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Subsistence and Personal Use Salmon Harvests in the Alaska Portion of the Yukon River Drainage, 2018

by

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and

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December 2023

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

Symbols and Abbreviations

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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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SUBSISTENCE AND PERSONAL USE SALMON HARVESTS IN THE ALASKA PORTION OF THE YUKON RIVER DRAINAGE, 2018

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ABSTRACT

This annual report contains estimates of subsistence and personal use salmon harvests within the Alaska portion of the Yukon River drainage. Most Yukon Area communities have no regulatory requirements to report their subsistence salmon harvest. Harvest information was collected for most communities through voluntary postseason household interviews, follow-up telephone interviews, postal questionnaires, and harvest calendars. Stratified random sampling techniques were used to select households to be surveyed. In 2018, a total of 1,500 households were surveyed in 33 communities. Data from surveyed households were expanded to estimate the total harvest, including unsurveyed households. In road-accessible portions of the Yukon Area, participants were required to document their harvest on a subsistence or personal use permit. In 2018, a total of 598 subsistence and personal use permits were issued, of which 99% were returned. Of these returned permits, 58% reported fishing. The total subsistence and personal use harvest throughout the Yukon Area was estimated to be 32,192 Chinook (*Oncorhynchus tshawytscha*), 74,997 summer chum (*O. keta*), 69,712 fall chum (*O. keta*), 8,398 coho (*O. kisutch*), and 3,849 pink (*O. gorbuscha*) salmon. The primary fishing gear types used were drift gillnets (49%), set gillnets (43%), fish wheels (6%), and dip nets and other gear types (1%). Approximately 1,918 households owned 5,318 dogs, and 280 households fed an estimated 60,130 whole salmon to dogs.

Keywords: Chinook *Oncorhynchus tshawytscha*, chum *O. keta*, coho *O. kisutch*, and pink *O. gorbuscha* salmon, northern pike *Esox lucius*, inconnu *Stenodus leucichthys*, sheefish, whitefish *Coregonus* spp., harvest, personal use, subsistence, Tanana River, Yukon River

INTRODUCTION

Since 1961, the Alaska Department of Fish and Game (ADF&G) has collected subsistence salmon harvest information within the Alaska portion of the Yukon River drainage (Yukon Area 5 AAC 05.100). Annual subsistence harvest estimates provide a record of harvest over time that can be used to observe trends. Annual documentation of the U.S. subsistence salmon harvest was used in conjunction with commercial, sport, and personal use harvests and escapement estimates (U.S. and Canada) to calculate total run size (JTC 2019). Harvest and escapement information, combined with age composition data, was used to construct brood tables, which estimate productivity or the number of returning offspring per spawner for some stocks and contribute to forecasts or preseason outlooks for fisheries management.

The Yukon River drainage supports 5 species of Pacific salmon that contribute to subsistence and personal use harvest: Chinook salmon (*Oncorhynchus tshawytscha*), chum (*O. keta*), coho (*O. kisutch*), pink (*O. gorbuscha*), and sockeye (*O. nerka*) salmon. Most subsistence and personal use salmon harvests are made up of Chinook, chum, and coho salmon. The chum salmon return consists of 2 temporally and genetically distinct stocks: summer chum and fall chum salmon. Chinook and summer chum salmon enter the Yukon River first, peaking in June, followed by fall chum in early August and coho salmon in mid to late August. Pink salmon peak in mid-July and are much more abundant in even-numbered years. They are typically only present and available for harvest in the Yukon River's coastal, lower, and middle portions up to the community of Anvik (river mile 315). Sockeye salmon are available in small numbers in the Yukon River, and the average subsistence harvest is less than 400 fish per year (Jallen et al. 2017a).

Many nonsalmon fish species are also present in the Yukon River, including resident and anadromous species. Some of those species important for subsistence use include whitefish (*Coregonus* spp. and *Prosopium cylindraceum*), inconnu (*Stenodus leucichthys*: commonly referred to as sheefish), burbot *(Lota lota*), northern pike (*Esox lucius*), Alaska blackfish (*Dallia pectoralis*), Arctic grayling (*Thymallus arcticus*), Arctic lamprey (*Lethenteron camtschaticum*), saffron cod (*Eleginus gracilis*: locally referred to as tomcod), and Pacific herring (*Clupea pallasii*).

The 2018 State of Alaska census indicated the population of the rural Yukon Area was approximately 22,426 people (Hunsinger 2019). This included the Denali Borough, Southeast Fairbanks, Yukon–Koyukuk, and Kusilvak census areas. The average rural population in the Yukon Area has remained stable, and the number of people in 2018 was nearly equal to the 2013–2017 average of approximately 22,397 people (Hunsinger 2019).

Yukon Area families have long traditions of harvesting salmon for subsistence use. Subsistence salmon fishing activities in the Yukon Area typically begin in late May and continue through early October. Salmon fishing in May and October is highly dependent upon river ice conditions. Extended family groups representing 2 or more households often work together to harvest, cut, and preserve salmon for subsistence. Often, fishing is based from a fish camp or a home community within the drainage (Figure 1). Some households from Yukon River tributary communities, such as Shageluk and Venetie, may operate or share in the operation of fish camps along the mainstem Yukon River. Subsistence salmon harvested for human consumption are commonly dried, smoked, canned, or frozen, and salmon harvested for dogs are typically dried or "cribbed" (i.e., whole fish air-frozen and stacked).

Subsistence and personal use fisheries in the Yukon Area primarily use drift gillnets, set gillnets, and fish wheels to harvest salmon. Set gillnets have been used to harvest salmon throughout the Yukon Area, but drift gillnets have only been allowed from the mouth of the Yukon River to approximately 18 miles below the community of Galena (river mile 530). During the 2018 season, Alaska regulations were based on traditional practices (Alaska Administrative Code [AAC]: 5 AAC 01.220 and 5 AAC 77.717 Lawful Gear). Under federal regulation 100.27 (i) (3) (XV) (C) since 2005, drift gillnets were allowed in federal waters of Subdistricts 4-B and 4-C (near the communities of Galena and Ruby; Figure 1) during weekly subsistence openings from June 10 to July 14 (Estensen et al. 2018). Although fish wheels were a legal gear type for subsistence fishing throughout the drainage, they were used only in the upper portion of the Yukon Area, where driftwood, river conditions, and fishing locations were more suitable.

Subsistence and personal use harvest estimates were derived from a voluntary harvest survey and fishing permits. Approximately two-thirds of the Yukon Area is not connected to the main Alaska road system. In this roadless area, voluntary household surveys were conducted in each community to estimate the subsistence harvest. Subsistence or personal use fishing permits were required in the remaining road-accessible portion of the Yukon Area, including parts of the Koyukuk, Tanana, and upper Yukon Rivers (Figure 1). Participants in permit areas were required to submit their harvest records annually.

Personal use fishing permits and a resident sport fish license were required to fish within the Fairbanks Nonsubsistence Area established in 1992 (Figure 2). Nonsubsistence areas were defined as areas where subsistence was not a principal characteristic of the economy, culture, and way of life (Alaska Statute 16.05.258(c)). Since 1995, personal use fishing has been open in nonsubsistence areas to all Alaska residents regardless of where they reside. The Fairbanks Nonsubsistence Area personal use fishery has a limit of 750 Chinook and 5,000 chum salmon taken through August 15, and 5,200 chum and coho salmon combined taken after August 16.

Alaska law dictates that subsistence is the highest priority use of salmon and is a primary consideration in fishery management actions. Commercial, personal use, and sport harvests have lower priorities than subsistence fishing. Commercial fishing occurs alongside subsistence fishing in some parts of the Yukon Area, and many locals participate in both fisheries. Commercial fishery

participants are required to have a valid limited entry commercial fishing permit, whereas any Alaska resident may participate in subsistence salmon fisheries. Households often use income from commercial fishing to help buy items associated with subsistence harvesting activities, including fuel and fishing equipment. Salmon harvested during subsistence openings cannot be legally bought or sold; however, commercially harvested salmon may be retained for subsistence use. In some areas, subsistence fishing periods are separated from commercial fishing by closures before, during, and after commercial periods, but in other areas, subsistence and commercial fishing occur concurrently.

Subsistence-caught salmon are primarily used for human consumption; however, salmon fed to dogs make up a large proportion of the total number of salmon harvested for subsistence (Holder and Hamner 1991; Borba and Hamner 2001; Jallen et al. 2017b). During the active fishing season, households throughout the Yukon Area feed scraps from salmon processing to dogs. Harvesting salmon for primary consumption by sled dogs is most common in the Upper Yukon Area (Figure 1), where larger numbers of sled dogs are used for recreation and transportation. Keeping sled dogs is less common in the Lower Yukon Area; thus, relatively few whole salmon are fed to dogs in this area. Information collected about dogs throughout the history of the household survey project has not been categorized by whether dogs were used for transportation or were kept as pets. Andersen and Scott (2010) found salmon account for 25% to 92% of all fish species fed to sled dogs among 6 Yukon River communities. However, because Chinook salmon are highly prized for human consumption, the Alaska Board of Fisheries adopted a regulation in 2001 stating that only Chinook salmon under 16 inches in length or unfit for human consumption may be fed to dogs (5 AAC 01.240(d)). Most of the subsistence salmon used for dog food are summer chum salmon, which are dried, and fall chum and coho salmon, which are usually cribbed. The average number of salmon fed to dogs has declined since the late 1990s (Holder and Hamner 1991; Borba and Hamner 2001; Jallen et al. 2017b). Reasons for this decline included poor chum salmon runs from 1998 to 2002, a reduction in carcasses left over from roe fisheries, the rise in the cost of equipment (boat, motor, nets, fuel) needed to harvest fish for dog food, and less reliance on dogs for transportation (Andersen and Scott 2010).

The 2018 subsistence salmon harvest survey and permit programs collected quantitative information on salmon harvest by species. The primary method of estimating Yukon Area subsistence harvest was the annual door-to-door postseason salmon harvest survey. In addition to salmon harvests, other information collected included gear types used to harvest salmon, harvest distribution, nonsalmon species harvest, number of dogs, and number of salmon fed to dogs. Qualitative information about salmon health and quality, subsistence fishing success, and fishery concerns was also collected from households. Minor changes to the survey project have been made over time, such as the refinement of gear questions estimating gear and mesh size-specific harvest of Chinook and summer chum salmon. This report documents the estimated subsistence and personal use salmon and nonsalmon fish harvests within the Alaska portion of the Yukon River drainage during the 2018 season.

STUDY AREA

The study area was the Yukon Area, which includes all waters of Alaska within the Yukon River drainage and all coastal waters of Alaska from Point Romanof southward to the Naskonat Peninsula (Figure 1). Postseason harvest interviews were conducted in 33 communities located off the road system. Harvests from the road-accessible communities on the Yukon (portions of

District 5), upper Subdistrict 4-A in the Koyukuk River drainage, and all communities along the Tanana River (District 6) were documented through required fishing permits and excluded from the household surveys (Figure 1). The Lower Yukon Area consists of coastal waters and the Yukon River drainage from its mouth upstream to Old Paradise Village (river mile 301), including management Districts 1–3. The Upper Yukon Area consists of the Yukon River drainage upstream of Old Paradise Village to the border of Canada (river mile 1,224), including management Districts 4–6. The Upper Yukon Area also includes 3 large tributaries where harvests occur: Koyukuk, Tanana, and Porcupine Rivers. The Coastal District includes the remainder of coastal Yukon Area waters not included in District 1 and encompasses the communities of Scammon Bay and Hooper Bay (Figure 1). The harvest from Coastal District communities may contain fish that are not necessarily Yukon River bound (Kerkvliet 1986). Chevak and Arctic Village communities were not included in this harvest survey based on their distance from the Yukon River mainstem and their very low historic salmon harvests. In this report, the term "Yukon Area" includes Districts 1–6 and the Coastal District. As of 2016, Yukon Area totals apply to data for U.S./Canada border passage objectives. Before 2016, Yukon River (District 1–6, excluding the Coastal District) totals were used to assess U.S./Canada border passage objectives.

OBJECTIVES

The objectives of the study were as follows:

1. Estimate and record the number of salmon harvested for subsistence and personal use by community, district, and subdistrict in the Yukon Area.
2. Document gear types used in subsistence and personal use fisheries and estimate the percentage of Chinook and summer chum salmon harvested by gear types in surveyed communities.
3. Document and estimate the number of dogs and salmon fed to dogs within Yukon Area communities.
4. Estimate and record the number of nonsalmon fish species harvested for subsistence and personal use by community, district, and subdistrict.

METHODS

The total number of salmon harvested in subsistence and personal use fisheries was estimated using information collected from household surveys, subsistence and personal use permits, test fishery data supplied by projects, harvest calendars (Figure 3), and fish retained from commercial fisheries and documented on fish tickets. In surveyed communities, information was collected from selected households and expanded to estimate the entire community's harvest. For communities in permit areas, harvest totals reported on returned permits were summed but not expanded to account for any harvest associated with unreturned permits.

HOUSEHOLD SUBSISTENCE SURVEYS

Participation in the survey interviews was voluntary, and household harvest information was kept confidential. Survey interviews were conducted in the Coastal District and Lower Yukon Area through Grayling in September. In communities upstream of Grayling, survey interviews occurred in October (Figure 1). Communities were surveyed in rough order from downriver to upriver after most households finished harvesting salmon for subsistence. The same 2 ADF&G technicians

primarily conducted household survey interviews throughout the season to maintain consistency in the administration of the survey. Phone and in-person surveys were rotated annually in the small communities of Alatna, Beaver, Bettles, Birch Creek, Chalkyitsik, and Stevens Village. In 2018, the Birch Creek and Chalkyitsik communities were interviewed by phone.

Household lists were updated during the community visits with the assistance of local community members to reflect persons who had moved, were deceased, moved into another household, or constituted a new household. Additional sources were used to maintain the household list (e.g., update names, addresses, phone numbers): cooperation with other agencies (U.S. Fish and Wildlife Service), other ADF&G divisions (Division of Subsistence), the Alaska Dispatch News and the Fairbanks News-Miner, Tanana Chiefs Conference phone book, United Utilities, Inc.'s Yukon Kuskokwim Telephone Directory, Tribal and corporation websites, and school district websites. Households living outside the survey areas but traveling to the Yukon River to fish in or near a surveyed community were included on the household list in the community nearest their fishing location. For example, a household that lived in Anchorage most of the year but traveled to Emmonak to fish in the summer would be included on the Emmonak household list, and their information would also be used to produce harvest estimates for that community. The 2018 household lists for each community were updated based on information collected in 2017.

Survey Design

The household harvest survey methodology was based on a stratified random sample design (Cochran 1977). In this design, a household within the community was the primary sampling unit. A household generally consisted of 1 or more people living together in a dwelling and who shared the same phone number or mailing address. Multiple generations living in 1 dwelling were considered 1 household. Individuals living in detached but physically related structures were considered part of a household if they participated as a unit in harvesting, processing, or distributing resources and shared contact information.

Under the survey design, each household was stratified into 5 harvest groups based on average combined total harvest of Chinook, summer chum, fall chum, and coho salmon during the most recent 2 surveys conducted within the previous 5 years. Pink salmon and sockeye salmon harvests were not considered when assigning households to a harvest group. If 2 recent years of harvest data were unavailable, the household's harvest group designation remained the same as the previous year. If subsistence restrictions were in place during the previous 5 years, a household may have been unable to harvest as many salmon as usual. Restrictions were in place during at least part of the 2013–2017 fishing seasons. As a result, 2018 households may have been moved from a lower harvest group to a higher harvest group but were not downgraded to a lower harvest group based on their 2013–2017 harvest data. The harvest groups and survey coverages (i.e., percentages of households selected to be surveyed within the group) were as follows:

1. Unknown: Unknown harvest level; survey coverage 100%.
2. Do not fish: Households that do not harvest salmon; survey coverage 30%.
3. Light harvester: Harvest of 1–100 total salmon; survey coverage 30%.
4. Medium harvester: Harvest of 101–500 total salmon; survey coverage 100%.
5. Heavy harvester: Harvest of more than 500 total salmon; survey coverage 100%.

There are several exceptions to this sampling strategy by design. Due to a large amount of test fishery catches donated to Emmonak and Pilot Station communities, and the large subsistence harvests in Tanana and Holy Cross, sampling rates in the light harvester and do not fish groups

were increased to 50%. Additionally, when a harvest group contained 5 or fewer households, all households in that group were selected (100% coverage). Last, if a community had less than 40 households, all households were included in the survey (100% coverage).

The household stratification was updated before the survey and was not re-stratified during or after the survey, except for the unknown harvest group. New households (e.g., moved into the community, formation of households due to marriage, or independence) discovered prior to or during the survey were classified as unknown.

Survey Questionnaire

To maintain comparability of data between years, the subsistence survey questions (Q) have generally remained consistent from year to year (Figure 4). The survey's main objective was to estimate the total household salmon harvest.

The total number of salmon harvested was derived by asking households about group harvests, harvest area, and salmon that the household kept (Q5, Q7, and Q12; Figure 4). To ensure all subsistence fish were accounted for in the total harvest (Q7), households were asked if fish were retained from the commercial fishery. If a household reported a portion of their subsistence catch as lost (e.g., stolen by wildlife, washed away during a flood, or discarded due to disease), the surveyor verified that these fish were included in the harvest total (Q7). If a household could feed the fish to dogs, these fish were allocated to Q16–18 as dog food, even if the harvest was not originally intended. Households were asked their primary gear (i.e., caught the most fish) or if they used a secondary gear type (Q8). If a household harvested Chinook or summer chum salmon, they were asked what gear types or mesh sizes were used to harvest each species (Q8A).

To determine the distribution of salmon within a community and to help cross-reference responses from related households, the survey included questions to address group harvests (Q5) and shared harvests (Q11). Households were also asked about the number of salmon received (e.g., from commercial, subsistence, or agency test fishery harvests; Q13) to further confirm the accuracy of harvest on the recipient's survey and the donor's survey. Salmon received from test fishery projects helped clarify that these fish were received but not harvested in the subsistence fishery.

Additional demographic and clarifying questions were asked, including the number of people in the household, the number of dogs, and the harvest of nonsalmon species throughout the previous 12 months. For example, Arctic lamprey harvested from October to December 2017 were reported by households during the survey interviews that occurred in September 2018. Reports of amounts of fish harvested in response to the herring question were entered as herring; however, this category probably included misidentified species such as rainbow smelt (*Osmerus mordax*) or capelin (*Mallotus villosus*). Only households in coastal and lower river communities were asked if they harvested herring roe on kelp.

Survey Implementation

Household survey interviews were conducted in September and October when much of salmon fishing activities had ended, and people could still easily recall their harvest numbers. Surveyors attempted to contact all selected households and noted households unavailable during the community visit for follow-up contacts by phone or letter. A minimum of 3 attempts were made to contact unavailable households.

Before conducting the interviews, surveyors were trained in interviewing techniques, which included learning the local names of fish species and various approaches to obtain the number of fish harvested. The surveyors were also briefed on current fishery issues and management actions related to the subsistence and commercial salmon fishing season. Surveyors were trained to ask questions consistently and foster a cooperative atmosphere such that interviewed household members could recall information as accurately as possible. After the interview, survey participants were given a small token of appreciation (a waterproof phone pouch) for participating.

Community residents were assisted by the Yukon River Drainage Fisheries Association (YRDFA) to assist with reviewing and updating the household list and community maps and guiding surveyors within the communities. In a few cases, subsistence assistants served as translators but did not conduct interviews or record data. When assistants were unavailable, surveyors worked with other sources of local information, such as tribal administrators or school principals, to aid in navigation or to locate households to survey in the community. In some communities, an additional assistant was hired to work with each surveyor and serve as an alternate if the first assistant was unavailable for the entire visit.

After the household interviews were conducted, survey forms were edited for clarity and completion. When amounts were reported in alternative terms, such as the number of 5-gallon buckets, quart-sized bags, gunny sacks, or pounds, a conversion sheet based on local approximate measures was used to estimate the number of fish harvested. Follow-up calls were occasionally made for further clarification or to reconcile information among households that harvested or shared salmon with each other.

When less than 80% of the selected households in a community were contacted through door-to-door and phone surveys, mail surveys were sent to the remaining households. Questions on the mail surveys were succinct versions of the household survey. Mail surveys contained questions related to household harvest, not group harvest.

Joint Surveys

In 2018, the Division of Subsistence had a research team that conducted field research documenting patterns and trends in salmon fishing (Trainor et al. 2021). Three of their selected communities, Nulato, Pilot Station, and Beaver, were also part of ADF&G's Division of Commercial Fisheries annual postseason harvest survey. ADF&G's Division of Subsistence requested that the Division of Commercial Fisheries staff administer the annual postseason survey to every household in those 3 communities (effectively 100% coverage regardless of harvest group).

DATA ANALYSIS AND ESTIMATION METHODS

Denote that:

i = individual household;

j = harvest group ($j = 1 \ldots 5$);

k = community;

l = harvest location; and

m = harvest gear.

Survey responses were denoted by:

y_{ijkl} = the number of salmon (Chinook, chum, coho, and pink) harvested by sampled household (i) in harvest group (j) of community (k), at location (l);

y_{ijkm} = the number of Chinook or summer chum salmon harvested by sampled household (i) in harvest group (j) of community (k) with fishing gear (m);

y_{ijk} = response of sampled household (i) in harvest group (j) of community (k);

n_{jk} = the number of sampled households in harvest group (j) of community (k);

$n_{kj(a)}$ = the number of sampled households having a specific attribute (a) in harvest group (j) of community (k);

N_{jk} = the total number of households in harvest group (j) of community (k); and

N_k = the total number of households in surveyed community (k).

Estimates of Population and Harvests

The following equations were used to estimate populations (the number of people and dogs), harvests (the number of fish harvested by subsistence and commercial fisheries), and uses of salmon harvested (kept for household use, given away, or fed to dogs). In this method, total numbers for each community (Y_k) were estimated by expanding mean responses ($\bar{y}_{jk}$) (e.g., the number of people or harvest) of sampled households at each harvest group with the total number of households in each harvest group (N_{jk}), and summing across the harvest groups as:

$$\hat{Y}_k = \sum_{j=1}^{5} N_{jk}\bar{y}_{jk} \quad \text{where} \quad \bar{y}_{jk} = \frac{\sum_i y_{ijk}}{n_{jk}} \quad . \tag{1}$$

A 95% confidence interval (95% CI) for the population and harvest were calculated as:

$$95\%\text{CI}_k = t_{(0.025, df=n_k-1)} \cdot \sqrt{\hat{V}(\hat{Y}_k)} \ ,$$

$$\text{where } \hat{V}(\hat{Y}_k) = \sum_{j=1}^{5} N_{jk}^2 V(\bar{y}_{jk}) \quad \text{and} \quad V(\bar{y}_{jk}) = \left(\frac{N_{jk} - n_{jk}}{n_{jk}}\right) \frac{\sum_j \left(y_{ijk} - \bar{y}_{jk}\right)^2}{n_{jk}(n_{jk}-1)} . \tag{2}$$

When responses of a harvest group(s) were not collected (e.g., no households were surveyed or all surveyed households declined to answer), response of the harvest group(s) of a community ($\bar{y}_{jk}$) was treated as missing. In this case, the response of the missing harvest group was assumed to be an average of the rest of the harvest groups, and the total response of the community ($\hat{Y}_k$) was calculated as:

$$\hat{Y}_k = \frac{N_k}{\sum_{j=1} N_{jk}} \sum_{j=1} N_{jk}\bar{y}_{jk} \quad . \tag{3}$$

A 95% confidence interval (95% CI$_k$) for the total response of the community was calculated as:

$$95\%\mathrm{CI}_k = t_{(0.025,df=n_k-1)} \cdot \sqrt{\hat{V}(\hat{Y}_k)} \text{ where } \hat{V}(\hat{Y}_k) = \left(\frac{N_k}{\sum_{j=1} N_{jk}} \right)^2 \sum_{j=1} N_{jk}^2 V_{jk}(\overline{y}_{jk}) . \quad (4)$$

Because estimates of the responses in each community were independent and mutually exclusive, the estimate of surveywide total ($\hat{Y}$) was calculated as:

$$\hat{Y} = \sum_{k=1}^{5} \hat{Y}_k . \quad (5)$$

A 95% confidence interval (95% CI) for the surveywide total was calculated as:

$$95\%\mathrm{CI} = t_{(0.025,df=n-1)} \cdot \sqrt{\hat{V}(\hat{Y})} \text{ where } \hat{V}(\hat{Y}) = \sum_{k=1} \hat{V}(\hat{Y}_k) . \quad (6)$$

Harvest estimates by harvest group were not presented for reasons of confidentiality.

Estimates of the Number of Households with a Specific Attribute

Equations 7 and 8 were used to estimate the number of households with the following specific attributes (*a*): subsistence fished, owned dogs, or fed whole salmon to their dogs. In this method, the number of households in a community with the above attribute ($\hat{N}_{k(a)}$) was estimated by expanding the proportion of sampled households having the above attribute $p_{jk(a)}$ with total number of households in each harvest group and summing across the harvest groups.

$$\hat{N}_{k(a)} = \sum_{j=1}^{5} N_{jk} p_{jk(a)} , \text{ where } p_{jk(a)} = \frac{n_{jk(a)}}{n_{jk}} . \quad (7)$$

A 95% confidence interval (95% CI$_k$) for the number of households with a specific attribute was calculated as:

$$95\%\mathrm{CI}_k = t_{(0.025,df=n-1)} \cdot \sqrt{\hat{V}(\hat{N}_{k(a)})} \text{ where } \hat{V}(\hat{N}_{k(a)}) = \sum_{j=1}^{5} N_{jk}^2 V(p_{jk(a)}) ,$$
$$V(p_{jk(a)}) = \left(\frac{N_{jk} - n_{jk}}{N_{jk}} \right) \left(\frac{p_{jk(a)}(1-p_{jk(a)})}{n_{jk}-1} \right) . \quad (8)$$

Correction for the missing harvest groups and the total number of households with each characteristic in the surveywide ($\hat{N}_{(s)}$) and its 95% confidence interval (95% CI) were calculated using Equations 3, 4, 5, and 6.

Estimates of Primary Gear Type Usage by Community

The number of households that used a specific primary gear (e.g., gillnet, fish wheel) for subsistence fishing was estimated by expanding the proportion of sampled households that used a specific gear type (*m*) for subsistence fishing $\hat{q}_{jkm(s)}$ with the proportion of households that

subsistence fished $\hat{p}_{jk(s)}$ by Equation 7 and total households in each harvest group and summing across the harvest groups,

$$\hat{N}_{km(s)} = \sum_{j} N_{jk} p_{jk(s)} q_{jkm(s)}, \quad \text{where} \quad q_{jkm(s)} = \frac{n_{jkm(s)}}{n_{jk(s)}}. \tag{9}$$

A 95% confidence interval (95% CI_k) for the number of households using a specific gear was estimated as:

$$95\%\text{CI}_k = t_{(0.025, df=n_k-1)} \cdot \sqrt{\hat{V}(\hat{N}_{km})},$$
$$\text{where } \hat{V}(\hat{N}_{km(s)}) = \sum_{j=1}^{5} N_{jk}^2 V(p_{jkm(s)}). \tag{10}$$

Variance of proportion for households that subsistence fished was calculated following Goodman (1960):

$$V(p_{jkm(s)}) = (p_{jk(s)})^2 V(q_{jkm(s)}) + (q_{jkm(s)})^2 V(p_{jk(s)}) - V(q_{jkm}) V(p_{jk(s)}),$$
$$\text{Where } V(q_{jkm(s)}) = \frac{q_{jkm(s)} \cdot (1 - q_{jkm(s)})}{n_{jk(s)} - 1}. \tag{11}$$

Correction for the missing harvest groups and the total number of households with each characteristic in the surveywide ($\hat{N}_{(s)}$) and its 95% confidence interval (95% CI) were calculated using Equations 3, 4, 5, and 6. Data by harvest group were not presented due to reasons of confidentiality.

Estimates of Salmon Harvest by Gear Type or Location

The harvest of Chinook and summer chum salmon was further estimated by harvest gear or mesh size (e.g., 6-inch, 7.5-inch, fish wheel, etc.). Equally, harvest by fishing location (i.e., district, subdistricts, or river drainage where fish were caught) was estimated for all salmon species. In these estimations, the number of salmon harvested at each community ($\hat{Y}_{km}$) was estimated by expanding the proportion of salmon harvested by sampled households ($\hat{p}_{jkm}$) with each gear type or location (m or l) within a harvest group (j) with mean harvest ($\bar{y}_{jk}$) estimated in Equation 1 and total number of households in each harvest group (N_{jk}), and summing across the harvest groups:

$$\hat{Y}_{km} = \sum_{j=1}^{5} N_{jk} \bar{y}_{jkm},$$
$$\text{where } \bar{y}_{jkm} = \bar{y}_{jk} p_{jkm}, \; p_{jkm} = \frac{\sum_i y_{ijkm}}{\sum_i \sum_m y_{ijkm}}. \tag{12}$$

A 95% confidence interval (95% CI_k) for the gear or location-specific Chinook and summer chum salmon harvest was estimated as:

$$95\%\text{CI}_k = t_{(0.025, df=n_k-1)} \cdot \sqrt{\hat{V}(\hat{Y}_{km})} \tag{13}$$

$$\text{where } \hat{V}(\hat{Y}_{km}) = \sum_{j=1}^{5} N_{jk}^2 V(\overline{y}_{jkm}) .$$

Variance of mean harvest by gear type or location was calculated following Goodman (1960):

$$V(\overline{y}_{jkm}) = (\overline{y}_{jk})^2 V(p_{jkm}) + (p_{jkm})^2 V(\overline{y}_{jk}) - V(p_{jkm}) V(\overline{y}_{jk}) ,$$

$$\text{where } V(p_{jkm}) = \frac{p_{jkm} \cdot (1 - p_{jkm})}{\sum_i \sum_m y_{ijkm} - 1} . \quad (14)$$

Correction for the missing harvest groups and the total number of households with each characteristic in the surveywide ($\hat{Y}_m$) and its 95% confidence interval (95% CI) were calculated using Equations 3, 4, 5, and 6. Harvests by harvest group were not presented for reasons of confidentiality.

Unexpanded Totals

Reported harvests of Alaska blackfish, Arctic char, Arctic grayling, Arctic lamprey, burbot, Pacific herring, tomcod/saffron cod, and roe on kelp were not expanded because of limited harvest information.

PERMIT PROGRAM

Subsistence and personal use permits were issued at the ADF&G offices in Fairbanks, Delta Junction, and Tok. For residents of communities outside the Fairbanks area, subsistence permit applications were mailed with a postage-paid return envelope to anyone who returned a permit from the previous year. Permits became available online through the ADF&G website beginning in 2018. Permit-issuing trips were made to 6 communities in 2018: Minto, Manley, Delta Junction, Tok, Northway, and Eagle. In 2018, the permit-issuing trips included guidance on how to obtain permits online.

Permit holders were required to record their daily fish harvest on the permit (Figure 5) and return the permit to ADF&G online or in person within 10 days of the expiration date, October 15 for salmon, and December 31 for nonsalmon permits or Kantishna River salmon permits. Harvests on permits were summed but not expanded, and attempts were made to get a return rate greater than 95%. A variety of methods were employed to encourage fishing permit returns. Official ADF&G news releases and newspaper advertisements were published as reminders of permit due dates. Households that did not report their harvest by the expiration date were mailed up to 2 reminder letters. Further, households that did not respond to the reminder letters were contacted by telephone. After permits were received, follow-up phone calls were made as needed to clarify harvest, gear types, and locations of harvest by species.

The number of unique individual permits was used to determine the total number of fishing households in the permit area, and all reported harvests on permits were counted. Households that fished in more than 1 permit area were only counted once to produce the total number of fishing households. In addition, the total number of fishing households excluded all households that received permits to harvest northern pike in the Tolovana River unless salmon were also harvested. The community of Stevens Village had traditionally been surveyed but is also near the Yukon River Bridge permit area. As such, Stevens Village was surveyed as part of the annual household

harvest survey area, and the permit information was used to supplement data collected from the household harvest survey.

Beginning in 2018, with the development of online permits, the 2 separate permits for the upper portion of Subdistrict 5-D were combined into 1 permit; however, participants were required to record daily fishing location as above or below the sonar project operated near the community of Eagle (Figure 1). This distinction was necessary because harvest above the sonar must be subtracted from the sonar estimate to determine U.S./Canada border passage of Chinook and fall chum salmon (JTC 2019). Similarly, permits for the northern pike fishery in the Tolovana River drainage required a fishing location to designate fishing inside or outside the Chatanika Harvest Area.

To ensure all subsistence-caught fish were accounted for, commercially retained salmon reported on fish tickets but not recorded on permits were added to permit harvest totals in the community nearest to where the harvest occurred. Information about dogs and salmon fed to dogs was collected from subsistence and personal use permits.

Harvest from the communities Huslia, Hughes, Allakaket, Alatna, Bettles, Rampart, Stevens Village, Fort Yukon, Birch Creek, Circle, and Central were partly grouped to protect the confidentiality of these smaller communities. Communities were grouped according to proximity and similar fishing locations. Combined harvests and confidence intervals were calculated using the equations outlined in the *Data Analysis and Estimation Methods* section.

RESULTS

OVERALL ESTIMATION OF HARVEST

An estimated 32,192 Chinook, 74,997 summer chum, 69,712 fall chum, and 8,398 coho salmon were harvested for subsistence and personal use by 1,603 households in the Yukon Area (Table 1). These totals include salmon provided by test fishery projects to households for subsistence use consisting of 1,322 Chinook, 3,657 summer chum, 2,734 fall chum, and 428 coho salmon (Appendix A3). Chinook salmon accounted for 17% of the total subsistence salmon harvest (excluding pink and sockeye salmon). Summer chum accounted for 40% of the total, fall chum 38%, and coho salmon 4% (Table 1, Figure 6).

Subsistence harvest accounted for 99% of the total harvest, and 1% was personal use harvest. The estimated number of salmon caught in subsistence fisheries alone was 183,942 fish consisting of 31,986 Chinook, 74,482 summer chum, 69,207 fall chum, and 8,267 coho salmon (Table 1, Figure 5, and Appendices B1–B4). The number of salmon harvested in nonsubsistence personal use fisheries was 1,357 fish, consisting of 206 Chinook, 515 summer chum, 505 fall chum, and 131 coho salmon (Table 1, Appendix B11).

OVERALL GEAR USAGE

Primary gear types used to harvest all salmon species consisted of 791 drift gillnets (49%), 697 set gillnets (43%), 92 fish wheels (6%), and 22 other gears (1%) including dip nets, beach seines, or hook and line (Table 1). In the subset of surveyed communities, an estimated 11,097 (42%) subsistence-caught Chinook salmon were harvested by 7.5-inch gillnets, 10,490 (39%) by 6-inch gillnets, 4,932 (19%) by fish wheels, 81 (<1%) by dip nets or other gear types, and 6 (<1%) by 4-inch gillnets (Appendix B14; not including test fishery donations). Within the subset of surveyed communities, the majority of subsistence-caught summer chum salmon were harvested by 6-inch

gillnets (60,313, 87%), 7,698 (11%) were harvested by 7.5-inch gillnets, 650 (1%) by fish wheels, 514 (<1%) by 4-inch gillnets, and 486 (<1%) by dip nets or other gear types (Appendix B15). Of the 169 subsistence permit households, 143 (85%) used set gillnets, 23 (14%) used fish wheels, and 3 (<2%) households used other gears (e.g., dip net; Table 1). Of the 58 households with personal use permits, 53 (91%) used set gillnets, and 5 (9%) used other gears as their primary gear. These data do not include 15 households that fished in more than 1 permit area or 103 households that fished in the Tolovana River northern pike fishery, which primarily used jigging gear.

SALMON HARVEST FOR DOG FOOD

An estimated 33% of salmon harvested for subsistence in the Yukon Area were fed to dogs (not including pink or sockeye salmon). An estimated 60,130 summer chum, fall chum, and coho salmon were utilized for dog food (Table 2, Appendix B12) in both the subsistence and personal use fisheries. Subsistence households owned an estimated 5,115 dogs, and approximately 256 households reported feeding 59,953 subsistence-caught salmon to their dogs (Table 2). The number of salmon fed to dogs from surveyed communities did not include an estimated 86 pink salmon fed to dogs (Table 2). Personal use permit households owned 203 dogs, and 24 reported feeding 177 personal use-caught salmon to their dogs. Dog-related salmon use information is not required on Tolovana River area northern pike permits.

SUBSISTENCE SURVEYS

Following the 2017 surveys, the household list was updated based on the number of new, deleted, and combined household information acquired. These data were used in 2018, and 1,552 households were selected from the 2,725 households identified within the 33 communities to be surveyed (Table 3). Information was collected from 1,500 households (97% of the selected sample and 55% of the total identified households in the survey area; Table 3). Included were 32 households that traveled to the Yukon River to fish in or near surveyed communities but were not present in the communities during the fall visits, which represented about 2% of the total number of selected households.

Division of Commercial Fisheries staff traveled to 31 of the 33 surveyed Yukon Area communities between September 7 and October 28, 2018. Due to their small size and low historical harvest levels, Birch Creek and Chalkyitsik communities were surveyed by phone and letter to reduce travel costs.

An additional 168 unselected households from 18 communities were interviewed in person or by phone, including new households, households requesting an interview, and households misidentified as selected. Additional surveys mainly came from an attempt to survey all households in 3 communities to assist a Division of Subsistence study (Trainor et al. 2021). The additional interviews from unselected households were included in the analysis to assist with the Trainor et al. (2021) study.

In 2018, of the selected households, 93% of the heavy harvester and 90% of the medium harvester households were successfully surveyed. More than 100% of the selected light harvester and unknown households were surveyed due to additional unselected households surveyed. Of the selected households identified as do not fish, 94% were surveyed (40% of all do not fish households). A portion of do not fish households are surveyed each year to accurately represent all households in the sample and maintain accuracy in the household database and strata (Table 3).

Based on responses to the survey questions, an estimated 1,374 households (in the roadless area) participated in the subsistence fishery in 2018 (Table 4). A total of 50% of the unknown harvest group and 20% of the do not fish group were estimated to have participated in the fishery and harvested salmon. Households identified as harvester groups represented 55% (32% light, 22% medium, and 2% heavy harvesters) of the households in surveyed communities (Table 3). Of the harvester groups, an estimated 60% of light, 80% of medium, and 80% of heavy harvester households subsistence fished for salmon in 2018 (Table 4).

Harvest by Location

Households did not always harvest fish in their community's district. Therefore, the estimated total from a community's district did not always equal the total from the harvest district. Households in Scammon Bay, Mountain Village, St. Mary's, Pilot Station, Marshall, Russian Mission, Shageluk, Koyukuk, Galena, Ruby, Huslia/Hughes, Allakaket/Alatna/Bettles, Tanana, Fort Yukon/Birch Creek and Venetie/Chalkyitsik harvested salmon from 2 or more locations (i.e., districts, subdistricts, or tributaries) to take advantage of harvest opportunities for different salmon stocks or legal gear types (Tables 5–9). The greatest number (10,373) of Chinook salmon were harvested in District 5 (sum of harvests from Subdistricts 5-A, 5-B, 5-C, and 5-D). Most summer chum salmon (24,016) were harvested in District 1. Most fall chum (23,454) and coho salmon (1,355) were harvested in District 5 (sum of harvests from Subdistricts 5-A, 5-B, 5-C, 5-D; Tables 7–8). Species-specific harvests from Yukon River tributaries ranged from 1% (Chinook salmon) to 15% (coho salmon) of the total survey area harvest. The largest tributary harvests of all salmon species combined were from the Koyukuk (11,942) and Innoko (832) Rivers. Harvests from Subdistricts 4-C and 5-A are thought to include primarily salmon oriented to the Tanana River (Buklis 1981; Spearman and Miller 1997), and those harvests were estimated to be 974 Chinook, 373 summer chum, 1,154 fall chum, and 104 coho salmon (Tables 5–8).

Test Fishery Donations and Salmon Retained from Commercial Harvest

In addition to subsistence fishing, some households could receive salmon through other means. Surveyed communities of Alakanuk, Emmonak, Kotlik, Mountain Village, St. Mary's, Pilot Station, and Eagle received 7 salmon from test fishery projects, which were added to community harvest estimates (Appendix A3). The Eagle sonar test fishery typically releases salmon. However, in 2018, some salmon were retained for a Division of Commercial Fisheries study (Appendix A3). Salmon caught in test fisheries made up 5% of the total Chinook salmon subsistence harvest in surveyed communities. Summer chum test fishery catch was 5%, fall chum was 8%, and coho salmon was 8% of the subsistence harvest from surveyed communities (Table 1, Appendix A3). Households in some portions of the Yukon Area also had the opportunity to retain commercially harvested salmon for subsistence. Estimates of salmon retained from commercial catches for subsistence use from surveyed communities included 1,453 Chinook, 563 summer chum, 244 fall chum, and 74 coho salmon (Table 1).

Other Fish Species

The estimated subsistence harvest of other fish species in the Yukon Area surveyed communities included 3,849 pink salmon, 25,931 large whitefish, 31,849 small whitefish, 20,775 northern pike, and 11,728 sheefish (Table 10). Broad whitefish made up 66% of the large whitefish harvested, and humpback whitefish made up the remaining 34% (Table 10). Coastal District and District 1 accounted for 91% of the estimated pink salmon subsistence harvest. Most estimated sheefish (52%) were harvested by District 1 households, and District 5 households harvested small

whitefish (37%). District 2 households accounted for the largest estimated harvest of northern pike (35%). District 4 households were estimated to have harvested the majority of large whitefish (25%).

Estimates of unexpanded nonsalmon species (primarily resident species) harvested included species only available in specific parts of the drainage, such as marine-based species (Pacific herring and tomcod). Other species, such as Alaska blackfish, burbot, and Arctic grayling, were widely distributed but not harvested throughout the drainage (Table 11). Coastal and lower river communities reported most of the harvested 28,907 Pacific herring, 150 gallons and 665.5 pounds of herring roe on kelp, 5,243 tomcod, and 61,896 Alaska blackfish. Of the 2,975 burbot, most were harvested in Districts 1 and 2. In 2018, 1,027 Arctic lamprey were reported harvested, primarily in Districts 2–4, for subsistence purposes (Table 11).

Survey Comments

At the end of each survey, households could comment on any topic related to fishing they felt was important. The most numerous comments (237 responses) were related to personal circumstances that affected an individual household's fishing effort, such as health problems, work schedules, and time conflicts with other activities. The second largest group of comments (199 responses) related to subsistence salmon harvest needs having been met. The third largest group of comments (110 responses) stated dissatisfaction with management, such as a desire to have longer openings for Chinook salmon or more commercial openings. Comments discussing equipment-related issues, such as boats or nets (75 responses), were the fourth largest group. Satisfaction with the salmon runs (47 responses) was the fifth largest group of comments. Expenses were mentioned by 14 households. Diseases found in harvested fish, such as tumors, pus, or tapeworms, were mentioned by 9 households. River conditions, such as high water and drift, and poor weather affected a small number of households (36 responses). Some households (5 responses) were concerned about conserving Chinook salmon, supported ADF&G conservation measures, or mentioned their efforts to conserve. Other comments included general mention of fish fed to dogs (2 responses).

PERMITS

Subsistence Permits

In the upper Subdistrict 4-A (Koyukuk River drainage), District 5 (Yukon River), and District 6 (Tanana River), 479 of the 483 (99%) subsistence permits issued were returned, and 283 reported subsistence salmon and nonsalmon harvest (Tables 12 and 13). In 2018, permits included 23 for the Tanana River upstream of Subdistrict 6-C and 175 for the northern pike fishery in the Tolovana River drainage (Table 12).

The 2018 subsistence permit harvest information was based on permits returned by April 30, 2019 (Tables 12 and 13). Total subsistence harvests of 4,152 Chinook, 929 summer chum, 31,325 fall chum, and 2,755 coho salmon were reported. The total harvest of other fish species included: 2,447 whitefish, 99 sheefish, 69 burbot, 1,156 northern pike, 36 longnose suckers, and 61 Arctic grayling (Tables 12 and 13, Appendices B6–B10).

Additionally, salmon were retained from commercial harvests in subsistence permit areas; fish tickets from the commercial fishery in District 6 included 299 summer chum and 171 fall chum salmon recorded as "Not sold/Personal use." These salmon were added to the community harvests from Nenana/Healy, Fairbanks North Star Borough (FNSB), and Manley (Table 1).

Personal Use Permits

In 2018, all 115 of the issued personal use permits were returned (Table 12). A total of 15 households were issued subsistence and personal use permits, and 9 households were issued both types of personal use permits (salmon and nonsalmon). Harvest was reported on 66 personal use fishing permits, 57 of which were issued for salmon, and 9 were issued for nonsalmon species. Personal use permit holders reported harvesting 206 Chinook salmon, 515 summer chum salmon, 505 fall chum salmon, 131 coho salmon, 100 whitefish, 113 longnose suckers, and 1 Arctic grayling (Tables 12 and 13; Appendix B11).

CHARACTERISTICS OF FISHING EFFORT

Subsistence calendar and permit information where harvests were recorded by day provide timing of harvests and fishing effort by location. In 2018, households returned 232 subsistence harvest calendars, approximately 12% of the total issued. A total of 198 calendars, 85% of those returned, documented salmon harvest information. The remaining households that returned harvest calendars in 2018 indicated they did not fish or returned a blank calendar (15%).

Subsistence fishing generally occurs from late May until late October each year. In the Lower Yukon Area, fishing efforts occurred mainly in the summer season before July 15. Reported harvests in District 4 occurred mainly in late June and early July during the summer season. Households in District 5 reported more consistent fishing efforts throughout the summer and fall seasons. District 6 effort was similar during the summer and fall seasons (Figure 7). For permit and calendar data combined, the greatest number of households that reported fishing on a single day (July 14, 2018) in a district was 37 households in District 5 during the summer season (Figure 7).

DISCUSSION

In 2018, the runs of summer chum, fall chum, and coho salmon were abundant enough to meet escapement goals and allow for subsistence and commercial fishing. However, subsistence fisheries were restricted by fishing time or gear during the summer to protect Chinook salmon (Carroll 2018).

The 2018 Yukon Area subsistence salmon harvest of 183,942 Chinook, chum, and coho salmon combined was 14% below the 2013–2017 average and 20% under the 2008–2012 average (Figure 6). These harvest averages include years with fishing restrictions, such as the closures during the Chinook salmon run in 2008, 2009, and 2011–2017 (Figures 6 and 8–11). The 2018 Chinook salmon harvest in the Yukon River increased by 94% from the 2013–2017 average, though it was 18% below the 2008–2012 average (Figure 8, Appendix B1). The 2018 summer chum harvest decreased by 19%, fall chum by 25%, and coho salmon by 37% compared to their individual 2013–2017 averages (Figures 9–11, and Appendices B2–B4). The total harvest of pink salmon in 2018 was 45% below the 2008–2016 even-year average (Figure 12, Appendix B5).

In 2018, fishery managers implemented selective gear restrictions allowing dip nets, beach seines, or human-operated fish wheels with the requirement that all Chinook salmon be released back into the water alive when targeting summer chum salmon and nonsalmon species for subsistence (Carroll 2018). Retention of Chinook salmon was not allowed by regulation from selective gear types (Carroll 2018); however, a small portion were reported harvested using dip nets and beach seines (<1% of total harvest; Appendix B14). Due to some confusion, once fishing returned to drift

and set gillnet gear, some individuals continued using the selective gear types. It was unclear if these fish were unable to be released to the water alive, were retained without knowledge of regulations, or were retained with disregard to regulations.

Commercial vessels had the opportunity to retain salmon for subsistence use during commercial periods. Typically, non-Chinook salmon species retained from commercial harvests were not usually recorded on fish tickets. However, due to increased enforcement during low runs, there has been an increase in Chinook salmon recorded as retained for subsistence on fish tickets. In 2018, Chinook salmon retained for subsistence use from commercial catches reported on fish tickets (3,335 fish) represented approximately 12% of the estimated harvest from surveys. The survey asks about commercially retained salmon (Q9), but these estimates should not be directly compared to fish reported as retained on fish tickets. Surveyed individuals were not always the household harvester and may not have known whether fish were harvested from commercial or subsistence openings. The total harvest estimate question (Q7) was designed to capture all salmon harvested for subsistence use, and Q9 was designed to assist with harvest recall.

SALMON SURVEY AND AMOUNTS NECESSARY FOR SUBSISTENCE

In 2018, only pink salmon harvests were within their respective amounts necessary for subsistence (ANS) ranges (Table 10 and Figure 12). The subsistence harvests of Chinook, summer chum, fall chum, and coho salmon were below their ANS ranges (Figures 8–11). Personal use harvests were not included in ANS calculations. The applicable Yukon Area ANS ranges are: 45,500–66,704 Chinook, 83,500–142,192 summer chum, 89,500–167,900 fall chum, 20,500–51,980 coho, and 2,100–9,700 pink salmon (Figures 8–12). The ANS ranges were established for Chinook, summer and fall chum, and coho salmon in 2001 (ADF&G 2001). These ranges were based on subsistence harvest data from 1990–1999 (excluding 1993 and 1998 for fall season restrictions). Pink salmon ANS was established in 2013 (Brown and Jallen 2012). The ANS ranges provide 1 index of the extent to which reasonable opportunity was provided in the subsistence fishery. In years with fishery restrictions during the summer seasons, reducing harvests of Chinook salmon was the inseason management objective, and therefore, ANS would not be expected to be achieved for that species. Unfortunately, restrictions on Chinook salmon also have an adverse effect on harvesting summer chum salmon because the 2 species migrate together. Additionally, the subsistence harvest of summer chum salmon has fallen off since ANS was established and before the Chinook salmon restrictions and may not be reflective of more recent harvest levels.

The percentage of subsistence salmon harvest by species has fluctuated when compared to past years. In 2018, Chinook salmon harvest represented nearly 17% of the total harvested salmon. Due to restrictions on Chinook salmon fishing opportunities in times of conservation, beginning in 2008, some households may have shifted to other subsistence foods such as other fish species or non-fish resources. During the 5 years prior to restrictions (2003–2007), Chinook salmon averaged 22% of the total subsistence harvest (Busher et al. 2009); the 2013–2017 average was 15% (Figure 6). Between 2003–2007 (Busher et al. 2009) and 2013–2017, the average percent fall chum salmon increased by 12%, summer chum salmon increased by 6%, and coho salmon decreased by 3% (Figures 6 and 9–11).

A large component of the annual subsistence harvest has traditionally consisted of salmon (summer chum, fall chum, and coho salmon) fed to dogs. Failure to meet ANS levels may be in part due to shifts in the use of subsistence salmon harvests and an overall reduction in the number of dogs and salmon fed to dogs. An average of 190,612 chum and coho salmon were fed to an average of 7,966

dogs annually prior to the establishment of ANS ranges (1992–1999; Borba and Hamner 2001). By comparison, from 2013 to 2017, an average of 74,293 chum and coho salmon were fed to an average of 5,311 dogs annually (Appendix B12). Annual variation in the number of salmon fed to dogs was probably due to owners feeding increased numbers of nonsalmon fish species, meat, or commercial dog food to a fluctuating number of dogs. The variation may also be due in part to the absence of large commercial salmon roe fisheries (Estensen et al. 2018). Historically, roe fisheries generated salmon carcasses that were probably fed to dogs. Salmon retained from commercial catch are considered subsistence-caught fish (captured in the survey). Furthermore, in District 6, beginning in 2015, there has been an increase in the number of commercial fishery participants that have been operating as catcher–sellers, which allows them to sell whole fish directly to individuals. This fishery has occurred during the fall season prior to freeze-up and has harvested primarily fall chum and coho salmon for dog food. These commercial sales have been replacing subsistence harvest that was historically reported on individual household subsistence fishing permits. Changes in harvest levels and patterns for summer/fall chum and coho salmon may warrant ANS review (Brown and Jallen 2012).

NONSALMON FISH SPECIES

Harvest estimates of nonsalmon fish species generated from this project are informative, even though reported values were probably underestimated. Currently, there is limited information about the annual abundance and use trends of nonsalmon species in the Yukon Area. Information collected during the survey project on nonsalmon species helped document where harvests of nonsalmon species occurred and which species were important to communities in the Yukon Area. In most permit areas, participants were required to report their annual harvest of nonsalmon species. In most permit areas, participants were required to report their annual harvest of nonsalmon species.

The 2018 combined total harvest of nonsalmon fish species reported on subsistence and personal use permits was 13% lower than the 2013–2017 average harvest and 12% higher than the 2008–2012 average harvest (Appendices B6–B11 and B13). However, the average combined total harvest of nonsalmon fish species, including permits and surveys, from 2013 to 2017 was 28% above the 2008–2012 average. The increased trend in nonsalmon harvest in recent years may be a result of households replacing salmon due to fishing restrictions on salmon species.

Information about Pacific herring has been collected in the past on the surveys as a comment or as a separately conducted mail-out survey (Estensen et al. 2012). Households in the Coastal District and Districts 1–2 were asked about herring as part of the subsistence salmon survey interviews. Reports from households in Districts 1 and 2 indicated that Pacific herring harvest was not limited to coastal residents.

PROJECT AND REPORT

The 2018 survey project progressed similarly to previous years. The household interviews were conducted by 2 surveyors, 1 new and 1 returning to the project. Similar to past years, travel to communities was affected by weather, flight delays, and community events. Many of the interviewed households generally responded positively to the surveyors and were willing to answer all questions, but some households were unreceptive toward the surveyors and expressed their frustrations with fisheries management actions. Further public outreach efforts may be warranted to encourage participation in the survey interviews and convey the importance of collecting

subsistence harvest information. The efforts to encourage returns of 2018 fishing permits were successfully implemented. After several months of attempting to contact, the non-responding permit holders were reported to the Alaska State Troopers. Preliminary estimates of subsistence and personal use harvests were provided to fishery managers for analysis used to develop the coming year's outlooks by late February 2019. A few additional permits from the 2018 season were received after February 2019, and the acquisition of the 2018 permit data was considered complete on April 30, 2019, with 99% compliance.

Two communities (Birch Creek and Chalkyitsik) were surveyed primarily by phone to reduce surveyor travel and overtime costs. The combined annual harvest of all salmon species from these communities, on average, was less than 600 salmon per year (Appendices B1–B4). Phone surveys were less successful due to the reduced opportunity to contact households with changed or no phone numbers. Similarly, mail surveys were less successful due to changing mail addresses.

Harvest information from calendars was used to supplement in person surveys. However, the 2008–2017 average return of subsistence calendars was only 15% annually. In 2018, just 12% of calendars were returned. With the low return of calendars, the timing of harvest data are available only by district and not at the community level. Further efforts, such as additional reminders or incentives, may be needed to increase the return rate.

Surveyors occasionally interviewed households who traveled outside the Yukon Area to fish in other parts of Alaska such as Bristol Bay, Kenai, or Copper Rivers. These fish were not included in harvest estimates for the Yukon Area.

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TABLES AND FIGURES

Table 1.–Subsistence and personal use salmon harvest estimates, including commercially related and test fishery harvests provided for subsistence use, Yukon Area, 2018.

Community	Number of fishing households[b]	Estimated salmon harvest				Primary gear used[a]			
						Gillnets		Fish	
		Chinook	Summer chum	Fall chum	Coho	Set	Drift	wheels	Other
Hooper Bay	109	456	8,346	158	119	107	1	0	0
Scammon Bay	90	666	6,850	364	746	86	4	0	0
Coastal District total	199	1,122	15,196	522	865	193	5	0	0
Nunam Iqua	19	78	1,549	188	184	14	3	0	3
Alakanuk [c]	73	414	5,448	510	190	22	46	0	5
Emmonak [c]	84	1,203	7,036	2,208	329	12	72	0	0
Kotlik [c]	84	1,556	7,007	759	264	42	43	0	0
District 1 subtotal	260	3,251	21,040	3,665	967	90	164	0	8
Mountain Village [c]	89	1,021	5,414	872	267	7	82	0	0
Pitkas Point	19	365	1,390	112	54	0	19	0	0
St. Mary's [c]	99	1,172	4,486	470	37	0	96	0	3
Pilot Station [c]	65	581	4,015	1,116	121	2	62	0	0
Marshall	72	914	3,311	415	112	3	69	0	0
District 2 subtotal	344	4,053	18,616	2,985	591	12	328	0	3
Russian Mission	60	1,043	2,245	349	123	28	32	0	0
Holy Cross	29	580	306	176	23	3	26	0	0
Shageluk	12	181	495	174	8	11	1	0	0
District 3 subtotal	101	1,804	3,046	699	154	42	59	0	0
Lower Yukon River total	705	9,108	42,702	7,349	1,712	144	551	0	11
Anvik	21	566	437	500	15	5	15	0	0
Grayling	36	888	779	750	0	1	35	0	0
Kaltag	22	570	25	66	34	0	19	0	3
Nulato	59	1,260	241	869	220	0	58	1	0
Koyukuk	29	859	150	295	22	4	25	0	0
Galena	73	1,262	349	1,401	216	17	56	0	0
Ruby	22	1,126	970	842	26	0	21	1	0
District 4 Yukon River subtotal	262	6,531	2,951	4,723	533	27	229	2	3
Huslia/ Hughes	23	170	4,726	859	1,020	20	3	0	0
Allakaket/Alatna/Bettles	24	48	4,844	362	27	21	3	0	0
Koyukuk River subtotal	47	218	9,570	1,221	1,047	41	6	0	0
District 4 subtotal	309	6,749	12,521	5,944	1,580	68	235	2	3

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Table 1.–Page 2 of 3.

Community	Number of fishing households [b]	Estimated salmon harvest				Primary gear used [a]			
						Gillnets		Fish	
		Chinook	Summer chum	Fall chum	Coho	Set	Drift	wheels	Other
Tanana	42	5,108	2,733	16,731	1,355	18	0	25	0
Rampart/Stevens Village [d]	11	284	1	1,417	11	10	0	1	0
Fairbanks (FNSB) [d, e]	61	1,475	521	2,077	72	59	0	2	0
Beaver	22	332	8	141	0	15	0	7	0
Fort Yukon/Birch Creek	67	4,704	44	3,487	0	30	0	33	4
Circle/Central [d]	10	683	0	2,877	0	4	0	6	0
Eagle [c,d]	25	1,011	0	16,539	0	16	0	9	0
Other District 5 [d, f]	18	474	37	175	11	17	0	1	0
District 5 Yukon River subtotal	256	14,071	3,344	43,444	1,449	169	0	84	4
Venetie/Chalkyitsik	21	443	114	2,544	0	19	0	1	0
Teedriinjik/Draanjik Rivers subtotal	21	443	114	2,544	0	19	0	1	0
District 5 subtotal	277	14,514	3,458	45,988	1,449	188	0	85	4
Manley [d]	9	210	78	3,645	918	8	0	1	0
Minto [d, f]	–	–	–	–	–	–	–	–	–
Nenana/Healy [d]	18	181	440	4,937	1,622	15	0	3	0
Fairbanks (FNSB) [d, e]	67	247	583	1,327	252	66	0	1	0
Other District 6 [d, g]	19	61	19	0	0	15	0	0	4
District 6 Tanana River subtotal	113	699	1,120	9,909	2,792	104	0	5	4
Upper Yukon River total	699	21,962	17,099	61,841	5,821	360	235	92	11
Alaska, Yukon Area total	1,603	32,192	74,997	69,712	8,398	697	791	92	22
AK, Yukon Area % of the total	–	17.4%	40.5%	37.6%	4.5%	44%	49%	6%	1%
Included in the communities above:									
Survey community subtotal [h]	1,376	26,778	69,662	35,401	5,095	497	791	69	18
Retained from commercial fisheries [i]	–	1,453	563	244	74	–	–	–	–
Subsistence permit subtotal	169	3,886	864	30,901	2,744	144	0	23	2
Test fishery subtotal	–	1,322	3,657	2,734	428	–	–	–	–
District 6 commercial retained [j]	–	0	299	171	0	–	–	–	–
Subsistence harvests subtotal	1,545	31,986	74,482	69,207	8,267	641	791	92	20
Personal use permit subtotals	58	206	515	505	131	56	0	0	2

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Note: En dash (–) indicates value could not be computed due to limitations of the data or confidentiality.

[a] Primary gear was the gear type used to harvest the largest number of salmon by each household. Other gear types included dip nets, fyke nets, jigging, spear, and beach seines. Discrepancies between gear and household totals were due to estimate rounding.

[b] Did not include 103 households that fished with a Tolovana River northern pike permit, or 15 households that fished in more than 1 permit area.

[c] Included salmon distributed from test fishery projects (added to community estimates).

[d] Permit data from permits returned by April 30, 2019.

[e] Fairbanks North Star Borough (FNSB) included Fairbanks, Ester, North Pole, Salcha, and Two Rivers.

[f] Minto data unavailable due to confidentiality, data were added to Other District 6.

[g] Households from other communities included Anchorage, Auke Bay, Central, Delta Junction, Dot Lake, Eagle River, Homer, Manley, Minto, Nenana, Northway, Soldotna, Sutton, Tok, Wasilla, Wiseman who were issued a permit.

[h] Included the community of Rampart permit data as was historically a survey community.

[i] Estimated number of salmon retained from commercial fisheries and used for subsistence in surveyed communities. These salmon are included in subsistence harvest estimates.

[j] Number of salmon retained from commercial fisheries and used for subsistence in District 6. These salmon were added to permit harvest totals of District 6 communities.

Table 2.–Household and dog information from surveys and permits by community of residence, Yukon Area, 2018.

Community	Households Total	Households *n*	Households with dogs Est total	Households with dogs CI 95%	No. of dogs Est total	No. of dogs CI 95%	Households feeding salmon to dogs Est total	Households feeding salmon to dogs CI 95%	Summer chum Est total	Summer chum CI 95%	Fall chum Est total	Fall chum CI 95%	Coho Est total	Coho CI 95%	Est total
Hooper Bay	238	107	141	6	273	44	2	0	7	4	0	0	0	0	7
Scammon Bay	117	53	82	5	139	26	11	4	16	17	0	0	0	0	16
Coastal District	355	160	223	7	412	51	13	4	23	17	0	0	0	0	23
Nunam Iqua	40	21	23	1	54	25	6	3	49	49	0	0	0	0	49
Alakanuk	142	67	86	8	157	33	0	0	0	0	0	0	0	0	0
Emmonak	198	99	120	3	248	78	1	0	8	9	0	0	0	0	8
Kotlik	119	57	87	5	184	60	8	3	56	41	0	0	0	0	56
District 1	499	244	316	10	643	106	15	5	113	62	0	0	0	0	113
Mountain Village	169	77	117	6	181	26	1	0	24	20	0	0	0	0	24
Pitkas Point	27	20	23	1	45	10	0	0	0	0	0	0	0	0	0
St. Mary's	142	68	82	4	129	23	2	0	74	55	0	0	0	0	74
Pilot Station	132	116	72	1	145	17	3	0	59	25	0	0	0	0	59
Marshall	100	44	75	5	184	67	6	2	3	3	53	54	0	0	56
District 2	570	325	369	9	684	76	12	2	160	63	53	52	0	0	213
Russian Mission	77	31	59	4	152	46	14	3	69	42	0	0	0	0	69
Holy Cross	59	29	43	3	78	26	3	1	24	17	0	0	0	0	24
Shageluk	34	24	25	1	55	10	4	1	65	47	0	0	0	0	65
District 3	170	84	127	5	285	52	21	3	158	63	0	0	0	0	158
Anvik	31	27	21	1	49	7	2	0	119	15	100	0	0	0	219
Grayling	57	29	39	4	91	21	6	2	344	179	11	6	0	0	355
Kaltag	51	25	39	4	51	15	0	0	0	0	0	0	0	0	0
Nulato	84	74	58	1	124	10	2	0	21	9	0	0	16	16	37
Koyukuk	44	18	34	4	73	38	7	3	145	133	0	0	0	0	145
Galena	147	52	88	5	163	39	5	0	16	9	45	0	141	141	202
Ruby	51	20	23	5	54	16	1	0	0	0	400	0	0	0	400
Huslia/Hughes	113	60	65	5	344	173	13	3	4,542	2,086	480	170	740	740	5,762
Allakaket/Alatna/Bettles	87	45	39	4	200	99	21	4	4,735	3,312	0	0	0	0	4,735
District 4	665	350	406	11	1,149	205	57	6	9,922	3,836	1,036	167	897	897	11,855

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Table 2.–Page 2 of 3.

Community	Households Total	Households *n*	Households with dogs Est total	Households with dogs CI 95%	No. of dogs Est total	No. of dogs CI 95%	Households feeding salmon to dogs Est total	Households feeding salmon to dogs CI 95%	Summer chum Est total	Summer chum CI 95%	Fall chum Est total	Fall chum CI 95%	Coho Est total	Coho CI 95%	Est total
Tanana	97	49	52	3	250	107	16	2	1,649	731	16,247	7,209	1,320	1,320	19,216
Stevens Village/Rampart[a]	22	16	14	2	116	16	3	0	0	0	1,050	0	0	0	1,257
Beaver	31	26	12	1	23	3	5	0	6	3	85	30	0	0	91
Fort Yukon/Birch Creek	219	80	117	6	380	121	20	3	0	0	3,561	1,731	0	0	3,561
Venetie/Chalkyitsik	101	45	59	5	238	96	25	4	64	73	2,468	1,265	0	0	2,532
District 5	470	216	254	9	1,007	185	69	6	1,719	806	23,411	8,647	1,320	791	26,657
Survey total	2,729	1,379	1,695	21	4,180	313	187	11	12,095	5,127	24,500	8,607	2,217	966	39,019

Subsistence/personal use Permits	Household permits[b] Issued	Household permits[b] Returned	Households with dogs	No. of dogs	Households feeding salmon to dogs	Information about salmon fed to dogs by species was not collected on permits						Total salmon
Fairbanks (FNSB)[c]	81	80	39	181	13	–	–	–	–	–	–	1,602
Circle/Central	12	12	9	112	5	–	–	–	–	–	–	2,532
Eagle	32	32	17	225	14	–	–	–	–	–	–	11,495
Other District 5[d]	20	20	9	13	3	–	–	–	–	–	–	0
District 5 permit subtotal	145	144	74	531	35	–	–	–	–	–	–	15,629
Manley	11	11	5	30	4	–	–	–	–	–	–	2,463
Minto	19	17	11	73	7	–	–	–	–	–	–	0
Nenana/Healy	33	33	20	148	10	–	–	–	–	–	–	2,043
Fairbanks (FNSB)[c]	121	121	84	264	31	–	–	–	–	–	–	976
Other District 6[d]	48	48	29	92	6	–	–	–	–	–	–	0
District 6 permit subtotal	232	230	149	607	58	–	–	–	–	–	–	5,482
Subsistence permit subtotal	280	277	152	935	69	–	–	–	–	–	–	20,934
District 5 total	–	–	257	1,335	80							42,109
Subsistence use subtotal	3,009	1,656	1,847	5,115	256							59,953
Personal use permit subtotal	97	97	71	203	24	–	–	–	–	–	–	177
Total survey and permit	–	–	1,918	5,318	280	–	–	–	–	–	–	60,130

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Note: En dash (–) indicates value could not be computed due to limitations of the data. The number of households contacted in surveyed communities is (*n*). Information from permits returned as of April 30, 2019. Did not include 86 pink salmon fed to dogs.

[a] Rampart permit data added to Stevens Village survey data for reasons of confidentiality. Total salmon fed to dogs included Rampart permit data which did not breakout fed to dogs by species.

[b] Unique household permits. Did not include 42 households that were issued more than 1 permit type. Did not include permits from Stevens Village or Tolovana River.

[c] Fairbanks North Star Borough (FNSB) may include Fairbanks, Eielson Air Force Base, Ester, North Pole, Salcha, and Two Rivers.

[d] Household permits from other communities included Anchorage, Auke Bay, Bethel, Coldfoot, Delta Junction, Eagle River, Hoonah, Juneau, Manley Hot Springs, Nenana, Northway, Palmer, Seward, Tanana, Tok, Venetie, Wasilla, and Wiseman.

Table 3.–Estimated total number of households in surveyed communities, by harvest level, with community and district totals, Yukon Area, 2018.

	Unknown				Does not harvest				Light harvester				Medium harvester				Heavy harvester				Total households				Total people		
Community	*N*	*S*	*n*	*%S*	*N*	*S*	*n*	*%S*	*N*	*S*	*n*	*%S*	*N*	*S*	*n*	*%S*	*N*	*S*	*n*	*%S*	*N*	*S*	*n*	*%S*	*np*	Total	CI
Hooper Bay	39	18	11	61	54	17	14	82	75	23	24	104	69	68	63	93	1	1	1	100	238	127	113	89	103	1262	113
Scammon Bay	16	7	4	57	21	7	5	71	41	12	11	92	39	38	37	97	–	–	–	–	117	64	57	89	54	624	50
Coastal District	55	25	15	60	75	24	19	79	116	35	35	100	108	106	100	94	1	1	1	100	355	191	170	89	157	1,886	123
Nunam Iqua	4	3	3	100	9	3	2	67	10	3	3	100	17	17	13	76	–	–	–	–	40	26	21	81	20	222	47
Alakanuk	20	18	12	67	31	8	4	50	48	15	14	93	42	42	39	93	1	1	1	100	142	84	70	83	68	669	118
Emmonak	34	20	20	100	50	25	21	84	55	28	24	86	58	58	49	84	1	1	1	100	198	132	115	87	102	828	73
Kotlik	16	6	4	67	16	6	6	100	45	14	16	114	42	42	38	90	–	–	–	–	119	68	64	94	53	578	88
District 1	74	47	39	83	106	42	33	79	158	60	57	95	159	159	139	87	2	2	2	100	499	310	270	87	243	2,297	168
Mountain Village	32	19	17	89	37	11	8	73	53	17	17	100	47	47	39	83	–	–	–	–	169	94	81	86	75	670	83
Pitkas Point	2	1	1	100	3	3	2	67	11	11	9	82	11	11	10	91	–	–	–	–	27	26	22	85	21	115	9
St. Mary's	29	10	15	150	19	6	6	100	45	15	12	80	47	47	44	94	2	2	2	100	142	80	79	99	68	527	86
Pilot Station [a]	27	12	24	200	31	17	27	159	44	22	42	191	29	29	29	100	1	1	1	100	132	81	123	152	114	622	22
Marshall	14	5	6	120	18	6	6	100	35	11	8	73	32	32	26	81	1	1	1	100	100	55	47	85	45	510	63
District 2	104	47	63	134	108	43	49	114	188	76	88	116	166	166	148	89	4	4	4	100	570	336	352	105	323	2,444	134
Russian Mission	8	7	5	71	15	5	4	80	41	13	12	92	13	13	11	85	–	–	–	–	77	38	32	84	31	398	55
Holy Cross	3	2	2	100	17	9	9	100	23	11	9	82	16	16	14	88	–	–	–	–	59	38	34	89	31	147	19
Shageluk	15	11	14	127	9	9	8	89	6	6	6	100	3	3	3	100	1	1	1	100	34	30	32	107	25	101	18
District 3	26	20	21	105	41	23	21	91	70	30	27	90	32	32	28	88	1	1	1	100	170	106	98	92	87	646	60
Anvik	3	3	2	67	8	8	7	88	13	13	11	85	6	6	6	100	1	1	1	100	31	31	27	87	26	85	10
Grayling	9	5	4	80	8	3	3	100	26	9	10	111	14	14	13	93	–	–	–	–	57	31	30	97	28	170	39
Kaltag	7	5	5	100	9	3	3	100	24	8	7	88	11	11	11	100	–	–	–	–	51	27	26	96	25	99	17
Nulato [a]	15	7	11	157	11	4	11	275	42	13	40	308	16	16	15	94	–	–	–	–	84	40	77	192	76	224	8
Koyukuk	4	1	2	200	10	4	4	100	22	7	6	86	6	6	4	67	2	2	2	100	44	20	18	90	18	105	33
Galena	27	13	12	92	49	14	14	100	56	16	17	106	12	12	11	92	3	3	1	33	147	58	55	95	52	352	51
Ruby	2	2	2	100	29	10	10	100	12	3	3	100	7	7	7	100	1	1	1	100	51	23	23	100	20	112	24
Huslia	8	7	7	100	41	12	11	92	18	5	6	120	6	6	5	83	4	4	4	100	77	34	33	97	29	258	71
Hughes	7	5	6	120	16	16	14	88	10	10	9	90	2	2	2	100	1	1	1	100	36	34	32	94	29	102	13
Allakaket	15	12	12	100	25	8	9	112	12	4	4	100	5	5	5	100	2	2	2	100	59	31	32	103	27	142	31
Alatna	3	3	2	67	3	3	1	33	2	2	1	50	1	1	0	0	–	–	–	–	9	9	4	44	4	16	0
Bettles	2	2	0	0	17	17	16	94	–	–	–	–	–	–	–	–	–	–	–	–	19	19	16	84	15	30	4
District 4	102	65	65	100	226	102	103	101	237	90	114	127	86	86	79	92	14	14	12	86	665	357	373	104	349	1,695	107

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	Unknown				Does not harvest				Light harvester				Medium harvester				Heavy harvester				Total households				Total people		
Community	*N*	*S*	*n*	*%S*	*N*	*S*	*n*	*%S*	*N*	*S*	*n*	*%S*	*N*	*S*	*n*	*%S*	*N*	*S*	*n*	*%S*	*N*	*S*	*n*	*%S*	*np*	Total	CI
Tanana	23	16	16	100	22	12	11	92	33	16	15	94	10	10	8	80	9	9	9	100	97	63	59	94	48	223	28
Stevens Village	11	2	5	250	1	1	1	100	2	2	2	100	1	1	1	100	3	3	3	100	18	9	12	133	12	54	14
Birch Creek	4	4	0	0	8	8	3	38	2	2	2	100	–	–	–	–	–	–	–	–	14	14	5	36	4	27	0
Beaver [a]	11	4	9	225	5	5	4	80	14	14	13	93	1	1	1	100	–	–	–	–	31	24	27	112	26	69	9
Fort Yukon	24	12	14	117	109	33	32	97	44	14	11	79	18	18	17	94	10	10	9	90	205	87	83	95	70	492	73
Venetie	20	7	9	129	34	10	10	100	10	4	4	100	7	7	5	71	2	2	2	100	73	30	30	100	27	164	30
Chalkyitsik	9	6	4	67	15	15	13	87	3	3	3	100	1	1	1	100	–	–	–	–	28	25	21	84	18	56	9
District 5	102	51	57	112	194	84	74	88	108	55	50	91	38	38	33	87	24	24	23	96	466	252	237	94	205	1,084	85
Survey totals	463	255	260	102	750	318	299	94	877	346	371	107	589	587	527	90	46	46	43	93	2,725	1,552	1,500	97	1,364	10,054	288

Note: En dash (–) indicates value could not be computed due to limitations of the data. The following notations were used in the above table: *N* = the total number of households, *S* = the number of households selected, *n* = the number of households contacted, and %S= the percent of the selected households that were contacted in each harvest group in surveyed communities. Households contacted (*n*) may include some households not pre-selected resulting in a household contacted percentage (*%S*) greater than 100%. In most communities a smaller number of households provided information about the number of people (*np*) in their households. Estimated total number of people includes a 95% confidence interval (CI).

[a] A full census of Beaver, Nulato, and Pilot Station were conducted as part of a joint study with the Alaska Department of Fish and Game, Division of Subsistence.

Table 4.–Estimated number of subsistence fishing households in surveyed communities, by harvest level, with community and district totals, Yukon Area, 2018.

	Unknown				Does not harvest salmon				Light harvester				Medium harvester				Heavy harvester				Combined Total		Est.	CI
Community	*N*	*n*	%F	SE	*N*	*n*	%F	SE	*N*	*n*	%F	SE	*N*	*n*	%F	SE	*N*	*n*	%F	SE	*N*	*n*	total	95%
Hooper Bay	39	9	30	0	54	13	30	0	75	23	30	0	69	60	80	0	1	1	100	0	238	106	109	6
Scammon Bay	16	3	70	0.1	21	5	40	0.0	41	10	80	0.0	39	36	100	0.0	–	–	–	–	117	54	90	8
Coastal District	55	12	40	0.1	75	18	30	0.0	116	33	50	0.0	108	96	90	0.0	1	1	0	1.0	355	160	199	9
Nunam Iqua	4	3	70	0.1	9	2	0	0.0	10	3	30	0.1	17	13	80	0.0	–	–	–	–	40	21	19	3
Alakanuk	20	12	40	0.0	31	4	20	0.1	48	14	60	0.0	42	37	70	0.0	1	1	0	0.0	142	68	73	8
Emmonak	34	16	30	0.0	50	19	20	0.0	55	24	40	0.0	58	43	70	0.0	1	1	100	0.0	198	103	84	3
Kotlik	16	4	100	0.0	16	5	40	0.0	45	14	50	0.0	42	35	90	0.0	–	–	–	–	119	58	84	4
District 1	74	35	50	0.0	106	30	20	0.0	158	55	50	0.0	159	128	80	0.0	2	2	0	2.0	499	250	260	10
Mountain Village	32	15	30	0.0	37	8	40	0.0	53	16	50	0.0	47	39	80	0.0	–	–	–	–	169	78	89	5
Pitkas Point	2	1	0	0.0	3	2	50	0.2	11	8	60	0.0	11	10	100	0.0	–	–	–	–	27	21	19	1
St. Mary's	29	10	60	0.0	19	6	80	0.0	45	12	70	0.0	47	39	70	0.0	2	2	50	0.2	142	69	99	5
Pilot Station	27	22	40	0.0	31	26	20	0.0	44	39	60	0.0	29	28	80	0.0	1	1	100	0.0	132	116	65	1
Marshall	14	5	40	0.0	18	6	70	0.0	35	8	80	0.0	32	25	80	0.0	1	1	100	0.0	100	45	72	5
District 2	104	53	40	0.0	108	48	50	0.0	188	83	60	0.0	166	141	80	0.0	4	4	0	4.0	570	329	344	9
Russian Mission	8	4	80	0.1	15	4	0	0.0	41	12	100	0.0	13	11	100	0.0	–	–	–	–	77	31	60	1
Holy Cross	3	2	50	0.2	17	7	10	0.0	23	8	50	0.0	16	14	90	0.0	–	–	–	–	59	31	29	3
Shageluk	15	11	50	0.0	9	7	30	0.0	6	4	0	0.0	3	3	70	0.1	1	1	100	0.0	34	26	12	1
District 3	26	17	60	0.0	41	18	10	0.0	70	24	80	0.0	32	28	90	0.0	1	1	0	1.0	170	88	101	4
Anvik	3	2	100	0.0	8	7	0	0.0	13	11	80	0.0	6	6	100	0.0	1	1	100	0.0	31	27	21	0
Grayling	9	4	100	0.0	8	3	0	0.0	26	9	70	0.0	14	13	70	0.0	–	–	–	–	57	29	36	2
Kaltag	7	4	20	0.1	9	3	0	0.0	24	7	40	0.0	11	11	90	0.0	–	–	–	–	51	25	22	3
Nulato	15	9	60	0.0	11	11	30	0.0	42	40	80	0.0	16	15	90	0.0	–	–	–	–	84	75	59	1
Koyukuk	4	2	100	0.0	10	4	20	0.1	22	6	70	0.0	6	4	100	0.0	2	2	100	0.0	44	18	29	4
Galena	27	12	60	0.0	49	12	20	0.0	56	16	70	0.0	12	11	60	0.0	3	1	100	0.0	147	52	73	4
Ruby	2	1	100	0.0	29	9	10	0.0	12	3	100	0.0	7	7	60	0.0	1	1	100	0.0	51	21	22	2
Huslia	8	7	10	0.0	41	10	0	0.0	18	6	70	0.0	6	4	50	0.1	4	4	80	0.1	77	31	19	3
Hughes	7	6	0	0.0	16	12	0	0.0	10	9	30	0.0	2	2	50	0.2	1	1	0	0.0	36	30	4	0
Allakaket	15	9	20	0.0	25	7	30	0.0	12	4	20	0.1	5	5	60	0.0	2	2	100	0.0	59	27	18	4
Alatna	3	2	0	0.0	3	1	100	0.0	2	1	100	0.0	1	0	–	–	–	–	–	–	9	4	6	0
Bettles	2	0	–	–	17	15	0	0.0	–	–	–	–	–	–	–	–	–	–	–	–	19	15	0	0
District 4	102	58	50	0.0	226	94	10	0.0	237	112	70	0.0	86	78	70	0.0	14	12	90	0.0	665	354	309	9

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Table 4.–Page 2 of 2.

Community	Unknown				Does not harvest salmon				Light harvester				Medium harvester				Heavy harvester				Combined			
	N	*n*	%F	SE	*N*	*n*	%F	SE	*N*	*n*	%F	SE	*N*	*n*	%F	SE	*N*	*n*	%F	SE	Total *N*	*n*	Est. total	CI 95%
Tanana	23	11	50	0	22	9	10	0	33	14	40	0	10	8	80	0	9	7	90	0	97	49	42	3
Stevens Village	11	5	40	0	1	1	0	0.0	2	2	50	0.2	1	1	0	0.0	3	3	100	0.0	18	12	8	2
Birch Creek	4	0	–	–	8	3	0	0.0	2	2	50	0.2	–	–	–	–	–	–	–	–	14	5	1	0
Beaver	11	8	60	0	5	4	20	0.1	14	13	90	0.0	1	1	100	0.0	–	–	–	–	31	26	22	1
Fort Yukon	24	11	50	0	109	29	10	0.0	44	10	50	0.0	18	16	60	0.0	10	9	60	0.0	205	75	66	5
Venetie	20	7	40	0	34	9	0	0.0	10	4	50	0.1	7	5	60	0.0	2	2	100	0.0	73	27	20	4
Chalkyitsik	9	4	0	0	15	11	0	0.0	3	2	0	0.0	1	1	100	0.0	–	–	–	–	28	18	1	0
District 5	102	46	40	0	194	66	10	0.0	108	47	50	0.0	38	32	60	0.0	24	21	80	0.0	466	212	161	7
Survey totals	463	221	50	0	750	274	20	0.0	877	354	60	0.0	589	503	80	0.0	46	41	80	0.0	2,725	1,393	1,374	20

Note: En dash (–) indicates value could not be computed due to limitations of the data. The number of fishing households was estimated from the total number of households (*N*), the number of households contacted (*n*), the percent of households that fished (%F), and the standard error (SE) for each harvest group in each community. Estimated total number of fishing households includes a 95% confidence interval (CI 95%).

Table 5.–Estimated subsistence harvest of Chinook salmon, including retained from commercial (not including test fishery catch), by fishing location in surveyed communities, Yukon Area, 2018.

	Districts/subdistricts (fishing location)[a]													River drainages (fishing location)					
Community	Coastal	1	2	3	4A	4B	4C	5A	5B	5C	5D-down	5D-up	6	Innoko	Koyukuk	Teedriinjik	Porcupine	Draanjik	Total by community[b]
Hooper Bay	377	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	457
Scammon Bay	260	406	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	666
Coastal District	637	486	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,123
Nunam Iqua	0	78	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	78
Alakanuk	2	368	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	370
Emmonak	0	585	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	585
Kotlik[c]	0	1,275	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,275
District 1	2	2,306	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,308
Mountain Village	0	228	790	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,018
Pitkas Point	0	0	365	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	365
St. Mary's	6	204	924	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,134
Pilot Station	0	6	486	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	492
Marshall	0	0	909	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	914
District 2	6	438	3,474	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,923
Russian Mission	0	0	7	1,036	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,043
Holy Cross	0	0	0	580	0	0	0	0	0	0	0	0	0	0	0	0	0	0	580
Shageluk	0	0	0	0	0	0	0	0	0	0	0	0	0	181	0	0	0	0	181
District 3	0	0	7	1,616	0	0	0	0	0	0	0	0	0	181	0	0	0	0	1,804
Anvik	0	0	0	0	566	0	0	0	0	0	0	0	0	0	0	0	0	0	566
Grayling	0	0	0	0	888	0	0	0	0	0	0	0	0	0	0	0	0	0	888
Kaltag	0	0	0	0	570	0	0	0	0	0	0	0	0	0	0	0	0	0	570
Nulato	0	0	0	0	1,260	0	0	0	0	0	0	0	0	0	0	0	0	0	1,260
Koyukuk	0	0	0	0	666	80	112	0	0	0	0	0	0	0	0	0	0	0	858
Galena	0	0	0	0	204	511	516	0	31	0	0	0	0	0	0	0	0	0	1,262
Ruby	0	0	0	0	0	886	240	0	0	0	0	0	0	0	0	0	0	0	1,126
Huslia/Hughes	0	0	0	0	60	0	0	0	0	9	0	0	0	0	102	0	0	0	171
Allakaket/Alatna/Bettles	0	0	0	0	17	0	0	0	0	0	0	0	0	0	32	0	0	0	49
District 4	0	0	0	0	4,231	1,477	868	0	31	9	0	0	0	0	134	0	0	0	6,750

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Table 5.–Page 2 of 2.

Community	Districts/subdistricts (fishing location)[a]													River drainages (fishing location)					
	Coastal	1	2	3	4A	4B	4C	5A	5B	5C	5D-down	5D-up	6	Innoko	Koyukuk	Teedriinjik	Porcupine	Draanjik	Total by community[b]
Tanana	0	0	0	0	0	0	59	47	4,940	62	0	0	0	0	0	0	0	0	5,108
Stevens Village/Rampart	0	0	0	0	0	0	0	0	0	0	110	0	0	0	0	0	0	0	110
Beaver	0	0	0	0	0	0	0	0	0	0	332	0	0	0	0	0	0	0	332
Fort Yukon/Birch Creek	0	0	0	0	0	0	0	0	0	0	2,398	2,087	0	0	0	0	220	0	4,705
Venetie/Chalkyitsik	0	0	0	0	0	0	0	0	0	0	358	0	0	0	0	86	0	0	444
District 5	0	0	0	0	0	0	59	47	4,940	62	3,197	2,087	0	0	0	86	220	0	10,698
Survey totals	645	3,230	3,481	1,621	4,231	1,477	927	47	4,971	71	3,197	2,087	0	181	134	86	220	0	26,606

Note: Commercially retained fish were salmon harvested during commercial fishing that were not sold but retained and used for subsistence purposes.

[a] Harvest near Fort Yukon was divided according to whether harvest occurred downriver (5D-down) or upriver (5D-up) of the confluence of the Porcupine and Yukon Rivers.

[b] Totals may not add up in both directions due to decimal rounding.

Table 6.–Estimated subsistence harvest of summer chum salmon, including retained from commercial (not including test fishery catch), by fishing location in surveyed communities, Yukon Area, 2018.

	Districts/Subdistricts[a]													River drainages					
											5D								Total
Community	Coastal	1	2	3	4A	4B	4C	5A	5B	5C	down	up	6	Innoko	Koyukuk	Teedriinjik	Porcupine	Draanjik	harvest [b]
Hooper Bay	6,920	1,426	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8,346
Scammon Bay	3,358	3,328	164	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6,850
Coastal District	10,278	4,754	164	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15,196
Nunam Iqua	0	1,549	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,549
Alakanuk	120	5,044	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5,164
Emmonak	0	5,024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5,024
Kotlik	0	6,552	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6,552
District 1	120	18,169	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18,289
Mountain Village	0	829	4,585	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5,414
Pitkas Point	0	0	1,390	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,390
St. Mary's	60	201	4,197	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4,458
Pilot Station	0	63	3,072	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,135
Marshall	0	0	3,311	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,311
District 2	60	1,093	16,555	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17,708
Russian Mission	0	0	0	2,245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,245
Holy Cross	0	0	0	306	0	0	0	0	0	0	0	0	0	0	0	0	0	0	306
Shageluk	0	0	0	0	0	0	0	0	0	0	0	0	0	495	0	0	0	0	495
District 3	0	0	0	2,551	0	0	0	0	0	0	0	0	0	495	0	0	0	0	3,046
Anvik	0	0	0	0	437	0	0	0	0	0	0	0	0	0	0	0	0	0	437
Grayling	0	0	0	0	779	0	0	0	0	0	0	0	0	0	0	0	0	0	779
Kaltag	0	0	0	0	25	0	0	0	0	0	0	0	0	0	0	0	0	0	25
Nulato	0	0	0	0	241	0	0	0	0	0	0	0	0	0	0	0	0	0	241
Koyukuk	0	0	0	0	150	0	0	0	0	0	0	0	0	0	0	0	0	0	150
Galena	0	0	0	0	110	83	133	0	22	0	0	0	0	0	0	0	0	0	348
Ruby	0	0	0	0	0	730	240	0	0	0	0	0	0	0	0	0	0	0	970
Huslia/Hughes	0	0	0	0	0	0	0	0	0	2	0	0	0	0	4,724	0	0	0	4,726
Allakaket/Alatna/Bettles	0	0	0	0	5	0	0	0	0	0	0	0	0	0	4,839	0	0	0	4,844
District 4	0	0	0	0	1,747	813	373	0	22	2	0	0	0	0	9,563	0	0	0	12,520

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Table 6.–Page 2 of 2.

	Districts/subdistricts (fishing location)[a]													River drainages (fishing location)					
Community	Coastal	1	2	3	4A	4B	4C	5A	5B	5C	5D-down	5D-up	6	Innoko	Koyukuk	Teedriinjik	Porcupine	Draanjik	Total by community[b]
Tanana	0	0	0	0	0	0	0	0	2,733	0	0	0	0	0	0	0	0	0	2,733
Stevens Village/Rampart	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Beaver	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	8
Fort Yukon/Birch Creek	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	44	0	44
Venetie/Chalkyitsik	0	0	0	0	0	0	0	0	0	0	114	0	0	0	0	0	0	0	114
District 5	0	0	0	0	0	0	0	0	2,733	0	123	0	0	0	0	0	44	0	2,900
Survey totals	10,458	24,016	16,719	2,551	1,747	813	373	0	2,755	2	123	0	0	495	9,563	0	44	0	69,659

Note: Commercially related fish are salmon harvested during commercial fishing that were not sold but retained and used for subsistence purposes.

[a] Harvest near Fort Yukon was divided according to whether harvest occurred downriver (5D-down) or upriver (5D-up) of the confluence of the Porcupine and Yukon Rivers.

[b] Totals may not add up in both directions due to estimate decimal rounding.

Table 7.–Estimated subsistence harvest of fall chum salmon, including retained from commercial (not including test fishery catch), by fishing location in surveyed communities, Yukon Area, 2018.

	Districts/subdistricts (fishing location)[a]													River drainages (fishing location)					
Community	Coastal	1	2	3	4A	4B	4C	5A	5B	5C	5D-down	5D-up	6	Innoko	Koyukuk	Teedriinjik	Porcupine	Draanjik	Total by community[b]
Hooper Bay	138	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	158
Scammon Bay	246	118	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	364
Coastal District	384	138	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	522
Nunam Iqua	0	188	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	188
Alakanuk	0	430	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	430
Emmonak	0	1,001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,001
Kotlik	0	607	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	607
District 1	0	2,226	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,226
Mountain Village	0	30	219	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	249
Pitkas Point	0	0	112	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	112
St. Mary's	0	157	313	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	470
Pilot Station	0	48	395	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	443
Marshall	0	0	415	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	415
District 2	0	235	1,454	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,689
Russian Mission	0	0	0	349	0	0	0	0	0	0	0	0	0	0	0	0	0	0	349
Holy Cross	0	0	0	176	0	0	0	0	0	0	0	0	0	0	0	0	0	0	176
Shageluk	0	0	0	0	26	0	0	0	0	0	0	0	0	148	0	0	0	0	174
District 3	0	0	0	525	26	0	0	0	0	0	0	0	0	148	0	0	0	0	699
Anvik	0	0	0	0	500	0	0	0	0	0	0	0	0	0	0	0	0	0	500
Grayling	0	0	0	0	750	0	0	0	0	0	0	0	0	0	0	0	0	0	750
Kaltag	0	0	0	0	66	0	0	0	0	0	0	0	0	0	0	0	0	0	66
Nulato	0	0	0	0	869	0	0	0	0	0	0	0	0	0	0	0	0	0	869
Koyukuk	0	0	0	0	182	112	0	0	0	0	0	0	0	0	0	0	0	0	294
Galena	0	0	0	0	237	690	474	0	0	0	0	0	0	0	0	0	0	0	1,401
Ruby	0	0	0	0	0	430	412	0	0	0	0	0	0	0	0	0	0	0	842
Huslia/Hughes	0	0	0	0	0	0	0	0	0	4	0	0	0	0	854	0	0	0	858
Allakaket/Alatna/Bettles	0	0	0	0	18	0	0	0	0	0	0	0	0	0	344	0	0	0	362
District 4	0	0	0	0	2,622	1,232	886	0	0	4	0	0	0	0	1,198	0	0	0	5,942

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Table 7.–Page 2 of 2.

	Districts/subdistricts (fishing location)[a]													River drainages (fishing location)					
Community	Coastal	1	2	3	4A	4B	4C	5A	5B	5C	5D-down	5D-up	6	Innoko	Koyukuk	Teedriinjik	Porcupine	Draanjik	Total by community[b]
Tanana	0	0	0	0	0	0	32	236	16,338	125	0	0	0	0	0	0	0	0	16,731
Stevens Village/Rampart	0	0	0	0	0	0	0	0	0	0	1,052	0	0	0	0	0	0	0	1,052
Beaver	0	0	0	0	0	0	0	0	0	0	141	0	0	0	0	0	0	0	141
Fort Yukon/Birch Creek	0	0	0	0	0	0	0	0	0	0	1,901	1,213	0	0	0	0	372	0	3,486
Venetie/Chalkyitsik	0	0	0	0	0	0	0	0	0	0	2,444	0	0	0	0	0	0	100	2,544
District 5	0	0	0	0	0	0	32	236	16,338	125	5,539	1,213	0	0	0	0	372	100	23,955
Survey totals	384	2,599	1,454	525	2,648	1,232	918	236	16,338	129	5,539	1,213	0	148	1,198	0	372	100	35,033

Note: Commercially related fish are salmon harvested during commercial fishing that were not sold but retained and used for subsistence purposes.

[a] Harvest near Fort Yukon was divided according to whether harvest occurred downriver (5D-down) or upriver (5D-up) of the confluence of the Porcupine and Yukon Rivers.

[b] Totals may not add in both directions due to estimate decimal rounding.

Table 8.–Estimated subsistence harvest of coho salmon, including retained from commercial (not including test fishery catch), by fishing location in surveyed communities, Yukon Area, 2018.

	Districts/subdistricts (fishing location)[a]													River drainages (fishing location)					
Community	Coastal	1	2	3	4A	4B	4C	5A	5B	5C	5D-down	5D-up	6	Innoko	Koyukuk	Teedriinjik	Porcupine	Draanjik	Total by community[b]
Hooper Bay	93	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	93
Scammon Bay	364	382	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	746
Coastal District	457	382	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	839
Nunam Iqua	0	184	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	184
Alakanuk	0	170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	170
Emmonak	0	138	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	138
Kotlik	0	254	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	254
District 1	0	746	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	746
Mountain Village	0	4	122	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	126
Pitkas Point	0	0	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	54
St. Mary's	0	0	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37
Pilot Station	0	18	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	55
Marshall	0	0	112	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	112
District 2	0	22	362	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	384
Russian Mission	0	0	0	123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	123
Holy Cross	0	0	0	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23
Shageluk	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	8
District 3	0	0	0	146	0	0	0	0	0	0	0	0	0	8	0	0	0	0	154
Anvik	0	0	0	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	15
Grayling	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kaltag	0	0	0	0	34	0	0	0	0	0	0	0	0	0	0	0	0	0	34
Nulato	0	0	0	0	220	0	0	0	0	0	0	0	0	0	0	0	0	0	220
Koyukuk	0	0	0	0	0	22	0	0	0	0	0	0	0	0	0	0	0	0	22
Galena	0	0	0	0	21	91	104	0	0	0	0	0	0	0	0	0	0	0	216
Ruby	0	0	0	0	0	26	0	0	0	0	0	0	0	0	0	0	0	0	26
Huslia/Hughes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,020	0	0	0	1,020
Allakaket/Alatna/Bettles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27	0	0	0	27
District 4	0	0	0	0	290	139	104	0	0	0	0	0	0	0	1,047	0	0	0	1,580

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Table 8.–Page 2 of 2.

Community	Districts/subdistricts (fishing location)[a]													River drainages (fishing location)					
	Coastal	1	2	3	4A	4B	4C	5A	5B	5C	5D-down	5D-up	6	Innoko	Koyukuk	Teedriinjik	Porcupine	Draanjik	Total by community[b]
Tanana	0	0	0	0	0	0	0	0	1,343	12	0	0	0	0	0	0	0	0	1,355
Stevens Village/Rampart	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Beaver	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fort Yukon/Birch Creek	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Venetie/Chalkyitsik	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
District 5	0	0	0	0	0	0	0	0	1,343	12	0	0	0	0	0	0	0	0	1,355
Survey totals	457	1,150	362	146	290	139	104	0	1,343	12	0	0	0	8	1,047	0	0	0	5,058

Note: Commercially related fish are salmon harvested during commercial fishing that were not sold but retained and used for subsistence purposes.

[a] Harvest near Fort Yukon was divided according to whether harvest occurred downriver (5D-down) or upriver (5D-up) of the confluence of the Porcupine and Yukon Rivers.

[b] Totals may not add in both directions due to estimate decimal rounding.

Table 9.–Estimated subsistence harvest and 95% CI (in parentheses) of salmon species, including retained from commercial (not including test fishery catch), by fishing location in surveyed districts, Yukon Area, 2018.

		Districts/Subdistricts[a]													River drainages					
												5D								Total by
Species	District	Coastal	1	2	3	4A	4B	4C	5A	5B	5C	down	up	6	Innoko	Koyukuk	Teedriinjik	Porcupine	Draanjik	district
Chinook	Coastal	637	486	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,123
		(298)	(161)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(339)
	District 1	2	2,306	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,308
		(0)	(338)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(338)
	District 2	6	438	3,475	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,924
		(1)	(169)	(533)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(559)
	District 3	0	0	7	1,616	0	0	0	0	0	0	0	0	0	181	0	0	0	0	1,804
		(0)	(0)	(2)	(303)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(80)	(0)	(0)	(0)	(0)	(314)
	District 4	0	0	0	0	4,230	1,477	868	0	31	9	0	0	0	0	133	0	0	0	6,748
		(0)	(0)	(0)	(0)	(513)	(651)	(288)	(0)	(23)	(5)	(0)	(0)	(0)	(0)	(31)	(0)	(0)	(0)	(878)
	District 5	0	0	0	0	0	0	59	47	4,940	62	3,197	2,087	0	0	0	86	220	0	10,698
		(0)	(0)	(0)	(0)	(0)	(0)	(23)	(34)	(2,740)	(24)	(909)	(921)	(0)	(0)	(0)	(83)	(222)	(0)	(3,040)
	Totals	645	3,230	3,482	1,621	4,230	1,477	927	47	4,971	71	3,197	2,087	0	181	133	86	220	0	26,605
		(298)	(411)	(533)	(303)	(513)	(651)	(289)	(34)	(2,740)	(25)	(909)	(921)	(0)	(80)	(31)	(83)	(222)	(0)	(3,264)
Summer chum	Coastal	10,278	4,753	164	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15,195
		(2,121)	(835)	(104)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(2,282)
	District 1	120	18,169	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18,289
		(24)	(2,571)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(2,571)
	District 2	60	1,093	16,556	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17,709
		(8)	(340)	(1,909)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(1,939)
	District 3	0	0	0	2,551	0	0	0	0	0	0	0	0	0	495	0	0	0	0	3,046
		(0)	(0)	(0)	(798)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(105)	(0)	(0)	(0)	(0)	(805)
	District 4	0	0	0	0	1,748	813	373	0	22	2	0	0	0	0	9,563	0	0	0	12,521
		(0)	(0)	(0)	(0)	(402)	(1,075)	(62)	(0)	(32)	(1)	(0)	(0)	(0)	(0)	(3,795)	(0)	(0)	(0)	(3,965)
	District 5	0	0	0	0	0	0	0	0	2,733	0	123	0	0	0	0	0	44	0	2,900
		(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(1,206)	(0)	(184)	(0)	(0)	(0)	(0)	(0)	(77)	(0)	(1,223)
	Totals	10,458	24,015	16,720	2,551	1,748	813	373	0	2,755	2	123	0	0	495	9,563	0	44	0	69,660
		(2,121)	(2,725)	(1,912)	(798)	(402)	(1,075)	(62)	0	(1,207)	(1)	(184)	(0)	(0)	(105)	(3,795)	(0)	(77)	(0)	(5,783)

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Table 9.–Page 2 of 2.

Species	District	Districts/Subdistricts[a]													River drainages					Total by district
		Coastal	1	2	3	4A	4B	4C	5A	5B	5C	5D down	5D up	6	Innoko	Koyukuk	Teedriinjik	Porcupine	Draanjik	
Fall chum	Coastal	384	138	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	522
		(200)	(124)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(235)
	District 1	0	2,226	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,226
		(0)	(611)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(611)
	District 2	0	235	1,456	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,691
		(0)	(74)	(235)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(247)
	District 3	0	0	0	526	26	0	0	0	0	0	0	0	0	148	0	0	0	0	700
		(0)	(0)	(0)	(268)	(17)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(42)	(0)	(0)	(0)	(0)	(272)
	District 4	0	0	0	0	2,622	1,232	886	0	0	4	0	0	0	0	1,198	0	0	0	5,942
		(0)	(0)	(0)	(0)	(405)	(496)	(70)	(0)	(0)	(2)	(0)	(0)	(0)	(0)	(132)	(0)	(0)	(0)	(658)
	District 5	0	0	0	0	0	0	32	236	16,338	125	5,539	1,213	0	0	0	0	372	100	23,955
		(0)	(0)	(0)	(0)	(0)	(0)	(12)	(344)	(7,037)	(49)	(2,063)	(327)	(0)	(0)	(0)	(0)	(132)	(0)	(7,350)
	Totals	384	2,599	1,456	526	2,648	1,232	918	236	16,338	129	5,539	1,213	0	148	1,198	0	372	100	35,036
		(200)	(628)	(235)	(268)	(405)	(496)	(71)	(344)	(7,037)	(49)	(2,063)	(327)	(0)	(42)	(132)	(0)	(132)	(0)	(7,417)
Coho	Coastal	457	382	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	839
		(293)	(249)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(384)
	District 1	0	746	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	746
		(0)	(187)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(187)
	District 2	0	22	363	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	385
		(0)	(13)	(89)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(90)
	District 3	0	0	0	146	0	0	0	0	0	0	0	0	0	8	0	0	0	0	154
		(0)	(0)	(0)	(98)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(9)	(0)	(0)	(0)	(0)	(99)
	District 4	0	0	0	0	290	139	104	0	0	0	0	0	0	0	1,047	0	0	0	1,580
		(0)	(0)	(0)	(0)	(50)	(48)	(31)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(888)	(0)	(0)	(0)	(892)
	District 5	0	0	0	0	0	0	0	0	1,343	12	0	0	0	0	0	0	0	0	1,355
		(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(1,207)	(11)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(1,207)
	Totals	457	1,150	363	146	290	139	104	0	1,343	12	0	0	0	8	1,047	0	0	0	5,059
		(293)	(311)	(89)	(98)	(50)	(48)	(31)	(0)	(1,207)	(11)	(0)	(0)	(0)	(9)	(888)	(0)	(0)	(0)	(1,566)

Note: Commercially retained fish are salmon commercially harvested but retained for subsistence purposes. Totals may not add in both directions due to estimate decimal rounding.

[a] Harvest near Fort Yukon was divided according to whether harvest occurred downriver (5D-down) or upriver (5D-up) of the Yukon and Porcupine Rivers' confluence.

Table 10.–Estimated subsistence harvest of pink salmon, whitefish, northern pike, and sheefish by surveyed communities, Yukon Area, 2018.

			Pink salmon		Large whitefish [a]		Small whitefish [a]		Northern pike		Sheefish		Total	Percent
Community	Total households	Households contacted [b]	Est total	CI 95%	Est total	CI 95%	Est total	CI 95%	Est total	CI 95%	Est total	CI 95%	combined harvest	broad whitefish [c]
Hooper Bay	238	107	635	214	120	67	3,055	971	340	430	14	12	4,164	72%
Scammon Bay	117	54	2,427	1,139	1,749	630	2,883	2,092	4,792	1,169	292	214	12,143	49%
Coastal District	355	161	3,062	1,142	1,869	624	5,938	2,276	5,132	1,229	306	211	16,307	51%
Nunam Iqua	40	21	377	655	137	75	751	310	262	238	990	342	2,517	100%
Alakanuk	142	68	7	12	629	157	3,419	887	532	270	1,476	261	6,063	75%
Emmonak	198	102	31	24	1,868	538	1,877	614	944	234	1,378	603	6,098	55%
Kotlik	119	58	29	12	1,165	575	3,025	910	911	281	2,308	1,167	7,438	91%
District 1	499	249	444	621	3,799	797	9,072	1,423	2,649	502	6,152	1,359	22,116	71%
Mountain Village [d]	169	78	92	28	1,847	803	867	643	3,489	1,273	716	554	7,011	75%
Pitkas Point	27	21	122	109	804	190	54	23	239	78	214	75	1,433	69%
St. Mary's	142	69	35	14	1,581	336	207	103	2,132	1,893	435	149	4,390	84%
Pilot Station	132	116	0	0	1,498	181	153	41	455	62	205	29	2,311	59%
Marshall	100	45	53	74	552	158	166	124	1,006	298	294	114	2,071	95%
District 2	570	329	302	129	6,282	909	1,447	656	7,321	2,272	1,864	582	17,216	75%
Russian Mission	77	31	0	0	800	420	8	5	301	167	389	317	1,498	80%
Holy Cross	59	31	0	0	498	226	102	117	264	99	56	28	920	47%
Shageluk	34	26	0	0	276	121	0	0	233	91	216	130	725	92%
District 3	170	88	0	0	1,574	479	110	113	798	209	661	334	3,143	72%
Anvik	31	27	0	0	112	18	0	0	90	18	62	20	264	87%
Grayling	57	29	16	9	481	224	0	0	72	32	204	74	773	52%
Kaltag	51	25	0	0	248	357	17	30	35	59	138	76	438	100%
Nulato	84	75	0	0	255	42	23	16	21	6	143	25	442	64%
Koyukuk	44	18	0	0	104	58	0	0	22	21	93	59	219	57%
Galena	147	52	0	0	619	227	111	101	58	66	113	40	901	48%
Ruby	51	21	0	0	226	29	0	0	8	0	50	47	284	54%
Huslia/Hughes	113	61	20	0	3,056	754	2,580	49	2,903	1,432	684	355	9,243	42%
Allakaket/Alatna/Bettles	87	45	5	0	1,510	410	816	0	325	11	468	289	3,124	73%
District 4	665	353	41	8	6,611	963	3,547	115	3,534	1,412	1,955	468	15,688	55%

-continued-

Table 10.–Page 2 of 2.

Community	Total households	Households contacted [b]	Pink salmon Est total	Pink salmon CI 95%	Large whitefish [a] Est total	Large whitefish [a] CI 95%	Small whitefish [a] Est total	Small whitefish [a] CI 95%	Northern pike Est total	Northern pike CI 95%	Sheefish Est total	Sheefish CI 95%	Total combined harvest	Percent broad whitefish [c]
Tanana	97	49	0	0	5,297	2,561	11,295	7,775	608	442	478	178	17,678	71%
Stevens Village/Rampart	18	12	0	0	87	23	50	0	95	34	24	7	256	43%
Beaver	31	26	0	0	45	23	169	94	16	5	37	7	267	13%
Fort Yukon/Birch Creek	219	80	0	0	305	148	94	98	478	276	214	103	1,091	88%
Venetie/Chalkyitsik	101	45	0	0	62	41	127	113	145	77	37	12	371	0%
District 5	466	212	0	0	5,796	2,517	11,735	7,625	1,341	519	790	203	19,662	70%
Survey totals	2,725	1,392	3,849	1,299	25,931	3,043	31,849	8,072	20,775	3,027	11,728	1,607	94,132	66%

Note: Estimates included 95% confidence interval, (CI 95%). Confidence intervals were based on survey estimates and do not include test fishery catch. Test fishery projects reported distributing 65 pink salmon.

[a] Large whitefish were considered to be 4 pounds or larger and small whitefish were considered to be less than 4 pounds.

[b] The number of households contacted per species may vary. The number of households indicated was the greatest number of households contacted for any species.

[c] Households were asked to categorize their harvest of large whitefish as either broad whitefish or humpback whitefish. The estimated remaining percent were humpback whitefish.

[d] Included test fishery donations.

Table 11.–Unexpanded and reported subsistence harvest of nonsalmon fish species, by surveyed communities, Yukon Area, 2018.

Community	Total households	Households contacted [a]	Alaska blackfish	Arctic grayling	Arctic lamprey	Burbot	Pacific herring	Tomcod
Hooper Bay [b]	238	107	3,141	0	0	7	7,198	2,069
Scammon Bay [b]	117	54	7,044	0	40	198	21,086	1,739
Coastal District	355	161	10,185	0	40	205	28,284	3,808
Nunam Iqua [b]	40	21	2,800	0	0	280	0	374
Alakanuk	142	68	3,648	0	0	141	0	185
Emmonak [b]	198	102	10,093	0	0	305	220	486
Kotlik [b]	119	58	2,470	0	0	290	322	342
District 1	317	160	19,011	0	0	1,016	542	1,387
Mountain Village [b]	169	78	14,125	249	0	350	81	40
Pitkas Point	27	21	4,240	23	45	51	0	8
St. Mary's	142	69	4,696	23	165	550	0	0
Pilot Station	132	116	3,878	10	0	103	0	0
Marshall	100	45	3,906	0	150	300	0	0
District 2	232	161	30,845	305	360	1,354	81	48
Russian Mission	77	31	310	0	510	59	0	0
Holy Cross	59	31	0	0	0	59	0	0
Shageluk	34	26	1,400	0	0	0	0	0
District 3	93	57	1,710	0	510	118	0	0
Anvik	31	27	0	0	40	2	0	0
Grayling	57	29	0	42	75	30	0	0
Kaltag	51	25	0	81	2	41	0	0
Nulato	84	75	0	565	0	13	0	0
Koyukuk	44	18	0	0	0	4	0	0
Galena	147	52	70	28	0	12	0	0
Ruby	51	21	0	20	0	1	0	0
Huslia	113	61	75	0	0	37	0	0
Hughes	87	45	0	231	0	13	0	0
District 4	200	106	145	967	117	153	0	0

-continued-

Table 11.–Page 2 of 2.

Community	Total households	Households contacted [a]	Alaska blackfish	Arctic grayling	Arctic lamprey	Burbot	Pacific herring	Tomcod
Tanana	97	49	0	7	0	26	0	0
Stevens Village/Rampart	18	12	0	2	0	6	0	0
Beaver	31	26	0	0	0	2	0	0
Fort Yukon/Birch Creek	219	80	0	0	0	95	0	0
Venetie/Chalkyitsik	101	45	0	552	0	0	0	0
District 5	320	125	0	561	0	129	0	0
Survey totals	421	170	61,896	1,833	1,027	2,975	28,907	5,243

[a] The number of households contacted per species may vary. The number of households indicated was the greatest number of households contacted for a given species.

[b] A total of 32 households from 6 communities reported harvesting herring roe on kelp.

Table 12.–Reported subsistence and personal use fish harvested under the authority of a permit, listed by permit area, Yukon Area, 2018.

Permit fishing area	Permit[a] Type	Issued[b]	Returned	Percent returned	No. of permits returned that fished[c]	Chinook	Summer chum	Fall chum	Coho	Whitefish	Sheefish	Burbot	Northern pike	Longnose sucker	Arctic grayling	
Koyukuk Middle and South Fork Rivers	SF	6	5	83%	1	0	0	0	0	2	0	0	0	0	5	
Yukon River Rampart Area	SR	21	21	100%	19	463	23	465	21	54	0	0	1	0	0	
Yukon River near Haul Road Bridge[d]	SY	82	81	99%	59	1,627	600	2,088	73	646	53	32	38	3	0	
Yukon River near Circle and Eagle	SE	61	61	100%	23	967	0	7,824	0	83	15	5	0	0	17	[e]
					23	602	0	11,715	0	86	22	1	3	2	20	[f]
Tanana River Subdistrict 6-A	SA	24	23	96%	12	210	78	3,872	1,076	131	1	4	2	0	0	
Tanana River Subdistrict 6-B	SB	83	82	99%	31	283	228	5,361	1,585	417	5	2	0	0	0	
Tanana River Upstream of Subdistrict 6-C	SU	23	23	100%	11	0	0	0	0	1,014	0	25	72	31	19	
Kantishna River Subdistrict 6-A	SK	8	8	100%	1	0	0	0	0	0	0	0	0	0	0	
Tolovana River Pike Subdistrict 6-B	ST	175	175	100%	4	0	0	0	0	14	3	0	208	0	0	[g]
					99	0	0	0	0	0	0	0	832	0	0	[h]
Subsistence permit subtotals		483	479	99%	283	4,152	929	31,325	2,755	2,447	99	69	1,156	36	61	
Tanana River salmon Subdistrict 6-C	PC	99	99	100%	57	206	515	505	131	7	0	0	0	0	1	
Tanana River whitefish upstream of Subdistrict 6-C	PW	16	16	100%	9	0	0	0	0	93	0	0	0	113	0	
Personal use Permit subtotals		115	115	100%	66	206	515	505	131	100	0	0	0	113	1	
All permit totals		598	594	99%	349	4,358	1,444	31,830	2,886	2,547	99	69	1,156	149	62	

Note: The first letter of a permit type refers to the fishery type (S = subsistence or P = personal use), the second letter refers to a particular fishing area or targeted species (F = Middle and South Forks of Koyukuk River, R = Yukon River near Rampart, Y = Yukon River near Dalton Hwy Bridge, E = Yukon River near Circle and Eagle, A = Tanana River Subdistrict 6-A, B = Tanana River Subdistrict 6-B, U = Tanana River upstream of Subdistrict 6-C, K = Kantishna River, T = Tolovana River northern pike permit, C = Tanana River Subdistrict 6-C, W = Tanana River whitefish/sucker permit. Permit area descriptions are officially described in Alaska State statutes. Did not include salmon retained from test fishery projects or commercial fisheries. Salmon retained from test fishery projects or commercial fisheries are not included in this table.

[a] Permit data from permits returned by April 30, 2019.

[b] Included 42 households that were issued permits for more than 1 area.

[c] Included 21 households that fished in 2 different permit areas.

[d] Included salmon reported on permits issued to residents of Stevens Village.

[e] Harvests below the sonar operations located near the community of Eagle to the lower boundary of the permit area.

[f] Harvests above the sonar operations located near the community of Eagle to the U.S./Canada border.

[g] Harvests outside the Chatanika Harvest Area.

[h] Harvests within the Chatanika Harvest Area.

Table 13.–Reported subsistence and personal use fish harvested under the authority of a permit, listed by fishery, by community of residence, and by drainage, Yukon Area, 2018.

Subsistence permit community	Harvest by drainage	Permits			No. of permit fished[b]	Chinook	Summer chum	Fall chum	Coho	Whitefish	Sheefish	Burbot	Northern pike	Longnose sucker	Arctic grayling
		Issued[a]	Returned	Percent returned											
Circle/Central	Yukon River	12	12	100%	10	683	0	2,877	0	69	0	0	0	0	0
Eagle	Yukon River	33	33	100%	25	761	0	16,539	0	95	33	6	3	2	34
Fairbanks (FNSB)[c]	Yukon River	88	87	99%	63	1,475	521	2,077	72	646	50	32	34	3	0
	Tanana River	37	37	100%	13	53	82	701	121	38	2	1	1	0	0
	Tolovana River	142	142	100%	98	0	0	0	0	0	0	0	814	0	0
	FNSB subtotal	267	266	100%	174	1,528	603	2,778	193	684	52	33	849	3	0
Manley	Tanana River	11	11	100%	9	210	78	3,645	918	123	1	4	1	0	0
Minto	Tolovana River	13	13	100%	4	0	0	0	0	14	3	0	226	0	0
Nenana/Healy	Tanana River	33	33	100%	18	181	141	4,887	1,622	387	3	1	0	0	0
Stevens Village/Rampart	Yukon River	5	5	100%	4	266	65	424	11	31	0	0	1	0	0
Other Subsistence[d]	Yukon River	26	26	100%	20	474	37	175	11	28	7	0	4	0	3
	Tanana River	49	47	96%	14	49	5	0	0	1,014	0	25	72	31	19
	Tolovana River	20	20	100%	1	0	0	0	0	0	0	0	0	0	0
	Kantishna River	8	8	100%	1	0	0	0	0	0	0	0	0	0	0
	Koyukuk River	6	5	83%	1	0	0	0	0	2	0	0	0	0	5
	Other subtotal	86	85	99%	33	409	34	175	11	1,044	7	25	76	31	27
Subsistence permit subtotals		483	479	99%	281	4,152	929	31,325	2,755	2,444	99	69	1,156	36	61
Personal use permit community															
Fairbanks (FNSB)[c]	Tanana River	102	102	100%	61	194	501	505	131	5	0	0	0	6	1
Other personal use[e]	Tanana River	13	13	100%	5	12	14	0	0	2	0	0	0	107	0
Personal use permit subtotals		115	115	100%	66	206	515	505	131	7	0	0	0	113	1
All permit totals		598	594	99%	347	4,358	1,444	31,830	2,886	2,451	99	69	1,156	149	62

Note: Did not include salmon from test fishery projects or salmon retained from commercial fisheries. Information from permits returned by April 30, 2019.

[a] Included 42 households that were issued permits for more than 1 area.

[b] Included 21 households that fished in more than 1 permit area.

[c] Fairbanks North Star Borough (FNSB) included residents from the communities of Ester, Fairbanks, North Pole, Salcha, and Two Rivers.

[d] Other Subsistence included residents from Anchorage, Circle/Central, Delta Junction, FNSB, Minto, Nenana/Healy, Northway, Tok and Wiseman who were issued a subsistence fishing permit for Yukon, Tanana, Tolovana, Kantishna, and upper Koyukuk Rivers.

[e] Other personal use permits included residents from Anchorage, Delta Junction, Homer, and Sutton.

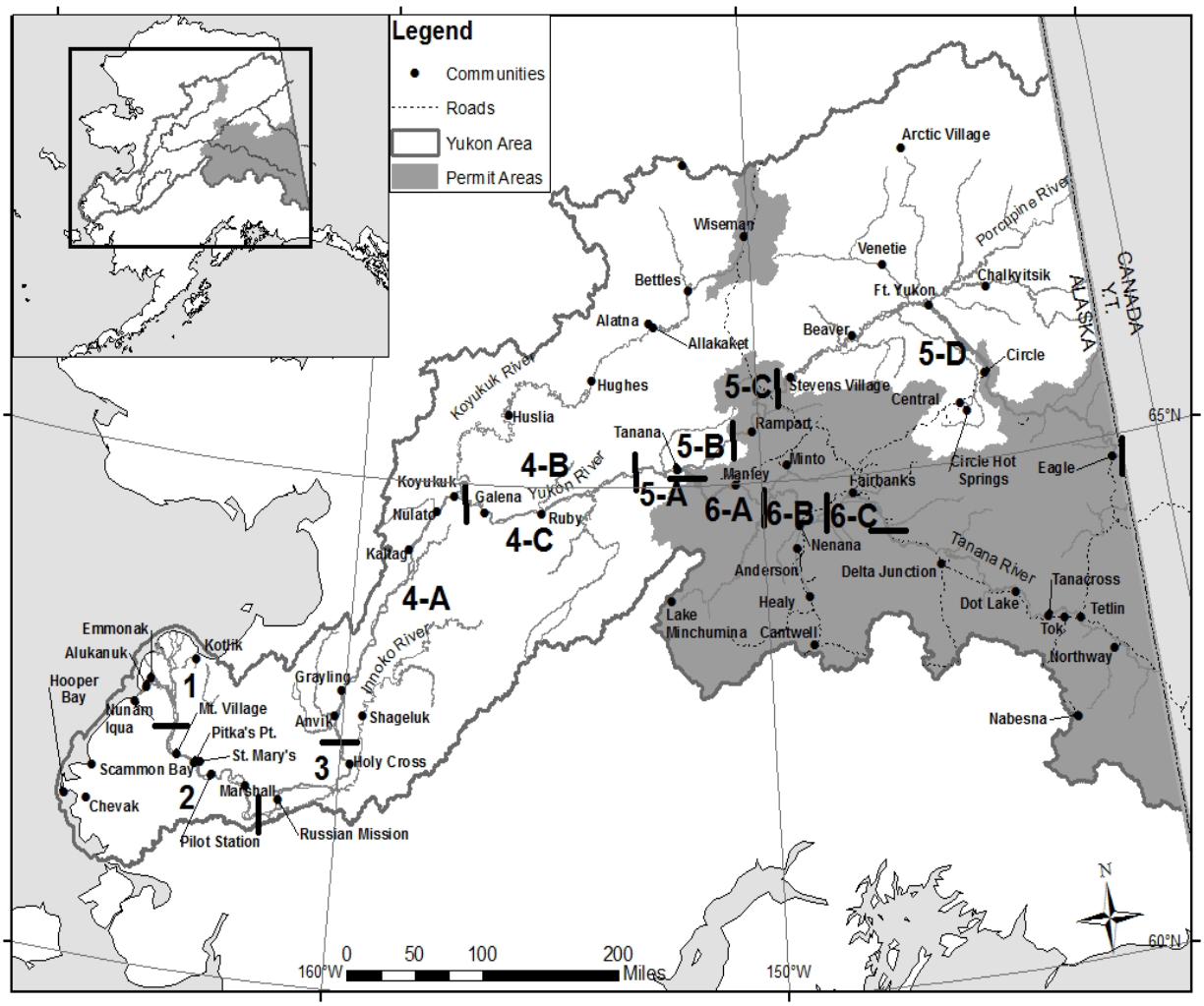


Figure 1.–Map of Alaska portion of the Yukon River drainage showing communities and subsistence and personal use permit areas.

Note: Subsistence and personal use permit areas are shaded. Arctic Village and Chevak are not surveyed communities.

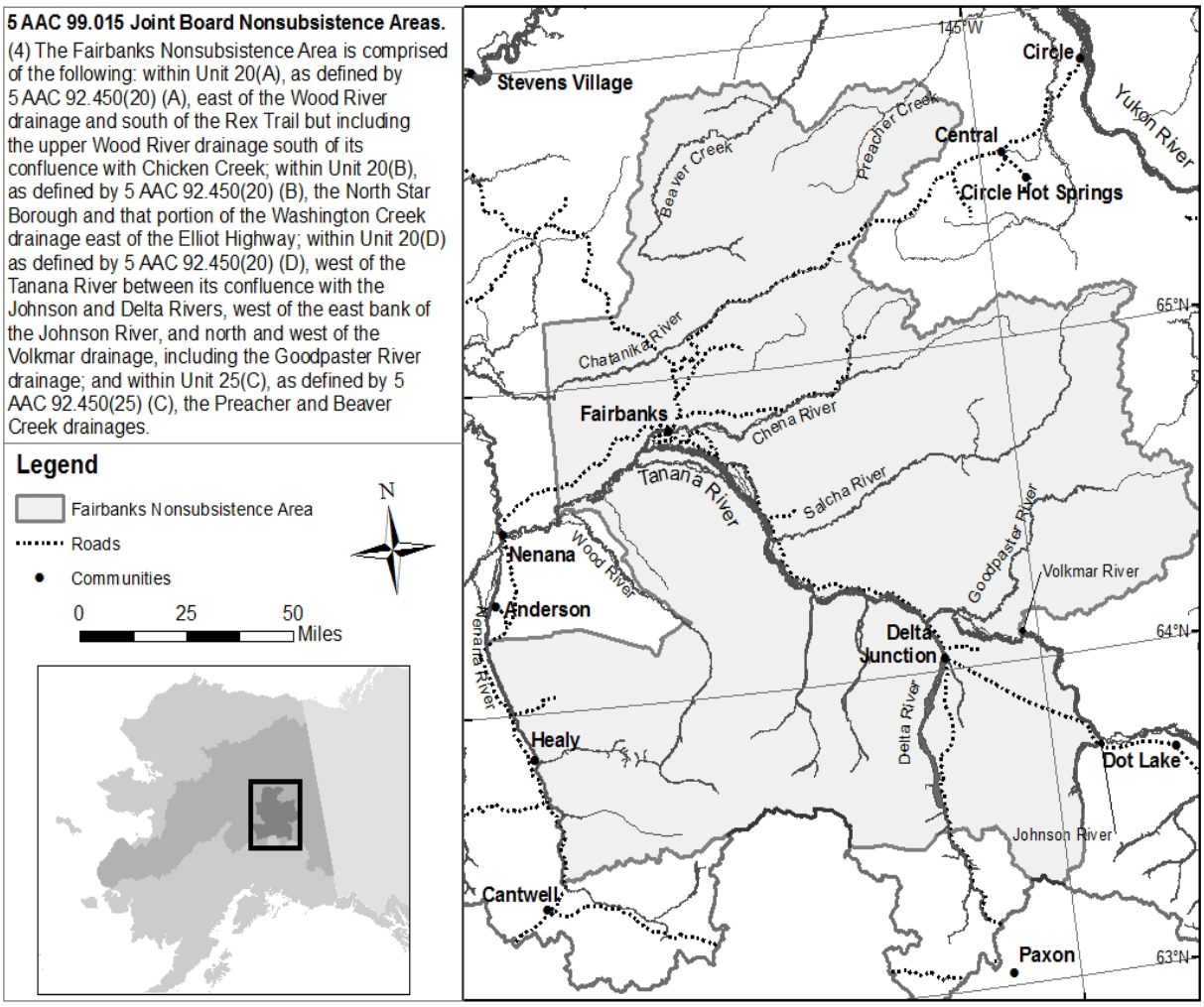


Figure 2.–Map of the Fairbanks Nonsubsistence Area.

Note: Households must have a personal use permit and sport fish license to fish in the Nonsubsistence Area.

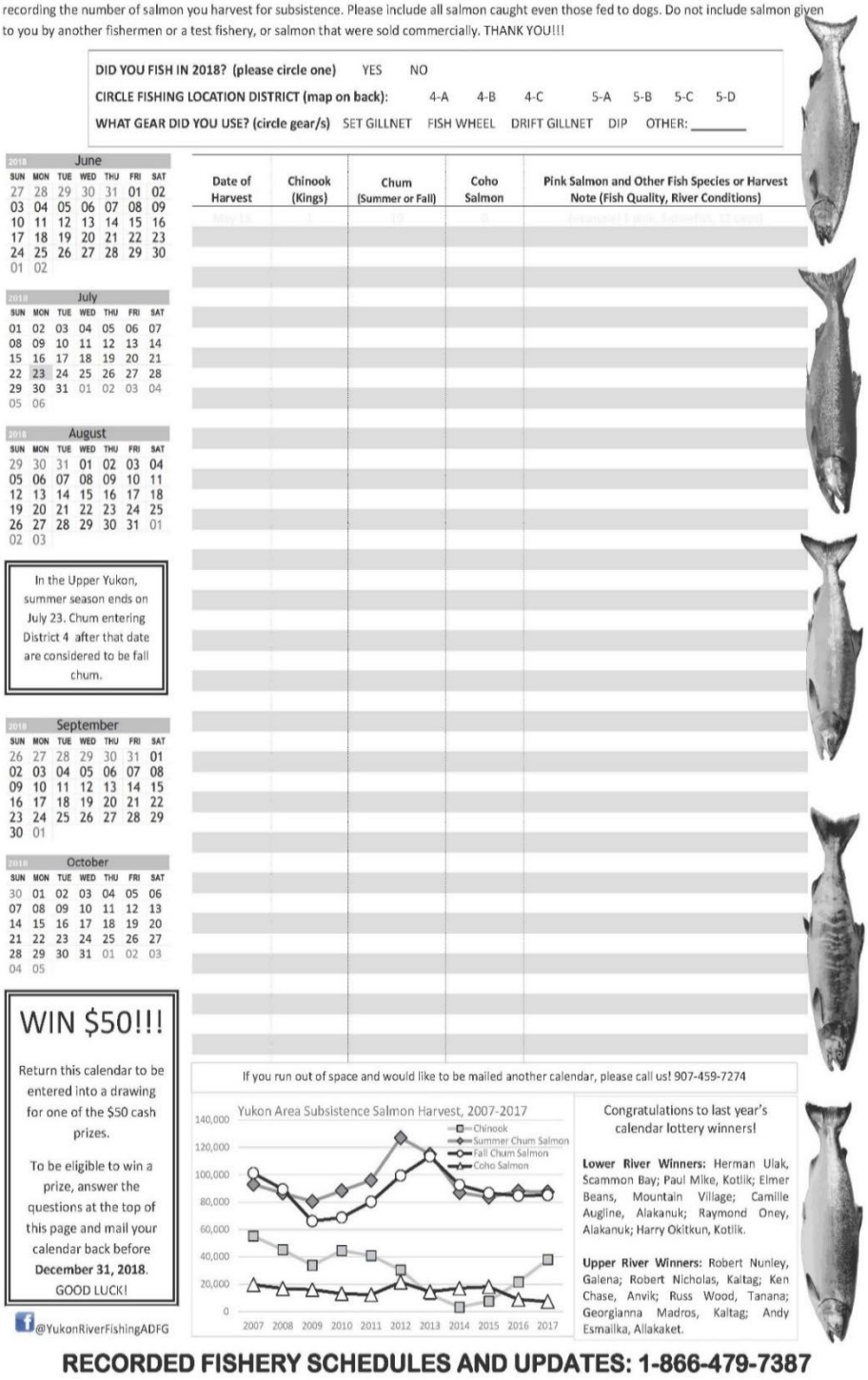
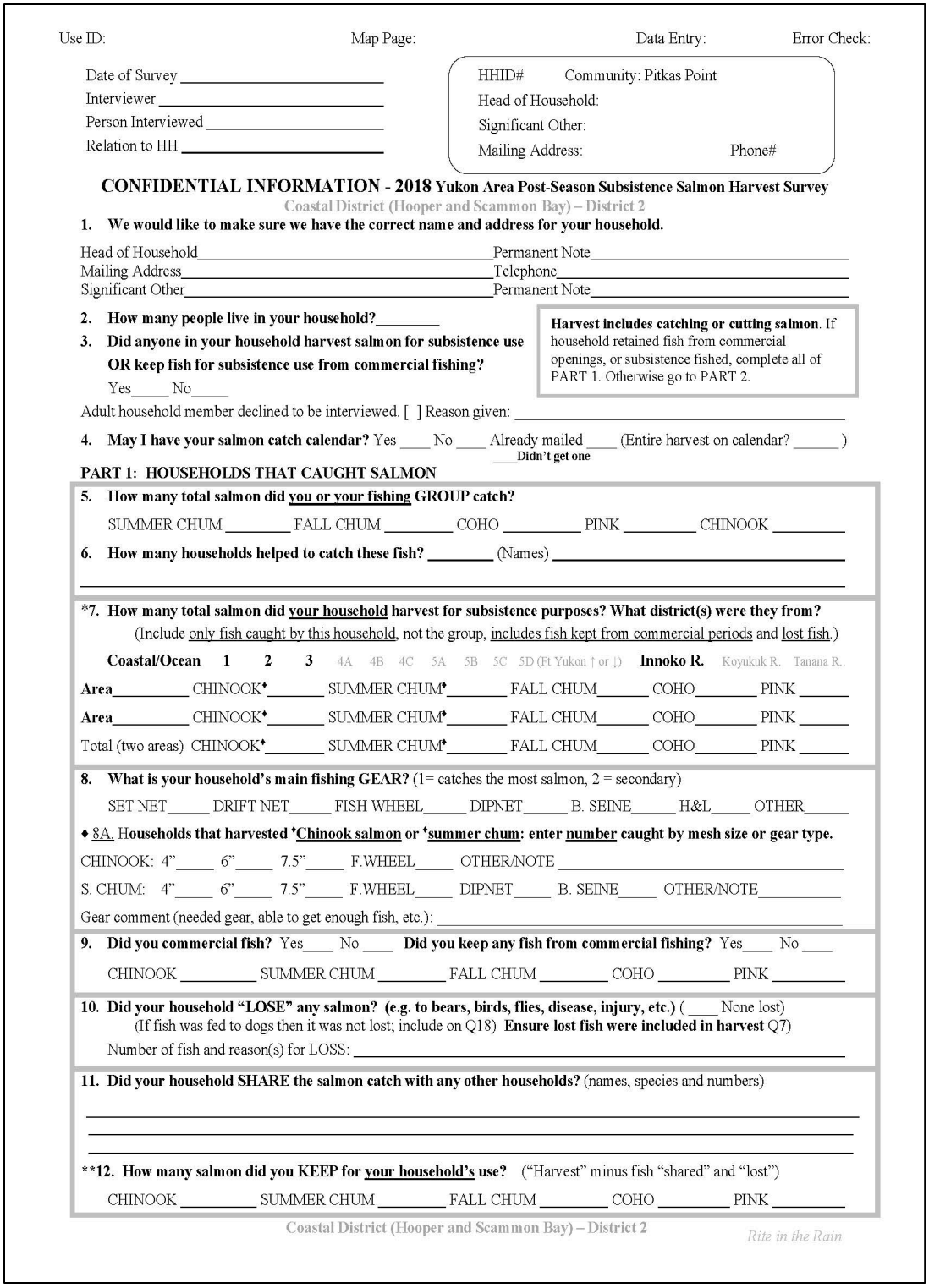


Figure 3.–Example Upper Yukon River subsistence harvest calendar, Yukon Area, 2018.

Note: Area specific versions of the calendar were used for lower and upper portions of the drainage. Different versions highlighted specific fishing areas and gear.



Use ID: Map Page: Data Entry: Error Check:

Date of Survey _____
Interviewer _____
Person Interviewed _____
Relation to HH _____

HHID# Community: Pitkas Point
Head of Household:
Significant Other:
Mailing Address: Phone#

CONFIDENTIAL INFORMATION - 2018 Yukon Area Post-Season Subsistence Salmon Harvest Survey

Coastal District (Hooper and Scammon Bay) – District 2

1. We would like to make sure we have the correct name and address for your household.

Head of Household_____Permanent Note_____
Mailing Address_____Telephone_____
Significant Other_____Permanent Note_____

2. How many people live in your household?_____

3. Did anyone in your household harvest salmon for subsistence use OR keep fish for subsistence use from commercial fishing?
Yes_____ No_____

Harvest includes catching or cutting salmon. If household retained fish from commercial openings, or subsistence fished, complete all of PART 1. Otherwise go to PART 2.

Adult household member declined to be interviewed. [ ] Reason given: _____

4. May I have your salmon catch calendar? Yes ____ No ____ Already mailed ____ (Entire harvest on calendar? _____)
___**Didn't get one**

PART 1: HOUSEHOLDS THAT CAUGHT SALMON

5. How many total salmon did you or your fishing GROUP catch?
SUMMER CHUM _____ FALL CHUM _____ COHO _____ PINK _____ CHINOOK _____

6. How many households helped to catch these fish? _____ (Names) _____
_____

***7. How many total salmon did your household harvest for subsistence purposes? What district(s) were they from?**
(Include only fish caught by this household, not the group, includes fish kept from commercial periods and lost fish.)

Coastal/Ocean 1 2 3 4A 4B 4C 5A 5B 5C 5D (Ft Yukon ↑ or ↓) **Innoko R.** Koyukuk R. Tanana R..

Area_____ CHINOOK♦_____ SUMMER CHUM♦_____ FALL CHUM_____ COHO_____ PINK _____
Area_____ CHINOOK♦_____ SUMMER CHUM♦_____ FALL CHUM_____ COHO_____ PINK _____
Total (two areas) CHINOOK♦_____ SUMMER CHUM♦_____ FALL CHUM_____ COHO_____ PINK _____

8. What is your household's main fishing GEAR? (1= catches the most salmon, 2 = secondary)
SET NET_____ DRIFT NET_____ FISH WHEEL_____ DIPNET_____ B. SEINE_____ H&L_____ OTHER_____

♦ 8A. **Households that harvested ♦Chinook salmon or ♦summer chum: enter number caught by mesh size or gear type.**
CHINOOK: 4"_____ 6"_____ 7.5"_____ F.WHEEL_____ OTHER/NOTE _____
S. CHUM: 4"_____ 6"_____ 7.5"_____ F.WHEEL_____ DIPNET_____ B. SEINE_____ OTHER/NOTE_____
Gear comment (needed gear, able to get enough fish, etc.): _____

9. Did you commercial fish? Yes____ No ____ **Did you keep any fish from commercial fishing?** Yes____ No ____
CHINOOK _____ SUMMER CHUM _____ FALL CHUM _____ COHO _____ PINK _____

10. Did your household "LOSE" any salmon? (e.g. to bears, birds, flies, disease, injury, etc.) (____ None lost)
(If fish was fed to dogs then it was not lost; include on Q18) **Ensure lost fish were included in harvest** Q7)
Number of fish and reason(s) for LOSS: _____

11. Did your household SHARE the salmon catch with any other households? (names, species and numbers)
_____
_____
_____

****12. How many salmon did you KEEP for your household's use?** ("Harvest" minus fish "shared" and "lost")
CHINOOK _____ SUMMER CHUM _____ FALL CHUM _____ COHO _____ PINK _____

Coastal District (Hooper and Scammon Bay) – District 2

Rite in the Rain

Figure 4.–Example Lower Yukon Area postseason subsistence salmon harvest survey form, 2018.

Note: Area specific versions of the survey form were used throughout the drainage. Different versions highlighted specific fishing areas and other fish species used by respective areas.

-continued-

Figure 4.–Page 2 of 2.

HHID: Head of Household:

PART 2: TO BE ASKED OF ALL HOUSEHOLDS

****13. Was your household GIVEN any salmon? Yes ____ No ____** Code: S=Subsistence, C=Commercial, T=Test Fish

Code: _____ Fishermen/Project (Name) _____

CHINOOK _____ SUMMER CHUM _____ FALL CHUM _____ COHO _____ PINK _____

Code: _____ Fishermen/Project (Name) _____

CHINOOK _____ SUMMER CHUM _____ FALL CHUM _____ COHO _____ PINK _____

14. Did your household catch any OTHER FISH besides salmon? Yes _____ No _____

(Harvest numbers should include from September/October of last year to now. Large whitefish are 4 pounds or greater.)

Large whitefish: BROAD _____ HUMPBACK _____ SMALL WHITEFISH (Cisco, Round whitefish) _____

SHEEFISH _____ BURBOT _____ PIKE _____ BLACKFISH _____ GRAYLING _____ EELS (Lamprey) _____

TOMCOD (Saffron) _____ HERRING (NUMBER **OR** POUNDS)_____ ROE ON KELP (POUNDS)_____

Other Fish Notes (note if pounds or number) _____

15. How many DOGS (including puppies) does your household have? _____ (if "none" go to question 19)

16. Do you feed WHOLE salmon to your dogs? Yes _____ No _____ Only Feed **SCRAPS** ____ (if "No" go to question 19)

17. Were any of the salmon put up for the dogs from the commercial fishery? Yes _____ No _____

18. Estimate harvest of salmon put up for dogs this year by fishery (numbers should represent WHOLE FISH, not scraps):

(Subsistence) CHINOOK _____ SUMMER CHUM _____ FALL CHUM _____ COHO _____ PINK _____

(Commercial) CHINOOK _____ SUMMER CHUM _____ FALL CHUM _____ COHO _____ PINK _____

19. Do you have any questions or comments? How did this year compare to last year? Did you get enough? _____

Do you want someone to call you back? _____

THANK YOU! THIS INFORMATION IS USED TO DOCUMENT THE SUBSISTENCE SALMON HARVEST WITHIN THE YUKON RIVER DRAINAGE AND TO TRY TO ENSURE THERE WILL BE ENOUGH SALMON FOR THE FUTURE.

Surveyor Comments:

Reminder: How many people live in this Household? _____ Please verify correct address and phone numbers

Official Use - This area is to be filled in by Fish and Game.

HOUSEHOLD'S TOTAL SUBSISTENCE SALMON CATCH (Totals from question *7)

CHINOOK _____ SUMMER CHUM _____ FALL CHUM _____ COHO _____ PINK _____

HOUSEHOLD'S TOTAL SUBSISTENCE SALMON USE (Add totals from questions **12 and **13)

CHINOOK _____ SUMMER CHUM _____ FALL CHUM _____ COHO _____ PINK _____

Complete Survey _____ Partial Survey _____ No Survey _____

Rite in the Rain

Coastal District (Hooper and Scammon Bay) – District 2

Date Issued:_____ Permit Number: SY-_____

Household Subsistence Fishing Permit
Yukon River Drainage - Bridge Area

Alaska Department of Fish and Game, Division of Commercial Fisheries
1300 College Road, Fairbanks, AK 99701 Telephone (907) 459-7274

Name _____ Telephone _____

Mailing Address _____

Email _____ Number in your Household _____
(Include yourself)

Other Household Member(s)_____

Number of Dogs in Household _____ Do you feed whole salmon to dogs? _____

Salmon primary gear type: _____

Salmon secondary gear type: _____

Non-salmon primary gear type: _____

Non-salmon secondary gear type: _____

Subsistence Permit Area: Under authority of this permit, fish may be taken from the Yukon River drainage from the mouth of Hess Creek upstream to the mouth of Dall River. This includes the Yukon Bridge area. See closed waters listed in regulation.

Permit Conditions:

- All regulations pertaining to subsistence fishing in the area must be followed. See regulation summary.
- Anyone fishing this household's gear must be named above and carry this permit on their person during any fishing activity. Household members participating in fishing must be Alaska Residents.
- Fish taken under authority of this permit must be recorded on the catch form provided before leaving the fishing site on the same day the fish are landed.
- This permit is valid for the calendar year the permit is issued (as noted in the last two digits of the permit number). This permit expires annually **on October 15 (midnight)**, unless otherwise noted by an ADF&G official. A permit is required year-round for subsistence fishing in this area.
- Return this permit, whether you fished or not, with your completed catch information to the address indicated on this permit or online at www.adfg.alaska.gov/sf/PU/ within **10 days** after the permit expiration date. Failure to return this permit or report this household's catch information may result in denial of a household permit next year and the Alaska Wildlife Troopers will be notified.
- **Fishermen must abide by the current fishing schedule and gear restrictions** available on the **24-HOUR RECORDING AT 459-7387 (in Fairbanks) or 1-866-479-7387 (Toll free)**. News releases are available at the Fairbanks office or at www.cfnews.adfg.alaska.gov, or you can sign up to receive news releases by email at this website.

Permit is not valid unless signed and dated. By completing this permit application I am agreeing to allow ADF&G to publish the number of fish reported using this permit. No names or addresses will be published.

I hereby claim I am a resident of Alaska and that the information I have provided on this permit is true as witnessed by my signature. I have read and will abide by all conditions of this permit.

X_____ Date_____ Date of Birth _____
Signature of Permittee

Revised 3/2018 RECORD HARVEST ON CATCH FORM

Figure 5.–Example subsistence harvest permit, Yukon Area, 2018.

-continued-

Figure 5.–Page 2 of 2.

Date Issued:_____ Permit Number: SY-_____

YUKON RIVER DRAINAGE SUBSISTENCE FISHERY CATCH FORM

If permit is on Rite-in-Rain water resistant paper please use pencil not ink.

DATE (Month/Day)	CHINOOK SALMON (KINGS)	CHUM SALMON (DOGS)	COHO SALMON	WHITEFISH	PIKE	OTHER SPECIES (Specify)	Number of Whole Salmon Put Up For Dogs

Report harvests online at www.adfg.alaska.gov/sf/PU/ or return a permit to ADF&G

RETURN TO:
Alaska Department of Fish and Game
Division of Commercial Fisheries
1300 College Road
Fairbanks, AK 99701
Telephone: (907) 459-7274

Revised 3/2018

PLEASE CHECK THIS BOX IF YOU DID NOT FISH THIS YEAR ☐

_____ _____

Sign this Catch Report when you return it. Date

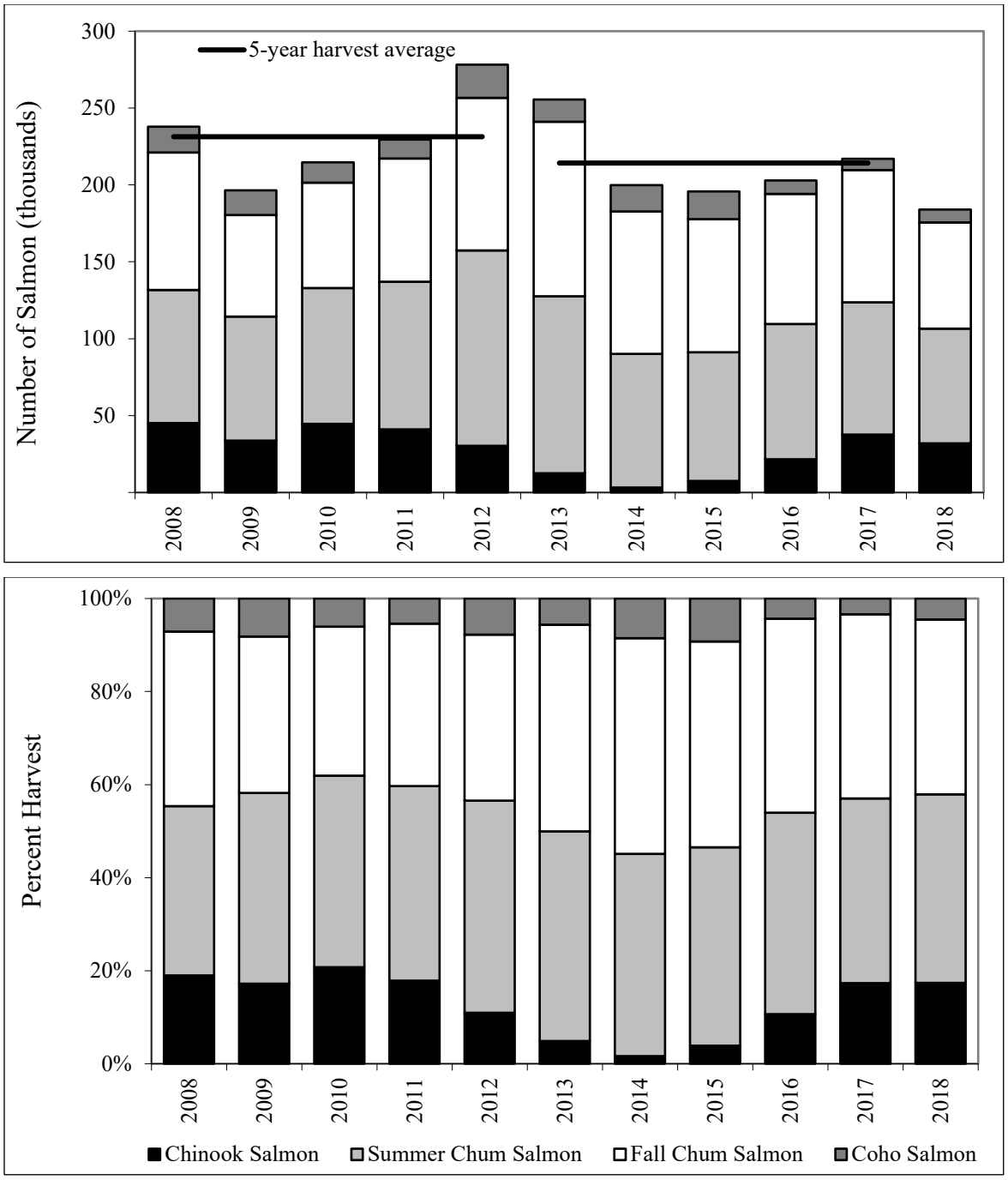


Figure 6.–Estimated total subsistence salmon harvest by species, Yukon Area, 2008–2018.

Note: Harvest of salmon species by number (top) and proportion (bottom). Totals included survey, permit, test fishery and retained from commercial. Did not include salmon caught in the personal use fishery.

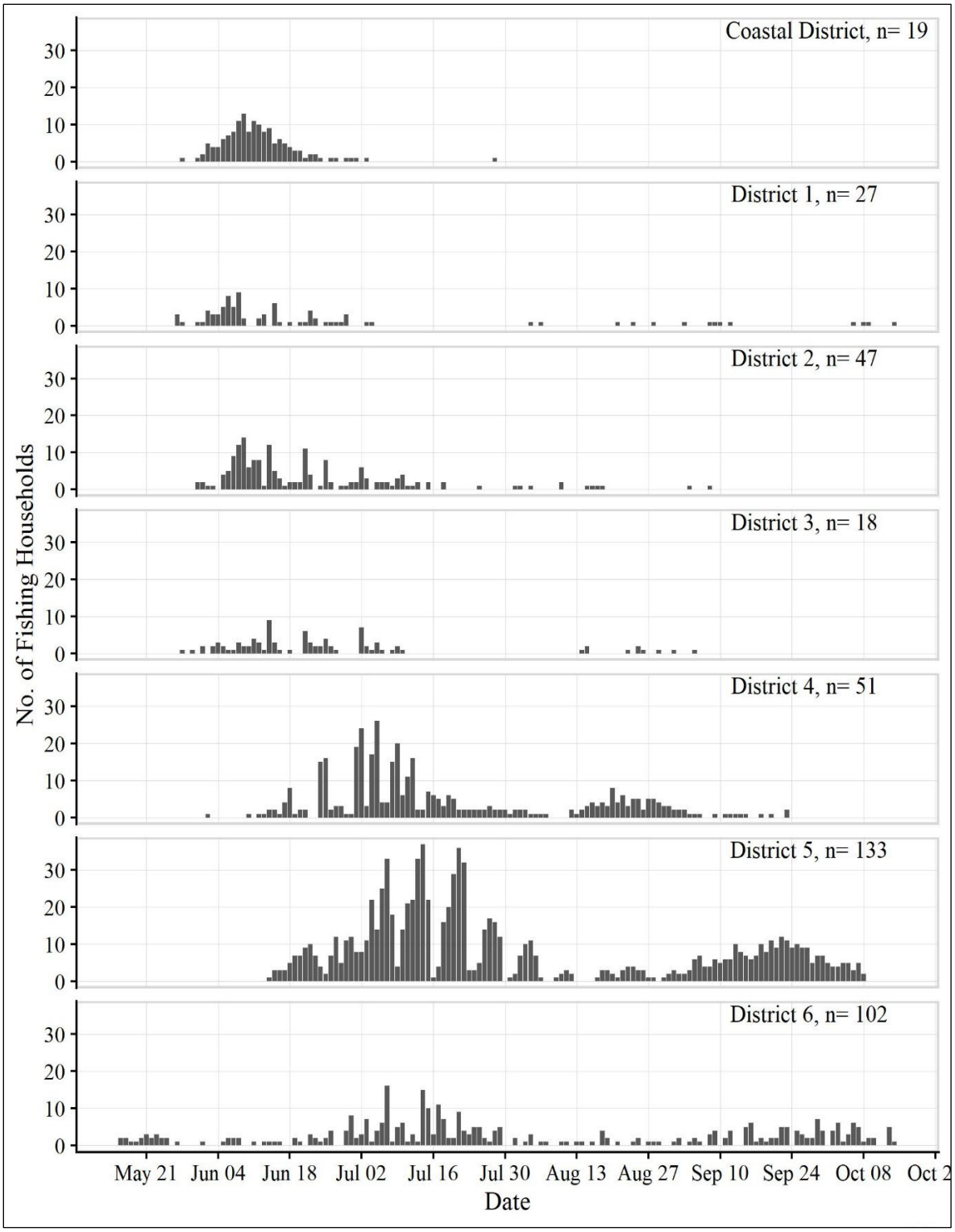


Figure 7.–Number of fishing households reporting harvest on calendars or permits by day and by district, Yukon Area, 2018.

Note: Bars represent the number of fishing households in each district that recorded harvest by day on calendars and permits. Did not include permit types primarily issued in District 6 for the harvest of nonsalmon species such as whitefish or northern pike.

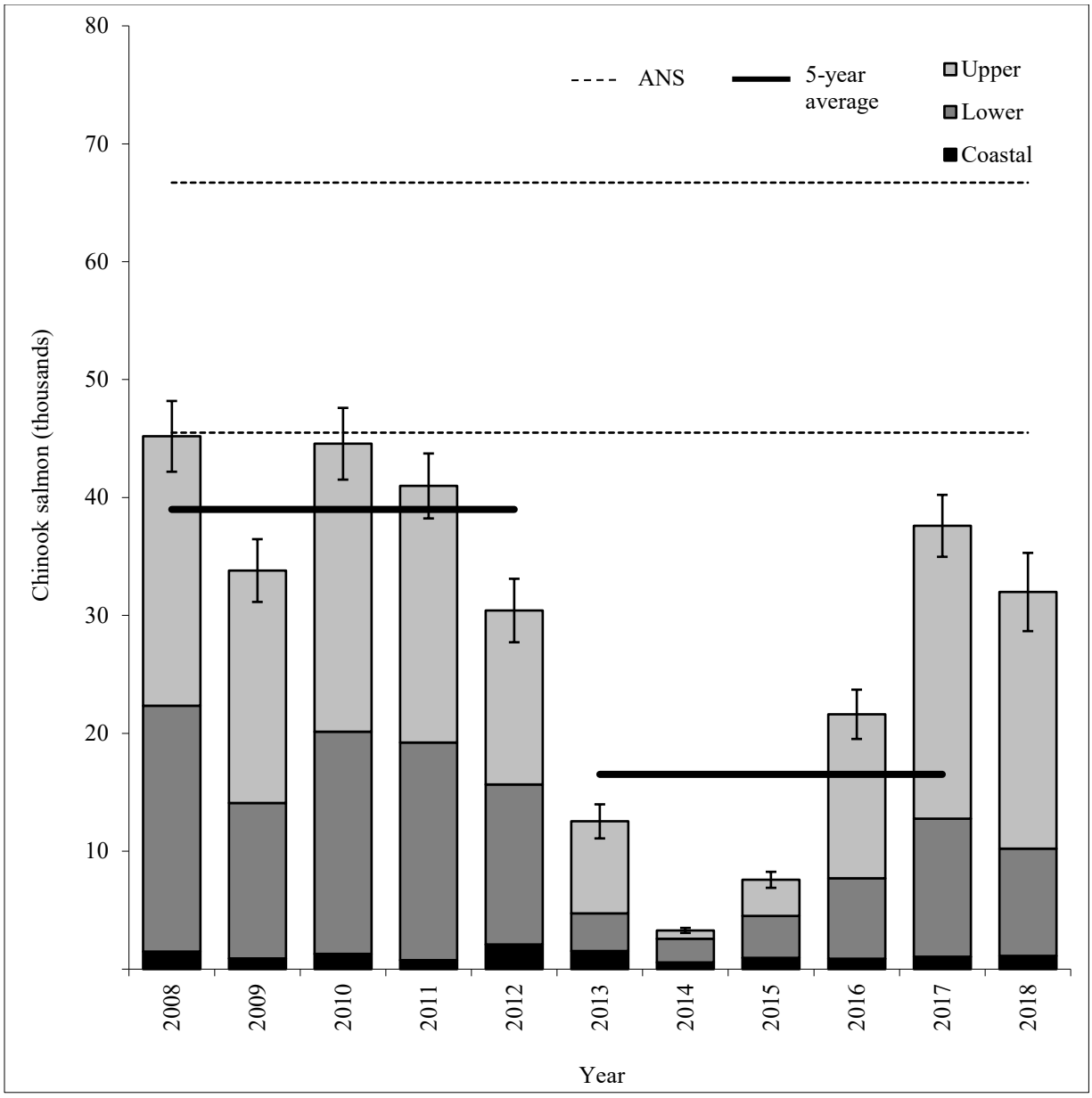


Figure 8.–Estimated Chinook salmon subsistence harvest, Yukon Area, 2008–2018.

Note: Harvest estimates (shaded bars) with 95% confidence intervals (vertical error bars). In 2001 the Alaska Board of Fisheries defined the amount necessary for subsistence (ANS) as 45,500–66,704 Chinook salmon. ANS ranges were based on 1990–1999 subsistence harvest amounts and do not include salmon from personal use fisheries. Subsistence fisheries were restricted by time or gear type during the summer season in 2008, 2009, and 2011–2018 to protect Chinook salmon.

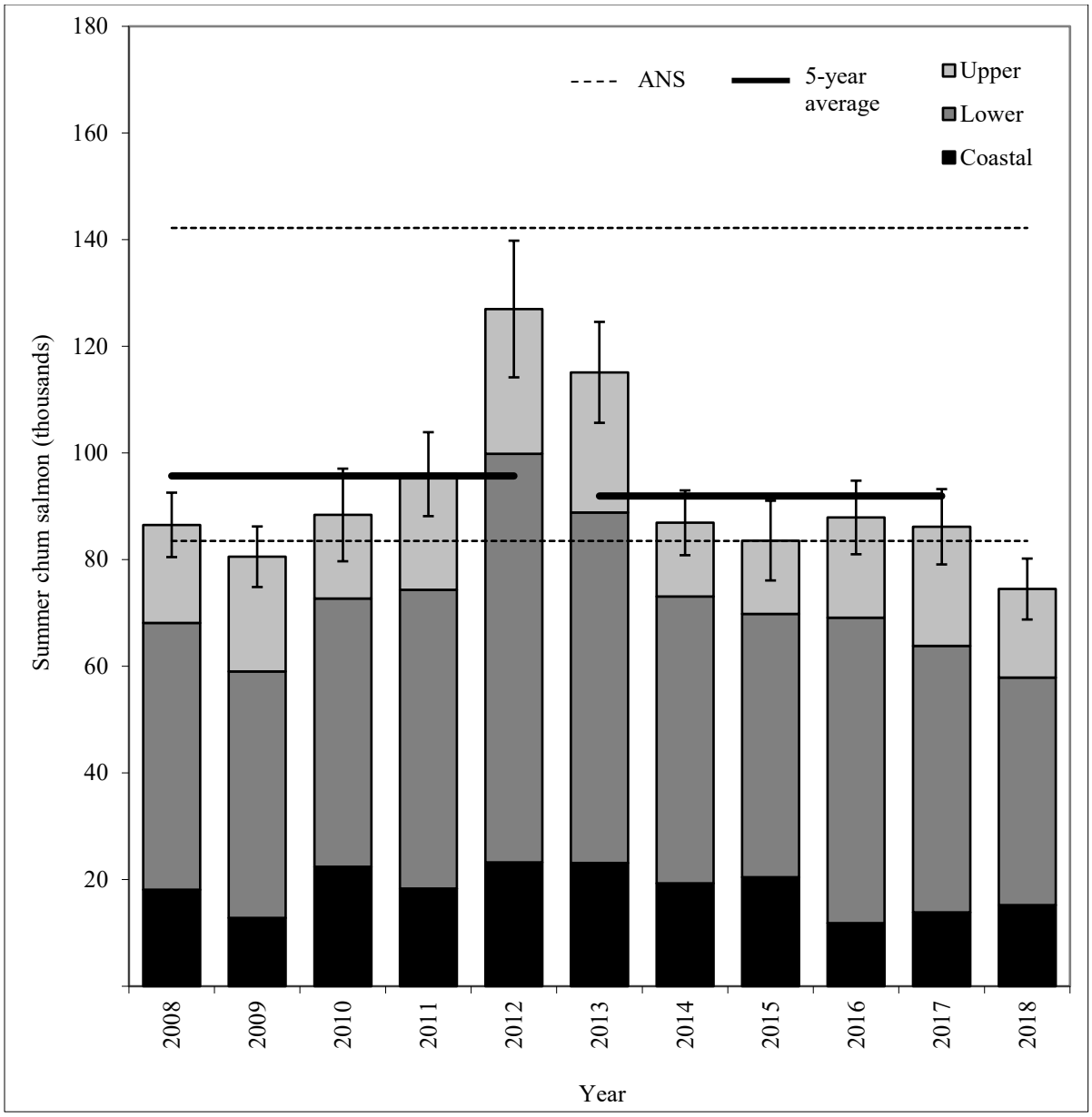


Figure 9.–Estimated summer chum salmon subsistence harvest, Yukon Area, 2008–2018.

Note: Harvest estimates (shaded bars) with 95% confidence intervals (vertical error bars). In 2001 the Alaska Board of Fisheries defined the amount necessary for subsistence (ANS) as 83,500–142,192 summer chum salmon. ANS ranges are based on 1990–1999 subsistence harvest amounts and did not include salmon from personal use fisheries. Subsistence fisheries were restricted by time or gear type during the summer season in 2008, 2009, and 2011–2018 to protect Chinook salmon.

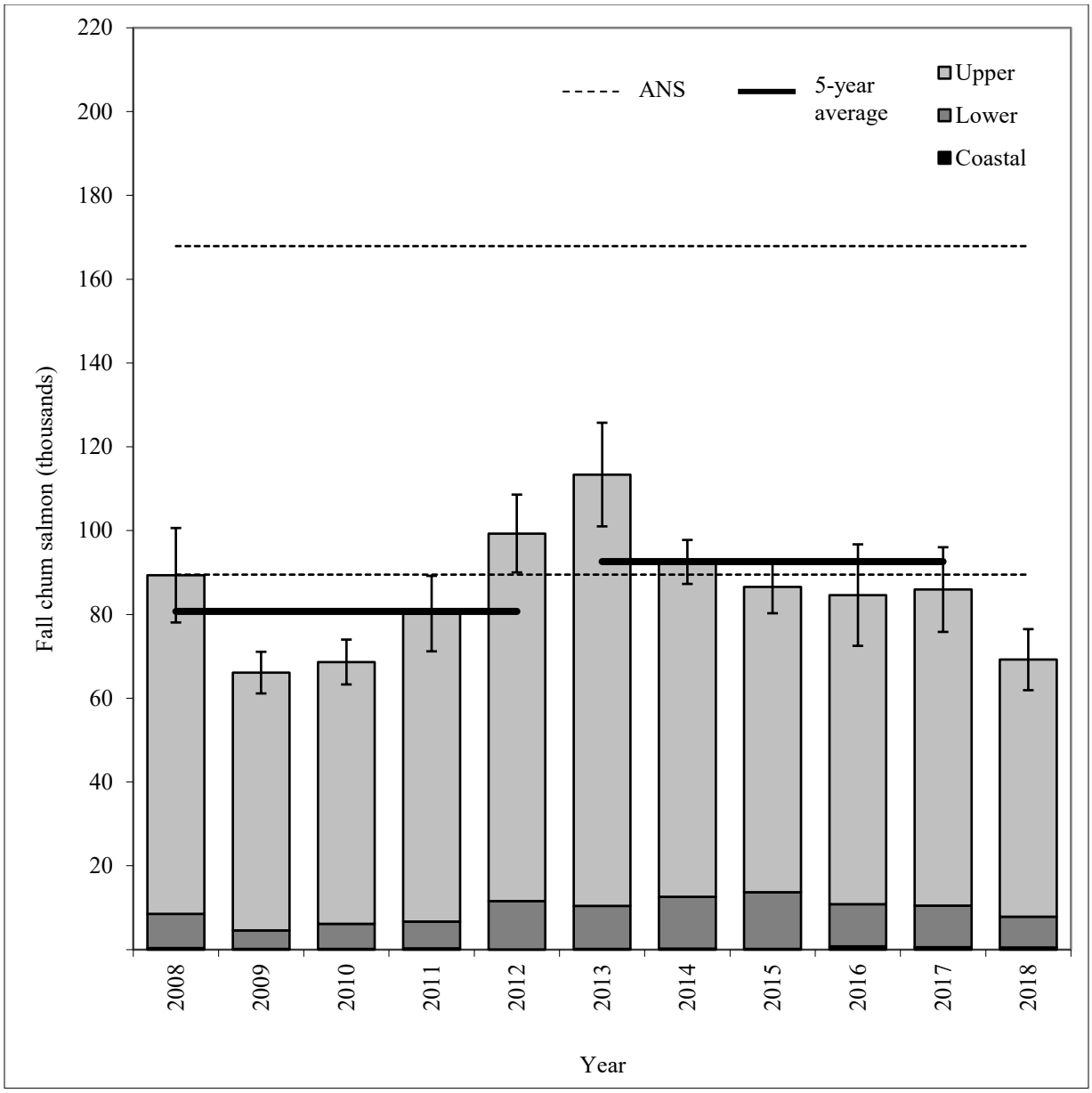


Figure 10.–Estimated fall chum salmon subsistence harvest, Yukon Area, 2008–2018.

Note: Harvest estimates (shaded bars) with 95% confidence intervals (vertical error bars). In 2001, the Alaska Board of Fisheries defined the amount necessary for subsistence (ANS) as 89,500−167,900 fall chum salmon. ANS ranges are based on 1990–1999 subsistence harvest amounts (excluding 1993 and 1998 due to restrictions) and did not include salmon from personal use fisheries.

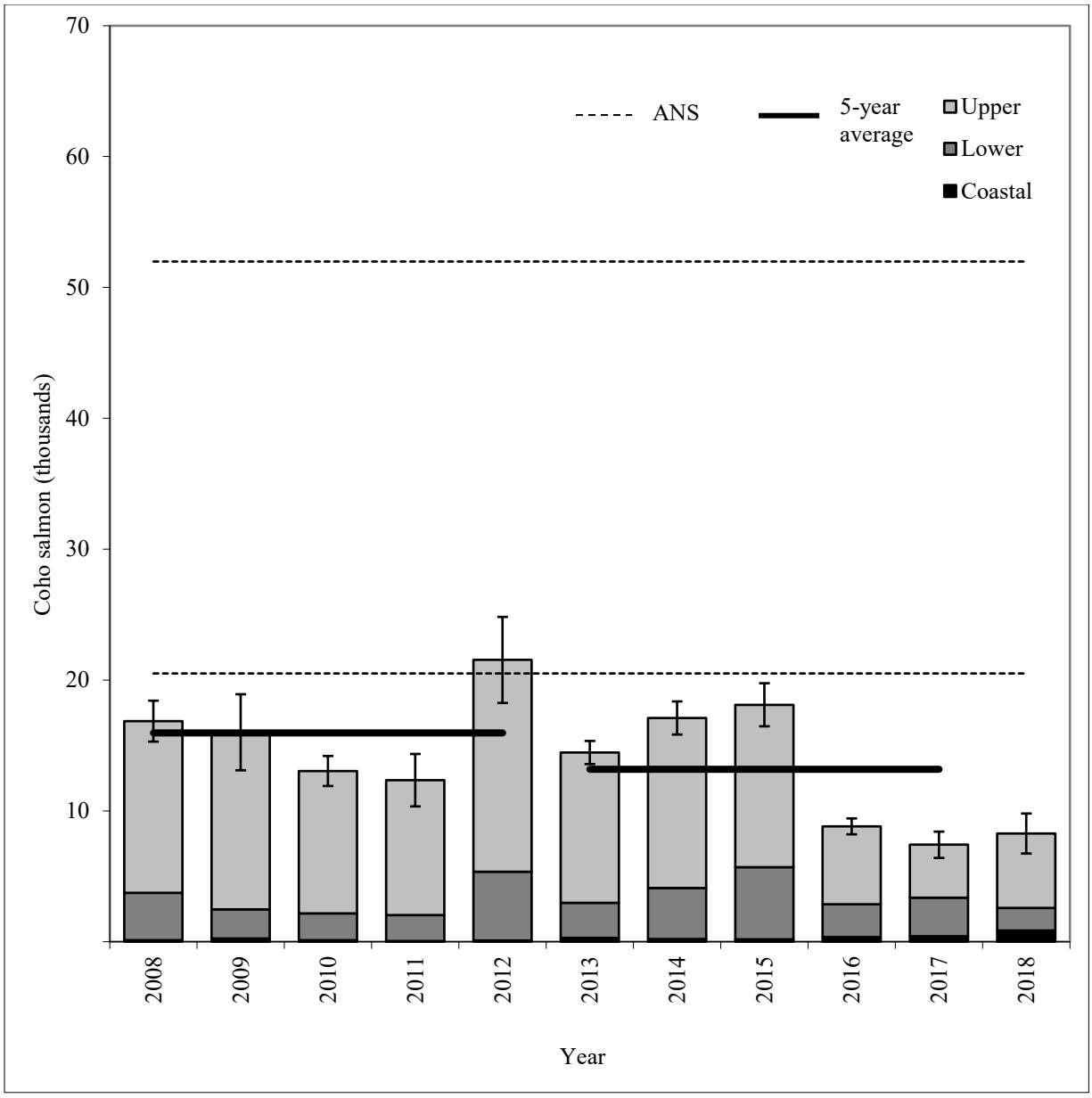


Figure 11.–Estimated coho salmon subsistence harvest, Yukon Area, 2008–2018.

Note: Harvest estimates (shaded bars) with 95% confidence intervals (vertical error bars). In 2001, the Alaska Board of Fisheries defined the amount necessary for subsistence (ANS) as 20,500–51,980 coho salmon. ANS ranges are based on 1990–1999 subsistence harvest amounts (excluding 1993 and 1998 due to restrictions) and did not include salmon from personal use fisheries.

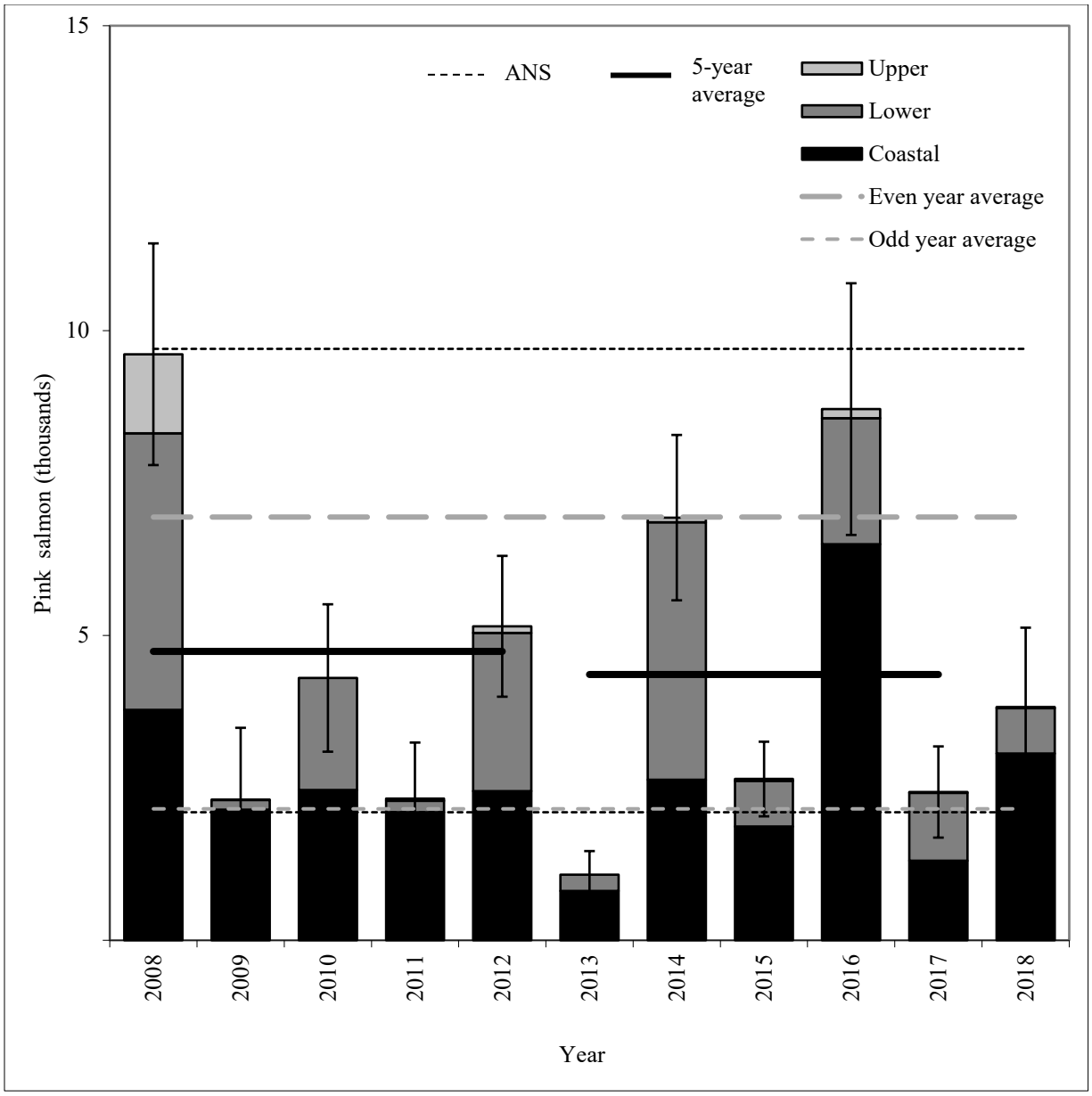


Figure 12.–Estimated pink salmon subsistence harvest, Yukon Area, 2008–2018.

Note: Harvest estimates (shaded bars) with 95% confidence intervals (vertical error bars). In 2013, the Alaska Board of Fisheries defined the amount necessary for subsistence (ANS) as 2,100–9,700 pink salmon. ANS ranges were based on 2002–2011 subsistence harvest amounts and did not include salmon from personal use fisheries. Even and odd year averages were calculated based on 2005–2014 harvest totals.

APPENDIX A. 2018 HARVEST INFORMATION

Appendix A1.–Estimated subsistence harvest of salmon and 95% confidence interval (CI) in surveyed communities, with community and district totals, Yukon Area, 2018.

			Chinook		Summer chum		Fall chum		Coho	
	Total		Est	CI	Est	CI	Est	CI	Est	CI
Community	*N*	*n*	total	95%	total	95%	total	95%	total	95%
Hooper Bay	238	107	456	141	8,346	1,735	158	144	119	98
Scammon Bay	117	54	666	197	6,850	1,565	364	138	746	343
Coastal District	355	161	1,122	240	15,196	2,316	522	197	864	352
Nunam Iqua	40	21	78	26	1,549	430	188	71	184	89
Alakanuk	142	68	370	121	5,164	1,673	430	161	170	120
Emmonak	198	103	585	126	5,024	1,241	1,001	522	138	57
Kotlik	119	58	1,275	287	6,552	1,447	607	257	254	99
District 1	499	250	2,308	333	18,289	2,537	2,226	602	746	184
Mountain Village	169	78	1,018	280	5,414	1,121	250	99	126	71
Pitkas Point	27	21	365	65	1,390	207	112	62	54	27
St. Mary's	142	69	1,135	218	4,459	1,121	470	168	37	20
Pilot Station	132	116	492	54	3,136	303	443	94	55	14
Marshall	100	45	914	352	3,311	1,139	415	142	112	36
District 2	570	329	3,924	498	17,710	1,953	1,690	262	385	86
Russian Mission	77	31	1,043	262	2,245	810	349	260	123	99
Holy Cross	59	31	580	136	306	84	176	84	23	16
Shageluk	34	26	181	83	495	108	174	51	8	9
District 3	170	88	1,804	299	3,046	800	700	271	154	98
Anvik	31	27	566	71	437	30	500	59	15	18
Grayling	57	29	888	211	779	315	750	226	0	0
Kaltag	51	25	570	264	25	6	66	8	34	0
Nulato	84	75	1,260	112	241	61	869	215	220	30
Koyukuk	44	18	859	333	150	135	295	197	22	25
Galena	147	52	1,262	416	349	190	1,401	419	216	39
Ruby	51	21	1,126	614	970	1,113	842	297	26	36
Huslia/Hughes	113	61	170	98	4,726	2,081	859	133	1,020	888
Allakaket/Alatna/Bettles	87	46	48	22	4,844	3,195	362	31	27	31
District 4	665	354	6,750	856	12,522	3,896	5,943	629	1,581	876
Tanana	97	49	5,108	2,758	2,733	1,212	16,731	7,081	1,355	1,213
Stevens Village	18	12	110	62	1	0	1,052	4	0	0
Beaver	31	26	332	63	8	4	141	37	0	0
Fort Yukon/Birch Creek	219	80	4,704	1,592	44	77	3,487	1,692	0	0
Venetie/Chalkyitsik	101	45	443	255	114	186	2,544	1,292	0	0
District 5	466	212	10,698	3,143	2,900	1,205	23,955	7,256	1,355	1,190
Survey totals	2,725	1,393	26,606	3,318	69,663	5,713	35,036	7,285	5,084	1,529

Note: The number of salmon harvested was estimated using the total number of households (N), the maximum number of households contacted (*n*) and included 95% confidence interval, (CI 95%).

Appendix A2.–Estimated number of primary gear and 95% confidence interval (CI) in surveyed communities, Yukon Area, 2018.

	Setnet		Driftnet		Fish wheel		Dip net		Hook & Line	
Community	Est	CI	Est	CI	Est	CI	Est	CI	Est	CI
Hooper Bay	107	6	1	0	0	0	0	0	0	0
Scammon Bay	86	10	4	1	0	0	0	0	0	0
Coastal District total	193	12	5	1	0	0	0	0	0	0
Nunam Iqua	14	4	3	1	0	0	3	1	0	0
Alakanuk	22	5	46	9	0	0	2	1	3	1
Emmonak	12	3	72	8	0	0	0	0	0	0
Kotlik	42	8	43	7	0	0	0	0	0	0
District 1 total	89	11	164	14	0	0	4	1	3	1
Mountain Village	7	2	82	9	0	0	0	0	0	0
Pitkas Point	0	0	19	1	0	0	0	0	0	0
St. Mary's	0	0	96	7	0	0	3	1	0	0
Pilot Station	2	0	62	3	0	0	0	0	0	0
Marshall	3	2	69	7	0	0	0	0	0	0
District 2 total	12	2	328	13	0	0	3	1	0	0
Russian Mission	28	7	32	7	0	0	0	0	0	0
Holy Cross	3	1	26	4	0	0	0	0	0	0
Shageluk	11	2	1	1	0	0	0	0	0	0
District 3 total	43	7	59	8	0	0	0	0	0	0
Anvik	5	2	15	3	0	0	0	0	0	0
Grayling	1	0	35	3	0	0	0	0	0	0
Kaltag	0	0	19	5	0	0	0	0	3	2
Nulato	0	0	58	2	1	0	0	0	0	0
Koyukuk	4	2	25	4	0	0	0	0	0	0
Galena	17	5	56	10	0	0	0	0	0	0
Ruby	0	0	21	2	1	0	0	0	0	0
Huslia/Hughes	20	5	3	1	0	0	0	0	0	0
Allakaket/Alatna/Bettles	21	4	3	2	0	0	0	0	0	0
District 4 total	69	9	235	13	2	0	0	0	3	2
Tanana	18	4	0	0	25	6	0	0	0	0
Stevens Village/Rampart	7	2	0	0	1	1	0	0	0	0
Beaver	15	3	0	0	7	1	0	0	0	0
Fort Yukon/Birch Creek	30	8	0	0	33	6	0	0	4	2
Venetie/Chalkyitsik	19	4	0	0	1	1	0	0	0	0
District 5 total	89	11	0	0	67	8	0	0	4	2
Survey total	496	22	790	25	70	8	8	2	11	3

Note: Totals may not add up due to decimal rounding.

Appendix A3.–Estimated number of salmon provided to communities for subsistence use by test fishery programs, Yukon Area, 2018.

Yukon River test fishery sites	Community	Chinook	Summer chum	Fall chum	Coho	Pink[a]	Total
Lower Yukon test fishery (LYTF)	Alakanuk	44	284	80	20	0	428
	Emmonak	618	2,012	1,207	191	0	4,028
	Kotlik	281	455	152	10	0	898
	St. Mary's	37	27	0	0	0	64
LYTF project subtotal		980	2,778	1,439	221	0	5,418
Mountain Village test fishery	Mountain Village	3	0	622	141	65	831
Pilot Station sonar test fishery	Pilot Station	89	879	673	66	0	1,707
Eagle sonar test fishery[b]	Eagle	250	0	0	0	0	250
Test fishery totals		1,322	3,657	2,734	428	65	8,206

[a] Pink salmon harvested and distributed from test fishery projects were not always recorded therefore this harvest is a minimum.

[b] The Eagle sonar test fishery typically releases salmon. However, in 2018, some salmon were retained for a Division of Commercial Fisheries study.

APPENDIX B. HISTORICAL INFORMATION

Appendix B1.–Chinook salmon subsistence harvest totals by fishing district and community of residence, and personal use harvest total for District 6, Yukon Area, 2008–2018.

Community	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2008–2012 Average	2013–2017 Average
Hooper Bay	388	183	584	252	1,090	1,210	455	534	284	314	456	499	559
Scammon Bay	1,104	722	716	517	1,014	332	108	432	602	747	666	815	444
Coastal District total	1,492	905	1,300	769	2,104	1,542	563	966	886	1,061	1,122	1,314	1,004
Nunam Iqua	163	200	404	250	195	12	62	210	190	235	78	242	142
Alakanuk	1,238	634	944	1,464	1,081	275	214	436	465	838	414	1,072	446
Emmonak	2,696	1,634	2,194	2,172	1,864	553	463	612	939	1,731	1,203	2,112	860
Kotlik	2,066	1,657	2,314	2,369	1,173	794	617	661	1,158	1,767	1,556	1,916	999
District 1 subtotal	6,163	4,125	5,856	6,255	4,313	1,634	1,356	1,919	2,752	4,571	3,251	5,342	2,446
Mountain Village	1,645	1,482	1,601	2,063	1,789	266	178	370	809	1,060	1,021	1,716	537
Pitkas Point	544	265	580	246	261	37	79	44	156	492	365	379	162
St. Mary's	1,756	1,929	2,800	1,734	2,344	215	68	261	1,032	919	1,172	2,113	499
Pilot Station	1,597	1,258	1,585	1,340	1,078	258	163	382	652	818	581	1,372	455
Marshall	3,284	1,201	2,110	2,686	1,409	328	128	128	512	1,554	914	2,138	530
District 2 subtotal	8,826	6,135	8,676	8,069	6,881	1,104	616	1,185	3,161	4,843	4,053	7,717	2,182
Russian Mission	2,949	978	924	1,550	1,711	236	16	365	321	1,368	1,043	1,622	461
Holy Cross	2,509	1,745	3,098	2,231	576	204	0	68	557	822	580	2,032	330
Shageluk	397	201	277	353	75	4	32	14	23	86	181	261	32
District 3 subtotal	5,855	2,924	4,299	4,134	2,362	444	48	447	901	2,276	1,804	3,915	823
Lower Yukon River total	20,844	13,184	18,831	18,458	13,556	3,182	2,020	3,551	6,814	11,690	9,108	16,975	5,451
Anvik	1,433	796	1,069	1,052	435	121	0	58	241	709	566	957	226
Grayling	1,761	1,133	2,122	1,374	1,081	226	3	22	370	749	888	1,494	274
Kaltag	2,403	1,970	3,191	2,488	1,346	348	10	119	1,358	1,959	570	2,280	759
Nulato	1,250	1,551	2,989	1,538	1,955	602	0	33	1,957	2,132	1,260	1,857	945
Koyukuk	513	982	867	1,349	614	898	52	26	612	648	859	865	447
Galena	2,232	1,370	1,357	1,434	742	275	1	372	993	2,224	1,262	1,427	773
Ruby	637	542	1,102	482	1,316	357	6	68	344	568	1,126	816	269
District 4 subtotal	10,229	8,344	12,697	9,717	7,489	2,827	72	698	5,875	8,989	6,531	9,695	3,692
Huslia/Hughes	316	1,070	128	131	165	68	51	38	94	454	170	362	141
Allakaket/Alatna/Bettles	74	100	63	45	8	6	9	35	46	31	48	58	25
Koyukuk River subtotal	390	1,170	191	176	173	74	60	73	140	485	218	420	166
District 4 total (incl. Koyukuk R.)	10,619	9,514	12,888	9,893	7,662	2,901	132	771	6,015	9,474	6,749	10,115	3,859

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Appendix B1.–Page 2 of 2.

Community	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2008–2012 Average	2013–2017 Average
Tanana	3,981	2,950	3,215	2,936	2,100	1,200	88	141	2,129	2,961	5,108	3,036	1,304
Rampart/Stevens Village	889	933	731	616	520	274	0	1	228	155	284	738	132
Fairbanks (FNSB) [a]	1,898	1,509	1,670	2,186	558	610	14	263	1,318	2,521	1,475	1,564	945
Beaver	546	516	198	356	71	107	0	69	165	585	332	337	185
Fort Yukon/Birch Creek	2,023	861	1,756	2,521	2,141	1,561	93	480	1,225	4,224	4704	1,860	1,517
Circle/Central	567	539	414	363	346	178	0	185	260	744	683	446	273
Eagle	1,068	446	867	728	167	175	76	395	864	1,730	1,011	655	648
Other District 5 [b]	362	541	779	777	477	125	0	7	306	830	474	587	254
District 5 subtotal	11,334	8,295	9,630	10,483	6,380	4,230	271	1,541	6,495	13,750	14,071	9,224	5,257
Venetie/Chalkyitsik	292	622	767	10	86	311	17	308	586	780	443	355	400
Teedriinjik/Draanjik R. subtotal	292	622	767	10	86	311	17	308	586	780	443	355	400
District 5 total [c]	11,626	8,917	10,397	10,493	6,466	4,541	288	1,849	7,081	14,530	14,514	9,580	5,658
Manley	106	345	337	287	174	165	92	121	230	103	210	250	142
Minto	12	0	43	61	99	60	0	23	35	101	–	43	44
Nenana/Healy	335	473	660	681	296	87	139	263	464	309	181	489	252
Fairbanks (FNSB) [d]	108	396	91	330	58	49	41	33	87	144	53	197	71
Other District 6 [e]	44	71	12	8	0	6	11	0	0	0	49	27	3
District 6 Tanana R. total	605	1,285	1,143	1,367	627	367	283	440	816	657	493	1,005	513
Upper Yukon River total	22,850	19,716	24,428	21,753	14,755	7,809	703	3,060	13,912	24,661	21,756	20,700	10,029
Yukon Area total [f]	45,186	33,805	44,559	40,980	30,415	12,533	3,286	7,577	21,612	37,412	31,986	38,989	16,484
Personal use (District 6) [g]	126	127	162	89	71	42	1	5	57	125	206	115	46
Yukon Area total with personal use	45,312	33,932	44,721	41,069	30,486	12,575	3,287	7,582	21,669	37,537	32,192	39,104	16,530

Note: Subsistence harvest data were estimated from postseason surveys, returned permits and test fishery projects. En dash (–) indicates value could not be computed due confidentiality of the data.

[a] Harvests by subsistence permit holders who resided in Fairbanks North Star Borough (FNSB) and fished in District 5 near the Yukon River Bridge crossing.

[b] Other permit holders who fished in District 5 but did not reside in the communities listed.

[c] Included the Teedriinjik (formerly Chandalar) and Draanjik (formerly Black) Rivers.

[d] Harvests by subsistence permit holders who resided in FNSB and fished in the Tanana River (District 6).

[e] Other permit holders who fished in District 6 but did not reside in the communities listed.

[f] Included Coastal District, historically Yukon River total (Lower River plus Upper River totals) was used in assessing border passage objectives under the Yukon Salmon Agreement.

[g] Harvest from the personal use fishing area on the Tanana River near Fairbanks. Not included in communities or totals above.

Appendix B2.–Summer chum salmon subsistence harvest totals by fishing district and community of residence, and personal use harvest total for District 6, Yukon Area, 2008–2018.

Community	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2008–2012 Average	2013–2017 Average
Hooper Bay	12,007	9,195	17,020	13,460	15,799	13,629	13,236	11,870	6,324	7,818	8,346	13,496	10,575
Scammon Bay	6,113	3,602	5,405	4,845	7,442	9,506	6,068	8,598	5,520	6,033	6,850	5,481	7,145
Coastal District total	18,120	12,797	22,425	18,305	23,241	23,135	19,304	20,468	11,844	13,851	15,196	18,978	17,720
Nunam Iqua	1,949	2,280	2,267	2,077	1,977	2,651	2,010	2,239	2,130	1,759	1,549	2,110	2,158
Alakanuk	6,881	5,152	7,722	7,447	9,012	7,520	9,120	4,469	6,527	4,993	5,448	7,243	6,526
Emmonak	9,646	9,038	10,918	12,468	15,829	8,209	7,143	9,973	8,976	6,933	7,036	11,580	8,247
Kotlik	4,291	7,528	4,265	6,598	8,552	10,136	5,621	4,960	8,925	8,776	7,007	6,247	7,684
District 1 subtotal	22,767	23,998	25,172	28,590	35,370	28,516	23,894	21,641	26,558	22,461	21,040	27,179	24,614
Mountain Village	7,559	7,204	7,071	9,355	9,031	11,861	7,059	6,063	8,782	7,230	5,414	8,044	8,199
Pitkas Point	1,246	994	633	585	1,153	2,186	1,588	1,225	1,485	1,489	1,390	922	1,595
St. Mary's	6,451	5,831	7,443	6,760	10,763	9,167	5,570	8,216	7,379	4,967	4,486	7,450	7,060
Pilot Station	6,012	4,888	6,196	4,182	5,716	5,299	5,728	4,702	4,796	4,952	4,015	5,399	5,095
Marshall	3,023	2,172	2,395	3,810	5,903	3,986	6,189	4,351	5,180	5,166	3,311	3,461	4,974
District 2 subtotal	24,291	21,089	23,738	24,692	32,566	32,499	26,134	24,557	27,622	23,804	18,616	25,275	26,923
Russian Mission	2,400	849	528	1,225	2,508	3,967	3,181	2,626	1,798	2,645	2,245	1,502	2,843
Holy Cross	441	194	463	363	1,147	262	97	421	991	242	306	522	403
Shageluk	130	103	350	1,145	5,035	463	470	80	275	804	495	1,353	418
District 3 subtotal	2,971	1,146	1,341	2,733	8,690	4,692	3,748	3,127	3,064	3,691	3,046	3,376	3,664
Lower Yukon River total	50,029	46,233	50,251	56,015	76,626	65,707	53,776	49,325	57,244	49,956	42,702	55,831	55,202
Anvik	340	277	451	220	1,371	830	2,052	777	1,117	330	437	532	1,021
Grayling	660	1,429	1,612	838	2,616	618	1,617	509	878	738	779	1,431	872
Kaltag	916	50	102	163	186	67	954	216	467	185	25	283	378
Nulato	468	133	416	246	254	401	158	6	1,001	1,588	241	303	631
Koyukuk	1,104	1,378	352	890	828	4,459	300	0	119	96	150	910	995
Galena	758	1,718	1,702	3,414	718	179	377	1,059	1,689	1,228	349	1,662	906
Ruby	655	603	1,971	775	3,891	681	29	88	678	107	970	1,579	317
District 4 subtotal	4,901	5,588	6,606	6,546	9,864	7,235	5,487	2,655	5,949	4,272	2,951	6,701	5,120
Huslia/Hughes	5,321	4,277	2,227	4,120	7,734	4,070	3,214	4,609	4,764	9,295	4,726	4,736	5,190
Allakaket/Alatna/Bettles	3,295	5,093	2,887	2,500	3,957	2,456	1,280	2,513	3,015	2,857	4,844	3,546	2,424
Koyukuk River subtotal	8,616	9,370	5,114	6,620	11,691	6,526	4,494	7,122	7,779	12,152	9,570	8,282	7,615
District 4 total (incl. Koyukuk R.)	13,517	14,958	11,720	13,166	21,555	13,761	9,981	9,777	13,728	16,424	12,521	14,983	12,734

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Community	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2008–2012 Average	2013–2017 Average
Tanana	2,877	4,665	1,856	4,381	4,333	9,565	2,612	3,162	3,685	3,086	2,733	3,622	4,422
Rampart/Stevens Village	190	118	189	110	259	55	70	0	629	10	1	173	153
Fairbanks (FNSB) [a]	119	44	427	688	172	1,350	300	575	461	1,413	521	290	820
Beaver	27	22	22	393	27	12	0	0	23	98	8	98	27
Fort Yukon/Birch Creek	230	275	722	1,297	0	225	19	0	12	98	44	505	71
Circle/Central	5	2	37	48	0	66	0	0	0	0	0	18	13
Eagle	14	0	25	2	0	50	0	0	0	0	0	8	10
Other District 5 [b]	25	29	144	790	101	94	91	8	180	321	37	218	139
District 5 subtotal	3,487	5,155	3,422	7,709	4,892	11,417	3,092	3,745	4,990	5,026	3,344	4,933	5,654
Venetie/Chalkyitsik	50	143	133	0	0	0	16	0	0	0	114	65	3
Teedriinjik/Draanjik R. subtotal	50	143	133	0	0	0	16	0	0	0	114	65	3
District 5 total [c]	3,537	5,298	3,555	7,709	4,892	11,417	3,108	3,745	4,990	5,026	3,458	4,998	5,657
Manley	144	367	102	142	58	45	182	9	32	16	78	163	57
Minto	9	1	8	27	64	258	24	0	4	234	–	22	104
Nenana/Healy	753	508	113	471	370	642	275	60	19	603	440	443	320
Fairbanks (FNSB) [d]	94	372	183	185	114	143	237	183	41	271	82	190	175
Other District 6 [e]	311	5	16	0	72	6	13	0	0	7	5	81	5
District 6 Tanana R. total	1,311	1,253	422	825	678	1,094	731	252	96	1,131	605	898	661
Upper Yukon River total	18,365	21,509	15,697	21,700	27,125	26,272	13,820	13,774	18,814	22,581	16,584	20,879	19,052
Yukon Area total [f]	86,514	80,539	88,373	96,020	126,992	115,114	86,900	83,567	87,902	86,388	74,482	95,688	91,974
Personal use (District 6) [g]	138	308	319	439	321	138	235	220	176	438	515	305	241
Yukon Area total with personal use	86,652	80,847	88,692	96,459	127,313	115,252	87,135	83,787	88,078	86,826	74,997	95,993	92,216

Note: Subsistence harvest data were estimated from postseason survey, returned permits and test fishery projects. En dash (–) indicates value could not be computed due confidentiality of the data.

[a] Harvests by subsistence permit holders who resided in Fairbanks North Star Borough (FNSB) and fished in District 5 near the Yukon River Bridge crossing.

[b] Other permit holders who fished in District 5 but did not reside in the communities listed.

[c] Included Teedriinjik (formerly Chandalar) and Draanjik (formerly Black) Rivers.

[d] Harvests by subsistence permit holders who resided in FNSB and fished in the Tanana River.

[e] Other permit holders who fished in District 6 but did not reside in the communities listed.

[f] Included Coastal District, historically Yukon River total (Lower River plus Upper River total) was used in assessing border passage objectives under the Yukon Salmon Agreement.

[g] Harvest from the personal use fishing area on the Tanana River near Fairbanks. Not included in communities or totals above.

Appendix B3.–Fall chum salmon subsistence harvest totals by fishing district and community of residence, and personal use harvest total for District 6, Yukon Area, 2008–2018.

Community	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2008–2012 Average	2013–2017 Average
Hooper Bay	329	41	116	267	1	91	137	79	105	137	158	151	110
Scammon Bay	57	117	70	48	10	58	115	119	657	416	364	60	273
Coastal District total	386	158	186	315	11	149	252	198	762	553	522	211	383
Nunam Iqua	59	41	143	51	210	93	128	210	111	52	188	101	119
Alakanuk	423	116	860	881	449	328	593	1067	743	424	510	546	631
Emmonak	1,670	1,589	1,718	1,540	5,890	2,165	2,465	3,244	2,501	2,735	2,208	2,481	2,622
Kotlik	671	171	481	962	1,073	1,087	886	1,356	1,217	1,370	759	672	1,183
District 1 subtotal	2,823	1,917	3,202	3,434	7,622	3,673	4,072	5,877	4,572	4,581	3,665	3,800	4,555
Mountain Village	926	926	133	800	685	2,174	1,484	1,398	1,210	1,560	872	694	1,565
Pitkas Point	101	76	10	30	9	65	400	172	232	172	112	45	208
St. Mary's	830	106	387	611	1,423	1,009	2,037	1,611	1,088	753	470	671	1,300
Pilot Station	917	265	833	575	1,031	777	796	1,346	903	1,065	1,116	724	977
Marshall	748	190	56	562	184	853	1,100	1,731	1,106	532	415	348	1,064
District 2 subtotal	3,522	1,563	1,419	2,578	3,332	4,878	5,817	6,258	4,539	4,082	2,985	2,483	5,115
Russian Mission	578	205	104	11	282	804	365	449	235	671	349	236	505
Holy Cross	920	627	21	94	339	855	1,840	763	583	324	176	400	873
Shageluk	323	105	1,200	249	16	105	252	176	179	289	174	379	200
District 3 subtotal	1,821	937	1,325	354	637	1,764	2,457	1,388	997	1,284	699	1,015	1,578
Lower Yukon River total	8,166	4,417	5,946	6,366	11,591	10,315	12,346	13,523	10,108	9,947	7,349	7,297	11,248
Anvik	317	176	169	202	569	763	1,028	680	527	296	500	287	659
Grayling	1,012	490	202	1,152	804	471	1,451	1,184	499	272	750	732	775
Kaltag	620	200	658	196	2,830	583	2,828	1,255	680	142	66	901	1,098
Nulato	729	552	1,049	652	2,729	2,995	3,839	2,248	2,681	1,762	869	1,142	2,705
Koyukuk	1,177	578	792	1,388	1,331	5,308	998	2,838	297	166	295	1,053	1,921
Galena	1,364	4,306	1,968	2,739	2,947	602	3,368	2,542	3,319	4,760	1,401	2,665	2,918
Ruby	657	134	1,026	592	4,408	2,505	972	713	526	97	842	1,363	963
District 4 subtotal	5,876	6,436	5,864	6,921	15,618	13,227	14,484	11,460	8,529	7,495	4,723	8,143	11,039
Huslia/Hughes	191	374	403	247	1,911	1,257	927	1,226	954	543	859	625	981
Allakaket/Alatna/Bettles	1,345	572	521	92	526	707	525	588	551	1,535	362	611	781
Koyukuk River subtotal	1,536	946	924	339	2,437	1,964	1,452	1,814	1,505	2,078	1,221	1,236	1,763
District 4 total (incl. Koyukuk R.)	7,412	7,382	6,788	7,260	18,055	15,191	15,936	13,274	10,034	9,573	5,944	9,379	12,802

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Community	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2008–2012 Average	2013–2017 Average
Tanana	17,478	19,595	14,984	21,728	20,465	31,546	14,131	19,627	21,261	21,952	16,731	18,850	21,703
Rampart/Stevens Village	1,643	1,770	3,441	1,251	467	940	6,700	186	4,500	0	1,417	1,714	2,465
Fairbanks (FNSB) [a]	659	229	822	1,696	793	1,160	1,406	2,454	2,143	3,075	2,077	840	2,048
Beaver	13	120	37	122	174	21	323	76	228	0	141	93	130
Fort Yukon/Birch Creek	14,252	2,829	6,006	7,188	12,659	16,453	8,025	6,257	7,728	4,523	3,487	8,587	8,597
Circle/Central	3,198	110	927	299	161	1,397	1,277	1,652	1,306	2,182	2,877	939	1,563
Eagle	15,269	10,941	15,008	17,455	18,731	18,871	17,450	17,185	15,765	19,126	16,539	15,481	17,679
Other District 5 [b]	3,183	71	120	208	443	121	222	229	17	12	175	805	120
District 5 subtotal	55,695	35,665	41,345	49,947	53,893	70,509	49,534	47,666	52,948	50,870	43,444	47,309	54,305
Venetie/Chalkyitsik	1,563	2,418	2,989	1,938	457	5,589	1,663	2,594	5,883	10,574	2,544	1,873	5,261
Teedriinjik/Draanjik R. subtotal	1,563	2,418	2,989	1,938	457	5,589	1,663	2,594	5,883	10,574	2,544	1,873	5,261
District 5 total [c]	57,258	38,083	44,334	51,885	54,350	76,098	51,197	50,260	58,831	61,444	45,988	49,182	59,566
Manley	2,490	4,126	2,696	2,333	2,164	1,539	2,579	1,697	414	809	3,645	2,762	1,408
Minto	28	0	70	1,500	2	593	472	140	40	18	–	320	253
Nenana/Healy	7,615	8,396	7,870	6,218	9,260	3,852	4,545	3,981	3,544	2,640	4,937	7,872	3,712
Fairbanks (FNSB) [d]	340	3,460	678	4,317	3,876	5,651	5,190	3,496	884	1,137	822	2,534	3,272
Other District 6 [e]	5,662	97	77	8	0	5	12	31	0	18	0	1,169	13
District 6 Tanana R. total	16,135	16,079	11,391	14,376	15,302	11,640	12,798	9,345	4,882	4,622	9,404	14,657	8,657
Upper Yukon River total	80,805	61,544	62,513	73,521	87,707	102,929	79,931	72,879	73,747	75,639	61,336	73,218	81,025
Yukon Area total [f]	89,357	66,119	68,645	80,202	99,309	113,393	92,529	86,600	84,617	86,139	69,207	80,726	92,656
Personal use (District 6) [g]	181	78	3,209	347	410	383	278	80	283	626	505	845	330
Yukon Area total with personal use	89,538	66,197	71,854	80,549	99,719	113,776	92,807	86,680	84,900	86,765	69,712	81,571	92,986

Note: Subsistence harvest data were estimated from postseason survey, returned permits and test fishery projects. En dash (–) indicates value could not be computed due confidentiality of the data.

[a] Harvests by subsistence permit holders who resided in Fairbanks North Star Borough (FNSB) and fished in District 5 near the Yukon River Bridge crossing.

[b] Other permit holders who fished in District 5 but did not reside in the communities listed.

[c] Included Teedriinjik (formerly Chandalar) and Draanjik (formerly Black) Rivers.

[d] Harvests by subsistence permit holders who resided in FNSB and fished in the Tanana River.

[e] Other permit holders who fished in District 6 but did not reside in the communities listed.

[f] Included Coastal District, historically Yukon River total (Lower River plus Upper River total) was used in assessing border passage objectives under the Yukon Salmon Agreement.

[g] Harvest from the personal use fishing area on the Tanana River near Fairbanks. Not included in communities or totals above.

Appendix B4.–Coho salmon subsistence harvest totals by fishing district and community of residence, and personal use harvest total for District 6, Yukon Area, 2008–2018.

Community	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2008–2012 Average	2013–2017 Average
Hooper Bay	66	24	45	0	7	73	118	95	121	218	119	28	125
Scammon Bay	50	222	79	55	86	214	86	79	234	206	746	98	164
Coastal District total	116	246	124	55	93	287	204	174	355	424	865	127	289
Nunam Iqua	24	71	73	23	18	83	153	229	58	20	184	42	109
Alakanuk	157	194	449	431	252	167	443	581	183	199	190	297	315
Emmonak	717	401	362	472	2,660	517	613	852	717	723	329	922	684
Kotlik	313	181	238	201	420	457	573	438	273	102	264	271	369
District 1 subtotal	1,211	847	1,122	1,127	3,350	1,224	1,782	2,100	1,231	1,044	967	1,531	1,476
Mountain Village	518	413	127	261	256	271	202	723	436	729	267	315	472
Pitkas Point	130	45	116	37	53	41	123	72	22	224	54	76	96
St. Mary’s	591	151	92	230	141	124	408	391	128	213	37	241	253
Pilot Station	268	203	189	145	329	136	568	305	136	91	121	227	247
Marshall	490	245	33	150	567	508	468	1511	409	139	112	297	607
District 2 subtotal	1,997	1,057	557	823	1,346	1,080	1,769	3,002	1,131	1,396	591	1,156	1,676
Russian Mission	372	96	300	0	319	152	124	154	6	483	123	217	184
Holy Cross	38	120	0	0	237	0	103	246	134	0	23	79	97
Shageluk	0	105	53	36	0	219	113	28	0	14	8	39	75
District 3 subtotal	410	321	353	36	556	371	340	428	140	497	154	335	355
Lower Yukon River total	3,618	2,225	2,032	1,986	5,252	2,675	3,891	5,530	2,502	2,937	1,712	3,023	3,507
Anvik	40	137	28	19	214	97	197	46	184	11	15	88	107
Grayling	25	318	132	119	26	34	403	212	35	0	0	124	137
Kaltag	45	40	0	258	928	306	514	18	53	3	34	254	179
Nulato	195	171	242	118	41	125	454	48	0	85	220	153	142
Koyukuk	84	198	254	137	62	3,267	50	416	1	6	22	147	748
Galena	558	2,353	549	1,013	276	170	718	654	201	136	216	950	376
Ruby	291	314	148	312	1,806	345	335	185	226	22	26	574	223
District 4 subtotal	1,238	3,531	1,353	1,976	3,353	4,344	2,671	1,579	700	263	533	2,290	1,911
Huslia/Hughes	100	412	289	83	165	360	282	310	93	171	1,020	210	243
Allakaket/Alatna/Bettles	152	43	88	13	38	236	109	52	33	92	27	67	104
Koyukuk River subtotal	252	455	377	96	203	596	391	362	126	263	1,047	277	348
District 4 total (incl. Koyukuk R.)	1,490	3,986	1,730	2,072	3,556	4,940	3,062	1,941	826	526	1,580	2,567	2,259

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Community	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2008–2012 Average	2013–2017 Average
Tanana	1,511	2,373	2,314	312	3,060	1,135	1,788	2,434	639	874	1,355	1,914	1,374
Rampart/Stevens Village	0	90	452	0	0	0	0	2	52	0	11	108	11
Fairbanks (FNSB) [a]	7	13	2	2	0	0	0	0	101	112	72	5	43
Beaver	6	0	1	0	2	0	2	0	0	0	0	2	0
Fort Yukon/Birch Creek	1,618	2	244	1,040	4	7	201	2	1	7	0	582	44
Circle/Central	0	13	164	0	5	150	0	0	38	0	0	36	38
Eagle	0	0	1	1	0	0	1	0	0	0	0	0	0
Other District 5 [b]	61	7	0	0	21	0	0	0	0	1	11	18	0
District 5 subtotal	3,203	2,498	3,178	1,355	3,092	1,292	1,992	2,438	831	994	1,449	2,665	1,509
Venetie/Chalkyitsik	0	0	426	34	0	6	38	24	30	18	0	92	23
Teedriinjik/Draanjik R. subtotal	0	0	426	34	0	6	38	24	30	18	0	92	23
District 5 total [c]	3,203	2,498	3,604	1,389	3,092	1,298	2,030	2,462	861	1,012	1,449	2,757	1,533
Manley	1,901	2,308	1,832	1,482	1,374	447	1,177	1,263	323	750	918	1,779	792
Minto	0	0	0	0	0	266	37	270	0	0	–	0	115
Nenana/Healy	3,880	4,166	3,511	4,248	6,664	1,962	3,002	3,359	2,970	1,392	1,622	4,494	2,537
Fairbanks (FNSB) [d]	230	577	212	1,109	1,502	2,576	3,689	3,108	978	362	121	726	2,143
Other District 6 [e]	2,417	0	0	3	0	6	6	0	0	11	0	484	5
District 6 Tanana R. total	8,428	7,051	5,555	6,842	9,540	5,257	7,911	8,000	4,271	2,515	2,661	7,483	5,591
Upper Yukon River total	13,121	13,535	10,889	10,303	16,188	11,495	13,003	12,403	5,958	4,053	5,690	12,807	9,382
Yukon Area total [f]	16,855	16,006	13,045	12,344	21,533	14,457	17,098	18,107	8,815	7,414	8,267	15,957	13,178
Personal use (District 6) [g]	50	70	1,062	232	100	109	174	145	266	200	131	303	179
Yukon Area total with personal use	16,905	16,076	14,107	12,576	21,633	14,566	17,272	18,252	9,081	7,614	8,398	16,259	13,357

Note: Subsistence harvest data were estimated from postseason survey, returned permits and test fishery projects. En dash (–) indicates value could not be computed due confidentiality of the data.

[a] Harvests by subsistence permit holders who resided in Fairbanks North Star Borough (FNSB) and fished in District 5 near the Yukon River Bridge crossing.

[b] Other permit holders who fished in District 5 but did not reside in the communities listed.

[c] Included Teedriinjik (formerly Chandalar) and Draanjik (formerly Black) Rivers.

[d] Harvests by subsistence permit holders who resided in FNSB and fished in the Tanana River.

[e] Other permit holders who fished in District 6 but did not reside in the communities listed.

[f] Harvest from the personal use fishing area on the Tanana River near Fairbanks. Not included in communities or totals above.

Appendix B5.–Estimated pink salmon subsistence harvest by residents of surveyed communities, with community and district totals, Yukon Area, 2008–2018.

Community	2008 [a]	2009 [a]	2010 [a]	2011 [a]	2012 [a]	2013	2014 [a]	2015	2016 [a]	2017 [a]	2018 [a]	Estimated total Even year average	Estimated total Odd year average	Estimated total All years average
Hooper Bay	1,013	957	219	210	1,101	302	712	451	4,007	315	635	1,410	447	929
Scammon Bay	2,766	1,186	2,245	1,888	1,343	507	1,923	1,414	2,490	988	2,427	2,153	1,197	1,675
Coastal District total	3,779	2,143	2,464	2,098	2,444	809	2,635	1,865	6,497	1,303	3,062	3,564	1,644	2,604
Nunam Iqua	757	61	306	8	1,051	0	670	352	352	484	377	627	181	404
Alakanuk	494	24	151	13	174	92	970	15	713	99	7	500	49	275
Emmonak	641	5	206	0	199	0	588	7	228	0	31	372	2	187
Kotlik	1,161	42	124	32	195	23	1,064	14	502	159	29	609	54	332
District 1 subtotal	3,053	132	787	53	1,619	115	3,292	388	1,795	742	444	2,109	286	1,198
Mountain Village [b]	500	6	217	24	207	0	233	57	93	152	92	250	48	149
Pitkas Point	15	0	143	0	2	2	45	288	48	0	122	51	58	54
St. Mary's	367	5	543	1	643	0	614	18	104	171	35	454	39	247
Pilot Station	117	4	125	34	23	131	27	0	8	5	0	60	35	47
Marshall	26	0	21	66	5	7	1	0	5	44	53	12	23	18
District 2 subtotal	1,025	15	1,049	125	880	140	920	363	258	372	302	826	203	515
Russian Mission	436	0	2	0	76	12	8	0	0	0	0	104	2	53
Holy Cross	20	0	0	0	0	0	0	0	2	1	0	4	0	2
Shageluk	0	9	0	9	24	0	3	0	9	1	0	7	4	6
District 3 subtotal	456	9	2	9	100	12	11	0	11	2	0	116	6	61
Lower Yukon total	4,534	156	1,838	187	2,599	267	4,223	751	2,064	1,116	746	3,052	495	1,774
Anvik	23	2	0	0	0	0	0	0	0	0	0	5	0	3
Grayling	200	0	0	40	0	0	39	0	33	0	16	54	8	31
Kaltag	383	0	0	0	0	0	0	0	73	0	0	91	0	46
Nulato	35	0	0	0	0	0	8	0	0	0	0	9	0	4
Koyukuk	67	0	0	0	0	0	0	0	0	0	0	13	0	7
Galena	31	0	0	0	3	0	6	16	11	8	0	10	5	8
Ruby	184	0	0	0	0	0	13	0	0	0	0	39	0	20
District 4 subtotal	923	2	0	40	3	0	66	16	117	8	16	222	13	118
Hughes/Huslia	100	0	0	0	101	0	0	0	0	5	20	40	1	21
Allakaket/Alatna/Bettles	0	0	0	0	0	0	0	0	0	0	5	0	0	0
Koyukuk River subtotal	100	0	0	0	101	0	0	0	0	5	25	40	1	21
District 4 total (incl. Koyukuk R.)	1,023	2	0	40	104	0	66	16	117	13	41	262	14	138

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Community	2008 [a]	2009 [a]	2010 [a]	2011 [a]	2012 [a]	2013	2014 [a]	2015	2016 [a]	2017 [a]	2018 [a]	Estimated total		
												Even year average	Odd year average	All years average
Tanana	80	0	0	0	3	0	8	13	34	0	0	25	3	14
Rampart/Stevens Village	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Beaver	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fort Yukon/Birch Creek	196	0	0	0	0	0	0	0	0	0	0	39	0	20
Venetie/Chalkyitsik	0	0	0	0	0	0	0	0	0	0	0	0	0	0
District 5 total	276	0	0	0	3	0	8	13	34	0	0	64	3	33
Survey totals	9,612	2,301	4,302	2,325	5,150	1,076	6,932	2,645	8,712	2,432	3,849	6,942	2,156	4,549
CI (95%)	1,818	1,184	1,209	918	918	918	1,356	612	2,064	748	1,299	1,473	876	1,175
Test fishery [b]	83	1	103	34	216	0	120	0	9	8	65	106	9	57

Note: CI (95%) is the annual 95% confidence interval.

[a] Included test fishery catch. Confidence intervals were calculated from subsistence estimates and did not include donations of test fishery catch to communities. Pink salmon harvested and distributed from test fishery projects were not always recorded, therefore this represents a minimum estimate.

[b] Number of test fishery catch added to community harvest estimates.

Appendix B6.–Subsistence harvests taken under authority of a permit in the Rampart Area and Yukon River Bridge Area of District 5, Yukon Area, 2008–2018.

Year	No. of permits issued	No. of permits returned	No. reporting harvest	Chinook	Summer chum	Fall chum	Coho	Whitefish	Sheefish	Burbot	Northern pike	Longnose sucker	Arctic grayling
Yukon River Rampart Village Area subsistence salmon fishery [a]													
2008	18	18	14	1,049	43	1,000	0	20	0	0	0	0	0
2009	25	24	20	1,404	159	1,070	4	147	0	0	10	0	8
2010	28	27	23	1,344	304	1,235	24	162	1	5	20	0	1
2011	29	29	24	1,586	429	768	1	76	1	0	11	0	0
2012	32	32	29	635	397	1,411	21	395	2	13	7	11	0
2013	23	23	18	474	579	300	0	27	2	0	0	0	5
2014	18	18	9	11	240	797	0	398	60	0	6	0	0
2015	17	17	8	73	104	629	2	66	36	3	4	0	0
2016	24	24	18	557	252	659	2	213	1	0	0	0	0
2017	23	23	19	1,015	155	650	0	85	1	0	1	0	0
2018	21	21	19	463	23	465	21	54	0	0	1	0	0
2008–2012 Avg.	26	26	22	1,204	266	1,097	10	160	1	4	10	2	2
2013–2017 Avg.	21	21	14	426	266	607	1	158	20	1	2	0	1
Yukon River Bridge Area subsistence fishery [b]													
2008	73	69	45	1,536	130	705	7	192	71	61	57	0	0
2009	68	66	37	1,248	28	996	106	60	9	37	60	0	0
2010	85	81	43	1,300	448	422	2	67	10	0	12	0	0
2011	74	73	43	1,552	1,139	1,828	1	315	5	12	36	20	1
2012	63	62	26	629	147	259	0	75	35	3	19	0	0
2013	47	47	21	359	1,020	1,055	0	56	5	4	16	0	0
2014	42	42	21	3	221	798	0	142	16	2	27	0	0
2015	39	39	16	158	466	2,212	0	281	85	5	51	0	0
2016	62	62	40	996	518	1,449	101	329	15	3	42	1	0
2017	63	62	46	2,392	1,605	1,803	113	565	83	15	50	0	0
2018	82	81	59	1,627	600	2,088	73	643	53	32	38	3	0
2008–2012 Avg.	68	70	39	1,253	378	842	23	142	26	23	37	4	0
2013–2017 Avg.	51	50	29	782	766	1,463	43	275	41	6	37	0	0

Note: Data may have been updated from previous annual reports.

[a] That portion of the Yukon River drainage from Garnett Island to Hess Creek.

[b] That portion of the Yukon River drainage from Hess Creek to Dall River.

Appendix B7.–Subsistence fish harvests taken under authority of a permit in the Circle-Eagle Area of District 5, Yukon Area, 2008–2018.

Year	No. of permits issued	No. of permits returned	No. reporting harvest	Chinook	Summer chum	Fall chum	Coho	Whitefish	Sheefish	Burbot	Northern pike	Longnose sucker	Arctic grayling
Upper Yukon River Circle-Eagle Area subsistence salmon fishery [a, b]													
2008	70	62	31	993	13	7,121	0	147	18	10	12	78	350
2009	45	43	21	760	2	4,069	0	180	30	1	1	62	224
2010	67	63	36	811	45	4,677	27	148	33	10	40	32	144
2011	60	59	31	768	51	5,374	0	180	42	3	56	108	348
2012	42	42	18	454	0	7,215	5	66	19	4	3	0	28
2013	30	27	16	198	66	7,652	150	130	22	3	7	1	70
2014	24	22	11	8	0	5,185	0	87	16	1	2	0	2
2015	30	29	17	220	0	6,338	0	69	11	4	19	0	31
2016	36	36	25	520	0	4,108	38	71	5	3	7	0	3
2017	31	31	26	1,117	0	7,832	0	126	19	4	1	4	17
2018[b]	61	61	23	967	0	7,824	0	115	15	5	0	0	17
2008–2012 Avg.	57	54	27	757	22	5,691	6	144	28	6	22	56	219
2013–2017 Avg.	30	29	19	413	13	6,223	38	97	15	3	7	1	25
Subsistence salmon fishery above mainstem Yukon River sonar project near Eagle [c]													
2008	26	25	18	815	6	11,755	0	51	16	0	4	0	18
2009	28	28	13	382	0	6,995	0	128	7	8	3	1	15
2010	26	26	21	604	3	11,429	1	106	25	7	1	8	12
2011	28	28	19	413	0	12,477	1	127	22	2	15	12	1
2012	26	24	12	91	0	11,681	0	166	44	1	2	7	16
2013	21	20	15	152	50	12,642	0	64	8	2	0	13	7
2014	15	15	11	55	0	13,575	1	102	109	2	2	2	47
2015	19	19	13	341	0	12,540	0	67	11	2	2	7	33
2016	23	23	17	762	0	13,015	0	53	32	3	3	8	33
2017	38	38	28	1,498	0	14,110	0	91	11	0	1	2	25
2018[d]	–	–	23	602	0	11,715	0	86	22	1	3	2	20
2008–2012 Avg.	–	–	17	461	2	10,867	0	116	23	4	5	6	12
2013–2017 Avg.	–	–	17	562	10	13,176	0	75	34	2	2	6	29

Note: Lower table is used to show harvest above mainstem Yukon sonar project operated near Eagle for run reconstruction. Data may have been updated from previous annual reports. The number of permits included multiple permits issued to households that fished both above and below the sonar site. En dash (–) indicates value could not be computed due to limitations of the data (the values are not comparable to prior years data, due to changes in permits reporting by location).

[a] That portion of the Yukon River drainage from Twenty-Two Mile Slough, located downstream of Circle, to the mainstem Yukon sonar project near Eagle.

[b] The number of permits issued and returned included households that did not fish or had no fishing location.

[c] Harvest occurred between the Yukon River mainstem sonar site located downstream from the community of Eagle and the U.S./Canada border.

[d] Beginning in 2018, SE permits were combined into 1 permit with 2 fishing locations: (1) Upstream of Eagle sonar, and (2) Downstream of Eagle sonar. Number of permits, returned and fished are those permits that fished upstream of Eagle sonar.

Appendix B8.–Harvest from permits in Subdistrict 6-A of the Tanana River and the Kantishna River, Yukon Area, 2008–2018.

Year	No. of permits issued	No. of permits returned	No. reporting harvest	Chinook	Summer chum	Fall chum	Coho	Whitefish	Sheefish	Burbot	Northern pike	Longnose sucker	Arctic grayling
Subdistrict 6-A subsistence salmon fishery [a]													
2008	34	32	15	115	146	2,583	1,987	96	1	1	71	0	0
2009	24	23	15	543	422	4,213	2,369	105	5	2	9	0	0
2010	22	22	11	360	106	3,094	1,963	69	6	0	3	0	0
2011	24	24	16	330	98	4,565	1,435	236	4	6	5	0	0
2012	23	22	11	228	58	2,166	1,374	77	2	14	5	0	2
2013	19	19	11	218	88	1,478	421	18	2	1	6	0	0
2014	22	22	16	104	179	3,450	1,420	100	3	1	1	0	0
2015	17	17	8	136	9	1,656	1,151	12	2	0	3	0	0
2016	17	16	10	264	36	593	486	24	0	0	1	0	0
2017	13	13	8	105	34	865	784	8	0	0	10	0	0
2018	24	23	12	210	78	3,872	1,076	131	1	4	2	0	0
2008–2012 Avg.	25	25	14	315	166	3,324	1,826	117	4	5	19	0	0
2013–2017 Avg.	18	17	11	165	69	1,608	852	32	1	0	4	0	0
Kantishna River subsistence fishery [b]													
2008	–	–	–	0	0	95	15	0	0	0	10	0	0
2009	–	–	–	0	0	436	311	57	0	32	21	71	0
2010	–	–	–	1	0	82	23	3	0	3	28	0	0
2011	6	6	3	1	49	698	105	28	1	9	33	28	0
2012	–	–	–	0	0	285	51	2	0	1	4	1	0
2013	–	–	–	0	0	314	144	13	0	0	0	0	0
2014	5	5	3	0	0	70	129	10	0	0	6	0	0
2015	–	–	–	0	0	127	11	0	0	1	2	3	1
2016	–	–	–	0	0	115	67	20	0	2	5	0	1
2017	–	–	–	0	0	20	3	0	0	0	0	0	0
2018	8	8	1	0	0	0	0	0	0	0	0	0	0
2008–2012 Avg.	4	4	3	0	10	319	101	18	0	9	19	20	0
2013–2017 Avg.	3	3	2	0	0	129	71	9	0	1	3	1	0

Note: En dash (–) indicates value could not be computed due confidentiality of the data. Data may have been updated from previous annual reports.

[a] Portion of the Tanana River drainage from Yukon River confluence to the upstream edge of Kantishna River confluence.

[b] Kantishna River drainage upstream of Tanana River confluence.

Appendix B9.–Harvest from permits in Subdistrict 6-B and the Tolovana River drainage, Yukon Area, 2008–2018.

Year	No. of permits issued	No. of permits returned	No. reporting harvest	Chinook	Summer chum	Fall chum	Coho	Whitefish	Sheefish	Burbot	Northern pike	Longnose sucker	Arctic grayling
Subdistrict 6-B subsistence salmon fishery [a]													
2008	73	71	35	486	854	7,815	4,009	403	0	4	121	21	11
2009	69	68	37	730	830	9,112	4,064	1,073	10	33	25	21	0
2010	93	86	34	593	336	7,625	3,429	543	46	6	18	34	1
2011	86	83	42	684	678	7,463	4,584	641	27	13	4	12	1
2012	85	79	39	375	436	10,428	6,674	550	37	16	62	44	12
2013	92	87	37	148	1,006	9,573	4,583	1,026	7	28	10	11	2
2014	81	78	38	168	533	8,381	5,977	1,241	8	15	64	28	16
2015	71	71	30	220	225	7,457	6,652	880	17	6	28	13	0
2016	66	62	25	372	60	2,992	2,495	586	16	3	18	8	0
2017	69	68	35	552	700	3,524	1,727	353	8	7	47	7	0
2018	83	81	31	283	228	5,361	1,585	417	5	2	0	0	0
2008–2012 Avg.	81	77	37	574	627	8,489	4,552	642	24	14	46	26	5
2013–2017 Avg.	76	73	33	292	505	6,385	4,287	817	11	12	33	13	4
Tolovana River drainage subsistence fishery [b]													
2008	147	138	79	0	0	0	0	273	4	3	1,363	1	47
2009	113	108	48	0	1	0	0	202	14	6	563	0	0
2010	96	91	36	0	0	0	0	181	39	0	125	9	0
2011	70	70	29	0	0	0	0	36	0	70	110	0	0
2012	73	68	35	0	0	2	0	130	8	6	525	0	0
2013	77	74	42	0	0	60	42	15	1	3	231	9	0
2014	106	105	57	0	0	1	0	3	0	0	478	1	0
2015	120	119	66	0	0	0	0	48	2	0	765	0	0
2016	201	196	129	0	0	0	0	10	0	1	1,020	0	0
2017	93	93	41	0	0	0	0	133	5	0	137	0	0
2018	175	175	103	0	0	0	0	14	3	0	1,040	0	0
2008–2012 Avg.	100	95	45	0	0	0	0	164	13	17	537	2	9
2013–2017 Avg.	119	117	67	0	0	12	8	42	2	1	526	2	0

Note: Data may have been updated from previous annual reports.

[a] Portion of the Tanana River drainage from the mouth of the Kantishna River upstream to the mouth of the Wood River, including the Wood River drainage.

[b] Included the Tolovana River drainage outside of the Fairbanks Nonsubsistence Area.

Appendix B10.–Harvest from permits in the upper Tanana River drainage and Koyukuk River, Yukon Area, Yukon Area, 2008–2018.

Year	No. of permits issued	No. of permits returned	No. reporting harvest	Chinook	Summer chum	Fall chum	Coho	Whitefish	Sheefish	Burbot	Northern pike	Longnose sucker	Arctic grayling
Upper Tanana River drainage subsistence fishery [a]													
2008	58	50	19	0	0	17	6	2,185	0	10	62	27	35
2009	42	40	17	0	0	84	0	2,035	0	0	44	35	98
2010	41	36	21	10	0	12	0	1,777	0	11	13	21	38
2011	41	40	24	0	0	0	0	3,181	0	24	58	78	79
2012	58	49	21	0	0	0	0	2,522	0	10	199	97	31
2013	52	46	15	0	0	0	0	1,314	0	20	130	170	98
2014	15	15	10	0	0	0	0	1,510	0	3	62	62	0
2015	38	38	14	0	0	33	1	2,064	1	2	16	12	33
2016	24	24	16	0	0	1	0	1,980	0	28	87	15	0
2017	22	22	7	0	0	10	1	899	0	5	30	1	0
2018	23	23	11	0	0	0	0	1,014	0	25	72	31	19
2008–2012 Avg.	48	43	20	2	0	23	1	2,340	0	11	75	52	56
2013–2017 Avg.	30	29	12	0	0	9	0	1,553	0	12	65	52	26
South and Middle Forks of the Koyukuk River subsistence fishery permit area [b]													
2008	1	1	1	0	0	0	0	10	0	0	0	15	27
2009	1	1	1	0	0	0	0	4	0	0	0	13	18
2010	1	1	1	0	0	0	0	8	0	0	0	0	0
2011	1	1	1	0	0	0	0	25	0	0	1	20	45
2012	1	1	1	0	0	0	0	11	0	0	1	3	15
2013	1	1	1	0	0	0	0	8	0	6	0	25	25
2014	1	1	1	0	0	0	0	9	0	3	0	8	18
2015	1	1	1	0	0	0	0	9	0	3	0	8	18
2016	1	1	1	0	0	0	0	4	0	0	0	0	32
2017	1	1	1	0	0	0	0	5	0	0	0	1	19
2018	1	1	1	0	0	0	0	10	0	0	0	10	20
2008–2012 Avg.	1	1	1	0	0	0	0	12	0	0	0	10	21
2013–2017 Avg.	1	1	1	0	0	0	0	7	0	2	0	8	22

Note: Data may have been updated from previous annual reports.

[a] That portion of the Tanana River drainage from the mouth of the Volkmar River, including the Volkmar River drainage, and the mouth of the Johnson River, including the Johnson River drainage, upstream to the Tanana River drainage headwaters.

[b] That portion of the South Fork of the Koyukuk River drainage upstream from the mouth of the Jim River and the Middle Fork of the Koyukuk River drainage upstream from the mouth of the North Fork River. A waiver is on file to report the harvest of less than 3 participants in the fishery.

Appendix B11.–Harvest from personal use permit areas in the Tanana River drainage, Yukon Area, 2008–2018.

Year	No. of permits issued	No. of permits returned	No. reporting harvest	Chinook	Summer chum	Fall chum	Coho	Whitefish	Sheefish	Burbot	Northern pike	Longnose sucker	Arctic grayling
Subdistrict 6-C personal use salmon fishery [a]													
2008	51	50	23	126	138	181	50	13	2	0	2	0	0
2009	57	57	23	127	308	71	65	2	1	0	0	1	0
2010	67	67	39	162	319	3,208	1,062	192	0	3	6	9	5
2011	67	65	34	98	439	354	249	20	1	1	0	0	0
2012	60	59	29	71	321	410	100	3	0	0	0	0	0
2013	53	52	27	42	138	363	124	24	1	0	0	0	3
2014	50	50	23	1	235	278	174	39	3	0	0	0	0
2015	42	42	15	5	220	80	145	26	1	0	1	1	0
2016	57	57	29	57	176	273	265	12	1	0	3	0	0
2017	82	82	40	125	438	626	200	6	1	1	4	1	0
2018	99	99	57	206	515	505	131	7	0	0	0	0	1
2008–2012 Avg.	60	60	30	117	305	845	305	46	1	1	2	2	1
2013–2017 Avg.	57	57	27	46	241	324	182	21	1	0	2	0	1
Upper Tanana River personal use whitefish/sucker fishery [b]													
2008	6	6	4	0	0	0	0	28	0	0	0	157	0
2009	11	11	6	0	0	7	5	46	0	0	0	314	0
2010	8	6	3	0	0	1	0	14	1	0	1	57	0
2011	7	7	5	0	0	0	0	42	0	0	0	142	0
2012	12	11	3	0	0	0	0	19	0	0	0	233	0
2013	14	14	7	0	0	20	8	65	0	1	3	118	0
2014	21	21	10	0	0	0	0	106	0	0	0	270	0
2015	22	22	12	0	0	0	0	254	0	0	0	322	1
2016	21	21	10	0	0	10	1	259	0	0	4	181	6
2017	14	14	9	0	0	0	0	111	0	0	0	164	0
2018	16	16	9	0	0	0	0	93	0	0	0	113	0
2008–2012 Avg.	9	8	4	0	0	2	1	30	0	0	0	181	0
2013–2017 Avg.	18	18	10	0	0	6	2	159	0	0	1	211	1

Note: Data may have been updated from previous annual reports.

[a] Portion of the Tanana River drainage from the upstream edge of the mouth of the Wood River, not including the Wood River drainage, to the upstream edge of the mouth of the Salcha River, including the Salcha River drainage.

[b] Portion of the Tanana River drainage from the upstream edge of the mouth of the Wood River, not including the Wood River drainage, to the mouth of the Volkmar River on the north bank of the Tanana River and upstream to the Johnson River on the south bank of the Tanana River. This permit is issued for harvesting whitefish species and longnose suckers and requires the release of live non-target species and reporting incidental fish retained.

Appendix B12.–Households with dogs, number of dogs, and salmon fed to dogs, as estimated in surveyed communities, or reported in permit areas, Yukon Area, 2008–2018.

Year	Number of households with dogs	Number of dogs	Salmon fed to dogs			
			Summer chum	Fall chum	Coho	Total [a]
2008	1,726	5,279	14,367	38,588	3,132	80,535
2009	1,495	4,220	17,090	23,549	4,296	66,837
2010	1,752	5,064	8,363	23,779	3,089	60,949
2011	1,727	5,353	17,265	33,662	2,421	84,247
2012	1,655	6,171	28,054	37,302	2,572	98,898
2013	1,770	5,007	18,890	51,427	4,257	99,447
2014	1,759	5,388	5,105	28,218	1,946	66,688
2015	1,795	5,175	7,848	24,184	3,654	64,945
2016	2,058	5,371	9,241	36,286	1,027	65,575
2017	1,965	5,615	18,071	32,162	1,241	75,513
2018	1,918	5,318	12,095	24,500	2,217	60,130
2008–2012 Avg.	1,671	5,217	17,028	31,376	3,102	78,293
2013–2017 Avg.	1,869	5,311	11,831	34,455	2,425	74,434

Note: The estimated number of salmon included those retained from subsistence and commercial related harvests. Duplicate permit household information removed. Typically Districts 4–6 harvest ~98 % of total salmon fed to dogs.

[a] Total did not add to sum of salmon fed to dogs by species; permit areas only report combined salmon species (summer and fall chum and coho salmon) fed to dogs.

Appendix B13.–Estimated and reported subsistence and personal use harvest of miscellaneous fish species, Yukon Area, 2008–2018.

Reporting groups	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2008–2012 Average	2013–2017 Average
Survey estimates [a]													
Northern pike	16,053	8,061	14,086	14,270	18,450	11,264	14,852	20,109	24,580	22,060	20,776	14,184	18,573
Sheefish	10,154	7,861	9,231	10,139	17,094	15,553	12,583	12,828	14,451	12,768	11,728	10,896	13,637
Whitefish [b]	54,729	51,778	50,232	44,890	70,486	64,766	84,889	79,740	69,578	64,202	57,780	54,423	72,635
Survey reported [c]													
Alaska blackfish	110,356	47,320	68,873	87,064	62,731	63,235	92,080	97,586	90,207	109,888	61,896	75,269	90,599
Arctic grayling	857	667	1,571	1,273	2,674	1,435	1,772	1,832	1,518	1,572	1,833	1,408	1,626
Arctic lamprey [d]	803	9,083	13,611	10,574	1,657	2,608	19,888	42,237	17,609	19,357	1,027	7,146	20,340
Burbot	3,273	2,027	2,743	2,477	2,422	2,115	2,016	3,364	2,501	2,811	2,975	2,588	2,561
Herring [e]	–	–	–	–	10,449	9,082	17,164	24,591	15,959	16,508	28,907	10,449	16,661
Tomcod	6,391	2,709	3,978	6,797	4,023	5,221	10,020	4,697	5,795	6,741	5,243	4,780	6,495
Permit reported													
Arctic grayling	488	363	201	475	104	210	83	131	62	49	62	326	107
Burbot	89	119	45	140	68	68	27	23	43	32	69	92	39
Longnose suckers	298	518	170	420	396	347	371	358	214	179	36	360	294
Northern pike	1,678	736	267	329	827	403	648	891	1,190	281	1,156	767	683
Sheefish	111	76	160	103	147	48	215	166	70	128	99	119	125
Whitefish [b]	3,403	4,039	3,112	4,907	4,016	2,766	3,747	3,771	3,562	2,380	2,451	3,895	3,245
Total harvest of species from survey and permits													
Arctic grayling	1,345	1,030	1,772	1,748	2,778	1,645	1,855	1,963	1,580	1,621	1,895	1,878	1,733
Burbot	3,362	2,146	2,788	2,617	2,490	2,183	2,043	3,387	2,544	2,843	3,044	3,171	2,600
Northern pike	17,731	8,797	14,353	14,599	19,277	11,667	15,500	21,000	25,770	22,341	21,932	18,848	19,256
Sheefish	10,265	7,937	9,391	10,242	17,241	15,601	12,798	12,994	14,521	12,896	11,827	11,598	13,762
Whitefish [b]	58,132	55,817	53,344	49,797	74,502	67,532	88,636	83,511	73,140	66,582	60,231	60,512	75,880
Total	90,835	75,727	81,648	79,003	116,288	98,628	120,832	122,855	117,555	106,283	98,929	88,700	113,231

Note: En dashes mean no data.

[a] Subsistence harvests of northern pike, sheefish, and whitefish from surveyed communities were estimated using methods developed for salmon harvest estimates.

[b] Included various Coregonus species and round whitefish (*Prosopium cylindraceum*). Categories of large (greater than 4 pounds) and small (less than 4 pounds) whitefish were combined. See individual annual reports for the breakdown of large and small whitefish.

[c] Total number of each species reported by households in surveyed communities. Harvest totals for these species are not estimated.

[d] Harvest of Arctic lamprey reported in each year occurred from October-December of the previous year. Harvests from 2009 to 2015 included Arctic lamprey reported on postcards. Household surveys were compared to avoid double counting.

[e] Households in the Coastal District and District 1 were asked about their herring harvest starting in 2012. Reports of smelt were included in herring harvest.

Appendix B14.–Estimated number of Chinook salmon harvested and 95% confidence interval (CI) by gear type in surveyed communities, Yukon Area, 2018.

	Gillnet mesh size (inches)													
	≤4.0		6.0		7.5		Fish wheel		Dip net		Beach seine		Other gear	
Community	Est	CI	Est	CI	Est	CI	Est	CI	Est	CI	Est	CI	Est	CI
Hooper Bay	2	0	270	94	184	48	0	0	0	0	0	0	0	0
Scammon Bay	0	0	634	196	0	0	0	0	32	4	0	0	0	0
Coastal District total	2	0	904	215	184	47	0	0	32	4	0	0	0	0
Nunam Iqua	0	0	78	26	0	0	0	0	0	0	0	0	0	0
Alakanuk	0	0	303	110	29	5	0	0	38	34	0	0	0	0
Emmonak	0	0	508	120	70	13	0	0	7	1	0	0	0	0
Kotlik	0	0	1,275	287	0	0	0	0	0	0	0	0	0	0
District 1 total	0	0	2,164	326	99	14	0	0	45	34	0	0	0	0
Mountain Village	0	0	895	268	123	17	0	0	0	0	0	0	0	0
Pitkas Point	0	0	208	35	157	42	0	0	0	0	0	0	0	0
St. Mary's	0	0	741	187	393	66	0	0	0	0	0	0	0	0
Pilot Station	0	0	307	38	186	18	0	0	0	0	0	0	0	0
Marshall	0	0	356	79	554	298	0	0	4	1	0	0	0	0
District 2 total	0	0	2,507	336	1,413	302	0	0	4	1	0	0	0	0
Russian Mission	0	0	229	55	814	208	0	0	0	0	0	0	0	0
Holy Cross	0	0	56	21	524	116	0	0	0	0	0	0	0	0
Shageluk	0	0	144	83	37	0	0	0	0	0	0	0	0	0
District 3 total	0	0	429	98	1,375	233	0	0	0	0	0	0	0	0
Anvik	0	0	195	35	371	36	0	0	0	0	0	0	0	0
Grayling	0	0	562	142	326	71	0	0	0	0	0	0	0	0
Kaltag	0	0	99	18	471	244	0	0	0	0	0	0	0	0
Nulato	0	0	524	52	737	60	0	0	0	0	0	0	0	0
Koyukuk	0	0	323	134	536	207	0	0	0	0	0	0	0	0
Galena	0	0	290	102	972	370	0	0	0	0	0	0	0	0
Ruby	0	0	487	171	559	510	80	0	0	0	0	0	0	0
Huslia/Hughes	0	0	30	6	140	98	0	0	0	0	0	0	0	0
Allakaket/Alatna/Bettles	0	0	23	1	25	22	0	0	0	0	0	0	0	0
District 4 total	0	0	2,533	273	4,137	690	80	0	0	0	0	0	0	0
Tanana	4	3	797	274	3,705	2,392	602	255	0	0	0	0	0	0
Stevens Village	0	0	86	62	24	0	0	0	0	0	0	0	0	0
Beaver	0	0	173	27	6	3	154	49	0	0	0	0	0	0
Fort Yukon/Birch Creek	0	0	768	441	17	6	3,919	1,328	0	0	0	0	0	0
Venetie/Chalkyitsik	0	0	129	98	138	98	177	154	0	0	0	0	0	0
District 5 total	4	3	1,952	526	3,890	2,348	4,852	1,349	0	0	0	0	0	0
Survey total	6	3	10,490	788	11,097	2,465	4,932	1,342	81	34	0	0	0	0

Note: Estimates (Est) include only those fish harvested for subsistence purposes in surveyed communities and do not include fish retained from commercial, test fishery catch donations, or harvests from permit areas.

Appendix B15.–Estimated number of summer chum salmon harvested and 95% confidence intervals (CI) by gear type in surveyed communities, Yukon Area, 2018.

	Gillnet mesh size (inches)													
	≤4.0		6.0		7.5		Fish wheel		Dip net		Beach seine		Other gear	
Community	Est	CI	Est	CI	Est	CI	Est	CI	Est	CI	Est	CI	Est	CI
Hooper Bay	456	421	7,279	1,659	611	53	0	0	0	0	0	0	0	0
Scammon Bay	0	0	6,696	1,564	0	0	0	0	153	9	0	0	0	0
Coastal District total	456	420	13,976	2,259	611	53	0	0	153	9	0	0	0	0
Nunam Iqua	0	0	1,542	430	0	0	0	0	7	7	0	0	0	0
Alakanuk	0	0	4,978	1,656	0	0	0	0	187	158	0	0	0	0
Emmonak	0	0	5,024	1,241	0	0	0	0	0	0	0	0	0	0
Kotlik	0	0	6,552	1,447	0	0	0	0	0	0	0	0	0	0
District 1 total	0	0	18,096	2,526	0	0	0	0	193	156	0	0	0	0
Mountain Village	0	0	5,274	1,115	95	11	0	0	45	5	0	0	0	0
Pitkas Point	26	18	1,364	202	0	0	0	0	0	0	0	0	0	0
St. Mary's	0	0	4,406	1,106	0	0	0	0	53	21	0	0	0	0
Pilot Station	0	0	3,119	302	12	4	0	0	4	0	0	0	0	0
Marshall	0	0	3,274	1,138	0	0	0	0	37	6	0	0	0	0
District 2 total	26	17	17,437	1,940	107	12	0	0	139	22	0	0	0	0
Russian Mission	0	0	2,245	810	0	0	0	0	0	0	0	0	0	0
Holy Cross	0	0	115	39	191	52	0	0	0	0	0	0	0	0
Shageluk	0	0	450	108	45	0	0	0	0	0	0	0	0	0
District 3 total	0	0	2,811	797	236	51	0	0	0	0	0	0	0	0
Anvik	0	0	355	22	82	8	0	0	0	0	0	0	0	0
Grayling	0	0	768	314	11	4	0	0	0	0	0	0	0	0
Kaltag	0	0	6	0	19	6	0	0	0	0	0	0	0	0
Nulato	0	0	148	54	93	19	0	0	0	0	0	0	0	0
Koyukuk	0	0	150	135	0	0	0	0	0	0	0	0	0	0
Galena	0	0	157	68	192	158	0	0	0	0	0	0	0	0
Ruby	0	0	686	1,113	84	11	200	0	0	0	0	0	0	0
Huslia/Hughes	0	0	2,000	339	2,723	1,957	0	0	0	0	0	0	0	0
Allakaket/Alatna/Bettles	0	0	2,361	97	2,484	3,110	0	0	0	0	0	0	0	0
District 4 total	0	0	6,632	1,159	5,688	3,599	200	0	0	0	0	0	0	0
Tanana	32	17	1,195	847	1,056	420	450	234	0	0	0	0	0	0
Stevens Village	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Beaver	0	0	8	4	0	0	0	0	0	0	0	0	0	0
Fort Yukon/Birch Creek	0	0	44	77	0	0	0	0	0	0	0	0	0	0
Venetie/Chalkyitsik	0	0	114	186	0	0	0	0	0	0	0	0	0	0
District 5 total	32	16	1,362	854	1,056	412	450	230	0	0	0	0	0	0
Survey total	514	418	60,313	4,217	7,698	3,614	650	229	486	158	0	0	0	0

Note: Estimates include only those fish harvested for subsistence purposes in surveyed communities and do not include fish retained from commercial, test fishery catch donations, or harvests from permit areas.