed as a collaborative effort between the WCA and the Division. The WCA researchers, with assistance from Division staff, were responsible for the key respondent interviews and observations of contemporary subsistence fisheries. Division researchers were responsible for reviewing and analyzing previously published reports, technical papers, and documents concerning historical methods of harvesting noncommercial salmon in Southeast Alaska.

Objective 1 was met by analyzing, and summarizing previously published reports, technical papers, and documents concerning historical methods of harvesting noncommercial salmon in Southeast Alaska.

Objective 2 was met by analyzing and summarizing previously published reports, technical papers, and documents concerning Wrangell's historical sockeye salmon subsistence harvests. In addition, 21 key respondents were interviewed which added knowledge of gear types and use areas, ecological observations, historical changes, and interactions between subsistence, commercial, and sport fishers.

Division staff worked with knowledgeable long term residents of Wrangell, including Sandra Churchill (report coauthor) and staff of the Wrangell Cooperative Association to select key respondents. Key respondents were chosen for their knowledge and active participation in the fishery. The protocol used in the key respondent interviews is Appendix A. Rather than asking each question, the protocol was used as a guide by the researchers. Not all questions on the protocol applied to every key respondent, so not all questions were addressed during an interview. Each key respondent was interviewed once, except 1 who was interviewed 3 times.

Researchers explained the purposes of the project and the provisions for confidentiality of the information recorded during the interview. Consent forms were used and are on file in ADF&G offices in Juneau. Permission to record the interview was requested of each key respondent. If a respondent did not want his or her interview recorded, the researchers took notes. These notes are on file at ADF&G offices in Juneau. The names of key respondents have not been used in this report. While some respondents did not object to having their names used, it is the policy of Southeast Division staff not to use a respondent's name. This

⁴ See Scott (1953) for further discussion of the social and economic processes of assimilation in 1940s Wrangell.

helps to avoid conflict over sensitive issues, such as clan rights to certain kinds of knowledge or specific geographic sites.

A majority of the interviews were taped using a microcassette recorder. Tapes were fully transcribed by the principal investigator, and both tapes and interview transcripts were archived in ADF&G offices in Juneau. Transcripts of interviews were provided to those key respondents who requested them, and corrections and other changes were made to reflect respondent comments.

Objective 3 was met by observing and participating in subsistence fishing, including documenting contemporary use areas and gear types from observations made while visiting study sites and interviewing key respondents on site. In June 2002, representatives from the Division, WCA, and the USFS traveled up the Stikine River to Telegraph Creek in order to observe the research area. Areas used for harvesting and preserving salmon and other wild resources, documented in written sources (e.g., Goldschmidt and Haas 1998), were located. In July and September 2003, and in February 2004, WCA staff member Sandra Churchill and Division staff member Amy Paige made 3 one week visits to Wrangell and conducted interviews with 21 key respondents.

In August 2003, Division researchers and Tom Cady of the USFS observed a salmon tagging project at the Mill Creek fish pass. In September 2003, Division researchers and USFS staff member Bob Larsen went to Thoms Place to view the area described by key respondents. Travel to Salmon Bay, however, was not accomplished because of weather and scheduling difficulties.

Objective 4 was met by observing and participating in subsistence fishing, and documenting interactions and relationships between subsistence, sport, and commercial fishers, harvest areas, and salmon abundance from observations made while visiting study sites and interviewing key respondents.

RESULTS AND DISCUSSION: EARLY TIMES

HISTORICAL NONCOMMERCIAL SALMON FISHERIES IN SOUTHEAST ALASKA

“Salmon was the most valuable natural product of the Northwest Coast and formed the staple food of the Tlingit people” (Emmons 1991:103). Clan status and wealth were measured by the extent to which clans controlled salmon streams, especially Chinook and sockeye salmon runs. Occupation of the territory at the mouth of the Stikine River gave the Wrangell people access to the salmon resources of the river and its many upstream tributaries, as well as control of the trading routes to the interior. The Tlingits enjoyed well developed property rights to particular salmon streams and defended them from neighboring clans and from the Russians. The rights were vested with the nuclear family or clan, not the individual (Price 1990).

Emmons, a U.S. Navy lieutenant stationed in the region in the 1880s and 1890s described Tlingit ownership and control of salmon streams:

The most valuable property of the Tlingit was the fishing ground or salmon stream, which was a family [lineage] possession, handed down through generations, and never encroached upon by others. In the case of a poor family that lacked a stream sufficient for their needs, or if they had suffered a failure of the run, another lineage might extend an invitation to fish in their stream, but only after the owner had satisfied his needs. (Emmons 1991:105)

In 1884, a traveler to Wrangell noted the extensive involvement of the Stikine Tlingit with salmon fishing: “The Indians begin to scatter on their annual fishing trips in June, and come back with their winter supplies of salmon in the early fall” (Scidmore 1885:58).

In the summer, people canoed long distances to salmon fishing sites, where they camped and fished, and processed and preserved the harvest for winter. Prior to the introduction of commercial seines and gillnets, salmon fishing occurred primarily at onshore and nearshore locations, especially at the outlets of salmon spawning streams, in narrow salt water bays, and at other sites where migrating salmon could be intercepted. These patterns were described in many 18th and 19th century records as well as in the oral histories of the Tlingit and Haida peoples (Emmons 1991).

Although the *Shtax'héen Kwáan* clans eventually moved to Wrangell, they continued to claim and use the traditional clan territories by maintaining seasonal camps for hunting, fishing, and gathering. Mill Creek, which supported a sockeye salmon run, was among the earliest known winter village sites of the *Shtax'héen Kwáan* people (Goldschmidt and Haas 1998:158). Through the early period of contact with European explorers and Russian and English fur traders, and the later period of contact with gold prospectors and fur trappers, the fishing economy of the Native people continued, although with adaptation of new tools and materials, especially nets. The newcomers also adapted many Native fishing techniques and methods of preserving salmon (Arnold 2008:74).

As early as 1898, Wrangell Tlingit felt that they were losing control of the resources and their way of life.⁵ Arnold (1997) quoted Wrangell Chief Kah-du-shan during an 1898 meeting held in Juneau between John G. Brady, Governor of Alaska, and a group of Tlingit chiefs:

By and by they began to build canneries and take the creeks away from us ... and when we told them these creeks belonged to us, they would not pay any attention to us and said all this country belonged to President, the big chief at Washington ... We make this complaint because we are very poor now. The time will come when we will not have anything left ... We also ask [the chief at Washington] to return our creeks and the hunting grounds that white people have taken away from us. (Arnold 1997:134)

TRADITIONAL TLINGIT STREAM TENURE AND FISHERY MANAGEMENT

Prior to European contact, Southeast Alaska Tlingit used a sophisticated system, based on a limited access strategy, to manage sockeye salmon fisheries. Sockeye salmon streams were usually owned, and the resources allocated, by a clan, while other salmon streams were shared among all clans of the village. In this matrilineal society, each child inherited the clan and resources of his or her mother, including the rights to the uses of salmon streams within the clan's territory. Accordingly, Tlingit children did not have rights to their father's clan territories (Emmons 1991; Olson 1997; Ratner et al. 2006).

By the middle of the 20th century the clan territory system had not faded from the memories of elders, who still remembered the clan territory boundaries and traditional management practices (Goldschmidt and Haas 1998:158). For example, if a nonclan member died within a clan's territory, the clan had a responsibility to make restitution for the death, even if the death were accidental or unavoidable. One form of reparation was the exchange of clan land (De Laguna 1990; Langdon 2006). In addition, in times of scarcity, a clan could fish in a neighboring clan's stream by paying a royalty on the catch (Rogers 1960).

The Goldschmidt and Haas testimonies (1998) presented information on clan territory boundaries and the dynamic system of land exchange (see also Langdon 2006). These testimonies supported claims of aboriginal use and ownership of specific salmon streams and waters throughout Southeast Alaska.

Clan leaders were ultimately responsible for the care of their territory. In essence, clan leaders functioned as resource managers of their territories, ensuring the sustainability of clan resources. They monitored the abundance of salmon and determined if there was a harvestable surplus for each stream in their territory.

⁵ For a detailed discussion of the changes to Southeast Alaska Tlingit society and economy that accompanied the introduction and growth of the fish canning industry, see Arnold (Arnold 1997, Arnold 2008).

Elder clan leaders also had the authority to allow members of other clans to harvest salmon from their streams. If a run could not support a harvest, then people went elsewhere to get fish (Langdon 2006).

ARCHAEOLOGICAL RECORD AND ORAL TRADITIONS ON METHODS AND MEANS OF SALMON FISHING IN THE WRANGELL AREA

Archeological Records of Ancient Methods and Means

Archaeological evidence of the earliest occupants of the region includes shell middens, petroglyphs, fish traps and weirs, house pits, burial sites, canoe runs, garden sites, and totems. Several sites are within the traditional territory of the *Shtax'héen kwaan*. Petroglyphs have been found throughout the Stikine Tlingit territory, including near the mouth of the Stikine River; along the northeastern shore of Eastern Passage south of Green Point, at many sites around Wrangell Island, including just north of the town of Wrangell, at sites around Etolin, Kadin and Zarembo islands, and at Whale Passage on the northeastern coast of Prince of Wales Island (Mobley and McCallum 2001).

Remains of ancient stone and wooden stake fish traps and weirs have been documented in the area (Mobley and McCallum 2001). Langdon (2003, 2006) described the ancient remains of sophisticated, semicircular stone fish traps in estuaries, at stream mouths, and at other intertidal coastal locations. The Alaska Heritage Resources Survey identified numerous stone and wooden stake fish weirs and traps throughout the Stikine Tlingit territory, including on Wrangell, Etolin, Zarembo, Kupreanof, Woewodsky, and Prince of Wales islands, at sites on the Cleveland Peninsula (near Ketchikan), and along mainland shorelines (ADNR 1984:8). Remains of wooden leads to basket traps were found in Red Bay, Salmon Bay, Whale Passage, and Little Ratz Harbor on northern Prince of Wales Island, territory claimed by the *Teeyhitta* clan of Wrangell (Campbell 1982). A few southern Southeast Alaska fish weir sites were dated, through samples taken from the wooden stakes, to 70 –150 years BPE to as old as 3,620 – 3,740 years BPE (Moss et al. 1990:85).

Wolfe (1989:99) described weirs and traps:

Weirs and traps were used to catch salmon in rivers, at river mouths, or along shallow stretches of shore where fish schooled. They were principle means for catching sockeye salmon ascending streams to spawn. The tidewater weir was a stone or wood fence constructed in the tidal mouths of streams to guide fish into a holding area or into an enclosed trap, from which the salmon were speared, clubbed, or dipped. The river weir was built in shallow rivers commonly with wooden basket traps. Fish were speared or netted from the holding areas.

Spears and gaffs were principally used for harvesting salmon from the stone and wood stake traps and weir systems, as reported by Ames and Maschner (1999), Campbell (1982), Langdon (2003, 2006), Mobley and McCallum (2001). Writing in 1838, Robert Campbell (Price 1990) of the Hudson Bay Company noted how the Tlingits would catch thousands of fish by damming the Stikine River, then spearing the fish. According to Wolfe (1989:99–100):

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

Several types of weirs and traps were used by the Tlingit to harvest salmon. The 2 major types used were semicircular stone weirs and woven wooden traps used with rock or wooden leads (Campbell 1982:1; Langdon 2006; Stewart 1977), situated on tidal flats and on rocky beaches, and even in stream courses between bedrock shoals. Weir remains usually consisted of a series of upright wooden stakes worn down through years of exposure. Some weirs may have functioned as small dams, extending across the entire width of a stream or tidal channel, and this type was the most frequently illustrated in ethnographies (e.g., Emmons 1991).

The weirs found at Red Bay and Little Ratz Harbor consisted of rock alignments crossing the creeks from bank to bank. A large midden adjacent to the weir at Red Bay was found in a forest of old growth spruce, 1 of which dated to 1692 (Campbell 1982:18). The Salmon Bay weir consisted of rock alignments in the stream channel that were parallel to the creek banks. According to Campbell, "The weir at Salmon Bay has a series of pegs running from each side of the (rock) alignment nearest the creek banks, through the creek, across the gravel shore, and to the grass flats, likely representing leads used to direct the fish into the trap" (Campbell 1982:19).

The fish traps were probably used with a partial weir in order to trap salmon as they milled about in estuaries before ascending their natal streams (Moss et al. 1990:192). A trap may have consisted of an arrangement of wood stakes, stones, or other elements left in place as an enclosure. Some traps probably involved portable and removable elements, such as basketry or latticework traps, or minimally altered brush or boughs woven into a framework (Moss et al. 1990:180). The streams where these ancient fish weirs and traps were located most likely supported runs of several species of salmon.

The ancient designs were highly efficient, likely yielding large catches which would entail both an efficient means of processing and preserving, and the social organization to support them. The traps were evidence of the high value placed on salmon by the early inhabitants.

Langdon (2006) described the basic principles of tidal pulse fishing: the semicircular stone walls were constructed to be as high as the water level during mid tide. The walls would be completely covered at high tide, allowing salmon to travel upstream. Salmon were captured behind the walls only on the falling tide. Fishing methods of this type were called beachscaping, or streamscaping when found in freshwater creeks and streams (Langdon 2003).

Moss et al. suggested "a wide range of fish were caught in weirs and traps, including varieties of eulachon, trout, shiners, perch, flounders, lamprey eels, and others, as well as salmon" (Moss et al. 1990:193). Campbell (1982), however, hypothesized that different types of weirs were developed for harvesting specific salmon species: semicircular stone weirs for pink and chum salmon, the most abundant salmon species in southern Southeast Alaska; wooden basket traps next to rock or wooden weirs for sockeye and coho salmon. The intertidal, semicircular stone weirs were built in the intertidal zone where pink and chum salmon milled before entering fresh waters. The weirs were submerged at flood tide, fish would enter the weir, and when the water ebbed, the fish were stranded.

Typically, sockeye and coho salmon rapidly ascend the creeks in order to spawn. Campbell (1982) described how a framework of upright poles interwoven with alder branches or spruce roots was pegged into the shoreline or streambed at low tide. The framework then directed the fish into cylindrical or box shaped basket traps (see also Stewart 1977).

According to Wolfe (1989:100) nets were not common in Southeast Alaska prior to the 1880s:

At historical contact nets were known and used for taking several types of fish, but apparently they were used for harvesting salmon primarily by the Tsimshian and Haida. Nets were made of fiber from the stinging nettle, willow sapling, and inner cedar bark. Several types of nets were used for taking salmon. Beach seines were used in marine waters at the mouths of streams. Gillnets were set in marine waters and from river banks. Dip nets were used to dip salmon caught in weirs and traps.

With the development of commercial salmon fisheries nets became a primary method for catching salmon. Cotton twine beach seines 70 to 175 fathoms long and 6 to 12 fathoms in depth were operated at relatively sandy and shallow river mouths. Flat bottomed open rowboats 20–25 ft long took the net from shore, encircled the fish, and then the net was pulled to shore. Beach seines were commonly used at the mouths of streams which were further blocked by log weirs to keep salmon from ascending streams (Moser 1899; Langdon 1977:216). By the mid 1890s, purse seines were introduced so as to harvest fish in deeper waters, and gasoline powered purse seine vessels were being used by 1910–1920 (Langdon 1977:239). Powered winches and rollers were commonly used by the 1930s, and outboards on skiffs by the mid 1940s. Power blocks were introduced by the mid 1950s and synthetic net materials during the 1950s (Langdon 1977:263,265).

Oral Traditions about These Ancient Methods and Means

In the precolonial period, the return of salmon marked the beginning of the subsistence cycle. People traveled to and stayed in fish camps during the summer, fishing and processing their harvest by drying and smoking. By late fall, when the winter's supply had been obtained, the people returned to their winter villages (Emmons 1991). Price (1990) and Colt (Colt 1999:3–4) noted that the “salmon fishing was a grand social ritual as well as a subsistence activity.”

None of the key respondents interviewed as part of this project had direct experience with older fishing methods, or shared any memories from their elders about fishing practices used in the 19th century. However, some described the archaeological remains of rock entrapments and wooden fish traps in the area and understood how they worked. The following quotes are from key respondents describing salmon entrapments and how they were used by people before the current era. The first respondent described a wooden fish trap observed near a contemporary farm close to Green Point near the mouth of the Stikine River:

[There was a fish trap] that got exposed. So you knew those Indians did use those wooden fish traps in them days. It was a wooden trap, still intact, that got uncovered. My brother said he told Dad about it, and they were going to go and try to get it out of there, but the river's bringing sand down all the time, and it started covering up again. You know there was some kind of fishing up there ... Our farm was over across there, up above Green Point. It was up above our farm a little ways, about a quarter of a mile. A big creek comes out there, it didn't have a name, it just came down off the mountain. (Interview conducted February 14, 2004)

A stone trap observed at Kunk Creek on the northeastern part of Etolin Island, was described next:

You can't see it too plainly, but there at Kunk Creek right down here. Those old traps ... those old rocks are visible where you can see where they stacked them, and then when the tide went out, the fish would get trapped back in there, in those rocks. Those Indians had to move a lot of rocks. Obviously it worked, or they wouldn't have done it. (Interview conducted February 14, 2004)

A Wrangell resident described the use of stone traps, and referred to them as “ancient,” in operation before his/her grandfather's time:

[Do you have any recollection of the really ancient fish stakes, and the fish traps in that area?] No, I don't. That was long before. I know there were traps there, but it was long before my time, long before my uncle and grandfather's time too. They're ancient. At Mill Creek, too. It was made of rock. They came in over the trap while the tide was in, and then as the tide went out ... then they would gather the fish up. [*The natural flow of the tide would catch them in those rocks?*] Well, they didn't get caught in the rocks. They

set up a barrier. They'd throw, they'd plunge⁶ ... we call it "plunge," so they wouldn't come on down. The rocks are still there, but the trap isn't. Just like [name] river up in Bradfield Canal, there are pole traps there ... They're probably 3,500 years old. It's long before. (Interview conducted July 16, 2003)

SALMON HARVESTING FOR COMMERCIAL AND NONCOMMERCIAL USES AFTER 1880

The commercial salmon industry established in the late 1870s played a central role in the economy of Native and non-Native Southeast Alaska households, surpassing the fur trade and mining in importance. Beginning around 1880, it was common for Southeast residents to fish for both noncommercial use and for commercial sale at the same time, a practice common elsewhere in Alaska (Arnold 2008:72).

Early Wrangell commercial fishers used their own dugout canoes, powered by paddles or oars, to transport sockeye salmon from as far as 50 mi away. New technologies introduced by the salmon canning industry were quickly adopted in the early 1900s, and Wrangell residents soon served as crews and captains on the larger seine boats and family owned and operated gillnet boats. This new equipment was adapted for use in obtaining salmon for home use (Price 1990; Scott 1953).

The use of hook and line for halibut and trolling gear for Chinook and coho salmon was widespread. Wrangell fishers also participated in the longline fishery for Stikine River Chinook salmon. Other species were also targeted by the commercial operators, including shrimp and halibut (Scott 1953). In 1936, Lipps (c. 1937:82) described Wrangell as:

... Probably the best for all-around employment of any town in Alaska. Some kind of work is going on all the year. They have spring trolling, summer fishing for canneries, fall and winter trolling, crab and shrimp fishing, cold storage for halibut and troll salmon, freighting up the Stikine River, logging for the local mill, and a fine harbor for shipping.

Commercial Processing Facilities and Their Impact

The earliest salmon processing facilities were salteries, which were followed by canneries in the late 1870s. By 1878, canneries were located at Klawock on west Prince of Wales Island and at Old Sitka on Baranof Island (Price 1990:49). The Alaska Sanitary Packing Company operated in Wrangell from 1912 to 1924; the Far West Alaska Company, which was formed in 1929 and merged with A.R. Breuger in 1935, operated a cannery in Wrangell until 1942; and the Wrangell Packing Company started in 1929. New canneries were established at Union Bay, Santa Anna Inlet, and Point Warde just west of Anan Bay (Rich and Ball 1933:624–625). Other early canneries in the area were established near Petersburg in 1900, and about 10 mi south of Petersburg in 1901.

The commercial salmon industry attracted immigrants from the Lower 48, Europe and Asia, many of whom became permanent residents. According to Moser (1899:103), the Wrangell cannery "employed 20 white fishermen, and received the catch of 70 natives. In the cannery were 8 whites, 4 native women, and 80 Chinese." By the 1900 fishing season, the Wrangell cannery employed "24 white fishermen, besides purchasing from fisheries engaging 150 native fishermen, 7 white and 4 native cannery-hands, and 86 Chinese" (Moser 1902:279).

Wrangell Tlingits were actively involved in the salmon canning industry from its start, both as fishers and as cannery employees. When steamboats were introduced Wrangell Natives were among the first licensed steam engineers and Wrangell Natives became commercial riverboats pilots on the Stikine River.

⁶ "Plunging" was splashing water or creating bubbles in the water by throwing rocks or by using a funnel shaped tool, or another similar object, with the object of preventing the fish from leaving the trap or net.

In 1910, commercial salmon traps were introduced into the region and their efficiency assured their rapid spread. Traps were generally situated along the migration routes of returning salmon, at capes in Sumner and Clarence straits and in Ernest Sound, at Thoms Place and at Salmon Lake Bay. By 1927, there were 69 fish traps in the northern part of the Clarence Strait district, and 18 in the Ernest Sound district, all of which supplied the canneries in Wrangell. The traps also increased the number of salmon stocks being exploited (Rich and Ball 1933).

With most of the fish supply coming from traps owned and controlled by the canneries, many local independent fishers did not have an outlet for the fish they had harvested. Independent Wrangell gillnetters gradually monopolized the Stikine River fisheries, where seines and traps were unsuitable. The gillnetters became successful enough to outcompete established companies, enough so that all gillnetting in the district was discontinued, at least prior to 1914⁷ (Rich and Ball 1933:555).

The commercial harvest of salmon in Southeast Alaska peaked in the late 1930s and early 1940s. By the early 1950s, the salmon fishing industry was experiencing a serious downturn, reaching historical low levels in the early 1960s (Arnold 2008:118). The decline in commercial fishing was mirrored in social and economic changes in Southeast Alaska brought about by World War II. Many Wrangell area fishers were called into the armed forces. When they returned home, they found a different economic situation (from interview conducted September 17, 2003).

The decline of the salmon stocks was eventually attributed to fish traps. Although one of the first actions of the new Alaska State Legislature was to ban their use, it was not soon enough to prevent the economic slump in the Wrangell area (Price 1990). The drop in salmon prices resulted in fewer people fishing in many different fisheries in order to make ends meet, which left little time for subsistence fishing. For those who did fish commercially, it was common to retain a portion of their commercial catch for home use (Tables 6 and 7) (Arnold 2008).

Harvests increased during the mid to late 1960s, but in the early 1970s, another decline in production occurred.

Commercial Fishing and Customary and Traditional Fishing Patterns

Commercial fishing brought significant changes to Wrangell Tlingits' customary and traditional fishing patterns. It attracted Alaska Natives to the community to participate in the fisheries as cannery workers and fishers, and in auxiliary support occupations. These factors led to many families gradually abandoning the practice of moving to traditional fish camps during the summer fishing months. Some Wrangell families continued under a modified pattern: living in town but regularly returning to their traditional sites during the salmon season (from interview conducted September 17, 2003).

Information from key respondents suggested several patterns of adjustment to the demands of the commercial fishing industry. Families might accompany the head of household to the remote cannery site, where men fished for the cannery using cannery boats and gear, and women cleaned and cut fish in the cannery. Young boys and girls fished for food for their families at nearby streams, smoking and sometimes canning salmon harvests. In some cases, families used cannery facilities to can or "jar" (preserve in glass jars) their personal catches. When Wrangell men, both Native and non-Native, were able to obtain their own seine boats, they frequently traveled throughout Southeast Alaska, often with their sons as crew, to participate in the seine openings and to sell their harvests to fish buyers throughout the region. Wrangell commercial fishing crews frequently included both Natives and non-Natives, as captains and as crew (Scott 1953).

Older Wrangell fishers interviewed for this project were first introduced to salmon fishing as crew members on local seine boats in the 1930s and 1940s, or as gillnetters and trollers for one of the local

⁷ No data were available to show the number of nets operated in the Stikine district after 1914.

canneries. The practices of setting aside some commercially caught salmon or setting nets during periods closed to commercial harvest were adopted in order to provide fish for home use, and the need for entire families to travel to fish camps became unnecessary. Many of the elders' earliest memories of learning to fish for salmon were of time spent on commercial gillnet, seine, and troll boats during the 1930s and 1940s:

[Was your dad involved in commercial fishing?] Yes, my dad was. He'd bring fish home. My dad never owned a boat but my uncles did. I started going out with my uncle [name] when I was about 8. And he was a commercial crab fisherman. I learned how to operate the boat, I was about that size. It wasn't a very large boat, about thirty four feet, and it had an Atlas Imperial. I don't know how many horsepower it had, not very many, probably about twelve. And I would operate the boat up ... I would have to steer up to the buoys. I got yelled at a lot. It was good. Then he was also a commercial troller during the season. And I learned a great deal about fishing from him. Also I had another uncle ... and he was an excellent troller and he was also a seine boat skipper and I went with him during the summers while he was seining. Of course I was just one of five other individuals, crew members. And I just went along. I was the "plunger boy." Them days most people went from one stream to the next. (Interview conducted September 17, 2003)

While most families lived in town by the 1930s, some lived out of town, on lands where they had traditional ties from before the cannery era or on federal homestead grant lands at the mouth of the Stikine River or on Zimovia Strait south of Wrangell. Some people lived on fur farming sites leased from the federal government. For all these families, fishing for personal use continued as distinct from commercial efforts, and they often used the new gear introduced by the canneries:

[You were telling us you had a farm up on the Stikine. What years were you living up there?] We moved up there in nineteen thirty-four or 'thirty-five. My dad put in for a homestead. It was during the Depression, so we had to have some way to live, you know, so we moved up there. It was just above Green Point. We had a setnet out in front of the house, where we caught cohos, king [Chinook] salmon, and whatever fish came along there. We'd smoke them, and dry them, and can them. We lived up there just off the land. There was no other way to live. We lived off the land there. In the spring we'd get king salmon, in the early spring. (Interview conducted February 13, 2004)

These methods and skills were combined with knowledge passed down from elders about salmon behavior. One key respondent described how his father learned to hang a gillnet from Willis Hoagland, one of the elders who gave testimony to Goldschmidt and Haas in 1946:

He [Willis Hoagland] came up ... My dad would tell my brother to row down [to town] and pick up Willis Hoagland ... if they had to hang a net. And my brother would row down to get him ... And my brother would pick him up and bring him up to our farm on the river. And my dad and him would lay out all the nets and the ropes, and the cork line and lead line and net. And they would start hanging them. Him and my dad would start measuring ... they had a stick that they'd measure the hangings on the cork line, so that it had a nice shape to it ... the Vs in the net hung just right, so that the fish, when they enter it, they got caught. It was all pretty good. They had to hang those nets just right, or they wouldn't fish.

They'd measure on the cork line, and then they'd measure the lead line, so it had a bag in it when it was fishing. The fish would come in like this, and the fish couldn't go down and ... because when you're fishing on the river here your lead line would drag on the sand bars, and they couldn't get under the net. They could go around it, but they couldn't go under it. [The net was] twenty-five meshes [deep]. That's all they would allow us is twenty-five meshes. *[So that was a government rule?]* Yep. And if you made it longer

than that ... you see when we fished on the river we fished on the incoming tide. It wasn't very deep, so we had to use twenty-five mesh nets, and if you made them any longer than that, if you had three hundred fathoms [1,800 ft] of net and you hooked on to a snag on the river, it would either tear your net up or bust your cork line. Three hundred fathoms of net in the water is a heck of a strain on the lead line. If you get hooked up on something, that's a lot of strain. If you hook up on a log that is half buried in that river, you know, and you get your net hooked up on it, and you get your lead line ... man. We'd have to pull it up just as far as we could, cut the lead line off on one end, and most of the time it would rip the hangings on the rest of it until it broke free. And then you'd have these big holes to patch up. *[Did you learn how to mend the net?]* Oh, yeah. You either had to learn how to mend the net, or you couldn't fish very good. (Interview conducted February 13, 2004)

These fishing patterns continued until World War II, when, key respondents indicated, things changed. During the war, the Wrangell logging industry expanded, which offered wage employment but which required a different skill set. Key respondents characterized the postwar changes in their way of life as "less living off the land." Young men were used to doing things differently:

[What happened? How did things start changing? What do you think made the biggest difference in how much people fished here for subsistence?] Well, when ... let's see. The definite change came right after World War II. Up until that time, it was a traditional lifestyle. And I ... my people had different sites on the river. And it was their subsistence lifestyle ... they would go on the river and get the fish. Not only Mill Creek, but they would follow right up into Andrews Creek, Dog Salmon Creek, Gold Creek, and Shakes. (Interview conducted February 13, 2004)

EARLY 20TH CENTURY SALMON PRESERVATION AND PROCESSING METHODS AND CULTURAL BELIEFS

Several key respondents described the salmon processing methods preferred by their parents. However, these traditional recipes did not appear to be as popular with the key respondents themselves.

The humpies [pink salmon] were smoked, and they were filleted out like a newspaper. And they were dried, and you could actually take them and eat them right out of the smokehouse. Because it would be a dried salmon. And then other times, it all depends on what our mother wanted. She would half smoke them, and then she would jar them, same as with the deer meat, the duck. *[Did you do something special with the sockeye?]* No, we treated them the same, all the same. Except, no, I shouldn't say that. We would do a lot of salting. They would salt not only the sockeye, but also the king salmon, the steelhead [trout], and my grandfather especially liked the humpy belly. So he would cut the belly out and that would be salted for the winter. Then late in the year, when the male developed a hump, and that was a delicacy for our people, and I know my grandfather looked forward to that. He'd cut that big hump off. *[Is that after the males have spawned?]* Only the males. They get them out of the stream ... that was a Tlingit delicacy. My granddad especially liked it. I don't remember what they called it. Like I say, I don't know the Tlingit name. *[Was it dark, dark color?]* Oh yeah, they're a dark brown, but it's the hump ... Kind of gristly. (Interview conducted July 13, 2003)

Another respondent described making a sort of head cheese out of salmon eggs.

Have you ever heard of *kaháakw*? OK, we'd take the fish, and my mother would make *kaháakw* for us ... take the eggs and make *kaháakw* out of them for us. *[It's sort of like Indian cheese?]* Yes, it's good. I love it. Fermented fish eggs. And *k'ínk'*. My mother

would take it [the fish] out and dig a hole in the gravel when the tide was low. And she would fill that up with fish heads, and then cover it up, until it was rotten. No, this don't sound very appetizing. She would dig it up. When it was done, she'd call it "done." And we would roast it in the fire and eat the cheeks and stuff. My dad wouldn't eat that stuff. It tastes just like pickled fish. He wouldn't touch *kaháakw* or *k'ínk'*. Couldn't get by the smell. Once you break *kaháakw* in your mouth it is different. It tastes good. It doesn't taste like it smells. It's like Limburger cheese. My dad would eat Limburger cheese but he would not eat *k'ínk'* or *kaháakw*. (Interview conducted February 13, 2004)

The work of processing and preserving salmon for later use was significantly influenced by the introduction of canning technology. Cannery operators also experimented with some of the traditional recipes for preserving salmon. People continued to smoke salmon, and, to a limited extent, dry salmon, but they also acquired the equipment needed for canning or jarring fish. One key respondent described his family's canning process used at their Stikine River homestead in the 1930s:

Canning our salmon ... we canned them in jars, quart jars. And that was king salmon. We'd have to boil them ... build a big fire ... we had a copper kettle. We'd boil them for three hours. *[Before you had a pressure cooker, you had to do it that way?]* Yep. *[And did you smoke any of those kings also?]* Yes, we did. My mother and Dad and I, we all helped putting up salmon. We'd fillet them out. And some of them we dried. Yep, we hung them. *[So you kept the tails on and hang them over?]* No. We'd hang them with string. We'd cut our smoke wood and hang our fish up. Then we'd smoke them for three or four days, and then we'd can them. *[So did you hang them in a smokehouse, or just outdoors?]* We had a smokehouse. And the ones we dried ... we'd come to town and get cheesecloth and build a rack, not a big rack, kind of a lean to, and cover it with cheesecloth. And then we'd dry the ones ... the cheesecloth would keep the flies off. *[Did you have any kind of a little fire going?]* Yes, a little fire, so the smoke would go through the cheesecloth and keep the bugs away. We'd fillet them out and everything like that. It's quite a deal every year. *[How many would you do?]* Oh, probably fifteen or twenty kings maybe. (Interview conducted February 13, 2004)

Key respondents also spoke about how their elders taught them to handle fish and how to behave around fish. The widely shared Tlingit ethics of respecting creatures taken for food and of avoiding waste were expressed by several of those interviewed for this project:

[Did (your mother) tell you any of the traditional ways of dealing with salmon, any rules about how you are supposed to behave with salmon? What did she tell you?] To respect the animal or the fish ... anything that was ... never to make fun of anything, you always respected it. Don't take any more than you need. I remember that. Don't waste it. I think it had a lot to do with [whether the fish would come back], I think that was their religion almost. If you took care of the animal, the animal would take care of you. Because I can remember that when I used to go out deer hunting, she always made sure that I took care of the animal right. Never make fun of anything. (Interview conducted February 12, 2004)

Another respondent was asked, "Did you learn anything from the Tlingit elders about how to handle salmon, about what to do? Were there any rules that you had?"

Oh my mother learned a lot of it, and she taught a lot of it to us. The main thing you must always do is clean 'em right now, get them out of the sunshine. The best we could do ... you know the Stikine River water is cold. We put them in a box, and put potato sacks on them, and soak them in that cold water. Put that over them 'til you could get at them. Usually overnight. Fish with rigor mortis in them, they're too fresh to even cook or whatever. So we held them over for a day, just to keep them nice and cold with potato

sacks on them. Cold, and do it quick as you can, get them taken care of. Even when we did fish, we'd ice them overnight. Get them in ice right away, and start in on them right away the next day. Just keep right on 'til you get them done. That's the best you can do with fish. (Interview conducted February 14, 2004)

Until the first decades of the 20th century, many Wrangell people continued to travel to fishing locations and sites upriver on the Stikine, where there was more favorable weather to dry salmon, since the climate at Wrangell made drying fish problematic.

The opportunity to obtain dried salmon by trading with the Tahltan Indians at Telegraph Creek meant that Wrangell people concentrated their efforts on smoking and canning fish, and gave them the motivation to travel along the Stikine River as far upriver as Telegraph Creek.

EARLY USES OF THE STIKINE RIVER

The Tlingit, Tahltan, and Sekani peoples used the Stikine River watershed, according to the testimony of local residents given in 1946 (Goldschmidt and Haas 1998). As elders in 1946 recalled, there were Tlingit fishing and hunting camps and villages at various sites at the mouth, along the middle and upper reaches, and along the tributaries of the Stikine River as far upriver as Telegraph Creek, where a wide range of harvesting and processing occurred (Goldschmidt and Haas 1998).

Navigation on the Stikine River presented significant challenges to the early travelers. Local residents used a variety of smaller craft to access fishing, hunting, and gathering sites. Key respondents for this project described rowing both long and short distances, or sometimes using small skiffs outfitted with sails and timing their travel upriver to take advantage of favorable currents and tides. The use of outboard engines, of the type that powered small commercial fishing vessels used by independent Wrangell fishers, was common by the 1940s.

The historical methods and gear for salmon fishing varied in the Stikine River watershed, and were dependent on the particular features of the fishing sites, according to key respondents. Fishing sites were located on the main stem, on the middle and south arms, and along the sloughs, creeks and rivers draining into the main stem. Key respondents described fishing with set and drift gillnets, dip nets, spears, and hook and line. Late 1930s spear fishing, using a homemade spear, was described by 1 key respondent for this project:

About nineteen thirty-eight, 'thirty-nine. This was right in the slough that came down. It was just a tributary of the Stikine that came down along by the Garnet Ledge. And it was kind of deep up there by the Garnet Ledge. It went in like a big deep hole. They'd [the salmon] buck the tide up there, and they'd lay in there until the tide covered the sand, and they'd go on up. There were a lot of cohos in there at that time. [*You were spearing for cohos?*] Yes. Big old cohos with their backs sticking out of the water. It was easy to run them down. But you could only get so many. That's all you could use. Ten pounds. It would last you all winter ... in cans. [*Did you make your own spears?*] Yes. We just got a willow stick, with a brace and bit, drill a little hole in there and pound a spike in there, cut the end off and file it sharp with a file. A willow stick. Didn't put any kind of hook, just a spike in the end there, cut the big part of that spike off and then take a file and sharpen it. And just scooped them over on the sand. If you could see a fish's back there was plenty of water for them to run in. (Interview conducted February 14, 2004)

When commercial gear was first introduced, it was also often used to harvest for home use independent of commercial efforts. Gillnets would have been used in the murky, silt laden waters of the lower river main stem, tributaries, and sloughs. Their use was always tricky, however, since the Stikine River carried heavy loads of debris that could rip and snarl nets. Smaller lengths of gillnet could be set in eddies or at other protected sites along the lower shoreline. Spears, dip nets, and hook and line were used in the clearer

waters at the confluences of tributaries. One key respondent described fishing in the 1930s and the early 1940s at the family homestead, which was located just north of Green Point (Figure 1):

[But when you were fishing for your own use, you usually just used a setnet?] Oh, yes, just a little setnet. Right above our place, like a hundred yards. There was a big rock pile out there, the river came down around there, and there was a big eddy behind it. Dad put a great big rock there with a buoy on it to rope off that rock, and then we just tied up to it and it stayed there all the time, until it'd have to be cleaned out. *[Would you be catching sockeyes that way at all?]* Yeah, you could. Starting in March, you'd get a king or two. They're the first ones to show up, and then the sockeyes follow them. Every once in a while you'd get a humpy or two.

[The net was] about sixty-five feet. *[And it was just attached to the shore?]* Yes, we'd set it out and put an anchor on the other end, so it had a nice hook in it, so that when the fish came in they couldn't get through, so they'd hit the net. Then we'd go out and take the fish out of the net. It was angled down the river a ways, and they'd swim up along the shore and hit that net and get caught. *[Were there any rules in those days, or could you put your net out (on the river) any time?]* You could put it out any time, whenever we needed to start canning our salmon and stuff.

You just left it [the net] out, and about once a week you had to take it out and let the sun shine on it, because there's little ... I don't know what you call it, they look like little roots and things, they'll sink a net. Fish won't even get in it. It hangs on the webbing that much. You've got to let it dry and then you can just break it off, like paper. But the river is full of that stuff. I don't know what it is. It looks like little roots of some kind. And it's just solid in the water. About every three days you've got to take a net out, let it dry, and then that stuff breaks off. (Interview conducted February 14, 2004)

One key respondent spoke of fishing on the upper Stikine during fall hunting trips in the 1950s:

We used to do a little bit of subsistence fishing up on the Stikine just before moose season. There were several of us guys that used to hang around together when we were in high school, go moose hunting and we'd always take a chunk of gear with us and set it up in one of the sloughs, because we always catch a few fish here and there. *[That would be in the fall?]* Yeah, mainly for our own enjoyment and just to have something to eat while we were up there moose hunting ... That would have been from about nineteen fifty-six, if I remember right, 'fifty-six, 'fifty-seven ... well, I graduated in nineteen fifty-nine. We continued to do it that way every once in a while up there, or somebody else would have a little setnet and we'd kind of help ourselves. *[So it would be a little setnet? And you'd tie on shore?]* One end was on shore and the other end would just kind of be staked out, straight out to a snag or something. And it would be in any one of the sloughs ... a little gillnet with floats on it, forty, fifty, sixty feet long. Mainly down on the Middle Arm and down the North Arm ... and it would be over on Farm Island. We used to call it Breese's Slough, I don't know what they call it now. That was one of the places we used to go. Or they used to call it Sawmill Slough because there was an old sawmill in there ... Back in there, there are several little sloughs back in there ... the north tip [of Farm Island], I guess that would be the northeastern end of ... between Hooligan Slough and North Arm. There are several little sloughs that go back in, we used to catch dogs [chum salmon] and coho and also some humpy. (Interview conducted February 15, 2004)

On an early summer 2002 trip to Telegraph Creek in British Columbia, researchers traveled with 2 Wrangell residents, who located early commercial and subsistence fishing sites on the Stikine River and its tributaries. In order to present a cultural geography of the area, following is a compilation of the 2

residents' oral reports on salmon fishing, as well as excerpts from the 1946 testimony given by Wrangell residents, as reported by Goldschmidt and Haas (1998).

Contemporary Wrangell residents had vivid memories of Stikine River subsistence and commercial salmon fishing in the 1930s, early 1940s, and through the outbreak of World War II. They recalled seeing smokehouses at the confluence of Andrew Creek, on the lower Stikine River.

According to the 1946 testimony of Willis Hoagland, a 70 year old Wrangell resident of the *Kiks.ádi* clan, the broad alluvial fan at the mouth of the Stikine River, with its small islands and sand bars, was important for fall Chinook salmon fishing, spring eulachon fishing, as well as fishing for sockeye, pink, chum, and coho salmon returning to the Stikine River. There were *Naanyaa.aayí* villages at Green Point, Point Rothsay, and on Sergief Island (Goldschmidt and Haas 1998:156).

Green Point to Garnet Ledge. There were good gillnet sites in back eddies near a creek locally referred to as Goat Creek, which is southeast of Garnet Ledge. According to a local respondent, this fishing site was much desired by the Wrangell Tlingit. Chinook, coho, and pink salmon spawned in Goat Creek, and freshwater clams were found nearby.

There were camps at the mouth of the Stikine where the people went in the fall to get kings, sockeyes, humpies, dogs, and cohos. Some of the people stay there until fall, and some go to other places. I gillnet there now, and I went after hooligans in the spring of 1945. (Goldschmidt and Haas 1998:156)

Sergief Island. The Tlingit traded with the Tsimshian on this island in the Stikine River flats. The Tlingit once set gillnets for salmon and eulachon in an eddy that was midway along the eastern shore. The *Naanyaa.aayí* clan once had longhouses in the woods near this eddy. In 2002, the time of the researchers' trip, the eddy, covered by willows and alders, no longer existed, and the surrounding land was privately owned. A previous landowner allowed researchers to look for cultural artifacts on the site, but the land had since changed owners. The island was also thought to be where Chief Shakes acquired his name from a Tsimshian chief who was named *Wee'ceks*, as part of a peace settlement with the Tlingit after they captured his Tsimshian warriors in a Sergief Island slough. The name was later shortened to "Shakes." The waters between Sergief Island and Point Rothsay were known as the "bone yard" because they were the "final resting place" for trees and other large debris that floated down the river. In 1946, Thomas Ukas stated there was a *Naanyaa.aayí* clan village at Sergief Island:

The people from Wrangell go there in the spring to gather hooligans. They don't live here in the winter, but use it for spring camp. Sergief Island is now owned by a white man. (Goldschmidt and Haas 1998:158)

Point Rothsay. The eddies near Point Rothsay offered places for the Stikine Tlingit to set 10 ft gillnets. A contemporary respondent thought the nets were made from nettle and spruce roots, but was not sure. In his 1946 testimony, Thomas Ukas stated "There was a village at Point Rothsay, which belonged to the *Naanyaa.aayí*" (Goldschmidt and Haas 1998:158). Willis Hoagland, also testifying in 1946, stated:

There was a hooligan camp at Six-Mile Point, just above Point Rothsay. There were camps at the mouth of the Stikine where the people went in the fall to get kings, sockeyes, humpies, dogs, and cohos ... I gillnet there now, and I went after hooligans in the spring of 1945. Quite a few of the people from here go up there every year. (Goldschmidt and Haas 1998:156)

Thomas Ukas described gillnetting for salmon between Point Rothsay and Sergief Island and along the east channel as far as Babbler Point; trolling in the spring from Point Highfield near Wrangell as far as Babbler Point; and trolling north of Woronkofski Island, around Vank, Sokolof, and Rynda islands (Goldschmidt and Haas 1998:160).

Cottonwood Island Slough. In 1898, this was the site of a lawless gold rush tent city, during the brief time that the Stikine River was used as a route to the Klondike. It was also a traditional salmon setnet site: the sloughs in this area were considered especially good places for catching coho salmon. Eulachon were also harvested from pools during low water levels in the spring (from interview conducted June 8, 2002).

North Arm Creek. This was known to be a Chinook and pink salmon stream. According to Thomas Ukas, “There were also smoke houses on the North Arm which belonged to my grandfather, who is a member of the *Xook’eidí* clan. They gathered berries, smoked fish, and hunted in that area” (Goldschmidt and Haas 1998:157).

Confluence of Andrew Slough and Andrew Creek. This was the location of several smokehouses as well as a summer camp and, during the 1940s, a cabin. A USFS public use cabin, built in 1982 and used by ADF&G for sockeye salmon research in the 1980s, was located across the river. Pink, chum and coho salmon were harvested at this confluence, since they schooled close to the bank. Andrew Creek also had a small run of Chinook salmon, which were a source of Chinook salmon eggs for the state fish hatchery at Snettisham. One key respondent believed that his ancestors had traps in Andrew Creek, but he was not sure. According to Thomas Ukas, “The Andrew Creek, which flows into the Stikine River, belonged to the *Kaach.ádi* people. Here, they dried fish and hunted bear in the fall ... There used to be smoke houses at that place” (Goldschmidt and Haas 1998:157). A contemporary key respondent spoke of fishing at Andrew Creek in the 1930s:

Oh, yeah. We went up and got sockeyes. There’s a sockeye run in Andrews Creek, and they had a big smokehouse there in the old days. The Indians built a big smokehouse, with a thing out the top to let the smoke out, and they’d hang their fish in there. It was big, bigger than this front room. *[So that would be about 17’ x 20’?] Yeah. I think the Forest Service burned it down, or something like that. [Like a big community smokehouse?] Yep. Most of the fish they got there were king salmon, coho, and sockeye, everything.*

[Is there a lake in there that the sockeye go to?] Yeah, Andrews Lake. It’s way the heck and gone back up in the mountains. [Is there still a run of sockeye up there?] There probably is, yes. Sockeye run early here. Probably June. [Is that the way it was then, and it’s still the same?] Still the same. Humpies run up there, we call ‘em pinks. There are quite a few creeks around there that we go fish out of. [Were there any other sockeye streams up that way?] There were a lot of them. I can’t name them all. [Was sockeye a special fish then, or would you just as soon be catching other fish?] It was a good fish. It was bright red, you know. Really looked nice. And we’d dry them. They are pretty much a dry fish anyhow. They’re not ... haven’t got a lot of fat in them. Not as much as the kings. [But more than the humpies?] Yeah.

[How did you get up there from your farm?] My dad had an outboard. In the later years we had a twenty-two horsepower outboard. And it was terrible. You could hear it coming from sixteen miles. [Do you remember paddling to get up there?] When we go there we did. We never paddled all the way. We sailed it sometimes. When the wind was right, just didn’t use the motor, or the motor was broke down or something. We used to take her grandmother and [name] and we would ... a whole bunch of us would get in a river scow and we’d all go up there and fish. In the fall we’d pick high bush cranberries. We made it a whole family deal to do that ... up where Andrews Creek comes in. There’s a lot of high bush cranberries there. There are humpies there, too.

You know it’s amazing when we used to stay in that old smokehouse up at Andrew [in the 1930s], they had smoke in there, and those Indians lived in there too! But it was huge; it was probably as long as this house. And on the end of it they had racks, where they split their fish somehow, and hung them, put smoke on them. And dried them I guess.

[Wasn't that the idea of the traditional longhouses, where several families lived together? They had a fire inside, and just a hole for the smoke to go out?] That's right, just a little square hole up there. I don't know how that all went up and out without choking them a little bit. (Interview conducted February 13 and 14, 2004)

Andrew Slough. Coho salmon were found in the sloughs. Sandy flats provided moose habitat.

ADF&G Camp. A salmon research project was located on the north shore of the river as part of a cooperative project between ADF&G and the Tahltan First Nation. Other ADF&G research activities included drift gillnetting, test netting, and fish tagging.

Shakes Slough. This was the site of a family cabin used for trapping, drying fish, and moose hunting. There was a good coho salmon stream nearby. A key respondent interviewed for this project described fishing at the mouth of Shakes Slough during the 1930s:

[At Shakes Slough is the water clear back in there?] Yeah. Pretty much. In the front it isn't. When you get back in by the lake in Shakes Slough, then you hit the clear water. [How far back in did you go to fish when you went fishing up at Shakes?] Fished right at the mouth, in the muddy water, with the gillnet. It was a lot of fun. (Interview conducted February 13, 2004)

One respondent last observed sockeye salmon in the stream on the west side of Shakes Slough 30 years ago. There was a site conducive to beach seining for eulachon on the west end of an island located just upstream from the entrance to Shakes Slough; this site was the furthest upstream eulachon fishing spot of which the respondent knew (from interview conducted June 8, 2002).

Rock Island. Known locally as Wizard Island, this small island is located between Shakes Slough and Bear Creek, on the south side of the river. There was once a Tlingit camp in the center of the island. A ring of trees surrounding a clearing in the interior of the island was observed by a contemporary key respondent (from interview conducted June 8, 2002).

Goat Creek. This was identified as a Chinook salmon stream by a contemporary key respondent (from interview conducted June 8, 2002).

Ketili Creek. This was identified as a coho salmon stream by a contemporary key respondent (from interview conducted June 8, 2002).

Confluence of the Katete River. A village once existed on the west shore of the river, just across the Canada – United States border. According to the testimony of Willis Hoagland, “Just above the Canadian border, the *Kiks.ádi* [clan] went to hunt for bear, beaver, goat, and porcupine. This was a summer village, belonging to the *Kiks.ádi* clan, and a source for cohos, dog salmon, humpies, and king salmon and various berries” (Goldschmidt and Haas 1998:156–157).

Katete River. A setnet site was once located here, but, according to a contemporary key respondent, the site was closed due to a disagreement between the Great Glacier Salmon Company and the independent fisher who was leasing the permit from the original owner. The company and the fisher were setting nets almost on top of each other, and regulations prevented them from interfering with the other's nets when they became tangled, so, according to the key respondent, the Canadian Department of Fisheries and Oceans closed the site to fishing (from interview conducted June 8, 2002).

The Great Glacier Salmon Company also built a hydroelectric plant and a freezing plant here, which were in operation between 1983 and 1985. Salmon were glazed by dipping them in water before freezing.

In the mid 1980s, a Tahltan First Nation commercial salmon fishing operation was located on an anchored barge. The commercial operation cleaned and iced the fish, then loaded them onto boats. The Tahltans moved the operation onto shore for the 1988 season, and did not operate in 1989 and 1990. During the 1986 and 1987 seasons, a researcher for this study worked at this operation on a joint United States–

Canada salmon sampling program. Canadians commercially harvested Chinook salmon, sockeye salmon, and a small number of coho salmon in 2000, 2001, and 2002 (from interview conducted June 8, 2002).

Confluence of the Choquette River. This was the contemporary location of a setnet site (from interview conducted June 8, 2002).

Confluence of the Porcupine River. This was the upper boundary of the Canadian commercial fishery on the lower Stikine River (from interview conducted June 8, 2002).

Downstream of the confluence of the Anuk River. A Canadian government administrative cabin was located here to assist government employees who were removing navigation hazards from the river. Contemporary key respondents informed researchers that they had not seen this activity for 5 or 6 years, but that a private citizen continued to remove hazards as necessary, so his family could safely navigate the river (from interview conducted June 8, 2002).

Confluence of the Flood River. An old trapping and hunting cabin was located here. Also, a productive driftnet site was located just downstream of this confluence, in an unbraided section of river. This was also the site of conflicts between a Great Glacier Salmon Company fisher, who no longer fishes on the river, and an independent fisher who tried to drift there and was repeatedly “corked”⁸ by Great Glacier Company operated nets. This site was closed to fishing when, for conservation reasons, the Canadian Department of Fisheries and Oceans moved the commercial fishery boundary line downstream to the confluence of the Porcupine River (from interview conducted June 8, 2002).

Scatter Ass Flats. This was the local name for this braided section of river. There were many channels that changed location, and many shallow flats upstream (from interview conducted June 8, 2002).

Scud Portage. This was a canoe portage used by Natives traveling between the Stikine River and the Scud River.

Little Canyon. This is a narrow, unbraided section of river featuring strong currents running under steep bluffs. A river navigation signal pole still remained on the east side of the river in 2002. The pole was used by steamboat pilots to warn boats traveling in the opposite direction. As a steamboat approached Little Canyon, its pilot would sound the whistle, which prompted the onshore flagman to run a flag up the pole, thus signaling the traffic that was approaching from the opposite direction (from interview conducted June 8, 2002).

Tinah Goon. Willis Hoagland described this village between Tahltan and Telegraph as belonging to the *Kiks.ádi* clan. “Our people lived ... in the summer, and came down about October. We dried goat meat, beaver, porcupine, cohos, sockeyes, humpies, and dog salmon there ... There were many houses there” (Goldschmidt and Haas 1998:157).

Telegraph. Downstream of Telegraph there was a Stikine summer and fall (until about October) village. These upriver sites apparently offered a dry climate more suitable for processing and drying salmon and other foods. They also served as camps for bear and goat hunting and berry gathering. Robert Campbell (Price 1990) included a description of the Tlingit salmon fishery and large encampment on the upper Stikine River near Dease Lake, in British Columbia, during an 1838 trip for the Hudson Bay Company:

From the top of a hill we caught our first glimpse of the immense camp (about 13 miles from the bridge) of which we had heard so much, and indeed the description given us was not exaggerated. Such a concourse of Indians I had never before seen assembled. They were gathered from all parts of the Western slope of the Rockies & from along the Pacific Coast. These Indians camped here for weeks at a time, living on salmon which could be caught in thousands in the Stikine by gaffing or spearing, to aid them in which the Indians had a sort of dam built across the river ... a lane was cleared through the crowd

⁸ To “cork” a net means to stop fish from entering a net, or to seal a net, by placing another net in front of it.

for Shakes to come down to meet me. Shakes was a coast Indian, tall and strongly built, & as I afterwards learned was all-powerful among the Indians on that side of the Mountains ... He came to the Stikine every year, with boats & goods, to the splendid rendezvous where I met him. Here he traded with the Indians of the interior for the Russians, who supplied him with goods at Fort Highfield at the mouth of the river. (Price 1990:41–42)

By the late 1940s, few Wrangell fishers traveled upriver in order to set gillnets for salmon, although it was common to catch coho salmon, and occasionally sockeye salmon, with rod and reel during fall moose and goat hunting trips. A key respondent explained:

[What happened after the war?] After World War II, the economics in Wrangell had changed. Most of the boys were used to doing other things after they came home. In nineteen forty-six and 'forty-seven ... I believe were the last time they had any amount of trappers on the Stikine. When the hooligan [eulachon] came in, in the spring, everybody turned out for that. But as far as the gillnetting goes, many of those that used to fish, they no longer fished in that area. They went out to other areas that were open and most of the old timers ... The older ones that used to fish there ... and not everyone knows how to fish the river. Because the currents ... and you've got to get into the back eddies. It's just that a lot of them: they just didn't know, and the younger people didn't want to learn. [Name] and [name] and [name], their parents had a place at the mouth of the river and they did considerable amounts of fishing on the river, both commercially, and, later on, subsistence-style.

[After the war, it seems like they didn't talk much about going up the Stikine, in the '50s and '60s.] Yeah, in fact there was hardly anything in the 'fifties and 'sixties [going on up there in those years]. Now my mother and sister and two brothers, the last time they were up there was in nineteen forty-four, and they were up there and they got their subsistence fish. There was a strawberry ranch up there that Chief Fletcher had, and they harvested berries and they harvested salmon. And they put everything up right there. But after that there was just no way for them to get up there.

[How recently have you fished up there for home use? Were you fishing up there in the '70s and '80s, that way?] Oh, no. Not really. *[Did anybody fish up there that way in the '70s and '80s?]* No, not for ... I don't really know how many years that's been closed. When the U.S. Fish and Wildlife controlled it, they shut it down. *[I thought they didn't shut it until the '80s?]* That I don't know. I know they were the ones that shut it down. And then no one could fish up there on the flats anymore, not even commercially. They fished out of here. I think Highfield [Point, near Wrangell] over to [unintelligible] was the old marker. They shut it down clear to there. *[Right up 'til the time they shut it down, were you fishing up there for home use?]* No, we never fished there ... we left there about nineteen forty-one or nineteen forty-two. The world changed. My father helped them start up the old mill down here. You know during the war they needed lumber, so they decided to open it up. So he went to work there. He was a machinist. So we never went back. The old house finally fell down and the Forest Service burned it. Of course they were talking about proposed roads going up there, and they wanted everybody out of there, anyway. (Interview conducted February 16, 2004)

Uses of Mill Creek

Petroglyphs found in the vicinity of the mouth of Mill Creek, near the shores of the Eastern Passage, were thought to be evidence of early use by the Stikine Tlingit (Emmons 1991). Goldschmidt and Hass (1998) reported that the mouth of Mill Creek was the location of the first village of the Stikine Tlingit. During his 1946 testimony, Thomas Ukas (Goldschmidt and Haas 1998:158) described the area in the 1880s:

Mill Creek is the place where the first village of the Stikine people was located. Before that time they were scattered in small villages all over, and this was the first winter village for the *Kiks.ádi* and the *Kaach.ádi*. There were still remains of houses in my time. When I was young, we got fish from the lake up Mill Creek, but now we don't go there. They are building a sawmill in there now, and it is ruining the sockeyes. We can no longer fish there.

I have seen many times — the last was 3 years ago — rocks piled up at the mouth of Mill Creek ... My father told me that these rocks were traps for fish, used by the Stikine Indians in early days

The sawmill, in operation from 1944–1953, was owned by the Alaska Metals and Power Company, but burned to the ground in 1954. Researchers investigated the Mill Creek site in 1975 and found that the sawmill and its operations had obliterated any apparent evidence of the village or the fish trap (Sealaska Corporation 1975). A key respondent described the precontact fishing technique of using stone traps at Mill Creek:

There used to be a Tlingit [fish] trap right here, made out of boulders, and they would ... when the salmon were coming, then they would get in their canoes and splash around, “plunge,” we call it, and keep them over the basin, and when the tide receded they just go and pick the fish out. (Interview conducted July 16, 2003)

Emmons (1991:81) noted the presence of petroglyphs at Mill Creek, or “Waterfall Town,” which was also described as “the old fishing village of Tchukass.” Keithahn (Emmons 1991:82) wrote in reference to petroglyphs in this area:

Large streams such as the Stikine River or a famous salmon stream such as Anan Creek [Ernest Sound, east of Wrangell Island] in the Wrangell district have more glyphs than streams in which the salmon run was small. A small stream near Wrangell, barren of salmon at present, boasts many petroglyphs at its mouth. The oldest Natives remember when it was an excellent salmon stream.

A key respondent who used to live on a homestead north of Green Point, which is south of mouth of the Stikine River, described going to Crittenden Creek for coho salmon, Mill Creek for sockeye salmon, and Virginia Lake for trout in the 1930s and 1940s. A boat was rowed all the way, or a skiff with a small outboard motor was used.

And the sockeye run in Mill Creek. We got cohos out of there [Crittenden Creek]. There's Virginia Lake. There's sockeyes running there. *[Do you remember as a young boy fishing for sockeye at Mill Creek?]* Yeah, we fished there all the time, when we were living at Green Point. We'd go down there with either the outboard, or we'd row down. My dad had a boat too, and we'd tow the skiff down there and fish ... we weren't fishing commercially there, we'd just get enough fish to can and stuff like that. They are beautiful fish. *[Are those the little “torpedoes”?]* Yep. Long and skinny. They'd jump right up those falls. They still do. You go down there in July and there's dog salmon running up there too, dog salmon and a few cohos run in there. Dog salmon spawn in the little creek that runs out just below the falls. They might try to go up Mill Creek, but they can't make it up the falls. *[Did you ever go fishing in Virginia Lake?]* Yes, but not for salmon. We'd go up there for trout. We'd catch ten or fifteen trout and bring them home and fry them and eat them. *[When you were up there did you see where the sockeye were spawning?]* You'd see them up at the head of the lake, where the tributaries come in. *[What was the last time you did that?]* Years and years ago. I haven't been up there in years. I haven't been ... I can't walk that good anymore. But we'd go up there and fish for trout and bring them home and eat them. (Interview conducted February 13, 2004)

A key respondent described fishing in Virginia Lake and beyond as a boy, and learning about the salmon spawning habitat of the lake and its tributaries. He also used to accompany his father on prospecting trips into the hills above the lake.

[Do you ever go fishing in Virginia Lake?] Oh, yeah, for trout. [Did you see where the sockeye spawn up in there?] Yes. We walked up there. We want to go look at all the old machinery. So we walked up above the lake. That's where the sockeye spawn. They only spawn in clear water above a lake. When they hatch out they go into the lake, and they spend time in a lake, for I don't know how long. Another year, I suppose. Whereas other fish go out right away. As soon as spring comes they're on their way out. Sockeyes spend time in ... in fact when you're fishing for trout over there at Virginia Lake, every once in a while, you'll catch a little sockeye in there, about that long. Why he bites, I don't know. (Interview conducted February 14, 2004)

In another interview he described gear he used at Mill Creek after he became an adult:

[It looks like a really good place to do dipnetting. Did people used to do that?] Oh yes! [Was dipnetting a good way to do it?] Oh yes, especially right in the falls itself, if you get it where it is not swollen, and all those pot holes and those rocks. It's easy to get 'em. [Do you remember people talking about doing that?] Oh I've done it myself. That was in the early days before all the regulations. [What about spears or gaffs? Did people used to use those there?] I've never seen them use a gaff there. (Interview conducted September 17, 2003)

The sockeye salmon run at Mill Creek has been the closest source of sockeye salmon for residents of Wrangell since its settlement. It was generally believed that the run had always been small because no commercial fish traps were ever placed there. In describing the Mill Creek sockeye salmon fishery in the 1950s, 1960s, and 1970s, key respondents related that, since the days of the canneries, the principal gear type was gillnets set along the shores of Mill Creek:

We used to go to Mill Creek when we were teenagers. Dad taught me how to do it. That's the main place. Here's the creek ... used to set it right off this point. There's a little creek that goes up this way ... the dogs [chum salmon] go up there. Best to set at incoming tide. This was before they blasted all that rock to make the ladder. This was in the late 'sixties, early 'seventies. The sockeye seemed bigger then.

We used to fish over there. Dad would put out ... long time ago there used to be a little cabin, right up here at the top here, it was half a cabin, a lean to. And they used to have a dock. Where the old mill used to be there used to be pilings, where the old sawmill was ... it wasn't a dock, just pilings. There used to be a little lean to up here, and we'd stay up there. One year we ... processed on the beach. Like a fish camp. Just me and Mom and Dad and [name] and [name]. I don't know, we stayed over there about five days. Had lots of fun. I had my dog with me ... he led a bear into the camp. It was an exciting evening. The dog ran under the cabin and Dad went to get his rifle. Yeah ... funny ... fun stuff. *[Was it a family affair?]* Yeah. There was three of us, [name] went, he was little, there was a ton of us ... about ten of us ... we had to make two trips, it was in the seventeen-foot speed boat. (Interview conducted August 18, 2003)

One key respondent described her family's fishing trips there in the late 1960s, when she was a child:

We just stayed there and canned them, and made a family picnic out of it, basically. And we stayed there until ... Dad put the net out in the evening, let it stay overnight and then pick it in the morning, and then we'd clean them and can them during the day.

[Did you all have jobs you had to do?] Just stay out of the way. Dad did most of it. He canned it and Mom helped him clean it. Take everything back down on the beach. We cleaned them right on the beach, and everything ... We had an old pressure cooker, in fact I have it out there on my porch. We just canned right there on the beach ... I think we got eight or nine cases out of it, and it went to the whole family, jars. Whenever anybody needed fish, Dad would dole out the jars. (Interview conducted August 18, 2003)

Another key respondent described the timing of sockeye salmon fishing at Mill Creek:

[How did you know when to fish?] We'd just wait, because we would know that any time after the first of July you'd go look and see if the fish had come back. And you could tell because they would jump, and you would see them jumping out there when they first come in. And then you'd wait until they'd build up a bit. (Interview conducted September 17, 2003)

Uses of Thoms Place

Thoms Lake and Thoms Creek, which flows into the bay known as Thoms Place, belonged to the *Kiks.ádi* people. There are no reported archaeological investigations of the area. It was readily accessible to the people living at the old village site, also known as Old Town (Figure 1) and marked as "deserted village" on maps. Those living at camps along Zimovia Strait from Turn Island to lands south of Old Town could also easily access Thoms Lake. After the arrival of the Americans, and people moved from Old Town into Wrangell, they still returned to Old Town on a seasonal basis to keep gardens and to dry and smoke the salmon they harvested in Thoms Place. Other nearby harvesting sites were Olive Cove (south of Anita Bay on Etolin Island) and Whaletail Cove. In 1897, Thomas Moser estimated the Thoms Creek sockeye salmon run at 15,000 to 20,000 salmon, which supplied the Point Highfield cannery located at present day Wrangell (Moser 1899:107). According to testimony given to Goldschmidt and Haas in 1946 (1998:75,157), Wrangell people fished and processed salmon at Thoms Place and other nearby locations along Zimovia Strait:

There is a sockeye stream on Thoms Creek. In my time, there was a big smoke house there, with 5 different families. It was owned by the *Kiks.ádi* people.

The whole Wrangell people used the south end of Wrangell Island ... There was a camp at Pat Creek, and just below it, another one on a sand beach. These places were used for drying fish ... There were camps at Turn Island and on Wrangell Island, from there on down to Old Town ... There used to be a smoke house at Tommy's place that belonged to the *Kiks.ádi* people. We still go there to seine fish. We also go across on the opposite of the narrows to fish. There is a big salmon creek up Anita Bay where we get humpies, cohos, dog salmon.

A key respondent spoke about fishing at Thoms Place in the 1930s:

For the sockeye we went to Thoms. I didn't go. I was too much in the way when I was younger ... And we'd also go into Thoms for the sockeye. *[In Thoms Creek, did you use a seine there?]* It all depended, what they were prepared for. *[Would you use the seine closer in?]* We'd use the seine normally right at low tide. They'd be all schooled up at the mouth of the stream ... They'd be jumping.

Before 1900, a commercial fish trap supplying the Wrangell cannery was located at the mouth of Thoms Place. The bay itself was closed to commercial fishing in 1924 (Rich and Ball 1933:625).

Uses of Salmon Bay and Lake

The Salmon Bay sockeye salmon run, claimed by the *Teehyittaaan* clan, was one of the most productive in the traditional territory of the Wrangell people. There was an old village site and evidence of a stone fish

trap. In 1884, Thomas McCauley established a salmon saltery here that was in operation for 8 years before moving to Whale Passage (Campbell 1982). It was reportedly one of the most important salmon stations in the area. Moser's 1897 investigations noted that Salmon Bay had "a capacity for 20,000 redfish" (Moser 1899:107). It produced some of the largest commercial sockeye salmon catches until the bay was closed to all salmon fishing in 1926. In 1946, testimony to Goldschmidt and Haas (1998:154,156) revealed the Wrangell people's use of Salmon Bay:

There is a big camp at Salmon Bay, close to the hole for salmon where the Natives had a fish trap. I used to fish in the mouth of Salmon Bay, and the Native people had a seining camp there in recent years. There was also a camp at Exchange Cove [south of Salmon Bay]. I used to go there for seining. Now, all the Wrangell people go there, though it used to belong to the *Teeyhittaan*.

South of Salmon Bay, I have seen piles of rocks which were used by the early Stikine Indians for trapping fish when the tide went out.

Several key respondents interviewed for this project discussed commercial fishing at Salmon Bay in the 1930s, 1940s, and 1950s:

[Did you ever get any sockeye at Salmon Bay?] We'd go to Salmon Bay, too. They have nice big sockeyes there. [Did you go in the early times over there?] Oh yeah. We went over with our outboard, and we had our gillnet with us. We'd go and make a set there and get enough sockeyes to can, and come back ... And they're pretty good sockeyes at Salmon Bay. (Interview conducted February 13, 2004)

RESULTS AND DISCUSSION: CONTEMPORARY TIMES, 1987 AND 2000

RESULTS OF HOUSEHOLD SURVEYS

The Division conducted household surveys of the subsistence harvests and uses of all resources by residents of Wrangell during the calendar years of 1987 and 2000. Results indicate that salmon were harvested and used at similar levels in both years. In 1987, salmon comprised an estimated 19% of the total harvest of wild resources, in pounds usable weight, and 15% in 2000 (Figures 7 and 8). In 1987, Chinook salmon were an estimated 77% of the total salmon harvest by weight, coho salmon were 14%, and sockeye salmon were 6% (Figure 9). Pink and chum salmon were harvested at lower levels. In 2000, Chinook salmon comprised an estimated 58% of the total salmon harvest by weight. Sockeye salmon increased to 19%, and coho salmon were 18% (Figure 10). As shown in Table 1 salmon were used by 82% of interviewed households in 1987 and 81% in 2000. Salmon were harvested by 53% of households in 1987 and 46% in 2000. Salmon were harvested at a level of 155 lb per household in 1987 and 168 lb per household in 2000. Estimated total harvests for all resources (pounds per household) were 435 lb in 1987 and 439 lb in 2000 (Figures 7 and 8).

Although levels of salmon harvest and use in Wrangell were similar in 1987 and 2000, there were some differences, especially in the composition of the harvest and in the methods used to harvest salmon for home use. Table 1 shows that the number of Chinook salmon harvested declined by 43% from 1987 to 2000, while the number of sockeye salmon harvested increased by 50%. Tables 2 through 5 illustrate the differences in the methods used to harvest salmon in 1987 and 2000. Of the total harvest of Chinook salmon, the proportion retained from commercial catches was about 20% in both years; the proportion harvested by rod and reel ranged between 79% and 75%; little of the Chinook salmon harvest was taken with subsistence nets. For sockeye salmon, however, the proportion of the harvest taken by rod and reel declined from 30% to 8% from 1987 to 2000, while the proportion harvested with subsistence nets almost doubled, from 34% to 65%, and proportion removed from commercial catches changed relatively little.

These data indicated that the increase in sockeye salmon harvest from 1987 to 2000 was a result of increased participation in the subsistence net fisheries. Tables 6 and 7 compare the methods, expressed as percentages, by which households harvested salmon for home use. Each sockeye salmon harvest method increased in use from 1987 to 2000.

During the 1987 survey, respondents were asked to identify salmon harvest sites used during the survey year. Harvesting locations close to Wrangell, such as Upper Stikine Strait, Chichagof Pass, Zimovia Strait, Eastern Passage, and Blake Channel, were used by more people than other locations (Cohen 1989). Fewer than 10% of Wrangell households reported using locations that were further than 20 mi from Wrangell. Wrangell residents who were reviewing the 1987 harvest survey results in 1991 indicated that the areas around Olive Cove and Thoms Place in Zimovia Strait were used more intensively in 1991 than in 1987 (Betts et al. *In prep*)⁹. In 2003, people reported harvesting salmon most often at Thoms Place, Mill Creek, and Salmon Bay, primarily through participation in a personal use net fishery. In 1991, some people reviewing the mapped 1987 information believed that overharvesting in areas close to Wrangell, such as Zimovia Strait, had caused declines in sockeye and Chinook salmon, as well as in other fish stocks. However, key respondents for this project did not express concerns about declining salmon stocks.

CONTEMPORARY METHODS OF PROCESSING

Methods used by Wrangell residents to process sockeye salmon included smoking, pickling, canning, and freezing. Key respondents said they learned traditional processing methods from their parents and other elders. Some experimented with recipes for pickling and smoking by varying the brine, type of wood used, and time of smoking. Some smoked and canned their harvested salmon at temporary camps before returning to Wrangell. A local fish smoking company processed salmon for local residents as well as for visiting sport fishers. The company used commercial equipment and adapted traditional recipes to produce commercially smoked salmon. Key respondents described some examples of contemporary smoking techniques:

I smoke [salmon] and pickle some. Usually I like to smoke about fifteen fish. And pickle about five. And that seems to suit our needs, have some to give away to friends and family. There have been some years when I've ended up with more. And then generally I'll give more of them away. I do freeze some. Just vacuum pack them and freeze them. This year we actually had G & G smoke and can some of them for us. We had won a gift certificate at the radio station for twenty-five pounds of processing from G & Gs for a fund raiser. We said, "Let's give this a try." It's actually kind of nice. We talk about canning, but it just seems like too much work. We have enough other things to do and just haven't gotten around to it. Smoking is a lot of work too. (Interview conducted September 19, 2003)

Another respondent was asked, "What do you do with your fish after you catch them? What are your methods for 'putting them up,' for processing them?"

First, I like pickled fish. So the bigger ones, I'll fillet 'em and then cut the tail section off and cut the belly bones off, and the back part where the thick meat is, I'll skin that and salt it. And then the tails and the bellies I smoke and eat, and then the smaller ones we just fillet and skin and jar and pressure cook 'em ... I like to get four or five cases of that. I don't think I've eaten a can of tuna fish in twenty-three years. My kids opened a can of tuna fish the other day, and mixed it up, and I said, "How can you kids eat that crap, here

⁹ Betts, M. F., M. Kookesh, R. F. Schroeder, T. F. Thornton, and A.-M. Victor. *In prep*. Subsistence resource use patterns in Southeast Alaska: summaries of thirty communities. Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 216, Juneau. Hereinafter cited as Betts et al. *In prep*.

try some of this.” I opened a can and [name] and I sat there and ate the whole jar with crackers. That’s the way I like it. (Interview conducted July 23, 2003)

DISTRIBUTION AND SHARING

Based on interviews conducted for this project, it appeared that Wrangell fishers had continued the customary practice of sharing their salmon harvest with family and neighbors, as documented in 2000. More households reported using salmon than reported harvesting salmon (Table 1). Respondents said that households harvesting salmon shared their catch with nonharvesting households:

It’s not a huge trip over to Mill Creek. I haven’t done it in the last three years because I don’t have a boat to get over there. *[Does anybody give you any, then?]* Well, last year I canned some for [name]. I smoked half and jarred half for [name] and his girlfriend and they gave me half. They just brought me the fish and I did all the work, and I got half of it. And she got her fish basically from fishermen down at the dock. I don’t think they got any fish. She just knew a lot of fishermen. She used to be a deckhand, and she’d hit them up for a fish every once in a while. Or they’d offer to give her a fish. I’m going to do the same thing this year — offer to process it for someone. Some fishermen can just give some away, since the prices are so low. I had a couple of kings in the freezer from late last fall, and I jarred those up in April, so I’d have fish to give to the kids when they went to college. (Interview conducted July 18, 2003)

[Do you have people who depend on you to give them some fish?] Yeah, fish and deer. I usually try and be generous with what I get, so ... and moose meat. *[Would you consider yourself a high harvester?]* Yeah. As far as ... not so much for subsistence fish these days. I catch some when I’m commercial fishing, and if somebody wants some I’ll bring them in ... I’ll give ‘em away. If somebody is “fish hungry.” I don’t even charge people for them. If somebody wants some fish I’m not getting paid enough from the cannery anyway. So if an elder or somebody wants some fish, or a friend of the family, whatever, if somebody wants some fish I’ll bring it in. And it’s the same way with the moose meat or the deer meat. Yeah we know a lot of people ... me and my brother both, know a lot of people that ... like [name] ... he got pretty sick, and we try to make sure that people that enjoy the wild game, they try to get it, too, even though they got older, or for whatever reason they weren’t able to go out and get it. We try to remember them, too. (Interview conducted July 17, 2003)

[Would you say your family was a high harvesting family for that time (1950–1970)?] Oh yeah. We lived on fish and deer meat. *[And a lot of people depended on you?]* Basically, the family. The older people in the neighborhood depended on us. Dad would share with the neighbors. (Interview conducted July 18, 2003)

CONTEMPORARY MANAGEMENT AND PROSECUTION OF WRANGELL AREA SALMON FISHERIES

Regulations, Permits and Methods and Means

The harvest of salmon for home use by Wrangell residents was guided by sport, personal use, and subsistence regulations. Commercial fishers also had the option to retain salmon for personal use from their commercial catches.

Key respondents in Wrangell said that a large portion of the salmon they harvested for home use was taken with rod and reel from salt waters. This pattern was also revealed during the Division’s 2000 harvest survey (Table 3). Almost 40% of interviewed households reported harvesting salmon with rod and

reel (Table 7), accounting for 38% of the reported number of salmon harvested (Table 5). The species mainly harvested by rod and reel harvest were Chinook and coho salmon. Some people used commercial hand troll gear to harvest Chinook, coho, and pink salmon under sport fishing regulations.

State sport fishing regulations required a local fisher to obtain a State of Alaska fishing license as well as a State of Alaska Chinook salmon stamp. Chinook salmon were allowed to be taken only in salt waters (5 AAC 47.022 (b) (1), 2003–2004). The open season for salmon in salt waters was the entire year (see 5 AAC 47.020, 2003–2004 for general provisions for salt waters). At the time of this study, daily bag and possession limits for residents were

- Chinook salmon: 2 per day and 2 in possession, must be 28 in or greater;
- Coho, chum, pink, and sockeye salmon 16 in or longer: 6 per day of each species and 12 of each species in possession; and
- Coho, chum, pink and sockeye salmon less than 16 in: 10 in combination per day, and 10 in combination in possession.

Sport fishing for all species of salmon was closed between April 16 and June 15 in the Grey's Passage area, leaving most Wrangell area salt waters open to salmon fishing for the entire year (5 AAC 47.021 (h), 2003–2004).

Key respondents spoke frequently of trolling with rod and reel or hand troll gear for Chinook and coho salmon in the immediate vicinity of Wrangell, as well as for Chinook salmon at Earl West Cove in Wrangell's Eastern Passage:

We'd go out and get our own fish. *[You made special sets?]* No, not make sets. We'd troll for them with hand ... sport rods ... 'cause we didn't need that many, you know, then. Because then our families had all left and gotten married. I just got fish for my mother and Dad, and our family. *[Has that been true for a lot of people in Wrangell, that they depend more on the rod and reel catches for a long time?]* Not a lot of them. A lot of them are still trolling. Not the ones my age, but the younger. They have hand troll permits. *[But for bringing home to eat?]* Yeah. They save them you know. *[They use their hand troll gear for bringing fish home?]* They sure do. (Interview conducted February 13, 2004)

Retention of Salmon from Commercial Catches for Home Use

Some Wrangell commercial salmon fishers set aside some fish to bring home. In 2000, 12% of Wrangell households reported retaining salmon from their commercial catches (Table 7). Salmon retained from commercial catches accounted for 39% of the reported number of salmon harvested (Table 5).

Subsistence and Personal Use Sockeye Salmon Harvest Patterns

Households that use subsistence and personal use methods for harvesting salmon are required to obtain a permit (1 per household) from ADF&G. Permits specify the streams, the open seasons, the types of gear allowed, and the possession limits or annual limits for each salmon species (2003–2004 subsistence regulations 5 AAC 01.700–01.750 and personal use regulations 5 AAC 77.682–699, 2003–2004). Fishers used the permit to record the numbers of salmon harvested each day. The *State Subsistence Salmon and Personal Use Permit Petersburg/Wrangell Management Area* is included as Appendix B.

In 2003, the Federal Subsistence Board made a positive customary and traditional use finding for salmon, Dolly Varden, trout, smelt, and eulachon in District 8 and waters draining into District 8. Residents of drainages flowing into District 6 north of the latitude of Point Alexander (Mitkof Island) and residents of drainages flowing into districts 6 and 7, including residents of Petersburg, Wrangell and Meyers Chuck, are allowed to fish under federal subsistence regulations (36 CFR Part 242 and 50 CFR Part 100).

Most Wrangell subsistence fishers targeted sockeye salmon (Tables 8, 9, and 10; Figures 11 and 12), since this species was unlikely to be caught with rod and reel. Several Wrangell area locations were open to subsistence and personal use fishing, including Mill Creek, Thoms Place, and Salmon Bay, which were the principal locations of sockeye salmon runs accessible to Wrangell fishers. Other locations where Wrangell permit holders reported occasionally taking small numbers of salmon included Alecks Creek (western Kuiu Island), Crystal Creek (across Frederick Sound from Petersburg), Dog Salmon Creek (south of Kasaan Bay on southeastern Prince of Wales Island), Earl West Cove, the Harding River, the Karta River (in Kasaan Bay on southeastern Prince of Wales Island), the Klawock River (eastern Prince of Wales Island), Kudays Creek, McCormack Creek, Olive Cove, Point Baker (northwestern Prince of Wales Island), Ratz Harbor, Red Lake Creek, the Sarkar River, Shipley Bay (western Prince of Wales Island), Snake Creek, the Stikine River, Sweetheart Creek (in Port Snettisham, south of Juneau), Taku River, Timothy Creek, and Wolverine Creek (the outlet of Lake McDonald, near Ketchikan) (Tables 9 and 10). Permit data is presented for the 2002 fishing season. Wrangell permit holders reported harvests from Mill Creek, Thoms Place, Salmon Bay, as well as small numbers harvested from Earl West Cove (Figure 13).

Other Wrangell area salmon harvesting locations were listed on the permit, but returned permits did not indicate that Wrangell residents harvested salmon from those areas. They included the pink salmon runs at Cat Creek (in northern Frederick Sound on the mainland) and Chuck River (in Windham Bay, south of Endicott Arm).¹⁰

Until 2002, these salmon fisheries were managed by the State of Alaska under personal use regulations. There were no major differences between regulations governing personal use and subsistence fisheries in Wrangell area state waters. In 2003, the Alaska Board of Fisheries made a customary and traditional use finding (5 AAC 01.716, 2003–2004) for salmon for the Wrangell and Petersburg management areas, which allowed these fisheries to be managed as subsistence fisheries. While this change in designation was not intended to result in regulation changes, the daily possession limits were raised for Salmon Bay for the 2003 salmon season (5 AAC 01.730 (e), 2003–2004; Appendix C).

Stikine River Salmon Stocks

The harvest of Chinook, sockeye, and coho salmon runs in the Stikine River are managed under the terms of the Pacific Salmon Treaty. The Pacific Salmon Commission Transboundary Technical Committee annually updated stock assessments and enhancement plans, determined forecasts for run strengths, and produced initial “total allowable catch” estimates for the various species on the Stikine River, as well as on 2 other transboundary rivers. The estimated number of salmon returning to the Stikine River was calculated pre-season, then updated during the season to provide management guidelines for the commercial, sport, and subsistence fisheries harvesting fish in Alaska commercial fishing districts 106 and 108. The 2003 report of the Pacific Salmon Commission Joint Transboundary Technical Committee summarized the recent history of the Stikine River salmon fisheries:

Stikine River salmon are harvested by U.S. commercial gillnet fisheries in Alaskan Districts 106 and 108, by Canadian commercial gillnet fisheries located in the lower and upper Stikine River, and by a Canadian aboriginal fishery in the upper portion of the river. In addition, a Canadian terminal area fishery is operated in the lower Tuya River and at Tahltan Lake when escapements are estimated to be surplus to spawning requirements. A small sport fishery also exists in the Canadian sections of the Stikine River drainage. In 1995, a United States personal use fishery was established in the lower Stikine River; no catches were reported in this fishery in 1995 through 2000,

¹⁰ ADF&G (Alaska Department of Fish and Game). 2004. Integrated fisheries database/Alexander Archipelago. CD-ROM version 3.1. Alaska Department of Fish and Game Division of Commercial Fisheries, Juneau. Hereinafter cited as IFDB/ALEX.

approximately 30 sockeye salmon were harvested in 2001, and the personal use fishery on the Stikine River was not open in 2002. (PSCJTTC 2003)

In spring 2004, the U.S. Fish and Wildlife Service's Office of Subsistence Management announced that it had reached agreement with the Pacific Salmon Commission for a subsistence sockeye salmon fishery on the lower Stikine River, in the federal waters upstream of Point Rothsay. This represented a step toward full reinstatement of recognition of the traditional use areas of the Stikine Native people. The Stikine River federal subsistence salmon fishery status report to the Federal Subsistence Board is included as Appendix C.

Contemporary Mill Creek and Virginia Lake Sockeye salmon Fishery

The Mill Creek subsistence sockeye salmon fishery continued to be one of the principal sources of sockeye salmon for Wrangell households. Its proximity to town makes it easily accessible, even for smaller skiffs. These smaller boats (under 20 ft) are used to travel to Mill Creek, rather than more distant sockeye salmon streams. A 20 to 30 minute trip, depending on the weather as and the size of the boat and motor. Its proximity to town make it possible to go after work on summer evenings. Some people still spend the night camping on the beach.

The fishery occurs in the marine waters at the mouth of the creek. Sockeye salmon are the primary species harvested; however, Chinook and chum salmon are occasionally reported. The data from returned permits showed an increase in the numbers of sockeye salmon that were taken at Mill Creek in recent years. Sockeye salmon harvest increased from a low of 10 sockeye salmon in 1988 to a high of 718 in 2002 (Table 10).

Driven by low sockeye salmon abundance in this drainage, a collaborative nutrient enrichment and fish enhancement project was conducted in the 1980s at Virginia Lake as part of a joint effort between the Wrangell commercial fishing community, ADF&G, the USFS, and the Southern Southeast Regional Aquaculture Association (Cady and Reed 2003; ADF&G 2003). Over 7.5 million sockeye salmon fry of McDonald Lake origin were released in Virginia Lake between 1989 and 1995. Efforts also included lake fertilization, stream channel modification, the construction of a fishpass in 1988, and evaluation of adult escapements. Beginning in 1994, annual stream surveys were conducted, and in 1997 fish were sampled as they migrated through the weir. Escapement estimates were generated in some years. In 2001, a Virginia Lake sockeye salmon stock status and trends research project was initiated by the USFS under the terms of a contract with OSM. In 2003 the project continued studying the sockeye salmon stocks and assessed the effectiveness of the programs mentioned above.

Some key respondents related that they could easily recognize the differences between the native Virginia Lake sockeye salmon stock and the MacDonald Lake sockeye salmon stock. Some questioned the wisdom of the fertilization program, the release of fish from another origin, the construction of the fishpass, and other salmon enhancement programs, expressing concerns about potential and perceived impacts to the native Virginia Lake sockeye salmon:

[Is it different now, with the ladder?] Well, the only difference right now is that the hatchery has put out so many fish, and they are not sockeye, they are dog salmon, and dog salmon being a terminal fish, they have no place to go. But there's a built in instinct apparently to go to a freshwater stream. And all the streams that were traditionally ... like Mill Creek or Virginia Lake Creek ... was strictly sockeye. Thoms was strictly sockeye, and Kunk Creek was strictly sockeye. There're some on Prince of Wales, I can't think of their names right now, but they were all strictly sockeye streams. But now you set your net out and you have a terrible time with those snaggle tooth dogs. (Interview conducted September 17, 2003)

[Do you notice a difference in quality of the fish now compared with earlier times, besides the size?] Not really. They're just smaller. They used to be fatter. Seems like they

are more streamlined. They might be longer, but they're not as fat as they used to be. Seems like when we were kids they were fatter. (Interview conducted August 18, 2003)

Timing of the Mill Creek Run and the Subsistence Fishery

The State of Alaska subsistence fishery for Mill Creek sockeye salmon was open June 1 to July 31 (5 AAC 01.730 (e), 2003–2004; Appendix C). Key respondents indicated that most salmon arrived in late July, although some arrived as late as early August; however, most fishing started in July. In 2002, based on permit returns, only 21% of the harvest was taken before July 16, and 53% of the harvest was taken in the 10 days between July 21 and July 31 (IFDB/ALEX). Observations made by USFWS and ADF&G staff indicated that most of the sockeye salmon return through the weir occurred in the last days of July and first weeks of August. The peak of commercial removals by the drift gillnet fleet fishing the statistical area that targets Stikine River stocks, Wrangell 108–40, occurred in the 3 weeks following July 6. By July 26, the commercial effort slowed considerably

Because Mill Creek was a short distance from town, people could make quick trips across Eastern Passage to determine whether the sockeye salmon had arrived. People sometimes delayed fishing at Mill Creek until the latter part of the opening, especially if they also intended to fish at Thoms Place, where the sockeye salmon run was thought to be earlier. One person noted that he caught more of the McDonald Lake sockeye salmon stock during his later fishing trips to Mill Creek. Key respondents did not link the timing of the Mill Creek sockeye salmon run with that of the Stikine River run. In terms of the timing of the fishing efforts, some key respondents preferred fishing at Mill Creek during the incoming tide. If they were alone, however, they preferred to fish during low tide because it was easier for them, if they were alone, to manage the nets when the current was not as strong. Another factor that influenced the harvest timing of Mill Creek sockeye salmon was the weather. During dry weather, the creek water level dropped, which discouraged salmon from jumping the falls or using the fishpass, so they schooled in the lagoon just downstream from the falls, beyond the regulation markers and out of the reach of gillnets. A high incoming tide combined with high water levels from a rainy period allowed salmon to quickly migrate through the creek to Virginia Lake. Following are the different strategies that people used to harvest Mill Creek sockeye salmon:

I like to fish Mill Creek at low tide, because I have the place to myself. But now, I don't know if people have found out that I have been successful over there, low tide or what. Now there are getting to be more and more people fishing at low tide. But there are not that many people fishing any way, so no problem.

[What conditions were the best to get the sockeye?] Incoming tide. Best to set at incoming tide. (Interview conducted July 28, 2003)

[At Mill Creek do they come in from a certain direction?] Well, we'd have the best luck when they came in from the Stikine River. (Interview conducted August 18, 2003)

It rained a couple of days in a row, and the creek was really high coming down, and the tides were higher, and [a friend] and I went over and set the net, and then sockeye, when they come in they just rushed right in, jumping four, five, six, eight, ten in a row — boom, boom, boom — and they went right for the ladder, and they didn't stop, they didn't back out, they didn't do nothing, they went right for the ladder, and — boom, boom, boom — up they went. And we were sitting there, and I was looking at my net and it wasn't catching any, because they came in the far side. We could see them in the ladder. They were the big ones. I think they were those big ones they enhanced over at Mill Creek ... they were the bigger ones from McDonald. It was kind of neat to see ... Those torpedo ones, they had to fight their way up there, and now they have that ladder, and they fed the lake, and they got those great big ones now, and that's what was coming in ... that's what I wanted, but it was not to be! They just went *[phew]*! Usually they'll

mill around inside there. Once in a while they'll go back out and hit the net, it's almost like they know where the line is, but usually they stay in front of that line, it's like, they know that line. They stay in front of that line. (Interview conducted July 23, 2003)

Some respondents reported that there may have been a difference in the timing of the return of the native stock and the stock of McDonald Lake origin. Other respondents wanted to fish at Mill Creek and Thoms Place to avoid harvesting chum salmon, which they said damaged to fishing nets.

Methods and Means at Mill Creek

Fishers used a variety of boats to travel to Mill Creek. Because of its relative proximity, smaller boats with smaller engines could be used, from 12 ft skiffs to 21 ft fiberglass vessels. People who owned flat bottomed river scows often waited for calm weather in order to avoid a rough ride in high seas.

In subsistence and personal use fisheries, drift gillnets could be used only prior to August 15, and were limited to 50 fathoms in length. Other legal gear included dip nets, spears, and gaffs. Retention of incidentally caught Chinook salmon and rainbow/steelhead trout was legal if taken by gaff or spear (5 AAC 01.720, 2003–2004 subsistence regulations; 5 AAC 77.682–699, 2003–2004 personal use regulations; see Appendix B). Under federal regulations (50 CRF Part 100.27 [i] [13] [v] 2003–2004) there was a household limit of 20 coho salmon per day and 40 coho salmon per year. The federal regulations applied to Mill Creek upstream of the falls.

As in historical times, gillnets were the gear most often used to harvest sockeye salmon at Mill Creek; only a few used dip nets, as reported on permits (IFDB/ALEX). Lengths of gillnets described by key respondents ranged from fairly short nets of 10 fathoms (60 ft) to 50 fathoms (300 ft), the maximum length allowed under the terms of the permit (Appendix B). One key respondent described the difficulty of catching the small, “torpedo shaped” native sockeye salmon stock:

[Native] ones are little torpedoes. They hit the net and squirt right through. They don't even get in there and stay in. They ruffle the corks a little bit, but they're gone. *[So they can get past the gillnets right there?]* I think so. Once they get up in the creek, it's pretty hard to set a gillnet up in there. *[You don't care for those fish?]* No, there's nothing to them. (Interview conducted February 14, 2004)

[What mesh size do you use?] I like a four-and-a-half inch or four inch mesh. If you get any larger, like a six inch mesh ... You might use them for cohos. And that's what the fishermen are using now. *[How deep is your net?]* Different ones ... use different. I don't know what the average net is. We used ... mine was cut down. It was only twenty-five meshes deep. They make them fifty meshes. But we only use a ten fathom [60 ft] net. And they're hung, you know, like I say. It depends on where you are going to use them. I use a ten fathom out here [along shoreline north of the mouth of Mill Creek]. Right from here is the only place we go. We never set our net over here, because it seems like the fish travel right along here coming from the north. Some others may fish over there. I've never seen them, but they may. And then others hang their gillnet real shallow so they can go right up in here, so they are right at the mouth of the falls. The markers are out here. *[Technically they are not following the rules?]* Technically, they're not supposed to [fish there]. (Interview conducted September 17, 2003)

Permits returned by Wrangell fishers indicated that drift gillnets were the most frequent gear used, followed by dip nets, and that the use of beach seines at Mill Creek was rare, although one key respondent described the practice of using a gillnet to surround Mill Creek sockeye salmon that were schooled just outside the lagoon. This method required 3 people to complete a set. A person who stood in the bow of the boat threw either a lead line or rocks from the beach, in order to scare the sockeye salmon into the net:

Like, you're standing in the bow of the boat, and you're throwing it out, making bubbles to scare the fish into the net. Or you could ... I mean this is the method I use. Others use a pole [a plunger] with a ... it's shaped like a funnel, like this, and it's hollow in here, or you can use a can of nails. As long as it's used to just make bubbles and scare the fish. *[Oh, you're kind of using it to bring it around, like a seine?]* Yes, even though it's a gillnet, you don't just run it straight out. *[Are people doing that method now?]* Yes, not many, but a lot of the people do, a lot of the older people do. A lot of the non-Natives, they *[They just leave it straight out?]* They just set it out. Which is a good method, too, you know. But most of the time, we're a little bit anxious. *[But you do it when you see the fish jumping and you know you're going to get ... when they're schooled up?]* Um hum. *[If you're not sure where the school is, you wouldn't do ...?]* Yeah. You'd just set the net out and just leave it and go. (Interview conducted September 17, 2003)

The use of dip nets for harvesting Mill Creek sockeye salmon was also described:

[It looks like a really good place to do dipnetting, but I guess you are not allowed to get in that close. Did people used to do that?] Oh yes! *[Was dipnetting a good way to do it?]* Oh yes, especially right in the falls itself, if you get it where it is not swollen, and all those pot holes and those rocks. It's easy to get 'em. *[Do you remember people talking about doing that?]* Oh, I've done it myself. That was in the early days, before all the regulations. (Interview conducted September 17, 2003)

Mill Creek Use Areas

Fishers set gillnets along the shore, both to the north and the south of the outlet of Mill Creek. There were ADF&G markers on the shore at the outer edge of the lagoon, downstream of the falls, which identified the boundaries of the subsistence setnetting area. The location of the reefs, the depth of the water, and the direction of immigrating fish influenced the selection of a setnet site. Key respondents described how to select a site at Mill Creek:

Okay. Have you got a chart there? Here's Mill Creek. You can set most anywhere here, but they come down inside this reef ... this reef is a prominent reef that sticks out, and you go down like this, down through here. (Interview conducted September 17, 2003)

[So, where do you put your net out here?] Right along in here, or anywhere along here. Right by the marker. We would put the net across here, but you have to do it at high tide, and you only got about two hours, maybe. Of course it depends on how deep your net is, how many meshes it is. If you got a shallow net you could probably stay longer. You could put your net right in here, and then when the tide receded, the salmon go out, you could get them then, get them both ways, coming and going. (Interview conducted September 17, 2003)

I think the advantage to fishing as close to the mouth as possible is that the fish kind of move back and forth, sniffing the water out, whatever they do, so you kind of have more of a chance of hitting them both ways. And I think they tend to run the beaches. And from what I've seen of [fish] "jumpers", and, in general, where people fish, they tend to move out this way when they move out [north along the beach]. When they're coming in they tend to come this way as well. I've seen people set off here. I've tried setting off south here, but it doesn't seem to be as effective for sockeyes. There're kings and dogs in the area that you can catch anywhere. As far as sockeyes go, they seem to be more in that [north] direction. (Interview conducted September 17, 2003)

[Where did you set at Mill Creek?] Here's the creek, used to set it right off this point, the length it was allowed. Usually it was just right off here, sometimes over here. [On the

south side of the outlet] there's a little creek that goes up this way ... most of the dogs go up that way. (Interview conducted September 17, 2003)

Since most key respondents interviewed for this project were people who participated in the net fisheries only, limited information was collected regarding resident's use of a rod and reel to target Virginia Lake trout; their use of dip nets, spears, or rod and reel to catch salmon upstream or downstream of the falls; or their use of alternative gear in the lagoon at the base of the falls. For instance:

I've tried to dipnet 'em, but all the regulations say you can't go beyond the point, and you have to be at a certain point, and the fish are so spread out that ... It's not like they come in hoards, so that you could throw your dip net down, or throw a spear in the water. Mill Creek is too flat when it's low tide out there. I don't have all day to get two fish. I have snagged them over there before. When they are thick in there you just throw your treble hook out and snag them. But the net works much easier, because you can just set your net out and go do other things, like go to the beach, and have your picnic or go up the into the creek and trout fish, because you're [net is] still fishing. (Interview conducted July 23, 2003)

[Have you ever tried catching them with a spear or dip net?] The other day I wished I would've had a dip net, they were so thick. Of course it was illegal there, where they was at. They were up there right by the falls and they couldn't fish. But they were so thick a guy could have caught them with a dip net. I've never tried it. I have a gillnet. (Interview conducted July 28, 2003)

Most key respondents said that they brought salmon to town in order to process them at home.

Abundance of Mill Creek Sockeye salmon

In 1986, the estimated sockeye salmon escapement to Mill Creek was between 10,000 and 40,000 fish (Cady and Reed 2003). In 2001, the weir counts of returning sockeye salmon were 1,003 fish; and, in 2002, 2,073 fish. Many questions remained about the factors affecting sockeye salmon spawning and juvenile rearing success of Virginia Creek and Mill Creek sockeye salmon. One key respondent compared fishing at Mill Creek today with her experiences in the late 1960s and early 1970s:

This was before they blasted all that rock and made the ladder. [Have you noticed a difference nowadays compared to back then?] Yeah. I don't know if my dad just knew how to do it or what, but it seems like when we were kids we used to get a lot of fish. This was in the late 'sixties, early 'seventies. The sockeye were a lot bigger when we were smaller. When I was younger the sockeye seemed bigger then. (Interview conducted August 18, 2003)

From 1992 to 2002, Mill Creek supplied Wrangell households with between 19% and 66% of the annual personal use/subsistence salmon harvest, according to returned permits (Table 9). Some people interviewed for this project indicated that they had to travel to Mill Creek several times in 1 season in order to reach the annual limit. There was considerable skepticism about the value of past enhancement and enrichment efforts at the lake, although people did have positive statements about the "larger McDonald sockeye."

Wrangell fishers were the principal participants in the personal use fishery at Mill Creek and at Earl West Cove (IFDB/ALEX). Since 1994, only a few fishers from other communities reported salmon harvests from these 2 locations.

In 2002, the average daily harvest was 8 Mill Creek salmon per permit, according to the data recorded on returned permits (IFDB/ALEX). The highest average daily harvests occurred between July 18 and 24, when about 11 fish were caught per day. In 2002, the number of groups fishing at Mill Creek ranged from

1 to 10. In July, the average number of fishing groups per day was 4. Over half of the reported subsistence salmon harvested at Mill Creek in 2002 occurred in the last 2 weeks¹¹ of the opening.

Thoms Place Subsistence Sockeye salmon Fishery

Fishing for sockeye salmon at Thoms Place required a greater investment in time and resources than fishing at Mill Creek. The trip down Zimovia Strait lasted 1 to 2 hours, depending on the size of the boat and motor. The trip also required more planning than a trip to Mill Creek. Because of the longer distance, more attention was given to the times of the tides, as well as to the weather conditions. Some fishers made a round trip in 1 day, while others spoke of extended stays of up to a week or more.

Returned permits showed that the number of sockeye salmon taken by Wrangell permit holders at Thoms Creek fluctuated (Table 10). Between 1985 and 2002, the numbers of sockeye salmon harvested at Thoms Place ranged from a low of 103 fish in 1988 to a high of 572 in 1993. Wrangell resident's participation in the Thoms Place sockeye salmon subsistence fishery was irregular.

Timing of Thoms Creek Run and the Subsistence Fishery

The Thoms Creek sockeye salmon run generally arrived earlier in July than the Mill Creek run, although peak escapements, based primarily on foot surveys conducted irregularly since 1961, have been recorded as late as August and September (IFDB/ALEX). One of the considerations affecting the timing of sockeye salmon fishing at Thoms Creek and at Mill Creek, mentioned by several key respondents, was the desire to avoid returning pink and chum salmon, the capture of which made sockeye salmon fishing less efficient and less enjoyable:

[What is the timing of your efforts?] We usually go to Thoms after the Fourth of July because, if you get in there then it's before the dog salmon come in, and you don't have to mess with the dog salmon in the nets. You'll still get fish in there in late July, but then you have the dogs to contend with, the big old snarly teeth. They're hard to get out of the net and they rip your net up. So, we generally, after that first year going the third week of July, we started going right after the Fourth of July and we haven't got a dog since. So that's when we do it. (Interview conducted September 18, 2003)

We live there for about a week; we work all the time, except at night. *[What's the best time?]* Oh, it just depends: kind of waiting for a new set of fish to come in. And you'll see them "finning"¹² or even jumping and go set your net, and if the tide goes out then, if you set off that rock you're going to get them because they back out with the tide, on the outgoing tide. I've caught them on the incoming and the outgoing tide. (Interview conducted September 18, 2003)

Methods and Means at Thoms Creek

All sizes and types of boats were used to travel to Thoms Place from Wrangell. Key respondents described several methods of fishing at Thoms Place, and the factors that influenced their gear choice. Different net lengths were described, as well as the different amounts of time that the nets were in the water, or "soaked":

[So you would do that circling method in this situation?] Yes. That's where I would use it, right there. And that's one of my favorite spots, right in here. *[Do the sockeye stay around pretty long, or do they go right up the creek?]* No, they mill around, if the weather is fairly dry ... they'll come in and they'll mill around for a while. But when it rains heavy, then the fish are gone ... they'll go right up. *[They go real quick?]* Right up. And some people, I've seen them go up and they'll get their fish out of the creek. A lot of

¹¹ ADF&G Commercial Fisheries' statistical weeks 30 and 31.

¹² Salmon are said to be "finning" when their dorsal and/or adipose fins break the surface of the water.

them are not very ... [*Could you spear fish there?*] Right in the creek itself. [*Is there a rule against spearing, or dipnetting up in that creek?*] I'm not sure whether there is or not, but I've never gone up there and done that. [*Would the fish be too far gone if they were ... if you caught them up there?*] Well there's a legal marker. [*So probably you're not supposed to go up in there?*] I don't know. I'm fine without breaking the law. I can get enough fish on the outside [of the marker]. (Interview conducted September 17, 2003)

Thoms Creek Use Areas

Fishers had preferred setnet places at Thoms Place, based on knowledge passed down from parents and grandparents and on personal experience and observation of salmon behavior and salmon movements within the bay. As at Mill Creek, gillnets were the principal gear used. Different fishers preferred different setnet locations and net lengths, explaining that a shorter net was easier for a person to handle on his or her own, and worked better in the narrower water bodies. A longer net caught more fish if it was set when and where the fish are moving. Tidal and water currents, and other factors as well, influenced where, when, and how fishers decided to set their nets. A key respondent described his selection of fishing sites at Thoms Place:

[*Would you use that down at Thoms Place, would that work down there, too?*] Basically, it would be the same. You could see the fish. And you go out and you set it out and normally ... well you were there yesterday ... the stream comes down like this and here, this is the flats right here. Yes it's easy to see the fish. It's normally along this side [north] that I find the best [places] to set my net, right along this side. For some reason or another, it's here ... It's probably that the main water comes down like that, you know. It's the sockeye go up in that area, right up in here, right along in this side, right up in here. You can get an occasional ... people set all over. But when I go in I watch the tide, and I get there right at low tide and the fish are down in here. Low tide is my favorite. At high tide, it is spread out, so, and it's quite difficult to get the fish. If you had a long enough gillnet, you could set it clear across. (Interview conducted September 17, 2003)

[*Where do you put your net at Thoms Place?*] Is that that little rock? We usually fish off that little rock here ... I've seen a lot of guys put in here ... this gets, at low tide this really comes out, but we usually fish off that big rock right there. That's the best spot, there's a channel right there and they'll come out on an outgoing tide there, and you'll catch whatever's left in there ... you'll catch them going in, too. That's the best ... to the right of that "ten" [on the map] [*Do you use the same spot every time you've gone down there?*] If it's not too good there, we'll take another net and go somewhere else. We'll leave that one in. (Interview conducted September 18, 2003)

Of course we're there, too. A lot of people who live around at Thoms Place, they'll just come and leave a net overnight, and come back later and pick it up. The trouble with that is it'll go dry and the fish and stuff ... and the seals'll start eating the fish and you'll lose a lot of fish that way. Lot of time there're seals in there. We'll have the skiff and we'll go out and scare the seals away. Those little buggers, they'll steal the fish, and they never get tangled up in the net. They know how to do it. They're smart. (Interview conducted September 18, 2003)

[*What size of boat do you use to get down to Thoms Place?*] I take the little nineteen foot aluminum skiff. [Name] takes his houseboat, about a thirty foot houseboat. It's not motorized, we just have to drag it, tie alongside the ... We live on it while we're there. It's nice, has a little galley where we do all our fish processing. It makes it nice. [*What net size do you use?*] We use a hundred and fifty foot net. Others use a twenty-five fathom net. (Interview conducted September 18, 2003)

Abundance of Thoms Creek Sockeye salmon

Key respondents spoke generally about the abundance of sockeye salmon in the areas they fished:

[Have you noticed any changes in when the fish come in over the past 8 years since you've been fishing?] Some years they haven't been as thick as others. But again we go early, to avoid the dogs and sometimes they're kind of sparse, but we stay long enough to get our quota in. Just get it faster or slower. (Interview conducted September 18, 2003)

In 2002, ten salmon per permit was the average daily harvest at Thoms Place, according to permit returns (IFDB/ALEX). The highest average daily harvests occurred in the 10 days between July 9 and July 20, when about 12 salmon per permit were caught. In 2002, the number of groups fishing at Thoms Place ranged from 1 to 5, and the daily average during July was 3. Over 60% of the subsistence sockeye salmon reported harvested at Thoms Place in 2002 occurred during the last week of June and the first 2 weeks of July.

Salmon Bay Subsistence Sockeye salmon Fishery

The number of Wrangell personal use and subsistence salmon fishers who traveled across Clarence Strait to Salmon Bay declined in recent years from a high of 27 in 1996 to 7 in 2002 (Table 10). It is a considerably longer trip than to other fishing sites, requiring more time, expense, and planning for the weather. The size of the boat and motor also influenced the travel time, but, generally, key respondents indicated that the trip from Wrangell took from 2 to 3 hours, one way. While it was within the traditional use area of the *Teeyhittaan* clan of Wrangell, the bay attracted more salmon fishers from Petersburg than from Wrangell (IFDB/ALEX), and was the principal source of sockeye salmon for Petersburg households wishing to participate in a sockeye salmon subsistence net fishery.

The data from returned permits showed declining numbers of Salmon Bay sockeye salmon taken by Wrangell permit holders (Table 10). The majority of people fishing at Salmon Bay were from Petersburg, but fishers from Point Baker, Port Protection, and other Prince of Wales Island communities, as well as Wrangell, also traveled to Salmon Bay for sockeye salmon.

At the time of this study, the trip to Salmon Bay from Wrangell cost as much as \$70 in gas and motor oil. There were other considerations that influenced the decision about fishing sites and each location offered unique features that required different sets of knowledge. The configuration of Salmon Bay, the location of tributary streams, the water depths, the tides and currents, the seabed contours, and the shoreline features each presented challenges that required modifications to gear. For example, navigation into and out of the bay was governed by the tides since the outlet channel was both narrow and shallow. Harvest limits were also a factor influencing the decision to travel to Salmon Bay. For some, the abundance of sockeye salmon there would cause them to exceed the harvest limits, while for others the abundance provided trip efficiency, if the trip were made with other permit holders who could share in the catch. People interviewed for this project described their Salmon Bay learning experiences:

I went to Salmon Bay a couple of times and that's a longer run. And if they're not there ... and you're allowed twenty a day, or forty per season or something like that. And if you go over there and set your net and catch a hundred. Sometimes they're in there just thick, and you're illegal "right now." And it's a long run. So I've gone over there before and set the net and got a hundred with [name]. You're looking around. You're nervous the whole way back to town, and then you've got a hundred fish to take care of. So I gave up on that place. Maybe later on when ... but I don't see myself running out there. (Interview conducted July 23, 2003)

Timing of Salmon Bay Run and the Subsistence Fishery

According to an ADF&G study of the sockeye salmon stocks at Thoms Place, Salmon Bay, and Luck Lake, in 2001, the peak of escapement at Salmon Bay occurred September 12, well after the close of the

subsistence season (Lewis and Cartwright 2002; 5 AAC 01.730 (e), 2003–2004; and Appendix B). The subsistence sockeye salmon fishery at Salmon Bay opened June 1, but few people reported harvesting there before the middle of July (IFDB/ALEX). One key respondent noted that the fish were of better quality and were brighter in early July, “Like I say, if you wait until the end of the month you can go over there [Salmon Bay] and catch dark fish. So if you want bright fish you go early in July, and then regulations close it at the end of July, I believe” (interview conducted February 15, 2004).

The weather definitely influenced fishers’ decisions to travel to Salmon Bay from Wrangell, since the trip involved a considerable expanse of open water.

From Wrangell we run the north shore of Zarembo to go there and that is pretty open. *[You have to be careful of the weather then?]* I do, yes. There are times when we have wanted to go but we just said no, and like [name] said, “Man, we went [over to Salmon Bay], and we got beat up.” So I’m glad I didn’t go that time. *[That is quite a lot of open water...]* But in July it’s not that bad. One time we were challenged by fog: we came off of Zarembo and it was just a big fog bank laying over there against the shore, so I pretty much knew where to go and ran on a compass, hit the marker just north of Salmon Bay and came down along the shore and got inside, but the fog was gone by the time we were ready to come home. (Interview conducted February 15, 2004)

Methods and Means at Salmon Bay

The relatively narrow and shallow entrance to the Salmon Bay required a shallow draft boat and careful observance of the tides:

Well, I’ve done it two different ways. But always get past this point either just as the tide is coming in, because this is where it gets shallow, get in and drag the boat over, it’s a shallow bottom boat we have ... drag the boat across, get in there, set the net and then the fish come in with the tide. You catch all your fish and start to clean them and then you leave on the high tide. *[So the boat that you come across is the same boat that you go in with?]* Yes right out here, so it’s eighteen foot, flat bottom. I mean really flat, there is no “V” to it at all, flat bottom, aluminum boat. It will float in about ten inches of water. So if everybody climbs out and walks up the bank, we just sort of drag it up, like the *African Queen* [film]. (Interview conducted February 15, 2004)

The tidal flow in Salmon Bay also presented some unique fishing conditions:

But with this lagoon at Salmon Bay, sometimes it’s fresh and sometimes it salt, so you have to kind of ... in between ... that is why. And the fish mill around. Sometimes you will go there and out in this part here there will be jumpers, so I imagine that is fish that are milling around. And some years you go there and it is kind of scary, you will pull into the outer bay here, and nothing, and you think “is there going to be anything inside?” and then you will go up into this hole and the hole will be full of jumpers. (Interview conducted February 15, 2004)

Seaweed and other debris inside Salmon Bay could damage nets, especially as the tide ebbed and flowed. One method key respondents used to avoid this type of damage was to ensure the net was set so that there was a gap between the top of the net and the cork line. Fishers also tried to prevent the nets from dragging along the sea bed. Another method described was to set the net in a certain spot, where there was a current running through particularly deep water:

And you get into the hole and set the net. But I mean there is plenty of water: it’s twenty or thirty feet deep up in this hole. The net drifts, it doesn’t hang. And if you don’t keep working it, it will drift back down. *[So are you attached at any end?]* To the boat. And if you see that you’ve got fish in the net, you run down and you pick the fish out and then

you've got to go back upstream and stretch it back out again. It will drift down. Except when the tide starts coming in, and then it will be hard enough that it will ... sometimes you will have to go on the downstream end to hold it. The net is just drifting there ... well, the net is drifting there ... we will hold on to the end to keep it straight, but if we catch fish we have to let go of the net, go down and pick the fish, then come back and straighten the net back out again. And I don't like it to drag the bottom because it picks up rocks and sticks, and rips the net. That's not good. When you snag the bottom, that is a problem. (Interview conducted February 15, 2004)

Another key respondent described a different method of fishing at Salmon Bay that he used when the amount of debris could damage the net:

And the other place that I use the circle method is at Salmon Bay. That's one of my favorite spots ... *[So where do you put your net there?]* You come up in through here and you get right up in and right off of here. Right there. I like to get there right at high tide. Now this is one of the areas that I want high tide. After the tide turns ... a lot of people go up and see the fish, and, boy, they set out ... You do get a lot [of fish], but you get a lot of junk and debris. I don't like that. So I normally wait until the tide turns. And [the sockeye salmon] stay right there for a while, they don't go right up. Then after all the junk is gone, then I make my set. Or if I ... I have to do that with the net I've got now, but I've hung another net that when I put the floats on ... Usually it's a ten fathom [60 ft] net, *[drawing an illustration]* these are the corks, like this, and they're hooked together. And then I didn't put the net ... normally the net is right up here like that, right next to the cork line ... I'll show you the way I prefer, especially ... I hang a net for each place. This is like that, then before I attach the net, I drop it ... There's a little space. It doesn't have to be very much. *[So all the junk goes through there? Is that the idea?]* Yes. Six to eight inch gap. So much junk that gets in there: heavy, seaweed, jellyfish. *[At Salmon Bay, especially?]* Yes. So that's why ... *[So how many meshes deep is your net?]* Mine is twenty-five meshes. Yes, this is especially for Salmon Bay. But I do use that net at Mill Creek, too. (Interview conducted September 17, 2003)

Salmon Bay Use Areas

Salmon Bay was considered to have unique features that required knowledge of the currents, channels, and seabed and shore configurations. Key respondents spoke about a location at the north end of the bay, where the water was particularly deep, and where the salmon seemed to pool during their migration toward the freshwater stream:

But we fish ... you go in across the tide flat here and then there is a hole. *[At the north end of the bay?]* Is it here or here? I haven't really studied this on a chart. But it must be up in here ... there is a hole and we learned about the hole from [name] who used to work here with Fish and Game [ADF&G]. He is the one that told us there is a hole up here and it's real deep. And it [the entrance to the bay] is too shallow to get out once you [get in]. I think we fish in a hole here. Because, if this is the sand flats, then this is the hole. And if it is a minus tide and all, you cannot get out through here and you set the net like this. There are a couple of people that set it like this and the fish just don't ... it doesn't fish that way because the fish ... they swim up and they see it [the net]. In a case like this they swim up and around the hole and so you set the net with the current and it is actually easier to fish that way because then the current just holds the net straight.

We have done it that way before, when we first started, because it seemed like the fish are traveling this way [straight up the creek] and that way, but they see it [the net] ... but it didn't work. Yeah, [the water] is pretty clear there. When I was with [name] he says, "No, you set it with the current." And so we watched them fish a couple of years and they

knew what they were doing. So we learned from them and from [name]. Now we can basically go over there and watch the tides, and it is generally the first or second weekend after the Fourth of July is how we know when to fish. It's pretty standard. (Interview conducted February 15, 2004)

Abundance of Salmon Bay Sockeye salmon

According to 2002 permit returns, the highest average daily harvests occurred between July 9 and July 20, when an average of about 16 fish per permit were caught (IFDB/ALEX). In 2002, the number of groups fishing at Salmon Bay ranged from 1 to 16, with an average of 4 groups during any single day of July. Twenty-three percent of the sockeye salmon harvest occurred on 1 day, July 20, 2002, and over 65% of the reported Salmon Bay subsistence sockeye salmon were harvested during the last 10 days of the opening, through July 31.

The Salmon Bay sockeye salmon run was more abundant than other stocks accessible to Wrangell fishers; however, only a few key respondents for this project had fished at Salmon Bay in recent years. Several factors limited Wrangell's participation in the Salmon Bay fishery, most notably the costs of travelling there and the difficulties of staying within permit limits given the high numbers of sockeye salmon available.

CURRENT SUBSISTENCE FISHERY TRENDS AND CHARACTERISTICS

Key Respondents' Interaction with Fishing Regulations

Key respondents indicated a general willingness to comply with state personal use and subsistence salmon fishing regulations (5 AAC 01.700–01.750, 2003–2004 subsistence regulations; 5 AAC 77.682–699, 2003–2004 personal use regulations; see the *State Subsistence Salmon and Personal Use Permit Petersburg/Wrangell Management Area* included as Appendix B). Some felt the current sockeye salmon harvest limits at Mill Creek and Thoms Place were reasonable and allowed them to harvest salmon for subsistence uses. Some were interested to learn that the limits at Salmon Bay had recently been increased, as this made the long trip across Clarence Strait a more reasonable proposition. Some felt that the Mill Creek open season should be extended into August, since they were aware that the peak of the run occurred after the July 31 closing date.

We're only allowed forty now: twenty a day and forty maximum. Before they changed that rule I believe it was ten a day with no maximum. Now it's forty, which is fine, enough for a family. But we can [the sockeye salmon] right there [at Thoms Place]. (Interview conducted September 18, 2003)

Well, the limit [for sockeye salmon] is enough for one family. But I think they should raise the limit on incidental catch of kings. [*What about the open times?*] They should extend the closing date at Mill Creek. I've heard the fish are coming in still in the first weeks in August. Also a setnet would make it a lot easier to fish. (Interview conducted September 18, 2003)

The regulations governing proxy¹³ fishing were not understood. People assumed that if they carried 1 or more permits issued to others, in addition to their own, they could harvest the numbers of fish stipulated on each permit. People indicated a strong desire to avoid wasting fish, and voiced strong disapproval of wasteful behavior, such as discarding smaller fish or exceeding the limits.

Regulations governing subsistence gear accommodated the practices of most fishers interviewed for this project. The permit (Appendix B) for the Petersburg and Wrangell subsistence salmon fisheries listed gaffs, spears, beach seines and dip nets as allowable gear. Although drift gillnets were not included on the

¹³ See Alaska Statute 16.05.405(e) (2003–2004) for the legal definition of proxy.

list, elsewhere on the permit, the allowable length of drift gillnets was specified as “may not exceed 50 fathoms [300 ft].” Most of the salmon reported harvested on returned permits were taken with drift gillnets. Some key respondents described a method of fishing that involved surrounding fish with a gillnet, in some cases with one end of the net attached to the shore. While the efficiency of the setnet was acknowledged, the rationale for limiting gear to drift gillnets was understood and accepted.

Some key respondents expressed a strong desire to reinstate the traditional subsistence fishery on the Stikine River, closed by authority of 5 AAC 01.730 (e), 2003–2004 (Appendix C). They characterized Wrangell as the only community in Southeast Alaska with no access to its traditional fishing areas. The closure of the Alaskan subsistence fishery on the Stikine River was a source of unhappiness for some Wrangell fishers and they cited the level of commercial fishing activity by members of the Canadian First Nations on the Canadian portion of the river.

In 2003 the Federal Subsistence Board made a positive customary and traditional use finding for salmon, Dolly Varden, trout, smelt, and eulachon in District 8 and waters draining into District 8. Residents of drainages flowing into District 6 north of the latitude of Point Alexander (Mitkof Island) and residents of drainages flowing into districts 6 and 7, including residents of Petersburg, Wrangell and Meyers Chuck, are allowed to fish under federal subsistence regulations (36 CFR Part 242 and 50 CFR Part 100).

Competition between User Groups

Competition with other user groups did not appear to be a critical issue for individuals who were interviewed for this project. Many Wrangell subsistence fishers also participated in the rod and reel fisheries managed under sport fishing regulations. The Chinook salmon sport fishing derby was a very popular spring event in Wrangell, drawing many local fishers, some of whom were also commercial salmon fishers with interests in management decisions affecting their commercial interests.

Few key respondents were concerned by nonresident sport fishing effort. The general consensus among key respondents was that while Wrangell did have several businesses catering to nonresident sport fishers, their activities were directed to salt waters along the northeastern coast of Prince of Wales Island, or to the freshwater lakes of the area. There were few complaints about conflicts with sport fishers. One key respondent explained how his fishing technique helped him to avoid crowded fishing grounds:

[Do you think there is very much competition out there, on the weekends?] No. Well, on the weekends there'll be more people than normal. But I try not to go on the weekend. I'm retired so I don't have to go. And that's another reason I fish at low tide. Because I could do better by myself at low tide, or with few other people there, at low tide than I could at high tide. High tide the fish might be concentrated more. But I've learned to fish pretty effectively at low tide. (Interview conducted July 28, 2003)

CONCLUSIONS

The history of Wrangell's involvement in the commercial salmon fisheries of the region helped explain contemporary patterns of fishing for home use. Early regulation of the commercial salmon fisheries had the effect of closing the traditional sockeye salmon fisheries, since closures were interpreted as applying to all fishing. This may have accounted for the contemporary reliance on salmon, other than sockeye salmon, harvested with “sport” gear: i.e., rod and reel and troll gear.

Wrangell became a predominantly non-Native community early in the 20th century, with a Tlingit population drawn from villages around the region, and a larger population of EuroAmerican settlers who formed permanent ties in the community. Wrangell Tlingit were at the forefront of the fight for Native land claims, equality, and equal rights for education. They were instrumental in the establishment of the Alaska Native Brotherhood, a nonprofit organization representing Native rights in Alaska. Some of Wrangell's Tlingit population embraced assimilation, but for others, the pressures to abandon traditional

customs were unwelcome, imposed from without by the schools, missionaries, government, industry, and unions. EuroAmerican settlers brought their own values and customs into the community (Scott 1953).

Fishing for sockeye salmon at Mill Creek, Thoms Place, and, to a lesser extent, at Salmon Bay, was important for a small segment of Wrangell households. For some, it was a way to maintain a connection with the traditions of their ancestors while providing a valued food source. For others, it served a recreational purpose. Both Wrangell's Alaska Native and non-Native households participated in sockeye salmon subsistence fisheries. Local knowledge of sockeye salmon populations derived from individual involvement in the commercial seine and gillnet fisheries from the 1930s to contemporary times.

There was a relatively low level of use of sockeye salmon by Wrangell households, compared with their uses of other salmon species and other fish, but the practice of sharing wild food harvests with family, friends, and neighbors continued as an important aspect of Wrangell's community life. Division of Subsistence data from household survey in 1987 and 2000 (Table 1) and Division of Commercial Fisheries' permit harvest data (IFDB/ALEX) documented the amounts of salmon harvested and the numbers of households participating in subsistence fisheries at study locations, which could be compared with the amounts of salmon harvested with rod and reel (sport) gear, and amounts retained from commercial catches for home use. Sockeye salmon stocks should continue to be harvested for subsistence uses by Wrangell households in the future. Opening the subsistence sockeye salmon fishery on the Stikine River would attract a small number of Wrangell fishers, but would also provide an important opportunity for some to revive traditional practices and renew links to the land and resources of their clan heritage that had been severed by government restrictions on fishing.

RECOMMENDATIONS

1. Acknowledge traditional salmon fishing and use areas on the Stikine River and consider provisions for those uses in state and federal regulations, in order to allow the Stikine Tlingit a continuation of customary and traditional uses. This would recognize the continuing importance of salmon and the role of the Stikine River as a trade route to the Interior in the cultural heritage of the community.
2. The skills and knowledge of early inhabitants of the Wrangell area, including how they used Stikine River salmon, were held by a few individuals who wished to pass them on to their children and grandchildren. The opening of a federal subsistence sockeye salmon fishery in federal waters at Point Rothsay would partly address this issue. Opening the Stikine River to these subsistence users may result in a small number of people attempting to fish with gillnets, beach seines, or dip nets, especially in the flats at the mouth of the river, the shoreline eddies between Babbler and Point Rothsay, and along Sergief Island and Farm Island, as well as further upriver in Cottonwood Slough, Andrew Creek, and Shakes Slough.
3. Additional interviews with a wider segment of Wrangell households, especially hunters, may provide more information about contemporary uses of Stikine River salmon stocks. Wrangell hunters travel up the Stikine River in the fall. The extent to which they utilize the salmon stocks and the methods and gear they employ should be identified.
4. Consider regulations to recognize customary practices and gear. Any regulations adopted for such a fishery should recognize the historical practices and gear that proved successful for harvesting salmon in the different river conditions, notably the use of setnets in some locations where currents, turbulence, shoreline configuration, and debris in the water made drift gillnetting impossible.
5. Review regulations for proxy subsistence fishing to address the current practice, common throughout Southeast Alaska, of fishing for others by reporting fish harvests on permits of a household without members of that household present during the fishing.

6. Review the opening and closing dates for the Mill Creek, Thoms Place, and Salmon Bay subsistence fisheries to determine if later closures could be permitted. Recent data from Mill Creek indicated the run peaks in mid August, after the close of the subsistence fishery.

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We would especially like to thank the residents of Wrangell who agreed to share their knowledge of sockeye salmon and their fishing experiences in the Wrangell area. The following individuals graciously gave their time and knowledge: Alice Bjorge, Carol Feller Brady, Janice Churchill, Kim Covalt, John Feller, Douglas Gross, Harvey and Gayle Gross, Iner Haaseth, Tom Harto, Jimmy Jenkins, Ed Kunz, Ethel Lund, Skip McKibben, Elmer Mork, Iver Nore, David and Paula Rak, Richard Stokes, and Greg Wood.

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TABLES, FIGURES, AND PLATES

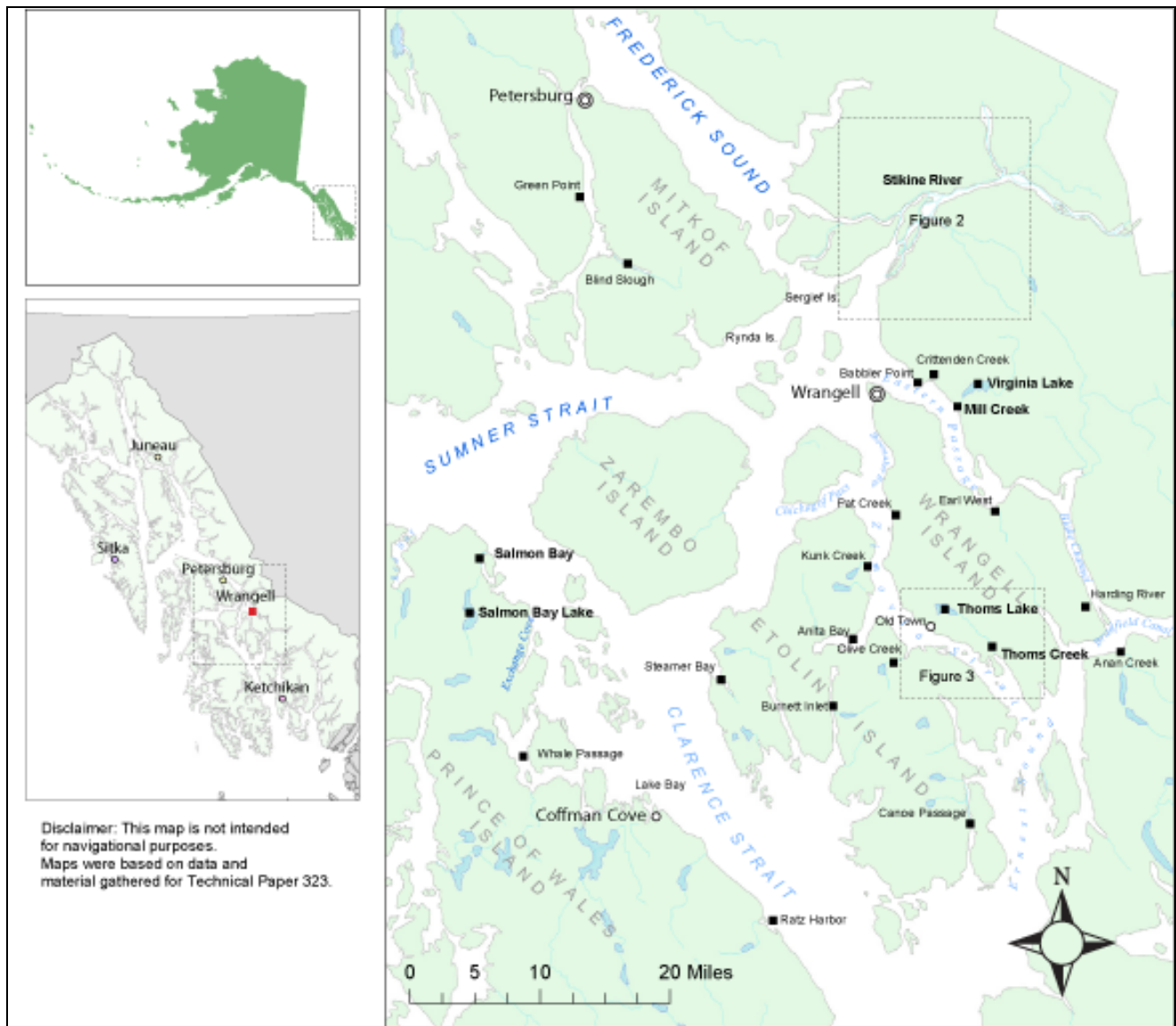


Figure 1.—Maps of Southeast and Wrangell areas.

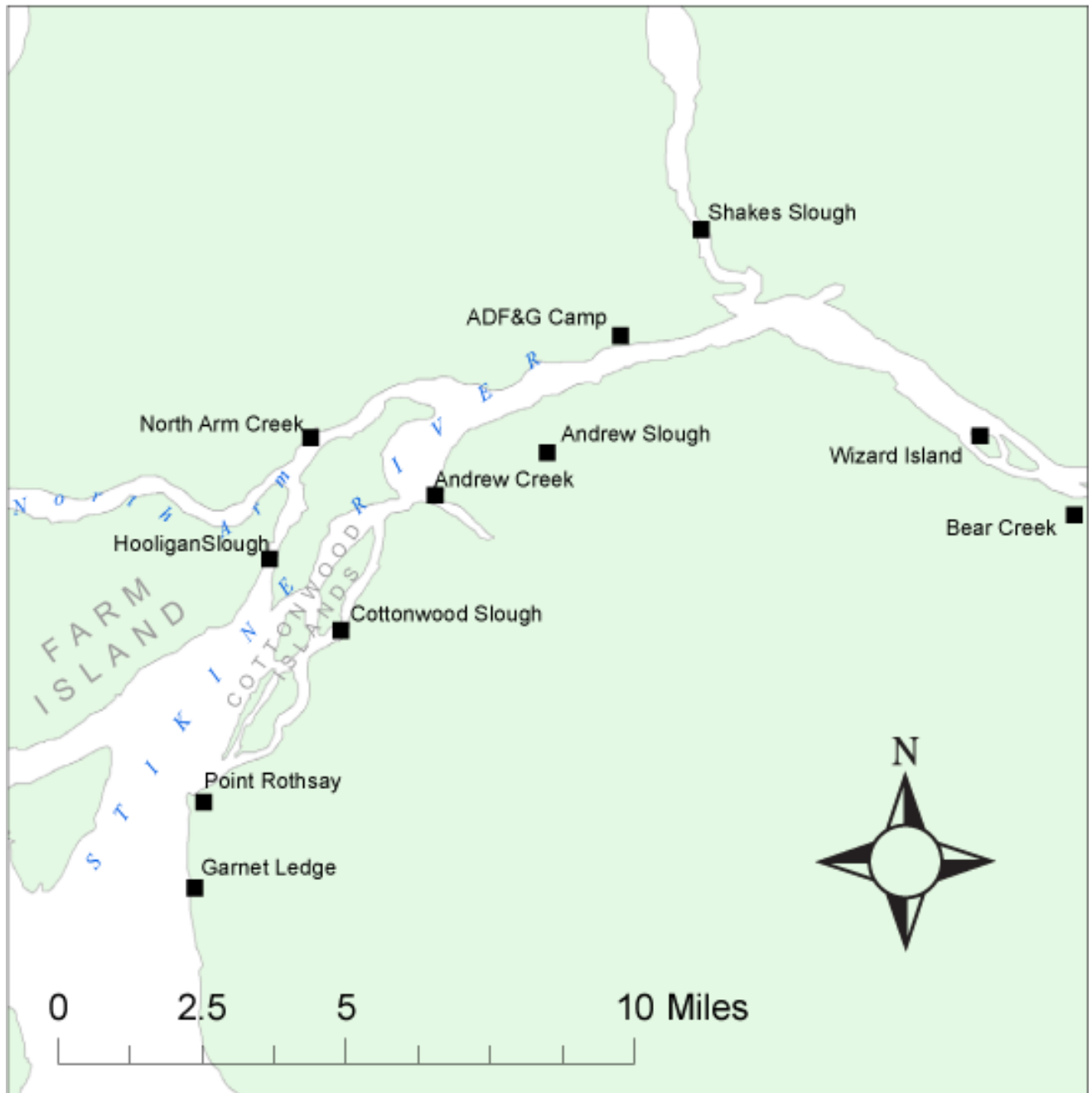


Figure 2.—Map of the Stikine River delta area.

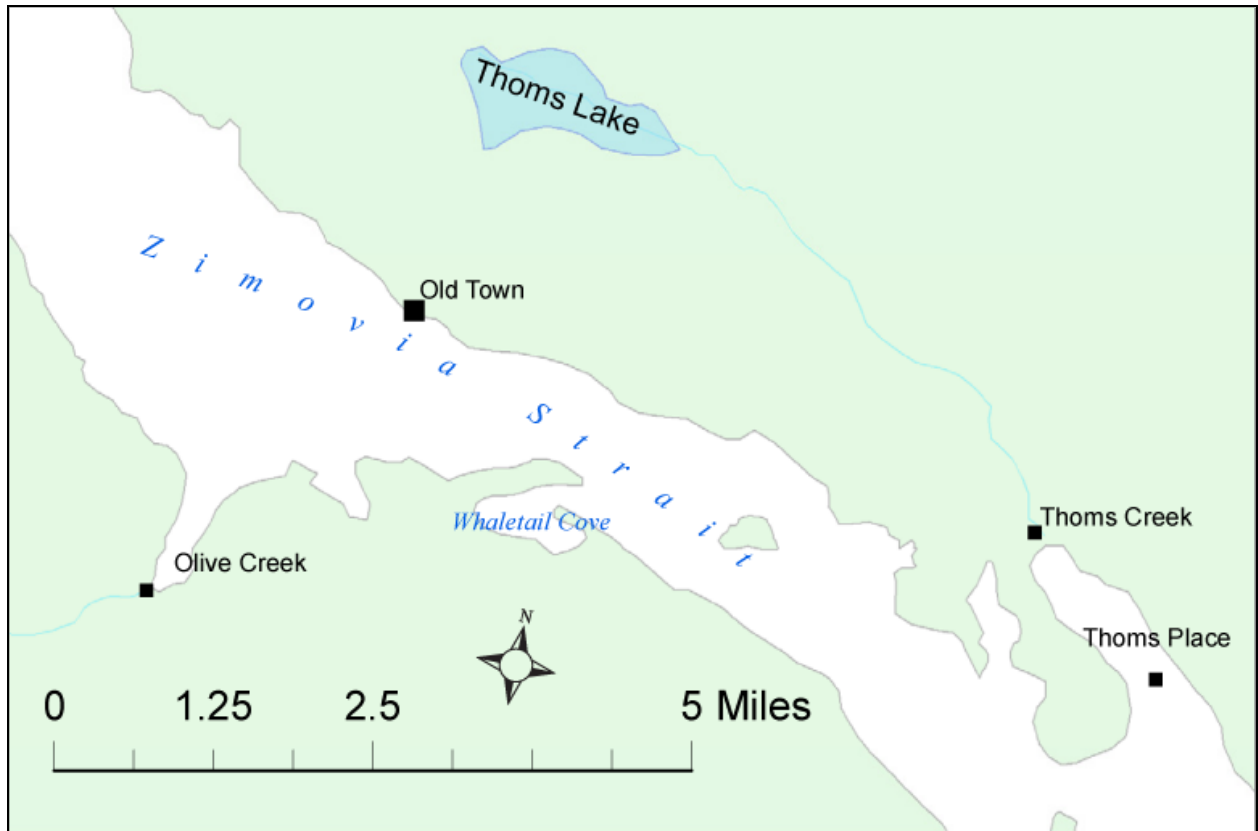


Figure 3.—Map of Thoms Place and Old Town area.

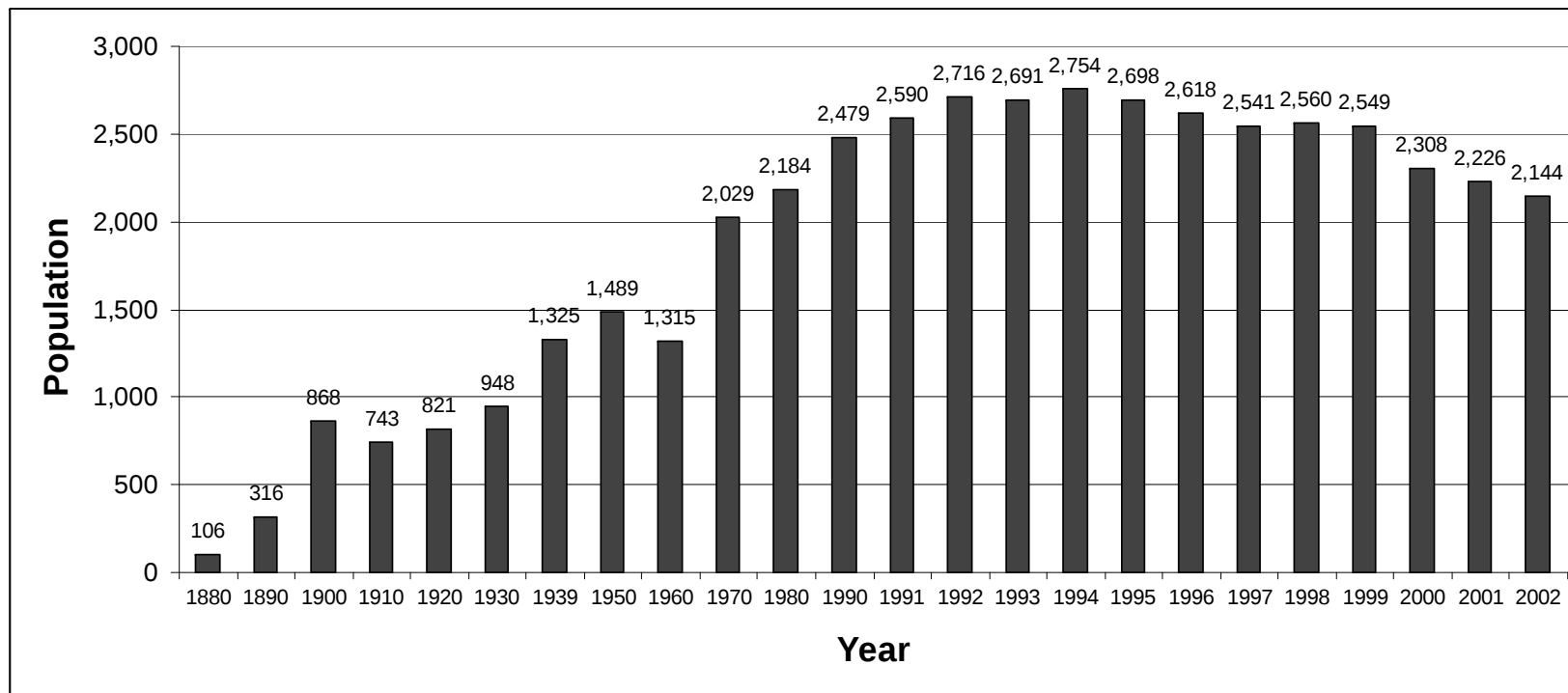


Figure 4.—Population of Wrangell, 1880–2002.

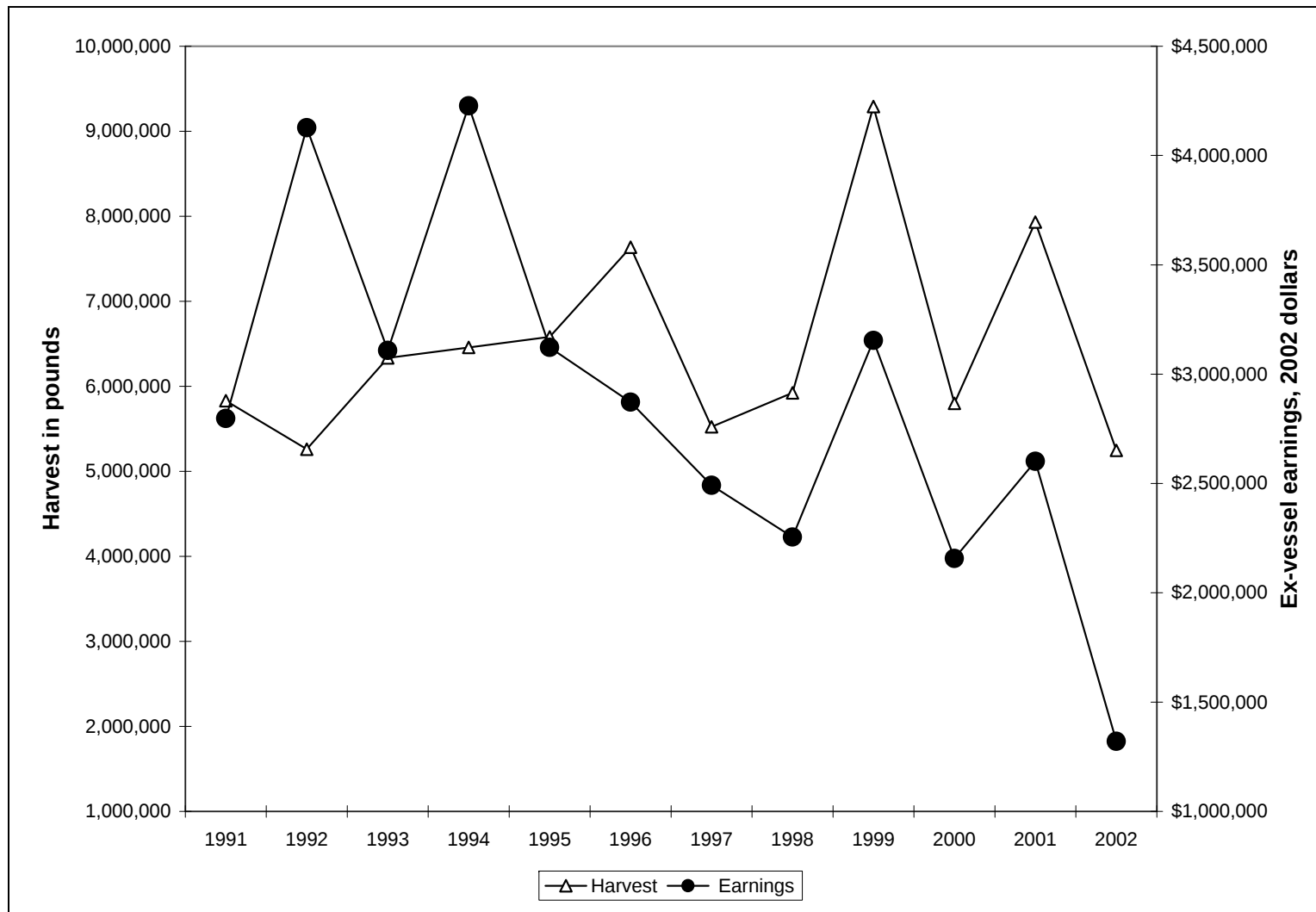


Figure 5.—Salmon harvested and monetary earnings of all Wrangell commercial permit holders, 1991–2002.

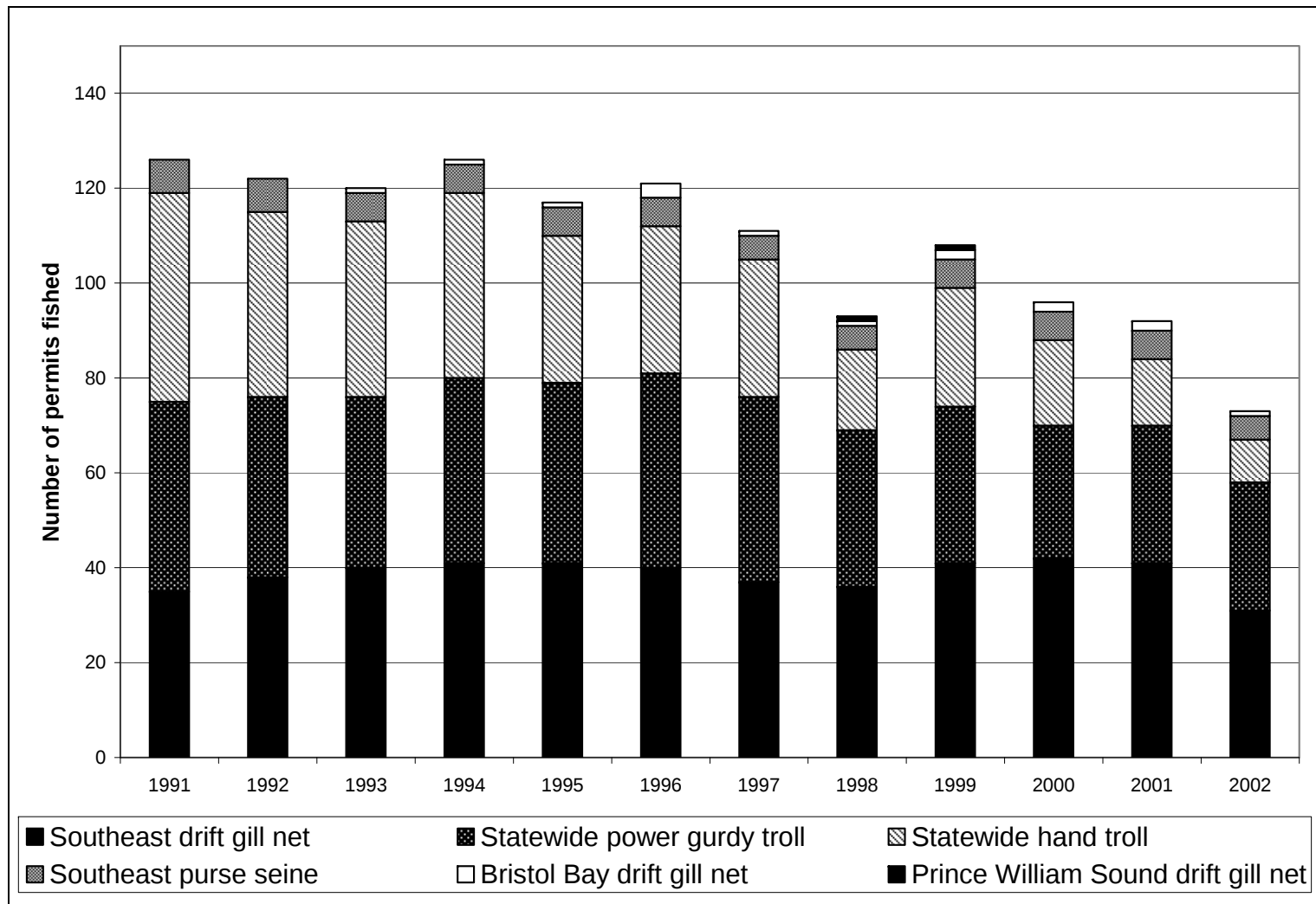
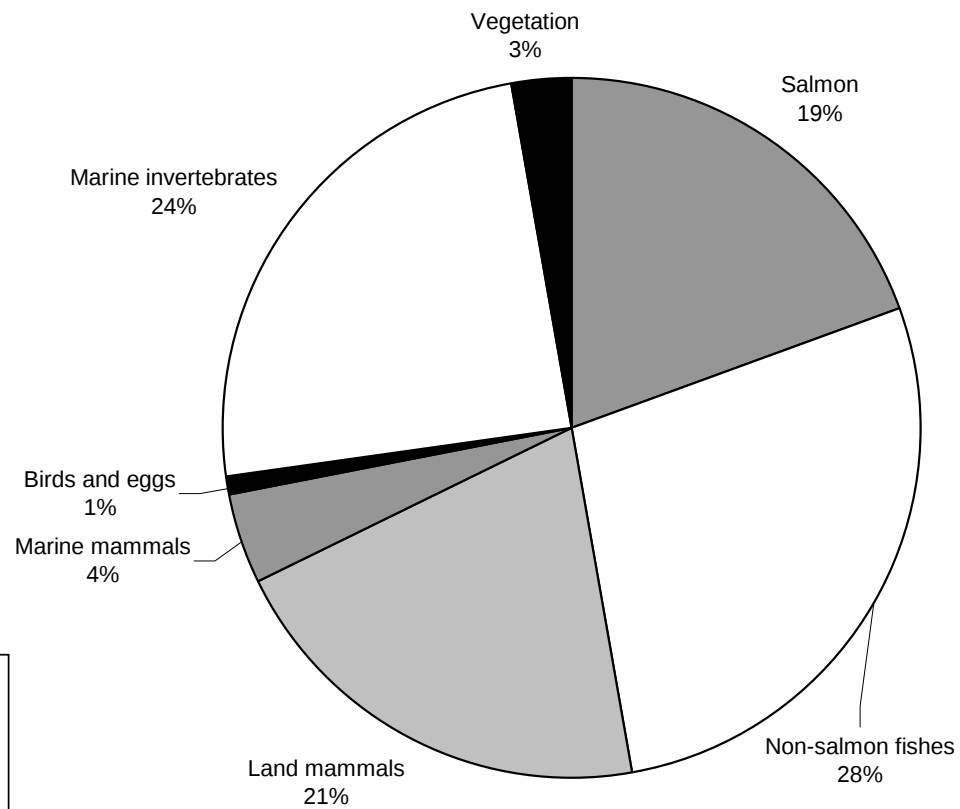


Figure 6.—Composition of commercial permits fished, by gear and area, Wrangell commercial permit holders, 1991–2002.



Total harvest = 440,612 pounds
Mean household = 435 pounds
Per person harvest = 155 pounds

Figure 7.—Composition of the wild resource harvest by resource category, Wrangell, 1987.

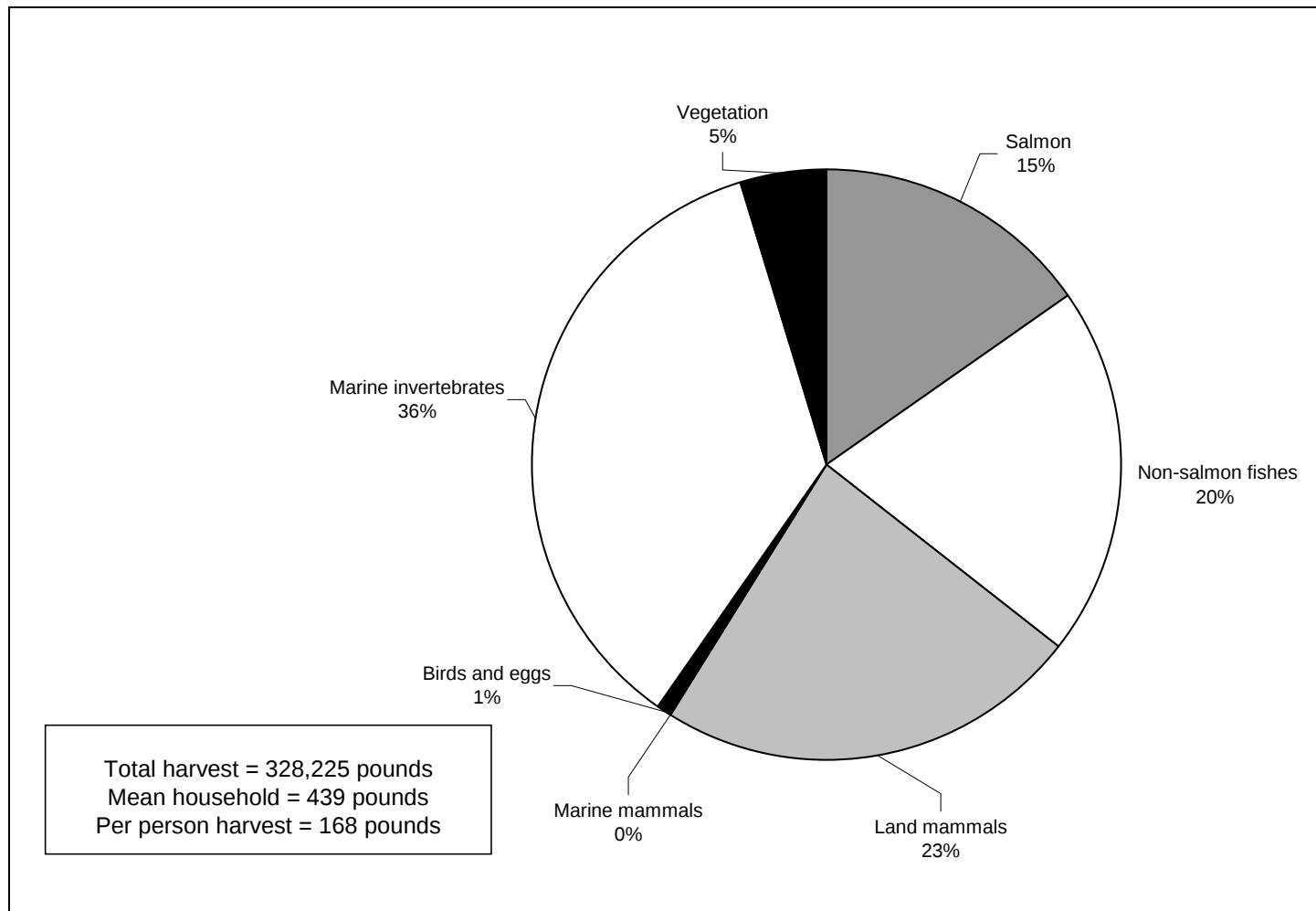


Figure 8.—Composition of the wild resource harvest by resource category, Wrangell, 2000.

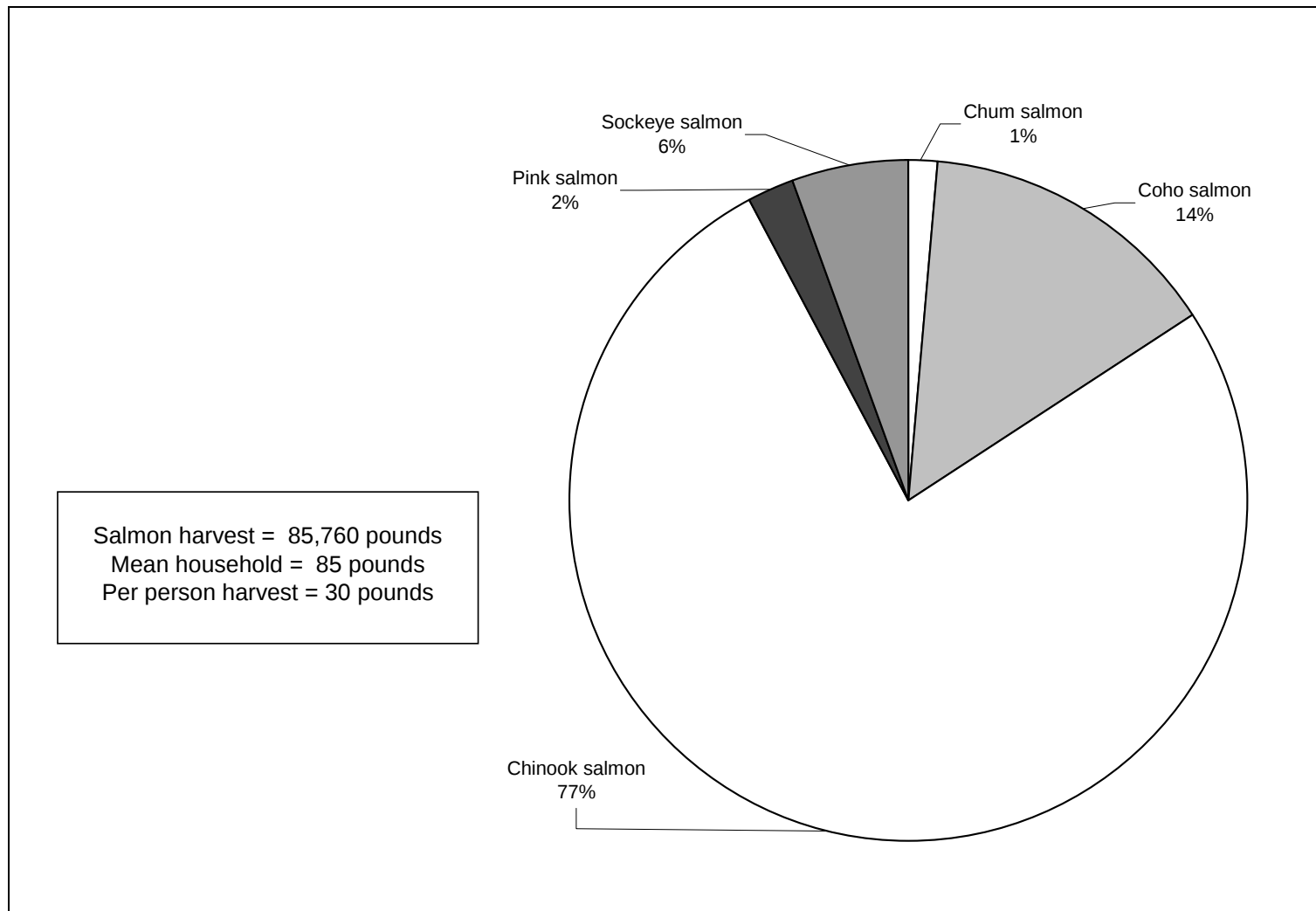


Figure 9.—Salmon harvest composition by weight, Wrangell, 1987.

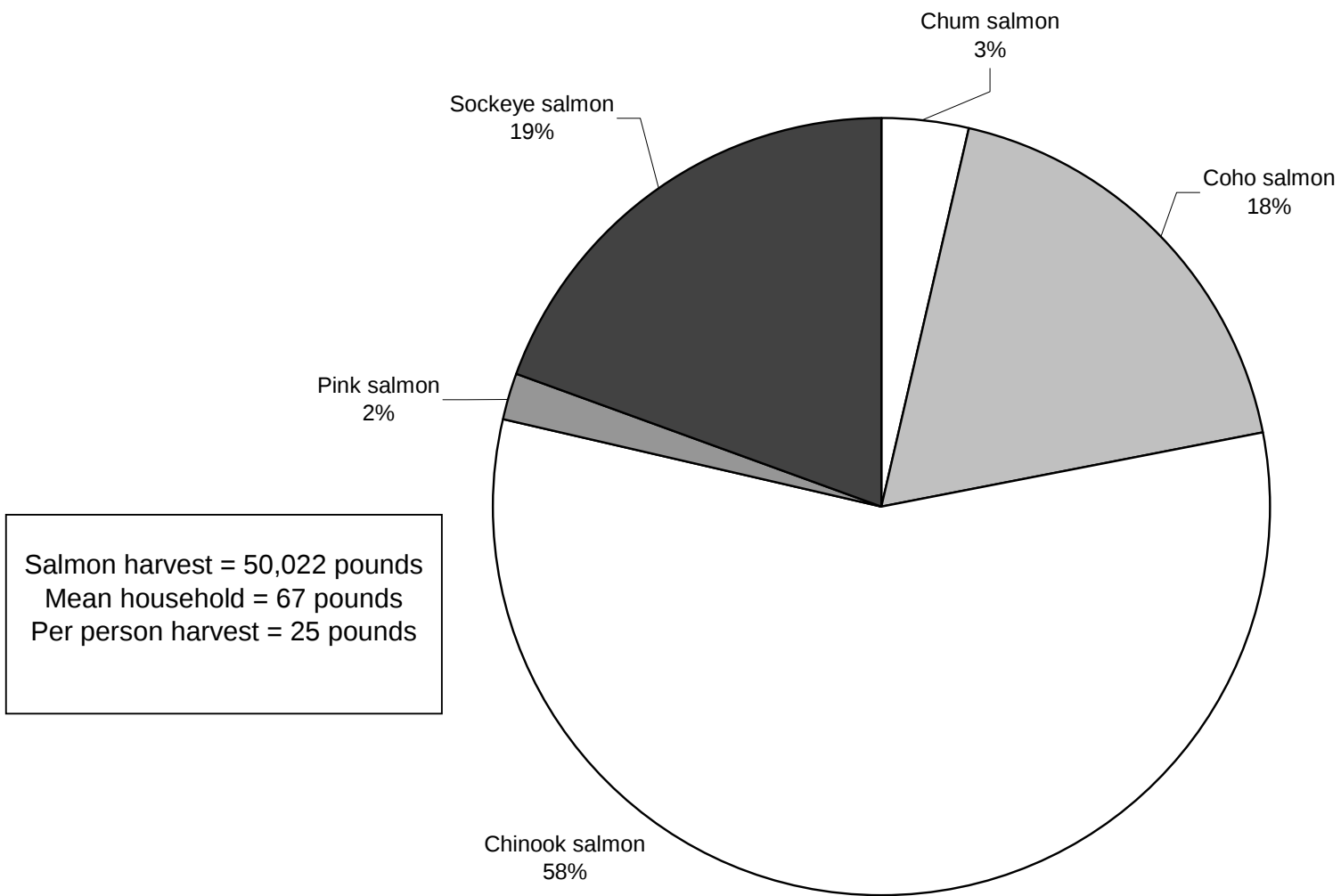


Figure 10.—Salmon harvest composition by weight, Wrangell, 2000.

Table 1.—The harvest and use of salmon, Wrangell, 1987 and 2000.

Year, resource	Number of households interviewed	Percentage of households						Pounds harvested		Amount harvested		95% confidence limit (±), harvest
		Use	Att.	Harv.	Recv.	Give	Total	Mean household	Per capita	Total	Mean household	
1987	75											
Chinook salmon		74.6	n/a	41.4	56.4	21.4	65,409	64.6	23.0	4,275	4.2	36.0
Sockeye salmon		24.4	n/a	12.9	13.2	4.9	4,717	4.7	1.7	1,097	1.1	66.0
Coho salmon		44.6	n/a	28.5	21.9	6.0	12,434	12.3	4.4	1,615	1.6	47.0
Pink salmon		18.4	n/a	7.8	10.6	1.7	2,033	2.0	0.7	924	0.9	104.0
Chum salmon		11.4	n/a	4.2	11.2	3.4	1,167	1.2	0.4	188	0.2	113.0
Total, all salmon		82.3	n/a	52.6	62.3	24.8	85,760	84.7	30.2	8,099	8.0	39.0
2000	98											
Chinook salmon		67.3	41.8	38.8	43.9	33.7	28,430	38.1	14.5	2,424	3.2	0.4
Sockeye salmon		38.8	19.4	19.4	22.4	12.2	9,694	13.0	4.9	2,172	2.9	0.7
Coho salmon		29.6	20.4	20.4	11.2	15.3	9,185	12.3	4.7	1,753	2.3	0.5
Pink salmon		3.1	2.0	2.0	1.0	0.0	968	1.3	0.5	389	0.5	1.8
Chum salmon		4.1	4.1	4.1	0.0	1.0	1,746	2.3	0.9	252	0.3	1.3
Total, all salmon		80.6	49.0	45.9	54.1	37.8	50,023	67.0	25.5	6,990	9.4	0.4

n/a = Information not collected for 1987.

Sources ADF&G Division of Subsistence Community Subsistence Information System

(<http://www.subsistence.adfg.state.ak.us/CSIS>), hereinafter cited as CSIS; CPDB.

Table 2.—Estimated salmon harvest by gear type, Wrangell, 1987.

Resource	Harvest units	Removed from commercial catch		Subsistence gear, any method		Rod and reel		Any method	
		Household		Household		Household		Household	
		Total	mean	Total	mean	Total	mean	Total	mean
Chinook salmon	Number	879	0.9	0	0.0	3,396	3.4	4,275	4.2
	Pounds	13,448	13.3	0	0.0	51,960	51.3	65,408	64.6
Sockeye salmon	Number	388	0.4	378	0.4	331	0.3	1,097	1.1
	Pounds	1,670	1.7	1,625	1.6	1,422	1,404.0	4,717	4.7
Coho salmon	Number	466	0.5	152	0.2	997	1.0	1,615	1.6
	Pounds	3,586	3.5	1,172	1.2	7,677	7.6	12,435	12.3
Pink salmon	Number	58	0.1	430	0.4	437	0.4	925	0.9
	Pounds	127	0.1	946	0.9	961	1.0	2,034	2.0
Chum salmon	Number	101	0.1	30	<0.1	57	0.1	188	0.2
	Pounds	624	0.6	189	0.2	351	0.4	1,164	1.5
Total, all salmon	Number	1,891	1.9	991	1.0	5,217	5.2	8,099	8.0
	Pounds	19,454	19.2	3,932	3.9	62,374	61.6	85,760	84.7

Source CPDB.

Table 3.—Estimated salmon harvest by gear type, Wrangell, 2000.

Resource	Harvest units	Removed from commercial catch		Subsistence gear									
		Household		Gillnet		Other		Any method		Rod and reel		Any method	
		Household		Household		Household		Household		Household		Household	
		Total	mean	Total	mean	Total	mean	Total	mean	Total	mean	Total	mean
Chinook salmon	Number	457	0.6	160	0.2	0	0.0	160	0.2	1,807	2.4	2,424	3.2
	Pounds	5,364	7.2	1,877	2.5	0	0.0	1,877	2.5	21,188	28.4	28,429	38.1
Sockeye salmon	Number	587	0.8	633	0.8	770	1.0	1,418	1.9	168	0.2	2,173	2.9
	Pounds	2,619	3.5	2,823	3.8	3,435	4.6	6,326	8.5	748	1.0	9,693	13.0
Coho salmon	Number	1,075	1.4	0	0.0	0	0.0	0	0.0	678	0.9	1,753	2.3
	Pounds	5,631	7.5	0	0.0	0	0.0	0	0.0	3,554	4.8	9,185	12.3
Pink salmon	Number	381	0.5	0	0.0	0	0.0	0	0.0	8	0.0	389	0.5
	Pounds	949	1.3	0	0.0	0	0.0	0	0.0	19	0.0	968	1.3
Chum salmon	Number	229	0.3	15	0.0	0	0.0	23	0.0	0	0.0	252	0.3
	Pounds	1,587	2.1	106	0.1	0	0.0	159	0.2	0	0.0	1,746	2.3
Total, all salmon	Number	2,729	3.7	808	1.1	770	1.0	1,601	2.1	2,660	3.6	6,990	9.4
	Pounds	16,150	21.6	4,806	6.4	3,435	4.6	8,363	11.2	25,510	34.1	50,023	67.0

Source CSIS.

Table 4.—Estimated percentages of salmon harvested by resource, gear type, and salmon total harvest, Wrangell, 1987.

Resource	Percent base	Removed from commercial catch		Subsistence methods, any gear		Rod and reel		Any method	
		Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Chinook salmon	Total	11	15.7	0	0.0	42	60.6	53	76.3
	Resource	21	20.6	0	0.0	79	79.4	100	100.0
	Gear type	46	69.1	0	0.0	65	83.3	76	152.4
Sockeye salmon	Total	5	1.9	5	1.9	4	1.7	14	5.5
	Resource	35	35.4	34	34.4	30	30.1	100	99.0
	Gear type	21	8.6	38	41.3	6	2.3	14	52.2
Coho salmon	Total	6	4.2	2	1.4	12	9.0	20	14.5
	Resource	29	28.8	9	9.4	62	61.7	100	100.0
	Gear type	25	18.4	15	29.8	19	12.3	20	60.5
Pink salmon	Total	1	0.1	5	1.1	5	1.1	11	26.3
	Resource	6	6.2	47	46.5	47	47.3	100	100.0
	Gear type	3	0.7	43	24.1	8	1.5	11	2.4
Chum salmon	Total	1	0.7	0	0.2	1	0.4	2	1.3
	Resource	54	53.5	16	16.2	30	30.1	100	100.0
	Gear type	5	3.2	3	4.8	1	0.6	2	5.4
Total, all salmon	Total	23	22.7	12	4.6	64	72.7	100	100.0
	Resource	23	22.7	12	4.6	64	72.7	100	100.0
	Gear type	100	100.0	100	100.0	100	100.0	100	100.0

Source CPDB.

Table 5.—Estimated percentages of salmon harvested by resource, gear type, and salmon total harvest, Wrangell, 2000.

Resource	Percent base	Removed from commercial catch		Subsistence methods									
		Number	Pounds	Gillnet		Other		Any method		Rod and reel		Any method	
				Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Chinook salmon	Total	17	33.2	20	39.1	0	0.0	10	22.5	68	83.1	95	138.8
	Resource	19	18.9	7	6.6	0	0.0	7	6.6	75	74.5		
	Gear type	7	10.7	2	3.8	0	0.0	2	3.8	26	42.4		
Sockeye salmon	Total	22	16.2	78	58.7	100	100.0	89	75.7	6	2.9	117	94.8
	Resource	27	27.0	29	29.1	35	35.4	65	65.3	8	7.7		
	Gear type	8	5.2	9	5.6	11	6.9	20	12.6	2	1.5		
Coho salmon	Total	39	34.9	0	0.0	0	0.0	0	0.0	26	13.9	65	48.8
	Resource	61	61.3	0	0.0	0	0.0	0	0.0	39	38.7		
	Gear type	15	11.3	0	0.0	0	0.0	0	0.0	10	7.1		
Pink salmon	Total	14	5.9	0	0.0	0	0.0	0	0.0	0	0.1	14	6.0
	Resource	98	98.0	0	0.0	0	0.0	0	0.0	2	2.0		
	Gear type	6	1.9	0	0.0	0	0.0	0	0.0	0	0.0		
Chum salmon	Total	8	9.8	2	2.2	0	0.0	1	1.9	0	0.0	9	11.7
	Resource	91	90.9	6	6.1	0	0.0	9	9.1	0	0.0		
	Gear type	3	3.2	0	0.2	0	0.0	0	0.3	0	0.0		
Total, all salmon	Total	100	100.0	100	100.0	100	100.0	100	100.0	100	100.0	100	100.0
	Resource	39	32.3	12	9.6	11	6.9	23	16.7	38	51.0		
	Gear type	39	32.3	12	9.6	11	6.9	23	16.7	38	51.0		

Source CSIS.

Table 6.–Percentage of households harvesting salmon by gear type, Wrangell, 1987.

Resource	Removed from commercial catch	Subsistence gear, any method	Rod and reel	Any method
Chinook salmon	8.9	0.0	39.6	48.5
Sockeye salmon	3.4	2.8	6.8	13.0
Coho salmon	5.9	0.8	21.8	28.5
Pink salmon	1.1	1.0	6.5	8.6
Chum salmon	2.5	0.8	0.9	4.2
Total, all salmon	9.8	2.9	50.4	63.1

Source CPDB.

Table 7.–Percentage of households harvesting salmon by gear type, Wrangell, 2000.

Resource	Removed from commercial catch	Subsistence methods				Rod and reel	Any method
		Gillnet	Dip net	Other	Any subsistence gear		
Chinook salmon	8.2	2.0	0.0	0.0	2.0	36.7	46.9
Sockeye salmon	8.2	6.1	1.0	2.0	8.2	5.1	21.5
Coho salmon	10.2	0.0	0.0	0.0	0.0	10.2	20.4
Pink salmon	1.0	0.0	0.0	0.0	0.0	1.0	2.0
Chum salmon	2.0	1.0	1.0	0.0	2.0	0.0	4.0
Total, all salmon	12.2	6.1	1.0	2.0	8.2	39.8	60.2

Source CSIS.

Table 8.—Personal use/subsistence salmon harvested by Wrangell permit holders, by year and species, 1985–2002.

Year	Permits						Salmon harvest	
	fished	Chinook	Sockeye	Coho	Pink	Chum	Total	per permit
1985	60	0	507	0	116	1	624	10.4
1986	50	0	412	0	190	0	602	12.0
1987	62	0	592	0	7	0	599	9.7
1988	18	0	186	0	51	35	272	15.1
1989	42	0	394	1	40	32	467	11.1
1990	65	57	658	130	91	59	995	15.3
1991	42	57	424	3	69	38	591	14.1
1992	66	3	768	10	112	29	922	14.0
1993	65	7	931	9	36	4	987	15.2
1994	73	8	914	0	15	71	1,008	13.8
1995	83	35	1,013	42	12	127	1,229	14.8
1996	76	26	923	15	10	350	1,324	17.4
1997	47	15	525	22	62	103	727	15.5
1998	72	21	758	4	49	168	1,000	13.9
1999	60	34	867	1	62	77	1,041	17.4
2000	78	44	1,003	9	26	37	1,119	14.3
2001	58	81	687	3	36	81	888	15.3
2002	72	119	1,127	10	27	87	1,370	19.0
18-year average	61	28	705	14	56	72	876	14.4

Source IFDB/ALEX.

Table 9.—Personal use/subsistence salmon harvested by Wrangell permit holders, by year and stream, 1985–2002.

Year	CF district	CF subdistrict	Stream number	Name of stream	Number of permits	Chinook	Sockeye	Coho	Pink	Chum	Total	Percentage
1985												
	107	30	30	Thoms Creek	28	0	253	0	5	0	258	41.3%
	107	45	7	Mill Creek	21	0	194	0	0	1	195	31.3%
	107	30	70	Snake Creek Olive Cove	4	0	0	0	100	0	100	16.0%
	105	43	2	Shipley Bay Lake Creek	5	0	50	0	0	0	50	8.0%
	107	40	50		1	0	0	0	11	0	11	1.8%
	106	41	10	Salmon Bay Creek	1	0	10	0	0	0	10	1.6%
											624	100.0%
1986												
	107	30	30	Thoms Creek	30	0	287	0	0	0	287	47.7%
	107	30	70	Snake Creek Olive Cove	6	0	0	0	190	0	190	31.6%
	106	41	10	Salmon Bay Creek	9	0	75	0	0	0	75	12.5%
	107	45	7	Mill Creek	5	0	50	0	0	0	50	8.3%
											602	100.0%
1987												
	107	30	30	Thoms Creek	43	0	396	0	7	0	403	67.3%
	106	41	10	Salmon Bay Creek	10	0	122	0	0	0	122	20.4%
	107	45	7	Mill Creek	8	0	49	0	0	0	49	8.2%
	105	43	2	Shipley Bay Lake Creek	1	0	25	0	0	0	25	4.2%
											599	100.0%
1988												
	107	30	30	Thoms Creek	10	0	103	0	1	0	104	38.2%
	106	41	10	Salmon Bay Creek	7	0	73	0	0	0	73	26.8%
	107	40	49	Harding River	1	0	0	0	0	35	35	12.9%
	107	10	70	Kudays Creek S Etolin	1	0	0	0	25	0	25	9.2%
	107	30	70	Snake Creek Olive Cove	1	0	0	0	25	0	25	9.2%
	107	45	7	Mill Creek	1	0	10	0	0	0	10	3.7%
											272	100.0%

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Table 9. Page 2 of 6.

Year	CF district	CF subdistrict	Stream number	Name of stream	Number of permits	Chinook	Sockeye	Coho	Pink	Chum	Total	Percentage
1989												
	107	30	30	Thoms Creek	20	0	179	0	3	0	182	39.0%
	106	41	10	Salmon Bay Creek	12	0	121	0	0	0	121	25.9%
	107	45	7	Mill Creek	9	0	87	0	3	3	93	19.9%
	107	30	70	Snake Creek Olive Cove	4	0	7	1	26	5	39	8.4%
	107	45	78	Earl West Cove	1	0	0	0	0	23	23	4.9%
	107	10	70	Kudays Creek S Etolin	1	0	0	0	8	0	8	1.7%
	107	40	49	Harding River	1	0	0	0	0	1	1	0.2%
											467	100.0%
1990												
	106	41	10	Salmon Bay Creek	21	0	320	0	0	0	320	32.2%
	107	45	7	Mill Creek	19	32	139	0	12	13	196	19.7%
	107	45	78	Earl West Cove	9	24	0	121	0	20	165	16.6%
	107	30	30	Thoms Creek	15	1	142	1	2	2	148	14.9%
	107	30	10	Timothy Creek	1	0	0	0	60	0	60	6.0%
	105	43	2	Shipley Bay Lake Creek	1	0	25	0	0	0	25	2.5%
	107	40	49	Harding River	1	0	2	0	0	22	24	2.4%
	101	80	68	Wolverine Creek	1	0	20	0	2	0	22	2.2%
	108	10	10	McCormack Creek Wrangell Island	1	0	0	5	15	2	22	2.2%
	111	32	32	Taku River	1	0	10	3	0	0	13	1.3%
											995	100.0%
1991												
	107	30	30	Thoms Creek	16	0	171	0	0	0	171	28.9%
	106	41	10	Salmon Bay Creek	15	1	143	0	0	0	144	24.4%
	107	30	70	Snake Creek Olive Cove	2	0	15	0	53	4	72	12.2%
	107	45	78	Earl West Cove	6	52	3	2	0	13	70	11.8%
	107	45	7	Mill Creek	6	4	37	0	16	1	58	9.8%

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Table 9. Page 3 of 6.

Year	CF district	CF subdistrict	Stream number	Name of stream	Number of permits	Chinook	Sockeye	Coho	Pink	Chum	Total	Percentage
1991	106	30	51	Hatchery Creek Sweetheart	1	0	20	0	0	0	20	3.4%
	106	10	10	Ratz Harbor Creek	1	0	15	0	0	0	15	2.5%
	107	40	49	Harding River	1	0	0	0	0	14	14	2.4%
	106	30	51	Hatchery Creek Sweetheart	1	0	10	0	0	0	10	1.7%
	111	32	32	Taku River	1	0	10	0	0	0	10	1.7%
					1	0	0	1	0	6	7	1.2%
											591	100.0%
1992												
	107	30	30	Thoms Creek	29	0	376	0	14	3	393	42.6%
	106	41	10	Salmon Bay Creek	23	0	223	0	0	0	223	24.2%
	107	45	7	Mill Creek	16	3	169	0	4	21	197	21.4%
	107	30	70	Snake Creek Olive Cove	6	0	0	4	88	5	97	10.5%
	107	10	70	Kudays Creek S Etolin	1	0	0	6	6	0	12	1.3%
											922	100.0%
1993												
	107	30	30	Thoms Creek	34	0	572	2	10	0	584	59.2%
	107	45	7	Mill Creek	15	2	185	0	0	4	191	19.4%
	106	41	10	Salmon Bay Creek	16	0	164	0	0	0	164	16.6%
	107	30	70	Snake Creek Olive Cove	2	0	0	0	26	0	26	2.6%
	107	45	78	Earl West Cove	3	5	0	7	0	0	12	1.2%
	102	60	87	Karta River	1	0	10	0	0	0	10	1.0%
											987	100.0%
1994												
	107	45	7	Mill Creek	39	5	428	0	4	37	474	47.0%
	107	30	30	Thoms Creek	31	0	356	0	1	0	357	35.4%
	106	41	10	Salmon Bay Creek	11	0	130	0	0	1	131	13.0%
	107	40	49	Harding River	2	0	0	0	0	26	26	2.6%
	107	30	70	Snake Creek Olive Cove	1	0	0	0	10	0	10	1.0%

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Table 9. Page 4 of 6.

Year	CF district	CF subdistrict	Stream number	Name of stream	Number of permits	Chinook	Sockeye	Coho	Pink	Chum	Total	Percentage
1994	107	45	78	Earl West Cove	3	3	0	0	0	7	10	1.0%
											<u>1,008</u>	<u>100.0%</u>
1995												
	107	45	7	Mill Creek	48	13	605	1	3	96	718	58.4%
	107	30	30	Thoms Creek	27	0	292	0	1	17	310	25.2%
	106	41	10	Salmon Bay Creek	8	0	87	0	1	0	88	7.2%
	107	45	78	Earl West Cove	7	22	0	41	4	14	81	6.6%
	106	41	30	Red Lake Creek	2	0	25	0	0	0	25	2.0%
	111	32	32	Taku River	1	0	4	0	0	0	4	0.3%
	107	30	70	Snake Creek Olive Cove	1	0	0	0	3	0	3	0.2%
											<u>1,229</u>	<u>100.0%</u>
1996												
	107	45	7	Mill Creek	38	19	426	0	4	321	770	58.2%
	106	41	10	Salmon Bay Creek	26	0	282	0	0	0	282	21.3%
	107	30	30	Thoms Creek	14	0	194	0	2	17	213	16.1%
	107	45	78	Earl West Cove	5	7	1	15	0	10	33	2.5%
	106	41	30	Red Lake Creek	1	0	10	0	0	0	10	0.8%
	107	40	49	Harding River	1	0	7	0	0	0	7	0.5%
	107	30	70	Snake Creek Olive Cove	1	0	0	0	4	2	6	0.5%
	102	60	38	Dog Salmon Creek	1	0	3	0	0	0	3	0.2%
											<u>1,324</u>	<u>100.0%</u>
1997												
	107	45	7	Mill Creek	25	5	229	2	21	85	342	47.0%
	106	41	10	Salmon Bay Creek	11	0	149	0	3	0	152	20.9%
	107	30	30	Thoms Creek	13	0	137	0	3	3	143	19.7%
	107	30	70	Snake Creek Olive Cove	2	0	0	0	35	0	35	4.8%
	107	45	78	Earl West Cove	2	10	0	20	0	0	30	4.1%
	107	40	49	Harding River	1	0	0	0	0	15	15	2.1%

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Table 9. Page 5 of 6.

Year	CF district	CF subdistrict	Stream number	Name of stream	Number of permits	Chinook	Sockeye	Coho	Pink	Chum	Total	Percentage
1997	105	43	2	Shipley Bay Lake Creek	1	0	10	0	0	0	10	1.4%
	102	60	38	Dog Salmon Creek	1	0	0	0	0	0	0	0.0%
	103	90	10	Sarkar	1	0	0	0	0	0	0	0.0%
											727	100.0%
1998												
	107	30	30	Thoms Creek	32	0	336	0	5	11	352	35.2%
	106	41	10	Salmon Bay Creek	17	0	246	0	0	1	247	24.7%
	107	45	7	Mill Creek	23	3	136	2	0	101	242	24.2%
	107	30	70	Snake Creek Olive Cove	2	1	0	0	44	17	62	6.2%
	107	45	78	Earl West Cove	7	17	0	2	0	38	57	5.7%
	103	60	47	Klawock River	1	0	25	0	0	0	25	2.5%
	102	60	38	Dog Salmon Creek	1	0	5	0	0	0	5	0.5%
	106	30	51	Hatchery Creek Sweetheart	1	0	5	0	0	0	5	0.5%
	111	35	20	Sweetheart Creek	1	0	5	0	0	0	5	0.5%
	102	60	48	Virginia Creek	1	0	0	0	0	0	0	0.0%
											1,000	100.0%
1999												
	107	30	30	Thoms Creek	26	0	479	0	4	5	488	46.9%
	107	45	7	Mill Creek	30	20	261	1	3	63	348	33.4%
	106	41	10	Salmon Bay Creek	13	0	127	0	0	0	127	12.2%
	107	30	70	Snake Creek Olive Cove	2	0	0	0	55	6	61	5.9%
	107	45	78	Earl West Cove	2	14	0	0	0	3	17	1.6%
											1,041	100.0%
2000												
	107	30	30	Thoms Creek	37	0	450	0	1	6	457	40.8%
	107	45	7	Mill Creek	31	7	264	1	0	22	294	26.3%
	106	41	10	Salmon Bay Creek	17	0	218	0	0	0	218	19.5%
	109	62	13	Alecks Creek	1	0	50	0	0	0	50	4.5%
	107	45	78	Earl West Cove	5	37	3	0	0	0	40	3.6%

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Table 9. Page 6 of 6.

Year	CF district	CF subdistrict	Stream number	Name of stream	Number of permits	Chinook	Sockeye	Coho	Pink	Chum	Total	Percentage
2000	107	30	70	Snake Creek	2	0	2	0	25	6	33	2.9%
				Olive Cove								
	111	32	32	Taku River	1	0	10	0	0	0	10	0.9%
	106	41	0	Point Baker	1	0	6	0	0	3	9	0.8%
	106	44	31	Crystal Creek	2	0	0	8	0	0	8	0.7%
											1,119	100.0%
2001												
	107	45	7	Mill Creek	30	36	346	3	10	70	465	52.4%
	107	30	30	Thoms Creek	20	0	163	0	20	5	188	21.2%
	106	41	10	Salmon Bay Creek	8	0	141	0	6	0	147	16.6%
	107	45	0	Earl West Cove SHA	5	44	0	0	0	1	45	5.1%
	108	40	15	Stikine River	2	0	22	0	0	0	22	2.5%
	106	41	30	Red Lake Creek	1	0	15	0	0	0	15	1.7%
	107	40	49	Harding River	2	1	0	0	0	5	6	0.7%
											888	100.0%
2002												
	107	45	7	Mill Creek	52	83	718	4	16	76	897	64.4%
	107	30	30	Thoms Creek	17	0	341	0	9	11	361	26.0%
	106	41	10	Salmon Bay Creek	7	0	88	0	0	0	88	6.3%
	107	45	0	Earl West Cove SHA	5	36	2	6	2	0	46	3.3%
											1,392	100.0%

Source IFDB/ALEX.

Table 10.–Personal use/subsistence salmon harvested by residents of Wrangell, by stream and year, 1985–2002.

Location, Year	CF district	CF subdistrict	Stream number	Number of permits	Chinook	Sockeye	Coho	Pink	Chum	Total
Mill Creek										
1985	107	45	7	21	0	194	0	0	1	195
1986				5	0	50	0	0	0	50
1987				8	0	49	0	0	0	49
1988				1	0	10	0	0	0	10
1989				9	0	87	0	3	3	93
1990				19	32	139	0	12	13	196
1991				6	4	37	0	16	1	58
1992				16	3	169	0	4	21	197
1993				15	2	185	0	0	4	191
1994				39	5	428	0	4	37	474
1995				48	13	605	1	3	96	718
1996				38	19	426	0	4	321	770
1997				25	5	229	2	21	85	342
1998				23	3	136	2	0	101	242
1999				30	20	261	1	3	63	348
2000				31	7	264	1	0	22	294
2001				30	36	346	3	10	70	465
2002				52	83	718	4	16	76	897
Earl West Cove										
1989	107	45	78	1	0	0	0	0	23	23
1990				9	24	0	121	0	20	165
1991				6	52	3	2	0	13	70
1993				3	5	0	7	0	0	12
1994				3	3	0	0	0	7	10
1995				7	22	0	41	4	14	81
1996				5	7	1	15	0	10	33
1997				2	10	0	20	0	0	30
1998				7	17	0	2	0	38	57
1999				2	14	0	0	0	3	17
2000				5	37	3	0	0	0	40
Earl West Cove Special Harvest Area										
2001	107	45	0	5	44	0	0	0	1	45
2002				5	36	2	6	2	0	46
Thoms Creek										
1985	107	30	30	28	0	253	0	5	0	258
1986				30	0	287	0	0	0	287
1987				43	0	396	0	7	0	403
1988				10	0	103	0	1	0	104
1989				20	0	179	0	3	0	182
1990				15	1	142	1	2	2	148
1991				16	0	171	0	0	0	171

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Table 10. Page 2 of 4.

Location, Year	CF district	CF subdistrict	Stream number	Number of						
				permits	Chinook	Sockeye	Coho	Pink	Chum	Total
1992				29	0	376	0	14	3	393
1993				34	0	572	2	10	0	584
1994				31	0	356	0	1	0	357
1995				27	0	292	0	1	17	310
1996				14	0	194	0	2	17	213
1997				13	0	137	0	3	3	143
1998				32	0	336	0	5	11	352
1999				26	0	479	0	4	5	488
2000				37	0	450	0	1	6	457
2001				20	0	163	0	20	5	188
2002				17	0	319	0	9	11	339
Salmon Bay Creek										
1985	106	41	10	1	0	10	0	0	0	10
1986				9	0	75	0	0	0	75
1987				10	0	122	0	0	0	122
1988				7	0	73	0	0	0	73
1989				12	0	121	0	0	0	121
1990				21	0	320	0	0	0	320
1991				15	1	143	0	0	0	144
1992				23	0	223	0	0	0	223
1993				16	0	164	0	0	0	164
1994				11	0	130	0	0	1	131
1995				8	0	87	0	1	0	88
1996				26	0	282	0	0	0	282
1997				11	0	149	0	3	0	152
1998				17	0	246	0	0	1	247
1999				13	0	127	0	0	0	127
2000				17	0	218	0	0	0	218
2001				8	0	141	0	6	0	147
2002				7	0	88	0	0	0	88
Red Lake Creek										
1995	106	41	30	2	0	25	0	0	0	25
1996				1	0	10	0	0	0	10
2001				1	0	15	0	0	0	15
Kudays Creek S Etolin										
1988	107	10	70	1	0	0	0	25	0	25
1989				1	0	0	0	8	0	8
1992				1	0	0	6	6	0	12
Timothy Creek										
1990	107	30	10	1	0	0	0	60	0	60
Snake Creek Olive Cove										
1985	107	30	70	4	0	0	0	100	0	100

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Table 10. Page 3 of 4.

Location, Year	CF district	CF subdistrict	Stream number	Number of		Chinook	Sockeye	Coho	Pink	Chum	Total
				permits							
1986				6		0	0	0	190	0	190
1988				1		0	0	0	25	0	25
1989				4		0	7	1	26	5	39
1991				2		0	15	0	53	4	72
1992				6		0	0	4	88	5	97
1993				2		0	0	0	26	0	26
1994				1		0	0	0	10	0	10
1995				1		0	0	0	3	0	3
1996				1		0	0	0	4	2	6
1997				2		0	0	0	35	0	35
1998				2		1	0	0	44	17	62
1999				2		0	0	0	55	6	61
2000				2		0	2	0	25	6	33
Harding River											
1985	107	40	50	1		0	0	0	11	0	11
1988			49	1		0	0	0	0	35	35
1989				1		0	0	0	0	1	1
1990				1		0	2	0	0	22	24
1991				1		0	0	0	0	14	14
1994				2		0	0	0	0	26	26
1996				1		0	7	0	0	0	7
1997				1		0	0	0	0	15	15
2001				2		1	0	0	0	5	6
Stikine River											
2001	108	40	15	2		0	22	0	0	0	22
Wolverine Creek											
1990	101	80	68	1		0	20	0	2	0	22
Dog Salmon Creek											
1996	102	60	38	1		0	3	0	0	0	3
1997				1		0	0	0	0	0	0
1998				1		0	5	0	0	0	5
Virginia Creek											
1998	102	60	48	1		0	0	0	0	0	0
Karta River											
1993	102	60	87	1		0	0	10	0	0	0
Klawock River											
1998	103	60	47	1		0	0	25	0	0	0
Sarkar											
1997	103	90	10	1		0	0	0	0	0	0
Shipley Bay Lake Creek											
1985	105	43	2	5		0	50	0	0	0	50
1987				1		0	25	0	0	0	25

-continued-

Table 10. Page 4 of 4.

Location, Year	CF district	CF subdistrict	Stream number	Number of		Chinook	Sockeye	Coho	Pink	Chum	Total
				permits							
1990				1		0	25	0	0	0	25
1997				1		0	10	0	0	0	10
Crystal Creek											
2000	106	44	31	2		0	0	8	0	0	8
Ratz Harbor Creek											
1991	106	10	10	1		0	15	0	0	0	15
Hatchery Creek Sweetheart											
1991	106	30	51	1		0	20	0	0	0	20
1991				1		0	10	0	0	0	10
1998				1		0	5	0	0	0	5
Point Baker											
2000	106	41	0	1		0	6	0	0	3	9
McCormack Creek Wrangell Island											
1990	108	10	10	1		0	0	5	15	2	22
Alecks Creek											
2000	109	62	13	1		0	50	0	0	0	50
Taku River											
1990	111	32	32	1		0	10	3	0	0	13
1991				1		0	10	0	0	0	10
1995				1		0	4	0	0	0	4
2000				1		0	10	0	0	0	10
Sweetheart Creek											
1998	111	35	20	1		0	5	0	0	0	5

Source IFDB/ALEX.

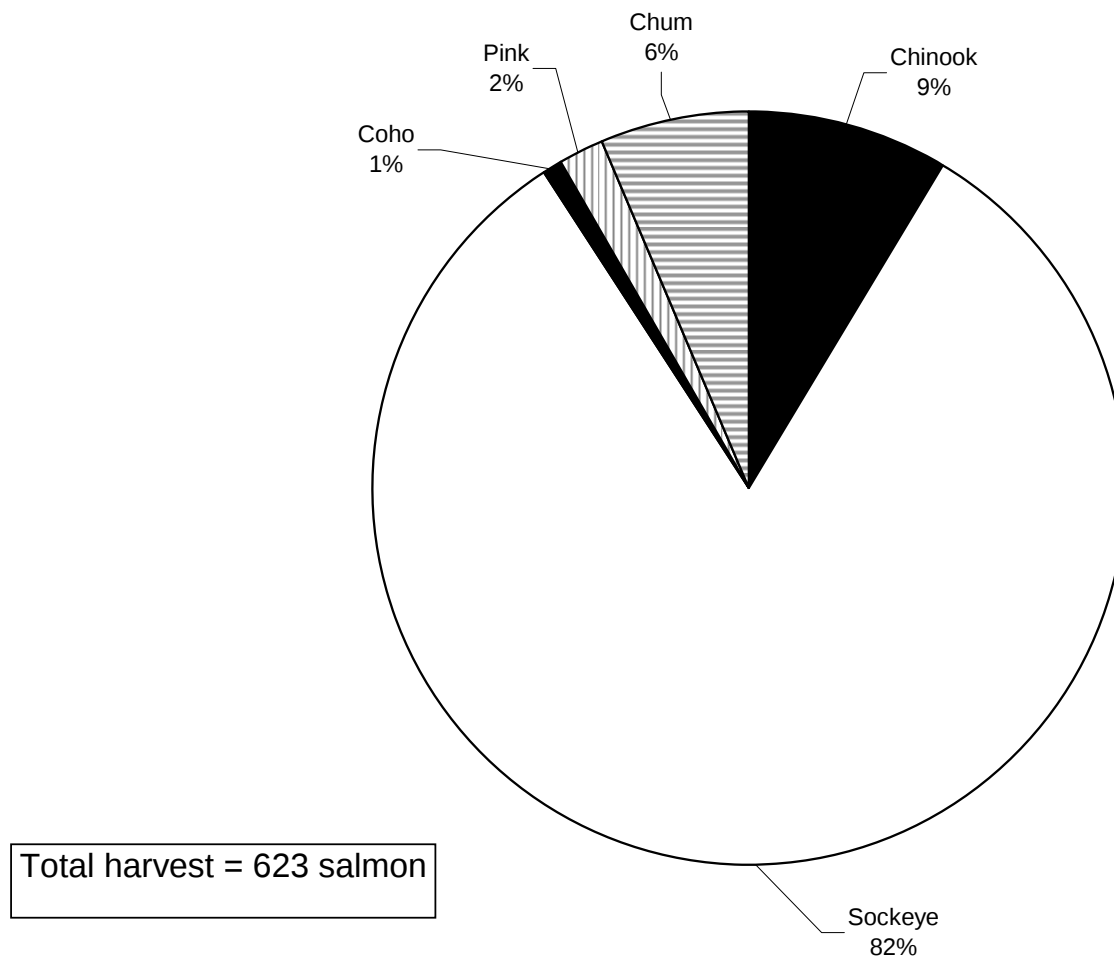


Figure 11.—The composition of the personal use/subsistence salmon harvest by Wrangell permit holders, 2002.

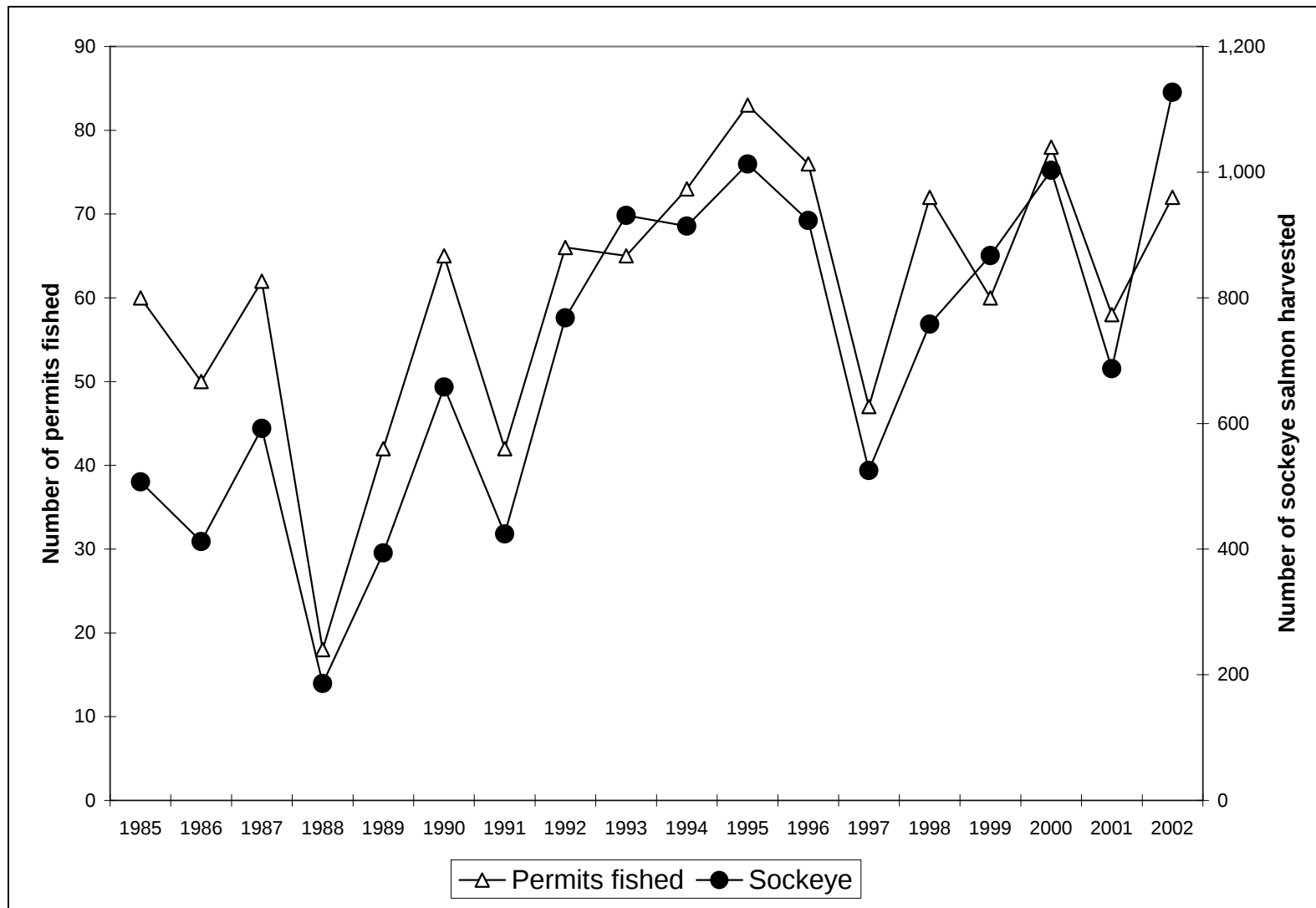


Figure 12.—Personal use/subsistence sockeye salmon harvested and permits fished by Wrangell permit holders, 1985–2002.

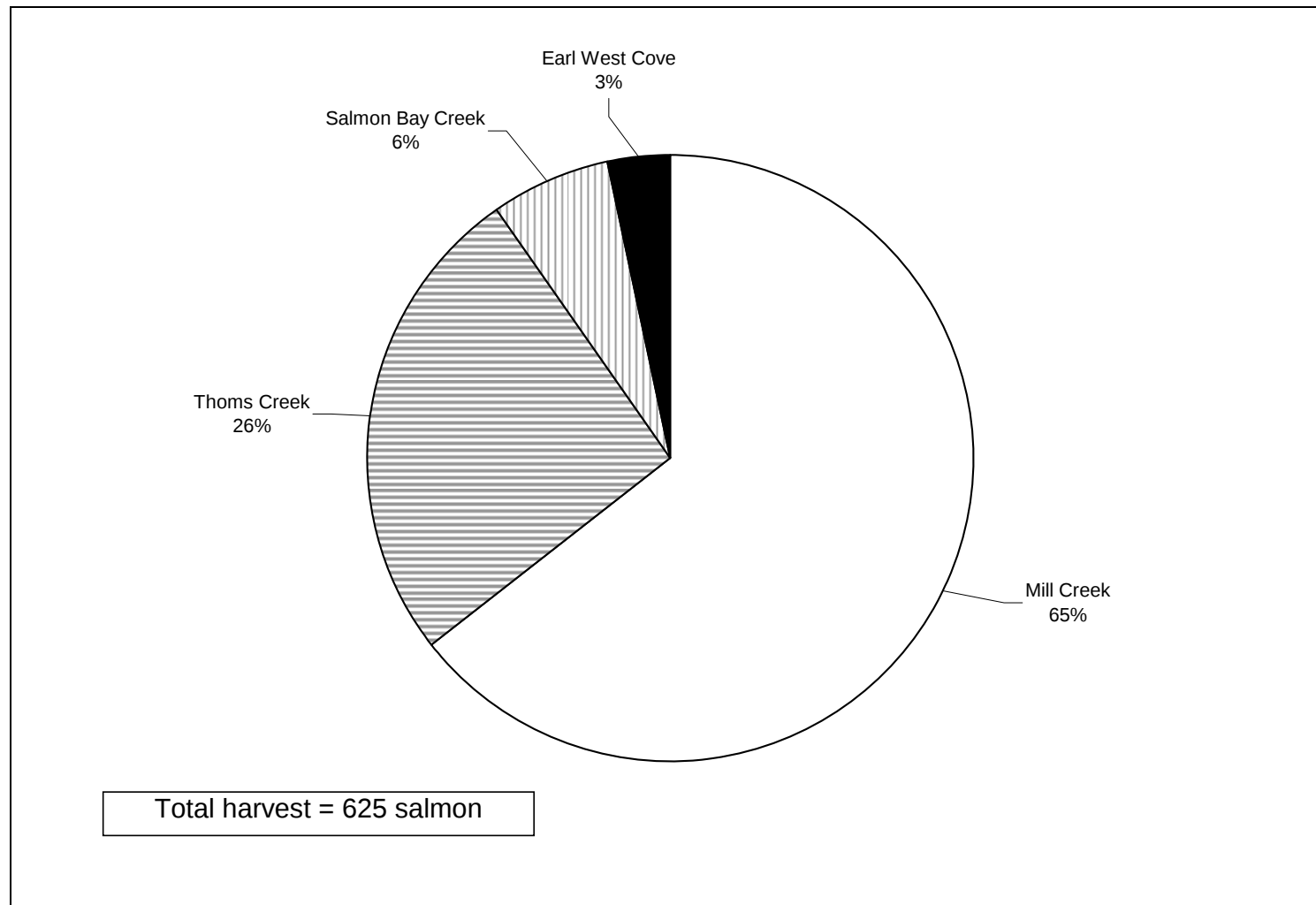


Figure 13. – Personal use/subsistence salmon harvest by Wrangell permit holders, by location, 2002.



Plate 1.—View of the fish pass on Mill Creek, summer 2003.



Plate 2.—View of Mill Creek below the falls and fish pass, summer 2003.



Plate 3.—View of the outlet of Mill Creek at Eastern Passage, summer 2003.



Plate 4.—View of Virginia Lake at the terminus of the Mill Creek trail, summer 2003.



Plate 5.—View of the outlet of Thoms Lake narrowing into Thoms Creek, summer 2003.



Plate 6.—View of Thoms Place from the mouth of Thoms Creek, looking south, summer 2003.



Plate 7.—View of Thoms Place, west side looking south, summer 2003.

APPENDIX A. INTERVIEW QUESTIONS

Interview Questions

Personal fishing history

1. Age of respondent?
2. Length of time fishing?
3. Who taught you how to fish?
4. Relationship to person or people that taught you?
5. First jobs on the boat?
6. Who do you fish with?
7. Do you always fish with the same people?
8. Relationship to people respondent fishes with?
9. How much time do you spend in the summer fishing?
10. What were the rules you were taught about fishing when you were learning?

Areas fished

1. Where do you fish now? In the past?
2. Do (did) you ever fish up the Stikine?
3. Do you ever get fish from the creek (river), lake or inlet streams?
4. What are there advantages of fishing where you do?

Knowledge of sockeye abundance, timing, etc.

1. Have you noticed any patterns or cycles of sockeye abundance where you fish (during day, throughout season, year to year)?
2. Have you seen any changes in the number of sockeye or the timing of the run?
3. How do you tell sockeye abundance?
4. Was it easier to get your fish in the past or now?
5. Other changes noticed? **Concerns?**
6. Memory or record of more than one sockeye run or peak?
7. Traditional ways of assessing sockeye abundance?
8. Are there any changes in run strength or timing in Thoms' Creek? Mill Creek? Salmon Bay? Red Bay?
9. Do fish from one site look different than fish from another site?
10. Do you have opinion about the impacts of hatcheries, weirs (possible positive and/or negative effects) logging; commercial fishing; charter boats; predation/ competition for food; other?
11. Are there any land or marine activities that you think are affecting sockeye salmon abundance directly or indirectly? Other salmon runs?

Timing of salmon runs and fishery

1. When do sockeye first show up at the stream where you fish?
2. When does the run usually end?
3. When does the run generally peak (more than one)?
4. Have you seen a change in the timing of sockeye during your lifetime?
5. What factors determine/influence when you go to get your sockeye?

Harvesting methods and gear

1. Current methods of harvesting (length, depth, mesh size of gillnets)?
2. Have you ever used beach seines, dip nets, spears, gaffs, rod and reel, for harvesting sockeye? Describe reasons for gear choice – location, water conditions, etc.
3. Modern equipment used – own boat (size), motor (size), own gear or borrowed, partner's gear, boat?
4. Changes of methods/ gear during lifetime
5. Changes during parents' lifetime?
6. Did your parents ever use spears, gaff hooks, dip nets?

Fishing groups

1. Do you fish with others?
2. Are these the same people over time (relationship)?
3. Who directs the fishing operation (captain, owner of boat/ net)?
4. What are the different jobs needed to fish using particular gear at [location]?
5. Where and when do you clean the fish?
6. Do you ever use rod and reel to catch salmon for home use?
7. Do you ever get salmon from a commercial salmon catch? What kind and how much per year?
8. Do you ever use nets or another kind of "subsistence" gear to catch coho?
9. Do you fish for other households?

Processing and products

1. Where and when are fish processed?
2. Who processes/helps with processing of salmon?
3. What products do you make from sockeye?
4. Are certain fish taken for different products?
5. Do (did) you take red (mature) sockeye for dry fish? For boiled fish?

6. Products made in the past?
7. Has the way of processing changed from when you were younger?

Distribution of fish

1. Number of people or households fished for?
2. Number of fish needed per household?
3. Relationship of people to respondent?
4. Do you process your salmon before distributing?
5. Use of salmon for ceremonial occasions?
6. Is the community getting all the fish it needs?

Importance of sockeye source

1. How much of your sockeye comes from each stream?
2. What is importance of each stream for your sockeye?

Traditional Native fishery management

1. What kind of rules did the Native people have about when or how they got the fish?
2. How did you learn the traditional rules?
3. Have your elders ever influenced how, where, or how much sockeye you catch?
4. Have your elders ever discussed traditional ways to judge or predict how abundant the fish were going to be in a particular stream for a particular year?
5. How did each clan monitor the stream that they had responsibility for?
6. Have your elders discussed any special practices or ceremonies to ensure the health of the run or to welcome the fish back to the stream?
7. What did Native people do in years when the abundance was low?
8. What is the history of cannery fish traps in the area? Who managed these traps? Did people also get subsistence fish from these traps?
9. Stories about fishing before time of contact, time of canneries?

Management, regulations and permits

1. Do the regulations make sense to you? Do you think they need to be changed? What would you change?
2. Dates fishery opens and closes?
3. Number of permits allowed to fish for?
1. Reporting on permits – do you feel comfortable accurately recording your catch on the permits?
2. Marking subsistence fish – removing dorsal fin?
3. Prohibited methods that are hampering ability to get the fish they need?
4. Other aspects?
5. Has the commercial fishing limited entry program had any impact on your ability to get salmon for home use?
6. If you could change something about the current way the fisheries are managed, what would you change?

Conflict with other users

1. What interferes with your subsistence fishing at your fishing site(s) and how?
2. Does any other activity impact your fishing?

**APPENDIX B. STATE SUBSISTENCE SALMON AND
PERSONAL USE PERMIT, PETERSBURG/WRANGELL
MANAGEMENT AREA**

ALASKA DEPARTMENT OF FISH AND GAME
State Subsistence Salmon and Personal Use Permit
Petersburg/Wrangell Management Area
Phone: Petersburg 772-3801 • Wrangell 874-3822

Name _____

Mailing Address _____

Physical Address _____

City/State/Zipcode _____

Telephone No. _____ No. of Persons in Household _____

Community of Principle Residence _____

Other members in household authorized to fish this permit:

Name _____ Name _____

Name _____ Name _____

Alternate person other than member of household fishing for permit holder because permit holder is blind, has physical disabilities, or is 65 years of age or older.

Name _____

Any departure from the guidelines may only be done with special permission from the area management biologist in Petersburg (772-3801). Subsistence/personal use permit holders are encouraged to contact the department prior to fishing as open areas and seasons may be altered by inseason emergency orders.

Other as Specified: _____

Authorized By: _____

"Possession Limit" means the maximum number of fish a person may have in their possession if the fish have not been canned, salted, frozen, smoked, dried, or otherwise preserved.

Chinook salmon, trout, and char may be taken only incidentally by gear operated under the personal use and subsistence fishing guidelines of this permit.

I have read the permit conditions and guidelines and understand that failing to comply with such reporting requirements makes me ineligible to receive a subsistence permit during the following calendar year.

Permittee Signature (not valid until signed)

Date

Department Representative (not valid until signed)

Date of Issue

This Permit Must Be Returned To ADF&G By November 10, 2003 Whether You Fished Or Not

Duplicate ☐

General Permit Conditions

1. Permit holders and other members in household authorized to fish this permit must be Alaskan residents.
2. This permit is valid only for dates and areas listed on this form, from date of issue to November 1, 2003.
3. Permit holder, authorized member of household, or authorized alternate and the permit must be present at time of harvest.
4. Only one permit will be issued per household.
5. Harvest reports must be completed daily prior to leaving the fishing area even if no fish were caught.

Specific Subsistence Permit Conditions

1. Permit is valid only for the following waters in the Kake, Pt. Baker/Port Protection, Wrangell, and Petersburg subsistence areas: **Kake:** the waters of Section 9-A and 9-B north of the latitude of Swain Pt., in the waters of District 10 west of a line from Pinta Pt. to Fulse Pt. Pybus, and in waters of District 5 north of a line from Pt. Barrie to Boulder Pt. **Pt. Baker/Port Protection:** the waters of District 5 north of a line from Pt. St. Albans to Cape Pole and Section 6-A west of a line from Macnamara Pt. to Mitchell Pt. and in Section 6-B west of the longitude of Macnamara Pt. **Wrangell and Petersburg:** the waters of District 7 and District 8.
2. Dorsal fins of subsistence salmon must be removed immediately after harvest.
3. Unless otherwise specified, gaffs, spears, beach seines, dip nets, drift gillnets, and cast nets are the types of subsistence gear allowed for general use in the Kake, Pt. Baker/Port Protection, Wrangell, and Petersburg areas. Drift and set gillnets may not exceed 50 fathoms. Set gillnets may only be used in Shipley Bay within 100 yards of the terminus of Shipley Creek and the permit holder shall be physically present at the net while it is in operation.
4. Marine waters at Kutlaku Creek in Bay of Pillars from the mean high tide line to a distance offshore the stream mouth will be closed as indicated by regulatory markers at approximately 56°37.43' north latitude.
5. The Stikine River is closed due to poor expected returns of Tahltan Lake sockeye. If returns are expected to achieve the minimum escapement goal then permits will be issued.
6. Falls Lake and Gut Bay Lake marine waters are closed approximately 50 yards seaward of the river mouth as indicated by regulatory markers. The season at Falls Lake has been divided into two open periods 6/1-7/6 and 7/14-7/20 separated by closures 7/7-7/13 and after 7/20 unless re-opened by emergency order.

SUBSISTENCE SALMON FISHING GUIDELINES

Salmon Species	Limits		Open Dates	Location
	Possession	Annual		
Sockeye	50	50	June 1-July 31	Alecks Creek, Bay of Pillars
	25	50	June 1-July 31	Shipley Bay
	30	30	June 1-July 31	Salmon Bay, Red Bay
	20	40	June 1-July 31	Thoms Place, Mill Creek
	10	20	June 1-July 20	Gut Bay
	50	50	June 1-July 6	Falls Lake*
Pink	50	50	July 14-July 20	Falls Lake*
	---CLOSED---			Stikine River
Pink	100	no annual limit	July 15-Aug. 31	All streams in the Kake, Pt. Baker/Port Protection, Wrangell, and Petersburg Subsistence Areas
Chum	50	no annual limit	July 1-Aug. 15	Harding River
	50	no annual limit	Sept. 1-Oct. 31	Security Bay
	50	no annual limit	Aug. 15-Sept. 30	Port Camden
Coho	20	40	Aug. 16-Oct. 31	All streams in the Kake, Pt. Baker/Port Protection, Wrangell, and Petersburg Subsistence Areas

*Note the season at Falls Lake is CLOSED 7/7-7/13 and after 7/20

Harvest Report: Record the number of fish caught daily. Mark this box if you did not fish at all ☐

Month/Day	Stream Name	Gear Used	Sockeye	Pink	Chum	Coho	King	Steelhead	Rainbow/Cutthroat	Dolly Varden

COMPLETE PT. BAKER INFORMATION ON BACK OF THIS PERMIT ONLY

Harvest Report continues on back of form.

6. Fishing is prohibited within 300 feet of a dam, fish ladder, weir, culvert, or other artificial obstruction unless otherwise marked.
7. Sport-taken and subsistence/personal-use taken salmon may not be possessed on the same day.
8. Salmon taken under the subsistence/personal-use regulations may not be subsequently used as bait for commercial fishing purposes.
9. Salmon may not be taken by a line attached to a rod or pole.
10. It is unlawful to buy or sell subsistence or personal use-taken salmon, or their parts.

Specific Personal Use Permit Conditions

1. Salmon may be taken for personal use only under the authority of a personal use fishing permit and only by holders of a valid resident Alaska sport fishing license and Alaska residents under the age of 16 or person 60 years of age or more who have been issued a permanent identification card.
2. Both tips (lobes) of the tail (caudal) fin of personal use taken salmon must be removed immediately after harvest.
3. Unless otherwise specified, beach seines, drift gillnets, cast nets, dip nets, spears, and gaffs are the types of personal-use gear allowed in the Petersburg and Wrangell Management Area. Gillnets may not exceed 50 fathoms in length.
4. A personal use fishery for harvesting king, coho, and chum salmon exists in the Eastern Passage and Anita Bay terminal harvest areas. These areas are defined as the waters of Eastern Passage south of 56°24.83' north latitude and west of 132°06.6' west longitude and the waters of Anita Bay south of a line from Anita Point to 56°14.25' N. latitude and 132°23.94' W. longitude. Salmon may be taken only by drift gillnets, which may not exceed 10 fathoms in length.
5. Blind Slough-Wrangell Narrows terminal harvest area open in the waters west of 132°54.52' W. longitude in Blind Slough and north of a line from Spruce Point to North Point and south of the latitude of Island Point in Wrangell Narrows.
6. Salmon streams flowing across or adjacent to the Petersburg and Wrangell road system are closed to personal use fishing.
7. The possession limit for king salmon is two fish and the possession limit for coho salmon is six fish except in the Anita Bay, Eastern Passage, and Blind Slough-Wrangell Narrows terminal harvest areas.
8. Hatchery Creek - A weekly season has been established at Hatchery Creek which drains into Sweetwater Lake. Because of increasing fishing pressure and concerns for the viability of the stock, the fishery will be closed each week during Monday, Tuesday, and Wednesday.

PERSONAL USE SALMON FISHING GUIDELINES

Salmon Species	Limits		Open Dates	Location
	Possession	Annual		
Sockeye	5 daily	20	June 1-June 30	Hatchery Creek
(open weekly Thurs-Sun.)				
Pink	100	no annual limit	July 15-Aug. 31	Cut Creek, Chuck River
Coho	25	25	Aug. 15-Sept. 5	Blind Slough, N. Wrangell
				(Friday 6 am-8 pm) Narrows
Chinook, Chum, Coho	25	25	June 15-Oct. 10	Anita Bay, Eastern Passage THAs

SIGN AND COMPLETE BY NOVEMBER 10 TO BE ELIGIBLE FOR A PERMIT THE FOLLOWING YEAR

- Fold Along Dotted Lines -- Staple or Tape Closed

RECORD THE DATE, NUMBER, & SPECIES OF FISH CAUGHT EACH DAY; ENTER ZERO IN SPACES WHERE NO FISH ARE HARVESTED; FILL IN ALL SPACES COMPLETELY

[illegible][illegible]

Fold Along Dotted Lines -- Staple or Tape Closed

Place
Stamp
Here

Alaska Department of Fish and Game
Division of Commercial Fisheries
P.O. Box 667
Petersburg, Alaska 99833

**APPENDIX C. STIKINE RIVER SUBSISTENCE SALMON
FISHERY STATUS REPORT TO THE FEDERAL SUBSISTENCE
BOARD**

1 March 2004 9:30 AM

STIKINE RIVER FEDERAL SUBSISTENCE SALMON FISHERY
STATUS REPORT TO THE
FEDERAL SUBSISTENCE BOARD

KEYPOINTS

- We are pleased to report accomplishment in coordinating a sockeye subsistence fishery on the Stikine River to begin this summer.
- We want to verify that the recommendations from the Pacific Salmon Commission on the sockeye fishery are acceptable to the Board.
- Additional progress may be made with the Commission yet this spring on Chinook and coho salmon fisheries. A meeting is being scheduled for early April.
- The Office of Subsistence Management needs about three weeks to complete administrative steps for implementation of the fishery regulations. These steps include issuance of a correction to the Federal Register, an addendum to the public regulation booklet, and a news release.
- Holding off on the administrative steps until after the proposed spring meeting allows us to take into account any additional progress that may be achieved. This avoids a potential piecemeal approach and minimizes confusion. We would still have sufficient time prior to the fishing season to complete the necessary steps.

BACKGROUND

- 1) The Board made the following Customary & Traditional Use determination in December 2003:

Area	Species	Determination
District 8 and waters draining into that District	Salmon, Dolly Varden, trout, smelt and eulachon	Residents of drainages flowing into District 6 north of the latitude of Point Alexander (Mitkof Island); residents of drainages flowing into Districts 7 & 8, including the communities of Petersburg & Wrangell; and residents of the community of Meyers Chuck.

2) The Board approved the following harvest regulations in December 2003, but delayed implementation pending coordination with the Transboundary Panel and the Pacific Salmon Commission:

§____.27(i)(13) (--) In the mainstem of the Stikine River:

(A) You may take Chinook, sockeye, and coho salmon under the authority of a Federal subsistence fishing permit issued by the USDA Forest Service for the Stikine River. Each Stikine River permit will be issued to a household and will be valid for 15 days. Permits may be revalidated for additional 15 day periods.

(B) The total annual guideline harvest level for the Stikine River fishery is 125 Chinook salmon, 600 sockeye salmon, and 400 coho salmon.

(C) You may take Chinook salmon from May 15 – June 20. The annual limit is 5 Chinook salmon per household. Only dipnets, spears, gaffs, rod and reel, beach seines, or gillnets not exceeding 15 fathoms in length with mesh size no larger than 5½ inches may be used.

(D) You may take sockeye salmon from June 15 – July 31. The annual limit is 40 sockeye salmon per household. Only dipnets, spears, gaffs, rod and reel, beach seines, or gillnets not exceeding 15 fathoms in length with mesh size no larger than 5½ inches may be used.

(E) You may take coho salmon from August 15 – October 1. The annual limit is 20 coho salmon per household. Only dipnets, spears, gaffs, rod and reel, beach seines, or gillnets not exceeding 15 fathoms in length with mesh size no larger than 5½ inches may be used.

(F) Salmon taken incidentally by gear operated under terms of this permit are legally taken and must be reported on the permit calendar. All salmon harvested will be included in the overall harvest guideline.

3) Status of coordination with the Transboundary Panel and the Pacific Salmon Commission:

The Transboundary Panel to the Pacific Salmon Commission continued deliberations on several issues, including a proposal for a U.S. Stikine River subsistence fishery, at meetings in Vancouver, B.C., during the week of 9-13 February 2004. The bilateral Panel (composed of representatives from U.S. and Canada Panels) came to agreement on terms for a sockeye subsistence fishery on the Stikine River for the remainder of the current Annex period (through the 2008 fishing season) and forwarded this recommendation to the Commission. The Commission approved the Panel's agreement. Specific details of the sockeye agreement are appended to this briefing. The bilateral Panel also agreed that terms for a directed Stikine River Chinook subsistence fishery are dependent on results of ongoing negotiations on abundance-based management and harvest sharing of Stikine River Chinook salmon. The bilateral Panel did not agree on terms for a Stikine River coho salmon subsistence fishery. Nevertheless, the U.S. Panel brought the request for a Stikine River coho salmon fishery to the Commission for approval, but the proposal was not passed. The Commission has tentatively scheduled an additional negotiating session for early April to continue deliberations of the Stikine River subsistence salmon fishery, and abundance-based management of transboundary river chinook stocks. Due to the ongoing status of negotiations further agreements may be reached before the fishing season to allow subsistence harvests of coho and chinook salmon.

The date shift for the sockeye season from June 15 to July 1 as recommended by the Pacific Salmon Commission is due to the overlap with chinook run timing; resolution of the chinook issue would likely lead to relaxing of the sockeye season starting date. Other stipulations for the sockeye fishery can be addressed through permit conditions and the delegated authorities of the Federal inseason manager. Establishing ongoing communication and coordination among fishery managers will allow us to address concerns as they arise.

Bilateral Transboundary Panel Position on a Proposed U.S. Stikine River Subsistence Fishery

The bilateral Transboundary Panel agrees to the following stipulations for a U.S. inriver subsistence fishery on the Stikine River for the duration of the current Annex IV, Chapter I agreement.

Targeted Species:

The target species will be sockeye salmon. Terms for a directed chinook fishery are dependent on results of ongoing negotiations between the parties on abundance based management regimes and harvest sharing of Stikine chinook salmon.

Allowable Harvest:

The U.S catch will not exceed 600 sockeye salmon. These fish will be part of the existing U.S. allocation of Stikine River sockeye salmon.

Season:

The fishing season will extend from July 1 through July 31.

Location:

The fishing area will include the mainstem of the Stikine River, downstream of the international border, with the exception that fishing at stock assessment sites identified prior to each season is prohibited unless allowed under specific conditions agreed to by both Parties' respective managers.

Catch Monitoring and Reporting:

Catches will be reported weekly, including all incidentally caught fish. All tags recovered shall be submitted to the Alaska Department of Fish and Game. A representative of the U.S. agency involved with the management of the inriver fishery will attend the annual post season Transboundary Panel meeting in 2005 to provide a review of the fishery. In subsequent years, a written report on the fishery summarizing harvests, fishing effort and other pertinent information requested by the Transboundary Panel will be submitted by the Agency for consideration by the Panel at its annual post season meeting.

Future Changes to Fishery:

Any proposed regulatory changes to the fishery during the remaining years of this annex would need to be reviewed by the bilateral TBR Panel and approved by the Pacific Salmon Commission.