Fishery Data Series No. 16-49

Subsistence Salmon Harvests in the Kuskokwim Area, 2014

Annual Report for Study 14-352
USFWS Office of Subsistence Management
Fisheries Resource Monitoring Program

by

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November 2016

Alaska Department of Fish and Game **Divisions of Sport Fish and Commercial Fisheries**

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Weights and measures (metric)

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

Weights and measures (English)

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

Time and temperature

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

Physics and chemistry

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

General

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

Mathematics, statistics

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

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November 2016

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This document should be cited as follows:
Shelden, C. A., T. Hamazaki, M. Horne-Brine, I. Dull, and R. Frye. 2016. Subsistence salmon harvests in the Kuskokwim area, 2014. Alaska Department of Fish and Game, Fishery Data Series No. 16-49, Anchorage.

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ABSTRACT

The Alaska Department of Fish and Game (ADF&G) in partnership with Orutsararmiut Native Council (ONC) in Bethel and Kuskokwim Native Association (KNA) in Aniak conducted a voluntary survey program to estimate subsistence salmon harvest for the Kuskokwim Area in 2014. Harvest information was collected through postseason household interviews and harvest calendars. Simple random sampling, stratified random sampling, and 100% census techniques were used, based on community size and user group designations, to select households to be interviewed. For the communities of Bethel and Aniak, subsistence salmon harvest information was collected by ONC and KNA respectively. ADF&G surveyed the remaining communities in the Kuskokwim Area. Data from surveyed communities were applied to estimate the harvest of unsurveyed communities when historical data for the unsurveyed community existed. In 2014, Kuskokwim Area subsistence users were subject to heavy restrictions with respect to the harvest of Chinook salmon *Oncorhynchus tshawytscha*. Households were surveyed in 25 communities in the Kuskokwim Area, including most communities along the Kuskokwim River and all communities within south Kuskokwim Bay. Subsistence salmon harvest estimates for 2014 were 15,434 Chinook, 70,687 chum *O. keta*, 53,030 sockeye *O. nerka*, 5,847 coho *O. kisutch*, and 647 pink salmon *O. gorbuscha*.

Key words: Chinook *Oncorhynchus tshawytscha*, chum *Oncorhynchus keta*, coho *Oncorhynchus kisutch*, and pink *Oncorhynchus gorbuscha* salmon, subsistence, harvest, Bethel, Aniak, Kuskokwim River, Kuskokwim Bay, Kuskokwim Area

INTRODUCTION

The purpose of this study was to quantitatively estimate the subsistence harvest of salmon, by species, in the Kuskokwim Management Area using postseason subsistence salmon harvest surveys. This study was a continuation of the *Kuskokwim Area subsistence salmon monitoring program* (Monitoring Program; Shelden et al. 2015). Data were collected about the number and species of salmon harvested by area residents and analyzed to provide an estimate of the number of salmon harvested for subsistence purposes in the Kuskokwim Area. This report describes the outcome of surveys for the 2014 fishing season in the Kuskokwim Area.

The Kuskokwim Area (Figure 1) subsistence salmon fishery is one of the largest in the state in terms of the number of residents who participate and the number of salmon harvested (Fall et al. 2014). Residents harvest all 5 locally occurring species of Pacific salmon for subsistence purposes: Chinook *Oncorhynchus tshawytscha*, chum *O. keta*, coho *O. kisutch*, sockeye *O. nerka*, and pink *O. gorbuscha* salmon. Between 2010 and 2014, the Alaska Department of Fish and Game (ADF&G), Division of Subsistence conducted comprehensive subsistence harvest and use surveys in 23 Kuskokwim Area communities. The results indicate that on average salmon contributes 40% of the total wild resource harvest (in edible pounds) in the Lower Kuskokwim communities from Eek to Tuluksak, 65% in the Central Kuskokwim communities from Lower Kalskag to Stony River, and 25% in the Upper Kuskokwim communities from McGrath to Nikolai (Brown et al. 2012, 2013; Ikuta et al. 2014; Ikuta and Koster 2012; Ikuta et al. 2016). Primary gear types used for harvesting salmon include drift gillnets, set gillnets, rod and reel, and dip nets were recently reintroduced (Hensel and Chase 1996).

Subsistence salmon harvest practices represent a complicated dynamic between culture, tradition, salmon biology, and local economy (Ikuta et al. 2013; Simon et al. 2007; Patton and Carroll 2011). Salmon harvest typically occurs June through October and is often accompanied by the movement of families from permanent winter residences to summer fish camps situated along tributaries, sloughs, and along main river channels. During these months, daily activities of many Kuskokwim Area households revolve around subsistence fishing.

There are 38 communities in the Kuskokwim Area. Annual surveys were attempted in 26 villages, based on logistics and voluntary involvement in the study (Table 1; Figure 1). On average from 2004 to 2013, 77% of the Kuskokwim Area subsistence salmon harvest (all species combined) occurred in the Lower Kuskokwim River villages from Eek to Tuluksak (Figure 2; Appendices A1–A4). The Middle Kuskokwim River villages from Lower Kalskag up through Chuathbaluk harvested an average of 9% of the total subsistence salmon between 2004 and 2013. The Upper Kuskokwim River communities harvested about 6% of the total, South Kuskokwim Bay communities harvested 5% of the total, and North Kuskokwim Bay communities harvested an average of 3% of the total, between 2004 and 2013 (Figure 2; Appendices A1–A4). This harvest distribution is similar to the human population distribution along the Kuskokwim River. In 2013, the population percentages calculated were Lower (79%), Middle (8%), and Upper (4%) Kuskokwim River communities, South Kuskokwim Bay communities (6%), and Kongiganak on North Kuskokwim Bay (3%) (Shelden et al. 2015).

The North Kuskokwim Bay communities of Kwigillingok, Kongiganak, and Kipnuk are not located on the Kuskokwim River, but some subsistence salmon fishing households from these communities travel to the Kuskokwim River to fish, in addition to fishing in areas closer to their communities (Fall et al. 2014). Of these North Kuskokwim Bay communities, only the community of Kongiganak has consistently participated in the voluntary ADF&G harvest survey (Shelden et al. 2014).

The communities of Quinhagak, Goodnews Bay, and Platinum, located in South Kuskokwim Bay, harvest salmon primarily from the Kanektok, Arolik, and Goodnews river drainages (Simon et al. 2007). South Kuskokwim Bay communities have consistently participated in Kuskokwim Area subsistence surveys (Appendices A1–A4).

Subsistence users from Bering Sea coastal communities have not chosen to participate in the Monitoring Program for most years. These include the communities of Mekoryuk (on Nunivak Island), Newtok, Tununak, Toksook Bay, Nightmute, and Chefornak; and typically these communities harvest salmon from coastal waters as well as rivers close to these communities (Simon et al. 2007; Wolfe et al. 2012).

At the time of this study, subsistence fishermen in the Kuskokwim Area were not required to report their harvest to ADF&G or to any federal management agencies, and licenses and permits were not required to participate in the subsistence fishery. Prior to 2014, with exceptions for special management areas (e.g., Aniak River), subsistence fishing in the Kuskokwim Management Area was largely unrestricted. In 2014, the United States Fish and Wildlife Service, Federal Office of Subsistence Management (OSM), responding to requests from communities, closed waters within and bordering federal land in the Kuskokwim drainage to the harvest of Chinook salmon. OSM then approved a plan to provide cultural harvest permits to each of 32 villages with a traditional claim on Kuskokwim River Chinook salmon. Permits were intended to allow a village-designated fisherman to harvest a predetermined number of Chinook salmon for each village for cultural reasons and a “taste” of Chinook salmon in recognition of the cultural significance of this species to the people of that area. Harvested salmon were intended to be shared throughout the community and were not intended to fully provide for subsistence needs because Chinook salmon resources were considered inadequate for sustainable harvest on that scale.

Under state regulations, legal subsistence fishing gear includes: gillnet (the most common gear type), beach seine, rod and reel, fish wheel, and spear (5 AAC 01.270). In 2014, the Alaska Board of Fisheries approved the use of dip nets in the Kuskokwim River in times of Chinook salmon conservation (5 AAC 01.270). The mesh size used for drift and set gillnets are not regulated, but length and depth of gillnets are restricted by regulation.

Annual documentation of the subsistence salmon harvest is necessary to determine whether salmon are returning in sufficient numbers to the Kuskokwim Area rivers to meet escapement and subsistence needs. Since 1960, the Monitoring Program has estimated salmon harvest primarily through household surveys and to a lesser extent harvest calendars and postcard surveys. This information has been used by ADF&G, U.S. Fish and Wildlife Service (USFWS), the Alaska Board of Fisheries, and the Federal Subsistence Board to manage and provide reasonable opportunity for continued customary and traditional uses of salmon throughout the region. In 2013, using the results from the postseason subsistence salmon survey, the Alaska Board of Fisheries revised the recognized amounts of salmon reasonably necessary for subsistence (ANS) in the Kuskokwim River drainage based on ranges of recorded harvests of salmon in years of unrestricted subsistence harvest. These revised ranges are 67,200–109,800 Chinook salmon; 41,200–116,400 chum salmon; 32,200–58,700 sockeye salmon; 27,400–57,600 coho salmon; and 500–2,000 pink salmon (5 AAC 01.286b). A species-specific ANS range provides an index of the extent to which reasonable opportunity was provided in each subsistence fishery.

The Alaska Board of Fisheries also revisited the ANS findings for the remainder of the Kuskokwim Area. For the south Kuskokwim Bay communities of Quinhagak, Goodnews Bay, and Platinum, the Alaska Board of Fisheries found an ANS of 6,900–17,000 salmon (not broken down by species). For the remaining Kuskokwim Area communities, located along the Bering Sea coast, ANS are harder to determine, but available data document an annual use of 12,500–14,400 salmon (not broken down by species; Wolfe et al. 2012).

The goal of the survey is to provide a reliable annual estimate of subsistence salmon harvest in the Kuskokwim area, primarily as a management tool. Questions are designed to determine total subsistence harvest of salmon regardless of the eventual use. Estimates include fish harvested to feed dogs, fish discarded due to being unfit for human consumption, and fish given away as part of traditional sharing practices, in addition to those consumed by the fishing household. The data collected during this survey serve fisheries managers by expanding their ability to assess annual run strength of various salmon species, forecast the strength and age composition of future runs, set preseason management plans, and develop long-term management plans, including escapement goals. These data also help managers assess subsistence needs and identify whether harvestable surpluses will be available for subsistence, commercial, and sport fishing uses (Brazil et al. 2013).

OBJECTIVES

The objectives of this study were as follows:

1. Estimate the number of Chinook, chum, sockeye, coho, and pink salmon harvested for subsistence uses by subsistence fishermen in 28 communities within the Kuskokwim Area.
2. Document gear types used by Kuskokwim Area subsistence fishermen.

3. Estimate fishing households, community population size, and households receiving salmon.
4. Document the number of dogs within Kuskokwim Area communities and salmon fed to dogs.
5. Document household responses relating to meeting of subsistence salmon needs in surveyed communities.
6. Document reported harvest of non-salmon fish species among fishermen in the Kuskokwim Area.

METHODS

STUDY DESIGN

In 2014, household surveys were attempted in 27 of the 38 communities within the Kuskokwim Area, including most communities along the Kuskokwim River and all communities within South Kuskokwim Bay. The village of Kongiganak in the north Kuskokwim Bay declined a request by ADF&G staff to conduct surveys in 2012–2014, and the village of Tuntatuliak failed to respond to requests to survey in 2014. The villages of Lime Village and Takotna were not attempted for logistical reasons, and the village of Telida appears to be a seasonally occupied location with no year-round residents. With the exception of Bethel (simple random sample) and Aniak (census), the postseason subsistence harvest survey was designed based on stratified random survey methodology (Scheaffer et al. 1999). In this survey design, each household was the primary sampling unit. A household generally consists of 1 or more people living together in a dwelling and sharing the same mailing address. Multiple generations living in 1 dwelling would be considered a single household. Each household was classified into 1 of 5 strata based on the household's recent harvest history. The 5 stratifications of participation in the subsistence fishery are as follows:

- High harvester: a household that has averaged a harvest of more than 200 salmon per year;
- Medium harvester: a household that has averaged a harvest of 101–200 salmon per year;
- Light harvesters: a household that has averaged a harvest of 1–100 salmon per year;
- Usually does not fish: a household that did not participate in subsistence fishing activities; and
- Unknown: a household that has no harvest record within any of the past 5 years.

For this study, fishing household was defined as a household that participated in subsistence fishing activities, such as harvesting or processing salmon. The household stratification was updated prior to the survey and was not reassigned during the survey year (i.e., no postsurvey reclassification), with the exception of unknown fishing households. From each stratum, survey households were selected randomly in the following percentages:

- Heavy harvester: 100%;
- Medium harvester: 100%;
- Light harvester: 30%;
- Usually do not fish: 30%; and
- Unknown: 100%.

When the number of households in each stratum was less than 5 households, all households in the stratum were surveyed. Likewise, when the total number of households in a community was less than or equal to 40, all households in the community were surveyed and the survey method became a census (100% surveyed). In Aniak the survey method was also a census because the Kuskokwim Native Association (KNA) had the capacity to conduct a complete census, which increased the precision of the estimates from this larger community.

In Bethel, a 25% random survey was conducted based on simple random survey methodology where each dwelling (physical location instead of household) was the primary sampling unit. Bethel is a main hub city of western Alaska, its population is highly fluid, and a high proportion of the population moves in and out of Bethel on a regular basis (Krauthoefer 2005). In addition, people often change dwellings, making it difficult to maintain an accurate and complete household list. A dwelling list for Bethel has been maintained and updated annually. Dwelling maps are developed from maps provided by the Bethel city planner's office. Map and list are compared and updated, both prior to the season and inseason based on surveyor notes. Based on the updated list, 25% of occupied dwellings were randomly selected for survey. Households randomly selected for survey in Bethel were pursued using rigorous protocols to prevent bias. For each selected dwelling, at least 3 separate attempts to contact the household were required. Attempts were made on separate days and different times of day with at least 1 visit made after 5:00 PM. Exceptions included an obviously abandoned or derelict dwelling or when contact was made and the occupant declined to be surveyed. In these cases, the selected dwelling was dropped from the survey and replaced by another dwelling selected at random from those not previously selected. Therefore, the final number of *selected* households could have exceeded 25% of Bethel dwellings. However, the final number of *surveyed* households was close to 25%.

Postseason subsistence harvest surveys were conducted in early autumn because the majority of salmon fishing was finished, yet fishermen could still recall their harvest numbers because the season had ended recently. In Aniak and Bethel, surveys were conducted by KNA and Orutsararmiut Native Council (ONC), respectively, and the other communities were surveyed by ADF&G.

Before conducting interviews, all surveyors (including KNA and ONC surveyors) were trained in surveying techniques, including direction of how to get the best information possible from people who are not accustomed to quantifying their fish harvest. Surveyors were trained in salmon species name identification, because local names for salmon vary throughout the drainage. The surveyors were also briefed on fishery issues or concerns from the recent subsistence and commercial salmon fishing season, to improve understanding of community members' reactions and comments during surveys.

During the survey, the crew contacted community officials to notify them about the project before arriving in the community to conduct surveys. The household lists were annotated and corrected as the surveyors completed the survey process in the community. During interviews, both surveyors and surveyed individuals contributed to the quality of the estimate. Surveyors were responsible to attempt contact with each selected household, ask questions consistently and understandably, and foster a cooperative atmosphere. Surveyors attempted to interview a member of each selected household, preferably the primary harvester. Occasionally, interviews were conducted with households not pre-selected for the survey. Those households either 1) were new or previously unknown households found by surveyors, or 2) voluntarily provided surveyors with their harvest information.

All survey data were entered into the ADF&G subsistence harvest database, and harvest estimates were generated for the Kuskokwim Area. All subsistence harvest data were treated as confidential, such that individual harvest data were not shared and all analysis was aggregate and anonymous. The study was generally conducted in accordance with the Alaska Federation of Natives' "Guidelines for Research" (AFN 2014).

THE SURVEY INSTRUMENT

The survey instrument was largely the same as the 2013 instrument. However, an adjustment was made to Question 8 to allow surveyors to record more detail. Space for this question was increased to capture any increased use of new or novel legal gear types (Appendix B1).

Most interview questions were designed to provide a quantitative assessment of each household's subsistence salmon harvest. A fishing household was identified by Question 3, which asked whether anyone in the household harvested salmon for subsistence use or kept fish for subsistence from the commercial fishery (Appendix B1). The surveyor was instructed to clarify that harvest includes any participation in the subsistence fishery, such as cutting fish. Household harvest included salmon that members of the household gave away, ate fresh, fed to dogs, or lost to spoilage. To avoid double-counting between households, salmon received from other households (outside the fishing group) were not considered part of the household harvest because they were part of the harvest of the household that *gave* the fish.

Individual household harvests form the basis of salmon harvest estimates for this study; therefore, an effort was made to differentiate group harvest (several households fishing with, or helping, others) from individual household harvest to prevent bias. Households were asked about their harvest activities and whether they participated in group harvests or fished alone (Question 5 and 6, Appendix B1). If surveyors identified a group harvest, they followed up by asking what portion of the group harvest the individual household had kept for itself (Question 7, Appendix B1). This helped to prevent the possibility that a single large harvest might be reported by more than 1 member household of the fishing group defined in Question 5.

Households were also asked whether they had given salmon to other families (outside of the fishing group), or whether they had received salmon from other subsistence households (outside of the work group), from a commercial fisherman, or from a test fishery project. Households were also asked how many salmon were harvested for dog food.

Fishermen who did not know the actual number of fish harvested occasionally reported harvest in alternative terms, such as the number of 5-gallon buckets, plastic bags, gunny sacks, or pounds. ADF&G devised a conversion sheet to estimate fish numbers in these circumstances (Appendix C1).

Assessment of whether a household's subsistence needs were met, for fishing and non-fishing households, was attempted as follows.

- Respondents were asked the *number* of fish, by species, the household would usually like to have or receive to meet their subsistence needs (Question 13, Appendix B1).
- For those who did not fish, respondents were asked the number of fish, by species, the household usually received or expected to receive at the beginning of the season to meet their subsistence needs.
- For fishing households, the number actually harvested was divided by normal household harvest of fish for fishing households (Question 7).

- For households receiving fish, the number actually received was divided by that usually received (Question 12).
- Results were binned by percentages of harvest goals met: 25%, 50%, 75%, and 100%.

Responses were divided into 2 categories:

1) households that participated in harvesting salmon; and
2) households that did not participate in harvesting salmon.

For the purposes of this analysis, responses from the second group were not included. These households would probably receive salmon later in the year, and therefore an assessment of harvest needs and success would be premature at the time of the surveys.

After the households were interviewed, survey forms were reviewed. During this process, forms from fishing group members were compared to identify discrepancies. Follow-up calls were made to try to settle discrepancies. Occasionally, fishing group members simply did not agree on numbers for salmon harvest. In this event, ADF&G project staff made a judgment on how to best represent the fish harvest on the appropriate survey forms, and priority was always given to ensuring the accuracy of the *household* harvest over the *group* harvest. Data from all surveys were checked and entered into the subsistence database. Each record was then rechecked by a different individual to assure accuracy.

HARVEST CALENDARS

In addition to household harvest survey, subsistence salmon harvest calendars were distributed in late April or early May each year by mass mailing to households identified as those who usually fish to ensure they were available to fishermen prior to the start of the salmon fishing season. The calendar has been helpful for examination of subsistence harvest timing and assists fishermen in keeping track of their daily salmon harvest for reference during postseason surveys.

Calendar mailings were based on the most up-to-date household lists used in the harvest Monitoring Program. Extra calendars were kept at the Bethel ADF&G office for distribution as needed or upon request. In an effort to increase the use and return rate of subsistence calendars, public service announcements were broadcast on local radio stations inseason reminding fishermen to keep their calendars up-to-date and describing the importance of calendars for documenting subsistence use. Flyers describing the importance of subsistence calendars and the postseason subsistence survey project were also distributed to local communities for posting in public locations such as council offices, local stores, and post offices.

Data from the returned calendars are not normally used to directly generate Kuskokwim Area harvest estimates. Because harvest calendars may contain harvest information from 1 or multiple households, data from returned calendars were not used to compare or complete harvest surveys. However, on occasion a survey respondent would instruct surveyors to take harvest numbers directly from a calendar, either returned during the survey or mailed in prior to the survey. Calendars provide harvest timing data, which is important for making fishery management decisions.

DATA ANALYSIS

Harvest Estimation

Expanded Community Harvest

Subsistence salmon harvest reported by sampled households was expanded to estimate total community harvest, by species, using a stratified random sampling expansion technique (Scheaffer et al. 1999). The stratified expansion procedure was performed for a community only if a sufficient number of households were sampled.

For harvests of each stratum, if 10 or fewer households were surveyed, and the proportion of surveyed households was less than 0.25 (for non- and light harvesters) or 0.3 (for other strata), then harvest expansion was not conducted. For estimates of community harvest, if the total number of surveyed households in each stratum was less than 50 and the proportion of surveyed households was less than 0.3, total community harvest was not estimated using this method (see section: *Harvest estimation of non-surveyed and under-surveyed communities*).

Denote that:

N_{kj} = the number of households in the stratum (j = 5: unknown, usually do not harvest, light harvest, medium harvest, and heavy harvest) of the community (k);

n_{kj} = the number of surveyed households in the stratum of the community (k);

y_{kji} = response of surveyed household (i) (i = 1 … n_{kj}) in the stratum (j) of the community (k); e.g., the number of fish harvested by a household.

Mean household response in the stratum of the community ($\bar{y}_{kj}$) was calculated as:

$$\bar{y}_{kj} = \frac{\sum_{i=1}^{n_{kj}} y_{kji}}{n_{kj}}. \tag{1}$$

Standard error of mean household response (SE_{kj}) was calculated as:

$$SE_{kj} = \sqrt{\frac{s_{kj}^2}{n_{kj}}\left(\frac{N_{kj}-n_{kj}}{N_{kj}}\right)} \text{ where } s_{kj}^2 = \frac{\sum_{i=1}^{n_{kj}}\left(y_{kji}-\bar{y}_{kj}\right)^2}{n_{kj}-1}. \tag{2}$$

The estimate of total harvest of the community ($\hat{T}_k$) was calculated as:

$$\hat{T}_k = \sum_{j=1}^{5} N_{kj}\bar{y}_{kj}. \tag{3}$$

The 95% confidence interval of total community harvest (95% CI_k) was calculated as:

$$95\%\text{CI}_k = t_{(0.025,df=n-1)} \cdot \sqrt{\hat{V}(T_k)} \text{ where } \hat{V}(T_k) = \sum_{j=1}^{5} N_{kj}^2\left(\frac{N_{kj}-n_{kj}}{N_{kj}}\right)\left(\frac{s_{kj}^2}{n_{kj}}\right). \tag{4}$$

When a single stratum was not surveyed, total harvest of a community ($\hat{T}_k$) was calculated as:

$$\hat{T}_k = \left(\frac{\sum_{j=1}^{5} N_{kj}}{\sum_{j=1}^{4} N_{kj}} \right) \sum_{j=1}^{4} N_{kj} \bar{y}_{kj} \,. \tag{5}$$

The 95% confidence interval of total community harvest when a single stratum was not surveyed (95% CI_k) was calculated as:

$$95\%\mathrm{CI}_k = t_{(0.025, df=n-1)} \cdot \sqrt{\hat{V}(T_k)} \text{ where } \hat{V}(T_k) = \left(\frac{\sum_{j=1}^{5} N_{kj}}{\sum_{j=1}^{4} N_{kj}} \right)^2 \sum_{j=1}^{4} N_{kj}^2 \left(\frac{N_{kj} - n_{kj}}{N_{kj}} \right) \left(\frac{s_{kj}^2}{n_{kj}} \right) \tag{6}$$

.

The above methods were used for estimation of salmon harvests (Question 7) and the number of people (Question 2). For the number of fish needed/usually harvested (Question 13), only harvests of those who subsistence fished were used.

For estimation of the number of subsistence fishing households in each community, the following expansion method was used.

Denote that:

$n_{kj(s)}$ = the number of surveyed households that subsistence fish in the stratum (j) of the community (k); and

n_{kj} = the number of surveyed households in the stratum (j) of the community (k).

Then, the proportion of households who subsistence fish in the stratum (j) of the community (k) ($\hat{p}_{kj(s)}$) was calculated as:

$$\hat{p}_{kj(s)} = \frac{n_{kj(s)}}{n_{kj}} \,. \tag{7}$$

Estimated number of households that subsistence fish in the community ($\hat{N}_{k(s)}$) was calculated as:

$$\hat{N}_{k(s)} = \sum_{j=1}^{5} N_{kj} \hat{p}_{kj(s)} \,. \tag{8}$$

The 95% confidence interval (95% CI_k) was calculated as:

$$95\%\mathrm{CI}_k = t_{(0.025, df=n-1)} \cdot \sqrt{\hat{V}(\hat{N}_{k(s)})} \text{ where } \hat{V}(\hat{N}_{k(s)}) = \sum_{j=1}^{5} N_{kj}^2 \left(\frac{N_{kj} - n_{kj}}{N_{kj}} \right) \left(\frac{\hat{p}_{kj(s)}(1 - \hat{p}_{kj(s)})}{n_{kj} - 1} \right) \,. \tag{9}$$

Harvest Estimation of Non-surveyed and Under-surveyed Communities

Harvests of several communities were not estimated in some years because surveys were not conducted or survey data were insufficient. Harvests of those communities were estimated by employing a Bayesian hierarchical multiple imputation method (Honaker and King 2010; King et al. 2001). In this method, we assumed that events that cause missing harvest data follow a missing at random process (MAR) and that harvest data possess multivariate normal distribution.

Under these conditions, the harvest in a given year and community can be estimated from the harvest estimates of that community in previous years and harvest estimates of surrounding communities during the same time period. For instance, the 2008 harvest of the community of Tuntutuliak (un-surveyed in that year) was estimated using its known harvests during 1990–2007 and harvests of other Lower Kuskokwim communities during the entire period, 1990–2008. This estimation method applies only for communities with several years of annual harvest estimates. It is further based on assumptions that fishing characteristics of communities (e.g., proportion of fishing households, demand, and effort) are constant over time, and changes in average household harvests are primarily due to abundance of fish or fishing regulations affecting all communities. Communities were grouped according to geographic subareas within the Kuskokwim Management Area, on the assumption that harvests within each subarea would be more similar than harvests in other subareas. The 4 geographic subareas were: 1) Lower Kuskokwim River and Kongiganak; 2) Middle Kuskokwim River; 3) Upper Kuskokwim River; and 4) South Kuskokwim Bay.

For the K communities within a given geographic subarea, we let $D_{ks.obs}$ denote the observed data (average harvest per household) for community k (k = 1,…, K) in year (s). In application, the average household harvest $D_{ks.obs}$ was the log-transformed average household harvest; $D_{ks.obs}$ is $\log(T_{ks}/N_{ks}+1)$, where T_{ks} was the total community harvest and N_{ks} was the total number of households in community (k) during year (s).

We assumed that the $D_{kj.obs}$ arose from an underlying multivariate normal distribution in which $\boldsymbol{\mu}_K$ is a vector of mean annual household harvest in the K communities within the subarea and $\boldsymbol{\Sigma}$ is a K x K covariance matrix:

$$D_{kj.obs} \sim \mathbf{N}(\boldsymbol{\mu}_K, \boldsymbol{\Sigma}) \quad . \tag{10}$$

In the Bayesian hierarchical model, we further assumed that $\boldsymbol{\mu}_K$ and $\boldsymbol{\Sigma}$ themselves arose from some other, unknown distribution. We assigned a normal prior distribution for $\boldsymbol{\mu}_K$, with mean μ and variance σ^2, and a Wishhart distribution with K x K dimensions for $\boldsymbol{\Sigma}$:

$$\begin{aligned} \boldsymbol{\mu}_K &\sim N(\mu, \sigma^2) \\ \boldsymbol{\Sigma} &\sim W(I_K, K) \end{aligned} \quad . \tag{11}$$

Then, the posterior distributions for $\boldsymbol{\mu}_K$ and $\boldsymbol{\Sigma}$ were derived as:

$$\tilde{\boldsymbol{\mu}}_K, \tilde{\boldsymbol{\Sigma}} \sim P(\boldsymbol{\mu}_K, \boldsymbol{\Sigma} \mid D_{kj.obs}) \quad . \tag{12}$$

A predicted value for missing data, $D_{kj.mis}$, was derived from random draws from the posterior distribution for $\boldsymbol{\mu}_K$ and $\boldsymbol{\Sigma}$:

$$\tilde{D}_{kj.mis} \sim P(D_{kj.mis} \mid D_{kj.obs}, \tilde{\boldsymbol{\mu}}_K, \tilde{\boldsymbol{\Sigma}}) \quad . \tag{13}$$

For the Bayesian estimation, WinBUGS 1.4.3 (Lunn et al. 2000) was used, with default initial values. A total of 55,000 imputations were generated (after discarding 5,000 initial burn-in iterations) and the mean value of these imputations was calculated. The resulting mean household harvest was back-transformed and multiplied by the number of households in the community that year to estimate the unknown total community harvest. Total community harvest was calculated as:

$$\tilde{T}_{kj} = N_{kj} \exp(\tilde{D}_{kj.mis}) \quad , \tag{14}$$

and its 95% confidence interval was estimated as:

$$95\%\text{CI} = N_{kj} \exp\left(1.96 \cdot \sqrt{V(\tilde{D}_{kj.mis})}\right) \quad , \tag{15}$$

where $V(\tilde{D}_{kj}^{mis})$ is the standard deviation of the Bayesian estimate. Estimation of missing data within a given subarea was independent of estimates in other subareas.

Total Kuskokwim Area Harvest

Total number of salmon harvested in the Kuskokwim Area ($\hat{T}$) was estimated by summing harvest estimates of all communities (across all geographic subareas):

$$\hat{T} = \sum_{k=1} \hat{T}_k \quad , \tag{16}$$

and its 95% confidence interval (95% CI) was calculated as:

$$95\%\text{CI} = t_{(0.025, df=n-1)} \cdot \sqrt{\hat{V}(T)} \text{ where } \hat{V}(T) = \sum_{k=1} \hat{V}(T_k) \, . \tag{17}$$

RESULTS

HOUSEHOLD SELECTION AND SURVEY

The Kuskokwim Area results reported here include communities located along Kuskokwim River and the South Kuskokwim Bay communities. The Bering Sea Coast communities and North Kuskokwim Bay communities did not take part in the voluntary survey process and estimates of their harvests (with the exception of Kongiganak) were not otherwise possible; therefore, no data are reported for those communities.

Partners ONC and KNA were successful in their sampling efforts in 2014. Bethel subsistence surveys were conducted by ONC from October through November, and 574 dwellings were successfully surveyed, 28% of 2,051 occupied dwellings (Tables 2 and 3). Aniak subsistence surveys were conducted by KNA from October through December, and 163 (89%) of 183 households were surveyed, including both preselected and non-selected (previously unknown) households (Tables 2 and 3).

In 2014, ADF&G surveys were conducted from mid-September through mid-November and were completed in 23 of 27 targeted communities: Eek, Napakiak, Napaskiak, Oscarville, Nunapitchuk, Atmautluak, Kasigluk, Kwethluk, Akiachak, Akiak, Tuluksak, Lower Kalskag, Upper Kalskag, Chuathbaluk, Crooked Creek, Red Devil, Sleetmute, Stony River, McGrath, Nikolai, Quinhagak, Goodnews Bay, and Platinum. ADF&G was denied access to the village of Kongiganak and was unable to secure definitive permission to visit Tuntatuliak. Lime Village and Takotna were ultimately not visited for logistical reasons. Overall, ADF&G contacted 1,124 (56%) of 1,994 households in targeted communities (Tables 2 and 3).

Of the 38 area communities, 25 were surveyed door-to-door in 2014 (Table 3). In total, 1,862 (44%) of the 4,229 households in the Kuskokwim Area were surveyed (Tables 2 and 3). Of the households selected for survey 78% or 1,424 households were successfully contacted (Table 3). The additional 756 households surveyed were unknown or new households that were opportunistically encountered and surveyed (Table 3). Data entry and error checking of all surveys collected was completed near the end of December 2014.

HARVEST ESTIMATES

For 2014, survey results were stratified and expanded for each community (Tables 4–8). The salmon harvests for Kongiganak, Tuntatuliak, Lime Village, and Takotna (not surveyed in 2014) were estimated using Bayesian methods described above (Table 2). The total expanded salmon harvest by species for the Kuskokwim Area (in communities for which estimates could be made) was 15,434 (95% CI +/-1,406) Chinook; 70,687 (95% CI +/-5,281) chum; 53,030 (95% CI +/-3,787) sockeye; 52,587 (95% CI +/-5,847) coho; and 2,620 (95% CI +/-647) pink salmon (Table 2). Overall, approximately 194,358 salmon were harvested in 2014 for subsistence use (Table 2).

Harvest estimates for households that participate in commercial fishing included salmon retained for subsistence use from that activity. Salmon retained from commercial fishing were most commonly reported in the areas within or adjacent to commercial fishing districts, such as north and south Kuskokwim Bay and the Lower Kuskokwim River (Table 9). In 2014, in the interest of conserving Chinook salmon, commercial fish buyers in the area chose not to purchase Chinook salmon in order to encourage retention for subsistence use and to discourage targeting of Chinook salmon by commercial fishermen. In 2014, the most commonly retained species from commercial harvests was Chinook salmon, followed by coho, sockeye, pink, and chum salmon respectively (Table 9).

PRIMARY FISHING GEAR

In 2014, the majority (82%) of responding households throughout the Kuskokwim Area reported that the primary gear type used for subsistence salmon fishing was drift gillnets (Table 10). Gear type estimates were not expanded.

ESTIMATED FISHING HOUSEHOLDS, COMMUNITY POPULATION SIZE, AND HOUSEHOLDS RECEIVING SALMON

We estimated that 2,407 households participated in the subsistence fishery for salmon in 2014 (Table 11). The total estimate of people living in surveyed communities of the Kuskokwim Area in 2014 was 14,766 (Table 12).

In Kuskokwim River subsistence activity, sharing of subsistence catch is a traditional practice. Sharing is defined as the immediate distribution (giving or receiving) of salmon, upon harvest, to

households outside of one's subsistence salmon harvest and processing work group. In 2014, a total of 1,628 households reported receiving 816 Chinook; 2,475 chum; 1,729 coho; 2,620 sockeye; and 29 pink salmon from subsistence fisherman, commercial fishermen, and the local Bethel test fishery (Table 13); the majority (89%) of fish were received from subsistence fishermen.

SUBSISTENCE USE OF SALMON FOR DOG FOOD

In 2014, regarding the question about owning dogs, 1,645 households responded and 59% of respondents reported owning a combined total of 2,452 dogs. Of households reporting dogs, 3 was the average number per household. The number of households reported feeding whole salmon to dogs was 51 (or 7% of dog owners), and among these households an average of 4 salmon per household were fed to dogs (Table 14).

LOST FISH

In 2014, from a total of 1,678 respondents, 1,921 salmon were reported as lost (i.e., not edible due to spoilage, animals, etc.; Table 15). Out of the 98 households that provided a reason for losing fish, 52% reported weather-related reasons (e.g., rain, mold, flies, spoilage); 35% reported animals (e.g., bears, birds, otters); 9% reported disease, 2% reported human theft; and 2% reported the abundance of fish as having a negative effect (Table 15).

SUBSISTENCE SALMON NEEDS

Of 1,862 surveyed households, 1,151 (62%) responded to questions regarding needs met for the harvest of Chinook salmon (Table 16). About 19% of respondents reported that they did not have a need for that species (Table 17). Of those reporting a need for this species, an estimated 12% met 100% of their needs, 11% met 50%–75% of their needs, and 77% reported meeting only 25% of their needs (+/-1% for rounding error, Table 16). Of the 1,104 (1,234 less 130 unknowns) respondents who provided a reason for not meeting their needs, a little under 41% indicated this was due to non-fishery related factors such as age, difficulties with equipment, the high price of fuel, work conflicts, or having given away too many of the fish they harvested. Approximately 4% cited natural conditions including run dynamics (low abundance, timing of the run), river conditions (flooding, clarity, debris load), and inclement weather. Approximately 51% of respondents cited fisheries management decisions as the reason they did not meet their needs. Approximately 4% reported intentionally abstaining for conservation reasons (Table 17).

Regarding needs met for chum salmon, 807 households (19%) responded and 33% of respondents stated that they do not generally fish for this species (Tables 18 and 19). Of those reporting a need for this species, an estimated 50% met 100% of their needs, 19% met 50%–75% of their needs, and 31% reported meeting only 25% of their needs (+/-1% for rounding error, Table 18). Of the 491 (646 less 155 unknowns) respondents that indicated that they had not met their needs for chum salmon, 64% cited non-fishery related reasons similar to those given for Chinook salmon and 2% cited natural conditions similar to those listed above. Approximately 30% of respondents cited fisheries management decisions as the reason they did not meet their needs. Approximately 1% reported intentionally abstaining for conservation reasons. The remaining 3% of respondents reported animal and human interference as reasons for not meeting their needs (Table 19).

Regarding needs met for sockeye salmon, 1,049 households (56%) responded and 20% of respondents stated that they do not generally fish for this species (Tables 20 and 21). Of those reporting a need for this species, an estimated 36% met 100% of their needs, 21% met 50%–75% of their needs, and 43% reported meeting only 25% of their needs (+/-1% for rounding error, Table 20). Of the 753 (933 less 180) respondents that indicated that they had not met their needs for sockeye salmon, 58% cited non-fishery related reasons similar to those given for Chinook salmon and 5% cited natural conditions similar to those listed above. Approximately 34% of respondents cited fisheries management decisions as the reason they did not meet their needs. Approximately 2% reported intentionally abstaining for conservation reasons. Approximately 1% reported human theft or animals (birds, bears, dogs, etc.) as a contributing factor to not meeting their needs (Table 21).

Regarding needs met for coho salmon, 915 households (49%) responded and 49% of respondents stated that they do not generally fish for this species (Tables 22 and 23). Of those reporting a need for this species, an estimated 41% met 100% of their needs, 17% met 50%–75% of their needs, and 42% reported meeting only 25% of their needs (+/-1% for rounding error, Table 22). Of the 605 respondents (785 less 180 unknowns) that indicated that they had not met their needs for coho salmon, 87% cited non-fishery related reasons similar to those given for Chinook salmon and 6% cited natural conditions similar to those listed above. Approximately 6% of respondents cited fisheries management decisions as the reason they did not meet their needs. Approximately 1% reported intentionally abstaining for conservation reasons and the remaining 2% reported human interference as the reason for not meeting their needs (Table 23).

REPORTED AND ESTIMATED HARVEST OF NON-SALMON SPECIES

In 2014, estimates for the harvest of non-salmon species were expanded similar to salmon. For most species this was the first time this was attempted. Based on these estimates, the most heavily harvested species in the Kuskokwim appear to be blackfish (*Dallia pectoralis*) and smelt (*Osmerus mordax*). These species were each harvested in numbers that compared to all salmon combined: 248,230 (95% CI +/-63,978) blackfish and 165,792 (95% CI +/-19,545) smelt, versus 194,358 total salmon (all species; Tables 2 and 24).

After blackfish, salmon, and smelt, the most heavily harvested species were humpback whitefish (*Coregonus pidschian*) and northern pike (*Esox lucius*). These were each harvested in numbers similar to sockeye and coho salmon (Tables 2 and 25). All other species were harvested in numbers less than half those of northern pike (Tables 24 and 25).

Non-salmon species were most heavily harvested in the Lower Kuskokwim River. Only grayling and herring were more heavily harvested in areas other than the Lower Kuskokwim River. Herring were harvested most among South Kuskokwim Bay communities, and grayling were harvested most among Upper Kuskokwim River communities (Table 24).

HARVEST CALENDARS

In 2014, households returned a total of 188 subsistence harvest calendars (approximately 11% of total issued). A total of 180 calendars (96% of those returned) documented salmon harvest information. The remaining households that returned harvest calendars in 2013 either indicated that they did not fish this season (<4%) or the calendars were returned blank (<1%).

DISCUSSION

HARVEST ESTIMATES

The 2014 subsistence harvest of Chinook salmon for the Kuskokwim Area is estimated to have been the lowest on record (Figure 3; Appendix A1). All sections of the Kuskokwim River reported this trend (1990 to present, Figure 4; Appendix A1). However, the harvest of Chinook salmon in South Kuskokwim Bay communities has increased somewhat in the last 2 years (Figure 5). The North Kuskokwim Bay community of Kongiganak has not been visited since 2011 and estimates are based on historical relationships with its neighbors, limiting the utility of these data for understanding the effects of recent changes in Chinook salmon abundance on that community.

In 2014, the total harvest of chum salmon was above the recent 5- (2009–2013) and 10-year averages (2004–2013) (Appendix A2). The shift in harvest observed in 2012 from Chinook to chum salmon seems to be reflected in harvest estimates from 2014 as well, in response to heavy restriction of Chinook salmon harvest (Figure 6; Shelden et al. 2014). Overall chum salmon abundances were considered to be good throughout the area from 2009 to 2014 (Brazil et al. 2013). This reinforces the suggestion that the lower harvest levels of chum salmon in 2009–2011 and 2013 are based on user preference, weather, and timing as opposed to abundance (Ikuta et al. 2013).

The total harvest of sockeye salmon in the Kuskokwim Area in 2014 was above the recent 5- and 10-year averages (Figure 7; Appendix A3). The reported harvest of sockeye salmon from Upper Kuskokwim River communities has been below the 10-year average since 2010 but decreased little in 2014 as it had each year since 2010 (Figure 8; Appendix A3). Middle Kuskokwim River communities continued to increase their harvest of sockeye salmon in 2014 and Lower River communities harvested numbers similar to those taken in 2012, suggesting a harvest shift based on Chinook salmon restriction (Figure 8; Appendix A3).

In 2014, coho salmon subsistence harvests were above both the 5- and 10-year averages for the area and were the highest since 1992, suggesting a shift based on Chinook salmon restrictions (Figure 9; Appendix A4). This shift was also discussed inseason during meetings of the Kuskokwim River Salmon Management Working Group. Subsistence users, recognizing the fact that they would not be able to meet their needs with Chinook salmon and limited in their harvest of chum and sockeye by restrictions protecting Chinook salmon, made unusually strong effort to harvest larger numbers of coho salmon for freezing, canning, and late-season drying (Shelden and Peeks 2015). Increases in coho harvest were noted in all sections of the Kuskokwim River but were most pronounced in the middle river communities (Figure 10; Appendix A4).

AMOUNTS NECESSARY FOR SUBSISTENCE

In 2014 the relative success of Kuskokwim River salmon harvests were mixed. Harvest of Chinook salmon fell far below the ANS range (5 AAC 01.286). Despite being lower than recent averages, subsistence harvests of chum, sockeye, coho, and pink salmon in the Kuskokwim River were within the ANS ranges defined for the drainage.

The Kuskokwim Bay ANS determination is not broken down by species (5 AAC 01.286). South Kuskokwim Bay harvest was determined to be within the range of ANS for that subarea (Table 2, Appendices A1–A4). ANS for the North Kuskokwim Bay and Bering Sea coastal

communities within the Kuskokwim Area fall under the remainder of the Kuskokwim Area description. In 2014, with none of these communities directly participating in the survey, it was impossible to determine the status of ANS for this subarea.

ACKNOWLEDGEMENTS

Special thanks go to the thousands of households in dozens of communities that graciously allowed us into their homes to collect this valuable information and for their continued participation in this project. In 2014, the Fisheries Resources Monitoring Program (FRMP) Division of the U.S. Fish and Wildlife Service (USFWS) Office of Subsistence Management (OSM) provided funding for this cooperative program under the Kuskokwim Area Postseason Subsistence Harvest Survey project (FRMP 15-038).

The authors thank our staff, including our key ADF&G crew leader, Maureen Horne-Brine, who managed logistics at all stages of the project and coordinated with all partners and technical staff and all village administrators to complete this project successfully in 2014. We thank our ADF&G surveyors Janet Bavilla and Alice Bailey; and data entry technicians Cara Lucas and Janet Bavilla.

Thanks also to our co-investigators from ONC and KNA. ONC staff includes ONC's Director of Natural Resources Greg Roczicka, and his survey crew Iyana Dull, Alyssa Joseph, Garis Kinegak, Rhea Maxie, and Alissa Joseph, and Clifford Hunter. KNA staff includes Daniel Gillikin and surveyor Marcus Tanner.

The authors would also like to acknowledge the following ADF&G staff. Thanks to Christopher Lawn, AYK Commercial Fisheries programmer for his training, design, and support with the subsistence salmon survey database. Thanks to Dave Koster of the Division of Subsistence for database management support and advice in improving Bethel survey practices. Thanks to Jason Graham, cartographer, for creating the project maps. Thanks to Shannon Royse, Publications Specialist, for reporting support and expertise leading to completion of this report, and Jan Conitz, AYK Regional Research Coordinator, for regional and technical review. Thanks to Jim Fall and Hiroko Ikuta for Division of Subsistence peer review; and USFWS OSM anthropologist Pippa Kenner for project support and peer review.

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TABLES AND FIGURES

Table 1.–Kuskokwim Area communities by geographic location.

North Kuskokwim Bay	Kipnuk[a]
	Kwigillingok[a]
	Kongiganak[b]
Lower Kuskokwim	Tuntutuliak[c]
	Eek
	Kasigluk
	Nunapitchuk
	Atmautluak
	Napakiak
	Napaskiak
	Oscarville
	Bethel
	Kwethluk
	Akiachak
	Akiak
	Tuluksak
Middle Kuskokwim	Lower Kalskag
	Upper Kalskag
	Aniak
	Chuathbaluk
Upper Kuskokwim	Crooked Creek
	Red Devil
	Sleetmute
	Stony River
	Lime Village[d]
	McGrath
	Takotna[d]
	Nikolai
	Telida
South Kuskokwim Bay	Quinhagak
	Goodnews Bay
	Platinum
Bering Sea Coast	Mekoryuk[a]
	Newtok[a]
	Nightmute[a]
	Toksook Bay[a]
	Tununak[a]
	Chefornak[a]

[a] The community was not surveyed because they chose to not participate in the study.

[b] The community typically participates but declined in 2014.

[c] Project leaders were unable to coordinate a date for visit with village leaders. After multiple attempts, project leaders ran out of time.

[d] The community was not surveyed in 2014 for logistical reasons.

Table 2.–Total estimated subsistence salmon harvest by species and community for the Kuskokwim Area, 2014.

	Households (HH)			Chinook			Chum			Sockeye			Coho			Pink		
Community	Total *N*	Total *n*	% survey	Avg harvest/ HH	Est. total harvest	CI (95%)	Avg harvest/ HH	Est. total harvest	CI (95%)	Avg harvest/ HH	Est. total harvest	CI (95%)	Avg harvest/ HH	Est. total harvest	CI (95%)	Avg harvest/ HH	Est. total harvest	CI (95%)
Kongiganak [a]	90	0	0%	11	*964*	*288*	21	*1,915*	*176*	14	*1,230*	*191*	6	*561*	*180*	–	–	–
N. Kuskokwim Bay	90	0	0%	11	964	288	21	1,915	176	14	1,230	191	6	561	180	–	–	–
Tuntutuliak [a]	90	1	1%	6	*574*	*174*	33	*2,967*	*335*	20	*1,774*	*181*	9	*794*	*215*	–	–	–
Eek	87	48	55%	8	665	266	14	1,182	437	17	1,450	547	6	555	248	0	15	16
Kasigluk	103	54	52%	2	205	47	35	3,612	771	19	1,990	627	8	851	444	0	12	11
Nunapitchuk	121	78	64%	2	287	53	43	5,213	767	17	2,059	258	11	1,305	247	0	42	21
Atmautluak	66	45	68%	2	108	29	50	3,327	1,077	23	1,531	442	3	176	49	1	62	64
Napakiak	93	55	59%	3	311	104	26	2,392	513	17	1,573	558	8	740	191	1	51	34
Napaskiak	99	60	61%	4	422	94	32	3,171	1,051	25	2,514	632	12	1,153	284	0	20	21
Oscarville	15	13	87%	5	68	20	40	599	25	45	679	89	9	128	27	2	24	0
Bethel	2,051	574	28%	2	3,089	1,000	9	18,017	4,400	7	14,828	2,911	9	19,364	3,824	1	1,048	430
Kwethluk	174	108	62%	6	959	286	25	4,318	997	34	5,921	1,566	25	4,422	716	1	125	99
Akiachak	153	97	63%	7	1,033	246	31	4,744	496	20	3,047	413	12	1,845	381	1	123	61
Akiak	83	59	71%	6	530	211	36	2,982	733	29	2,418	639	18	1,501	680	3	282	181
Tuluksak	95	63	66%	4	404	245	24	2,274	790	7	622	184	9	808	368	0	30	27
Lower Kuskokwim	3,230	1,255	39%	3	8,655	1,172	17	54,798	5,077	13	40,406	3,639	10	33,642	4,045	1	1,834	488
Lower Kalskag	75	47	63%	4	283	232	19	1,458	437	14	1,040	392	12	907	299	0	30	16
Upper Kalskag	63	44	70%	4	258	76	16	1,038	252	13	839	256	15	938	280	0	24	6
Aniak	184	163	89%	2	344	60	26	4,695	1,107	9	1,578	275	52	9,566	4,133	3	636	422
Chuathbaluk	33	27	82%	3	90	46	24	805	380	15	481	257	9	291	138	0	0	0
Middle Kuskokwim	355	281	79%	3	975	256	23	7,996	1,274	11	3,938	601	33	11,702	4,156	2	690	422
Crooked Creek	33	25	76%	1	35	14	12	391	92	12	391	140	6	198	101	0	1	1
Red Devil	9	5	56%	9	83	0	32	284	0	17	151	0	88	792	0	1	5	0
Sleetmute	38	30	79%	2	58	41	17	633	125	14	541	245	26	993	140	0	0	0
Stony River	15	13	87%	2	24	23	6	89	67	9	137	48	12	177	55	0	4	3
Lime Village [a]	14	0	0%	*2*	*32*	*75*	*21*	*295*	*103*	*63*	*888*	*64*	*16*	*226*	*53*	–	–	–
McGrath	114	56	49%	2	173	189	6	642	486	4	451	320	10	1,189	558	0	15	21
Takotna [a]	23	0	0%	0	*0*	*116*	0	*0*	*81*	0	*3*	*55*	0	*0*	*79*	–	–	–
Nikolai	36	31	86%	7	235	63	38	1,356	99	7	236	22	7	256	27	0	2	0
Telida	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Upper Kuskokwim	284	160	56%	2	640	247	13	3,690	540	10	2,798	438	13	3,831	595	0	27	21

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Table 2.–Page 2 of 2.

	Households (HH)			Chinook			Chum			Sockeye			Coho			Pink		
Community	Total *N*	Total *n*	% survey	Avg harvest/ HH	Est. total harvest	CI (95%)	Avg harvest/ HH	Est. Total harvest	CI (95%)	Avg harvest/ HH	Est. total harvest	CI (95%)	Avg harvest/ HH	Est. total harvest	CI (95%)	Avg harvest/ HH	Est. total harvest	CI (95%)
Kuskokwim River[b]	3,959	1,696	43%	3	11,234	1,258	17	68,398	5,265	12	48,372	3,719	13	49,736	5,833	1	2,551	646
Quinhagak	177	112	63%	21	3,723	604	11	1,959	348	17	2,939	472	13	2,240	350	0	40	18
Goodnews Bay	72	38	53%	6	431	171	4	268	209	19	1,370	523	5	371	182	0	0	0
Platinum	21	16	76%	2	46	27	3	62	19	17	349	88	11	240	81	1	29	20
S. Kuskokwim Bay	270	166	61%	16	4,200	628	8	2,289	406	17	4,658	710	11	2,851	403	0	69	27
Total	4,229	1,862	44%	4	15,434	1,406	17	70,687	5,281	13	53,030	3,787	12	52,587	5,847	1	2,620	647

Note: Dashes indicate data are unavailable. Headings are defined as: *N* = the total number of households, *n* = the number of households surveyed, CI (95)% = 95% confidence interval.

[a] Villages not surveyed. Estimated using historical average household harvest expanded by the number of households.

[b] Kuskokwim River total includes the Lower, Middle, and Upper Kuskokwim areas and North Kuskokwim Bay.

Table 3.–Households selected and surveyed by user group, 2014.

	Unknown					Does not usually fish					Light harvester					Medium harvester					High harvester					Combined use groups				
Community	*N*	S	ns	U	PS	*N*	S	ns	U	PS	*N*	S	ns	U	PS	*N*	S	ns	U	PS	*N*	S	ns	U	PS	*N*	S	ns	U	PS
Kongiganak	–	–	–	–	–	–	–	–	–	–	76.00	38.00	0.00	–	–	12.00	12.00	0.00	–	–	2.00	2.00	0.00	–	–	90.00	52.00	0.00	–	0.00
N. Kuskokwim Bay	–	–	–	–	–	–	–	–	–	–	76.00	38.00	0.00	–	0.00	12.00	12.00	0.00	–	0.00	2.00	2.00	0.00	–	0.00	90.00	52.00	0.00	–	0.00
Tuntutuliak	5	5	0	–	–	5	5	0	–	–	50	25	0	–	–	23	23	0	–	–	7	7	1	0	0.14	90	65	1	0	0.02
Eek	1	0	0	–	–	3	3	2	0	0.7	69	35	32	1	0.94	13	13	12	0	0.92	1	1	1	0	1	87	52	47	1	0.92
Kasigluk	5	0	0	3	–	1	1	1	0	1	79	38	32	1	0.87	16	16	15	0	0.94	2	2	2	0	1	103	57	50	4	0.95
Nunapitchuk	7	1	1	4	5	6	6	5	0	0.8	76	39	36	3	1	21	21	19	0	0.9	11	11	10	0	0.91	121	78	71	7	1
Atmautluak	5	0	0	4	–	1	1	1	0	1	36	18	17	1	1	17	17	15	0	0.88	7	7	7	0	1	66	43	40	5	1.05
Napakiak	4	1	1	3	4	4	4	3	0	0.8	67	33	31	0	0.94	16	16	15	0	0.94	2	2	2	0	1	93	56	52	3	0.98
Napaskiak	5	2	2	2	2	5	5	3	0	0.6	53	25	16	3	0.76	28	28	27	0	0.96	8	8	7	0	0.88	99	68	55	5	0.88
Oscarville	1	0	0	–	–	–	–	–	–	–	5	5	4	0	0.8	6	6	6	0	1	3	3	3	0	1	15	14	13	0	0.93
Bethel	–	–	–	–	–	–	–	–	–	–	2,051	0	0	574	–	–	–	–	–	–	–	–	–	–	–	2,051	0	0	574	–
Kwethluk	22	1	1	14	15	7	7	4	0	0.6	104	52	45	6	0.98	32	32	29	0	0.91	9	9	9	0	1	174	101	88	20	1.07
Akiachak	18	1	0	9	9	7	1	1	0	1	79	37	37	4	1.11	36	36	33	0	0.92	13	13	13	0	1	153	88	84	13	1.1
Akiak	11	2	2	6	4	2	2	2	0	1	36	17	17	3	1.18	24	24	20	0	0.83	10	10	9	0	0.9	83	55	50	9	1.07
Tuluksak	12	1	1	11	12	7	7	5	0	0.7	51	25	21	2	0.92	17	17	16	0	0.94	8	8	7	0	0.88	95	58	50	13	1.09
Lower Kuskokwim	96	14	8	56	4.6	48	42	27	0	0.6	2,756	349	288	598	2.54	249	249	207	0	0.83	81	81	71	0	0.88	3,230	735	601	654	1.71
Lower Kalskag	7	0	0	7	–	4	4	4	0	1	49	22	20	1	0.95	10	10	10	0	1	5	5	5	0	1	75	41	39	8	1.15
Upper Kalskag	9	0	0	6	–	–	–	–	–	–	43	20	20	7	1.35	5	5	5	0	1	6	6	6	0	1	63	31	31	13	1.42
Aniak	–	–	–	–	–	–	–	–	–	–	184	174	154	9	0.94	–	–	–	–	–	–	–	–	–	–	184	174	154	9	0.94
Chuathbaluk	5	0	0	5	–	2	2	1	0	0.5	20	20	15	0	0.75	6	6	6	0	1	–	–	–	–	–	33	28	22	5	0.96
Middle Kuskokwim	21	0	0	18	–	6	6	5	0	0.8	296	236	209	17	0.96	21	21	21	0	1	11	11	11	0	1	355	274	246	35	1.03
Crooked Creek	4	1	1	3	4	–	–	–	–	–	23	23	15	0	0.65	6	6	6	0	1	–	–	–	–	–	33	30	22	3	0.83
Red Devil	–	–	–	–	–	–	–	–	–	–	5	5	2	0	0.4	2	2	2	0	1	2	2	1	0	0.5	9	9	5	0	0.56
Sleetmute	4	1	1	3	4	2	2	2	0	1	29	29	22	0	0.76	1	1	1	0	1	2	2	1	0	0.5	38	35	27	3	0.86
Stony River	2	1	1	1	2	1	1	1	0	1	11	11	9	0	0.82	1	1	1	0	1	–	–	–	–	–	15	14	12	1	0.93
Lime Village	1	1	0	–	–	–	–	–	–	–	10	10	0	–	–	2	2	0	–	–	1	1	0	–	–	14	14	0	–	0
McGrath	6	0	0	6	–	7	7	4	0	0.6	95	46	29	13	0.91	3	3	3	0	1	3	3	1	0	0.33	114	59	37	19	0.95
Takotna	–	–	–	–	–	–	–	–	–	–	23	23	0	–	–	–	–	–	–	–	–	–	–	–	–	–	23	0	–	0
Nikolai	4	0	0	3	–	2	2	1	0	0.5	28	28	25	0	0.89	–	–	–	–	–	2	2	2	0	1	36	32	28	3	0.97
Telida	–	–	–	–	–	–	–	–	–	–	2	2	0	–	–	–	–	–	–	–	–	–	–	–	–	2	2	0	–	0
Upper Kuskokwim	21	4	3	16	4.8	12	12	8	0	0.7	226	177	102	13	0.65	15	15	13	0	0.87	10	10	5	0	0.5	284	218	131	29	0.73
Kuskokwim River [a]	138	18	11	90	5.6	66	60	40	0	0.7	3,354	800	599	628	1.53	297	297	241	0	0.81	104	104	87	0	0.84	3,959	1,279	978	718	1.33

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Table 3.–Page 2 of 2.

	Unknown					Does not usually fish					Light harvester					Medium harvester					High harvester					Combined use groups				
Community	*N*	S	ns	U	PS	*N*	S	ns	U	PS	*N*	S	ns	U	PS	*N*	S	ns	U	PS	*N*	S	ns	U	PS	*N*	S	ns	U	PS
Quinhagak	24	2	2	17	9.5	5	5	5	0	1	131	66	59	13	1.09	14	14	13	0	0.93	3	3	3	0	1	177	90	82	30	1.24
Goodnews Bay	7	0	0	6	–	2	2	1	0	0.5	59	30	28	0	0.93	4	4	3	0	0.75	–	–	–	–	–	72	36	32	6	1.06
Platinum	2	0	0	2	–	3	3	1	0	0.3	16	16	13	0	0.81	–	–	–	–	–	–	–	–	–	–	21	19	14	2	0.84
S. Kuskokwim Bay	33	2	2	25	14	10	10	7	0	0.7	206	112	100	13	1.01	18	18	16	0	0.89	3	3	3	0	1	270	145	128	38	1.14
Total	171	20	13	115	6.4	76	70	47	0	0.7	3,560	912	699	641	1.47	315	315	257	0	0.82	107	107	90	0	0.84	4,229	1,424	1,106	756	1.31

Note: Dashes indicate data are unavailable. Headings are defined as: *N* = the total number of households, S = number selected for survey, ns = number selected and surveyed, U = number of unselected houses that were surveyed, PS = the proportion of selected households surveyed.

[a] Kuskokwim River total includes the Lower, Middle, and Upper Kuskokwim areas and North Kuskokwim Bay.

Table 4.–Expanded harvest of Chinook salmon for communities surveyed, Kuskokwim Area, 2014.

	Unknown				Not usually harvest				Light harvesters				Medium harvesters				High harvesters				Combined use groups			
Community	*N*	*n*	Mean	SE	*N*	*n*	Mean	SE	*N*	*n*	Mean	SE	*N*	*n*	Mean	SE	*N*	*n*	Mean	SE	Total *N*	Total *n*	Est. total	CI (95%)
Kongiganak	–	–	–	–	–	–	–	–	76	0	–	–	12	0	–	–	2	0	–	–	90	0	–	–
Tuntutuliak	5	0	–	–	5	0	–	–	50	0	–	–	23	0	–	–	7	1	3	–	90	1	–	–
Eek	1	0	–	–	3	1	0	–	69	29	6	2	13	9	18	6	1	1	40	–	87	40	665	266
Kasigluk	5	2	0	0	1	1	3	–	79	32	1	0	16	13	6	1	2	2	5	0	103	50	205	47
Nunapitchuk	7	5	1	0	6	5	1	0	76	37	2	0	21	18	4	0	11	10	4	1	121	75	287	53
Atmautluak	5	3	0	0	1	0	–	–	36	17	1	0	17	13	3	0	7	7	3	0	66	40	108	29
Napakiak	4	4	0	0	4	3	0	0	67	30	3	1	16	14	8	1	2	2	5	0	93	53	311	104
Napaskiak	5	4	1	0	5	2	1	1	53	18	3	1	28	25	6	1	8	6	11	1	99	55	422	94
Oscarville	1	0	–	–	–	–	–	–	5	3	3	2	6	6	6	0	3	3	5	0	15	12	68	20
Bethel	–	–	–	–	–	–	–	–	2,051	512	2	0	–	–	–	–	–	–	–	–	2,051	512	3,089	1,000
Kwethluk	22	14	7	3	7	2	4	3	104	39	3	1	32	25	10	1	9	9	11	0	174	89	959	286
Akiachak	18	9	1	0	7	1	0	.	79	38	6	1	36	31	11	1	13	13	11	0	153	92	1,033	246
Akiak	11	7	1	1	2	2	0	0	36	16	4	2	24	18	8	1	10	5	18	5	83	48	530	211
Tuluksak	12	9	1	0	7	4	4	2	51	19	4	2	17	11	7	2	8	7	7	1	95	50	404	245
Lower Kalskag	7	7	1	0	4	4	0	0	49	21	5	2	10	9	2	0	5	5	1	0	75	46	283	232
Upper Kalskag	9	6	1	0	–	–	–	–	43	26	4	1	5	5	2	0	6	5	14	3	63	42	258	76
Aniak	–	–	–	–	–	–	–	–	184	161	2	0	–	–	–	–	–	–	–	–	184	161	344	60
Chuathbaluk	5	4	0	0	2	1	0	–	20	12	1	1	6	4	10	3	–	–	–	–	33	21	90	46
Crooked Creek	4	3	1	0	–	–	–	–	23	14	0	0	6	5	4	1	–	–	–	–	33	22	35	14
Red Devil	–	–	–	–	–	–	–	–	5	1	0	–	2	2	18	0	2	1	1	–	9	4	83	0
Sleetmute	4	4	0	0	2	2	0	0	29	20	1	1	1	1	0	–	2	1	8	–	38	28	58	41
Stony River	2	2	0	0	1	1	0	–	11	9	2	1	1	1	0	–	–	–	–	–	15	13	24	23
Lime Village	1	0	–	–	–	–	–	–	10	0	–	–	2	0	–	–	1	0	–	–	14	0	–	–
McGrath	6	5	0	0	7	2	0	0	95	38	2	1	3	3	0	0	3	0	–	–	114	48	173	189
Takotna	–	–	–	–	–	–	–	–	23	0	–	–	–	–	–	–	–	–	–	–	23	0	–	–
Nikolai	4	3	10	3	2	1	0	–	28	21	3	1	–	–	–	–	2	2	57	0	36	27	235	63
Telida	–	–	–	–	–	–	–	–	2	0	–	–	–	–	–	–	–	–	–	–	2	0	–	–
Quinhagak	24	19	22	3	5	5	5	0	131	69	21	2	14	13	27	2	3	3	29	0	177	109	3,723	604
Goodnews Bay	7	6	3	1	2	1	0	–	59	27	6	1	4	3	17	6	–	–	–	–	72	37	431	171
Platinum	2	2	0	0	3	0	–	–	16	13	2	1	–	–	–	–	–	–	–	–	21	15	46	27

Note: This table depicts only the expanded harvest estimates by village. It does not include Bayesian estimates for missed villages. Dashes indicate data are unavailable. Headings are defined as: *N* = the total number of households, *n* = the number of households surveyed, SE = standard error, CI (95)% = 95% confidence interval.

Table 5.–Expanded harvest of chum salmon for communities surveyed, Kuskokwim Area, 2014.

	Unknown				Not usually harvest				Light harvesters				Medium harvesters				High harvesters				Combined use groups			
Community	*N*	*n*	Mean	SE	*N*	*n*	Mean	SE	*N*	*n*	Mean	SE	*N*	*n*	Mean	SE	*N*	*n*	Mean	SE	Total *N*	Total *n*	Est. total	CI (95%)
Kongiganak	–	–	–	–	–	–	–	–	76	0	–	–	12	0	–	–	2	0	–	–	90	0	–	–
Tuntutuliak	5	0	–	–	5	0	–	–	50	0	–	–	23	0	–	–	7	1	45	–	90	1	–	–
Eek	1	0	–	–	3	1	0	–	69	29	12	3	13	9	26	4	1	1	10	–	87	40	1,182	437
Kasigluk	5	2	65	50	1	1	6	–	79	32	27	4	16	13	57	4	2	2	105	0	103	50	3,612	771
Nunapitchuk	7	5	23	7	6	5	4	2	76	38	26	5	21	18	90	4	11	10	103	8	121	76	5,213	767
Atmautluak	5	3	1	0	1	0	–	–	36	17	42	14	17	14	69	7	7	7	87	0	66	41	3,327	1,077
Napakiak	4	4	1	0	4	3	10	5	67	30	14	3	16	13	63	8	2	2	190	0	93	52	2,392	513
Napaskiak	5	4	8	3	5	2	30	23	53	18	27	10	28	26	39	2	8	6	62	8	99	56	3,171	1,051
Oscarville	1	0	–	–	–	–	–	–	5	3	3	2	6	6	54	0	3	3	72	0	15	12	599	25
Bethel	–	–	–	–	–	–	–	–	2,051	511	9	1	–	–	–	–	–	–	–	–	2,051	511	18,017	4,400
Kwethluk	22	13	5	2	7	2	8	6	104	40	19	5	32	25	45	3	9	9	68	0	174	89	4,318	997
Akiachak	18	9	2	1	7	1	0	–	79	38	22	3	36	31	46	2	13	13	85	0	153	92	4,744	496
Akiak	11	7	11	4	2	2	0	0	36	15	23	6	24	18	45	7	10	6	96	23	83	48	2,982	733
Tuluksak	12	9	1	1	7	4	20	8	51	19	19	7	17	11	46	9	8	7	45	7	95	50	2,274	790
Lower Kalskag	7	7	4	0	4	4	0	0	49	21	15	4	10	9	36	4	5	5	70	0	75	46	1,458	437
Upper Kalskag	9	6	2	1	–	–	–	–	43	26	10	2	5	4	36	10	6	5	72	12	63	41	1,038	252
Aniak	–	–	–	–	–	–	–	–	184	161	26	3	–	–	–	–	–	–	–	–	184	161	4,695	1,107
Chuathbaluk	5	4	1	0	2	1	0	–	20	12	8	2	6	4	109	30	–	–	–	–	33	21	805	380
Crooked Creek	4	3	3	1	–	–	–	–	23	14	3	1	6	5	52	6	–	–	–	–	33	22	391	92
Red Devil	.	–	–	–	–	–	–	–	5	1	0	–	2	2	30	0	2	1	33	–	9	4	284	0
Sleetmute	4	4	6	0	2	2	3	0	29	19	7	2	1	1	0	–	2	1	200	–	38	27	633	125
Stony River	2	2	0	0	1	1	0	–	11	9	7	3	1	1	10	–	–	–	–	–	15	13	89	67
Lime Village	1	0	–	–	–	–	–	–	10	0	–	–	2	0	–	–	1	0	–	–	14	0	–	–
McGrath	6	5	9	3	7	2	0	0	95	38	4	2	3	3	43	0	3	0	–	–	114	48	642	486
Takotna	–	–	–	–	–	–	–	–	23	0	–	–	–	–	–	–	–	–	–	–	23	0	–	–
Nikolai	4	3	0	0	2	1	0	–	28	21	6	2	–	–	–	–	2	2	600	0	36	27	1,356	99
Telida	–	–	–	–	–	–	–	–	2	0	–	–	–	–	–	–	–	–	–	–	2	0	–	–
Quinhagak	24	19	7	1	5	5	11	0	131	67	11	1	14	13	14	1	3	3	32	0	177	107	1,959	348
Goodnews Bay	7	6	2	1	2	1	0	–	59	27	4	2	4	3	3	0	–	–	–	–	72	37	268	209
Platinum	2	2	0	0	3	0	–	–	16	13	3	0	–	–	–	–	–	–	–	–	21	15	62	19

Note: This table depicts only the expanded harvest estimates by village. It does not include Bayesian estimates for missed villages. Dashes indicate data are unavailable. Headings are defined as: *N* = the total number of households, *n* = the number of households surveyed, SE = standard error, CI (95)% = 95% confidence interval.

Table 6.–Expanded harvest of sockeye salmon for communities surveyed, Kuskokwim Area, 2014.

	Unknown				Not usually harvest				Light harvesters				Medium harvesters				High harvesters				Combined use groups			
Community	*N*	*n*	Mean	SE	*N*	*n*	Mean	SE	*N*	*n*	Mean	SE	*N*	*n*	Mean	SE	*N*	*n*	Mean	SE	Total *N*	total *n*	Est. total	CI (95%)
Kongiganak	–	–	–	–	–	–	–	–	76	0	–	–	12	0	–	–	2	0	–	–	90	0	–	–
Tuntutuliak	5	0	–	–	5	0	–	–	50	0	–	–	23	0	–	–	7	1	25	–	90	1	–	–
Eek	1	0	–	–	3	1	0	–	69	29	16	4	13	9	24	4	1	1	7	–	87	40	1,450	547
Kasigluk	5	2	60	46	1	1	6	–	79	32	15	3	16	13	24	3	2	2	60	0	103	50	1,990	627
Nunapitchuk	7	5	12	3	6	5	5	2	76	37	12	2	21	18	27	1	11	10	44	3	121	75	2,059	258
Atmautluak	5	3	0	0	1	0	–	–	36	17	18	6	17	14	33	3	7	7	40	0	66	41	1,531	442
Napakiak	4	4	0	0	4	3	20	10	67	30	14	4	16	13	30	4	2	2	43	0	93	52	1,573	558
Napaskiak	5	4	6	2	5	2	30	23	53	18	22	5	28	26	29	2	8	6	46	7	99	56	2,514	632
Oscarville	1	0	–	–	–	–	–	–	5	3	17	8	6	6	52	0	3	3	80	0	15	12	679	89
Bethel	–	–	–	–	–	–	–	–	2,051	510	7	1	–	–	–	–	–	–	–	–	2,051	510	14,828	2,911
Kwethluk	22	12	10	6	7	2	23	19	104	40	22	7	32	25	39	4	9	9	209	0	174	88	5,921	1,566
Akiachak	18	9	3	2	7	1	0	.	79	38	16	2	36	30	31	2	13	13	38	0	153	91	3,047	413
Akiak	11	7	21	10	2	2	0	0	36	16	14	4	24	18	43	8	10	6	67	17	83	49	2,418	639
Tuluksak	12	9	1	1	7	4	3	2	51	19	5	2	17	11	11	2	8	7	20	3	95	50	622	184
Lower Kalskag	7	7	1	0	4	4	0	0	49	21	13	4	10	9	22	3	5	5	36	0	75	46	1,040	392
Upper Kalskag	9	6	1	0	–	–	–	–	43	26	6	1	5	4	55	22	6	5	51	7	63	41	839	256
Aniak	–	–	–	–	–	–	–	–	184	161	9	1	–	–	–	–	–	–	–	–	184	161	1,578	275
Chuathbaluk	5	4	0	0	2	1	0	–	20	12	6	1	6	4	60	20	–	–	–	–	33	21	481	257
Crooked Creek	4	3	22	11	–	–	–	–	23	14	2	1	6	5	44	8	–	–	–	–	33	22	391	140
Red Devil	–	–	–	–	–	–	–	–	5	1	0	–	2	2	33	0	2	1	1	–	9	4	151	0
Sleetmute	4	4	9	0	2	2	3	0	29	19	14	4	1	1	0	–	2	1	40	–	38	27	541	245
Stony River	2	2	0	0	1	1	0	–	11	9	9	2	1	1	40	–	–	–	–	–	15	13	137	48
Lime Village	1	0	–	–	–	–	–	–	10	0	–	–	2	0	–	–	1	0	–	–	14	0	–	–
McGrath	6	5	0	0	7	2	0	0	95	38	2	2	3	3	61	0	3	0	–	–	114	48	451	320
Takotna	–	–	–	–	–	–	–	–	23	0	–	–	–	–	–	–	–	–	–	–	23	0	–	–
Nikolai	4	3	0	0	2	1	0	–	28	21	1	0	–	–	–	–	2	2	100	0	36	27	236	22
Telida	–	–	–	–	–	–	–	–	2	0	–	–	–	–	–	–	–	–	–	–	2	0	–	–
Quinhagak	24	19	13	2	5	5	11	0	131	69	17	2	14	13	17	1	3	3	33	0	177	109	2,939	472
Goodnews Bay	7	6	15	4	2	1	0	–	59	27	19	4	4	3	31	5	–	–	–	–	72	37	1,370	523
Platinum	2	2	0	0	3	0	–	–	16	13	19	2	–	–	–	–	–	–	–	–	21	15	349	88

Note: This table depicts only the expanded harvest estimates by village. It does not include Bayesian estimates for missed villages. Dashes indicate data are unavailable. Headings are defined as: *N* = the total number of households, *n* = the number of households surveyed, SE = standard error, CI (95)% = 95% confidence interval.

Table 7.–Expanded harvest of coho salmon for surveyed communities, Kuskokwim Area, 2014.

	Unknown				Not usually harvest				Light harvesters				Medium harvesters				High harvesters				Combined use groups			
Community	*N*	*n*	Mean	SE	*N*	*n*	Mean	SE	*N*	*n*	Mean	SE	*N*	*n*	Mean	SE	*N*	*n*	Mean	SE	Total *N*	total *n*	Est. total	CI (95%)
Kongiganak	–	–	–	–	–	–	–	–	76	0	–	–	12	0	–	–	2	0	–	–	90	0	–	–
Tuntutuliak	5	0	–	–	5	0	–	–	50	0	–	–	23	0	–	–	7	1	15	–	90	1	–	–
Eek	1	0	–	–	3	1	0	–	69	29	7	2	13	9	5	1	1	1	10	–	87	40	555	248
Kasigluk	5	3	12	4	1	1	0	–	79	31	8	3	16	14	8	1	2	2	6	0	103	51	851	444
Nunapitchuk	7	5	25	9	6	5	23	6	76	38	5	1	21	18	23	2	11	10	13	3	121	76	1,305	247
Atmautluak	5	3	0	0	1	0	–	–	36	17	1	1	17	14	3	1	7	7	13	0	66	41	176	49
Napakiak	4	4	1	0	4	3	13	7	67	30	4	1	16	14	22	3	2	2	25	0	93	53	740	191
Napaskiak	5	4	8	3	5	2	0	0	53	18	9	2	28	25	19	1	8	6	18	4	99	55	1,153	284
Oscarville	1	0	–	–	–	–	–	–	5	2	3	2	6	6	12	0	3	3	10	0	15	11	128	27
Bethel	–	–	–	–	–	–	–	–	2,051	512	9	1	–	–	–	–	–	–	–	–	2,051	512	19,364	3,824
Kwethluk	22	13	4	1	7	2	25	21	104	40	12	3	32	25	30	3	9	9	211	0	174	89	4,422	716
Akiachak	18	9	2	1	7	1	0	–	79	38	5	1	36	30	24	4	13	13	36	0	153	91	1,845	381
Akiak	11	7	7	4	2	2	0	0	36	17	8	3	24	18	22	4	10	6	58	31	83	50	1,501	680
Tuluksak	12	9	1	0	7	4	6	4	51	19	13	4	17	11	3	1	8	7	5	1	95	50	808	368
Lower Kalskag	7	7	8	0	4	4	0	0	49	21	10	3	10	9	17	2	5	5	41	0	75	46	907	299
Upper Kalskag	9	6	7	4	–	–	–	–	43	26	15	3	5	5	17	0	6	5	24	8	63	42	938	280
Aniak	–	–	–	–	–	–	–	–	184	161	52	11	–	–	–	–	–	–	–	–	184	161	9,566	4,133
Chuathbaluk	5	4	4	2	2	1	0	–	20	12	12	3	6	5	7	2	–	–	–	–	33	22	291	138
Crooked Creek	4	3	3	2	–	–	–	–	23	14	0	0	6	5	31	8	–	–	–	–	33	22	198	101
Red Devil	–	–	–	–	–	–	–	–	5	1	60	–	2	2	26	0	2	1	150	–	9	4	792	0
Sleetmute	4	4	18	0	2	2	10	0	29	20	10	2	1	1	0	–	2	1	300	–	38	28	993	140
Stony River	2	2	0	0	1	1	0	–	11	9	11	2	1	1	60	–	–	–	–	–	15	13	177	55
Lime Village	1	0	–	–	–	–	–	–	10	0	–	–	2	0	–	–	1	0	–	–	14	0	–	–
McGrath	6	5	40	10	7	2	0	0	95	38	9	3	3	3	0	0	3	0	–	–	114	48	1,189	558
Takotna	–	–	–	–	–	–	–	–	23	0	–	–	–	–	–	–	–	–	–	–	23	0	–	–
Nikolai	4	3	1	1	2	1	0	–	28	21	2	0	–	–	–	–	2	2	100	0	36	27	256	27
Telida	–	–	–	–	–	–	–	–	2	0	–	–	–	–	–	–	–	–	–	–	2	0	–	–
Quinhagak	24	19	5	1	5	5	12	0	131	68	13	1	14	13	18	2	3	3	27	0	177	108	2,240	350
Goodnews Bay	7	6	1	0	2	1	0	–	59	27	5	1	4	3	17	4	–	–	–	–	72	37	371	182
Platinum	2	2	0	0	3	0	–	–	16	13	13	2	–	–	–	–	–	–	–	–	21	15	240	81

Note: This table depicts only the expanded harvest estimates by village. It does not include Bayesian estimates for missed villages. Dashes indicate data are unavailable. Headings are defined as: *N* = the total number of households, *n* = the number of households surveyed, SE = standard error, CI (95)% = 95% confidence interval.

Table 8.–Expanded harvest of pink salmon for communities surveyed, Kuskokwim Area, 2014.

	Unknown				Not usually harvest				Light harvesters				Medium harvesters				High harvesters				Combined use groups			
Community	*N*	*n*	Mean	SE	*N*	*n*	Mean	SE	*N*	*n*	Mean	SE	*N*	*n*	Mean	SE	*N*	*n*	Mean	SE	Total *N*	total *n*	Est. total	CI (95%)
Kongiganak	–	–	–	–	–	–	–	–	76	0	–	–	12	0	–	–	2	0	–	–	90	0	–	–
Tuntutuliak	5	0	–	–	5	0	–	–	50	0	–	–	23	0	–	–	7	1	0	–	90	1	–	–
Eek	1	0	–	–	3	1	0	–	69	29	0	0	13	9	1	1	1	1	0	–	87	40	15	16
Kasigluk	5	2	0	0	1	1	0	–	79	32	0	0	16	13	0	0	2	2	0	0	103	50	12	11
Nunapitchuk	7	5	0	0	6	5	0	0	76	37	0	0	21	18	0	0	11	9	1	0	121	74	42	21
Atmautluak	5	3	1	1	1	0	–	–	36	17	1	1	17	14	0	0	7	7	1	0	66	41	62	64
Napakiak	4	4	0	0	4	3	0	0	67	30	0	0	16	14	2	1	2	2	0	0	93	53	51	34
Napaskiak	5	4	0	0	5	2	1	1	53	18	0	0	28	26	0	0	8	6	0	0	99	56	20	21
Oscarville	1	0	–	–	–	–	–	–	5	3	0	0	6	6	0	0	3	3	7	0	15	12	24	0
Bethel	–	–	–	–	–	–	–	–	2,051	511	1	0	–	–	–	–	–	–	–	–	2,051	511	1,048	430
Kwethluk	22	13	0	0	7	2	0	0	104	40	1	0	32	24	0	0	9	9	4	0	174	88	125	99
Akiachak	18	9	0	0	7	1	0	.	79	38	1	0	36	30	2	0	13	13	1	0	153	91	123	61
Akiak	11	7	0	0	2	2	0	0	36	17	1	1	24	18	3	1	10	6	18	8	83	50	282	181
Tuluksak	12	8	0	0	7	4	1	1	51	19	0	0	17	11	0	0	8	7	0	0	95	49	30	27
Lower Kalskag	7	7	0	0	4	4	0	0	49	21	0	0	10	7	2	1	5	5	2	0	75	44	30	16
Upper Kalskag	9	6	0	0	–	–	–	–	43	26	0	0	5	5	2	0	6	5	2	1	63	42	24	6
Aniak	–	–	–	–	–	–	–	–	184	159	3	1	–	–	–	–	–	–	–	–	184	159	636	422
Chuathbaluk	5	4	0	0	2	1	0	–	20	11	0	0	6	4	0	0	–	–	–	–	33	20	0	0
Crooked Creek	4	3	0	0	–	–	–	–	23	14	0	0	6	5	0	0	–	–	–	–	33	22	1	1
Red Devil	–	–	–	–	–	–	–	–	5	1	0	.	2	2	0	0	2	1	1	–	9	4	5	0
Sleetmute	4	4	0	0	2	2	0	0	29	20	0	0	1	1	0	–	2	1	0	–	38	28	0	0
Stony River	2	2	0	0	1	1	0	–	11	9	0	0	1	1	0	–	–	–	–	–	15	13	4	3
Lime Village	1	0	–	–	–	–	–	–	10	0	–	–	2	0	–	–	1	0	–	–	14	0	–	–
McGrath	6	5	0	0	7	2	0	0	95	38	0	0	3	3	0	0	3	0	–	–	114	48	15	21
Takotna	–	–	–	–	–	–	–	–	23	0	–	–	–	–	–	–	–	–	–	–	23	0	–	–
Nikolai	4	3	0	0	2	1	0	–	28	21	0	0	–	–	–	–	2	2	1	0	36	27	2	0
Telida	–	–	–	–	–	–	–	–	2	0	–	–	–	–	–	–	–	–	–	–	2	0	–	–
Quinhagak	24	19	0	0	5	5	0	0	131	68	0	0	14	13	0	0	3	3	2	0	177	108	40	18
Goodnews Bay	7	6	0	0	2	1	0	–	59	27	0	0	4	3	0	0	–	–	–	–	72	37	0	0
Platinum	2	2	0	0	3	0	–	–	16	13	2	1	–	–	–	–	–	–	–	–	21	15	29	20

Note: This table depicts only the expanded harvest estimates by village. Bayesian estimates are not performed for pink salmon for missed villages. Dashes indicate data are unavailable. Headings are defined as: *N* = the total number of households, *n* = the number of households surveyed, SE = standard error, CI (95)% = 95% confidence interval.

Table 9.–Reported number of salmon retained from commercial fishing for subsistence use, Kuskokwim Area, 2014.

Community	*N*	*n*	Chinook	Chum	Coho	Sockeye	Pink
Kongiganak	90	0	–	–	–	–	–
N. Kuskokwim Bay	92	0	–	–	–	–	–
Tuntutuliak	90	1	3	0	0	0	0
Eek	87	8	0	0	0	0	10
Kasigluk	103	11	4	0	18	0	4
Nunapitchuk	121	29	5	2	10	1	3
Atmautluak	66	8	0	2	17	0	4
Napakiak	93	11	1	0	0	0	0
Napaskiak	99	11	0	0	22	0	0
Oscarville	15	2	3	0	3	0	0
Bethel	2,051	22	7	0	0	17	8
Kwethluk	174	17	1	22	12	0	4
Akiachak	153	40	33	0	3	4	21
Akiak	83	7	2	0	2	2	0
Tuluksak	95	2	0	0	0	0	0
Lower Kuskokwim	3,319	169	59	26	87	24	54
Lower Kalskag	75	0	0	0	0	0	0
Upper Kalskag	63	0	0	0	0	0	0
Aniak	184	0	0	0	0	0	0
Chuathbaluk	33	0	0	0	0	0	0
Middle Kuskokwim	355	0	0	0	0	0	0
Crooked Creek	33	0	0	0	0	0	0
Red Devil	9	0	0	0	0	0	0
Sleetmute	38	0	0	0	0	0	0
Stony River	15	0	0	0	0	0	0
Lime Village	14	0	–	–	–	–	–
McGrath	114	0	0	0	0	0	0
Takotna	23	0	–	–	–	–	–
Nikolai	36	0	0	0	0	0	0
Telida	2	0	–	–	–	–	–
Upper Kuskokwim	284	0	0	0	0	0	0
Kuskokwim River[a]	4,050	169	59	26	87	24	54
Quinhagak	177	45	28	0	16	1	9
Goodnews Bay	72	11	21	31	0	52	0
Platinum	21	5	5	3	7	16	3
S. Kuskokwim Bay	270	61	54	34	23	69	12
Survey total	4,320	230	113	60	110	93	66

Note: Dashes indicate data are unavailable. Headings are defined as: *N* = the total number of households, *n* = the number of households surveyed.

[a] Kuskokwim River total includes the Lower, Middle, and Upper Kuskokwim areas and North Kuskokwim Bay.

Table 10.–Fishing gear reported as the primary type used by subsistence fishermen, Kuskokwim Area, 2014.

Community	*N*	*n*	Setnet	Driftnet	Fish wheel	Hook & line
Kongiganak	90	0	–	–	–	–
N. Kuskokwim Bay	92	0	–	–	–	–
Tuntutuliak	90	1	–	1	–	–
Eek	87	8	3	23	–	–
Kasigluk	103	11	3	38	–	–
Nunapitchuk	121	29	6	54	–	–
Atmautluak	66	8	3	24	–	–
Napakiak	93	11	10	21	–	–
Napaskiak	99	11	36	10	–	–
Oscarville	15	2	9	2	–	–
Bethel	2,051	22	52	142	–	14
Kwethluk	174	17	33	23	–	5
Akiachak	153	40	31	31	–	–
Akiak	83	7	11	21	–	–
Tuluksak	95	2	12	21	–	3
Lower Kuskokwim	3,319	169	209	411	–	22
Lower Kalskag	75	0	9	21	–	–
Upper Kalskag	63	0	16	11	–	–
Aniak	184	0	17	48	2	21
Chuathbaluk	33	0	1	7	5	1
Middle Kuskokwim	355	0	43	87	7	22
Crooked Creek	33	0	1	11	–	1
Red Devil	9	0	2	1	–	1
Sleetmute	38	0	9	6	–	2
Stony River	15	0	2	3	–	–
Lime Village	14	0	–	–	–	–
McGrath	114	0	10	1	3	3
Takotna	23	0	–	–	–	–
Nikolai	36	0	10	–	–	4
Telida	2	0	–	–	–	–
Upper Kuskokwim	284	0	34	22	3	11
Kuskokwim River[a]	4,050	169	286	520	10	55
Quinhagak	177	45	2	75	–	9
Goodnews Bay	72	11	8	16	–	–
Platinum	21	5	7	–	–	1
S. Kuskokwim Bay	270	61	17	91	–	10
Total	4,320	230	303	611	10	65

Note: Dashes indicate data are unavailable. Headings are defined as: *N* = the total number of households, *n* = the number of households surveyed.

[a] Kuskokwim River total includes the Lower, Middle, and Upper Kuskokwim areas and North Kuskokwim Bay.

Table 11.–Estimated number of households that subsistence fished in communities surveyed, Kuskokwim Area, 2014.

	Unknown				Not usually harvest				Light harvesters				Medium harvesters				High harvesters				Combined use groups			
Community	*N*	*n*	Mean	SE	*N*	*n*	Mean	SE	*N*	*n*	Mean	SE	*N*	*n*	Mean	SE	*N*	*n*	Mean	SE	Total *N*	total *n*	Est. total	CI (95%)
Kongiganak	–	–	–	–	–	–	–	–	76	0	–	–	12	0	–	–	2	0	–	–	90	0	–	–
N. Kuskokwim Bay	–	–	–	–	–	–	–	–	76	0	–	–	12	0	–	–	2	0	–	–	90	0	–	–
Tuntutuliak	5	0	–	–	5	0	–	–	50	0	–	–	23	0	–	–	7	1	1	–	90	1	–	–
Eek	1	0	–	–	3	1	0	–	69	29	1	0	13	9	1	0	1	1	1	–	87	40	55	10
Kasigluk	5	3	1	0	1	1	1	–	79	32	1	0	16	14	1	0	2	2	1	0	103	52	83	9
Nunapitchuk	7	5	1	0	6	5	1	0	76	38	1	0	21	19	1	0	11	10	1	0	121	77	97	8
Atmautluak	5	3	0	0	1	0	–	–	36	17	1	0	17	14	1	0	7	7	1	0	66	41	43	7
Napakiak	4	4	0	0	4	3	1	0	67	30	1	0	16	14	1	0	2	2	1	0	93	53	57	9
Napaskiak	5	4	1	0	5	2	1	0	53	18	1	0	28	26	1	0	8	6	1	0	99	56	80	9
Oscarville	1	0	–	–	–	–	–	–	5	3	1	0	6	6	1	0	3	3	1	0	15	12	13	2
Bethel	–	–	–	–	–	–	–	–	2,051	516	0	0	–	–	–	–	–	–	–	–	2,051	516	831	75
Kwethluk	22	14	1	0	7	2	1	0	104	40	1	0	32	26	1	0	9	9	1	0	174	91	120	14
Akiachak	18	9	0	0	7	1	0	.	79	39	1	0	36	31	1	0	13	13	1	0	153	93	107	10
Akiak	11	7	1	0	2	2	1	0	36	18	1	0	24	18	1	0	10	7	1	0	83	52	59	7
Tuluksak	12	10	1	0	7	4	1	0	51	20	1	0	17	12	1	0	8	7	1	0	95	53	68	9
Lower Kuskokwim	96	59	1	0	48	21	1	0	2,756	800	0	0	249	189	1	0	81	68	1	0	3,230	1,137	1,613	81
Lower Kalskag	7	7	0	0	4	4	0	0	49	21	1	0	10	10	1	0	5	5	1	0	75	47	49	8
Upper Kalskag	9	6	0	0	–	–	–	–	43	26	1	0	5	5	1	0	6	5	1	0	63	42	39	6
Aniak	–	–	–	–	–	–	–	–	184	162	1	0	–	–	–	–	–	–	–	–	184	162	100	5
Chuathbaluk	5	4	0	0	2	1	0	–	20	12	1	0	6	6	1	0	–	–	–	–	33	23	21	4
Middle Kuskokwim	21	17	0	0	6	5	0	0	296	221	1	0	21	21	1	0	11	10	1	0	355	274	208	11
Crooked Creek	4	4	1	0	–	–	–	–	23	14	0	0	6	5	1	0	–	–	–	–	33	23	18	4
Red Devil	.	–	–	–	–	–	–	–	5	1	1	–	2	2	1	0	2	1	1	–	9	4	9	0
Sleetmute	4	4	1	0	2	2	1	0	29	20	1	0	1	1	0	–	2	1	1	–	38	28	23	4
Stony River	2	2	0	0	1	1	0	–	11	9	0	0	1	1	1	–	–	–	–	–	15	13	6	2
Lime Village	1	0	–	–	–	–	–	–	10	0	–	–	2	0	–	–	1	0	–	–	14	0	–	–
McGrath	6	5	0	0	7	2	0	0	95	38	0	0	3	3	1	0	3	0	–	–	114	48	40	13
Takotna	–	–	–	–	–	–	–	–	23	0	–	–	–	–	–	–	–	–	–	–	23	0	–	–
Nikolai	4	3	1	0	2	1	0	–	28	21	0	0	–	–	–	–	2	2	1	0	36	27	18	3
Telida	–	–	–	–	–	–	–	–	2	0	–	–	–	–	–	–	–	–	–	–	2	0	–	–
Upper Kuskokwim	21	18	1	0	12	6	0	0	226	103	0	0	15	12	1	0	10	4	1	0	284	143	115	14
Kuskokwim River[a]	138	94	1	0	66	32	1	0	3,354	1,124	0	0	297	222	1	0	104	82	1	0	3,959	1,554	1,936	83

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Table 11.–Page 2 of 2.

	Unknown				Not usually harvest				Light harvesters				Medium harvesters				High harvesters				Combined use groups			
Community	*N*	*n*	Mean	SE	*N*	*n*	Mean	SE	*N*	*n*	Mean	SE	*N*	*n*	Mean	SE	*N*	*n*	Mean	SE	Total *N*	total *n*	Est. total	CI (95%)
Quinhagak	7	6	1	0	2	1	0	–	59	27	1	0	4	3	1	0	–	–	–	–	72	37	49	8
Goodnews Bay	2	2	0	0	3	0	–	–	16	13	1	0	–	–	–	–	–	–	–	–	21	15	13	2
Platinum	33	27	1	0	10	6	0	0	206	109	1	0	18	16	1	0	3	3	1	0	270	161	204	12
S. Kuskokwim Bay	171	121	1	0	76	38	1	0	3,560	1,233	0	0	315	238	1	0	107	85	1	0	4,229	1,715	2,139	84
Total	172	142	1	0	27	22	0	0	3,812	1,374	1	0	227	192	1	0	76	71	1	0	4,314	1,801	2,407	84

Note: Dashes indicate data are unavailable. Headings are defined as: *N* = the total number of households, *n* = the number of households surveyed, SE = standard error, Est. Total = estimated total number of households from all use groups that subsistence fished, expressed as a proportion of households from each group that fished, based on the number of households surveyed, and their responses to the question: "Did you subsistence fish?", CI (95)% = 95% confidence interval.

[a] Kuskokwim River total includes the Lower, Middle, and Upper Kuskokwim areas and North Kuskokwim Bay.

Table 12.–Estimated number of people living in communities surveyed, Kuskokwim Area, 2014.

	Unknown				Not usually harvest				Light harvesters				Medium harvesters				High harvesters				Combined use groups			
Community	*N*	*n*	Mean	SE	*N*	*n*	Mean	SE	*N*	*n*	Mean	SE	*N*	*n*	Mean	SE	*N*	*n*	Mean	SE	Total *N*	total *n*	Est. total	CI (95%)
Kongiganak	–	–	–	–	–	–	–	–	76	0	–	–	12	0	–	–	2	0	–	–	90	0	–	–
N. Kuskokwim Bay	–	–	–	–	–	–	–	–	76	0	–	–	12	0	–	–	2	0	–	–	90	0	–	–
Tuntutuliak	5	0	–	–	5	0	–	–	50	0	–	–	23	0	–	–	7	1	3	–	90	1	–	–
Eek	1	0	–	–	3	1	2	–	69	29	4	0	13	9	4	0	1	1	6	–	87	40	361	56
Kasigluk	5	3	5	1	1	1	4	–	79	30	5	0	16	14	7	0	2	2	3	0	103	50	538	68
Nunapitchuk	7	5	4	1	6	5	3	0	76	37	5	0	21	19	6	0	11	10	5	0	121	76	582	50
Atmautluak	5	3	4	1	1	0	–	–	36	16	5	1	17	12	7	1	7	7	5	0	66	38	350	43
Napakiak	4	4	2	0	4	3	4	1	67	30	4	0	16	13	4	0	2	2	2	0	93	52	332	42
Napaskiak	5	4	3	0	5	2	6	1	53	17	5	0	28	25	5	0	8	6	5	0	99	54	476	47
Oscarville	1	0	–	–	–	–	–	–	5	3	4	1	6	6	4	0	3	1	8	–	15	10	74	12
Bethel	–	–	–	–	–	–	–	–	2,051	509	3	0	–	–	–	–	–	–	–	–	2,051	509	6,681	290
Kwethluk	22	12	3	0	7	2	3	1	104	37	5	0	32	24	6	0	9	9	7	0	174	84	861	70
Akiachak	18	9	3	0	7	1	4	–	79	37	4	0	36	31	5	0	13	13	6	0	153	91	678	47
Akiak	11	7	3	1	2	2	3	0	36	18	4	0	24	18	5	0	10	7	5	0	83	52	384	33
Tuluksak	12	10	4	0	7	4	4	0	51	21	6	0	17	12	6	0	8	7	5	0	95	54	511	51
Lower Kuskokwim	96	57	4	0	48	21	4	0	2,756	784	4	0	249	183	5	0	81	66	5	0	3,230	1,111	11,828	332
Lower Kalskag	7	7	3	0	4	4	4	0	49	20	4	0	10	9	4	0	5	5	5	0	75	45	290	34
Upper Kalskag	9	6	3	0	–	–	–	–	43	25	4	0	5	5	5	0	6	5	5	0	63	41	256	32
Aniak	–	–	–	–	–	–	–	–	184	157	3	0	–	–	–	–	–	–	–	–	184	157	594	20
Chuathbaluk	5	4	3	0	2	1	4	–	20	11	4	0	6	6	5	0	–	–	–	–	33	22	132	16
Middle Kuskokwim	21	17	3	0	6	5	4	0	296	213	4	0	21	20	4	0	11	10	5	0	355	265	1,272	52
Crooked Creek	4	4	2	0	–	–	–	–	23	14	3	0	6	5	5	0	–	–	–	–	33	23	98	12
Red Devil	–	–	–	–	–	–	–	–	5	1	2	–	2	2	1	0	2	1	2	–	9	4	14	0
Sleetmute	4	4	4	0	2	2	2	0	29	20	3	0	1	1	3	–	2	1	2	–	38	28	103	11
Stony River	2	2	2	0	1	1	1	–	11	9	3	0	1	1	2	–	–	–	–	–	15	13	39	7
Lime Village	1	0	–	–	–	–	–	–	10	0	–	–	2	0	–	–	1	0	–	–	14	0	–	–
McGrath	6	5	3	0	7	2	3	1	95	38	2	0	3	2	2	0	3	0	–	–	114	47	270	29
Takotna	–	–	–	–	–	–	–	–	23	0	–	–	–	–	–	–	–	–	–	–	23	0	–	–
Nikolai	4	2	2	0	2	1	1	–	28	20	3	0	–	–	–	–	2	2	2	0	36	25	90	11
Telida	–	–	–	–	–	–	–	–	2	0	–	–	–	–	–	–	–	–	–	–	2	0	–	–
Upper Kuskokwim	21	17	3	0	12	6	1	0	226	102	3	0	15	11	3	0	10	4	2	0	284	140	613	35
Kuskokwim River[a]	138	91	3	0	66	32	4	0	3,354	1,099	4	0	297	214	5	0	104	80	5	0	3,959	1,516	13,714	338

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Table 12.–Page 2 of 2.

	Unknown				Not usually harvest				Light harvesters				Medium harvesters				High harvesters				Combined use groups			
Community	*N*	*n*	Mean	SE	*N*	*n*	Mean	SE	*N*	*n*	Mean	SE	*N*	*n*	Mean	SE	*N*	*n*	Mean	SE	Total *N*	total *n*	Est. total	CI (95%)
Quinhagak	24	19	4	0	5	5	2	0	131	67	4	0	14	13	6	0	3	3	5	0	177	107	774	56
Goodnews Bay	7	6	2	0	2	1	3	–	59	27	3	0	4	2	3	1	–	–	–	–	72	36	198	26
Platinum	2	2	1	0	3	0	–	–	16	13	4	0	–	–	–	–	–	–	–	–	21	15	80	13
S. Kuskokwim Bay	33	27	3	0	10	6	2	0	206	107	4	0	18	15	5	0	3	3	5	0	270	158	1,052	63
Survey total	171	118	3	0	76	38	3	0	3,560	1,206	4	0	315	229	5	0	107	83	5	0	4,229	1,674	14,766	343

Note: Dashes indicate data are unavailable. Headings are defined as: *N* = the total number of households, *n* = the number of households surveyed, SE = standard error, Est. Total = estimated total number of households from all use groups that subsistence fished, expressed as a proportion of households from each group that fished, based on the number of households surveyed, and their responses to the question: "Did you subsistence fish?", CI (95)% = 95% confidence interval.

[a] Kuskokwim River total includes the Lower, Middle, and Upper Kuskokwim areas and North Kuskokwim Bay.

Table 13.–Number of fish reported as received from subsistence, commercial and test fisheries, Kuskokwim Area, 2014.

Received from:			Subsistence fishermen					Commercial fishermen					Bethel test fishery					All fisheries combined				
Community	*N*	*n*	Chinook	Chum	Sockeye	Coho	Pink	Chinook	Chum	Coho	Sockeye	Pink	Chinook	Chum	Coho	Sockeye	Pink	Chinook	Chum	Coho	Sockeye	Pink
Kongiganak	90	0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
N. Kuskokwim B	92	0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Tuntutuliak	90	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0
Eek	87	37	14	26	20	21	4	0	0	0	0	0	1	0	0	0	0	15	26	20	21	4
Kasigluk	103	50	21	108	77	94	0	0	0	0	0	0	0	0	0	0	0	21	108	77	94	0
Nunapitchuk	121	75	11	237	28	105	0	0	0	0	0	0	0	0	0	0	0	11	237	28	105	0
Atmautluak	66	36	82	179	41	28	0	0	0	0	0	0	0	0	0	0	0	82	179	41	28	0
Napakiak	93	48	11	48	32	50	0	0	0	0	0	0	3	5	0	0	0	14	53	32	50	0
Napaskiak	99	55	25	41	73	36	0	0	0	0	0	0	3	0	0	0	0	28	41	73	36	0
Oscarville	15	10	0	0	0	5	0	0	0	0	0	0	3	2	1	0	0	3	2	1	5	0
Bethel	2,051	498	181	412	530	921	14	0	0	0	0	0	90	229	154	350	2	271	641	684	1,271	16
Kwethluk	174	81	24	195	110	130	0	0	0	0	0	0	9	2	0	0	0	33	197	110	130	0
Akiachak	153	84	17	131	134	46	0	0	0	0	0	0	5	0	0	0	0	22	131	134	46	0
Akiak	83	51	27	124	147	104	0	0	0	0	0	0	0	0	0	0	0	27	124	147	104	0
Tuluksak	95	51	13	68	13	42	0	0	0	0	0	0	10	0	0	0	0	23	68	13	42	0
Lower Kusko	3,319	1,077	426	1,569	1,205	1,582	18	0	0	0	0	0	125	238	155	350	2	551	1,807	1,360	1,932	20
Lower Kalskag	75	41	18	59	15	23	0	0	0	0	0	0	0	0	0	0	0	18	59	15	23	0
Upper Kalskag	63	41	28	9	9	45	3	0	0	0	0	0	0	0	0	0	0	28	9	9	45	3
Aniak	184	161	23	424	43	222	0	0	0	0	0	0	0	0	0	0	0	23	424	43	222	0
Chuathbaluk	33	22	2	6	6	8	1	0	0	0	0	0	1	0	0	0	0	3	6	6	8	1
Middle Kusko	355	265	71	498	73	298	4	0	0	0	0	0	1	0	0	0	0	72	498	73	298	4
Crooked Creek	33	22	11	15	15	15	0	0	0	0	0	0	3	0	0	0	0	–	–	–	–	–
Red Devil	9	4	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0
Sleetmute	38	25	12	20	49	19	0	0	0	0	0	0	1	0	0	0	0	13	20	49	19	0
Stony River	15	13	2	0	5	36	0	0	0	0	0	0	10	0	0	0	0	12	0	5	36	0
Lime Village	14	0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
McGrath	114	46	10	0	19	142	0	0	0	0	0	0	0	0	0	0	0	10	0	19	142	0
Takotna	23	0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Nikolai	36	27	30	10	0	7	0	0	0	0	0	0	3	2	0	0	0	33	12	0	7	0
Telida	2	0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Upper Kusko	284	137	65	45	88	219	0	0	0	0	0	0	18	2	0	0	0	83	47	88	219	0
Kuskokwim R[a]	4,050	1,479	562	2,112	1,366	2,099	22	0	0	0	0	0	144	240	155	350	2	706	2,352	1,521	2,449	24
Quinhagak	177	98	81	62	104	50	0	0	0	0	0	0	0	0	0	0	0	81	62	104	50	0
Goodnews Bay	72	36	24	45	80	78	5	0	0	0	0	0	0	0	0	0	0	24	45	80	78	5
Platinum	21	15	5	16	24	33	0	0	0	0	0	0	0	0	0	10	0	5	16	24	43	0
S. Kuskokwim B.	270	149	110	123	208	161	5	0	0	0	0	0	0	0	0	10	0	110	123	208	171	5
Survey total	4,320	1,628	672	2,235	1,574	2,260	27	0	0	0	0	0	144	240	155	360	2	816	2,475	1,729	2,620	29

Note: Dashes indicate data are unavailable. Headings are defined as: *N* = the total number of households, *n* = the number of households surveyed.

[a] Kuskokwim River total includes the Lower, Middle, and Upper Kuskokwim areas and North Kuskokwim Bay.

Table 14.–Number of people that own dogs, number of dogs per community, number reporting harvesting salmon for dogs, and number of salmon harvested for dogs, by species, Kuskokwim Area, 2014

Community	*N*	*n*	Own dog	Feed salmon	# dogs	Chinook	Chum	Sockeye	Coho	Pink
Kongiganak	90	0	–	–	–	–	–	–	–	–
N. Kuskokwim Bay	92	0	–	–	–	–	–	–	–	–
Tuntutuliak	90	1	1	0	2	0	0	0	0	0
Eek	87	39	22	1	45	0	20	0	0	0
Kasigluk	103	49	33	0	86	0	0	0	0	0
Nunapitchuk	121	77	64	2	132	0	65	0	25	0
Atmautluak	66	36	27	0	101	0	0	0	0	0
Napakiak	93	49	30	0	50	0	0	0	0	0
Napaskiak	99	51	35	2	147	0	160	60	0	0
Oscarville	15	10	7	2	19	0	45	0	0	0
Bethel	2,051	497	229	16	391	0	355	249	5	52
Kwethluk	174	84	66	1	194	0	0	0	0	2
Akiachak	153	91	54	2	224	0	220	362	2	0
Akiak	83	50	35	6	188	0	480	180	75	80
Tuluksak	95	52	36	2	95	0	105	30	0	0
Lower Kuskokwim	3,319	1,086	639	34	1,674	0	1,450	881	107	134
Lower Kalskag	75	42	26	2	59	0	25	3	0	0
Upper Kalskag	63	39	19	1	66	0	0	0	0	10
Aniak	184	162	96	7	275	0	1,515	5,125	100	0
Chuathbaluk	33	23	18	0	32	0	0	0	0	0
Middle Kuskokwim	355	266	159	10	432	0	1,540	5,128	100	10
Crooked Creek	33	21	15	1	24	0	20	0	0	0
Red Devil	9	4	3	0	5	0	0	0	0	0
Sleetmute	38	28	18	2	36	0	220	200	0	0
Stony River	15	13	5	0	7	0	0	0	0	0
Lime Village	14	0	–	–	–	–	–	–	–	–
McGrath	114	48	27	1	52	4	50	0	1	0
Takotna	23	0	–	–	–	–	–	–	–	–
Nikolai	36	27	16	1	61	0	1,000	90	20	2
Telida	2	0	–	–	–	–	–	–	–	–
Upper Kuskokwim	284	141	84	5	185	4	1,290	290	21	2
Kuskokwim River[a]	4,050	1,493	882	49	2,291	4	4,280	6,299	228	146
Quinhagak	177	101	61	2	107	0	4	0	0	0
Goodnews Bay	72	36	20	0	37	0	0	0	0	0
Platinum	21	15	10	0	17	0	0	0	0	0
S. Kuskokwim Bay	270	152	91	2	161	0	4	0	0	0
Survey total	4,320	1,645	973	51	2,452	4	4,284	6,299	228	146

Note: Dashes indicate data are unavailable. Headings are defined as: *N* = the total number of households, *n* = the number of households surveyed, # dog = number of dogs reported / owned by the respondent.

[a] Kuskokwim River total includes the Lower, Middle, and Upper Kuskokwim areas and North Kuskokwim Bay.

Table 15.–Number of salmon, by species reported as lost due to spoilage, animals, etc., Kuskokwim Area, 2014.

Community	*N*	*n*	Households reporting lost fish	Chinook	Chum	Coho	Sockeye	Reason given for loss: Animal	Disease	Human	Weather	Run negative	Unknown
Kongiganak	90	0	–	–	–	–	–	–	–	–	–	–	–
N. Kuskokwim Bay	90	0	–	–	–	–	–	–	–	–	–	–	–
Tuntutuliak	90	1	0	0	0	0	0	0	0	0	0	0	0
Eek	87	39	2	0	11	0	11	0	0	0	1	0	1
Kasigluk	103	51	2	0	40	0	0	0	0	0	2	0	0
Nunapitchuk	121	74	6	0	103	11	28	0	0	0	5	0	1
Atmautluak	66	41	0	0	0	0	0	0	0	0	0	0	0
Napakiak	93	51	0	0	0	0	0	0	0	0	0	0	0
Napaskiak	99	56	5	1	32	30	26	1	1	0	3	0	0
Oscarville	15	10	1	0	6	0	6	0	0	0	1	0	0
Bethel	2,051	511	21	0	43	18	40	2	2	2	13	1	1
Kwethluk	174	85	13	2	68	146	28	2	0	0	9	0	2
Akiachak	153	90	11	25	159	35	36	6	1	0	4	0	0
Akiak	83	46	6	0	50	53	21	4	0	0	2	0	0
Tuluksak	95	50	11	26	353	0	57	8	0	0	2	0	1
Lower Kuskokwim	3,230	1,105	78	54	865	293	253	23	4	2	42	1	6
Lower Kalskag	75	47	5	0	13	3	16	3	2	0	0	0	0
Upper Kalskag	63	41	1	0	0	0	0	1	0	0	0	0	0
Aniak	184	162	2	6	6	0	0	1	0	0	0	0	1
Chuathbaluk	33	21	2	0	3	7	0	1	0	0	1	0	0
Middle Kuskokwim	355	271	10	6	22	10	16	6	2	0	1	0	1
Crooked Creek	33	23	0	0	0	0	0	0	0	0	0	0	0
Red Devil	9	4	1	1	0	125	0	0	0	0	0	0	1
Sleetmute	38	28	5	2	7	15	4	1	0	0	3	1	0
Stony River	15	13	1	5	10	0	20	1	0	0	0	0	0
Lime Village	14	0	–	–	–	–	–	–	–	–	–	–	–
McGrath	114	48	3	0	3	13	0	3	0	0	0	0	0
Takotna	23	0	–	–	–	–	–	–	–	–	–	–	–
Nikolai	36	26	4	37	76	2	0	0	1	0	2	0	1
Telida	2	0	–	–	–	–	–	–	–	–	–	–	–

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Community	*N*	*n*	Households reporting lost fish	Chinook	Chum	Coho	Sockeye	Reason given for loss					
								Animal	Disease	Human	Weather	Run negative	Unknown
Upper Kuskokwim	284	142	14	45	96	155	24	5	1	0	5	1	2
Kuskokwim River[a]	3,869	1,518	102	105	983	458	293	34	7	2	48	2	9
Quinhagak	177	108	3	0	0	0	55	0	2	0	1	0	0
Goodnews Bay	72	37	2	0	5	0	22	0	0	0	2	0	0
Platinum	21	15	0	0	0	0	0	0	0	0	0	0	0
S. Kuskokwim Bay	270	160	5	0	5	0	77	0	2	0	3	0	0
Survey total	4,229	1,678	107	105	988	458	370	34	9	2	51	2	9

Note: Dashes indicate data are unavailable. Headings are defined as: *N* = the total number of households, *n* = the number of households surveyed.

[a] Kuskokwim River total includes the Lower, Middle, and Upper Kuskokwim areas and North Kuskokwim Bay.

Table 16.–Percentage of estimated Chinook salmon subsistence needs met for households that subsistence fished, Kuskokwim Area, 2014.

Community	*N*	*n*	25% needs met	50% needs met	75% needs met	100% needs met
Kongiganak	90	–	–	–	–	–
N. Kuskokwim Bay	90	–	–	–	–	–
Tuntutuliak	90	1	–	–	–	–
Eek	87	32	59%	16%	6%	19%
Kasigluk	103	41	88%	5%	2%	5%
Nunapitchuk	121	63	92%	2%	0%	6%
Atmautluak	66	29	72%	10%	0%	17%
Napakiak	93	33	85%	3%	3%	9%
Napaskiak	99	41	85%	2%	5%	7%
Oscarville	15	9	100%	0%	0%	0%
Bethel	2,051	303	86%	7%	2%	5%
Kwethluk	174	73	82%	7%	3%	8%
Akiachak	153	70	79%	14%	3%	4%
Akiak	83	41	71%	10%	5%	15%
Tuluksak	95	36	81%	8%	0%	11%
Lower Kuskokwim	3,319	772	83%	7%	2%	7%
Lower Kalskag	75	37	84%	3%	3%	11%
Upper Kalskag	63	32	72%	9%	6%	13%
Aniak	184	93	83%	12%	2%	3%
Chuathbaluk	33	12	92%	8%	0%	0%
Middle Kuskokwim	355	174	82%	9%	3%	6%
Crooked Creek	33	13	100%	0%	0%	0%
Red Devil	9	2	50%	0%	0%	50%
Sleetmute	38	16	88%	6%	0%	6%
Stony River	15	13	92%	8%	0%	0%
Lime Village	14	–	–	–	–	–
McGrath	114	32	88%	0%	0%	13%
Takotna	23	–	–	–	–	–
Nikolai	36	17	76%	12%	12%	0%
Telida	2	–	–	–	–	–
Upper Kuskokwim	284	93	87%	4%	2%	6%
Kuskokwim River[a]	4,048	1,039	83%	7%	3%	7%
Quinhagak	177	83	17%	18%	8%	57%
Goodnews Bay	72	21	33%	14%	0%	52%
Platinum	21	8	50%	13%	0%	38%
S. Kuskokwim Bay	270	112	22%	17%	6%	54%
Survey total	4,318	1,151	77%	8%	3%	12%

Note: Totals may not add to 100% due to rounding error. Dashes indicate data are unavailable. Headings are defined as: *N* = the total number of households, *n* = the number of households surveyed. The percentage is estimated by dividing the total number of fish harvested by the total responders said were needed.

[a] Kuskokwim River total includes the Lower, Middle, and Upper Kuskokwim areas and North Kuskokwim Bay.

Table 17.–Comments provided by survey participants regarding the meeting of subsistence needs for Chinook salmon, 2014.

						Reasons given for reporting needs not met										
						Non-fishery related factors					Natural conditions					
	N	*n*	Needs met	No need	Total not met	Did not fish	Personal	Equipment	Expenses	Management (-)	Run dynamics (-)	River conditions (-)	Weather	Voluntary conservation	Human theft	Unknown
Kongiganak	90	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
N. Kuskokwim Bay	90	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Tuntutuliak	90	1	–	–	1	–	–	–	–	1	–	–	–	–	–	–
Eek	87	40	7	5	28	6	8	1	–	12	1	–	–	–	–	0
Kasigluk	103	52	3	4	45	1	1	2	–	35	1	–	–	–	–	5
Nunapitchuk	121	77	5	7	65	1	8	2	–	46	2	–	–	–	–	6
Atmautluak	66	41	5	5	31	3	3	2	–	22	–	–	–	–	–	1
Napakiak	93	53	3	8	42	4	6	5	–	20	–	–	–	–	–	7
Napaskiak	99	56	3	3	50	3	6	2	–	37	–	–	–	–	–	2
Oscarville	15	11	0	1	10	–	–	–	–	8	1	–	–	–	–	1
Bethel	2,051	508	17	154	337	55	74	41	1	115	4	–	–	16	1	30
Kwethluk	174	90	5	4	81	9	7	4	–	47	–	–	1	2	1	10
Akiachak	153	92	2	6	84	7	8	5	–	49	7	–	–	–	1	7
Akiak	83	50	6	5	39	1	4	5	–	19	1	–	–	5	–	4
Tuluksak	95	52	3	4	45	2	7	10	–	16	1	–	–	1	–	8
Lower Kuskokwim	3,319	1,123	59	206	858	92	132	79	1	427	18	0	1	24	3	81
Lower Kalskag	75	47	5	3	39	3	3	3	–	25	–	–	–	–	1	4
Upper Kalskag	63	42	5	6	31	5	3	1	–	19	1	–	–	1	–	1
Aniak	184	162	4	44	114	8	6	8	–	50	6	–	–	11	1	24
Chuathbaluk	33	23	0	4	19	2	4	1	–	9	1	–	–	–	–	2
Middle Kuskokwim	355	274	14	57	203	18	16	13	0	103	8	0	0	12	2	31
Crooked Creek	33	22	0	2	20	1	2	–	–	10	1	–	–	–	–	6
Red Devil	9	4	1	1	2	–	1	–	–	1	–	–	–	–	–	0
Sleetmute	38	28	0	7	21	–	5	6	–	7	1	–	–	–	–	2
Stony River	15	13	0	–	13	6	–	2	–	3	–	1	–	1	–	0
Lime Village	14	–	–	–	0	–	–	–	–	–	–	–	–	–	–	–
McGrath	114	48	3	12	33	6	10	4	–	10	–	–	–	2	–	1
Takotna	23	–	–	–	0	–	–	–	–	–	–	–	–	–	–	–
Nikolai	36	27	0	3	24	3	9	2	–	5	–	1	–	1	–	3
Telida	2	–	–	–	0	–	–	–	–	–	–	–	–	–	–	–
Upper Kuskokwim River	284	142	4	25	113	16	27	14	0	36	2	2	0	4	0	12
Kuskokwim River[a]	4,048	1,539	77	288	1,174	126	175	106	1	566	28	2	1	40	5	124

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						Reasons given for reporting needs not met											
						Non-fishery related factors					Natural conditions						
	N	*n*	Needs met	No need	Total not met	Did not fish	Personal	Equipment	Expenses	Management (-)	Run dynamics (-)	River conditions (-)	Weather	Voluntary conservation	Human theft	Unknown
Kongiganak	90	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Quinhagak	177	109	53	15	41	6	19	4	–	1	6	–	2	–	–	3
Goodnews Bay	72	37	12	12	13	5	2	1	–	2	1	–	–	–	–	2
Platinum	21	15	4	5	6	1	2	–	–	–	1	–	–	1	–	1
S. Kuskokwim Bay	270	161	69	32	60	12	23	5	0	3	8	0	2	1	0	6
Survey total	4,318	1,700	146	320	1,234	138	198	111	1	569	36	2	3	41	5	130

Note: Dashes indicate data are unavailable. Headings are defined as: *N* = the total number of households, *n* = the number of households surveyed.

[a] Kuskokwim River total includes the Lower, Middle, and Upper Kuskokwim areas and North Kuskokwim Bay.

Table 18.–Percentage of estimated chum salmon subsistence needs met for households that subsistence fished, Kuskokwim Area, 2014.

Community	*N*	*n*	25% needs met	50% needs met	75% needs met	100% needs met
Kongiganak	90	–	–	–	–	–
N. Kuskokwim Bay	90	–	–	–	–	–
Tuntutuliak	90	1	0%	0%	0%	100%
Eek	87	22	18%	9%	5%	68%
Kasigluk	103	33	12%	24%	6%	58%
Nunapitchuk	121	53	21%	21%	6%	53%
Atmautluak	66	26	15%	15%	12%	58%
Napakiak	93	24	38%	8%	8%	46%
Napaskiak	99	28	18%	7%	21%	54%
Oscarville	15	5	0%	20%	40%	40%
Bethel	2,051	184	53%	7%	7%	33%
Kwethluk	174	63	30%	17%	10%	43%
Akiachak	153	56	25%	14%	7%	54%
Akiak	83	29	24%	14%	3%	59%
Tuluksak	95	35	43%	17%	14%	26%
Lower Kuskokwim	3,319	559	34%	13%	9%	45%
Lower Kalskag	75	26	35%	8%	8%	50%
Upper Kalskag	63	20	25%	20%	0%	55%
Aniak	184	55	24%	7%	4%	65%
Chuathbaluk	33	10	40%	10%	30%	20%
Middle Kuskokwim	355	111	28%	10%	6%	56%
Crooked Creek	33	9	56%	0%	22%	22%
Red Devil	9	1	0%	0%	0%	100%
Sleetmute	38	8	25%	13%	0%	63%
Stony River	15	6	67%	0%	0%	33%
Lime Village	14	–	–	–	–	–
McGrath	114	5	80%	20%	0%	0%
Takotna	23	–	–	–	–	–
Nikolai	36	12	58%	17%	8%	17%
Telida	2	–	–	–	–	–
Upper Kuskokwim	284	41	54%	10%	7%	29%
Kuskokwim River[a]	4,048	711	34%	12%	8%	45%
Quinhagak	177	73	5%	11%	3%	81%
Goodnews Bay	72	15	7%	0%	0%	93%
Platinum	21	8	38%	13%	0%	50%
S. Kuskokwim Bay	270	96	8%	9%	2%	80%
Survey total	4,318	807	31%	12%	7%	50%

Note: Totals may not add to 100% due to rounding error. Dashes indicate data are unavailable. Headings are defined as: *N* = the total number of households, *n* = the number of households surveyed. The percentage is estimated by dividing the total number of fish harvested by the total responders said were needed.

[a] Kuskokwim River total includes the Lower, Middle, and Upper Kuskokwim areas and North Kuskokwim Bay.

Table 19.–Comments provided by survey participants regarding the meeting of subsistence needs for chum salmon, 2014.

						Reporting needs not met											
						Non-fishery related factors				Natural conditions							
	N	*n*	Needs met	No need	Total needs not met	did not fish	Personal	Equipment	Expenses	Management (-)	Run dynamics (-)	River conditions (-)	Weather	Voluntary conservation	Human theft	Animal	Unknown
Kongiganak	90	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
N. Kuskokwim Bay	90	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Tuntutuliak	90	1	–	–	1	–	1	–	–	–	–	–	–	–	–	–	–
Eek	87	40	16	13	11	3	5	1	–	1	–	–	–	–	–	–	1
Kasigluk	103	52	29	2	21	–	1	2	1	9	–	–	–	–	–	–	8
Nunapitchuk	121	77	36	6	35	1	9	1	–	14	2	–	–	–	–	–	8
Atmautluak	66	41	17	6	18	1	3	2	1	9	–	–	–	–	–	–	2
Napakiak	93	53	16	9	28	3	6	6	–	4	–	–	–	–	–	–	9
Napaskiak	99	56	24	8	24	3	5	1	–	10	–	–	–	–	–	–	5
Oscarville	15	11	4	2	5	–	–	–	–	2	–	–	–	–	–	–	3
Bethel	2,051	507	82	250	175	34	58	30	1	19	4	–	–	1	1	–	27
Kwethluk	174	90	27	10	53	6	5	4	–	22	–	–	1	–	1	–	14
Akiachak	153	92	39	10	43	6	4	4	–	18	1	–	–	–	1	1	8
Akiak	83	50	22	9	19	1	2	2	1	5	1	–	2	2	–	–	3
Tuluksak	95	52	9	5	38	2	6	8	1	12	–	–	–	1	–	1	7
Lower Kuskokwim	3,319	1,122	321	330	471	60	105	61	5	125	8	0	3	4	3	2	95
Lower Kalskag	75	47	16	10	21	3	3	3	–	5	–	–	–	–	1	1	5
Upper Kalskag	63	42	14	12	16	5	3	1	–	3	–	–	–	–	–	–	4
Aniak	184	162	40	81	41	3	4	1	–	3	–	–	–	1	1	–	28
Chuathbaluk	33	23	2	5	16	2	5	1	–	4	2	–	–	–	–	–	2
Middle Kuskokwim	355	274	72	108	94	13	15	6	0	15	2	0	0	1	2	1	39
Crooked Creek	33	23	3	5	15	1	3	–	–	4	–	–	–	–	–	–	7
Red Devil	9	4	1	1	2	–	2	–	–	–	–	–	–	–	–	–	–
Sleetmute	38	28	3	16	9	–	5	2	–	–	–	–	–	–	–	–	2
Stony River	15	13	2	7	4	2	–	1	–	1	–	–	–	–	–	–	–
Lime Village	14	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
McGrath	114	48	1	38	9	3	3	1	–	–	–	–	–	–	–	–	2
Takotna	23	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Nikolai	36	27	2	11	14	2	4	3	–	1	–	1	–	–	–	–	3
Telida	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Upper Kuskokwim	284	143	12	78	53	8	17	7	0	6	0	1	0	0	0	0	14
Kuskokwim River[a]	4,048	1,539	405	516	618	81	137	74	5	146	10	1	3	5	5	3	148

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						Reporting needs not met												
						Non-fishery related factors					Natural conditions							
	N	*n*	Needs met	No need	Total needs not met	did not fish	Personal	Equipment	Expenses	Management (-)	Run dynamics (-)	River conditions (-)	Weather	Voluntary conservation	Human theft	Animal	Unknown
Quinhagak	177	109	65	26	18	1	10	2	–	–	–	–	–	–	–	–	5
Goodnews Bay	72	37	14	18	5	3	1	–	–	–	–	–	–	–	–	–	1
Platinum	21	15	4	6	5	2	1	–	–	1	–	–	–	–	–	–	1
S. Kuskokwim Bay	270	161	83	50	28	6	12	2	0	1	0	0	0	0	0	0	7
Survey total	4,318	1,700	488	566	646	87	149	76	5	147	10	1	3	5	5	3	155

Note: Dashes indicate data are unavailable. Headings are defined as: *N* = the total number of households, *n* = the number of households surveyed.

[a] Kuskokwim River total includes the Lower, Middle, and Upper Kuskokwim areas and North Kuskokwim Bay.

Table 20.–Percentage of estimated sockeye salmon subsistence needs met for households that subsistence fished, Kuskokwim Area, 2014.

Community	*N*	*n*	25% needs met	50% needs met	75% needs met	100% needs met
Kongiganak	90	–	–	–	–	–
N. Kuskokwim Bay	90	–	–	–	–	–
Tuntutuliak	90	1	–	–	–	–
Eek	87	25	32%	8%	12%	48%
Kasigluk	103	38	26%	29%	5%	39%
Nunapitchuk	121	62	29%	16%	6%	48%
Atmautluak	66	26	12%	19%	8%	62%
Napakiak	93	29	41%	10%	7%	41%
Napaskiak	99	33	21%	6%	21%	52%
Oscarville	15	9	33%	0%	22%	44%
Bethel	2,051	289	57%	10%	8%	25%
Kwethluk	174	65	40%	15%	11%	34%
Akiachak	154	66	32%	27%	8%	33%
Akiak	83	39	41%	13%	8%	38%
Tuluksak	95	35	57%	14%	9%	20%
Lower Kuskokwim	3,320	717	43%	14%	9%	34%
Lower Kalskag	75	29	59%	7%	0%	34%
Upper Kalskag	63	23	39%	26%	0%	35%
Aniak	184	82	54%	13%	4%	29%
Chuathbaluk	33	12	58%	8%	25%	8%
Middle Kuskokwim	355	146	53%	14%	4%	29%
Crooked Creek	33	12	75%	0%	8%	17%
Red Devil	9	2	50%	0%	0%	50%
Sleetmute	38	22	50%	23%	9%	18%
Stony River	15	10	70%	30%	0%	0%
Lime Village	14	–	–	–	–	–
McGrath	114	19	89%	0%	11%	0%
Takotna	23	–	–	–	–	–
Nikolai	36	8	100%	0%	0%	0%
Telida	2	–	–	–	–	–
Upper Kuskokwim	284	73	73%	11%	7%	10%
Kuskokwim River[a]	4,049	936	47%	14%	8%	32%
Quinhagak	177	79	8%	11%	6%	75%
Goodnews Bay	73	23	13%	9%	9%	70%
Platinum	21	11	27%	0%	27%	45%
S. Kuskokwim Bay	271	113	11%	10%	9%	71%
Survey total	4,320	1,049	43%	13%	8%	36%

Note: Totals may not add to 100% due to rounding error. Dashes indicate data are unavailable. Headings are defined as: *N* = the total number of households, *n* = the number of households surveyed. The percentage is estimated by dividing the total number of fish harvested by the total responders said were needed.

[a] Kuskokwim River total includes the Lower, Middle, and Upper Kuskokwim areas and North Kuskokwim Bay.

Table 21.–Comments provided by survey participants regarding the meeting of subsistence needs for sockeye salmon, 2014.

						Reporting needs not met											
						Non-fishery related factors				Natural conditions							
	N	*n*	Needs met	No need	Total needs not met	Did not fish	Personal	Equipment	Expenses	Management (-)	Run dynamics (-)	River conditions (-)	Weather	Voluntary conservation	Human	Animal	Unknown
Kongiganak	90	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
N. Kuskokwim Bay	90	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Tuntutuliak	90	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	0
Eek	87	40	14	7	19	5	6	1	–	4	–	–	–	–	–	–	3
Kasigluk	103	52	17	2	33	–	1	2	1	20	1	–	–	–	–	–	8
Nunapitchuk	121	77	29	7	41	1	10	1	–	19	1	–	–	–	–	–	9
Atmautluak	66	41	10	7	24	3	3	2	1	9	2	–	–	–	–	–	4
Napakiak	93	53	15	6	32	3	8	5	–	5	1	–	–	–	–	–	10
Napaskiak	99	56	25	3	28	3	6	1	–	10	–	–	–	–	–	–	8
Oscarville	15	11	5	0	6	.	1	–	–	2	1	–	–	–	–	–	2
Bethel	2,051	507	77	151	279	55	81	42	1	48	9	–	2	6	2	–	33
Kwethluk	174	90	24	4	62	7	7	6	–	27	–	–	1	–	1	–	13
Akiachak	154	92	28	4	60	7	7	5	–	29	3	–	–	–	1	–	8
Akiak	83	50	18	4	28	2	3	4	1	10	1	–	–	3	–	–	4
Tuluksak	95	52	8	3	41	2	8	10	1	12	.	–	–	1	–	–	7
Lower Kuskokwim	3,320	1,122	271	198	653	88	141	79	5	195	19	0	3	10	4	0	109
Lower Kalskag	75	47	13	7	27	3	4	3	–	11	–	–	–	–	1	1	4
Upper Kalskag	63	42	12	8	22	5	3	1	–	10	–	–	–	1	–	–	2
Aniak	184	162	24	55	83	5	12	9	–	11	7	–	–	4	1	–	34
Chuathbaluk	33	23	2	3	18	2	6	1	–	6	2	–	–	–	–	–	1
Middle Kuskokwim	355	274	51	73	150	15	25	14	0	38	9	0	0	5	2	1	41
Crooked Creek	33	23	2	2	19	1	2	–	–	7	2	–	–	–	–	–	7
Red Devil	9	4	1	1	2	–	1	–	–	1	–	–	–	–	–	–	0
Sleetmute	38	28	5	1	22	–	7	6	–	6	–	–	–	–	–	–	3
Stony River	15	13	1	2	10	4	1	3	–	2	–	–	–	–	–	–	0
Lime Village	14	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
McGrath	114	48	2	24	22	4	7	2	–	3	2	–	–	–	–	–	4
Takotna	23	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Nikolai	36	27	1	14	12	3	3	2	–	–	–	1	–	–	–	–	3
Telida	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Upper Kuskokwim	284	143	12	44	87	12	21	13	0	19	4	1	0	0	0	0	17
Kuskokwim River[a]	4,049	1,539	334	315	890	115	187	106	5	252	32	1	3	15	6	1	167

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						Reporting needs not met												
						Non-fishery related factors				Natural conditions								
	N	*n*	Needs met	No need	Total needs not met	Did not fish	Personal	Equipment	Expenses	Management (-)	Run dynamics (-)	River conditions (-)	Weather	Voluntary conservation	Human	Animal	Unknown
Quinhagak	177	109	64	18	27	3	10	3	–	–	1	–	–	–	–	–	10
Goodnews Bay	73	37	18	10	9	5	2	–	–	–	–	–	–	–	–	–	2
Platinum	21	15	5	3	7	2	2	–	–	1	–	–	1	–	–	–	1
S. Kuskokwim Bay	271	161	87	31	43	10	14	3	0	1	1	0	1	0	0	0	13
Survey total	4,320	1,700	421	346	933	125	201	109	5	253	33	1	4	15	6	1	180

Note: Dashes indicate data are unavailable. Headings are defined as: *N* = the total number of households, *n* = the number of households surveyed.

[a] Kuskokwim River total includes the Lower, Middle, and Upper Kuskokwim areas and North Kuskokwim Bay.

Table 22.–Percentage of estimated coho salmon subsistence needs met for households that subsistence fished, Kuskokwim Area, 2014.

Community	*N*	*n*	25% needs met	50% needs met	75% needs met	100% needs met
Kongiganak	90	–	–	–	–	–
N. Kuskokwim Bay	90	–	–	–	–	–
Tuntutuliak	90	1	46%	4%	0%	50%
Eek	87	28	46%	4%	0%	50%
Kasigluk	103	25	48%	4%	8%	40%
Nunapitchuk	121	41	46%	5%	7%	41%
Atmautluak	66	16	50%	6%	0%	44%
Napakiak	93	24	38%	8%	8%	46%
Napaskiak	99	27	26%	15%	15%	44%
Oscarville	15	7	57%	0%	0%	43%
Bethel	2,051	276	47%	13%	8%	32%
Kwethluk	174	61	48%	7%	11%	34%
Akiachak	153	49	43%	16%	6%	35%
Akiak	83	34	59%	12%	0%	29%
Tuluksak	95	29	62%	7%	7%	24%
Lower Kuskokwim	3,319	618	47%	11%	7%	35%
Lower Kalskag	75	27	44%	7%	0%	48%
Upper Kalskag	63	26	31%	15%	0%	54%
Aniak	184	80	23%	10%	4%	64%
Chuathbaluk	33	8	63%	25%	13%	0%
Middle Kuskokwim	355	141	30%	11%	3%	55%
Crooked Creek	33	8	88%	13%	0%	0%
Red Devil	9	2	0%	0%	0%	100%
Sleetmute	38	17	35%	24%	0%	41%
Stony River	15	10	30%	30%	0%	40%
Lime Village	14	–	–	–	–	–
McGrath	114	21	62%	10%	14%	14%
Takotna	23	–	–	–	–	–
Nikolai	36	9	78%	22%	0%	0%
Telida	2	–	–	–	–	–
Upper Kuskokwim	284	67	54%	18%	4%	24%
Kuskokwim River[a]	4,048	826	45%	11%	6%	38%
Quinhagak	177	58	12%	7%	7%	74%
Goodnews Bay	72	20	25%	0%	5%	70%
Platinum	21	11	27%	9%	0%	64%
S. Kuskokwim Bay	270	89	17%	6%	6%	72%
Survey total	4,318	915	42%	11%	6%	41%

Note: Totals may not add to 100% due to rounding error. Dashes indicate data are unavailable. Headings are defined as: *N* = the total number of households, *n* = the number of households surveyed. The percentage is estimated by dividing the total number of fish harvested by the total responders said were needed.

[a] Kuskokwim River total includes the Lower, Middle, and Upper Kuskokwim areas and North Kuskokwim Bay.

Table 23.–Comments provided by survey participants regarding the meeting of subsistence needs for coho salmon, 2014.

						Reporting needs not met										
						Non-fishery related factors					Natural conditions					
Community	*N*	*n*	Needs met	No need	Total needs not met	Did not fish	Personal	Equipment	Expenses	Management (-)	Run dynamics (-)	River conditions (-)	Weather	Voluntary conservation	Human	Unknown
Kongiganak	90	–	–	–	–	–	–	–	–	–	–	–	–		–	–
N. Kuskokwim Bay	90	–	–	–	–	–	–	–	–	–	–	–	–		–	–
Tuntutuliak	90	1	1	0	0	–	–	–	–	–	–	–	–	–	–	0
Eek	87	40	15	9	16	4	7	1	–	–	–	–	–	–	–	4
Kasigluk	103	52	13	18	21	3	7	4	2	–	–	–	1	–	–	4
Nunapitchuk	121	77	18	24	35	7	12	2	1	–	1	–	1	–	–	11
Atmautluak	66	41	8	16	17	5	4	3	2	–	–	–	–	–	–	3
Napakiak	93	53	13	15	25	2	8	5	–	2	–	–	–	–	–	8
Napaskiak	99	56	18	9	29	5	8	3	–	3	–	–	1	–	–	9
Oscarville	15	11	3	2	6	1	3	–	–	–	–	–	–	–	–	2
Bethel	2,051	506	113	141	252	57	87	42	2	20	1	–	5	3	1	34
Kwethluk	174	90	30	7	53	10	10	7	–	5	2	–	4	–	–	15
Akiachak	153	92	23	24	45	8	17	1	–	–	–	–	6	–	1	12
Akiak	83	50	13	10	27	2	8	6	1	1	1	–	1	–	–	7
Tuluksak	95	52	11	8	33	1	16	9	–	–	–	–	1	1	–	5
Lower Kuskokwim	3,319	1,121	279	283	559	105	187	83	8	31	5	0	20	4	2	114
Lower Kalskag	75	47	16	10	21	3	3	4	–	3	1	–	2	–	1	4
Upper Kalskag	63	42	18	6	18	6	3	2	–	1	1	–	–	–	–	5
Aniak	184	162	52	50	60	7	11	7	2	–	–	–	–	–	–	33
Chuathbaluk	33	23	2	5	16	3	7	2	–	–	1	–	–	–	–	3
Middle Kuskokwim	355	274	88	71	115	19	24	15	2	4	3	0	2	0	1	45
Crooked Creek	33	23	1	7	15	2	6	–	–	–	–	1	1	–	–	5
Red Devil	9	4	2	1	1	–	1	–	–	–	–	–	–	–	–	0
Sleetmute	38	28	8	5	15	–	7	5	–	1	–	–	–	–	–	2
Stony River	15	13	3	2	8	4	–	3	–	1	–	–	–	–	–	0
Lime Village	14	–	–	–	0	–	–	–	–	–	–	–	–	–	–	–
McGrath	114	48	7	17	24	7	9	3	–	–	–	–	–	–	–	5
Takotna	23	–	–	–	0	–	–	–	–	–	–	–	–	–	–	–
Nikolai	36	27	2	12	13	2	6	2	–	–	–	1	–	–	–	2
Telida	2	–	–	–	0	–	–	–	–	–	–	–	–	–	–	–

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						Reporting needs not met											
						Non-fishery related factors					Natural conditions						
Community	*N*	*n*	Needs met	No need	Total needs not met	Did not fish	Personal	Equipment	Expenses	Management (-)	Run dynamics (-)	River conditions (-)	Weather	Voluntary conservation	Human	Unknown
Upper Kuskokwim	284	143	23	44	76	15	29	13	0	2	0	2	1	0	0	14
Kuskokwim River[a]	4,048	826	390	398	750	139	240	111	10	37	8	2	23	4	3	173
Quinhagak	177	109	57	31	21	4	10	3	–	–	–	–	–	–	–	4
Goodnews Bay	72	37	14	15	8	3	2	1	–	–	–	–	–	–	–	2
Platinum	21	15	7	2	6	2	2	–	–	–	–	–	1	–	–	1
S. Kuskokwim Bay	270	89	78	48	35	9	14	4	0	0	0	0	1	0	0	7
Survey total	4,318	915	468	446	785	148	254	115	10	37	8	2	24	4	3	180

Note: Dashes indicate data are unavailable. Headings are defined as: *N* = the total number of households, *n* = the number of households surveyed.

[a] Kuskokwim River total includes the Lower, Middle, and Upper Kuskokwim areas and North Kuskokwim Bay.

Table 24.–Estimated (expanded) harvest of humpback and broad whitefish, including those caught the previous winter, Kuskokwim Area, 2014.

	Blackfish		Grayling		Charr/Dolly Varden		Herring		Smelt		Rainbow	
Community	Total	CI (95%)	Total	CI (95%)	Total	CI (95%)	Total	CI (95%)	Total	CI (95%)	Total	CI (95%)
Kongiganak	–	–	–	–	–	–	–	–	–	–	–	–
N. Kuskokwim Bay	–	–	–	–	–	–	–	–	–	–	–	–
Tuntutuliak	–	–	–	–	–	–	–	–	–	–	–	–
Eek	1,405	1,215	43	33	7	8	0	0	52	78	12	7
Kasigluk	15,062	15,664	0	0	112	122	0	0	533	678	11	8
Nunapitchuk	30,645	10,016	0	0	43	27	0	0	3,993	3,016	4	6
Atmautluak	20,786	12,968	0	0	7	7	0	0	6,962	6,523	4	6
Napakiak	19,288	23,331	0	0	184	171	0	0	3,473	1,644	84	101
Napaskiak	446	262	27	27	781	359	0	0	5,696	3,016	139	87
Oscarville	1,854	165	0	0	43	0	0	0	737	155	241	347
Bethel	49,240	30,819	504	336	1,555	583	646	802	65,781	14,874	376	245
Kwethluk	55,138	41,807	263	274	4,328	2,343	372	499	16,860	5,275	321	165
Akiachak	35,815	15,559	136	71	210	89	0	0	19,968	5,772	174	75
Akiak	2,488	1,499	89	62	124	56	0	0	12,763	2,909	76	37
Tuluksak	851	916	104	60	5	5	0	0	10,332	4,868	5	2
Lower Kuskokwim	233,017	62,436	1,165	446	7,399	2,420	1,018	940	147,150	19,276	1,447	452
Lower Kalskag	2,705	2,847	0	0	3	0	0	0	3,481	1,290	0	0
Upper Kalskag	536	376	0	0	14	10	23	29	946	436	6	5
Aniak	5	3	76	22	139	53	0	0	1,505	313	36	8
Chuathbaluk	0	0	593	151	31	11	0	0	50	0	1	1
Middle Kuskokwim	3,246	2,805	669	145	186	54	23	29	5,983	1,367	44	9
Crooked Creek	0	0	180	182	39	42	0	0	0	0	7	9
Red Devil	0	0	50	0	16	0	0	0	0	0	0	0
Sleetmute	0	0	245	104	31	37	0	0	0	0	0	0
Stony River	0	0	45	15	0	0	0	0	0	0	1	1
Lime Village	–	–	–	–	–	–	–	–	–	–	–	–
McGrath	394	619	954	643	0	0	0	0	0	0	6	9
Takotna	–	–	–	–	–	–	–	–	–	–	–	–
Nikolai	0	0	19	14	4	4	0	0	0	0	0	0
Telida	–	–	–	–	–	–	–	–	–	–	–	–

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	Blackfish		Grayling		Charr/Dolly Varden		Herring		Smelt		Rainbow	
Community	Total	CI (95%)	Total	CI (95%)	Total	CI (95%)	Total	CI (95%)	Total	CI (95%)	Total	CI (95%)
Upper Kuskokwim	394	609	1,491	663	90	54	0	0	0	0	13	12
Kuskokwim River total	236,657	62,482	3,325	808	7,674	2,421	1,042	940	153,133	19,318	1,504	452
Quinhagak	11,573	13,926	390	177	7,512	1,909	1,507	906	11,888	2,962	728	348
Goodnews Bay	0	0	7	10	1,512	870	5,140	6,041	714	557	0	0
Platinum	0	0	101	93	560	393	165	104	57	53	10	7
S. Kuskokwim Bay	11,573	13,873	498	196	9,585	2,113	6,812	5,949	12,659	3,000	738	346
Survey total	248,230	63,978	3,823	831	17,258	3,203	7,854	5,980	165,792	19,545	2,242	568

Note: Dashes indicate data are unavailable. Headings are defined as: N = the total number of households, n = the number of households surveyed.

Table 25.–Estimated harvest of non-salmon fish, including those caught the winter prior to the survey season, Kuskokwim Area, 2014.

	Humpback whitefish		Broad whitefish		Cisco		Sheefish		Burbot		Pike	
Community	Total	CI (95%)	Total	CI (95%)	Total	CI (95%)	Total	CI (95%)	Total	CI (95%)	Total	CI (95%)
Kongiganak	–	–	–	–	–	–	–	–	–	–	–	–
N. Kuskokwim Bay	–	–	–	–	–	–	–	–	–	–	–	–
Tuntutuliak	–	–	–	–	–	–	–	–	–	–	–	–
Eek	122	103	70	76	24	37	6	4	770	285	1,137	828
Kasigluk	3,591	974	2,347	697	172	128	64	64	222	106	3,489	1,043
Nunapitchuk	5,138	1,191	2,499	571	131	52	224	82	605	134	4,585	822
Atmautluak	1,199	406	1,310	376	125	141	74	32	276	84	1,053	211
Napakiak	934	279	449	365	162	217	107	48	260	116	3,508	1,473
Napaskiak	4,640	1,518	1,008	631	286	313	189	91	845	458	1,980	798
Oscarville	2,826	416	25	10	15	0	129	0	587	10	764	573
Bethel	9,329	2,567	3,944	2,311	2,589	1,135	2,370	1,550	3,957	1,747	12,407	3,881
Kwethluk	2,470	1,058	2,028	934	1,564	1,759	441	264	1,084	378	3,201	1,112
Akiachak	4,354	1,928	759	241	204	169	350	85	2,411	697	2,361	718
Akiak	4,928	3,239	723	266	1,795	1,539	270	154	9,678	7,270	2,184	1,373
Tuluksak	873	397	538	211	98	62	168	126	834	518	1,404	824
Lower Kuskokwim	40,403	5,126	15,701	2,787	7,165	2,600	4,390	1,591	21,529	7,383	38,072	4,949
Lower Kalskag	430	351	473	167	13	0	252	145	288	252	333	405
Upper Kalskag	408	138	271	138	153	0	170	111	30	23	136	58
Aniak	733	203	931	282	1,387	701	191	43	92	31	471	177
Chuathbaluk	113	77	66	46	67	22	132	130	56	21	1	1
Middle Kuskokwim	1,683	426	1,741	355	1,619	699	744	221	466	250	941	437
Crooked Creek	400	145	379	106	105	2	160	81	31	22	17	17
Red Devil	9	0	0	0	95	0	–	–	–	–	–	–
Sleetmute	101	31	96	21	38	20	35	19	5	4	135	50
Stony River	277	39	38	13	135	47	61	35	0	0	24	15
Lime Village	–	–	–	–	–	–	–	–	–	–	–	–
McGrath	101	94	192	187	38	36	383	209	0	0	364	180
Takotna	–	–	–	–	–	–	–	–	–	–	–	–
Nikolai	160	45	215	15	1,525	78	73	16	4	0	205	49
Telida	–	–	–	–	–	–	–	–	–	–	–	–

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	Humpback whitefish		Broad whitefish		Cisco		Sheefish		Burbot		Pike	
Community	Total	CI (95%)	Total	CI (95%)	Total	CI (95%)	Total	CI (95%)	Total	CI (95%)	Total	CI (95%)
Upper Kuskokwim	1,047	177	920	212	1,935	95	711	223	40	21	746	190
Kuskokwim River total	43,134	5,145	18,362	2,817	10,719	2,693	5,846	1,621	22,034	7,385	39,759	4,970
Quinhagak	61	43	45	29	696	252	0	0	167	142	205	199
Goodnews Bay	0	0	9	14	97	77	0	0	0	0	0	0
Platinum	0	0	0	0	70	51	0	0	0	0	0	0
S. Kuskokwim Bay	61	43	55	32	863	266	0	0	167	141	205	198
Survey total	43,194	5,144	18,417	2,817	11,582	2,706	5,846	1,621	22,201	7,386	39,963	4,974

Note: Dashes indicate data are unavailable. Headings are defined as: N = the total number of households, n = the number of households surveyed.

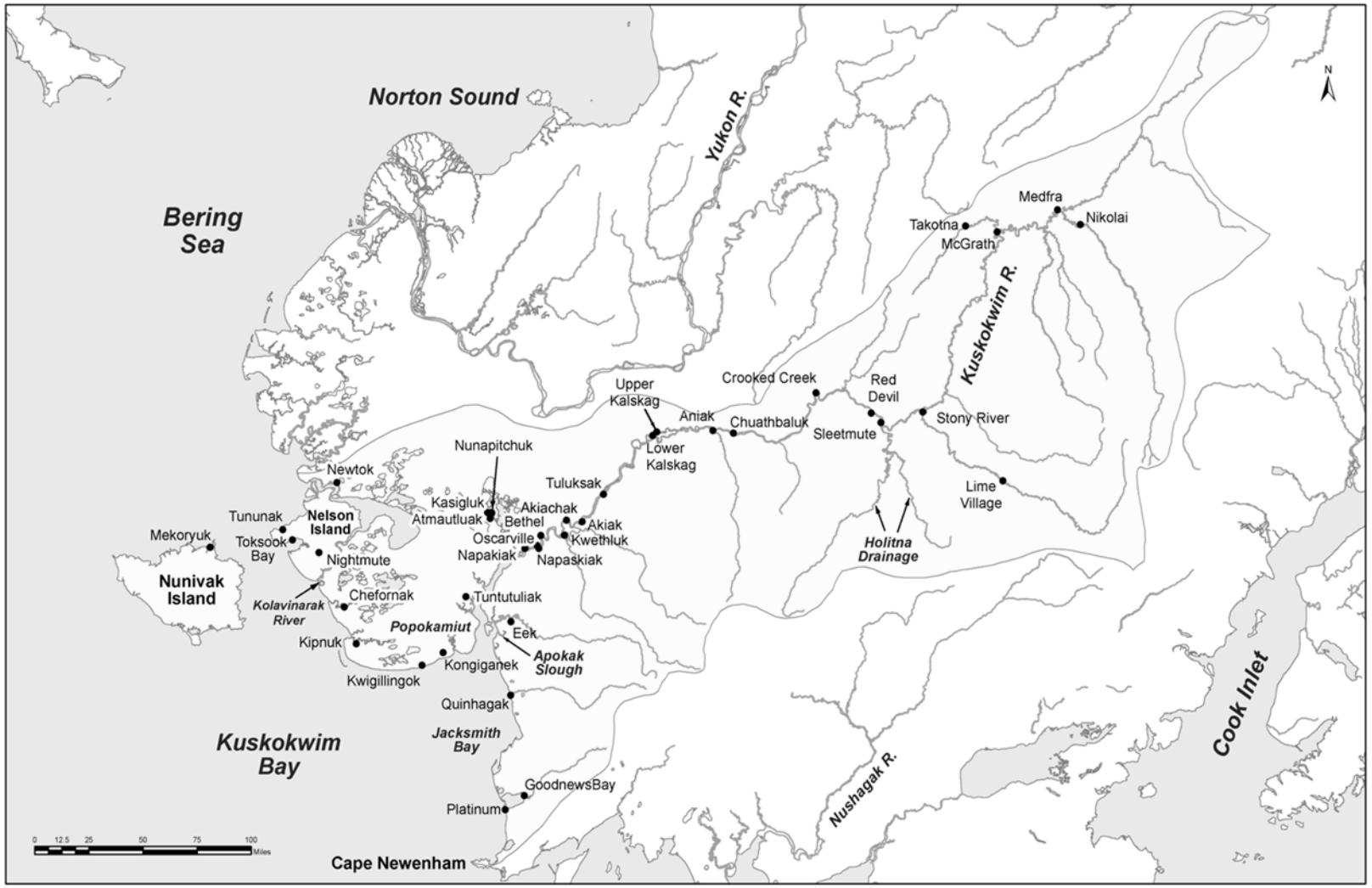

Figure 1.–Kuskokwim Management Area showing communities.

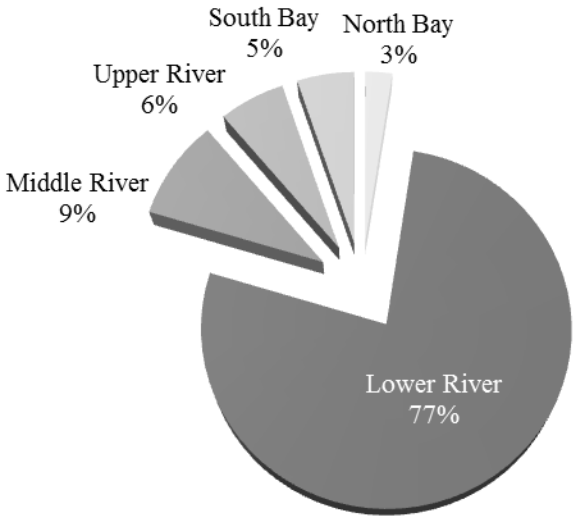

Figure 2.–Average percentage of subsistence salmon harvested in the Kuskokwim River by subarea 2004–2013.

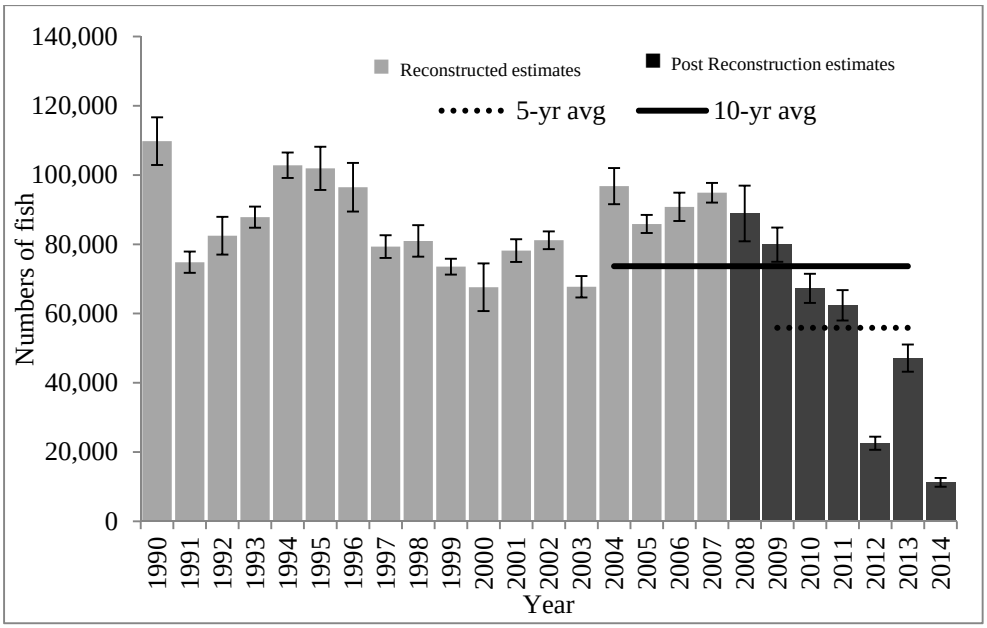

Figure 3.–Historical subsistence harvest estimates of Chinook salmon in the Kuskokwim River.

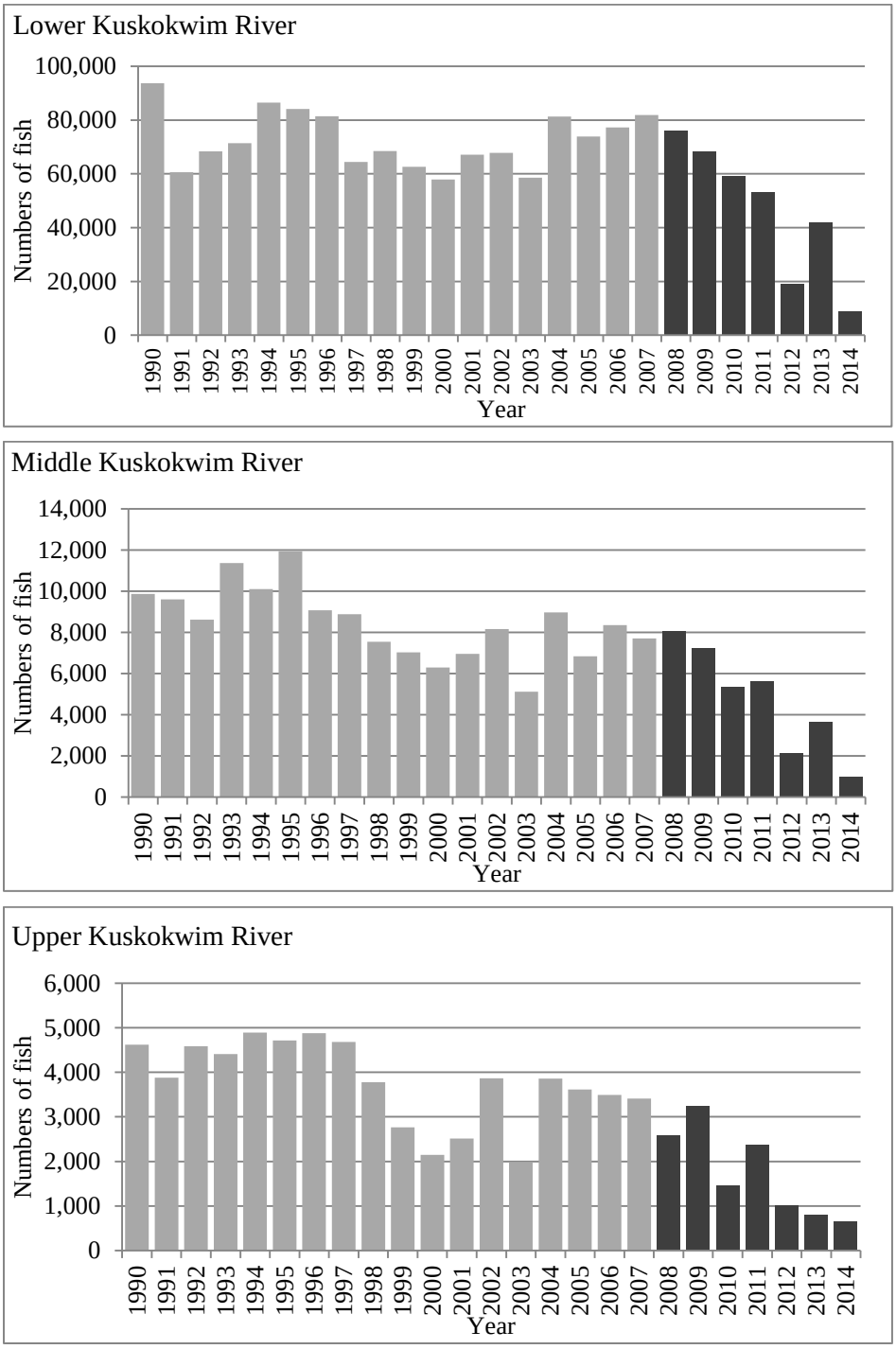

Figure 4.–Historical subsistence harvest estimates of Chinook salmon in the Kuskokwim River by subarea.

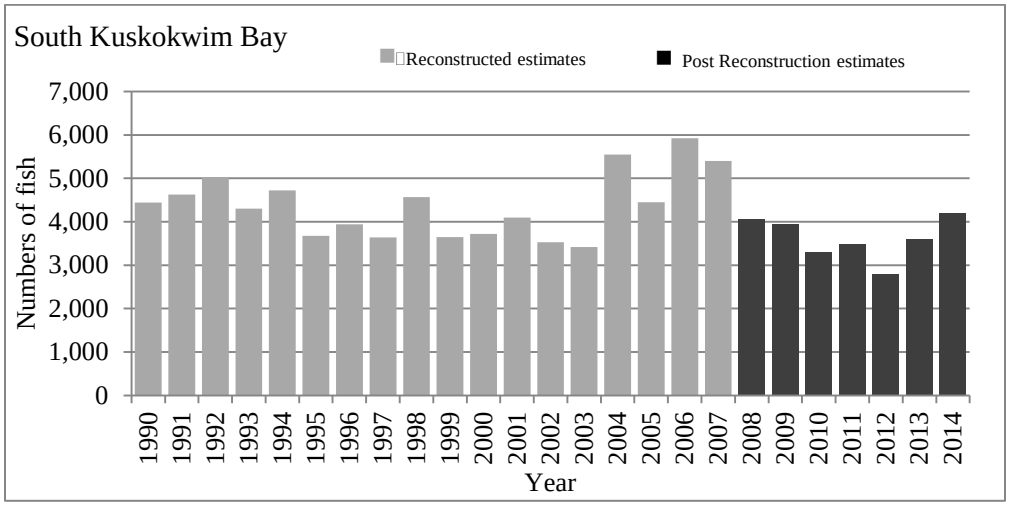

Figure 5.–Historical subsistence harvest estimates of Chinook salmon in the Kuskokwim Bay by subarea.

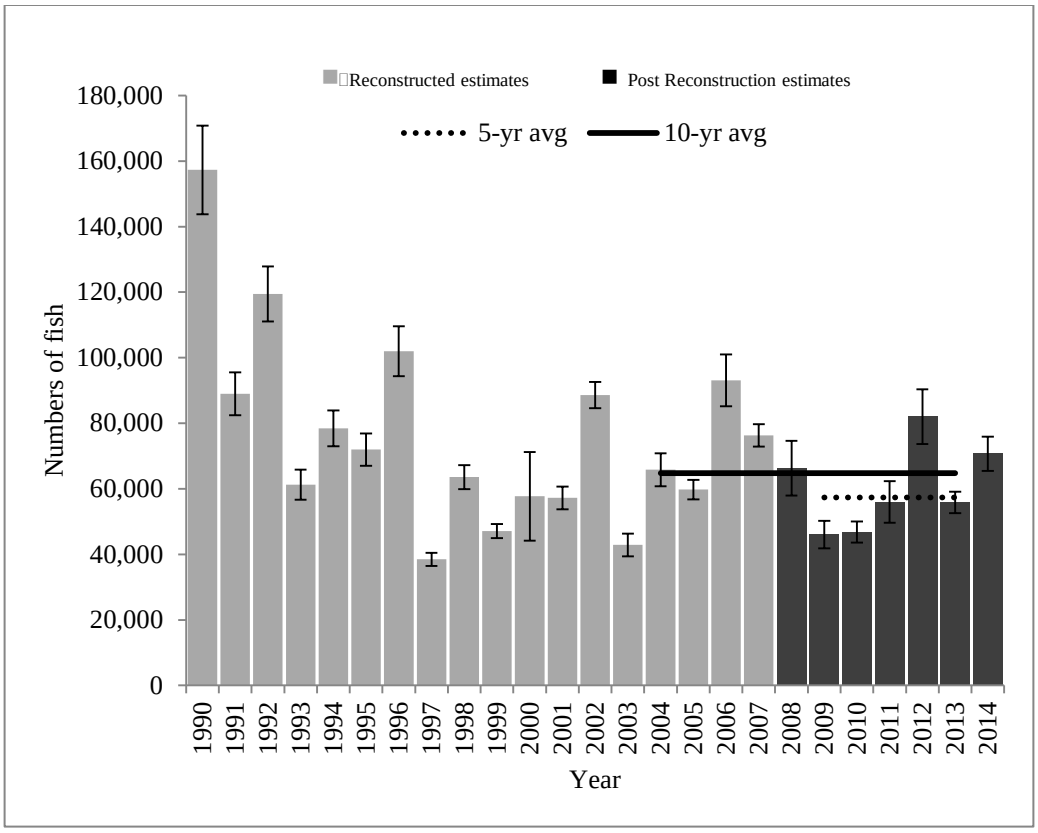

Figure 6.–Historical subsistence harvest estimates of chum salmon in the Kuskokwim Area (Kuskokwim River and Bay).

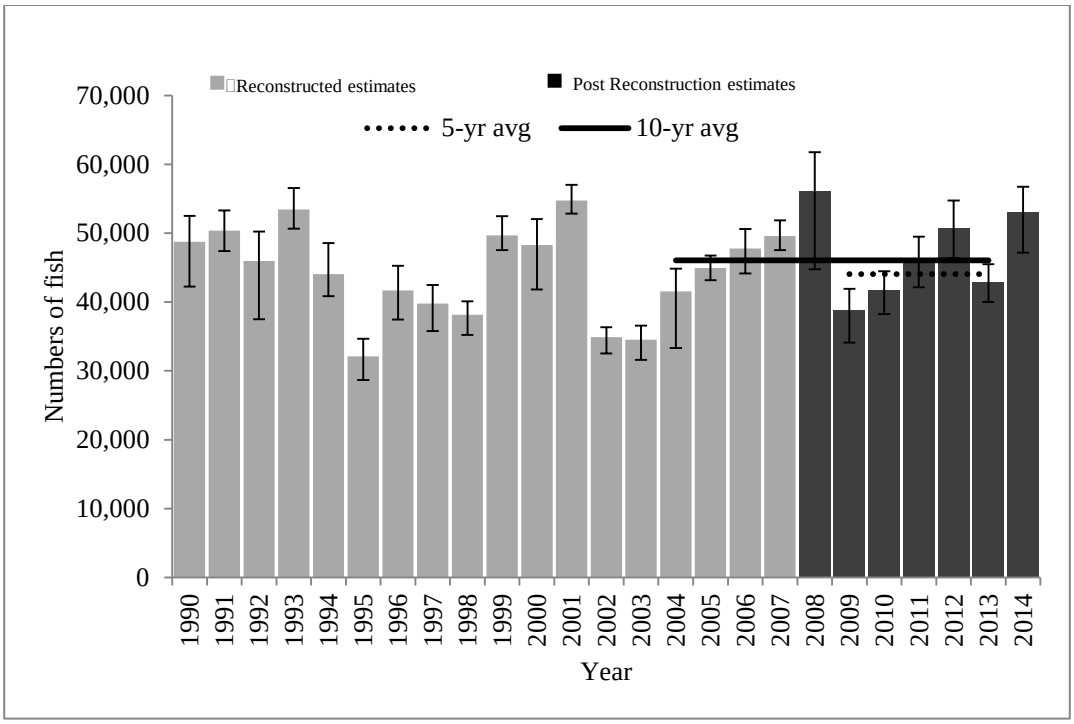

Figure 7.–Historical subsistence harvest estimates of sockeye salmon in the Kuskokwim Area.

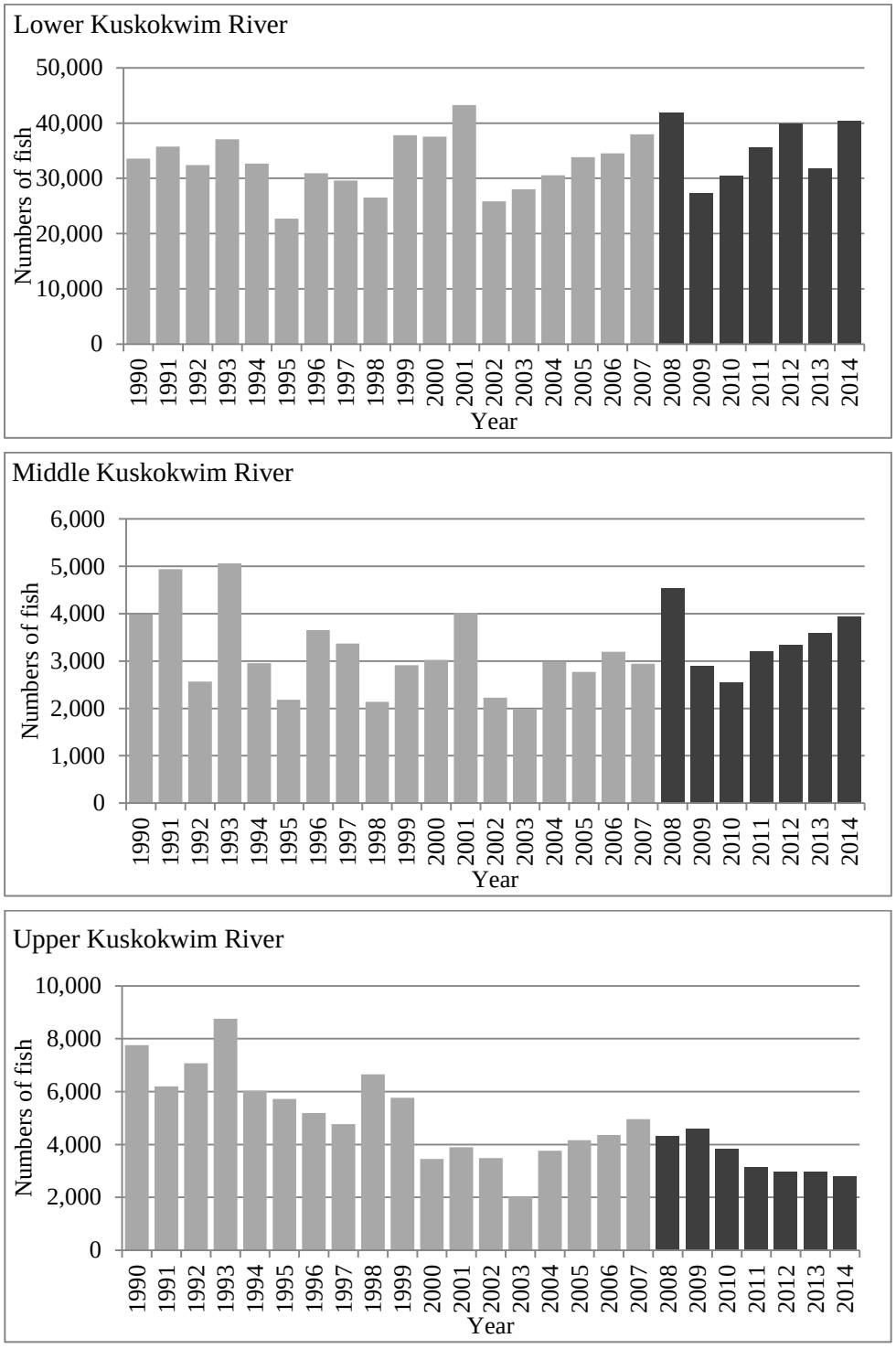

Figure 8.–Historical subsistence harvest estimates of sockeye salmon in the Kuskokwim River by subarea.

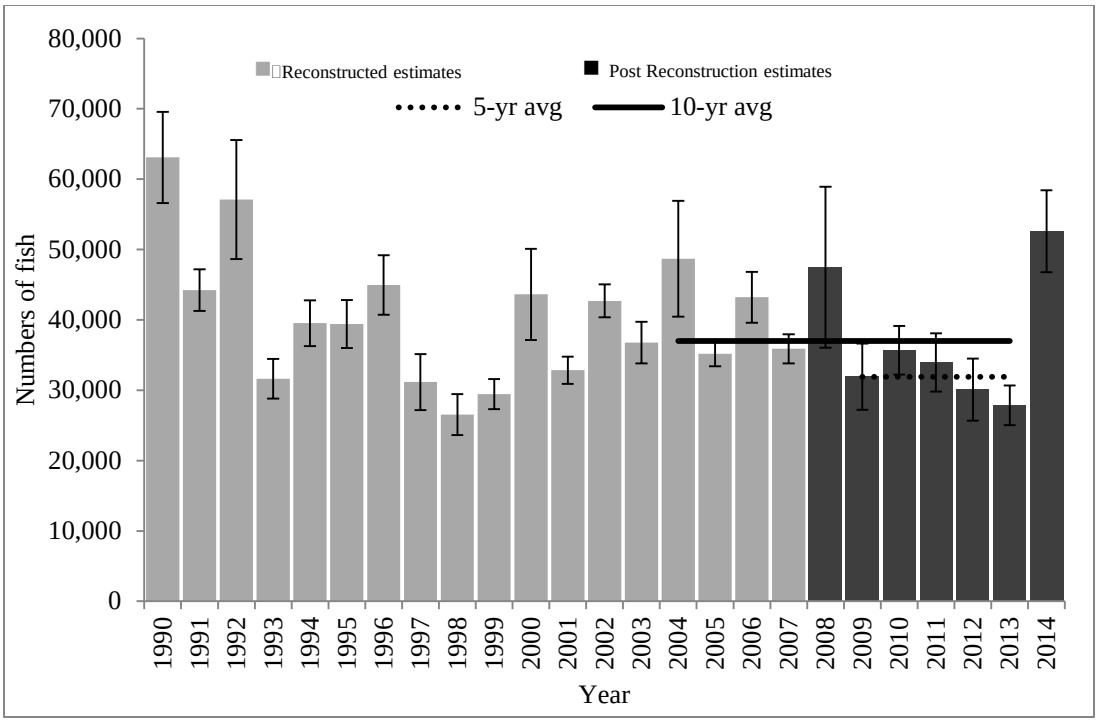

Figure 9.–Historical subsistence harvest estimates of coho salmon in the Kuskokwim Area.

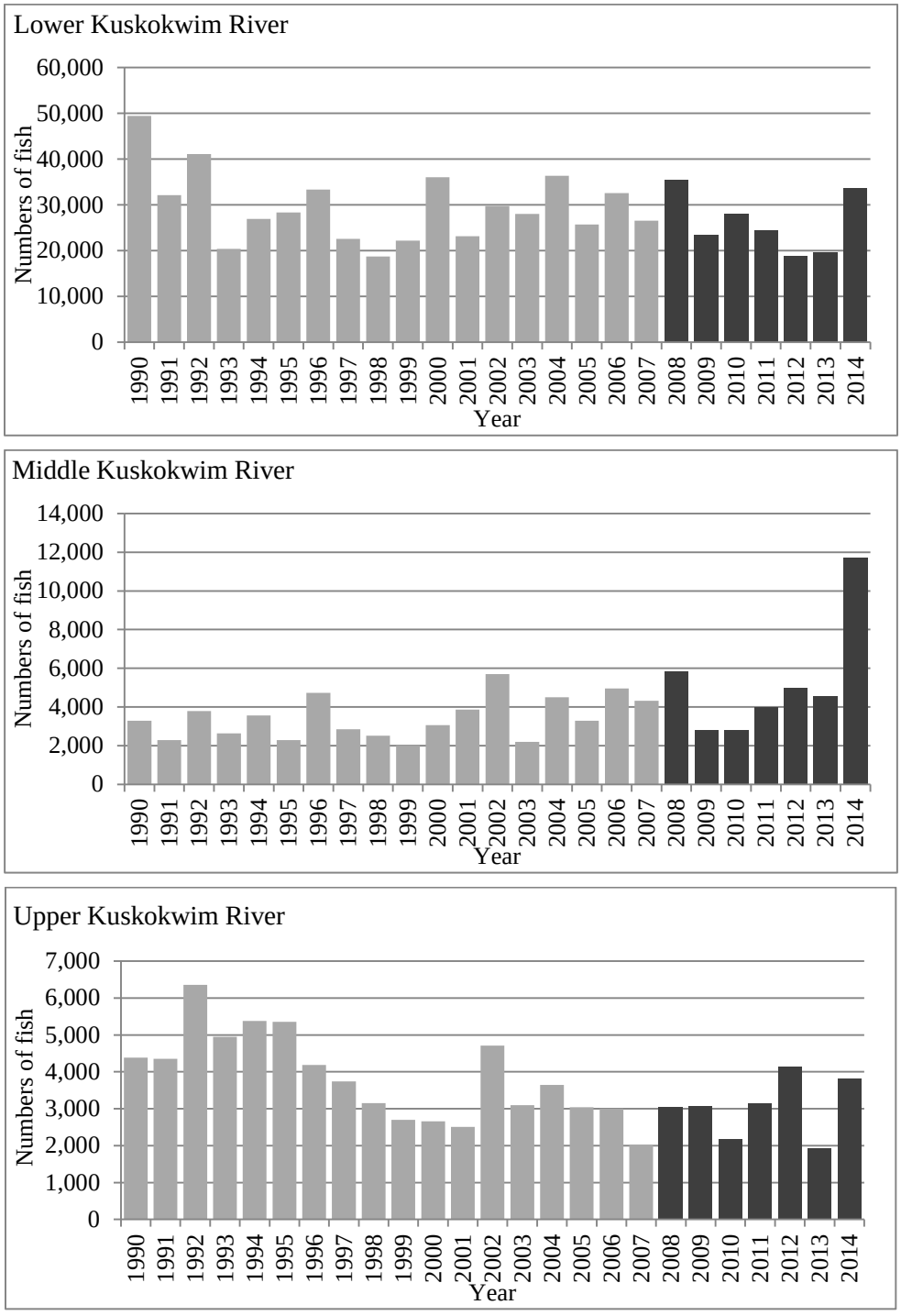

Figure 10.–Historical subsistence harvest estimates of coho salmon in the Kuskokwim River by subarea.

APPENDIX A: HISTORICAL SALMON HARVEST ESTIMATES 2004–2014

Appendix A1.–Estimated number of Chinook salmon harvested for subsistence in the Kuskokwim area, 2004–2014

Community	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Average 2009–2013	Average 2004–2013
Kongiganak	2,663	1,536	***1,729***	1,865	2,233	1,243	1,456	1,208	***287***	***641***	***964***	967	1,486
North Kuskokwim Bay	2,663	1,536	1,729	1,865	2,233	1,243	1,456	1,208	287	641	964	967	1,486
Tuntutuliak	3,912	4,545	4,469	***4,614***	4,266	3,067	3,261	3,032	1,123	2,448	***574***	2,586	3,474
Eek	2,954	***3,133***	***2,501***	***2,512***	2,966	1,982	1,761	1,378	1,004	1,188	665	1,463	2,138
Kasigluk	***7,859***	***5,242***	***4,905***	***5,167***	2,471	2,464	3,014	2,823	552	2,919	205	2,354	3,742
Nunapitchuk	4,921	4,103	4,121	***4,661***	4,234	3,468	2,548	3,559	845	2,563	287	2,597	3,502
Atmautluak	2,153	***1,927***	1,758	***1,890***	1,298	1,567	1,088	1,236	234	1,592	108	1,143	1,474
Napakiak	2,839	3,060	5,125	3,245	1,903	2,387	1,674	1,963	457	1,588	311	1,614	2,424
Napaskiak	4,058	4,485	5,877	6,392	4,555	5,372	4,333	3,360	1,108	2,939	422	3,422	4,248
Oscarville	1,325	1,069	1,052	1,360	1,351	754	618	694	51	585	68	540	886
Bethel	29,443	28,293	27,805	30,422	27,800	26,170	26,157	25,093	7,321	17,246	3,089	20,397	24,575
Kwethluk	7,157	6,089	7,258	6,466	8,451	7,130	4,440	2,467	1,709	3,192	959	3,788	5,436
Akiachak	7,131	5,411	5,561	7,621	9,719	7,361	4,470	3,852	2,862	3,585	1,033	4,426	5,757
Akiak	3,775	3,860	4,423	4,297	4,090	3,247	3,625	2,455	***1,218***	1,449	530	2,399	3,244
Tuluksak	3,766	2,655	***2,372***	3,266	2,937	3,212	2,057	1,230	651	732	404	1,576	2,288
Lower Kuskokwim	81,293	73,872	77,228	81,914	76,040	68,181	59,046	53,142	19,135	42,026	8,655	48,306	63,188
Lower Kalskag	1,991	1,417	3,494	1,937	1,748	2,525	1,030	1,260	459	744	283	1,204	1,661
Upper Kalskag	2,498	2,533	1,569	1,383	2,435	1,696	1,496	1,772	562	1,317	258	1,369	1,726
Aniak	3,022	1,977	2,412	3,417	3,100	2,130	2,262	2,214	993	1,440	344	1,808	2,297
Chuathbaluk	1,460	913	***887***	973	772	877	551	409	103	155	90	419	710
Middle Kuskokwim	8,971	6,840	8,362	7,710	8,055	7,228	5,339	5,655	2,117	3,656	975	4,799	6,393
Crooked Creek	946	948	***736***	647	488	608	240	402	124	***145***	35	304	528
Red Devil	156	181	232	301	148	258	33	186	225	77	83	156	180
Sleetmute	906	522	750	861	933	693	272	242	132	96	58	287	541
Stony River	***688***	***311***	***288***	530	514	704	189	134	***151***	51	24	246	356
Lime Village	***69***	***171***	***103***	***95***	***29***	***75***	***47***	***118***	29	***43***	***32***	62	78
McGrath	***587***	910	689	495	288	600	262	829	68	95	173	371	482
Takotna	***16***	8	***0***	***10***	***0***	***8***	0	0	***0***	***0***	***0***	2	4
Nikolai	493	564	696	471	184	298	402	450	276	283	235	342	412
Telida	–	–	–	–	–	–	–	–	–	–	–	–	–

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Community	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Average 2009–2013	Average 2004–2013
Upper Kuskokwim	3,861	3,615	3,494	3,409	2,584	3,244	1,445	2,361	1,005	790	640	1,769	2,581
Kuskokwim River	96,788	85,863	90,812	94,898	88,912	79,896	67,286	62,366	22,544	47,113	11,234	55,841	73,648
Quinhagak	4,563	3,505	5,163	4,686	3,125	3,312	2,793	2,588	2,396	3,143	3,723	2,846	3,527
Goodnews Bay	863	869	***713***	647	898	569	480	834	389	413	431	537	667
Platinum	122	74	***45***	66	42	61	17	62	24	39	46	41	55
South Kuskokwim Bay	5,548	4,448	5,921	5,399	4,065	3,942	3,290	3,484	2,809	3,595	4,200	3,424	4,250
Total estimated harvest	102,336	90,311	96,733	100,297	92,977	83,838	70,576	65,850	25,353	50,708	15,434	59,265	77,898

Note: Dashes indicate harvest was not estimated and bold indicates Bayesian estimates. Kuskokwim River total includes the Lower, Middle, and Upper Kuskokwim areas and North Kuskokwim Bay.

Appendix A2.–Estimated number of chum salmon harvested for subsistence in the Kuskokwim area, 2004–2014.

Community	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Average 2009–2013	Average 2004–2013
Kongiganak	2,958	1,960	2,420	***2,353***	1,755	1,420	2,522	2,809	***1,638***	***1,397***	***1,915***	1,957	2,123
North Kuskokwim Bay	2,958	1,960	2,420	2,353	1,755	1,420	2,522	2,809	1,638	1,397	1,915	1,957	2,123
Tuntutuliak	2,546	3,568	4,024	3,350	***3,375***	3,330	2,439	1,865	2,614	2,180	***2,967***	2,486	2,929
Eek	688	**877**	***1,075***	***783***	***788***	782	721	486	1,552	1,232	1,182	955	898
Kasigluk	5,064	***4,194***	***5,461***	***4,309***	***1,502***	1,857	2,338	2,029	3,261	2,197	3,612	2,336	3,221
Nunapitchuk	5,053	4,167	5,150	**6,619**	***4,705***	3,468	3,223	4,257	5,312	2,977	5,213	3,847	4,493
Atmautluak	2,271	1,940	***2,337***	2,193	*2,177*	1,665	1,386	1,864	2,701	2,409	3,327	2,005	2,094
Napakiak	2,328	3,238	8,143	3,628	1,313	1,638	1,759	1,546	1,711	1,185	2,392	1,568	2,649
Napaskiak	2,705	2,205	4,323	3,032	2,400	1,451	3,110	1,783	3,216	2,589	3,171	2,430	2,681
Oscarville	828	686	1,151	932	847	534	352	402	599	490	599	475	682
Bethel	13,448	14,273	20,953	16,540	15,853	10,055	9,575	15,324	26,872	12,506	18,017	14,866	15,540
Kwethluk	4,288	4,328	6,328	6,291	5,729	4,111	3,112	3,484	3,849	3,825	4,318	3,676	4,535
Akiachak	3,880	2,428	4,333	4,782	6,856	2,872	2,856	3,205	4,150	3,417	4,744	3,300	3,878
Akiak	3,499	3,528	3,095	4,141	3,522	1,350	1,163	2,421	***2,925***	2,212	2,982	2,014	2,786
Tuluksak	2,433	2,183	3,094	***3,202***	2,920	1,570	3,180	2,697	2,585	3,062	2,274	2,619	2,693
Lower Kuskokwim	49,031	47,615	69,466	59,803	51,988	34,683	35,214	41,363	61,347	40,281	54,798	42,578	49,079
Lower Kalskag	1,316	997	4,703	1,997	1,004	930	691	1,643	3,284	1,214	1,458	1,552	1,778
Upper Kalskag	1,656	1,201	2,469	294	2,432	329	391	1,599	1,930	1,534	1,038	1,157	1,384
Aniak	2,535	2,952	3,722	4,108	2,830	2,602	2,515	2,391	5,667	2,880	4,695	3,211	3,220
Chuathbaluk	2,352	530	1,451	***1,541***	593	937	535	686	796	935	805	778	1,036
Middle Kuskokwim River	7,859	5,680	12,345	7,940	6,859	4,798	4,132	6,319	11,677	6,563	7,996	6,698	7,417
Crooked Creek	1,583	1,064	1,513	***813***	352	519	539	862	610	***1,803***	391	867	966
Red Devil	135	214	41	186	188	244	122	434	516	981	284	459	306
Sleetmute	1,054	422	1,475	818	373	367	524	689	1,004	542	633	625	727
Stony River	754	***324***	***790***	***540***	1,247	771	338	516	***491***	***27***	***89***	429	580
Lime Village	199	***573***	***316***	***419***	***297***	***405***	***314***	***499***	419	909	295	509	435
McGrath	290	***470***	999	464	676	825	944	476	885	598	642	746	663
Takotna	0	*4*	0	***0***	***0***	***0***	***0***	0	***0***	***12***	***0***	2	2
Nikolai	277	230	308	223	54	292	440	349	1,044	513	1,356	528	373
Telida	–	–	–	–	–	–	–	–	–	–	–	–	–

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Community	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Average 2009–2013	Average 2004–2013
Upper Kuskokwim River	4,292	3,301	5,442	3,464	3,187	3,423	3,221	3,825	4,970	5,386	3,690	4,165	4,051
Kuskokwim River	64,140	58,555	89,674	73,560	63,789	44,324	45,089	54,316	79,631	53,627	68,398	55,397	62,671
Quinhagak	1,383	994	2,754	2,249	1,794	1,557	1,347	1,255	2,001	1,958	1,959	1,624	1,729
Goodnews Bay	240	192	555	*395*	586	138	324	349	322	153	268	257	325
Platinum	42	21	108	*77*	106	28	37	70	76	90	62	60	65
South Kuskokwim Bay	1,665	1,207	3,417	2,720	2,486	1,723	1,708	1,674	2,399	2,201	2,289	1,941	2,120
Total estimated harvest	65,805	59,762	93,091	76,281	66,275	46,047	46,797	55,990	82,030	55,828	70,687	57,338	64,791

Note: Dashes indicate harvest was not estimated and bold indicates Bayesian estimates. Kuskokwim River total includes the Lower, Middle, and Upper Kuskokwim areas and North Kuskokwim Bay.

Appendix A3.–Estimated number of sockeye salmon harvested for subsistence in the Kuskokwim area, 2004–2014.

Community	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Average 2009–2013	Average 2004–2013
Kongiganak	1,809	1,103	1,464	***960***	1,502	1,018	1,869	1,266	***1,307***	***1,031***	***1,230***	1,298	1,333
North Kuskokwim Bay	1,809	1,103	1,464	960	1,502	1,018	1,869	1,266	1,307	1,031	1,230	1,298	1,333
Tuntutuliak	1,620	2,145	1,834	1,763	***2,120***	932	2,068	1,274	1,516	1,183	***1,774***	1,395	1,646
Eek	567	1,033	***684***	***558***	***834***	1,019	1,241	664	1,490	1,319	1,450	1,147	941
Kasigluk	1,668	***1,634***	***2,248***	***1,786***	***1,041***	1,215	1,441	1,269	1,451	1,470	1,990	1,369	1,522
Nunapitchuk	1,659	1,821	1,871	2,147	***2,549***	1,538	1,902	2,223	2,396	1,806	2,059	1,973	1,991
Atmautluak	1,103	1,444	***1,012***	1,041	***1,250***	624	731	827	1,623	1,316	1,531	1,024	1,097
Napakiak	1,351	2,122	1,845	1,962	1,244	917	1,183	1,351	1,141	1,105	1,573	1,139	1,422
Napaskiak	1,148	1,344	1,784	1,738	2,620	1,579	1,979	1,587	2,065	2,069	2,514	1,856	1,791
Oscarville	436	278	778	712	677	332	250	228	323	347	679	296	436
Bethel	11,679	14,297	12,816	13,902	15,247	11,272	11,103	16,946	18,282	12,616	14,828	14,044	13,816
Kwethluk	3,302	2,457	2,770	3,536	4,920	2,432	2,534	2,357	2,884	2,705	5,921	2,582	2,990
Akiachak	3,109	2,372	2,661	3,269	4,354	2,407	2,433	2,647	3,443	2,594	3,047	2,705	2,929
Akiak	1,258	1,920	2,000	3,695	2,881	1,290	1,161	2,576	***1,818***	1,731	2,418	1,715	2,033
Tuluksak	1,670	987	2,247	***1,845***	2,133	1,691	2,483	1,699	1,380	1,541	622	1,759	1,768
Lower Kuskokwim	30,570	33,854	34,550	37,955	41,869	27,248	30,509	35,648	39,812	31,802	40,406	33,004	34,382
Lower Kalskag	775	439	1,434	780	1,583	1,044	507	802	891	977	1,040	844	923
Upper Kalskag	686	945	563	417	1,000	369	460	938	770	662	839	640	681
Aniak	996	1,015	692	1,261	1,585	923	1,165	1,168	1,375	1,466	1,578	1,219	1,165
Chuathbaluk	526	369	508	***484***	363	564	403	300	297	480	481	409	429
Middle Kuskokwim	2,983	2,768	3,197	2,942	4,531	2,900	2,535	3,208	3,333	3,585	3,938	3,112	3,198
Crooked Creek	732	693	544	***523***	220	329	302	243	234	***514***	391	324	433
Red Devil	88	272	510	318	359	477	475	502	511	270	151	447	378
Sleetmute	980	673	1,181	1,303	1,164	684	1,024	693	715	362	541	696	878
Stony River	896	***688***	***746***	***1,019***	1,476	977	372	303	***469***	447	137	514	739
Lime Village	874	***1,368***	***1,216***	***1,406***	***659***	***1,080***	***932***	***739***	780	***831***	***888***	872	988
McGrath	194	***454***	149	375	417	965	650	630	233	538	451	603	461
Takotna	0	***1***	0	***1***	***3***	***3***	***2***	0	***2***	***2***	***3***	2	1
Nikolai	1	10	20	14	13	66	65	13	0	0	236	29	20
Telida	–	–	–	–	–	–	–	–	–	–	–	–	–

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Community	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Average 2009–2013	Average 2004–2013
Upper Kuskokwim	3,765	4,160	4,365	4,960	4,310	4,581	3,822	3,123	2,945	2,964	2,798	3,487	3,900
Kuskokwim River	39,127	41,885	43,577	46,817	52,213	35,747	38,735	43,245	47,396	39,382	48,372	40,901	42,812
Quinhagak	1,375	1,745	3,128	1,755	2,097	1,960	1,719	1,582	2,015	2,158	2,939	1,887	1,953
Goodnews Bay	873	1,213	995	***920***	1,739	902	1,093	1,328	1,197	1,113	1,370	1,127	1,137
Platinum	183	90	63	***121***	156	186	175	135	173	181	349	170	146
South Kuskokwim Bay	2,431	3,048	4,186	2,796	3,992	3,048	2,987	3,045	3,385	3,452	4,658	3,183	3,237
Total estimated harvest	41,558	44,933	47,763	49,613	56,205	38,795	41,722	46,290	50,781	42,834	53,030	44,084	46,049

Note: Dashes indicate harvest was not estimated and bold indicates Bayesian estimates. Kuskokwim River total includes the Lower, Middle, and Upper Kuskokwim areas and North Kuskokwim Bay.

Appendix A4.–Estimated number of coho salmon harvested for subsistence in the Kuskokwim area, 2004–2014.

Community	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Average 2009–2013	Average 2004–2013
Kongiganak	937	740	657	883	***557***	561	483	613	***356***	***412***	***561***	485	620
North Kuskokwim Bay	937	740	657	883	557	561	483	613	356	412	561	485	620
Tuntutuliak	1,189	1,074	948	703	1,620	***359***	698	250	565	450	***794***	464	786
Eek	1,018	378	773	***459***	***661***	***176***	315	280	612	483	555	373	515
Kasigluk	***5,034***	1,304	***3,070***	***1,753***	***867***	***629***	1,043	430	303	418	851	565	1,485
Nunapitchuk	555	807	692	1,752	508	***286***	195	407	319	226	1,305	287	575
Atmautluak	744	530	254	***424***	262	***67***	36	263	383	203	176	190	317
Napakiak	1,648	742	2,363	1,244	1,006	420	877	927	402	634	740	652	1,026
Napaskiak	655	602	1,640	639	903	786	1,029	471	269	772	1,153	665	777
Oscarville	304	60	175	180	62	67	12	43	38	37	128	39	98
Bethel	17,040	12,994	18,810	12,972	15,839	12,895	20,426	18,141	13,280	12,662	19,364	15,481	15,506
Kwethluk	3,430	3,048	1,245	1,624	7,262	4,333	1,495	1,097	1,013	1,555	4,422	1,899	2,610
Akiachak	2,397	1,817	1,714	2,355	4,311	1,790	1,181	1,440	714	1,106	1,845	1,246	1,883
Akiak	1,342	1,847	379	1,325	1,358	661	475	505	***455***	454	1,501	510	880
Tuluksak	1,007	484	498	1,131	***635***	857	330	163	341	473	808	433	592
Lower Kuskokwim River	36,363	25,687	32,561	26,561	35,293	23,326	28,112	24,417	18,694	19,473	33,642	22,804	27,049
Lower Kalskag	368	319	1,415	515	76	318	96	684	1,107	529	907	547	543
Upper Kalskag	1,500	594	1,799	381	2,350	181	92	998	360	636	938	453	889
Aniak	2,355	2,032	1,018	3,003	2,883	2,223	2,533	2,215	3,365	3,102	9,566	2,688	2,473
Chuathbaluk	284	346	727	419	***525***	96	76	109	179	319	291	156	308
Middle Kuskokwim River	4,507	3,291	4,959	4,318	5,834	2,818	2,797	4,006	5,011	4,586	11,702	3,844	4,213
Crooked Creek	713	312	401	289	***952***	283	87	297	149	***255***	198	214	374
Red Devil	65	331	171	193	307	126	88	130	238	318	792	180	197
Sleetmute	505	581	671	360	228	403	458	426	784	219	993	458	464
Stony River	679	468	***322***	***336***	***552***	634	201	333	***358***	120	177	329	400
Lime Village	231	372	***132***	***443***	***695***	***210***	***146***	***596***	117	***384***	***226***	291	333
McGrath	1,228	799	***894***	279	247	1,175	1,053	1,331	2,257	523	1,189	1,268	979
Takotna	***51***	8	***0***	8	***6***	***28***	***20***	3	***22***	***0***	***0***	14	15
Nikolai	171	166	407	95	53	203	135	20	214	119	256	138	158
Telida	–	–	–	–	–	–	–	–	-	–	-		

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Community	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Average 2009–2013	Average 2004–2013
Upper Kuskokwim River	3,643	3,037	2,998	2,005	3,040	3,062	2,188	3,136	4,139	1,938	3,831	2,893	2,919
Kuskokwim River	45,450	32,755	41,175	33,766	44,724	29,767	33,580	32,172	28,200	26,409	49,736	30,026	34,800
Quinhagak	1,435	1,558	1,315	1,550	1,869	1,824	1,599	1,369	1,380	1,087	2,240	1,452	1,499
Goodnews Bay	1,542	634	605	***468***	769	261	319	259	382	295	371	303	553
Platinum	266	223	116	***106***	114	81	197	143	124	50	240	119	142
South Kuskokwim Bay	3,243	2,415	2,036	2,124	2,752	2,166	2,115	1,771	1,886	1,432	2,851	1874	2194
Total estimated harvest	48,693	35,170	43,211	35,890	47,476	31,933	35,695	33,943	30,086	27,841	52,587	31,900	36,994

Note: Dashes indicate harvest was not estimated and bold indicates Bayesian estimates. Kuskokwim River total includes the Lower, Middle, and Upper Kuskokwim areas and North Kuskokwim Bay.

APPENDIX B: SURVEY INSTRUMENT

Appendix B1.–Kuskokwim Area postseason subsistence salmon harvest survey form, 2014.

Date of Survey:_____ Time: _____ | **HHID #** | **COMMUNITY:** | **Data Entry:** | **Error Check:**

Person Interviewed:_____

Relation to HH: _____ Interviewer: _____

CONFIDENTAL INFORMATION

2014 Kuskokwim Area Postseason Subsistence Salmon Survey

1. Head of Household:_____ **Telephone** _____ **Address:** _____

2. How many people live in your household? _____ **Permanent Notes:** _____

3. Did anyone in your household subsistence or commercial fish for salmon? YES ☐ NO ☐
(Subsistence "harvest" includes catching or cutting salmon.) **YES → Part I. NO → Part II.**

☐ Adult household member declined to be interviewed.
Reason: _____

PART I: FISHING HOUSEHOLDS

4. Do you have a catch calendar to turn in: YES ☐ NO ☐ Already Sent In ☐ (Is calendar group or household harvest? Are all salmon recorded on calendar?)

5. Did you fish in a group or did you fish by yourself? Total households (including respondent): _____ Names: _____

6. How many salmon did your fishing group harvest this year? Chinook _____ Sockeye _____ Chum _____ Coho _____ Pink _____

7. How many salmon did your household harvest/keep from the group harvest? Where did you go fishing? (See Map)

Area		Chinook			Sockeye			Chum			Coho			Pink		
Area		Chinook			Sockeye			Chum			Coho			Pink		

8. What is your household's main gear type? (1=primary, 2=secondary, etc.) Set Net _____ Drift Net _____ Fish Wheel _____ Hook & Line _____ Dipnet _____ Other _____

a. Hook & Line? YES ☐ NO ☐ ; a1. Included above (#7)? YES ☐ NO ☐ Chinook _____ Sockeye _____ Chum _____ Coho _____ Pink _____

b. other gear _____ b1. Included above (#7)? YES ☐ NO ☐ Chinook _____ Sockeye _____ Chum _____ Coho _____ Pink _____

c. other gear _____ c1. Included above (#7)? YES ☐ NO ☐ Chinook _____ Sockeye _____ Chum _____ Coho _____ Pink _____

9. Did anyone in your household commercial fish? YES ☐ NO ☐

a. If yes, did your household keep any of the commercial salmon for subsistence? Area _____ Chinook _____ Sockeye _____ Chum _____ Coho _____ Pink _____

b. Are these fish already reported in the household harvest (#7)? YES ☐ NO ☐

10. Did anyone in your household lose any salmon (i.e. bears, weather, flies, etc.)? YES ☐ NO ☐

Chinook _____ Sockeye _____ Chum _____ Coho _____ Pink _____ Reason(s) for loss: _____

a. Are the "lost" fish already reported in the household harvest (#7)? YES ☐ NO ☐

b. Were any of the "lost" salmon fed to **your** dogs (whole fish only)? YES ☐ NO ☐; How many? Chinook ____ Sockeye ____ Chum _____ Coho _____ Pink ____

c. Were extra fish harvested to replace those that were lost? YES ☐ NO ☐; How many? Area ___ Chinook ____ Sockeye ____ Chum _____ Coho ____ Pink ____

d. Are the "replacement" fish already reported in the household harvest (#7)? YES ☐ NO ☐

11. Did your household give away any salmon that you harvested (not including spoiled)? YES ☐ NO ☐ (shared outside of their fishing group)

Chinook _____ Sockeye _____ Chum _____ Coho _____ Pink _____; Names: _____

a. Are these fish already reported in the household harvest (#7)? YES ☐ NO ☐

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PART II: ALL HOUSEHOLDS

12. Did anyone give you salmon? YES ☐ NO ☐ **Code:** S = Subsistence; C = Commercial; T = Test Fish

Code:_____Chinook _____ Sockeye _____ Chum_____ Coho _____ Pink _____ Names: _____

Code:_____Chinook _____ Sockeye _____ Chum_____ Coho _____ Pink _____ Names: _____

a. Were any of the fish you received fed to your dogs (from question #12)? YES ☐ NO ☐ Chinook _____ Sockeye _____ Chum_____ Coho_____ Pink _____

13. How many salmon does your household like to have for subsistence?

Chinook _____ Sockeye _____ Chum _____ Coho _____ Pink _____

Why? _____ Why? _____ Why? _____ Why? _____ Why? _____

14. Did your household catch any other fish besides salmon? (From last Sept/October to now.) YES ☐ NO ☐

Humpback Whitefish_____ Broad Whitefish_____ Cisco _____ Sheefish_____ Lush_____ Pike_____ Blackfish_____

Grayling_____ Char_____ Rainbow Trout_____ Smelt_____ Herring_____

15. How many dogs does your household have? _____ (if zero go to question #18)

16. Do you feed whole salmon to your dogs? YES ☐ NO ☐ Only Scraps ☐

17. Not including spoiled fish or fish you received, how many <u>whole</u> salmon did your household put up for dogs this year? (Numbers should represent whole fish, not scraps)

Chinook _____ Sockeye _____ Chum _____ Coho _____ Pink _____

a. Are fish harvested for dogs already reported in the household harvest (from question #7)? YES ☐ NO ☐

18. Additional Comments: _____

Surveyor Comments:

Completed Survey ☐ **Partial Survey** ☐ **No Survey** ☐ **Survey Reviewed for completeness by Surveyor** ☐

APPENDIX C: FISH MEASURES

Appendix C1.–Approximate measurements used to convert reported amounts of fish harvest, Kuskokwim Area, 2008–2014.

Amount	Description
Salmon	
1 Chinook salmon = 5–8 pound strips	Dried and smoked Chinook salmon
1 gallon Ziplock = 5pound strips	Dried and smoked Chinook salmon
1 quart Ziplock = 2 pound strips	Dried and smoked Chinook salmon
6 gallon bucket = 4 to 5 Chinook salmon	Dried Chinook salmon
5 gallon poke fish = 25 to 30 chum salmon	Dried chum salmon in seal oil
30 gallon barrel = 150 to 180 chum salmon	Dried chum salmon in seal oil
1 gallon Ziplock = 2 to 3 chum salmon	Dried chum salmon filets
5 gallon bucket = 25 chum salmon	Chum salmon filets, tightly packed
1 dried chum salmon = 2/3 pound	Summer chum salmon for dog food
1 bundle – 50 dried chum salmon	Summer chum salmon for dog food
300 dog salmon/dog/winter	Feeding summer chum salmon to a dog team
1 dried chum salmon = 1.25 to 1.33 pounds	Summer or fall chum salmon
1 pink salmon = 3 pounds	Pink salmon
Other fish	
1 small whitefish = 1 pound	Round whitefish, least, Bering, or arctic cisco, caught in whitefish net (4 inch or smaller mesh) or a fish wheel
1 large whitefish = 4 pounds	Broad or humpback whitefish caught in a chum salmon net (5 inch or larger mesh) or a fish wheel
125 smelt = 5 gallon bucket	
1 gunny sack = 50 to 100 pounds (ask fishermen)	tomcod, whitefish, herring
14 blackfish = 1 pound	Blackfish
350 blackfish = 5 gallon bucket = 25 pounds	
1 eel = 1/3 pound	Arctic lamprey