

Chignik Area Subsistence Salmon Fisheries Research Report to the Alaska Board of Fisheries, January 2011

by

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Alaska Department of Fish and Game

Division of Subsistence



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Weights and measures (metric)

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

Weights and measures (English)

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

Time and temperature

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

Physics and chemistry

all atomic symbols

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

General

all commonly-accepted abbreviations
e.g., Mr., Mrs., AM, PM, etc.

all commonly-accepted professional titles e.g., Dr., Ph.D., R.N., etc.

Alaska Administrative Code	AAC
at	@

compass directions:

east	E
north	N
south	S
west	W

copyright

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corporate suffixes:

Company	Co.
Corporation	Corp.
Incorporated	Inc.
Limited	Ltd.

District of Columbia	D.C.
----------------------	------

et alii (and others)	et al.
----------------------	--------

et cetera (and so forth)	etc.
--------------------------	------

exempli gratia (for example)	e.g.
------------------------------	------

Federal Information Code	FIC
--------------------------	-----

id est (that is)	i.e.
------------------	------

latitude or longitude	lat. or long.
-----------------------	---------------

monetary symbols (U.S.)	\$, �
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months (tables and figures):	first three letters (Jan.,...,Dec)
------------------------------	------------------------------------

registered trademark	�
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trademark	™
-----------	---

United States (adjective)	U.S.
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United States of America (noun)	USA
---------------------------------	-----

U.S.C.	United States Code
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U.S. state	use two-letter abbreviations (e.g., AK, WA)
------------	---

Measures (fisheries)

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

Mathematics, statistics

all standard mathematical signs, symbols and abbreviations

alternate hypothesis	H _A
----------------------	----------------

base of natural logarithm	e
---------------------------	---

catch per unit effort	CPUE
-----------------------	------

coefficient of variation	CV
--------------------------	----

common test statistics	(F, t, � ² , etc.)
------------------------	-------------------------------

confidence interval	CI
---------------------	----

correlation coefficient (multiple)	R
------------------------------------	---

correlation coefficient (simple)	r
----------------------------------	---

covariance	cov
------------	-----

degree (angular)	�
------------------	---

degrees of freedom	df
--------------------	----

expected value	E
----------------	---

greater than	>
--------------	---

greater than or equal to	≥
--------------------------	---

harvest per unit effort	HPUE
-------------------------	------

less than	<
-----------	---

less than or equal to	≤
-----------------------	---

logarithm (natural)	ln
---------------------	----

logarithm (base 10)	log
---------------------	-----

logarithm (specify base)	log ₂ , etc.
--------------------------	-------------------------

minute (angular)	'
------------------	---

not significant	NS
-----------------	----

null hypothesis	H ₀
-----------------	----------------

percent	%
---------	---

probability	P
-------------	---

probability of a type I error (rejection of the null hypothesis when true)	�
--	---

probability of a type II error (acceptance of the null hypothesis when false)	�
---	---

second (angular)	"
------------------	---

standard deviation	SD
--------------------	----

standard error	SE
----------------	----

variance	
----------	--

population	Var
------------	-----

sample	var
--------	-----

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**CHIGNIK AREA SUBSISTENCE SALMON FISHERIES RESEARCH
REPORT TO THE ALASKA BOARD OF FISHERIES, JANUARY 2011**

by

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December 2010

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ABSTRACT

This report provides a summary of Alaska Department of Fish and Game (ADF&G) Division of Subsistence research findings about the Chignik Management Area (CMA) subsistence salmon *Oncorhynchus* fisheries to assist the Alaska Board of Fisheries (BOF) during its January 2011 meeting when addressing proposals affecting the subsistence fisheries in the area. Proposals 95 and 96 seek to modify the allowable gear used to harvest subsistence salmon, and the open waters in the Chignik River watershed. Included in this summary are results from Division of Subsistence comprehensive surveys conducted from the mid 1980s to the mid 1990s, from the division's ongoing subsistence salmon harvest permit program, as well as preliminary findings from an ongoing salmon ethnography project in Chignik Lake.

There are 4 communities in the CMA: Chignik Bay, Chignik Lagoon, Chignik Lake, and Perryville. Division of Subsistence harvest surveys show that salmon comprise approximately 45% of all resources harvested, by weight, for subsistence in these communities. Chignik subsistence salmon permits are issued annually by CMA vendors, with harvest reports due to the department by December 31. The 2009 estimated total subsistence salmon harvest was 8,907 salmon: 76% sockeye *O. nerka*, 13% coho *O. kisutch*, and 8% pink salmon *O. gorbuscha*, and chum *O. keta* and Chinook salmon *O. tshawytscha* were 1% each. This harvest was below the 10-year average of 12,183 total salmon.

In the Chignik River watershed, sockeye salmon are harvested for subsistence uses from early and late runs from early May through January. Most subsistence harvesting of early-run sockeye salmon occurs in early June in Chignik Lagoon, when "bright" (e.g., silver skin and red meat) sockeye salmon are harvested by gillnet or purse seine. These fish are typically processed by smoking, canning, salting, or freezing. Late-run sockeye salmon are usually harvested for subsistence in fall and early winter in Chignik River, Chignik Lake, Clark River, Home Creek, and a few other tributaries (such as Cucumber Creek). Some subsistence users harvest salmon in Black River, Black Lake, and other tributaries, including Scow River, Alec River, and Red Salmon Creek (Chiaktuak Creek). Salmon taken in the Black Lake region are usually "redfish": either spawning early-run sockeye salmon or coho salmon. Bright sockeye salmon harvested in Chignik Lake are usually harvested by hand-held gear, beach seines, or gillnets. These fish are usually processed by smoking or freezing. Sockeye salmon are also harvested in late fall and early winter from Clark River or Home Creek. These fish are also called "redfish", or occasionally "spawning" or "spawned-outs," and refer to a fish that has dark red skin and white meat. Respondents relate that these fish are usually preserved by drying on outdoor racks. Treble hooks attached to a line or rod and reel are used or small beach seines. These methods and means are used, respondents said, because male salmon, with their large humps, are preferred for drying, and because most local residents wish to avoid harvesting females in order to allow them to spawn. Respondents said gillnets were not used to target these fish because their large heads and soft flesh are damaged by the nets. Respondents did say that small seines were sometimes used when fishing at the mouths of tributaries. According to study results, these fishing locations and harvest and preservation methods have been used throughout the lives of local subsistence users.

Key words: Subsistence fishing, Pacific salmon, Chignik, Chignik Lagoon, Chignik Bay, Perryville, Board of Fisheries.

INTRODUCTION

This report provides a summary of Alaska Department of Fish and Game (ADF&G) Division of Subsistence recent research findings about the Chignik Management Area (CMA) subsistence salmon *Oncorhynchus* fisheries to assist the Alaska Board of Fisheries (BOF) during its January 2011 meeting when addressing proposals affecting the subsistence fisheries in the area. Proposals 95 and 96 seek to modify the allowable gear and expand the area used to harvest subsistence salmon and the open waters in the Chignik River watershed (Table 1). Included in this summary are results from the division's ongoing subsistence salmon research program, as reported in Fall et al. 2009, as well as information from a newer subsistence salmon study conducted in Chignik Lake: both contain information relevant to the subsistence proposals before the BOF at this meeting.

This report complements the Division of Commercial Fisheries' annual area management report (Anderson and Nichols *In prep*), which focuses on the commercial fisheries for salmon and Pacific herring *Clupea pallasii*, as well as on some aspects of the subsistence salmon fishery.

The CMA includes all waters of Alaska on the south side of the Alaska Peninsula enclosed by 156°20.22' west longitude (the longitude of the southern entrance to Imuya Bay near Kilokak Rocks) and a line extending 135° southeast from the tip of Kupreanof Point (Figure 1). The communities in the area are Chignik (also called Chignik Bay), with a 2009 estimated population of 62; Chignik Lagoon (population 73); Chignik Lake (population 105); and Perryville (population 122). A fifth community, Ivanof Bay, did not have a year-round population in 2009; however, former residents have occupied it seasonally (ADLWD 2010). All these communities are within the Lake and Peninsula Borough, and virtually all area residents participate in harvesting salmon in the Chignik area.

Division research reports harvests of salmon by residents of communities in the CMA by various methods and means. In the CMA area, the division's standard salmon research program (Fall et al. 2009) has been complemented by a recent Alaska Sustainable Salmon Fisheries project designed to provide a current, more detailed update of a study conducted by the division in the early 1990s (Hutchinson-Scarborough and Fall 1996), and to address the patterns of subsistence uses of fisheries resources in the CMA.

In some parts of Alaska, in addition to gear authorized under subsistence fishing regulations, subsistence users report that substantial numbers of fish for home uses are taken with rod and reel (Fall et al. 2009), which is allowable gear under sport fishing regulations. CMA residents have reported that they have used rod and reel or hook and line to harvest salmon for home use and for sharing (Hutchinson-Scarborough and Fall 1996; CMA key respondents' personal communications to Hutchinson-Scarborough, ADF&G Subsistence Resource Specialist II, October 2010). This report includes CMA respondents' data on rod and reel harvests of salmon subsequently used for home use, when available.

Commercial harvesters may also retain finfish from lawfully taken commercial catch for home use ("home pack"). These fish are required to be reported on the commercial fish ticket, not on the subsistence salmon permit. Home pack harvest information is usually reported in Division of Commercial Fisheries management reports (Anderson and Nichols *In prep*). Since many subsistence users, including subsistence fishers in the CMA area, regularly characterize fish retained from commercial catches for home use as subsistence fish, and report that they use and process them in accordance with customary and traditional uses (Fall et al. 2009), these harvest data have been included in this report.

CMA AREA SUBSISTENCE FISHING REGULATIONS

In 1993, the BOF made a positive determination that salmon are customarily and traditionally taken or used for subsistence (a "positive C&T finding") in the CMA and specified amounts of salmon reasonably necessary for subsistence (ANS) in each CMA district. In 2002, the BOF made a modification of the original finding for ANS [5 AAC 01.466 (a) and (b)]. The current amounts necessary for subsistence for Chignik Bay, Central, and Eastern districts combined are 5,200–9,600 early-run sockeye salmon *O. nerka*; 2,000–3,800 late-run sockeye salmon; 100–150 Chinook salmon *O. tshawytscha*; and 400–700 salmon other than sockeye or Chinook salmon. The BOF has also set an ANS for rainbow/steelhead trout *O. mykiss* at 200–300, and at 15,200–22,800 pounds of usable weight for finfish other than those listed above.

A subsistence permit is required, fishers must record daily salmon harvests on the permits, and permits with harvest records must be returned to the Division of Subsistence by December 31 (Appendix A). There is an annual limit of 250 salmon per permit. Legal gear includes seines and gillnets, but purse seines may not be used in Chignik Lake. There is no closed season for subsistence salmon fishing, except from July 1 through August 31 in the Chignik River from a point 300 feet upstream from the Chignik ADF&G weir to Chignik Lake; or in Black Lake, or any tributary to Black Lake or Chignik Lake, except in the waters of Clark River and Home Creek from each of their confluences with Chignik Lake to a point

one mile upstream.¹ Other standard permit conditions include prohibition of fishing within 300 feet of a dam, fish ladder, weir, culvert, or other artificial obstruction, and a prohibition against positioning a net so that it blocks more than one-half of the width of a waterway or any channel or side channel of the waterway.

Commercial salmon fishing permit holders can fish for subsistence salmon, except not the 12 hours before nor the 12 hours following a commercial salmon fishing period (5 AAC 01.485). The BOF has not authorized “personal use” fisheries for salmon in the CMA.

RECENT SUBSISTENCE FISHING REGULATORY HISTORY

Subsistence harvest patterns in the CMA are often influenced by Chignik commercial salmon fisheries since many of those who commercial fish are also subsistence harvesters. Regulations for subsistence salmon fishing are tied to Chignik commercial fishing operations.

Prior to 2002, the CMA commercial fishery was managed by ADF&G as a competitive limited entry permit fishery. Pre-2002 regulations allowed subsistence fishing with seine and gillnet gear and required an individual permit with a seasonal limit of 250 salmon. Purse seines could be used to harvest subsistence salmon, except in Chignik Lake, which has been open by regulation to subsistence salmon fishing since 1985 (Morris 1987:185). Also prior to 2002, CMA commercial salmon harvesters could not subsistence fish between June 10 and September 30, although they were allowed to remove salmon caught during commercial openings for home use. Subsistence salmon fishing was not allowed in Chignik River upstream of the ADF&G weir site to Chignik Lake, in tributaries to Chignik Lake, or in Black Lake.

From 2002 to 2005, the CMA commercial salmon fishery was managed based on 2 management plans: the Chignik Area Management Plan (competitive fishery) and the Chignik Area Cooperative Purse Seine Salmon Management Plan (cooperative fishery; Stichert 2007b). After development of the cooperative fishery, ADF&G management staff initiated subsistence permit conditions in 2003 that increased subsistence harvest opportunities for commercial fishing license holders.² By regulation, commercial fishing permit holders could not subsistence fish for salmon from 48 hours before the first commercial salmon fishing opening through September 30. Subsistence fishing permit conditions allowed commercial permit holders who were not engaged in commercial fishing during an opening for cooperative or competitive fleets to subsistence fish during commercial openings, after registering with ADF&G.

In 2004, through emergency order, ADF&G allowed subsistence salmon fishing within the Chignik River, excluding the waters 100 yards upstream and downstream of the Chignik weir, through June 30. Regulations had closed the Chignik River to subsistence salmon fishing (5 AAC 01.475) until 2006. In addition to obtaining a subsistence permit, commercial harvesters wishing to subsistence fish after the first commercial opening were allowed, with a requirement to register with ADF&G staff working at the weir. ADF&G established a subsistence fishing schedule for these commercial harvesters depending upon whether they fished for the cooperative fleet or independently (Bouwens 2004).

At its 2004 meeting, the BOF adopted regulations to increase subsistence fishing opportunities for commercial salmon fishing license holders by allowing them, with certain restrictions (5 AAC 01.485), to harvest subsistence salmon during the commercial salmon fishing season. In addition, the BOF directed ADF&G to manage for an increase in escapement of sockeye salmon during the August commercial fishery (from 50,000 to 75,000), in order to enhance late-season subsistence opportunities in Chignik Lake. Although the commercial fishery was limited in August, the sockeye escapement goal was not achieved in 2005 (Bouwens 2005). In 2005, the BOF opened the Chignik River drainage to subsistence fishing, except for waters within 300 feet of the weir, and except for a July 1 through August 31 closure

¹. This regulation amendment was adopted by the BOF in 2008.

². Regulations providing for a cooperative commercial salmon fishery in CMA were invalidated by a decision of the Alaska Supreme Court and have not been operative since 2005.

upstream of the weir to protect spawning Chinook salmon (Stichert 2007a). The cooperative fishery plan was repealed by the Alaska Supreme Court in March 2005, but the BOF reestablished the cooperative management plan by emergency regulation and it occurred in 2005. Since 2006, however, the CMA commercial fishery has been managed solely under the *Chignik Salmon Management Plan* as a competitive fishery.

During its January 2008 meeting, the BOF adopted regulatory changes to subsistence fishing in the CMA that allowed subsistence salmon fishing in Clark River and Home Creek from their confluences with Chignik Lake upstream 1 mile. The use of gillnets for subsistence fishing in the CMA remained legal, but when they are fixed, anchored or otherwise held in place, they may not obstruct more than one-half of the width of the stream (Jackson and Anderson 2009).

CMA AREA HARVEST ASSESSMENT PROGRAM

PERMIT AND HOUSEHOLD SURVEY DATA

Division of Commercial Fisheries conducted its first subsistence salmon harvest assessment in the CMA in 1976, and subsistence harvest assessments for salmon have been conducted annually since then. Division of Subsistence assumed responsibility of the harvest assessment program in 1993. Permits are issued upon request in each community. The method of permit issuance in the communities varies by community and year, depending on availability of vendors and other arrangements with area organizations. Permits are also issued upon request at the Chignik River weir by Division of Commercial Fisheries staff.

Chignik subsistence salmon permits must be returned by mail to the Division of Subsistence office in Anchorage by December 31. Permits include a harvest report that fishers are required to complete even if no subsistence fishing occurred. The report asks for dates fished, specific locations fished, and the number of each species of salmon caught on each day, but does not ask for reported gear type. Nonresponders are sent reminder letters, and telephone calls are made if further follow-up is required.

As part of its regular research activities for this area, Division of Subsistence has also conducted in-person household interviews since 1997 in order to collect CMA harvest information from households that do not obtain or return permits and to add late season harvest information not recorded on permits. The survey form is presented as Appendix B. Survey technicians hired from the communities attempt to contact all households in the CMA. Respondents are asked questions similar to those on the permit, but additional questions regarding late-season harvests and whether their subsistence needs were met are also asked (see Appendix C for results of the needs question). Surveys are generally conducted during February or March; however, surveys were not conducted in 2010 for the 2009 harvest year due to lack of funding. These annual assessments of the number of salmon harvested by subsistence gear by community, location, and species are based on the combined results of returned permits and household surveys, expanded for nonresponders, and are reported in a Division of Subsistence Technical Paper (Fall et al. 2009).

In 1993, Division of Subsistence obtained copies of all available subsistence permits for the CMA from Division of Commercial Fisheries' archive in Kodiak. Permits issued prior to 1980 and for 1987 could not be located. All permit data were entered into a database. Estimated harvests developed in this database and reported in subsequent Division of Commercial Fisheries reports differ slightly from those reported in earlier reports for several reasons. There are small discrepancies in some years in the number of permits issued or returned. Estimated harvests in earlier reports were based on a simple expansion from harvests reported on returned permits to the total number of permits issued. Since 1993, harvest data from returned permits have been expanded by community of residence to estimate harvest by all permit holders. Data from returned permits are tabulated by species and fishing area. Increases in permits issued and returned beginning in 1993, and consequently higher harvest estimates, reflect use of area vendors to issue permits as well as postseason surveys conducted by ADF&G staff and area research assistants.

Comparisons of household survey data and permit data collected for 1984 and 1989 suggested that permit data underestimated subsistence harvests in the CMA subsistence salmon fishery (Hutchinson-Scarborough and Fall 1996:27). With the assistance of area permit vendors, ADF&G Chignik weir staff, research assistants, and area governments, subsistence salmon harvest assessments for most recent years, with some exceptions, have resulted in more reliable estimates of total harvest.

Since 1980, the number of subsistence salmon permits issued for the CMA has averaged 103 per year, with 70 permits (68%) returned. Over the last 10 years, the average has been 119 permits issued and 92 permits (77%) returned. The recent 5-year average (2004–2008) is 111 permits issued and 78 (70%) returned.

Since 2008, the number of issued permits and the reported harvest have declined. The reason for decline is not clearly understood; however, year-round populations in most CMA communities have declined as well, and there have been fewer participants in CMA commercial fisheries. This may be due to lower salmon prices, increased costs in maintaining boats and associated fishing expenses, or a downturn in Alaska and US economies. In 2008, 89 permits were issued, and 69 were returned (76%; Table 2). This was a significant decline from the recent 5-year and 10-year averages. In 2009, 95 permits were issued, and 82 (86%) were returned. Of all permits issued for 2009, 68 (72%) were issued to residents of CMA communities, and 26 (27%) were issued to residents of other Alaska communities (Table 3).

Estimates of CMA Area Subsistence Salmon Harvests

Estimates of 2010 subsistence salmon harvests based on permit returns and household surveys for the CMA will not be available until spring 2011. Subsistence salmon fishing is still occurring in the area and permit harvest reports are not required to be returned until December 31.

In 2009, the estimated subsistence salmon harvest based on permit returns and follow-up household surveys for the Chignik area was 8,907 fish (Table 2). This was less than the estimated historical (1977–2008) average harvest of 11,351 salmon, as well as less than the recent 10-year estimated average of 12,183 salmon and 5-year average of 11,056 salmon (Table 2).

Composition of CMA average subsistence salmon harvests from 1977–2009 was 78.1% sockeye, 11.2% coho, 7.8% pink, 2.2% chum, and 0.7% Chinook salmon (Figure 2). The 2009 subsistence harvest in CMA was similar to the historical overall average: 76.2% (6,785) sockeye, 13.2% (1,174) coho, 7.9% (707) pink, 1% (137) chum, and 1% (104) Chinook salmon (Table 2; Figure 3). Of the total harvest, Chignik/Perryville area residents took an estimated 7,564 salmon (84.9%) and other Alaska residents harvested an estimated 1,343 salmon (15.1%) (Table 3; Figure 4).

In 2009, Chignik Lake residents harvested an estimated total of 2,871 salmon, most of which were sockeye salmon (2,577); this was 38% of the total 6,785 sockeye salmon harvested for CMA subsistence fisheries, as well as 32% of the total subsistence salmon harvest (8,907) for the CMA (Table 3). In addition to sockeye salmon, Chignik Lake residents had an estimated harvest of 39 Chinook salmon, which was 38% of the total Chinook harvest of 104. They also harvested an estimated 172 coho, 80 pink, and 4 chum salmon (Table 3). Residents of Chignik Lagoon (1,232) and Chignik Bay (1,228) had near-identical sockeye salmon harvest estimates, which combined made up 36% of the total sockeye salmon harvests for the CMA. Chignik Bay residents harvested the same number of coho salmon as Chignik Lake residents (172; Table 3). Chignik Lagoon residents harvested only 5 coho salmon and had no harvests of pink and chum salmon, but did have an estimated harvest of 28 Chinook salmon (27%). Chignik Bay residents harvested 16 Chinook (15%; Table 3; Figure 3).

The 2009 subsistence salmon harvest in the Perryville and Western districts is estimated at 1,984 salmon (22% of total CMA harvest) and these residents' harvests were the most diverse, by species, of all communities, although the quantities of sockeye (675), coho (632), and chum salmon (570) harvested were similar. Perryville residents accounted for the region's largest percentage of estimated subsistence

harvests of coho salmon (632, or 54%), chum salmon (100, or 73%), and pink salmon (570, or 81%; Table 3; Figure 4).

Locations and dates of harvest are not always recorded on the harvest reports. For the estimated 6,785 sockeye harvested in the CMA in 2009, 4,164 had reported harvest locations indicated on returned permits. Of these, 2,076 sockeye salmon were harvested prior to July 5, and 2,088 sockeye salmon after July 5 (Table 4). In 2009, the number of sockeye salmon reported harvested from Chignik River, Chignik Lake, Hatchery Beach, and Clark River combined was 1,566 fish (Table 4).

Harvests reported from Black Lake in 2009 were 87 sockeye salmon and no other salmon species. In 2008, 282 sockeye were reported harvested from Black Lake (Table 4). Reported sockeye harvests from Black Lake from 2005–2009 ranged from 0–282, with a 5-year average of 91 sockeye harvested. From 1993–2000, an average of 35 sockeye salmon were harvested in Black Lake, with a range of 0–236 (ADF&G Division of Subsistence 2002).

SUBSISTENCE RESEARCH ON SUBSISTENCE SALMON USES IN THE CMA AREA

As directed by Alaska state statute (AS 16.05.094), the Division of Subsistence conducts studies on all aspects of the harvest of wild resources to provide information to the boards and the public. As part of its research program, the division uses social science methods to administer comprehensive household surveys to collect detailed information about subsistence harvests and uses of wild resources. For the Chignik area, comprehensive surveys were conducted for the study years 1984 (Morris 1987), 1989 (Fall et al. 1995), 1991 (only for Chignik Bay and Chignik Lake; Hutchinson-Scarborough and Fall 1996), and 2003 (Fall 2006).

More recently, the division was awarded Alaska Sustainable Salmon Fund (AKSSF) monies to update previous research. The AKSSF project period is May 1, 2010 through June 30, 2013. The project focuses on subsistence salmon fisheries in the CMA, documenting the strategies of local residents in adapting to changes in the commercial and subsistence salmon fisheries. Field research methods include a salmon harvest and use survey, harvest mapping, key respondent interviews, and participant observation (see Appendix D for an example of the survey). The focus of the research is on subsistence salmon fishing in all its complexity, including harvest, processing, and preservation at various times of the season in each community. The following review covers data compiled from past research efforts in the CMA. The section also provides summary information compiled as part of interviews and data gathered during AKSSF activities that occurred between May and October 2010. A more detailed section will follow that examines the contemporary context of the subsistence salmon fishery in the CMA.

Timing, Processing, Location of Harvest

Prior to 2002 (and the Chignik cooperative commercial fishery), many subsistence users reported that they processed early-run sockeye salmon just prior to the first commercial opening in early June. Many residents of Chignik Lake and Perryville who were participating in the commercial salmon fishery would occupy fish camps along Chignik Lagoon and use either purse seines or beach seines to harvest salmon for household use. Because of regulations in effect at that time, commercial harvesters could not subsistence fish for salmon after the first commercial opening through the end of the commercial fishing season. Therefore, these families had to focus their efforts on harvesting and processing salmon in late May or early June for household use.

During the cooperative fishery (2002–2005), some changes occurred within the area related to subsistence fishing patterns. Prior to the cooperative fishery many area residents who relied on subsistence caught salmon for home use also participated in CMA commercial fisheries, they would often use their commercial fishing boats to subsistence fish just prior to the commercial fishing season as the subsistence fishery was closed after the commercial fishery opened as noted above. A change that occurred was that during the cooperative fishery ADF&G opened the commercial fishery in early June at a time when many participants would have been processing subsistence fish. As salmon were being harvested in the

cooperative fishery, this change resulted in a decrease in the number of salmon that were arriving in Chignik Lagoon where subsistence fishing nets were placed. Thus, the cooperative fishery resulted in a decrease in subsistence efficiency and an increase in effort required to harvest salmon in the subsistence fishery in Chignik Lagoon.

According to personal communications between some Chignik residents and Division of Subsistence researchers, because of the decrease in the salmon run into Chignik Lagoon, many families waited until later in the summer to subsistence fish. Successful drying of salmon was more tenuous at this time because more flies are present this late in summer, and harvests could be spoiled by flies that lay their eggs in the salmon as they air-dry. CMA residents had mixed reviews of the cooperative fishery in terms of both subsistence harvests and the cash economy that was created by the cooperative fishery. Cooperative fishing regulatory changes removed certain restrictions on subsistence fishing for commercial harvesters in 2003: they could fish for subsistence throughout the summer as long as it was not done during a commercial opening and a subsistence permit was obtained. Fishers who did not hold a commercial fishing permit and who wished to subsistence fish could fish for subsistence at any time as long as they obtained a subsistence permit. Although there was an increase in the reported number of fish removed from cooperative boats for “personal use” to supplement subsistence harvests, some subsistence users informed ADF&G that despite adjustments to the CMA subsistence fishery which provided more opportunity for subsistence fishing, some were still having difficulty obtaining subsistence salmon in 2004 and 2005 (CMA residents’ personal communications to Hutchinson-Scarborough, 2004; Bouwens 2005:6).

As previously stated, in 2004, the BOF modified the commercial fisheries management plan for late-run sockeye salmon to allow more fish to pass into Chignik Lake in September, with the intent of providing for subsistence harvests. In 2006, several residents, many from Chignik Lake, commented to ADF&G that despite modifications to the August commercial fishery, they still had difficulty harvesting late-run salmon in the subsistence fishery as there was a decrease in the salmon run (Stichert 2007b). Residents noted that they needed to fish more days to achieve harvest goals (Stichert 2007b).

In 2006, the cooperative commercial fishery was disbanded and CMA community subsistence patterns returned to historical patterns used prior to the cooperative fishery; residents harvested a majority of their salmon for home use prior to the commercial fishery opening. However, in 2008 and 2009, harvests in the subsistence fishery were lower than in previous years and participation in the subsistence fishery had declined. The total salmon harvest estimate in the subsistence fishery in 2008 was 8,783 salmon and in 8,907 salmon in 2009. Both years were below the 5-year average (11,056), 10-year average (12,183), and historical average (11,351). The number of permits issued has also declined since 2008 (Table 2).

Respondents interviewed as part of the AKSSF research project that is currently ongoing have noted that early-run sockeye salmon are especially important because of their taste and fat content. These fish are traditionally preserved by smoking, canning, salting, or freezing, and it is necessary to cure the fish before the emergence of flies that can spoil the harvest, which typically occurs in mid to late June. Traditionally, subsistence fishers could maximize efforts and economies to harvest and process early-run fish because the fish arrived in pulses. Subsistence fishers could call on extra labor to help harvest salmon during the peak of a pulse, and process for preservation during a lull.

Late-run sockeye salmon are typically harvested either in Chignik Lagoon, Chignik Lake, or near the mouth of Clark River. Beach seines or hook and line are used to harvest late-run salmon in Chignik Lake (Morris 1987; Fall et al. 1995; Hutchinson-Scarborough and Fall 1996:49; CMA key respondent interviewed by Hutchinson-Scarborough, October 2010). Besides Chignik Lake late-run sockeye salmon are also harvested in Chignik Lagoon, Clark River, Home Creek, and Black Lake (Table 4). Harvested bright (non-spawning) late-run sockeye salmon are usually smoked or filleted and then frozen, while “redfish,” late-run sockeye salmon, are generally dried. See the maps in Appendix E for harvest locations.

Fish camps owned or utilized mostly by Chignik Lake and Perryville residents are located across from the village of Chignik Lagoon. During Division of Subsistence studies in 1990, most camps were heavily used (Hutchinson-Scarborough and Fall 1996). However, in recent years only a few are being used, with the decline beginning around the time of the cooperative fishery. Because the cooperative fishery limited the number of fishing boats, numerous families from Perryville and Chignik Lake ceased to travel to Chignik Lagoon in summer to stay at fish camps and harvest and process subsistence caught salmon; instead, they remained in their communities to harvest fish from nearby streams (Hutchinson-Scarborough and Fall 1996:49). In October 2010, key respondents from Chignik Lake told Division of Subsistence researchers that only a few of these camps were used and they were mostly occupied by Perryville residents (CMA key respondents' personal communications to Hutchinson-Scarborough, October 2010).

Commercial Salmon Harvest Retention

The subsistence permit program for CMA does not account for salmon removed from commercial catches for home use: these fish are reported to ADF&G Division of Commercial Fisheries on a fish ticket (Table 5). Area residents related that they consider commercially harvested salmon they choose not to sell and retain for home use are a subsistence food, and are used, processed, shared, and consumed like salmon harvested with subsistence gear (Hutchinson-Scarborough and Fall 1996; CMA key respondents' personal communications to Hutchinson-Scarborough, October 2010).

In 2007, 358 total salmon were reported on commercial fish tickets as removed from commercial catches. Fifteen total salmon were reported removed from commercial harvests in 2008, and 169 in 2009 (Stichert et al. 2009; Mark Stichert, ADF&G Division of Commercial Fisheries, personal communication, 2010; Table 5).

Gear Type

Harvest records on Chignik permits do not ask subsistence fishers to record gear type used for harvesting salmon. Recording gear type used to harvest salmon for home use is collected by the Division of Subsistence during baseline household surveys. The most recent survey that covers all CMA communities is for study year 2003 (Fall 2006). The methods of harvesting salmon recorded in this survey include commercial retention of salmon, rod and reel harvest under sport fishing regulations, and harvesting salmon in the subsistence fishery using gillnets or seines (Table 6; Figure 5).

In 2003, surveys documented that subsistence nets or seines were used to harvest 75% (11,201) of the total estimated harvest of salmon; 8% (1,178) were harvested with rod and reel or hook and line gear, and 18% (2,623) were retained from commercial harvests (Table 6; Figure 5). In terms of the harvest by species, except for Chinook salmon, gillnets and seines were used more often (70–83%) than other gear types. For Chinook salmon, only 9% (54) were harvested with gillnets or seines, while 26% (154) were harvested by rod and reel, and a majority 66% (396) were removed from commercial harvests (Table 6; Figure 5; Fall 2006).

Gillnets and beach seines have traditionally been used to harvest late-run sockeye salmon at the mouth of Chignik Lagoon, Chignik River, Chignik Lake, and the mouths of Clark River and Home Creek. In 2010, beach seines and gillnets were still used along the lagoon, but mostly at the mouth of the Chignik River by some Chignik Lake residents. Hand seines or hook and line gear have traditionally been used to harvest spawning or spawned-out sockeye or coho salmon (“redfish”) from Clark River, as well as occasionally from other salmon tributaries to Chignik and Black lakes.

AKSSF PROJECT KEY RESPONDENT INTERVIEW SUMMARIES

The following provides information based on key respondent interviews and community meetings in communities of the CMA. These are preliminary findings from in-person interviews conducted between May and October 2010. Field research for this project is currently ongoing and the final report will be available in June 2013.

Perryville

Perryville residents' subsistence patterns have not changed greatly from historical times, although fewer residents are traveling to fish camps in Chignik Lagoon. Fresh sockeye salmon are transported to Perryville by commercial fishing families. Area streams and beaches are used extensively to harvest coho, chum, and pink salmon, as well as the occasional sockeye salmon. Due to changes in river locations and stream flows, and fluctuations in salmon runs to these systems, Perryville subsistence fishers may use other CMA streams to harvest fish, sometimes traveling as far as Ivanof Bay. Perryville residents smoke, dry, can, salt, or freeze subsistence salmon harvests. Some Perryville residents have relatives living in Chignik Lake, and some travel to Chignik Lake in fall to harvest late-run sockeye salmon for drying. The village of Ivanof Bay has been abandoned as a year-round community; however, some Ivanof Bay residents now residing in Perryville return to Ivanof Bay to harvest a large portion of their subsistence salmon (CMA resident personal communication to Hutchinson-Scarborough, 2007).

Summary of Key Respondent Meeting, Chignik Lagoon, May 2010

Prior to AKSSF fieldwork, in May 2010, Hutchinson-Scarborough traveled to Chignik Lagoon, Chignik Lake, Chignik Bay, and Perryville to introduce the project at village meetings and to obtain project support resolutions from each village council. Some local subsistence salmon information was also gathered informally during these meetings. During this meeting in Chignik Lagoon that was open to all residents of the community, several local fishers stated that the Chinook salmon return that spawns in Chignik River is small. Commercial harvesters do not target Chinook salmon, they said, but do catch them in commercial catches while fishing for sockeye salmon. They said these fish are usually not sold, but are taken home as home pack and processed with the rest of the subsistence salmon. Although salmon for home use are required to be reported fish tickets, some respondents stated that the numbers of Chinook salmon reported on fish tickets may be underestimated. They felt this was probably not intentional, that perhaps some people forget to report home pack Chinook salmon because they are busy transferring their commercial catch to tenders.

During key respondent interviews in Chignik Lagoon in 2010 respondents indicated that some residents of Chignik Lagoon, Chignik Bay, and Chignik Lake are now engaged in sport fish guiding. As a result, they said, there has been an increase in the number of sport anglers coming to Chignik to fish for Chinook salmon, as well as for other species, such as Pacific halibut *Hippoglossus stenolepis*. No opposition was expressed to this development, because, they said, it brings cash income to area residents. However, respondents expressed concern that an increasing number of sport anglers are harvesting Chinook salmon in Chignik River. This, they said, in addition to underreported Chinook salmon home pack, could have an adverse affect on local Chinook salmon stocks, and could eventually limit local subsistence users from obtaining enough Chinook salmon for subsistence. Some respondents expressed the thought that sport fishing bag limits for Chinook salmon should be lowered. They also indicated that they did not own large-meshed gillnets that they would use to target Chinook salmon, which would be legal gear for subsistence fishing, but which might also make it difficult to manage the numbers harvested, and result in an overharvest of Chinook salmon. Therefore, respondents said, most Chignik Lagoon residents sport fish using rod and reel to harvest Chinook salmon in Chignik River, as well as at its outlet into the lagoon. Some respondents indicated that although they had sport fishing licenses and king salmon stamps, they consider this fishing to be subsistence fishing. They said Chinook salmon harvested in Chignik Lagoon are generally frozen whole. In late fall, after frost kills the flies and residents have more time, they thaw the fish, cut them into strips, brine them, and then smoke them.

PRELIMINARY RESULTS, OCTOBER 2010 FIELDWORK, CHIGNIK LAKE

In October 2010, Hutchinson-Scarborough and ADF&G Division of Subsistence staff member Sarah Evans traveled to Chignik Lake and observed subsistence processing of late-run sockeye salmon,

conducted key respondent interviews to learn more about local subsistence salmon practices, and mapped subsistence salmon harvest locations.

Key respondent interviews were conducted with 6 active fishing households. Interview topics addressed subsistence salmon activities and patterns, including information about seasons of harvest by species and gear type used, and included mapping of harvest locations (Appendix E). Hutchinson-Scarborough and Evans also observed some processing of late-run subsistence salmon: fresh “bright” sockeye salmon harvested by gillnet near the mouth of Chignik River at Chignik Lagoon. Some respondents said it was unusual to find such bright salmon that late in the year. These salmon were either smoked or were filleted and then frozen. Some respondents reported that they harvested “redfish,” spawned-out sockeye salmon in this case, from Clark River by hook and line, and that only a few were taken to eat immediately at a memorial service dinner and to give to a visiting relative from Bristol Bay.

Subsistence fishing participant observation was also planned for this trip, but few subsistence users were fishing at that time, because, respondents said, there were too many bears at Clark River, where much of the subsistence fishing for “redfish” or “spawned-outs” takes place in the CMA. Respondents said that bears would eat drying salmon, so they wanted to wait until there were fewer bears before harvesting and drying salmon. Also, they said, it was still rainy and a deep frost had not yet occurred, which kills the flies that can spoil drying salmon. Most respondents said that both runs of sockeye salmon arrived later this year: the early-run was strong in terms of numbers of fish, but the late-run was weak. Many attributed this to warmer weather, which, they said, then resulted in an increase in the number of bears feeding on an increased availability of late-run sockeye salmon in Clark River.

Many active fishers were absent from Chignik Lake or did not have time to fish because they were making preparations to travel to the annual Alaska Federation of Natives conference. Later follow-up telephone calls to community residents revealed that much of the fishing effort at Clark River for spawned-out fish took place in November 2010 and that these fish were processed by drying.

Key respondents in Chignik Lake explained that subsistence salmon are harvested at different times of year and different locations using a variety of gear types for various reasons, such as tradition, taste preferences, efficiency in harvest, conservation goals, proximity of the resource to the village, weather, presence or absence of flies, availability of salmon, fat content in fish, desired curing techniques, processing and curing customs, commercial fishing involvement and openings, equipment availability (e.g., boats, motors, nets), fuel availability and cost, other employment, income, health, and family responsibilities. Residents of Chignik Lake, and Chignik Lagoon and Chignik Bay as well, related that they prefer sockeye salmon to other salmon primarily because sockeye are the main salmon resource available near the villages and because of acquired taste preference. By contrast, Perryville, situated on the Pacific coast, has a greater abundance of coho, chum, and pink salmon runs, and local subsistence users relate that they prefer coho to sockeye salmon, again due to acquired taste and customs.

Sockeye salmon are harvested from both runs to the Chignik River watershed. Subsistence fishers usually harvest early-run sockeye salmon, which enter Chignik Lagoon in early June, with purse seines or gillnets in the lagoon. The majority of subsistence users in the CMA, and particularly those who are also commercial harvesters, prefer to harvest spring subsistence salmon prior to the first commercial opening in early June. This is because, they say, subsistence fishing and processing requires labor by all family members, as well as adequate time to do it efficiently and properly, especially when salmon are being smoked or canned. Also, local subsistence users prefer to harvest and smoke salmon early, when the weather is still cold, before flies lay eggs in curing salmon and spoil it. Families work together to harvest, process, and preserve salmon by smoking, kippering, canning, salting, and freezing. Salmon are shared with family; others in the community, but especially elders and single parent mothers; and relatives who live outside the community.

Chignik Lake subsistence users also harvest early-run sockeye salmon from Chignik River and Chignik Lake. Gear types used in these areas include both subsistence and sport fishing methods including

gillnets, hand or beach seines, and rod and reel/hook and line. Some Chignik Lake families that own cabins at Black Lake occasionally harvest redbfish (sockeye and coho salmon) in Black Lake and other tributaries, particularly Scow and Alec rivers, Red Salmon Creek (Chiaktuak Creek), and Black River (Upper Chignik River). Salmon are also occasionally taken from Black Lake when subsistence users are hunting for caribou, moose, or brown bears. Gear used at Black Lake is usually a hook and line or a small beach seine. Respondents also noted that they occasionally use spears to harvest salmon at Black Lake as well as Clark River. However, few salmon are harvested this way and they are usually eaten right away.

Respondents stated that Black Lake has become quite shallow in recent years and it is often impossible to access the area by skiff at certain times of the year. They say that there has also been a large decline in caribou and moose in the area, so the Black Lake area is not as regularly used for subsistence activities as in the past.

Some Chignik Lake respondents stated that since 2002 (the year of the Chignik cooperative fishery) there has been an increase in subsistence salmon fishing for early-run sockeye salmon in the Chignik Lake area. They said that the cooperative fishery eliminated the need to use the number of commercial fishing boats used in the competitive fishery, and also eliminated crew and skipper jobs for many Chignik Lake and other CMA residents. Prior to this time, they said, most Chignik Lake and Perryville families who commercial fished moved to fish camps along the north side of Chignik Lagoon in early summer, where they also subsistence fished and processed subsistence sockeye salmon. When these families stopped commercial fishing, most no longer traveled to the camps. Although the cooperative fishery was eliminated in 2005, they said, participation in commercial fishing by Chignik Lake residents has not returned to the level it was before the cooperative fishery years, and neither has their use of spring and summer fish camps. Only 1 Chignik Lake family and 3 Perryville families used their fish camps in 2010, according to key respondents.

Late-run sockeye salmon, which enter Chignik Lagoon in early July, are harvested in Chignik Lagoon, Chignik River, Chignik Lake, and tributaries to Chignik Lake. Clark River and Home Creek are more commonly used, respondents said, because they have larger runs of sockeye salmon and are close to the village. Other streams, such as Cucumber Creek, are fished depending on the location of fish, direction of the wind, and other weather factors. Bright sockeye salmon are harvested with gillnets near the mouth of Chignik River, in Chignik Lagoon, and in Chignik River, and with gillnets or beach seines near the outlet of Chignik Lake. In Chignik Lake and at the mouths of the tributaries, small beach or hand purse seines are used in the subsistence salmon fishery (Appendix E).

Once sockeye salmon have turned red and moved into Clark River and Home Creek, some local fishers from all communities, including Perryville, will harvest and process them by drying, which, respondents said, is the preferred method due to the low fat content of the fish, which decreases spoilage. Fishers also wait until a few hard freezes kill any remaining flies, typically October through December, before harvesting sockeye salmon redbfish. Respondents also said that the number of area brown bears feeding on fish, both in streams and on fish racks, lessens once winter sets in. Redfish caught from Clark River, Home Creek, and Scow River are generally harvested by “jigging” or “snagging:” methods that involve a treble hook attached to a line or rod and reel. This method is preferred, respondents said, not only because sockeye salmon will not take a lure, but also because most local subsistence users prefer male redbfish due to their larger hump, which provides more meat and taste for dried fish (dry fish). Jigging, they said, allows the fisher to target male salmon, to leave the females to spawn, and to more carefully manage harvest amounts. Respondents said that gillnets were not used to harvest redbfish because the flesh of spawning fish is very mushy and the heads are very large, and the fish is damaged if nets are used. Small seines are usually used when fishing at the mouths of these streams, or along the beaches of Chignik Lake, but are not efficient higher up in the river, where the water is shallow.

Most coho salmon, which arrive in mid August, migrate up Clark River and near Hatchery Beach, but many also migrate into other Chignik Lake and Black Lake tributaries. Coho salmon are harvested by

local residents using subsistence and sport fishing methods, although most Chignik Lake residents do not harvest them in large quantities. Respondents relate that residents usually use rod and reel/ hook and line to harvest coho salmon in tributaries to Chignik and Black lakes, where they spawn. Occasionally residents will use beach seines to harvest coho salmon from Chignik Lake. Coho salmon are also harvested by gillnet in Chignik Lagoon and gillnet and rod and reel in Chignik River. Coho salmon are harvested either bright or in spawning colors. Some CMA residents use rod and reel to harvest spawning coho salmon in Black Lake tributaries, especially Scow, Alec and the Black rivers, the West Fork, and Red Salmon Creek (Appendix E). Respondents say that the large heads of spawning male coho salmon are a preferred food for many local residents.

Chinook salmon are harvested for subsistence uses in all communities. Chinook salmon spawn in the Chignik River, so most fishing occurs either there or where the river enters Chignik Lagoon. Local residents primarily use rod and reel to harvest Chinook salmon for traditional uses, which include food and sharing. The fish are generally cured by smoking, canning, or freezing. Most key respondents interviewed in Chignik Lake stated that they were not aware that it was illegal under state regulations to use rod and reel or hook and line for subsistence without a sport fishing license. In Chignik Lake, none indicated that they owned a larger (7-inch mesh) gillnet that could catch Chinook salmon, and most indicated that they could not afford to invest in a separate net used to catch a small number of Chinook salmon for subsistence. All respondents said that as long as they could remember, local residents fished for Chinook salmon using rod and reel. Some subsistence users indicated that they occasionally caught Chinook salmon incidentally in sockeye salmon nets because the Chinook roll and get wrapped in them. Many also indicated that they usually obtained Chinook salmon from commercial fish home packs. All key respondents supported the closed fishing period and closed area in Chignik River to allow Chinook salmon to spawn. However, some questioned why sport fishing in Chignik River was open³ when subsistence fishing was closed.

SUMMARY AND CONCLUSIONS

All species of salmon are harvested in the CMA; they are harvested at various life stages, at specific times of year, and at specific locations based on those times; they are harvested by a variety of gear types; and preserved by a variety of methods. Regardless of the methods used to harvest salmon for home use, community residents report that they use and consider the harvested resource as subsistence fish (Hutchinson-Scarborough and Fall 1996; CMA key respondents' personal communications to Hutchinson-Scarborough, October 2010).

Sockeye salmon, both an early and late run, are the primary species harvested by residents of Chignik Lake, Chignik Lagoon, and Chignik Bay. Harvests on early-run sockeye salmon occur primarily in early June in Chignik Lagoon, but there are also harvests that occur in Chignik River and Chignik Lake, and occasionally in Black Lake and tributaries. Harvests on late-run sockeye salmon can occur at any time starting in early July, with these fish usually harvested in Upper Chignik Lagoon, Chignik River, Chignik Lake, and in Chignik Lake tributaries of Clark River and Home Creek. From October through January, spawning or spawned out sockeye and coho salmon, called "red fish," are also harvested in these tributaries; these fish are usually dried or occasionally are eaten fresh.

Gear types used for harvesting salmon depend on the location, species of salmon, time of year, and conservation practices linked to harvest goals. Subsistence purse seines and gillnets are used throughout the entire CMA, except that purse seines are not used in Chignik River or Chignik Lake. A diversity of methods including gillnets, beach seines, hand purse seines, and rod and reel or hook and line are used for salmon fishing by local subsistence users in Chignik River, Chignik Lake and tributaries, and Black Lake and tributaries. Most redbfish harvests occur in late fall and early winter in Clark River or Home Creek;

³ Sport fishing in Chignik River is open year-round except that it is closed to fishing for king salmon August 10–December 31. The limit for salmon, other than king salmon, is 5 per day, 5 in possession.

these fish are usually processed by drying because their low fat content prevents spoiling. Gillnets are not used to harvest spawned-out salmon because they will damage the fish and because fishers cannot select for the preferred male salmon. In shallow river waters, where salmon can be seen, snagging or jigging with a hook and line also allows fishers to target male salmon and allows them to leave females to spawn. In October 2010, Chignik Lake respondents to ADF&G Division of Subsistence researchers stated that these fishing locations and fishing and preservations methods were taught to them by their elders and have been used by local people all their lives.

Some local people harvest limited numbers of Chinook salmon, which arrive in the lagoon by July. Most Chignik Lake residents use rod and reel to fish upstream and downstream of the ADF&G Chignik River weir. Respondents stated that it is impractical to use available subsistence gillnets to harvest Chinook salmon because the mesh is too small. Also, respondents stated, that if a larger-sized mesh gillnet were used to harvest Chinook salmon, it would be hard to limit the harvest. Fishing for Chinook salmon in the upper river is more traditional, they said, but fishing in the lower river has been increasing because of increasing numbers of sport anglers along the upper river. Some Chignik Lagoon respondents reported that that the number of Chinook salmon removed from commercial catches for home pack is underreported. Some respondents related concerns that underreporting of Chinook salmon taken for home pack and increasing sport fishing effort might adversely affect local Chinook salmon stocks, and have an impact on local residents' opportunities to harvest Chinook salmon as well.

Coho salmon are also harvested in the same areas of the Chignik River watershed as sockeye salmon, but residents say they are not preferred as much as sockeye salmon, so harvest amounts are low. Pink and chum salmon are not generally harvested in the Chignik lagoon and river drainage; however, they are harvested in larger numbers, along with coho salmon, by Perryville residents near their village.

TABLES AND FIGURES

Table 1.–Current and proposed areas (proposals 95 and 96) open (X) to subsistence fishing, by gear type, Chignik Lagoon and Chignik River drainage.

Fishing location	Current				Proposal 95			
	Gillnet	Hand seine	Hook and line	Spear	Gillnet	Hand seine	Hook and line	Spear
Chignik Lagoon to Mensis	X	X			X	X	X	X
Chignik River	X	X			X	X		X
Chignik Lake	X	X			X	X	X	X
Lower 1 mile Clark River	X				X		X	X
Lower 1 mile Home Creek	X				X		X	X
All Chignik Lake tributaries					X		X	X
Black River					X		X	X
Black River tributaries					X		X	X
Black Lake					X		X	X
Black Lake tributaries					X		X	X

Fishing location	Current				Proposal 96			
	Gillnet	Hand seine	Hook and line	Spear	Gillnet	Hand seine	Hook and line	Spear
Chignik Lagoon to Mensis	X	X			X	X	X	X
Chignik River	X	X			X	X		X
Chignik Lake	X	X			X	X	X	X
Lower 1 mile Clark River	X				X		X	X
Lower 1 mile Home Creek	X				X		X	X
All Chignik Lake tributaries					X		X	X
Black River							X	X
Black River tributaries							X	X
Black Lake							X	X
Black Lake tributaries							X	X

Table 2.—Chignik area subsistence salmon permits issued, and subsistence salmon harvests, 1977–2009.

Year	Permits		Estimated salmon harvest					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1977	NA	NA	50	9,700	2,400	600	1,800	14,550
1978	NA	NA	50	6,000	500	600	2,100	9,250
1979	NA	NA	14	7,750	34	0	262	8,060
1980	82	37	6	12,475	32	169	478	13,160
1981	29	7	0	2,049	0	0	0	2,049
1982	59	15	3	8,532	12	0	2	8,548
1983	32	21	0	3,078	1,319	850	1,250	6,497
1984	77	64	23	8,747	464	204	330	9,768
1985	59	48	1	7,177	50	25	26	7,279
1986	74	38	4	10,347	205	77	98	10,730
1987	NA	NA	10	7,021	278	204	261	7,774
1988	80	34	9	9,073	1,455	142	54	10,733
1989	68	23	24	7,551	384	147	81	8,187
1990	72	23	103	8,099	210	115	470	8,996
1991	95	58	42	11,483	13	81	275	11,893
1992	98	19	55	8,648	709	145	305	9,862
1993	201	141	122	14,710	3,765	642	1,265	20,503
1994	219	122	165	13,978	4,055	382	1,720	20,300
1995	111	95	98	9,563	1,191	150	723	11,726
1996	119	104	48	7,357	2,126	355	2,204	12,089
1997	126	103	28	13,442	2,678	840	2,035	19,024
1998	104	72	91	7,750	1,390	186	1,007	10,424
1999	106	88	243	9,040	1,679	136	1,191	12,290
2000	130	112	163	9,561	1,802	517	1,185	13,227
2001	135	122	171	8,633	1,859	213	2,787	13,663
2002	120	86	74	10,092	1,401	23	390	11,980
2003	146	127	267	10,989	2,256	286	1,597	15,394
2004	104	57	88	7,029	1,981	202	1,047	10,347
2005	119	100	224	8,171	2,112	353	730	11,590
2006	113	79	259	8,079	1,539	275	1,035	11,187
2007	128	83	84	10,191	1,936	165	996	13,372
2008	89	69	41	7,189	877	57	619	8,783
2009 ^a	95	82	104	6,785	1,174	137	707	8,907
5-year average (2004–2008)	111	78	139	8,132	1,689	211	885	11,056
10-year average (1998–2008)	119	92	161	8,897	1,744	223	1,158	12,183
Historical average (1977–2008)	103	70	80	8,859	1,272	254	885	11,351

Sources ADF&G Division of Subsistence Alaska Salmon Fishing Database (ASFDB) 2010; Quimby and Owen 1994 for 1976–1979 and 1987.

NA = Data not available. Information regarding the number of permits issued and returned was collected; however, the record containing this information no longer exists. Harvest data for these years are also recorded in ADF&G Division of Commercial Fisheries and Division of Sport Fish area management reports.

- a. From 1993 through 2008, postseason household surveys were conducted to supplement harvest data collected through returned permits. Limited budgets prevented administration of the surveys for 2009, likely resulting in an underestimate of subsistence harvests since not all subsistence fishing households obtained a permit. To compensate for this underestimation, the average annual harvest for 1998–2008 reported during postseason surveys was added to harvests from returned permits to estimate the total subsistence harvest for 2009.

Table 3.–Estimated subsistence salmon harvests by community, CMA, 2009.

Community of principal residence	Permits		Estimated salmon harvest					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Chignik Bay	15	12	16	1,228	172	6	21	1,444
Chignik Lagoon	12	11	28	1,232	5	0	0	1,265
Chignik Lake	20	17	39	2,577	172	4	80	2,871
Perryville	22	20	9	674	632	100	570	1,984
Subtotal, area residents	68	59	91	5,711	980	110	672	7,564
Anchorage	7	7	0	541	12	0	0	553
Fairbanks	1	1	0	46	0	0	0	46
Homer	2	1	0	48	0	0	0	48
Ivanof Bay	2	2	1	70	182	27	32	312
Kodiak	8	7	11	186	0	0	3	201
Palmer	1	1	0	150	0	0	0	150
Petersburg	1	0	0	0	0	0	0	0
Wasilla	4	3	0	33	0	0	0	33
Subtotal, other Alaska residents	26	22	13	1,075	194	27	35	1,343
Total	95	82	104	6,785	1,174	137	707	8,907

Source ADF&G Division of Subsistence ASFDB 2010.

Table 4.–Reported subsistence salmon harvests by fishing location and time of harvest, CMA, 2009.

Fishing location	Estimated salmon harvest ^a					
	Chinook	Sockeye	Coho	Chum	Pink	Total
Harvest before 7/5						
Alexander Point	0	33	0	0	5	38
Chignik	0	23	0	0	0	23
Chignik Lagoon	11	1,481	0	0	0	1,492
Chignik Lake	0	147	0	0	0	147
Chignik River	8	29	0	0	0	37
Dago Point	0	333	0	0	0	333
Hook Bay	0	30	0	0	0	30
Subtotal, early harvest	19	2,076	0	0	5	2,100
Harvest after 7/5						
Alexander Point	0	20	0	4	0	23
Anchorage Bay	0	84	0	0	0	84
Below ADF&G weir	3	167	0	0	3	174
Black Lake	0	87	0	0	0	87
Chignik	0	34	0	0	0	34
Chignik Bay	0	36	36	3	14	89
Chignik Lagoon	13	1,289	181	3	63	1,549

-continued-

Table 4. Page 2 of 2.

Fishing location	Estimated salmon harvest ^a					Total
	Chinook	Sockeye	Coho	Chum	Pink	
Harvest after 7/5, continued						
Chignik Lake	8	407	7	0	7	428
Chignik River	0	155	29	1	1	187
Clark River	0	348	4	0	0	352
Hatchery beach	0	227	33	0	11	271
Humpback Bay	0	0	33	0	0	33
Humpback Point	0	0	49	0	0	49
Ivanof Bay	0	0	57	20	15	92
Kametolook River	0	0	0	7	43	50
Long Beach	0	0	49	0	9	57
Perryville	0	24	0	37	61	122
Perryville beach	7	7	6	0	26	46
Smokey Hollow	0	0	18	0	0	18
Unknown	3	4	0	0	0	7
Subtotal, late harvest	35	2,888	503	74	252	3,752
Total	53	4,964	503	74	257	5,852

Source ADF&G Division of Subsistence ASFDB 2010.

a. Harvest estimates are from 2009 permit returns only.

Table 5.—Reported (fish tickets) removal from commercial salmon harvest for “home pack,” CMA, 2007, 2008, and 2009.

Year, species	Number	Pounds
2007		
Sockeye	285	1,346
Coho	56	416
Pink	0	0
Chum	1	8
Chinook	16	308
Total, 2007	358	4,156
2008		
Sockeye	0	0
Coho	0	0
Pink	0	0
Chum	0	0
Chinook	15	345
Total, 2008	15	345

-continued-

Table 5. Page 2 of 2.

Year, species	Number	Pounds
2009		
Sockeye	93	631
Coho	0	0
Pink	0	0
Chum	1	9
Chinook	75	1,166
Total, 2009	169	1,806

Source Mark Stichert, ADF&G Division of Commercial Fisheries, personal communication, 2010.

Table 6.—Estimated salmon harvests, by gear type, CMA, 2003.

Species, gear type	Estimated salmon harvest				
	Chignik Bay	Chignik Lagoon	Chignik Lake	Perryville	Total
Chinook salmon	133	359	50	61	603
Commercial retention	7	316	38	34	395
Rod and reel	79	43	9	23	154
Subsistence nets or seines	47	0	3	4	54
Sockeye salmon	1,545	1,972	2,448	2,288	8,252
Commercial retention	430	292	402	537	1,659
Rod and reel	67	0	0	5	72
Subsistence nets or seines	1,048	1,680	2,046	1,747	6,521
Spawning sockeye salmon	179	117	1,414	183	1,894
Commercial retention	0	0	0	0	0
Rod and reel	1	0	337	0	338
Subsistence nets or seines	178	117	1,078	183	1,556
Coho salmon	236	28	65	1,890	2,218
Commercial retention	65	7	64	141	276
Rod and reel	98	21	2	279	398
Subsistence nets or seines	74	0	0	1,470	1,544
Chum salmon	18	0	0	163	181
Commercial retention	13	0	0	18	32
Rod and reel	0	0	0	0	0
Subsistence nets or seines	5	0	0	144	149
Pink	40	99	79	1,637	1,854
Commercial retention	26	83	79	73	261
Rod and reel	13	0	0	203	216
Subsistence nets or seines	0	17	0	1,360	1,377
All salmon	2,151	2,574	4,056	6,221	15,002
Commercial retention	540	697	582	803	2,623
Rod and reel	258	63	347	510	1,178
Subsistence nets or seines	1,352	1,814	3,127	4,908	11,201

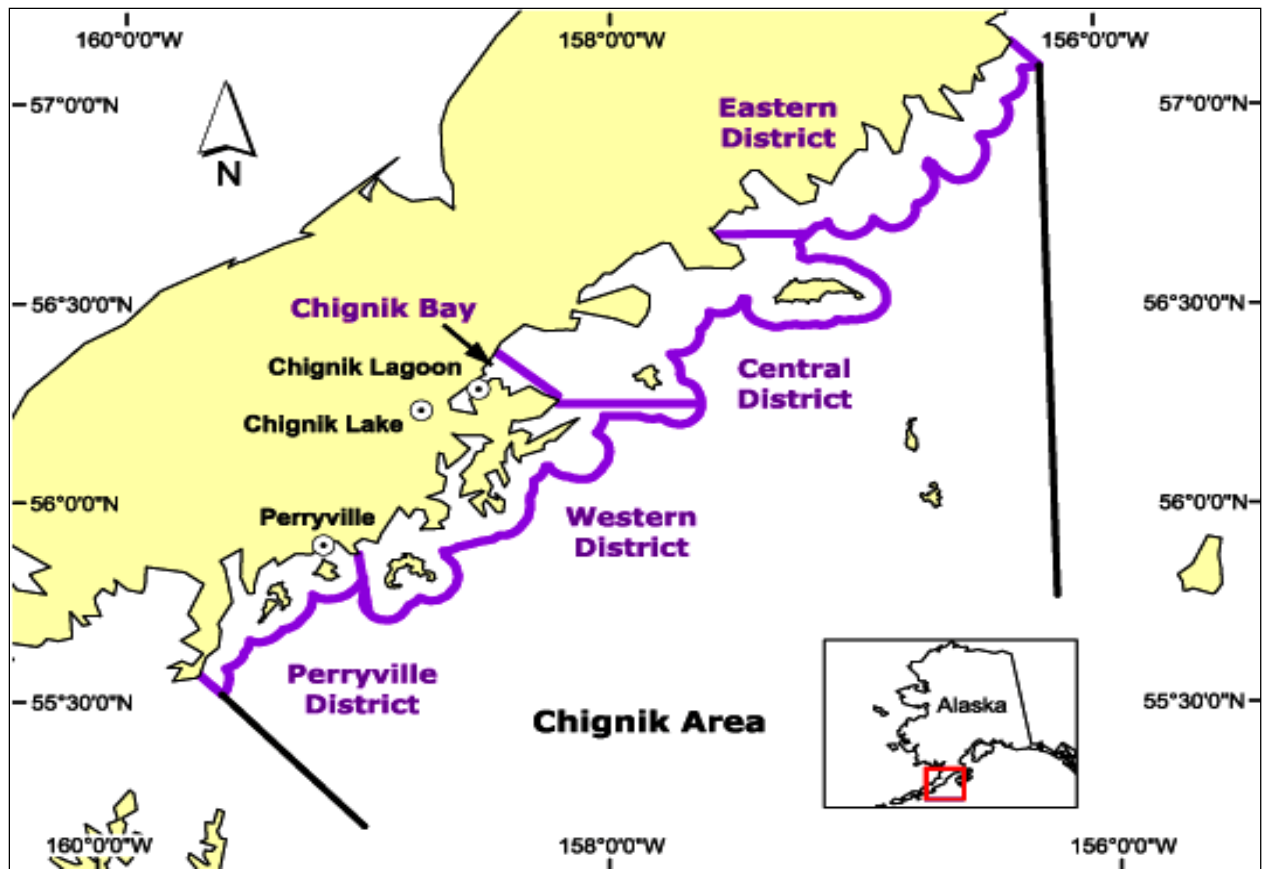


Figure 1.—Location of communities within the CMA.

Source ADF&G Division of Commercial Fisheries.

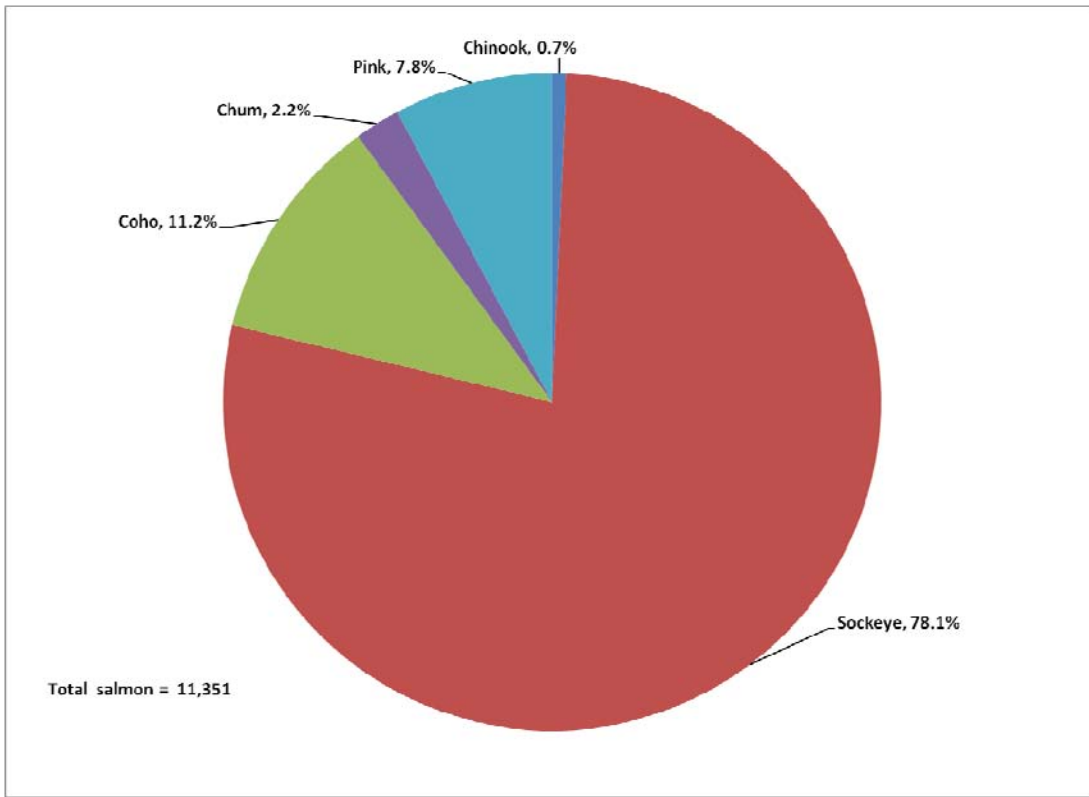


Figure 2.—Species composition of CMA subsistence salmon harvests, 1977–2009.

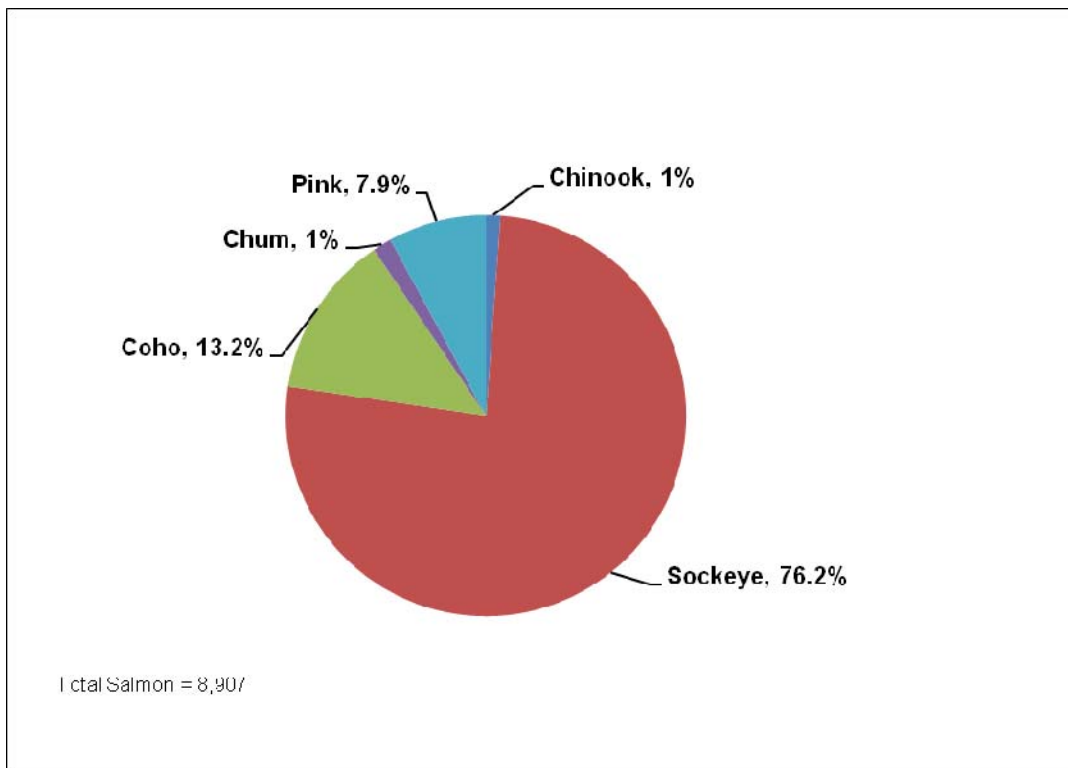


Figure 3.—Species composition of CMA subsistence salmon harvests, 2009.

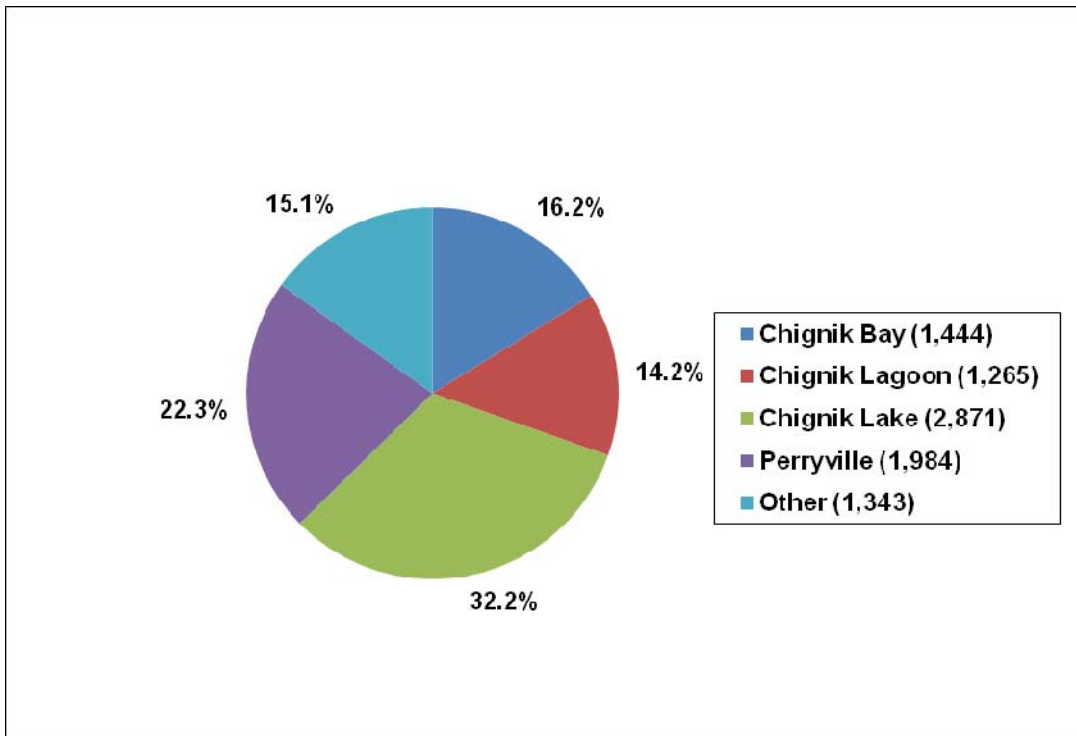


Figure 4.—Subsistence salmon harvests by community, CMA, 2009.

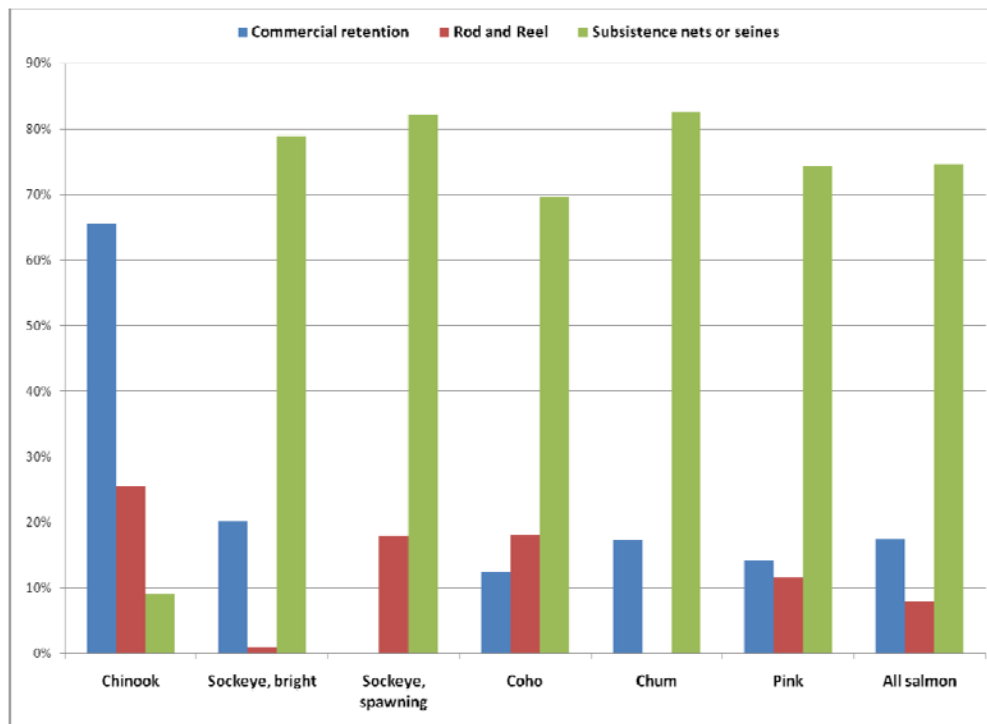


Figure 5.—Estimated salmon harvests, by gear type, CMA, 2003.

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**APPENDIX A: CHIGNIK SALMON SUBSISTENCE PERMIT,
2010**

SELECT SUBSISTENCE FISHING REGULATIONS

These listed regulations are not inclusive of all the regulations that apply to subsistence salmon fishing in the Chignik Area.

5 AAC 01.015. SUBSISTENCE FISHING PERMITS AND REPORTS. (b)(3) Permits must be retained in the possession of the permittee and be readily available for inspection while taking fish. A person who transports subsistence-taken fish shall have a subsistence fishing permit in their possession.

5AAC 01.460.FISHING SEASONS. Fish, other than rainbow trout and steelhead trout, may be taken at any time, except as may be specified by a subsistence fishing permit. Rainbow trout and steelhead trout, taken incidentally in other subsistence finfish net fisheries, are lawfully taken and may be retained for subsistence purposes.

5 AAC.01.470. LAWFUL GEAR AND GEAR SPECIFICATIONS. (a) Salmon may be taken by seines and gillnets, or with gear specified on a subsistence fishing permit, except that salmon in Chignik Lake may not be taken with purse seines. A gillnet may not be set while staked, anchored, or otherwise fixed in a stream while it obstructs more than one-half of the width of the waterway and any channel or side channel of the waterway.

5 AAC 01.475. WATERS CLOSED TO SUBSISTENCE FISHING. Salmon may not be taken (1) from July 1 through August 31, in the Chignik River from a point 300 feet upstream from the Chignik weir to Chignik Lake; (2) in Black Lake or any tributary to Black Lake or Chignik Lake except in the waters of Clark River and Home Creek from their confluence with Chignik Lake to a point one mile upstream.

5 AAC 01.480. SUBSISTENCE FISHING PERMITS. (a) Salmon, trout and char may only be taken under the authority of a subsistence fishing permit.

- (b) Not more than 250 salmon may be taken for subsistence purposes unless otherwise specified on the subsistence fishing permit
- (c) A record of subsistence-caught fish must be kept on the reverse side of the permit. The record must be completed immediately upon taking subsistence-caught fish and must be returned to the local representative of the department no later than December 31 of the year issued.

5 AAC 01.485. RESTRICTIONS ON COMMERCIAL FISHERMEN. (a) In the Chignik Area, a commercial salmon fishing license holder may not subsistence fish for salmon during the 12 hours before the first commercial salmon fishing period and the 12 hours following the closure of a commercial salmon fishing period. However, a commercial salmon fishing license holder may subsistence fish for salmon during a commercial salmon fishing period.

SPECIAL PERMIT PROVISIONS

1. The adipose fin must be removed from all subsistence-caught salmon immediately upon capture.
2. A commercial license holder may not fish for both subsistence and commercial salmon at the same time. Further, a commercial salmon vessel may not carry both subsistence and commercially caught salmon at the same time.
3. A commercial fishing vessel may not simultaneously carry both commercial seine and subsistence gillnet gear.
4. Commercial fishermen may always remove salmon from their commercial catch for home pack. Mark the number of salmon taken by species for home pack use on your fish ticket.
5. This permit can be withdrawn at any time.

NOTICE TO FISHERS:

Before you fish, be sure you know whose land you are on and check the regulations: State regulations apply on all state, private, and federal lands where authorized. Private landowners may restrict entry on their land. Federal lands may be closed to fishing except by certain rural residents. Persons standing on state or private lands should be sure their fishing activities are legal under state regulations. If you have questions regarding the federal subsistence fisheries, please contact the Federal Office of Subsistence Management at (800) 478-1456.

**APPENDIX B: CHIGNIK AREA SUBSISTENCE SALMON
HOUSEHOLD HARVEST SURVEY, 2008**

2008
CHIGNIK MANAGEMENT AREA SUBSISTENCE SALMON
HOUSEHOLD HARVEST SURVEY

Division of Subsistence, Alaska Department of Fish and Game

(Office use only) Permit # Seq#

Community: _____ Interviewer _____
 HH/ Name: _____ Date _____

- Did you or any member of your household subsistence fish for salmon in 2008?
 YES _____ NO _____ (If "No", please skip to question 7)
- Did you or any member of your household obtain a subsistence salmon permit for 2008?
 YES _____ NO/NOT SURE _____
- If you or other household members had a 2008 permit; did you send to ADF&G your harvest report?
 YES _____ NO _____ NOT SURE _____
 (If "YES", skip to question 5 for late-run salmon/ If "No" or "Not Sure" go to question 4)
- If your household harvested salmon but did not have a permit or did not return it or lost it, please fill out household's harvests in the chart below. If you can not remember dates or locations, please estimate to the best of your memory. (for example: "early, mid, late June"/ "Chignik Lagoon or Clarks River")
 (For LATE harvest fish (November 2008-February 2009), please record harvest at question 6).

Note: Do not include salmon that were given to this household.
Do include salmon that this household caught and gave away to other households.

Date and location of harvest		Number of salmon harvested (April-October 2008)					Total
Day/Month	Location	Kings	Sockeye	Coho	Pinks	Chums	
Totals							

- Did you fish for redfish or spawning cohos after November 1, 2008?
 YES _____ NO _____
- If "YES", how many did you harvest? (record harvest in chart below/ include early 2009 harvests if any)
Complete for all fishing households, including those who returned permits.

Date and location of harvest		Number of salmon harvested (November-February 2009)					Total
Day/Month	Location	Kings	Sockeye	Coho	Pinks	Chums	
Totals							

- Did you harvest or receive enough salmon this year to meet your needs?
 YES _____ NO _____ (If "NO" describe why different).

APPENDIX C: RESPONSES TO NEEDS QUESTION, 1998–2008

Appendix C.–Responses to the question “Did you harvest or receive enough salmon to meet your needs”, CMA, 1998–2010.

Year ^b	Numbers of households ^a											
	Chignik Bay		Chignik Lagoon		Chignik Lake		Ivanof Bay		Perryville		Total	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
1998	0	3	0	6	1	8	0	0	18	6	19	23
1999	2	3	4	8	1	5	0	2	2	7	9	25
2000	4	0	5	1	0	0	7	1	6	6	22	8
2001	3	4	0	20	1	14	0	4	7	7	11	49
2002	8	0	3	12	10	8			9	11	30	31
2003	9	5	7	7	9	8			24	5	49	25
2005	2	1	3	1	3	3	0	0	13	3	21	8
2007	3	0	0	0	12	0	0	0	9	0	24	0
2008	2	1	8	1	1	5	0	0	13	3	24	10

Year ^b	Percentage of households											
	Chignik Bay		Chignik Lagoon		Chignik Lake		Ivanof Bay		Perryville		Total	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
1998	0.0	100.0	0.0	100.0	11.1	88.9			75.0	25.0	45.2	54.8
1999	40.0	60.0	33.3	66.7	16.7	83.3	0.0	100.0	22.2	77.8	26.5	73.5
2000	100.0	0.0	83.3	16.7			87.5	12.5	50.0	50.0	73.3	26.7
2001	42.9	57.1	0.0	100.0	6.7	93.3	0.0	100.0	50.0	50.0	18.3	81.7
2002	100.0	0.0	20.0	80.0	55.6	44.4			45.0	55.0	49.2	50.8
2003	64.3	35.7	50.0	50.0	52.9	47.1			82.8	17.2	66.2	33.8
2005	66.7	33.3	25.0	25.0	50.0	50.0	0.0	0.0	81.3	18.8	72.4	27.6
2007	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	100.0	0.0	100.0	0.0
2008	66.7	33.3	11.1	11.1	16.7	83.3	0.0	0.0	81.3	18.8	70.6	29.4

a. Asked during post-season household interviews only. Responses represent about 45% of permit holders.

b. Blank cells indicate no data were collected; in addition, no data were collected during 2004 or 2006.

Sources ADF&G Division of Subsistence postseason household surveys, 1999–2009.

**APPENDIX D: CHIGNIK LAKE KEY RESPONDENT
SUBSISTENCE SALMON INTERVIEW QUESTIONS, 2010**

- Hand Seine
 - Purse Seine
 - Removal from Commercial Catch
 - Spear/ Dip Net, other
- Why do you prefer to use specific gear types for different fish or locations?
- What's the pattern of fishing in Chignik Lake? (seasons, location if not already answered)
- How do you decide how many fish you need for your family for the winter?
- Do you prefer male or female fish for the different salmon species or time of year (such as spawned outs- prefer males? If so why?
- How do you process the fish? Please note what species of salmon are harvested particular way. Please indicate your usual family harvest of salmon are needed for the following preservations methods.
Quantity for:
 - Freeze
 - Smoke

- Dry
 - Can
 - Salt
 - Eat Fresh
- Who does which jobs to preserve fish for the winter?
 - Do males and females have different jobs?
- How are tasks divided up?
 - Gender?
 - Age?
 - Relationships?

Fish Camps: (need to map genealogy connections to fishing but do this at end of interview)

Do you have a fish camp? If so where? (map location).

When at fish camp, where do you fish, and what species of salmon do you get, and how do you catch them?

Do you process your salmon at fish camp, or take them back to the village to process?

Please list the family members that use the fish camp and where they live.

Do you go there every summer? And if so, when do you go?

If you no longer use your fish camp, why not?

How long have you not used your fish camp?

History:

- Can you tell me about subsisting for salmon in Chignik Lake in the past?
 - Are the runs better or worse?
 - Is the quality of fish different?
 - Is it hard to find a place to put your nets?
 - Has the number of salmon you harvest changed from past years?
 - Are you fishing as much as you use to?
 - Does your employment effect how often you get out to subsistence fish?
 - Do you have any difficulties getting enough fish? (Are enough people helping to get fish, like the young adults? Do work schedules make it difficult to fish? Are salmon abundant and accessible?)
 - Are there areas that elders in your village or your ancestors use to use for subsistence salmon fishing that is no longer used?

- Do you know what gear was used in the past to catch salmon in Chignik Lake?

Commercial Fishing:

- Do you currently participate in Commercial Fishing? If so what fishery (salmon, cod, herring)?
- Are you crew or captain?
- Have you participated in the past but no longer do? If so, why?
- If you commercial fished this summer did you remove salmon from your commercial catch for home use? ("home pack").
- If so, how much (for each species) did you remove for your own use? (Captains, please indicate the total salmon removed for you and crew, then indicate of that amount how much you took home yourself)

Total Sockeye removed for home use:

Total Chinook removed for home use:

Total other salmon removed for home use:

- Captains, did you report all of these removed salmon on your commercial fish ticket?
- Do you feel that the Coop Commercial fishery that took place summer 2002-2006 (4 seasons), changed your subsistence salmon activities in any way (pro or con). Ex, are you no longer going to fish camp, location, time of year, quantity etc. of salmon has changed. Please explain changes and why?
 - Do you have to fish in different areas now?
 - Where?
 - Why?

Do you get your salmon at a different time of year now?

Regulations:

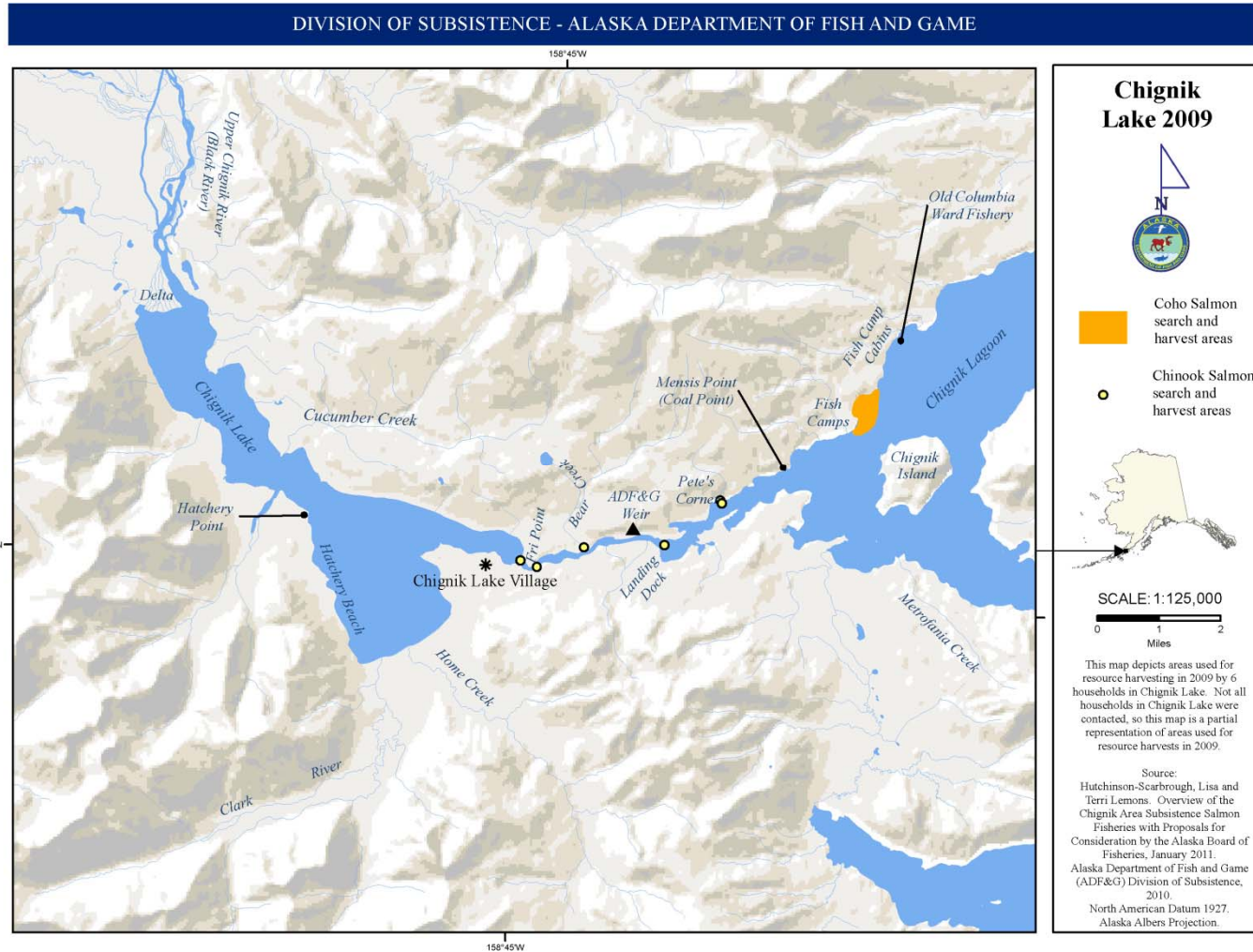
- Are any regulations affecting your opportunity for subsistence?
- Do you have any recommendations for regulatory change or management?
- How do you feel about the proposed BOF proposals? (Describe the proposals) 95 and 96.
- Do you have any questions or other comments?

Genealogy of a fish camp – Subsistence salmon harvests:

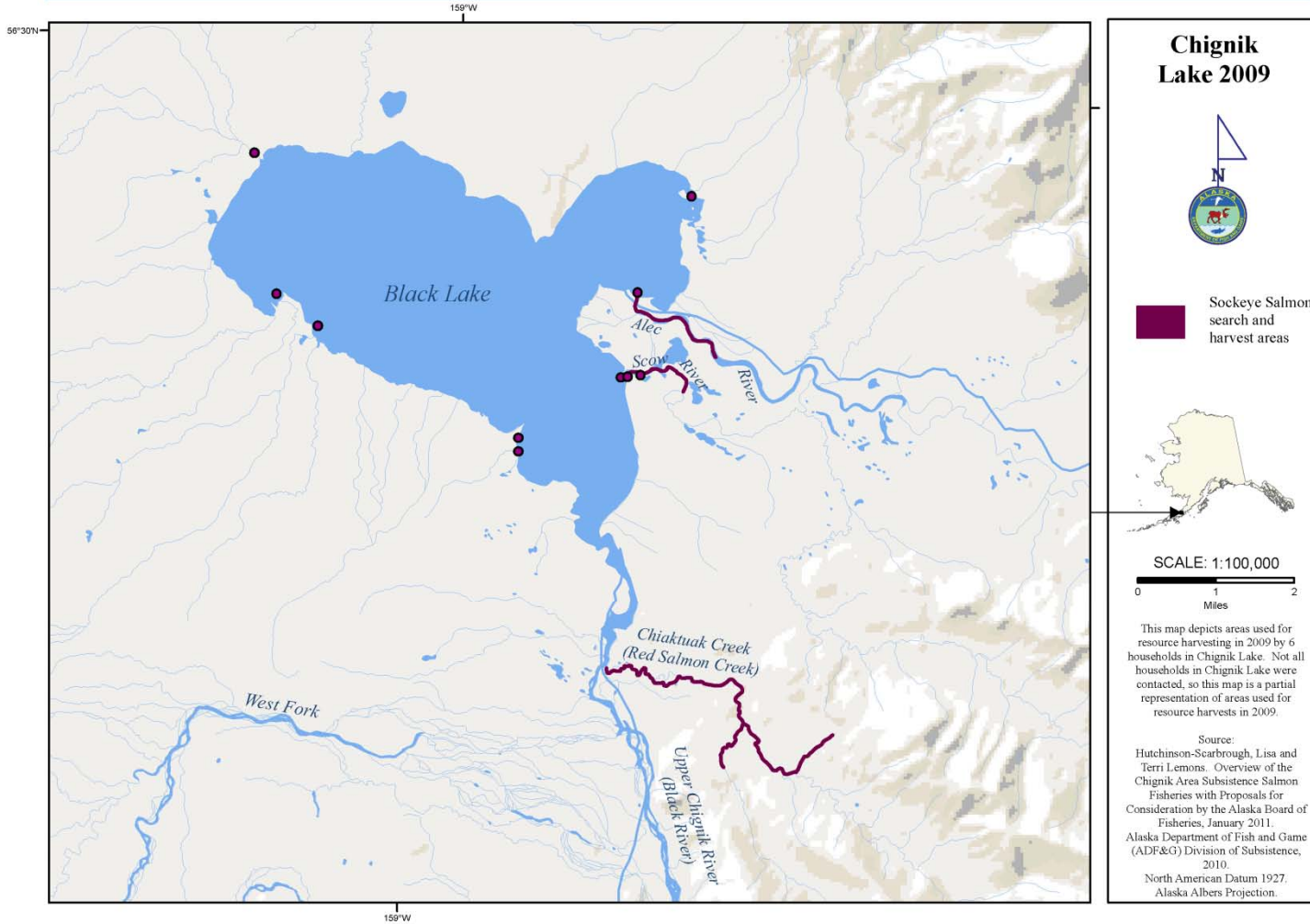
- chart relationships to the family subsistence harvests and sharing network

**APPENDIX E: PRELIMINARY MAPPING RESULTS, CHIGNIK
AREA SUBSISTENCE SALMON SURVEY, OCTOBER 2010**

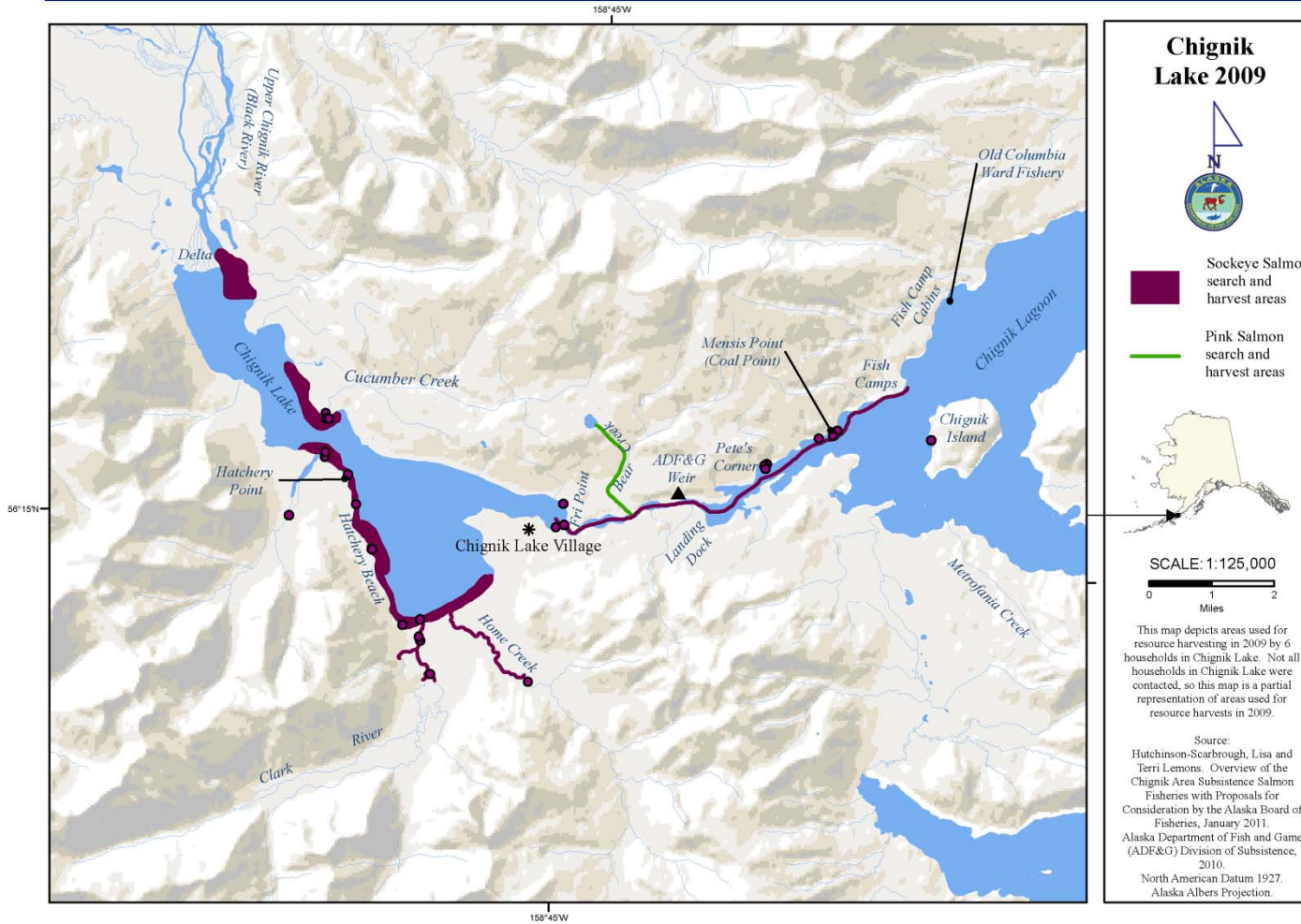
Appendix E.—Preliminary mapping results, Chignik area subsistence salmon survey, October 2010.



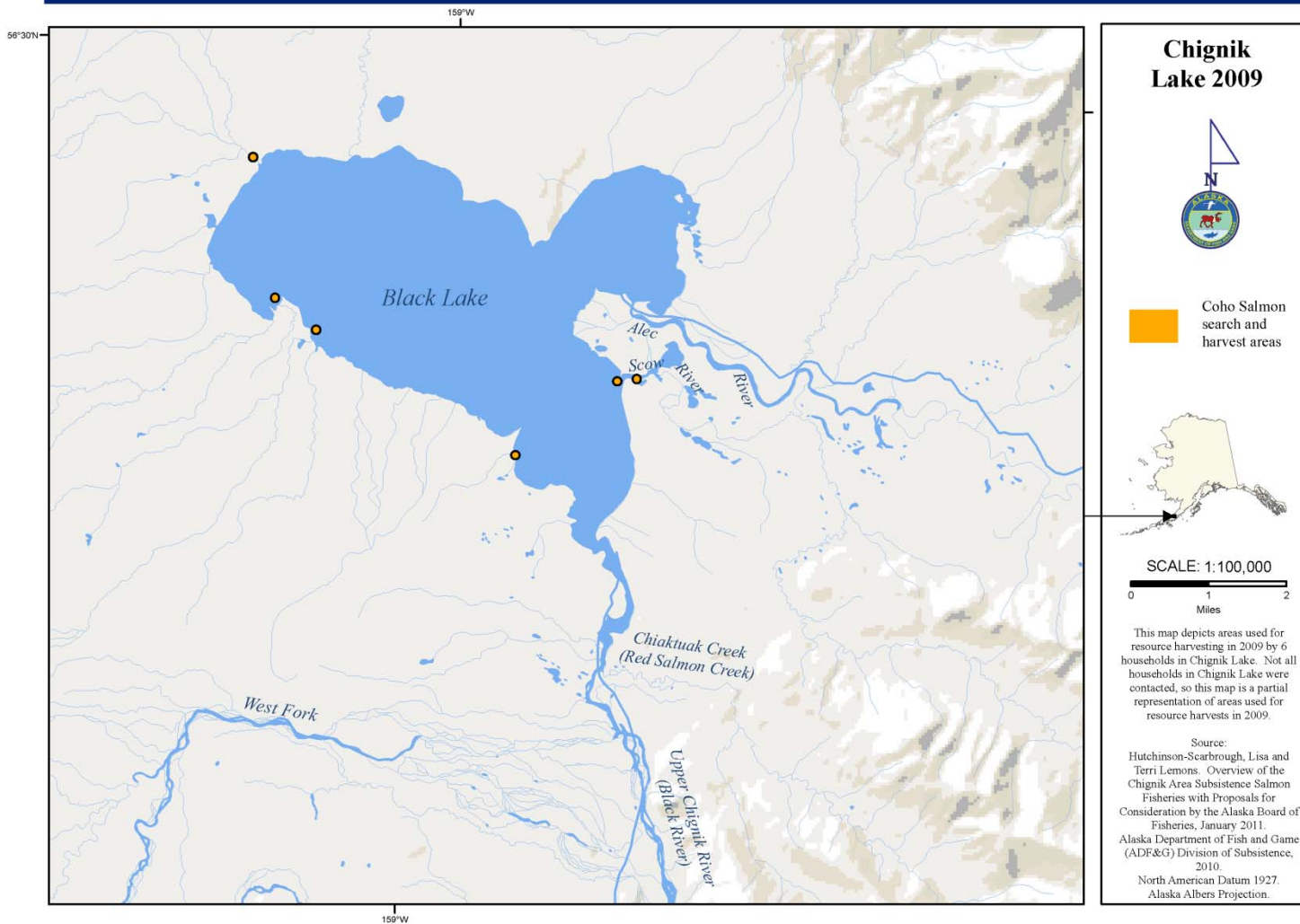
Map D-1.—Subsistence harvest locations for sockeye and pink salmon in Chignik Lake and Chignik River. *Source* Hutchinson-Scarborough and Evans, ADF&G Division of Subsistence, 2010.



Map D-2.—Subsistence harvest locations for sockeye salmon in Black Lake and tributaries. *Source* Hutchinson-Scarborough and Evans, ADF&G Division of Subsistence, 2010.



Map D-3.—Subsistence harvest locations for coho and Chinook salmon in Chignik Lake and Chignik River. *Source* Hutchinson-Scarborough and Evans, AD&FG Division of Subsistence, 2010.



Map D-4.—Subsistence harvest locations for coho salmon in Chignik Black Lake and tributaries. *Source* Hutchinson-Scarborough and Evans, ADF&G Division of Subsistence, 2010.