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Subsistence and Personal Use Salmon Harvests in the Alaska Portion of the Yukon River Drainage, 2019

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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ABSTRACT

This annual report contains estimates of subsistence and personal use salmon and nonsalmon fish 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 2019, a total of 1,462 households were surveyed in 33 communities. Data from surveyed households were expanded to estimate the total harvest, including that of unsurveyed households. In road accessible portions of the Yukon Area, fishery participants were required to document their harvest on a subsistence or personal use permit. In 2019, a total of 718 subsistence and personal use permits were issued, of which 97% were returned. Of these returned permits, 51% reported fishing. The total subsistence and personal use harvest throughout the Yukon Area was estimated to be 48,621 Chinook (*Oncorhynchus tshawytscha*), 63,590 summer chum (*O. keta*), 64,142 fall chum (*O. keta*), and 5,886 coho (*O. kisutch*) salmon. The primary fishing gear types used were drift gillnets (48%), set gillnets (45%), fish wheels (5%), and dip nets and other gear types (2%). Approximately 1,870 households owned 4,906 dogs, and 238 households fed an estimated 50,798 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 subsistence salmon harvest was used with commercial, sport, and personal use harvests and escapement estimates (U.S. and Canada) to calculate total run size (JTC 2020). 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 (*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 enter in 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 portion 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, including resident and anadromous species, are also present in the Yukon River. Some of those 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 2019 State of Alaska census indicated the population of the rural Yukon Area was approximately 22,129 people (Howell 2020). This included the Denali Borough, Southeast Fairbanks, Yukon–Koyukuk, and Kusilvak census areas. The average rural population in the Yukon Area in 2019 was 1% lower than the 2010–2015 average of approximately 22,377 people (Howell 2020).

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, but salmon harvested for dogs are typically dried or cribbed (i.e., whole fish air-frozen and stacked).

Subsistence and personal use fishery participants in the Yukon Area have primarily used drift gillnets, set gillnets, and fish wheels to harvest salmon. Set gillnets have been used to harvest salmon throughout the Yukon Area. In contrast, 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). Alaska regulations in place during the 2019 season (Alaska Administrative Code (AAC): 5 AAC 01.220 and 5 AAC 77.717 Lawful Gear) were based on traditional practices. Although fish wheels were a legal gear type for subsistence fishing throughout the drainage, they were essentially used only in the upper portion of the Yukon River drainage, where the availability of wood, river conditions, and fishing locations was 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 primary 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). Fishery 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 to all Alaska residents in nonsubsistence areas 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. In some parts of the Yukon Area, commercial fishing occurs alongside subsistence fishing, and many local fishery users 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 portion of the Yukon River; 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 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 2019 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 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 2019 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) and includes 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 low historic salmon harvests. In this report, the Yukon Area includes Districts 1–6 and the Coastal District.

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 by subsistence and personal use fishery participants 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 2019, the communities of Bettles, Birch Creek, Chalkyitsik, and Stevens Village were interviewed by

phone. Additionally, Rampart was visited to assess whether permits captured the subsistence harvest.

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., updated names, addresses, phone numbers, etc.): cooperation with other agencies (U.S. Fish and Wildlife Service), other divisions (ADF&G 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 2019 household lists for each community were updated based on information collected in 2018.

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. When 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 2014–2018 fishing seasons. As a result, 2019 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 2014–2018 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 the 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 before 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, then these fish were allocated to Q16–17 as dog food, even if the harvest was not originally intended as dog food. In 2019, Q17 was reduced to ask the number of whole salmon, by species, fed to dogs from all fisheries. 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 and 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 agency test fishery projects helped clarify that these fish were received but not harvested by the subsistence fishery participants themselves.

Additional demographic and clarifying questions were asked, including the number of people in the household (Q2), the number of dogs (Q15), and the harvest of nonsalmon species throughout the previous 12 months (Q14). For example, broad whitefish harvested from September 2018 to September 2019 were reported by households during the survey interviews that occurred during September 2019. Reports of amounts of fish harvested in response to the herring question were entered as herring; however, this category probably includes 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 those surveyed 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 keychain) for participating.

Community residents were employed as subsistence assistants by the Yukon River Drainage Fisheries Association (YRDFA) to assist with reviewing and updating the household list and community maps and to guide 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 households reported amounts 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.

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 a community (k); and
N_k = the total number of households in the 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), the 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:

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

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

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

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

$$\hat{Y} = \sum_{k=1}^{5} \hat{Y}_k \ . \tag{5}$$

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

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

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.

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

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

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

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 $\hat{p}_{jkm(s)}$ estimated using 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:

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

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

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

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:

$$95\%\mathrm{CI}_k = t_{(0.025,df=n_k-1)} \cdot \sqrt{\hat{V}(\hat{Y}_{km})}\,,$$
$$\text{where} \quad \hat{V}(\hat{Y}_{km}) = \sum_{j=1}^{5} N_{jk}^2 V(\bar{y}_{jkm})\,. \tag{13}$$

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

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

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

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

Unexpanded Totals

Harvests of Alaska blackfish, Arctic char, Arctic grayling, Arctic lamprey, burbot, Pacific herring, tomcod or saffron cod, and roe on kelp reported on surveys were not expanded because of limited harvest information and project design.

Confidentiality

Harvest from the communities Huslia and Hughes; Allakaket, Alatna, and Bettles; Rampart and Stevens Village; Fort Yukon and Birch Creek; and Circle and Central were combined in part due to the confidentiality of the smaller communities. These communities were combined according to proximity and similar fishing locations. Combined harvests and confidence intervals were calculated using the equations outlined above.

PERMIT PROGRAM

Subsistence and personal use permits were issued at the ADF&G offices in Fairbanks, Delta Junction, Tok, or online. For residents of communities outside the Fairbanks area, subsistence permit applications were mailed with a postage-paid return envelope to all fishery participants who returned their permits from the previous year. No trips to issue permits were conducted in the spring of 2019. Permits were also issued by ADF&G staff stationed at the sonar project near the community of Eagle. Permits were available online through the ADF&G website beginning in 2018.

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 of October 15 for salmon, and December 31 for nonsalmon permits and 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 up to 3 times. After permits were received, follow-up phone calls were made to clarify harvest, gear types, and harvest locations 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.

The 2 separate permits for the upper portion of Subdistrict 5-D were combined in 2018 for online permits; however, fishery participants were required to record the 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 2020). Similarly, permits for the northern pike fishery in the Tolovana River drainage required a fishing location requirement to designate fishing inside or outside of the Chatanika Harvest Area (5 AAC 01.224.(b)(2)(G)).

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.

RESULTS

OVERALL ESTIMATION OF SALMON HARVEST

An estimated total of 48,621 Chinook, 63,590 summer chum, 64,142 fall chum, and 5,886 coho salmon were harvested for subsistence and personal use by 1,498 households in the Yukon Area (Table 1). These totals include salmon provided by test fishery projects to households for subsistence use consisting of 1,909 Chinook, 5,237 summer chum, 3,160 fall chum, and 546 coho salmon (Appendix A3). Chinook salmon accounted for 27% of the total subsistence salmon harvest (excluding pink and sockeye salmon). Summer chum accounted for 35% of the total, fall chum 35%, and coho salmon 3% (Table 1, Figure 6).

The subsistence fishery accounted for 99% of the total salmon harvest, and 1% was taken in the personal use fishery. An estimated 181,225 fish were caught in the subsistence fisheries alone, consisting of 48,377 Chinook, 63,296 summer chum, 63,734 fall chum, and 5,818 coho salmon (Table 1, Figure 6, and Appendices B1–B4). The number of salmon harvested in nonsubsistence personal use fisheries was 1,014, consisting of 244 Chinook, 294 summer chum, 408 fall chum, and 68 coho salmon (Table 1, Appendix B11).

OVERALL GEAR USAGE

Primary gear types used to harvest all salmon species consisted of 717 drift gillnets (48%), 677 set gillnets (45%), 79 fish wheels (5%), and 23 other gears (2%), including dip nets, beach seines, or hook and line (Table 1). Within the subset of surveyed communities, an estimated 18,541 (46%) subsistence-caught Chinook salmon were harvested by 6-inch gillnets, 15,625 (38%) by 7.5-inch gillnets, 6,137 (15%) by fish wheels, 255 (<1%) by dip nets or other gear, and 113 (<1%) by 4-inch gillnets, not including commercial and test fishery donations (Appendix A4). Within the subset of surveyed communities, 50,997 (89%) of subsistence-caught summer chum salmon were caught by 6-inch gillnets, 5,218 (9%) were harvested by 7.5-inch gillnets, 569 (1%) by fish wheels, 434 (<1%) by 4-inch gillnets, and 162 (<1%) by dip nets beach seines or other gear types

(Appendix A5). Of the 156 subsistence permit households, 132 (85%) used set gillnets, 21 (13%) used fish wheels, and 3 (<2%) used other gears such as dip nets (Table 1). Of the 48 households with personal use permits, 47 (98%) used set gillnets, and 1 (2%) used other gears as their primary gear. These data do not include 9 households that fished in more than 1 permit area or 156 households that fished in the Tolovana River northern pike fishery, which primarily used jigging gear.

SALMON HARVEST FOR DOG FOOD

An estimated 28% of salmon harvested for subsistence in the Yukon Area were fed to dogs, not including pink or sockeye salmon. Of those salmon fed to dogs, 50,798 summer chum, fall chum, and coho salmon were used as dog food by subsistence and personal use households combined (Table 2, Appendix B12). Subsistence households owned an estimated 4,732 dogs, and approximately 220 households reported feeding 50,396 subsistence-caught salmon to their dogs (Table 2). Personal use permit households owned 174 dogs, and 18 reported feeding their dogs 402 personal use-caught salmon. Information about salmon use related to dogs is not required on Tolovana River area northern pike permits.

SUBSISTENCE SURVEYS

Following the 2018 surveys, the household list was updated based on the number of new, deleted, and combined household information acquired. A total of 1,684 households were selected from the 2,712 households identified within the 33 communities to be surveyed (Table 3). Information was collected from 1,462 households (87% of the selected sample and 54% of the total identified households in the survey area; Table 3). Included were 45 households that traveled to the Yukon River to fish in or near surveyed communities but resided outside surveyed communities, representing about 2.7% of the total number of selected households.

Division of Commercial Fisheries surveyors traveled to 30 of the 33 Yukon Area communities between September 3 and October 26, 2019. Birch Creek, Chalkyitsik, and Stevens Village communities were surveyed by phone and letter to reduce travel costs. These 3 communities were selected due to their small size and low historic harvest levels.

An additional 63 unselected households from 12 communities were interviewed in person or by phone, including new households, households requesting an interview, and households misidentified as selected. The number of additional interviews from unselected households was small relative to the stratified household selection; therefore, the analysis included their responses.

In 2019, of the selected households, 89% of the heavy harvester and 88% of the medium harvester households were successfully surveyed. Of the light harvester households in the sample, 92% were surveyed, representing 36% of all the households identified as light harvester in the survey area. For selected unknown households, 80% were surveyed. Regarding selected households identified as do not fish, 88% were surveyed, representing 37% of all households identified as do not fish in the survey area. 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 1,290 households (in the roadless area) participated in the subsistence fishery in 2019 (Table 4). A total of 40% 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 salmon harvester groups represented 55% of the

households in surveyed communities (32% Light harvester, 21% medium harvester, and 2% heavy harvester; Table 3). Of these harvester groups, an estimated 60% of light, 70% of medium, and 80% of heavy harvester households subsistence fished for salmon in 2019 (Table 4).

Harvest by Location

Households did not always harvest fish in the district where their community was located. Therefore, the estimated total from a community's district did not always equal the total from the harvest district. Households in Hooper Bay, Alakanuk, Mountain Village, Pitkas Point, St. Mary's, Russian Mission, Shageluk, Grayling, Koyukuk, Galena, Ruby, Huslia/Hughes, Allakaket/Alatna/Bettles, Tanana, Stevens Village/Rampart, 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 of Chinook salmon were harvested by subsistence participants who fished in District 4 (11,914; the sum of harvests from Subdistricts 4-A, 4-B, 4-C; Table 5). Most summer chum salmon (25,060) and 2,318 coho salmon were harvested in District 1 (Tables 6 and 8). Most fall chum (19,345) salmon were harvested in District 5 and 2,318 in District 1 (Table 7). Species-specific harvests from Yukon River tributaries ranged from 1% (Chinook salmon) to 7% (fall chum salmon) of the total survey area harvest. The largest tributary harvests of all salmon species combined were from the Koyukuk (3,193) and Teedriinjik (3,004) 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 1,654 Chinook, 210 summer chum, 850 fall chum, and 89 coho salmon (Tables 5–8).

Test Fishery Donations

In addition to subsistence fishing, some households could receive salmon through other means. The communities of Nunam Iqua, Alakanuk, Emmonak, Kotlik, Mountain Village, St. Mary's, and Pilot Station received salmon from test fishery projects, which were added to community harvest estimates (Appendix A3). Salmon caught in test fisheries made up 5% of the total Chinook salmon subsistence harvest in surveyed communities. Summer chum made up 9%, fall chum 10%, and coho salmon 15% from test fisheries of subsistence harvest from surveyed communities (Table 1, Appendix A3).

Other Fish Species

The estimated subsistence harvest of other fish species in the Yukon Area surveyed communities included 5,031 pink salmon, 36,237 large whitefish, 29,837 small whitefish, 15,703 northern pike, and 14,838 sheefish (Table 10). Of the large whitefish harvested, 79% were broad whitefish, and the remaining 21% were humpback whitefish (Table 10). Coastal District and District 1 accounted for 91% of the estimated pink salmon subsistence harvest. District 1 households harvested the most estimated sheefish (53%), and Coastal District households harvested the most small whitefish (45%). District 2 households harvested the most estimated northern pike (31%), followed closely by District 1 (27%). Additionally, District 1 households were estimated to have harvested the most large whitefish (47%).

Estimates of unexpanded nonsalmon species (primarily resident species) harvested included species only available in specific parts of the drainage, such as marine-based species like 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 12,267 Pacific herring, 143 gallons and 35 pounds of herring roe, 10,006 tomcod, and 88,009 Alaska blackfish. Of the 1,946 burbot, most were harvested in Districts 1 and 2. In 2019, very few Arctic lamprey were reported as harvested (4, 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 (112 responses) were related to dissatisfaction with management, such as a desire for longer openings for Chinook salmon and more commercial openings. The second largest group of comments (79 responses) related to satisfaction with the salmon runs. The third largest group of comments (56 responses) stated satisfaction with management actions. The fourth largest group was the comments discussing personal circumstances that affected an individual household's fishing effort, such as health problems, work schedules, and time conflicts with other activities (55 responses). Dissatisfaction with salmon runs (41 responses) was the fifth largest group of comments. Expenses were mentioned by 1 household. Disease found in harvested fish, such as tumors, pus, or tapeworms, was mentioned by 12 households. River conditions, such as high water and drift, and poor weather affected a small number of households (27 responses). Some households (7 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 (3 responses). In 2019, record high temperatures were seen throughout Alaska (Di Liberto 2019; von Biela et al. 2022). The effects of high temperatures were mentioned by 28 households, specifically about warm water or dead salmon due to warm water.

PERMITS

Subsistence Permits

In areas that require subsistence fishing permits in upper Subdistrict 4-A (Koyukuk River drainage), District 5 (Yukon River), and District 6 (Tanana River), 596 of 611 (98%) subsistence permits issued were returned, and 321 reported subsistence fishing for salmon and nonsalmon (Tables 12). In 2019, the permits issued included 31 for the Tanana River upstream of Subdistrict 6-C and 245 for the northern pike fishery in the Tolovana River drainage.

The 2019 subsistence permit harvest information was based on permits returned by June 4, 2020 (Tables 12 and 13). Total subsistence harvests of 5,981 Chinook, 639 summer chum, 27,602 fall chum, and 1,583 coho salmon were reported. The total harvest of other fish species included 3,506 whitefish, 163 sheefish, 37 burbot, 1,937 northern pike, 25 longnose suckers, and 104 Arctic grayling (Tables 12 and 13, and Appendices B6–B10).

Additionally, salmon were retained from commercial harvests in subsistence permit areas. Fish tickets from the commercial fishery in District 6 included 58 summer chum and 228 fall chum salmon recorded as "Not sold/Personal use." These salmon were added to the community harvests of Nenana/Healy, Fairbanks North Star Borough, and Manley (Table 1).

Personal Use Permits

In 2019, of the 107 personal use permits issued, 104 were returned (97%; Table 12). A total of 10 households were issued subsistence and personal use permits, and 9 were issued both types of personal use permits (salmon and nonsalmon). Harvest was reported on 51 personal use fishing

permits, 49 of which were issued for salmon and 2 for nonsalmon species. Personal use permit holders reported harvesting 244 Chinook, 294 summer chum, 408 fall chum, and 68 coho salmon, as well as 99 whitefish, 10 sheefish, 73 northern pike, and 104 longnose suckers (Tables 12 and 13, and Appendix B11).

CHARACTERISTICS OF FISHING EFFORT

Subsistence calendar and permits, where harvests were recorded daily, provide harvest timing and fishing effort by location. In 2019, households returned 179 subsistence harvest calendars (approximately 9% of total issued). A total of 152 calendars (85% of those returned) documented salmon harvest information. The remaining households that returned harvest calendars in 2019 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, targeting Chinook and summer chum salmon. Reported harvests in District 4 occurred mainly in late June and early July during the summer season. Districts 5 and 6 households reported more consistent fishing efforts throughout 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 6, 2019) in a district was 45 households in District 5 during both the summer and fall seasons (Figure 7).

DISCUSSION

In 2019, 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, to protect Chinook salmon, subsistence fishery participants were restricted by fishing time and gear during the summer season (ADF&G 2019).

The 2019 Yukon Area subsistence salmon harvest (Chinook, chum, and coho salmon combined) was approximately 9% below the 2014–2018 average and 23% under the 2009–2013 average (Figure 6). These harvest averages include years with fishing restrictions, such as the closures during the Chinook salmon run in 2009 and 2011–2015 (Figure 6). The 2019 Chinook salmon harvest in the Yukon River increased by 137% from the 2014–2018 average, though it was 88% above the 2009–2013 average (Figure 8, Appendix B1). The 2019 summer chum decreased by 25%, fall chum by 24%, and coho salmon by 51%, compared to their 2014–2018 averages (Figures 9–11, and Appendices B2–B4). The total harvest of pink salmon in 2019 was 133% above the 2009–2017 odd-year average and was the largest odd-year harvest on record starting in 1998 (Figure 12, Appendix B5).

Commercial fishery participants could retain salmon for subsistence use from commercial openings. Non-Chinook salmon species retained from commercial harvests were not usually recorded on fish tickets. In recent years, there has been an increase in Chinook salmon recorded as retained for subsistence on fish tickets. The rise in Chinook salmon reporting was due to increased enforcement during low Chinook salmon runs. In 2019, Chinook salmon retained for subsistence use from commercial catches reported on fish tickets (1,179 fish) represented approximately 3% of the estimated survey harvest. Although the survey asks about commercially retained salmon (Q9), these estimates should not be directly compared to fish reported as retained on fish tickets. Surveyed individuals were not always the household's 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 2019, only the Chinook salmon harvest was within the amounts necessary for subsistence (ANS) range (Figure 8). Personal use harvests were not included in ANS calculations. The subsistence harvests of summer chum, fall chum, and coho salmon were all below their ANS ranges (Figures 8, 10, and 11). 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 one index of the extent to which reasonable opportunity was provided in the subsistence fishery.

The percentage of subsistence salmon harvest by species has fluctuated compared to past years. In 2019, Chinook salmon harvest represented 27% of the total harvested salmon (excluding pink and sockeye salmon). Comparatively, this was 10% higher than the Chinook salmon harvested in 2018 and second highest percentage on record (2001 was 30% of the total salmon harvested; Borba and Hamner 2001). 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 in recent years. The 5 years before restrictions (2003–2007), Chinook salmon averaged 22% (Busher et al. 2009) of the total subsistence harvest, and the 2014–2018 average was 10% (Figure 6). Between 2003–2007 and 2014–2018 (Busher et al. 2009), the average percent fall chum salmon increased by 10%, summer chum salmon increased by 5%, 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 dogs annually before establishing ANS ranges (1992–1999; Borba and Hamner 2001). From 2014 to 2018, an average of 66,570 chum and coho salmon were fed to dogs annually (Appendix B12). Annual variation in the number of salmon fed to dogs was probably due to owners feeding 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 operating as catcher–sellers, allowing them to sell whole fish directly to individuals. This fishery occurs during the fall season before freeze-up and has primarily harvested fall chum and coho salmon for dog food. These commercial sales have replaced subsistence harvest historically reported on individual household subsistence fishing permits. Changes in harvest levels and patterns for summer and fall chum and coho salmon may warrant ANS review (Brown and Jallen 2012).

OTHER FISH SPECIES

Harvest estimates of other fish species generated from this project are informative, even though reported values were probably underestimated. 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, fishery participants were required to report their annual harvest of nonsalmon species. The 2019 combined total harvest of nonsalmon fish species reported on subsistence and personal use permits was 16% lower than the 2014–2018 average and 22% higher than the 2009–2013 average harvest (Appendices B6–B11, and B13).

PROJECT AND REPORT

The 2019 survey project progressed similarly to previous years. Household interviews were conducted by 2 surveyors, and both were new to the project. Similar to past years, travel to communities was affected by weather, flight delays, and community events. Although many of the interviewed households generally responded positively to the surveyors and were willing to answer all questions, some households were unreceptive toward the surveyors and expressed their frustrations with fisheries management actions. Additional public outreach efforts may be warranted to encourage participation in the survey interviews and convey the importance of collecting subsistence harvest information. Efforts to encourage fishing permit returns were successfully implemented in 2019, and data collection was completed in mid-February 2020 with 98% compliance. 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 and used to develop the coming year's outlooks by late February 2020. A few additional permits from the 2019 season were received after February 2020, and the acquisition of the 2019 permit data was considered complete on June 4, 2020. Due to the availability of online permits, more were issued than in previous years. However, the number of permits issued is also influenced by the subsistence opportunities.

Several communities were surveyed primarily by phone to reduce surveyor travel and overtime costs (Birch Creek, Chalkyitsik, and Stevens Village). The combined annual harvest of all salmon species from these communities averaged 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. The community of Rampart has recently had a population increase large enough to result in the reopening of its school, and it is also in an area where residents may fish inside or outside the permit area. A visit resulted and confirmed that the residents of Rampart fish within the permit area and use their permits appropriately. However, it was determined that some households live elsewhere and travel to Rampart in the summer to subsistence fish within the permit area without using a permit to record or report harvest. The resumption of summertime permitting trips to contact these summer-only households and provide education about the free permits and harvest recording and reporting responsibilities is recommended.

Harvest information from calendars may be used to supplement in-person surveys. However, the 2004–2015 average annual return of subsistence calendars was only 17%. Additional monetary incentives were offered in 2012–2016 to encourage returns. However, there was no significant

return improvement; only 9% of calendars were returned in 2019. 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 River, or Copper River. These fish were not included in harvest estimates for the Yukon Area. In 2019, surveyors heard from several households that had traveled to the Norton Sound Area during the summer season and harvested at least 10 Chinook and 30 summer chum salmon. Due to the proximity, some of the fish harvested in Norton Sound may have been from Yukon Area stocks but were recorded as Norton Sound harvest. Edits should be made to the Coastal District and District 1 survey forms, and additional maps should be supplied to help surveyors identify harvests from this area in the future.

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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, 2019.

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	103	784	2,999	210	342	90	13	0	0
Scammon Bay	68	1,233	4,037	605	462	64	2	0	2
Coastal District total	171	2,017	7,036	815	804	154	15	0	2
Nunam Iqua [c]	22	470	1,105	102	21	20	0	0	1
Alakanuk [c]	84	1,818	6,276	352	380	47	34	0	3
Emmonak [c]	98	2,419	8,404	1,868	379	18	77	0	2
Kotlik [c]	86	2,333	6,994	1,929	1,182	46	40	0	0
District 1 subtotal	290	7,040	22,779	4,251	1,962	131	151	0	6
Mountain Village [c]	68	1,238	4,320	1,180	273	4	64	0	0
Pitkas Point	17	1,096	1,103	139	0	1	16	0	0
St. Mary's [c]	91	2,735	7,349	844	10	5	86	0	0
Pilot Station [c]	69	1,919	6,871	997	147	6	63	0	0
Marshall	53	1,261	2,703	644	212	0	53	0	0
District 2 subtotal	298	8,249	22,346	3,804	642	16	282	0	0
Russian Mission	43	1,561	1,483	469	104	20	23	0	0
Holy Cross	27	1,483	199	171	63	7	20	0	0
Shageluk	12	262	673	114	65	11	1	0	0
District 3 subtotal	82	3,306	2,355	754	232	38	44	0	0
Lower Yukon River total	670	18,595	47,480	8,809	2,836	185	477	0	6
Anvik	15	655	223	45	55	5	11	0	0
Grayling	44	1,446	879	45	75	1	40	0	3
Kaltag	26	1,225	180	103	1	0	26	0	0
Nulato	49	2,396	157	662	27	3	46	0	0
Koyukuk	24	1,088	21	287	38	2	18	0	4
Galena	76	2,895	1,223	1,129	120	15	59	1	0
Ruby	22	1,036	464	242	32	11	11	1	0
District 4 Yukon River subtotal	256	10,741	3,147	2,513	348	37	211	2	7
Huslia/ Hughes	20	871	3,915	420	80	8	12	0	0
Allakaket/Alatna/Bettles	18	134	472	1,299	69	17	1	0	0
Koyukuk River subtotal	38	1,005	4,387	1,719	149	25	13	0	0
District 4 subtotal	294	11,746	7,534	4,232	497	62	224	2	7

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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	47	3,408	530	12,039	82	31	1	12	2
Rampart/Stevens Village [d]	11	446	0	98	7	6	0	5	0
Fairbanks (FNSB) [d, e]	54	2,479	179	4,104	506	52	0	1	1
Beaver	18	1,413	27	17	0	15	0	3	0
Fort Yukon/Birch Creek	56	4,563	12	7,153	4	22	0	34	0
Circle/Central [d]	10	694	0	2,069	0	4	0	6	0
Eagle [c,d]	22	788	0	16,610	0	15	0	7	0
Other District 5 [d, f]	17	944	55	52	1	15	0	2	0
District 5 Yukon River subtotal	235	14,735	803	42,142	600	160	1	70	3
Venetie/Chalkyitsik	27	660	0	2,804	12	23	0	2	2
Teedriinjik/Draanjik Rivers subtotal	27	660	0	2,804	12	23	0	2	2
District 5 subtotal	262	15,395	803	44,946	612	183	1	72	5
Manley [d]	7	94	3	2,457	381	5	0	2	7
Minto [d]	3	35	0	13	0	3	0	0	3
Nenana/Healy [d]	18	404	409	1,801	475	16	0	2	0
Fairbanks (FNSB) [d, e]	59	299	325	1,046	280	57	0	1	1
Other District 6 [d, f]	14	36	0	23	1	12	0	0	2
District 6 Tanana River subtotal	101	868	737	5,340	1,137	93	0	5	3
Upper Yukon River total	657	28,009	9,074	54,518	2,246	338	225	79	15
Alaska, Yukon Area total	1,498	48,621	63,590	64,142	5,886	677	717	79	23
AK, Yukon Area % of the total	–	26.7%	34.9%	35.2%	3.2%	45%	48%	5%	2%
Included in the communities above:									
Survey community subtotal [g]	1,294	40,939	57,382	32,807	3,696	498	717	58	19
Subsistence permit subtotal	156	5,529	619	27,539	1,576	132	0	21	3
Test fishery subtotal	–	1,909	5,237	3,160	546	–	–	–	–
District 6 commercial retained [h]	–	0	58	228	0	–	–	–	–
Subsistence harvests subtotal	1,450	48,377	63,296	63,734	5,818	630	717	79	22
Personal use permit subtotals	48	244	294	408	68	47	0	0	1

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Table 1.–Page 3 of 3.

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

[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 156 households that fished with a Tolovana River northern pike permit, or 9 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 June 4, 2020.

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

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

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

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

Table 2.–Household and dog information from surveys and permits by community of residence, Yukon Area, 2019.

Community	Households		Households with dogs		No. of dogs		Households feeding salmon to dogs		Summer chum		Fall chum		Coho		
	Total	*n*	Est total	CI 95%	Est total	CI 95%	Est total	CI 95%	Est total	CI 95%	Est total	CI 95%	Est total	CI 95%	Est total
Hooper Bay	245	119	183	4	366	54	3	1	0	0	0	0	0	0	0
Scammon Bay	117	53	81	4	136	30	3	1	38	34	0	0	0	0	38
Coastal District	362	172	264	6	502	61	6	1	38	34	0	0	0	0	38
Nunam Iqua	41	21	27	3	48	16	1	0	1	1	0	0	0	0	1
Alakanuk	150	68	70	7	125	42	2	0	23	17	0	0	0	0	23
Emmonak	205	109	113	3	201	34	7	1	107	90	0	0	0	0	107
Kotlik	121	56	94	4	249	98	9	6	171	97	12	9	0	0	183
District 1	517	254	304	9	623	111	19	6	302	132	12	9	0	0	314
Mountain Village	167	84	95	5	144	26	6	2	5	3	0	0	0	0	5
Pitkas Point	28	22	18	2	35	11	0	0	0	0	0	0	0	0	0
St. Mary's	139	70	97	5	172	30	2	0	0	0	0	0	0	0	0
Pilot Station	131	55	51	4	77	27	2	1	3	4	0	0	0	0	3
Marshall	99	50	47	4	129	32	0	0	0	0	0	0	0	0	0
District 2	564	281	308	9	557	58	10	2	8	5	0	0	0	0	8
Russian Mission	75	28	43	4	92	56	4	2	11	19	0	0	0	0	11
Holy Cross	53	32	21	2	46	14	0	0	0	0	0	0	0	0	0
Shageluk	32	18	27	3	88	29	9	3	592	866	0	0	0	0	592
District 3	160	78	91	5	226	62	13	3	603	810	0	0	0	0	603
Anvik	32	22	18	2	45	13	2	1	90	108	0	0	0	0	90
Grayling	56	22	35	6	85	32	0	0	0	0	0	0	0	0	0
Kaltag	50	22	31	5	58	24	1	1	0	0	0	0	0	0	0
Nulato	84	39	36	4	43	13	0	0	0	0	0	0	0	0	0
Koyukuk	42	15	17	6	24	17	0	0	0	0	0	0	0	0	0
Galena	139	61	74	5	107	24	1	0	23	0	0	0	0	0	23
Ruby	48	16	36	6	61	26	2	0	26	0	20	0	0	0	46
Huslia/Hughes	113	54	83	4	337	89	7	2	2,297	972	287	258	0	0	2,584
Allakaket/Alatna/Bettles	82	44	37	5	108	39	4	1	77	100	875	68	0	0	952
District 4	646	294	367	14	868	110	17	2	2,513	965	1,182	262	0	0	3,695

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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	99	51	43	3	228	72	10	1	184	123	10,344	4,537	51	49	10,579
Stevens Village/Rampart[a]	25	9	11	8	14	13	2	0	0	0	0	0	0	0	18
Beaver	32	23	17	1	40	11	0	0	0	0	0	0	0	0	0
Fort Yukon/Birch Creek	214	73	138	8	424	130	30	4	0	0	9,126	5,380	0	0	9,126
Venetie/Chalkyitsik	100	37	69	7	198	57	20	7	76	91	2,516	1,709	0	0	2,592
District 5	470	193	278	12	904	158	62	7	260	150	21,986	7,140	51	48	22,315
Survey total	2,719	1,272	1,612	23	3,680	244	127	10	3,724	1,266	23,180	7,105	51	48	26,973

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]	93	90	54	265	24	–	–	–	–	–	–	2,085
Circle/Central	15	15	11	125	7	–	–	–	–	–	–	1,987
Eagle	31	31	19	166	15	–	–	–	–	–	–	14,615
Other District 5[d]	29	28	17	31	3	–	–	–	–	–	–	0
District 5 permit subtotal	168	164	101	587	49	–	–	–	–	–	–	18,687
Manley	12	12	6	32	3	–	–	–	–	–	–	2,500
Minto	16	13	11	75	5	–	–	–	–	–	–	11
Nenana/Healy	34	34	22	99	15	–	–	–	–	–	–	1,921
Fairbanks (FNSB)[c]	128	125	85	355	30	–	–	–	–	–	–	697
Other District 6[d]	55	54	33	78	9	–	–	–	–	–	–	9
District 6 permit subtotal	245	238	157	639	62	–	–	–	–	–	–	5,138
Subsistence permit subtotal	322	314	201	1,052	93	–	–	–	–	–	–	23,423
District 5 total	–	–	322	1,317	93	–	–	–	–	–	–	40,600
Subsistence use subtotal	3,041	1,586	1,813	4,732	220	–	–	–	–	–	–	50,396
Personal use permit subtotal	91	88	57	174	18	–	–	–	–	–	–	402
Total survey and permit	–	–	1,870	4,906	238	–	–	–	–	–	–	50,798

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Table 2.–Page 3 of 3.

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 June 4, 2020. Does not include 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 52 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) included Fairbanks, Eielson Air Force Base, Ester, North Pole, Salcha, and Two Rivers.

[d] Households permits from other communities included Anchorage, Auke Bay, Bethel, Chalkyitsik, Delta Junction, Eagle River, Hoonah, Juneau, Manley Hot Springs, Minto, 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, 2019.

	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	46	38	29	76	55	17	14	82	75	23	21	91	68	68	63	93	1	1	1	93	245	147	128	87	119	1094	96
Scammon Bay	16	16	10	62	21	7	5	71	41	13	10	77	39	39	37	95	–	–	–	95	117	75	62	83	54	583	80
Coastal District	62	54	39	72	76	24	19	79	116	36	31	86	107	107	100	93	1	1	1	93	362	222	190	86	173	1,677	124
Nunam Iqua	7	4	3	75	9	3	3	100	10	3	4	133	15	15	13	87	–	–	–	87	41	25	23	92	20	179	48
Alakanuk	30	17	19	112	29	9	6	67	48	15	13	87	42	42	36	86	1	1	1	86	150	84	75	89	70	677	92
Emmonak	45	30	26	87	47	24	20	83	55	28	28	100	57	57	47	82	1	1	1	82	205	140	122	87	106	857	73
Kotlik	18	13	9	69	16	5	3	60	46	14	15	107	41	41	38	93	–	–	–	93	121	73	65	89	54	712	128
District 1	100	64	57	89	101	41	32	78	159	60	60	100	155	155	134	86	2	2	2	86	517	322	285	89	250	2,425	177
Mountain Village	32	28	25	89	35	11	10	91	53	16	15	94	47	47	43	91	–	–	–	91	167	102	93	91	85	700	76
Pitkas Point	3	2	2	100	3	3	3	100	11	11	9	82	11	11	9	82	–	–	–	82	28	27	23	85	23	111	9
St. Mary's	28	26	21	81	19	6	4	67	44	14	14	100	46	46	42	91	2	2	2	91	139	94	83	88	75	509	43
Pilot Station	28	26	22	85	30	16	13	81	43	21	19	90	29	29	25	86	1	1	0	86	131	93	79	85	48	617	70
Marshall	20	13	11	85	17	5	7	140	32	9	9	100	29	29	25	86	1	1	1	86	99	57	53	93	46	457	52
District 2	111	95	81	85	104	41	37	90	183	71	66	93	162	162	144	89	4	4	3	89	564	373	331	89	277	2,393	122
Russian Mission	7	7	4	57	15	5	5	100	40	13	11	85	13	13	11	85	–	–	–	85	75	38	31	82	25	403	83
Holy Cross	2	1	1	100	15	7	7	100	21	11	12	109	15	15	15	100	–	–	–	100	53	34	35	103	33	151	25
Shageluk	14	13	12	92	8	8	8	100	6	6	5	83	3	3	3	100	1	1	0	100	32	31	28	90	26	94	12
District 3	23	21	17	81	38	20	20	100	67	30	28	93	31	31	29	94	1	1	0	94	160	103	94	91	84	647	85
Anvik	5	3	4	133	7	7	4	57	13	13	11	85	6	6	4	67	1	1	1	67	32	30	24	80	23	85	13
Grayling	8	8	3	38	8	3	3	100	26	8	8	100	14	14	12	86	–	–	–	86	56	33	26	79	23	191	31
Kaltag	6	6	5	83	9	3	3	100	24	8	7	88	11	11	9	82	–	–	–	82	50	28	24	86	24	129	34
Nulato	16	15	12	80	11	4	4	100	41	13	11	85	16	16	13	81	–	–	–	81	84	48	40	83	39	207	22
Koyukuk	3	2	2	100	10	3	3	100	21	7	7	100	6	6	5	83	2	2	2	83	42	20	19	95	15	110	31
Galena	24	24	21	88	46	14	10	71	54	17	17	100	12	12	12	100	3	3	3	100	139	70	63	90	61	348	53
Ruby	1	1	1	100	26	8	7	88	13	4	4	100	7	6	7	117	1	1	1	117	48	20	20	100	18	112	33
Huslia	10	7	6	86	41	13	13	100	18	6	7	117	6	6	4	67	4	4	4	67	79	36	34	94	33	254	39
Hughes	9	5	7	140	12	12	9	75	10	10	8	80	2	2	2	100	1	1	1	100	34	30	27	90	27	87	12
Allakaket	12	11	8	73	24	8	9	112	12	4	3	75	5	5	4	80	2	2	2	80	55	30	26	87	25	133	30
Alatna	2	2	2	100	3	3	3	100	2	2	2	100	1	1	1	100	–	–	–	100	8	8	8	100	8	24	0
Bettles	2	2	0	0	17	17	15	88	–	–	–	–	–	–	–	–	–	–	–	–	19	19	15	79	14	28	4
District 4	98	86	71	83	214	95	83	87	234	92	85	92	86	85	73	86	14	14	14	86	646	372	326	88	310	1,709	97

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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	25	23	18	78	22	10	12	120	33	17	14	82	10	10	7	70	9	9	9	70	99	69	60	87	53	207	28
Stevens Village	11	11	4	36	1	1	1	100	2	2	1	50	1	1	0	0	3	3	1	0	18	18	7	39	7	53	14
Birch Creek	5	4	3	75	8	8	4	50	2	2	2	100	–	–	–	–	–	–	–	–	15	14	9	64	8	43	14
Beaver	12	10	10	100	5	5	5	100	14	14	10	71	1	1	1	100	–	–	–	100	32	30	26	87	24	82	10
Fort Yukon	24	22	16	73	103	30	29	97	44	14	13	93	18	18	13	72	10	10	9	72	199	94	80	85	72	499	65
Venetie	22	17	13	76	32	10	13	130	9	3	4	133	7	7	4	57	2	2	2	57	72	39	36	92	34	194	37
Chalkyitsik	9	9	5	56	15	15	10	67	3	3	2	67	1	1	1	100	–	–	–	100	28	28	18	64	16	52	10
District 5	108	96	69	72	186	79	74	94	107	55	46	84	38	38	26	68	24	24	21	88	463	292	236	81	214	1,130	81
Survey totals	502	416	334	80	719	300	265	88	866	344	316	92	579	578	506	88	46	46	41	89	2,712	1,684	1,462	87	1,308	9,980	290

Note: 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%. En dash (–) indicates value could not be computed due to limitations of the data. In most communities a smaller number of households provided information about the number of people (*np*) in their households. The estimated total number of people includes a 95% confidence interval (CI).

Table 4.–Estimated number of subsistence fishing households in surveyed communities, by harvest level, with community and district totals, Yukon Area, 2019.

	Unknown				Does not harvest salmon				Light harvester				Medium harvester				Heavy harvester				Combined			
Community	*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%
Hooper Bay	46	28	40	0.0	55	13	10	0	75	21	50	0	68	60	60	0	1	1	100	0.0	245	123	103	4
Scammon Bay	16	9	60	0.0	21	5	40	0.0	41	9	40	0.0	39	32	80	0.0	–	–	–	–	117	55	68	6
Coastal District	62	37	50	0.0	76	18	20	0.0	116	30	50	0.0	107	92	70	0.0	1	1	0	1.0	362	178	171	7
Nunam Iqua	7	3	30	0.1	9	3	30	0.1	10	4	50	0.1	15	12	80	0.0	–	–	–	–	41	22	22	4
Alakanuk	30	15	40	0.0	29	6	50	0.0	48	13	60	0.0	42	35	70	0.0	1	1	0	0.0	150	70	84	6
Emmonak	45	22	40	0.0	47	19	20	0.0	55	26	50	0.0	57	42	70	0.0	1	1	100	0.0	205	110	98	3
Kotlik	18	6	70	0.0	16	3	70	0.1	46	12	70	0.0	41	35	80	0.0	–	–	–	–	121	56	86	7
District 1	100	46	40	0.0	101	31	40	0.0	159	55	60	0.0	155	124	70	0.0	2	2	0	2.0	517	258	290	10
Mountain Village	32	24	50	0.0	35	9	10	0.0	53	13	30	0.0	47	43	70	0.0	–	–	–	–	167	89	68	4
Pitkas Point	3	2	100	0.0	3	3	30	0.1	11	9	30	0.0	11	9	90	0.0	–	–	–	–	28	23	17	1
St. Mary's	28	19	60	0.0	19	4	0	0.0	44	13	80	0.0	46	38	80	0.0	2	2	50	0.2	139	76	91	2
Pilot Station	28	17	40	0.0	30	10	40	0.0	43	13	50	0.0	29	21	80	0.0	1	0	–	–	131	61	69	4
Marshall	20	10	50	0.0	17	6	20	0.0	32	9	60	0.0	29	24	80	0.0	1	1	100	0.0	99	50	53	4
District 2	111	72	50	0.0	104	32	20	0.0	183	57	50	0.0	162	135	80	0.0	4	3	0	4.0	564	299	298	7
Russian Mission	7	4	0	0.0	15	5	20	0.0	40	11	70	0.0	13	8	90	0.0	–	–	–	–	75	28	43	4
Holy Cross	2	0	–	–	15	7	10	0.0	21	12	70	0.0	15	14	60	0.0	–	–	–	–	53	33	27	2
Shageluk	14	12	40	0.0	8	8	20	0.0	6	5	20	0.0	3	3	100	0.0	1	0	–	–	32	28	12	1
District 3	23	16	30	0.0	38	20	20	0.0	67	28	70	0.0	31	25	80	0.0	1	0	0	1.0	160	89	82	4
Anvik	5	3	30	0.1	7	4	0	0.0	13	11	60	0.0	6	4	80	0.1	1	1	100	0.0	32	23	15	2
Grayling	8	2	100	0.0	8	3	100	0.0	26	8	80	0.0	14	11	60	0.0	–	–	–	–	56	24	44	3
Kaltag	6	5	40	0.0	9	3	30	0.1	24	7	60	0.0	11	9	70	0.0	–	–	–	–	50	24	26	4
Nulato	16	12	60	0.0	11	4	50	0.1	41	10	50	0.0	16	13	80	0.0	–	–	–	–	84	39	49	5
Koyukuk	3	2	50	0.2	10	3	0	0.0	21	6	70	0.0	6	4	100	0.0	2	2	100	0.0	42	17	24	3
Galena	24	21	50	0.0	46	10	50	0.0	54	16	60	0.0	12	12	70	0.0	3	3	100	0.0	139	62	76	5
Ruby	1	1	0	0.0	26	6	20	0.0	13	4	100	0.0	7	7	60	0.0	1	1	100	0.0	48	19	22	3
Huslia	10	6	0	0.0	41	12	20	0.0	18	7	30	0.0	6	4	20	0.1	4	4	80	0.1	79	33	16	3
Hughes	9	7	0	0.0	12	9	0	0.0	10	8	20	0.0	2	2	50	0.2	1	1	0	0.0	34	27	4	1
Allakaket	12	8	10	0.0	24	8	10	0.0	12	3	70	0.1	5	4	20	0.1	2	2	100	0.0	55	25	16	5
Alatna	2	2	50	0.2	3	3	0	0.0	2	2	50	0.2	1	1	0	0.0	–	–	–	–	8	8	2	0
Bettles	2	0	–	–	17	15	0	0.0	–	–	–	–	–	–	–	–	–	–	–	–	19	15	0	0
District 4	98	69	40	0.0	214	80	30	0.0	234	82	60	0.0	86	71	70	0.0	14	14	90	0.0	646	316	294	11

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Table 4.–Page 2 of 2.

	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%
Tanana	25	16	20	0.0	22	10	0	0.0	33	14	70	0.0	10	7	100	0.0	9	7	100	0.0	99	54	47	2
Stevens Village	11	4	20	0.1	1	1	100	0.0	2	1	0	0.0	1	0	–	–	3	1	100	0.0	18	7	7	3
Birch Creek	5	3	0	0.0	8	3	0	0.0	2	2	50	0.2	–	–	–	–	–	–	–	–	15	8	1	0
Beaver	12	10	70	0.0	5	5	0	0.0	14	10	60	0.0	1	1	100	0.0	–	–	–	–	32	26	18	1
Fort Yukon	24	16	40	0.0	103	24	10	0.0	44	13	40	0.0	18	13	60	0.0	10	9	80	0.0	199	75	55	4
Venetie	22	11	20	0.0	32	13	10	0.0	9	4	80	0.1	7	4	100	0.0	2	2	100	0.0	72	34	22	2
Chalkyitsik	9	4	20	0.1	15	9	0	0.0	3	2	50	0.2	1	1	100	0.0	–	–	–	–	28	16	5	2
District 5	108	64	30	0.0	186	65	10	0.0	107	46	50	0.0	38	26	80	0.0	24	19	90	0.0	463	220	155	6
Survey totals	502	304	40	0.0	719	246	20	0.0	866	298	60	0.0	579	473	70	0.0	46	39	80	0.0	2,712	1,360	1,290	19

Note: 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. The estimated total number of fishing households includes a 95% confidence interval (CI 95%). En dash (–) indicates value could not be computed due to limitations of the data.

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, 2019.

	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	493	290	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	783
Scammon Bay	0	1,233	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,233
Coastal District	493	1,523	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,016
Nunam Iqua	0	470	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	470
Alakanuk	34	1,653	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,687
Emmonak	0	1,492	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,492
Kotlik[c]	0	1,843	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,843
District 1	34	5,458	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5,492
Mountain Village	0	258	974	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,232
Pitkas Point	0	96	1,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,096
St. Mary's	0	168	2,551	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,719
Pilot Station	0	0	1,581	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,581
Marshall	0	0	1,261	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,261
District 2	0	522	7,367	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7,889
Russian Mission	0	0	407	1,154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,561
Holy Cross	0	0	0	1,483	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,483
Shageluk	0	0	0	75	20	0	0	0	0	0	0	0	0	167	0	0	0	0	262
District 3	0	0	407	2,712	20	0	0	0	0	0	0	0	0	167	0	0	0	0	3,306
Anvik	0	0	0	0	655	0	0	0	0	0	0	0	0	0	0	0	0	0	655
Grayling	0	0	0	0	1,446	0	0	0	0	0	0	0	0	0	0	0	0	0	1,446
Kaltag	0	0	0	0	1,225	0	0	0	0	0	0	0	0	0	0	0	0	0	1,225
Nulato	0	0	0	0	2,396	0	0	0	0	0	0	0	0	0	0	0	0	0	2,396
Koyukuk	0	0	0	0	788	150	150	0	0	0	0	0	0	0	0	0	0	0	1,088
Galena	0	0	0	0	276	2,085	533	0	0	0	0	0	0	0	0	0	0	0	2,894
Ruby	0	0	0	0	0	592	444	0	0	0	0	0	0	0	0	0	0	0	1,036
Huslia/Hughes	0	0	0	0	707	72	0	0	0	0	0	0	0	0	92	0	0	0	871
Allakaket/Alatna/Bettles	0	0	0	0	0	20	0	0	0	0	0	0	0	0	114	0	0	0	134
District 4	0	0	0	0	7,493	2,919	1,127	0	0	0	0	0	0	0	206	0	0	0	11,745

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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	355	172	2,881	0	0	0	0	0	0	0	0	0	3,408
Stevens Village/Rampart	0	0	0	0	0	0	0	0	0	13	184	0	0	0	0	0	0	0	197
Beaver	0	0	0	0	0	0	0	0	0	0	1,413	0	0	0	0	0	0	0	1,413
Fort Yukon/Birch Creek	0	0	0	0	0	0	0	0	0	0	2,942	1,621	0	0	0	0	0	0	4,563
Venetie/Chalkyitsik	0	0	0	0	0	0	0	0	0	0	160	130	0	0	0	369	0	0	659
District 5	0	0	0	0	0	0	355	172	2,881	13	4,699	1,751	0	0	0	369	0	0	10,240
Survey totals	527	7,503	7,774	2,712	7,513	2,919	1,482	172	2,881	13	4,699	1,751	0	167	206	369	0	0	40,688

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 due to estimate decimal rounding.

[c] Several households reported harvest from the Norton Sound Area outside of District 1 in the Yukon Area. Salmon harvested from outside the Yukon Area were not included in harvest totals or estimates.

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, 2019.

	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	2,365	635	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,000
Scammon Bay	0	4,037	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4,037
Coastal District	2,365	4,672	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7,037
Nunam Iqua	0	905	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	905
Alakanuk	54	5,415	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5,469
Emmonak	0	5,752	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5,752
Kotlik[c]	0	6,480	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6,480
District 1	54	18,552	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18,606
Mountain Village	0	1,055	3,265	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4,320
Pitkas Point	0	76	1,027	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,103
St. Mary's	0	705	6,634	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7,339
Pilot Station	0	0	5,817	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5,817
Marshall	0	0	2,703	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,703
District 2	0	1,836	19,446	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21,282
Russian Mission	0	0	499	984	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,483
Holy Cross	0	0	0	199	0	0	0	0	0	0	0	0	0	0	0	0	0	0	199
Shageluk	0	0	0	84	167	0	0	0	0	0	0	0	0	422	0	0	0	0	673
District 3	0	0	499	1,267	167	0	0	0	0	0	0	0	0	422	0	0	0	0	2,355
Anvik	0	0	0	0	223	0	0	0	0	0	0	0	0	0	0	0	0	0	223
Grayling	0	0	0	0	644	0	0	0	0	0	0	0	0	0	235	0	0	0	879
Kaltag	0	0	0	0	180	0	0	0	0	0	0	0	0	0	0	0	0	0	180
Nulato	0	0	0	0	157	0	0	0	0	0	0	0	0	0	0	0	0	0	157
Koyukuk	0	0	0	0	21	0	0	0	0	0	0	0	0	0	0	0	0	0	21
Galena	0	0	0	0	46	969	207	0	0	0	0	0	0	0	0	0	0	0	1,222
Ruby	0	0	0	0	0	464	0	0	0	0	0	0	0	0	0	0	0	0	464
Huslia/Hughes	0	0	0	0	2,982	21	0	0	0	0	0	0	0	0	912	0	0	0	3,915
Allakaket/Alatna/Bettles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	472	0	0	0	472
District 4	0	0	0	0	4,253	1,454	207	0	0	0	0	0	0	0	1,619	0	0	0	7,533

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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	3	0	527	0	0	0	0	0	0	0	0	0	530
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	27	0	0	0	0	0	0	0	27
Fort Yukon/Birch Creek	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0	0	0	0	12
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	3	0	527	0	39	0	0	0	0	0	0	0	569
Survey totals	2,419	25,060	19,945	1,267	4,420	1,454	210	0	527	0	39	0	0	422	1,619	0	0	0	57,382

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 due to estimate decimal rounding.

[c] Several households reported harvest from the Norton Sound Area outside of District 1. Salmon harvested from outside the Yukon Area are not included in harvest totals or estimates.

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, 2019.

	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	87	124	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	211
Scammon Bay	0	605	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	605
Coastal District	87	729	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	816
Nunam Iqua	0	102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	102
Alakanuk	0	322	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	322
Emmonak	0	567	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	567
Kotlik	0	1,829	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,829
District 1	0	2,820	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,820
Mountain Village	0	67	147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	214
Pitkas Point	0	0	139	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	139
St. Mary's	0	56	788	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	844
Pilot Station	0	0	232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	232
Marshall	0	0	644	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	644
District 2	0	123	1,950	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,073
Russian Mission	0	0	74	395	0	0	0	0	0	0	0	0	0	0	0	0	0	0	469
Holy Cross	0	0	0	171	0	0	0	0	0	0	0	0	0	0	0	0	0	0	171
Shageluk	0	0	0	0	0	0	0	0	0	0	0	0	0	114	0	0	0	0	114
District 3	0	0	74	566	0	0	0	0	0	0	0	0	0	114	0	0	0	0	754
Anvik	0	0	0	0	45	0	0	0	0	0	0	0	0	0	0	0	0	0	45
Grayling	0	0	0	0	45	0	0	0	0	0	0	0	0	0	0	0	0	0	45
Kaltag	0	0	0	0	103	0	0	0	0	0	0	0	0	0	0	0	0	0	103
Nulato	0	0	0	0	662	0	0	0	0	0	0	0	0	0	0	0	0	0	662
Koyukuk	0	0	0	0	25	132	130	0	0	0	0	0	0	0	0	0	0	0	287
Galena	0	0	0	0	32	474	622	0	0	0	0	0	0	0	0	0	0	0	1,128
Ruby	0	0	0	0	0	145	98	0	0	0	0	0	0	0	0	0	0	0	243
Huslia/Hughes	0	0	0	0	420	0	0	0	0	0	0	0	0	0	0	0	0	0	420
Allakaket/Alatna/Bettles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,299	0	0	0	1,299
District 4	0	0	0	0	1,332	751	850	0	0	0	0	0	0	0	1,299	0	0	0	4,232

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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	0	0	12,039	0	0	0	0	0	0	0	0	0	12,039
Stevens Village/Rampart	0	0	0	0	0	0	0	0	0	0	35	0	0	0	0	0	0	0	35
Beaver	0	0	0	0	0	0	0	0	0	0	17	0	0	0	0	0	0	0	17
Fort Yukon/Birch Creek	0	0	0	0	0	0	0	0	0	0	5,734	1,418	0	0	0	0	0	0	7,152
Venetie/Chalkyitsik	0	0	0	0	0	0	0	0	0	0	68	34	0	0	0	2,635	0	68	2,805
District 5	0	0	0	0	0	0	0	0	12,039	0	5,854	1,452	0	0	0	2,635	0	68	22,048
Survey totals	87	3,672	2,024	566	1,332	751	850	0	12,039	0	5,854	1,452	0	114	1,299	2,635	0	68	32,743

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 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, 2019.

	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	263	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	343
Scammon Bay	0	462	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	462
Coastal District	263	542	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	805
Nunam Iqua	0	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21
Alakanuk	0	370	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	370
Emmonak	0	213	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	213
Kotlik	0	1,172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,172
District 1	0	1,776	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,776
Mountain Village	0	0	58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	58
Pitkas Point	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
St. Mary's	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
Pilot Station	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Marshall	0	0	212	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	212
District 2	0	0	280	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	280
Russian Mission	0	0	13	91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	104
Holy Cross	0	0	0	63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	63
Shageluk	0	0	0	18	0	0	0	0	0	0	0	0	0	46	0	0	0	0	64
District 3	0	0	13	172	0	0	0	0	0	0	0	0	0	46	0	0	0	0	231
Anvik	0	0	0	0	50	0	0	0	0	0	0	0	0	0	0	0	0	0	50
Grayling	0	0	0	0	75	0	0	0	0	0	0	0	0	0	0	0	0	0	75
Kaltag	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Nulato	0	0	0	0	27	0	0	0	0	0	0	0	0	0	0	0	0	0	27
Koyukuk	0	0	0	0	0	20	18	0	0	0	0	0	0	0	0	0	0	0	38
Galena	0	0	0	0	0	105	15	0	0	0	0	0	0	0	0	0	0	0	120
Ruby	0	0	0	0	0	0	32	0	0	0	0	0	0	0	0	0	0	0	32
Huslia/Hughes	0	0	0	0	80	0	0	0	0	0	0	0	0	0	0	0	0	0	80
Allakaket/Alatna/Bettles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	69	0	0	0	69
District 4	0	0	0	0	233	125	65	0	0	0	0	0	0	0	69	0	0	0	492

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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	24	58	0	0	0	0	0	0	0	0	0	82
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	4	0	0	0	0	0	0	0	4
Venetie/Chalkyitsik	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	12
District 5	0	0	0	0	0	0	0	24	58	0	4	0	0	0	0	0	0	12	98
Survey totals	263	2,318	293	172	233	125	65	24	58	0	4	0	0	46	69	0	0	12	3,682

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 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, 2019.

		Districts/Subdistricts (fishing location)[a]													River drainages (fishing location)					
Species	District	Coastal	1	2	3	4A	4B	4C	5A	5B	5C	5D-down	5D-up	6	Innoko	Koyukuk	Teedriinjik	Porcupine	Draanjik	Total by district
Chinook	Coastal	493	1,523	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,016
		(333)	(405)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(525)
	District 1	34	5,458	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5,492
		(34)	(748)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(749)
	District 2	0	522	7,367	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7,889
		(0)	(78)	(1,009)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(1,012)
	District 3	0	0	407	2,712	20	0	0	0	0	0	0	0	0	167	0	0	0	0	3,306
		(0)	(0)	(262)	(784)	(9)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(24)	(0)	(0)	(0)	(0)	(827)
	District 4	0	0	0	0	7,494	2,919	1,128	0	0	0	0	0	0	0	206	0	0	0	11,747
		(0)	(0)	(0)	(0)	(1,427)	(873)	(488)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(121)	(0)	(0)	(0)	(1,747)
	District 5	0	0	0	0	0	0	355	172	2,881	13	4,699	1,751	0	0	0	369	0	0	10,240
		(0)	(0)	(0)	(0)	(0)	(0)	(257)	(148)	(1,015)	(0)	(1,189)	(723)	(0)	(0)	(0)	(255)	(0)	(0)	(1,766)
	Totals	527	7,503	7,774	2,712	7,514	2,919	1,483	172	2,881	13	4,699	1,751	0	167	206	369	0	0	40,690
		(335)	(854)	(1,042)	(784)	(1,427)	(873)	(552)	(148)	(1,015)	(0)	(1,189)	(723)	(0)	(24)	(121)	(255)	(0)	(0)	(2,952)
Summer chum	Coastal	2,365	4,671	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7,036
		(669)	(963)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(1,173)
	District 1	54	18,551	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18,605
		(45)	(2,841)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(2,842)
	District 2	0	1,835	19,446	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21,281
		(0)	(232)	(3,336)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(3,344)
	District 3	0	0	499	1,267	167	0	0	0	0	0	0	0	0	422	0	0	0	0	2,355
		(0)	(0)	(271)	(725)	(75)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(168)	(0)	(0)	(0)	(0)	(796)
	District 4	0	0	0	0	4,252	1,454	207	0	0	0	0	0	0	0	1,620	0	0	0	7,533
		(0)	(0)	(0)	(0)	(2,652)	(226)	(178)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(2,715)
	District 5	0	0	0	0	0	0	3	0	527	0	39	0	0	0	0	0	0	0	569
		(0)	(0)	(0)	(0)	(0)	(0)	(2)	(0)	(262)	(0)	(28)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(264)
	Totals	2,419	25,057	19,945	1,267	4,419	1,454	210	0	527	0	39	0	0	422	1,620	0	0	0	57,379
		(671)	(3,009)	(3,347)	(725)	(2,653)	(226)	(178)	(0)	(262)	(0)	(28)	(0)	(0)	(168)	(507)	(0)	(0)	(0)	(5,358)

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Table 9.–Page 2 of 2.

Species	District	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 district
Fall chum	Coastal	87	729	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	816
		(86)	(354)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(364)
	District 1	0	2,822	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,822
		(0)	(802)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(802)
	District 2	0	123	1,950	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,073
		(0)	(33)	(600)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(601)
	District 3	0	0	74	566	0	0	0	0	0	0	0	0	0	114	0	0	0	0	754
		(0)	(0)	(57)	(375)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(380)
	District 4	0	0	0	0	1,332	751	850	0	0	0	0	0	0	0	1,299	0	0	0	4,232
		(0)	(0)	(0)	(0)	(0)	(290)	(284)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(120)	(0)	(0)	(0)	(535)
	District 5	0	0	0	0	0	0	0	0	12,039	0	5,854	1,452	0	0	0	2,635	0	68	22,048
		(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(5,511)	(0)	(2,096)	(2,253)	(0)	(0)	(0)	(638)	(0)	(43)	(6,344)
	Totals	87	3,674	2,024	566	1,332	751	850	0	12,039	0	5,854	1,452	0	114	1,299	2,635	0	68	32,745
		(86)	(877)	(603)	(375)	(328)	(290)	(284)	(0)	(5,511)	(0)	(2,096)	(2,253)	(0)	(0)	(120)	(638)	(0)	(43)	(6,467)
Coho	Coastal	263	542	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	805
		(243)	(248)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(347)
	District 1	0	1,776	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,776
		(0)	(789)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(789)
	District 2	0	0	279	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	279
		(0)	(0)	(103)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(103)
	District 3	0	0	13	172	0	0	0	0	0	0	0	0	0	46	0	0	0	0	231
		(0)	(0)	(14)	(175)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(176)
	District 4	0	0	0	0	233	125	66	0	0	0	0	0	0	0	69	0	0	0	493
		(0)	(0)	(0)	(0)	(0)	(32)	(60)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(3)	(0)	(0)	(0)	(109)
	District 5	0	0	0	0	0	0	0	24	58	0	4	0	0	0	0	0	0	12	98
		(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(48)	(0)	(4)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(62)
	Totals	263	2,318	292	172	233	125	66	24	58	0	4	0	0	46	69	0	0	12	3,682
		(243)	(827)	(104)	(175)	(84)	(32)	(60)	(36)	(48)	(0)	(4)	(0)	(0)	(0)	(3)	(0)	(0)	(17)	(895)

Note: Commercially related fish are salmon harvested during commercial fishing that were not sold but retained and used for subsistence purposes. Totals may not add up 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 confluence of the Porcupine and Yukon Rivers.

Table 10.–Estimated subsistence harvest of pink salmon, whitefish, northern pike, and sheefish by surveyed communities, Yukon Area, 2019.

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]
Hooper Bay	245	123	2,393	1,005	3,529	2,147	8,714	6,209	881	409	74	57	15,591	37%
Scammon Bay	117	55	1,322	278	992	572	4,717	3,651	2,016	655	333	229	9,380	42%
Coastal District	362	178	3,715	1,039	4,521	2,213	13,431	7,157	2,897	763	407	232	24,971	38%
Nunam Iqua	41	22	269	231	187	97	735	458	6	6	1,116	393	2,313	60%
Alakanuk	150	70	190	314	15,229	25,746	2,545	2,537	706	267	1,738	1,017	20,408	98%
Emmonak	205	110	23	30	937	420	2,197	955	2,677	747	3,287	1,685	9,121	68%
Kotlik	121	56	398	271	846	379	1,700	576	864	365	1,796	989	5,604	69%
District 1	517	258	880	464	17,199	25,430	7,177	2,772	4,253	865	7,937	2,212	37,446	94%
Mountain Village [d]	167	88	270	422	1,164	437	343	104	1,945	864	1,552	2,102	5,274	91%
Pitkas Point	28	23	0	0	675	210	232	134	128	53	585	323	1,620	95%
St. Mary's	139	74	80	93	2,676	717	100	85	1,261	459	592	291	4,709	82%
Pilot Station [d]	131	60	1	0	1,019	534	0	0	763	410	386	311	2,169	66%
Marshall	99	50	1	1	528	176	53	32	781	336	211	84	1,574	63%
District 2	564	295	352	428	6,062	1,017	728	187	4,878	1,100	3,326	2,146	15,346	81%
Russian Mission	75	28	0	0	932	810	276	445	497	368	296	228	2,001	53%
Holy Cross	53	33	0	0	495	233	445	234	121	38	36	17	1,097	100%
Shageluk	32	28	2	2	544	179	169	54	391	74	174	25	1,280	100%
District 3	160	89	2	2	1,971	837	890	491	1,009	366	506	223	4,378	78%
Anvik	32	23	0	0	73	30	0	0	51	30	47	45	171	100%
Grayling	56	22	0	0	209	162	0	0	57	68	88	65	354	100%
Kaltag	50	24	0	0	173	98	43	28	534	604	474	430	1,224	100%
Nulato	84	39	0	0	2	2	0	0	0	0	88	50	90	100%
Koyukuk	42	16	0	0	107	35	0	0	21	39	20	24	148	25%
Galena	139	62	0	0	177	17	68	1	66	34	96	84	407	62%
Ruby	48	19	0	0	0	0	0	0	0	0	18	0	18	0%
Huslia/Hughes	113	60	82	0	2,158	294	2,851	0	1,213	608	480	171	6,784	87%
Allakaket/Alatna/Bettles	82	48	0	0	1,618	725	600	871	235	25	408	173	2,861	57%
District 4	646	313	82	0	4,517	788	3,562	852	2,177	835	1,719	490	12,057	75%

-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	99	54	0	0	1,053	568	2,547	1,655	59	30	683	449	4,342	72%
Stevens Village/Rampart	18	6	0	0	35	69	0	0	14	28	0	0	49	100%
Beaver	32	26	0	0	378	473	0	0	31	23	15	17	424	5%
Fort Yukon/Birch Creek	214	83	0	0	425	263	1,502	1,723	254	142	211	178	2,392	29%
Venetie/Chalkyitsik	100	50	0	0	76	57	0	0	131	103	34	32	241	71%
District 5	463	219	0	0	1,967	768	4,049	2,358	489	179	943	476	7,448	50%
Survey totals	2,712	1,352	5,031	1,210	36,237	25,483	29,837	8,046	15,703	1,837	14,838	3,162	101,646	79%

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

[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] Includes test fishery donations.

Table 11.–Unexpanded and reported subsistence harvest of nonsalmon fish species, by surveyed communities, Yukon Area, 2019.

Community	Total households	Households contacted [a]	Alaska blackfish	Arctic grayling	Arctic lamprey	Burbot	Pacific herring	Tomcod
Hooper Bay [b]	245	123	14,585	0	0	180	4,020	7,641
Scammon Bay [b]	117	55	3,630	0	1	48	6,108	897
Coastal District	362	178	18,215	0	1	228	10,128	8,538
Nunam Iqua [b]	41	22	980	0	0	132	0	152
Alakanuk	150	70	6,279	0	0	320	28	208
Emmonak [b]	205	110	41,020	0	0	190	846	860
Kotlik [b]	121	56	1,750	30	0	153	1,265	248
District 1	326	166	50,029	30	0	795	2,139	1,468
Mountain Village [b]	167	88	4,335	50	0	377	0	0
Pitkas Point	28	23	3,500	0	0	57	0	0
St. Mary's	139	74	3,750	10	0	134	0	0
Pilot Station	131	60	0	0	0	6	0	0
Marshall	99	50	280	0	0	103	0	0
District 2	230	110	11,865	60	0	677	0	0
Russian Mission	75	28	0	0	0	44	0	0
Holy Cross	53	33	350	0	0	25	0	0
Shageluk	32	28	550	0	0	5	0	0
District 3	85	61	900	0	0	74	0	0
Anvik	32	23	0	10	0	7	0	0
Grayling	56	22	0	10	0	8	0	0
Kaltag	50	24	0	0	0	20	0	0
Nulato	84	39	0	223	0	0	0	0
Koyukuk	42	16	0	0	0	0	0	0
Galena	139	62	0	20	0	20	0	0
Ruby	48	19	0	20	0	10	0	0
Huslia	113	60	7,000	71	1	27	0	0
Hughes	82	48	0	68	0	30	0	0
District 4	195	108	7,000	422	1	122	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	99	54	0	1	2	3	0	0
Stevens Village/Rampart	18	6	0	0	0	0	0	0
Beaver	32	26	0	0	0	2	0	0
Fort Yukon/Birch Creek	214	83	0	20	0	45	0	0
Venetie/Chalkyitsik	100	50	0	211	0	0	0	0
District 5	314	133	0	232	2	50	0	0
Survey totals	414	183	88,009	744	4	1,946	12,267	10,006

[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 20 households from 5 communities reported harvesting 143 gallons and 35 pounds of 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, 2019.

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	19	18	95%	1	0	0	0	0	0	0	0	0	0	0	
Yukon River Rampart Area	SR	36	34	94%	23	1,300	42	196	7	66	1	10	0	0	50	
Yukon River near Haul Road Bridge[d]	SY	90	87	97%	46	2,440	182	3,961	507	927	35	12	65	6	1	
Yukon River near Circle and Eagle[e]	SE	62	61	98%	20	875	30	8,110	0	285	13	4	0	4	22	[e]
					21	742	0	10,631	0	125	19	0	3	2	8	[f]
Tanana River Subdistrict 6-A	SA	28	28	100%	10	101	56	2,639	547	18	0	4	26	0	0	
Tanana River Subdistrict 6-B	SB	76	72	95%	33	519	329	2,059	522	376	47	1	11	5	0	
Tanana River Upstream of Subdistrict 6-C	SU	31	29	94%	11	0	0	4	0	621	0	2	199	8	23	
Kantishna River Subdistrict 6-A	SK	24	24	100%	0	0	0	0	0	0	0	0	0	0	0	
Tolovana River Pike Subdistrict 6-B	ST	245	243	99%	148	0	0	0	0	0	0	0	937	0	0	[g]
						8	4	0	2	0	1,088	48	4	696	0	[h]
Subsistence permit subtotals		611	596	98%	321	5,981	639	27,602	1,583	3,506	163	37	1,937	25	104	
Tanana River salmon Subdistrict 6-C	PC	92	90	98%	49	244	294	408	68	88	10	0	73	66	0	
Tanana River whitefish upstream of Subdistrict 6-C	PW	15	14	93%	2	0	0	0	0	11	0	0	0	38	0	
Personal use permit subtotals		107	104	97%	51	244	294	408	68	99	10	0	73	104	0	
All permit totals		718	700	97%	372	6,225	933	28,010	1,651	3,605	173	37	2,010	129	104	

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 Highway 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 and sucker permit. Permit area descriptions are officially described in Alaska State statutes. Did not include salmon retained from test fishery projects or commercial fisheries.

[a] Permit data from permits returned by June 4, 2020.

[b] Included 52 households that were issued permits for more than 1 area.

[c] Included 9 households that fished in 2 different permit or harvest 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, 2019.

Subsistence permit community	Harvest by drainage	Permits		Percent (%) returned	No. of permits fished[b]	Chinook	Summer chum	Fall chum	Coho	Whitefish	Sheefish	Burbot	Northern pike	Longnose sucker	Arctic grayling
		Issued[a]	Returned												
Circle/Central	Yukon River	15	15	100	10	694	0	2,069	0	222	0	0	0	0	0
Eagle	Yukon River	31	31	100	22	788	0	16,610	0	188	32	4	10	6	30
Fairbanks (FNSB)[c]	Yukon River	98	95	97	55	2,479	179	4,104	506	930	35	12	63	6	1
	Koyukuk River	7	7	100	0	0	0	0	0	0	0	0	0	0	0
	Tanana River	39	39	100	15	82	31	657	213	114	11	1	24	8	0
	Tolovana River	216	216	100	150	0	0	0	0	0	0	0	937	0	0
	Kantishna River	8	8	100	0	0	0	0	0	0	0	0	0	0	0
	FNSB subtotal	368	365	99	220	2,561	210	4,761	719	1,044	46	13	1,024	14	1
Manley	Yukon River	2	2	100	1	199	0	0	0	0	0	0	0	0	0
	Tanana River	12	12	100	7	94	3	2,457	381	9	0	3	5	0	0
	Tolovana River	2	2	100	0	0	0	0	0	0	0	0	0	0	0
	Manley subtotal	16	16	100	8	293	3	2,457	381	9	0	3	5	0	0
Minto	Yukon River	5	5	100	4	189	25	0	0	0	0	0	0	0	0
	Tanana River	16	13	81	3	31	0	11	0	99	31	0	5	0	0
	Tolovana River	11	10	91	3	4	0	2	0	1,088	48	4	685	0	0
	Minto subtotal	32	28	88	10	224	25	13	0	1,187	79	4	690	0	0
Nenana/Healy	Yukon River	1	1	100	0	0	0	0	0	0	0	0	0	0	0
	Tanana River	36	34	94	18	404	351	1,574	475	169	5	1	7	5	0
	Tolovana River	3	2	67	1	0	0	0	0	0	0	0	10	0	0
	Nenana subtotal	40	37	93	19	404	351	1,574	475	169	5	1	17	5	0
Stevens Village/Rampart	Yukon River	10	7	70	5	452	20	63	7	55	0	10	0	0	50
Other Subsistence[d]	Yukon River	26	26	100	11	556	0	82	1	8	1	0	3	0	0
	Koyukuk River	12	11	92	1	0	0	0	0	0	0	0	0	0	0
	Tanana River	32	31	97	11	9	0	3	0	624	0	2	195	0	23
	Tolovana River	13	13	100	1	0	0	0	0	0	0	0	1	0	0
	Kantishna River	16	16	100	0	0	0	0	0	0	0	0	0	0	0
	Other subtotal	99	97	98	24	565	0	85	1	632	1	2	199	0	23
Subsistence permit subtotals		611	596	98%	318	5,981	609	27,632	1,583	3,506	163	37	1,945	25	104
Personal use permit community															
Fairbanks (FNSB)[c]	Tanana River	99	96	97	47	217	294	388	67	89	10	0	73	66	0
Other personal use[e]	Tanana River	8	8	100	4	27	0	20	1	10	0	0	0	38	0
Personal use permit subtotals		107	104	97%	51	244	294	408	68	99	10	0	73	104	0
All permit totals		718	700	97	369	6,225	903	28,040	1,651	3,605	173	37	2,018	129	104

-continued-

Table 13.–Page 2 of 2.

Note: Does not include salmon from test fishery projects or salmon retained from commercial fisheries. Information from permits returned by June 4, 2020.

[a] Included 52 households that were issued permits for more than 1 area.

[b] Included 9 households that fished in more than 1 permit area. Did not include 3 households that fished in 2 harvest areas within the same drainage.

[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, Auke Bay, Chalkyitsik, Clear Delta Junction, Eagle River, Manley, Minto, Palmer, Tanana, Tok, Venetie, Wasilla, and Wiseman who were issued a subsistence fishing permit for Yukon, Tanana, Tolovana, Kantishna, and upper Koyukuk Rivers.

[e] Other personal use included residents from Anchorage, Delta Junction, Palmer, and Talkeetna who were issued a personal use permit.

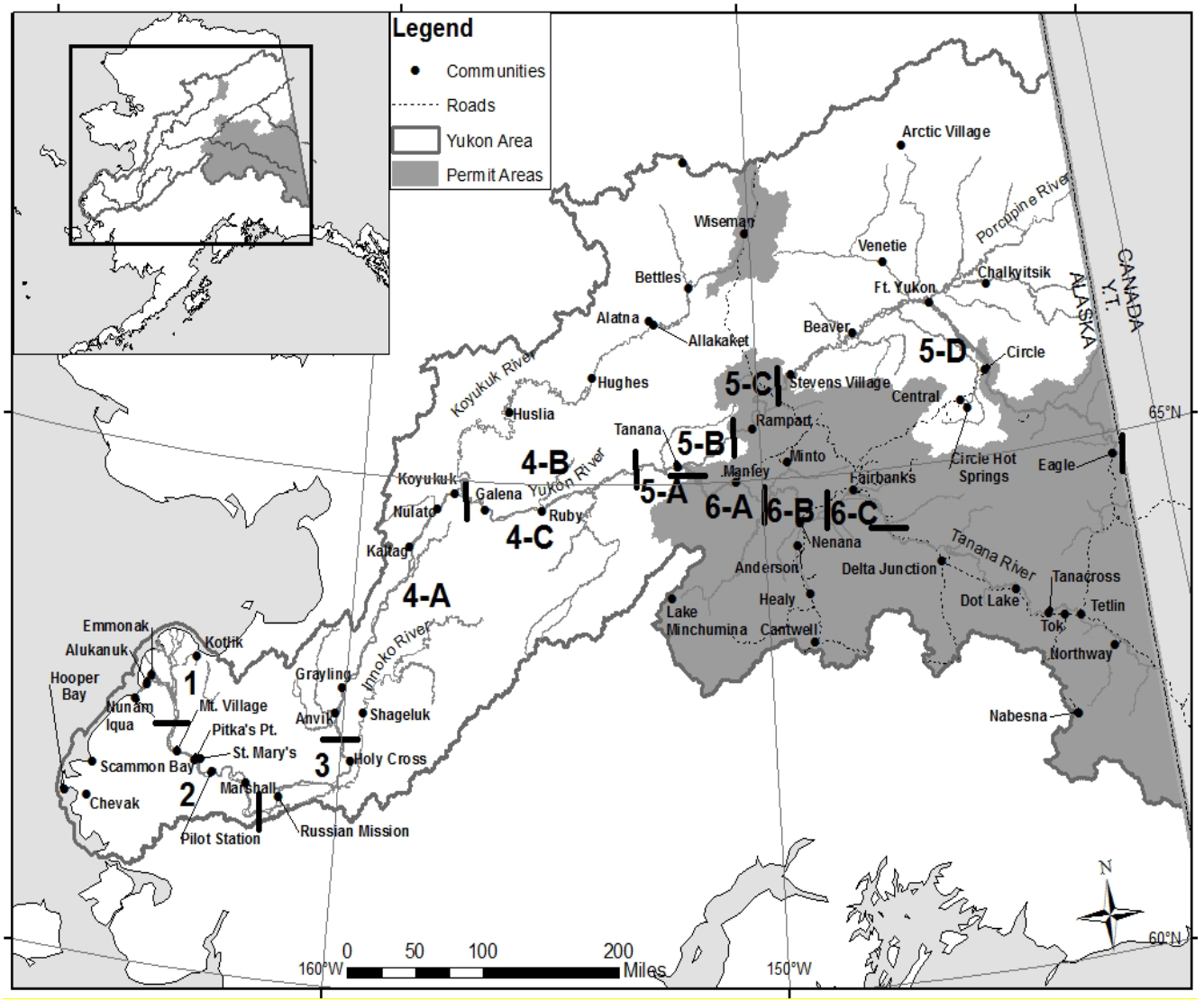


Figure 1.–Map of Alaska portion of the Yukon River drainage showing communities and subsistence and personal use permit areas.

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

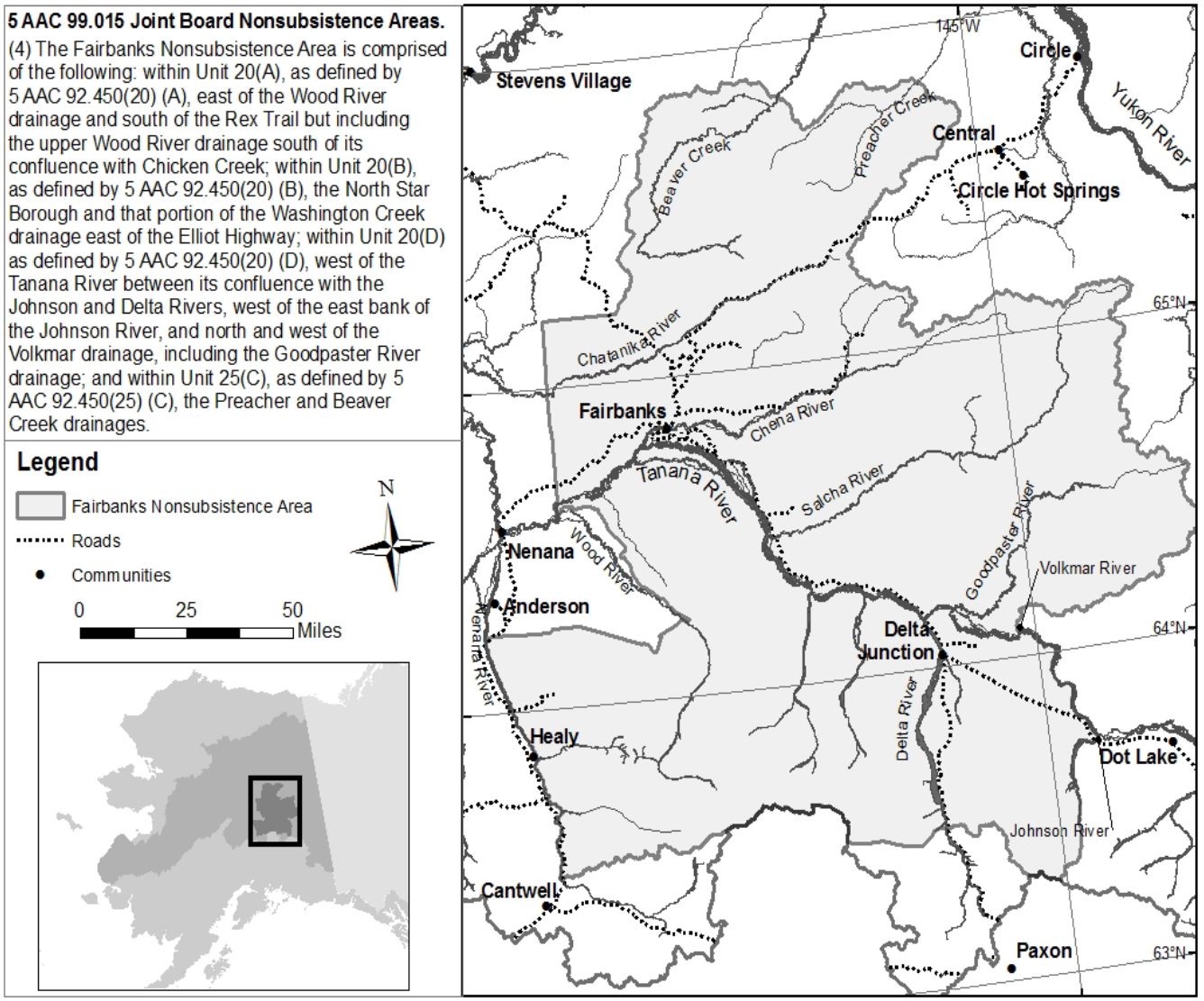


Figure 2.–Map of the Fairbanks Nonsubsistence Area.

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

2019 SUBSISTENCE SALMON HARVEST CALENDAR AND LOTTERY

The Alaska Department of Fish and Game requests your assistance in assessing the Yukon River subsistence salmon harvest. You can help by recording the number of salmon you harvest for subsistence. Please include all salmon caught even those fed to dogs. Do not include salmon given to you by another fishermen or a test fishery, or salmon that were sold commercially. HAI'! ANA BAASEE'! MAASEE CHOO! THANK YOU!

DID YOU FISH IN 2019? (please circle one) YES NO

CIRCLE FISHING LOCATION DISTRICT (map on back): 4-A 4-B 4-C 5-A 5-B 5-C 5-D

WHAT GEAR DID YOU USE? (circle gear/s) SET GILLNET FISH WHEEL DRIFT GILLNET DIP OTHER: ________

2019 June

SUN	MON	TUE	WED	THU	FRI	SAT
26	27	28	29	30	31	01
02	03	04	05	06	07	08
09	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	01					

2019 July

SUN	MON	TUE	WED	THU	FRI	SAT
30	01	02	03	04	05	06
07	08	09	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	01	02	03
04	05					

2019 August

SUN	MON	TUE	WED	THU	FRI	SAT
28	29	30	31	01	02	03
04	05	06	07	08	09	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
01	02					

In the **Upper Yukon**, summer season ends on **July 31**. Chum entering District 4 after that date are considered to be **fall chum**.

2019 September

SUN	MON	TUE	WED	THU	FRI	SAT
01	02	03	04	05	06	07
08	09	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	01	02	03	04	05
06	07					

2019 October

SUN	MON	TUE	WED	THU	FRI	SAT
29	30	01	02	03	04	05
06	07	08	09	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	01	02
03	04					

WIN $50!!!

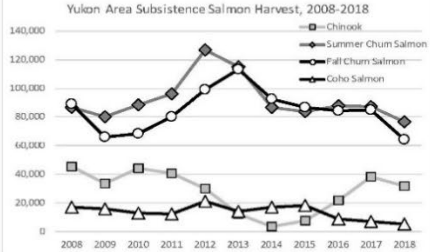
Return this calendar to be entered into a drawing for one of the $50 cash prizes.

To be eligible to win a prize, answer the questions at the top of this page and mail your calendar back before **December 31, 2019**. GOOD LUCK!

@YukonRiverFishingADFG

Date of Harvest	Chinook (Kings)	Chum (Summer or Fall)	Coho Salmon	Pink Salmon and Other Fish Species or Harvest Note (Fish Quality, River Conditions)
May 15	1	10	0	(example) 1 pink, 3 sheefish, 12 cisco

If you run out of space and would like to be mailed another calendar, please call us! 907-459-7274



Congratulations to last year's calendar lottery winners!

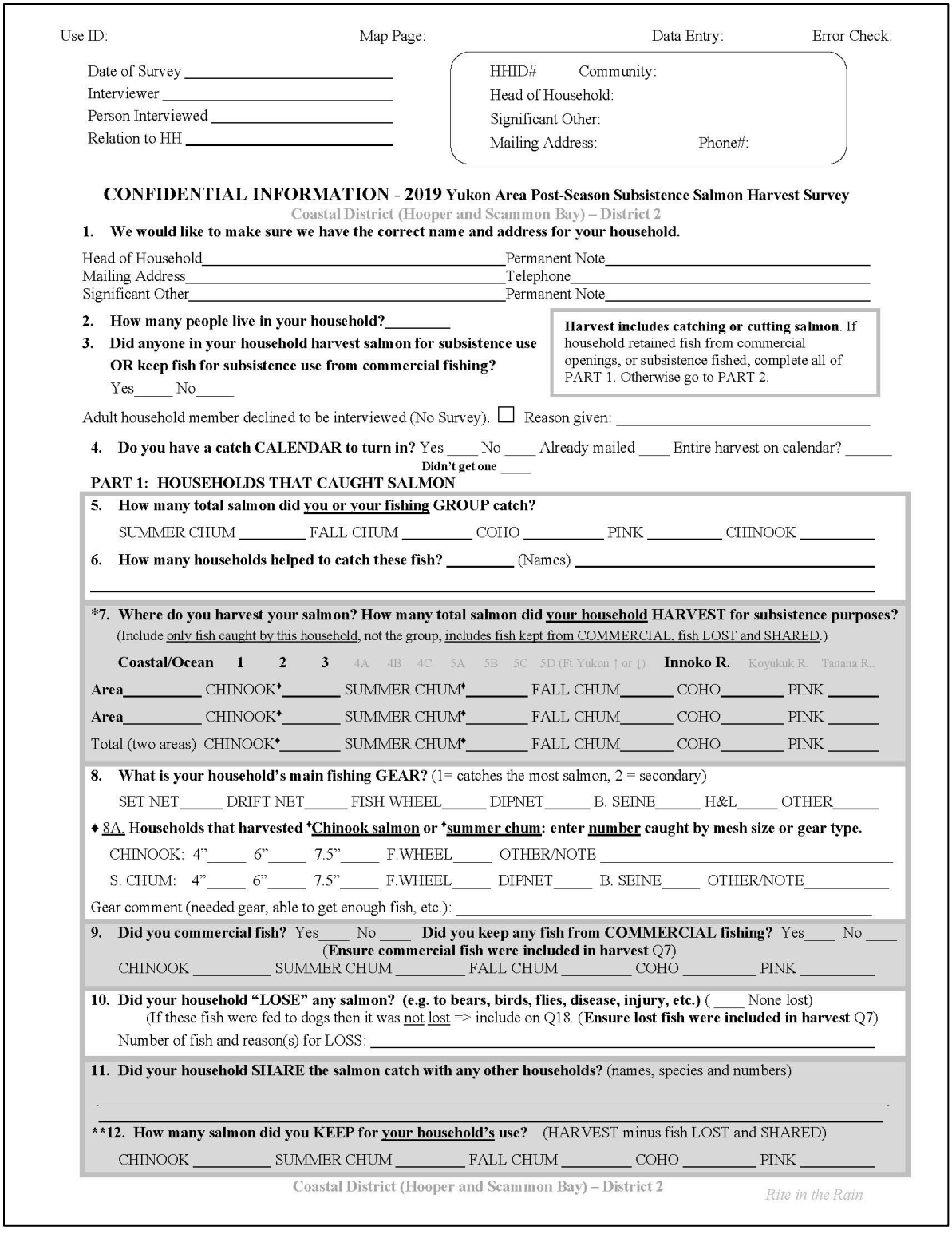
Lower River Winners: George Ford, Hooper Bay; Timothy Bell, Hooper Bay; Aleck Leichty, Kotlik; Albert Beans, Pilot Station; Anna Luke, Saint Mary's; James Edwards, Saint Mary's.

Upper River Winners: Eddie James, Birch Creek; Bruce Fennimore, Galena; Shirley Clark, Grayling; Wilson Sam, Huslia; William McCarty, Ruby; Martin Scarf, Tanana.

RECORDED FISHERY SCHEDULES AND UPDATES: 1-866-479-7387

Figure 3.–Example Upper Yukon River subsistence harvest calendar, Yukon Area, 2019.

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:
Head of Household:
Significant Other:
Mailing Address: Phone#:

CONFIDENTIAL INFORMATION - 2019 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 (No Survey). ☐ Reason given: _____

4. Do you have a catch CALENDAR to turn in? 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. Where do you harvest your salmon? How many total salmon did your household HARVEST for subsistence purposes?**
(Include only fish caught by this household, not the group, includes fish kept from COMMERCIAL, fish LOST and SHARED.)

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____
(**Ensure commercial fish were included in harvest** Q7)
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 these fish were 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 LOST and SHARED)
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, 2019.

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 _____

(From last September/October 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. How many WHOLE salmon did YOUR household put up for dogs? (numbers should represent WHOLE FISH, not scraps):

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

18. 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? Yes No _____

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 ☐ Reviewed for completeness ☐

Coastal District (Hooper and Scammon Bay) – District 2

Rite in the Rain

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, 2019.

-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

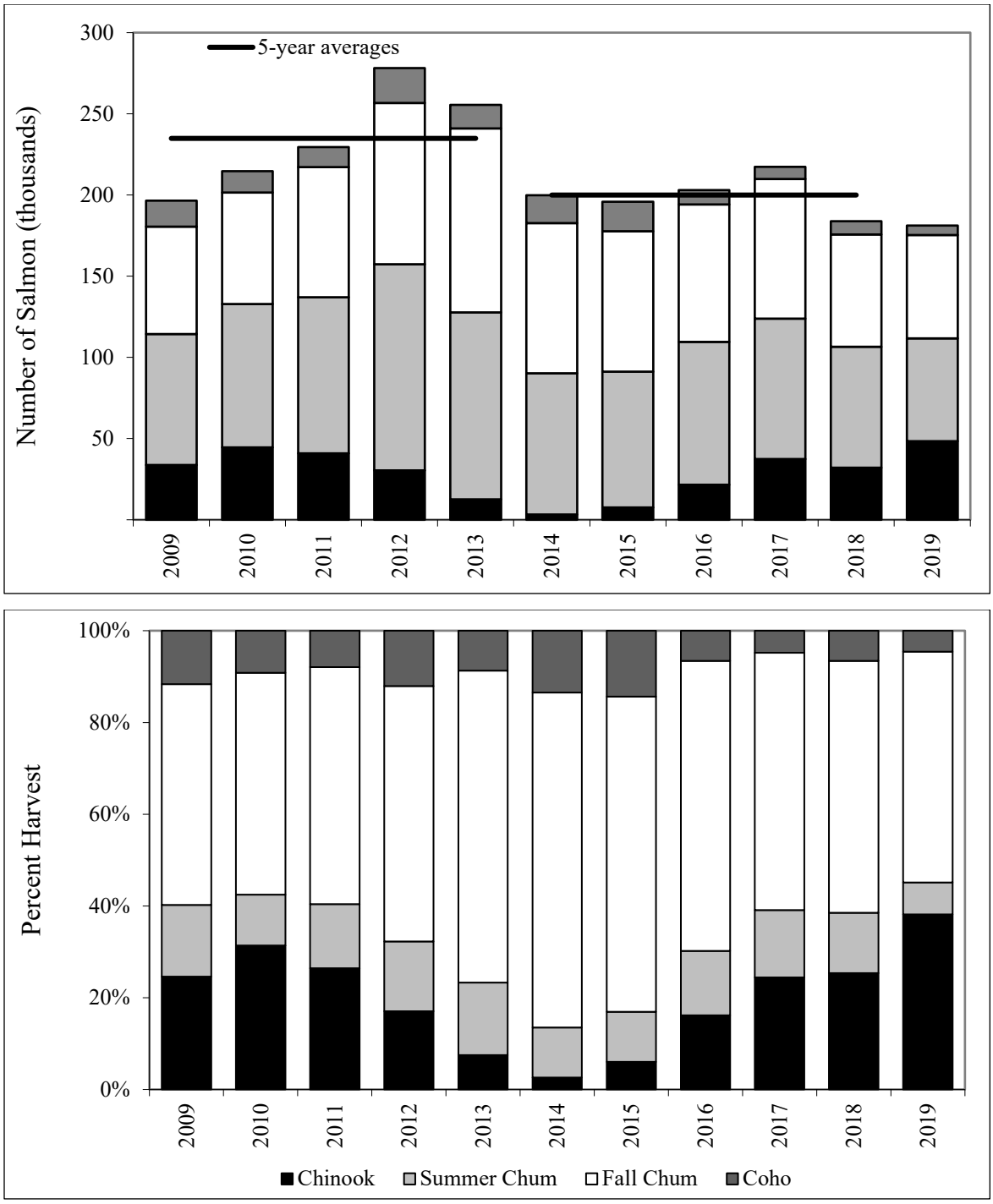


Figure 6.–Estimated total subsistence salmon harvest by species, Yukon Area, 2009–2019.

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

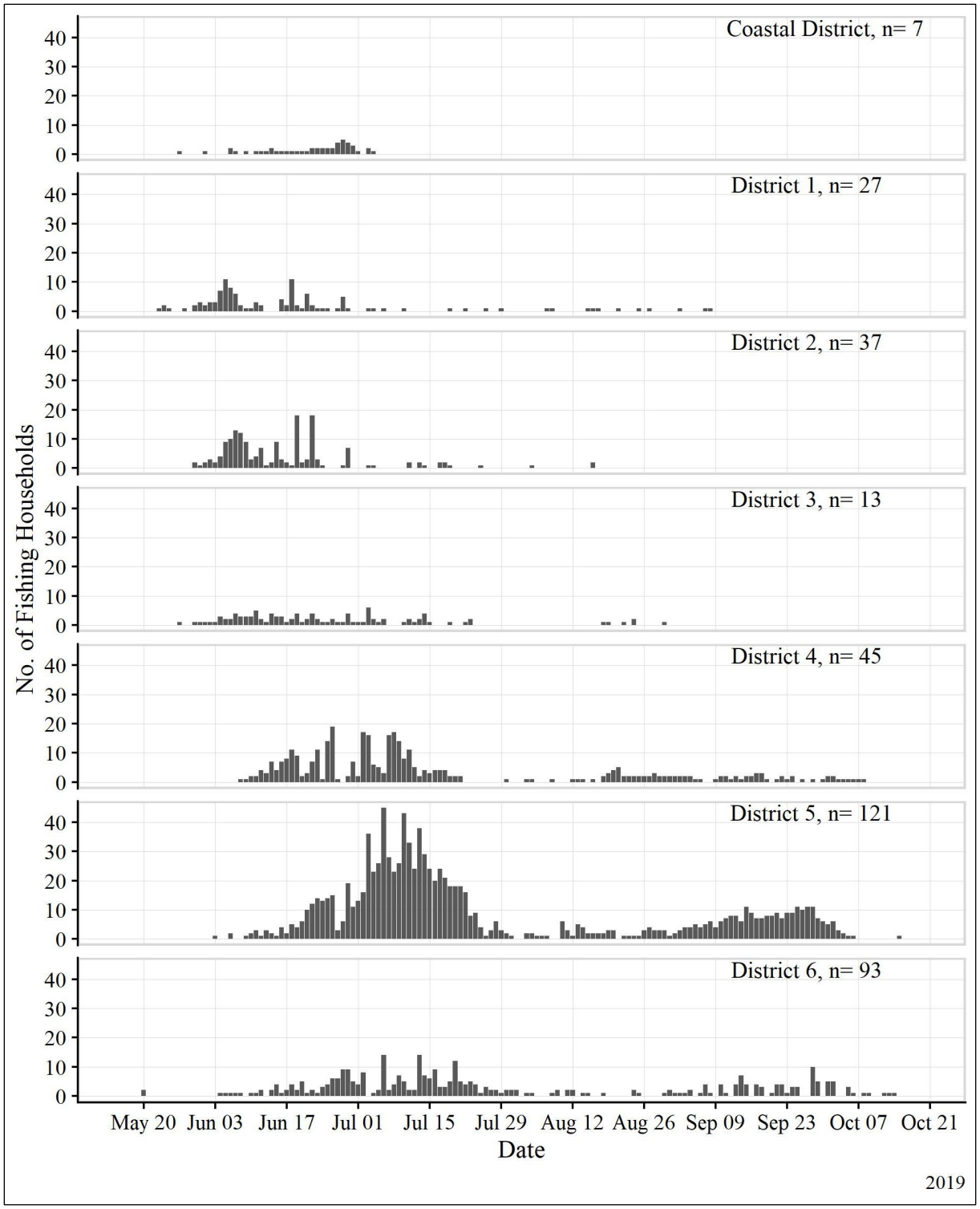


Figure 7.–Number of fishing households reporting harvest on calendars or permits by day and by district, Yukon Area, 2019.

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

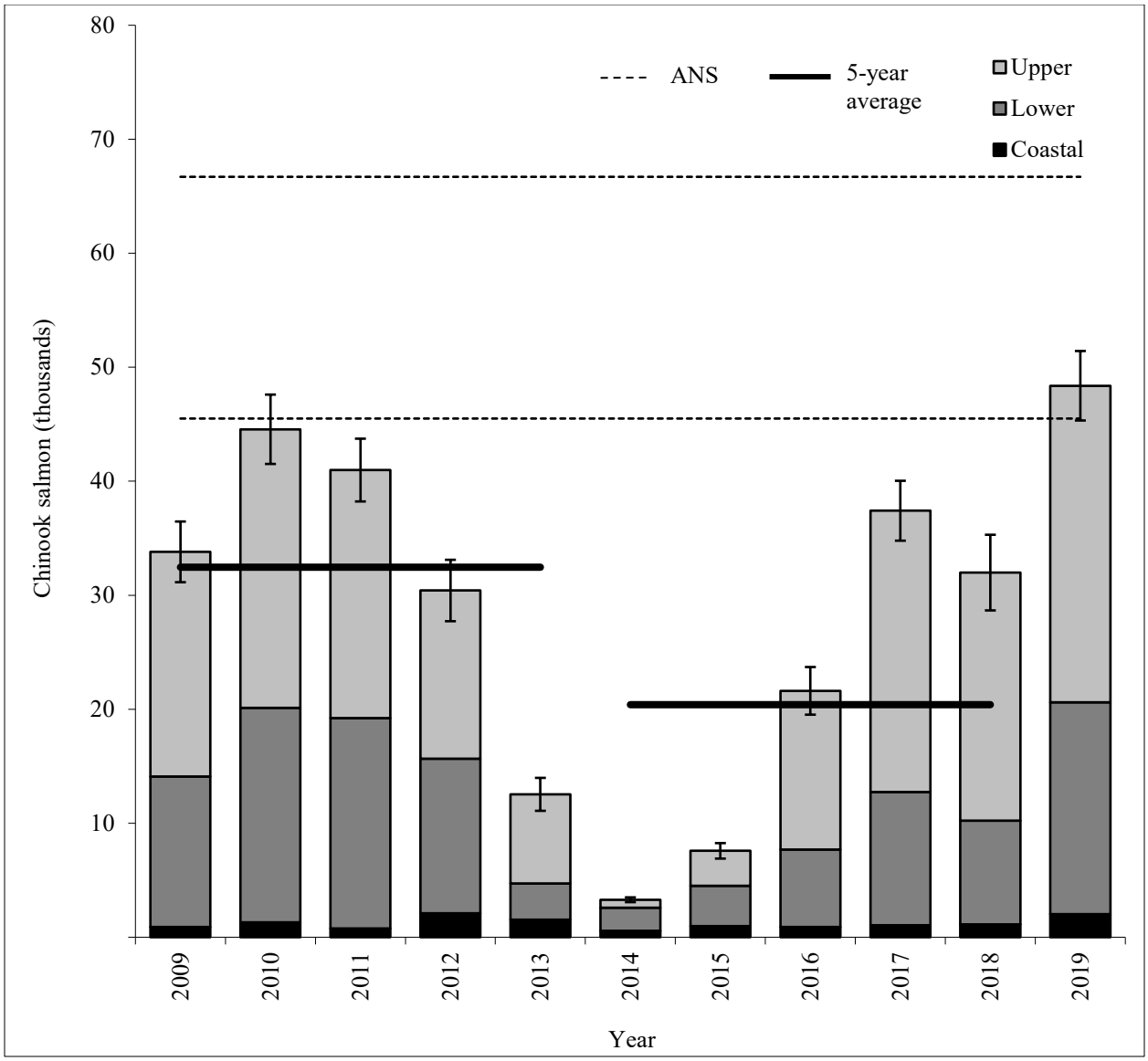


Figure 8.–Estimated Chinook salmon subsistence harvest, Yukon Area, 2009–2019.

Note: Harvest estimates are shaded bars and 95% confidence intervals are 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 did not include salmon from personal use fisheries. Subsistence fisheries were restricted by time and gear type during the summer season in 2009, and 2011–2019 to protect Chinook salmon.

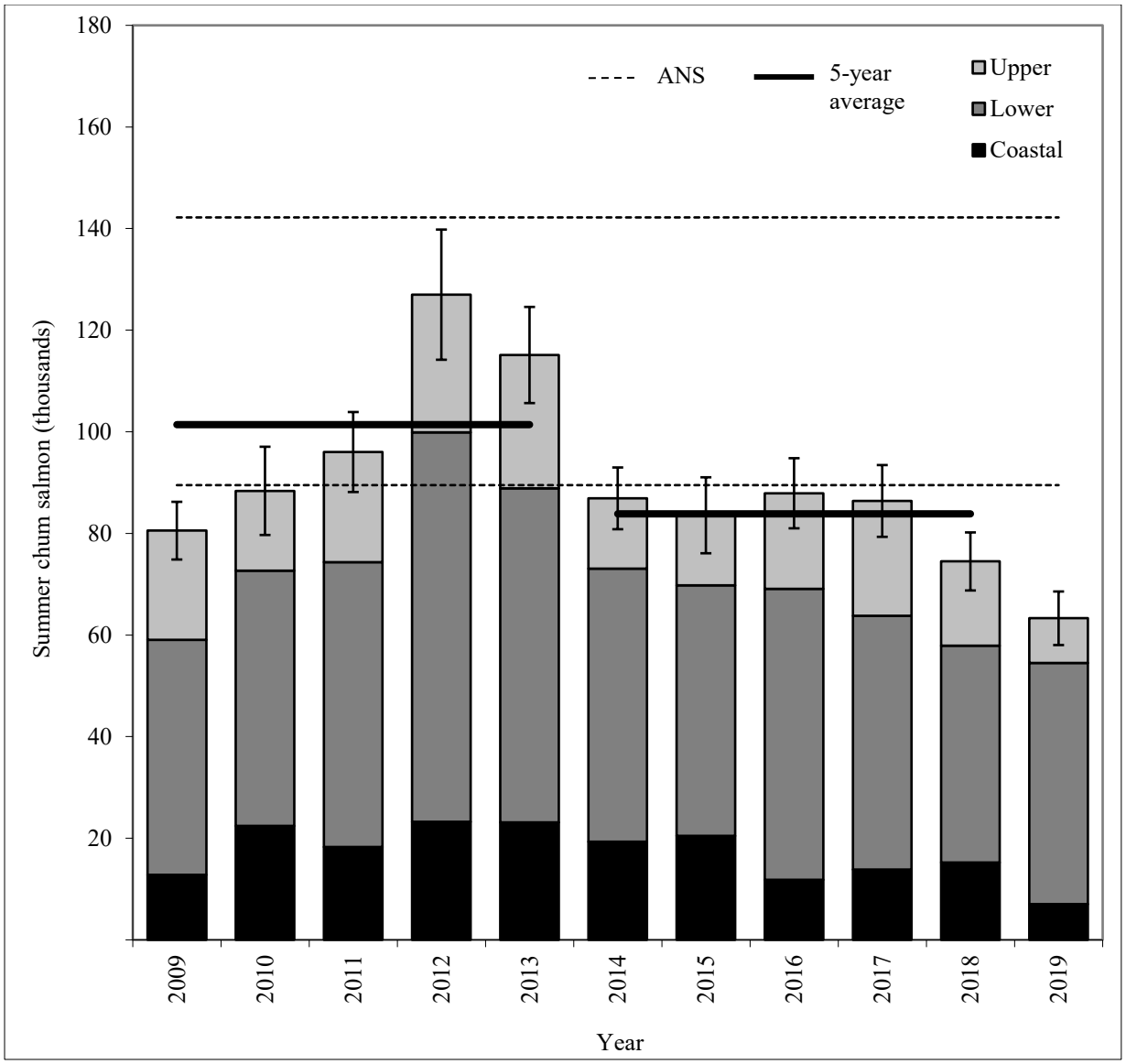


Figure 9.–Estimated summer chum salmon subsistence harvest, Yukon Area, 2009–2019.

Note: Harvest estimates are shaded bars and 95% confidence intervals are 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 were based on 1990–1999 subsistence harvest amounts and did not include salmon from personal use fisheries. Subsistence fisheries were restricted by time and gear type during the summer season in 2009 and 2011–2018 to protect Chinook salmon.

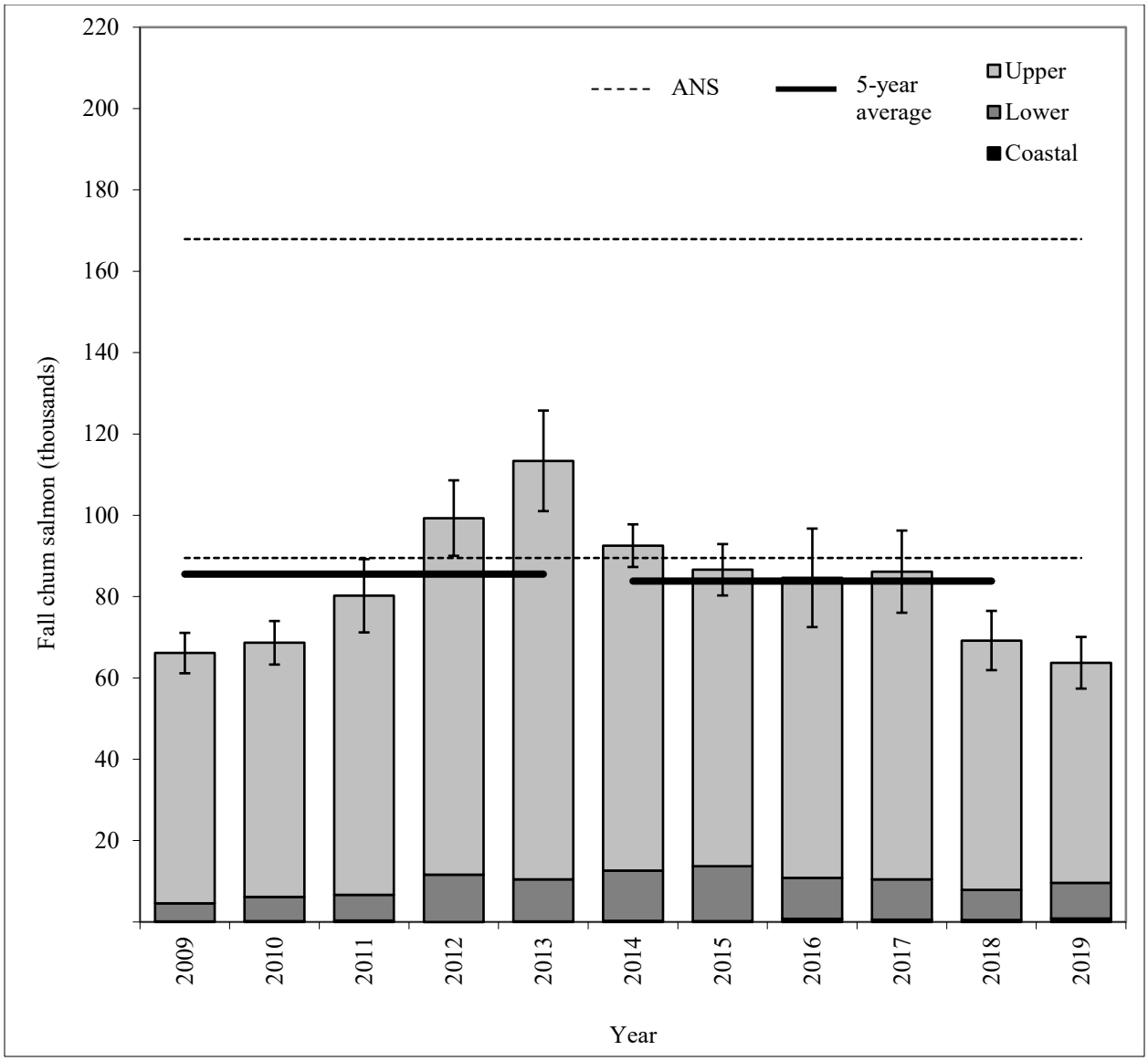


Figure 10.–Estimated fall chum salmon subsistence harvest, Yukon Area, 2009–2019.

Note: Harvest estimates are shaded bars and 95% confidence intervals are 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.

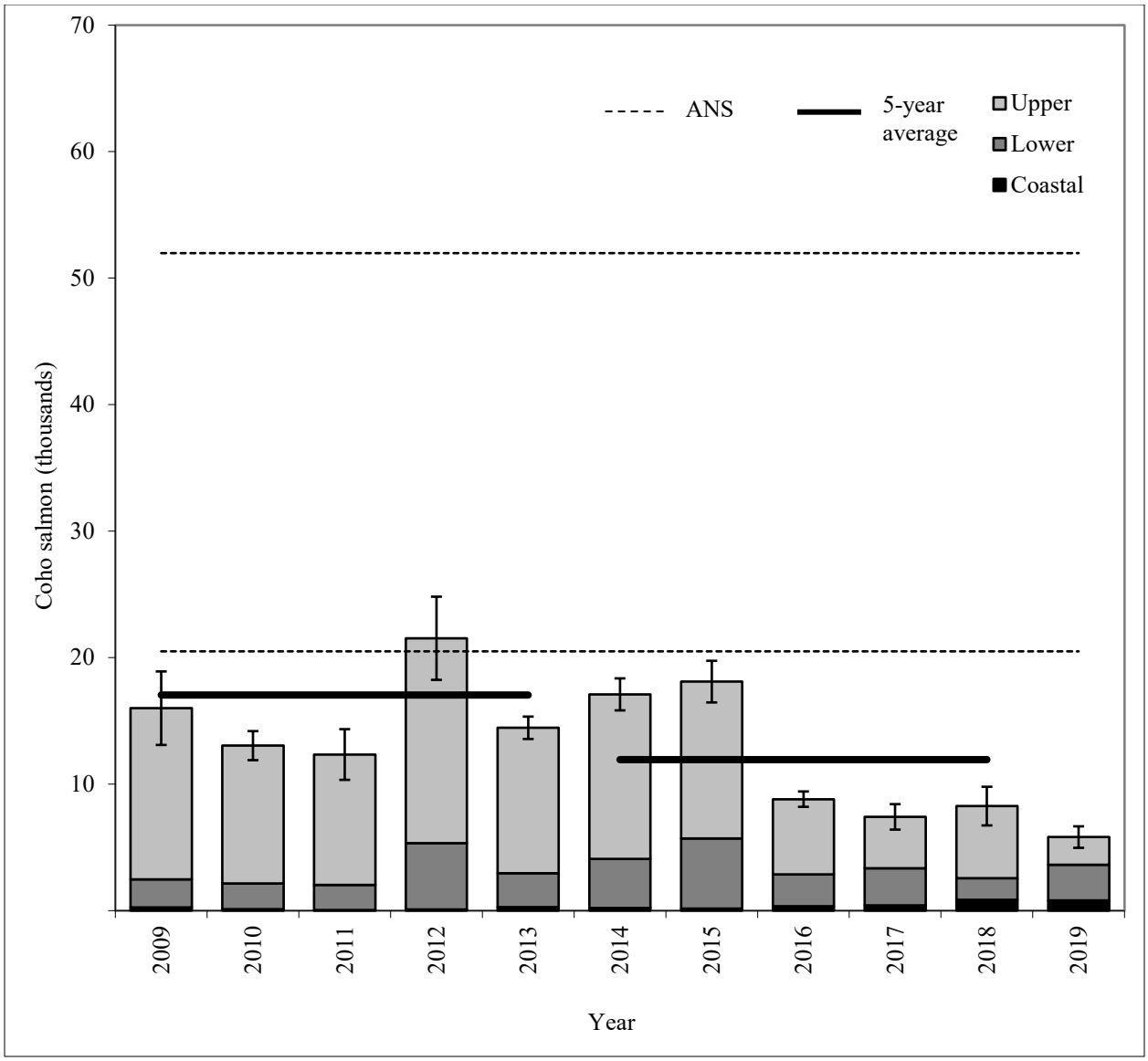


Figure 11.–Estimated coho salmon subsistence harvest, Yukon Area, 2009–2019.

Note: Harvest estimates are shaded bars and 95% confidence intervals are 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.

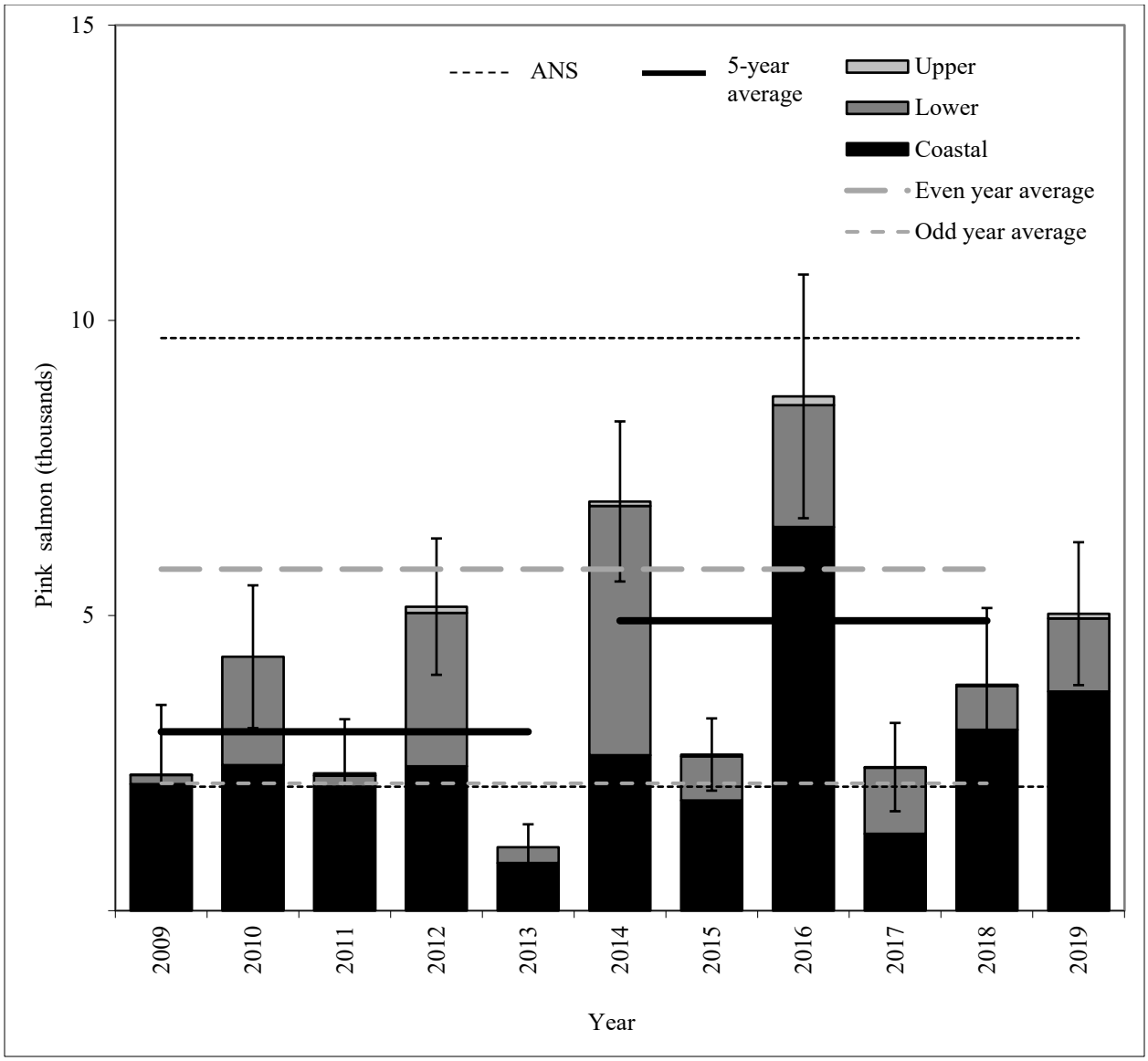


Figure 12.–Estimated pink salmon subsistence harvest, Yukon Area, 2009–2019.

Note: Harvest estimates are shaded bars and 95% confidence intervals are 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 are based on 2002–2011 subsistence harvest amounts and did not include salmon from personal use fisheries.

APPENDIX A: 2019 HARVEST INFORMATION

Appendix A1.–Estimated subsistence harvest of salmon and 95% confidence interval (CI) in surveyed communities, with community and district totals, Yukon Area, 2019.

			Chinook		Summer chum		Fall chum		Coho	
Community	*N*	*n*	Est	CI	Est	CI	Est	CI	Est	CI
Hooper Bay	245	123	784	308	2,999	658	210	189	342	194
Scammon Bay	117	55	1,233	326	4,037	924	605	250	462	191
Coastal District total	362	178	2,017	445	7,036	1,122	815	310	804	270
Nunam Iqua	41	22	470	260	905	330	102	62	21	14
Alakanuk	150	70	1,687	546	5,469	1,947	322	197	370	303
Emmonak	205	110	1,492	245	5,752	1,190	569	207	215	100
Kotlik	121	56	1,843	371	6,480	1,654	1,829	747	1,172	722
District 1 total	517	258	5,492	737	18,606	2,800	2,822	789	1,778	777
Mountain Village	167	89	1,232	306	4,320	687	214	97	58	20
Pitkas Point	28	23	1,096	201	1,103	325	139	111	0	0
St. Mary's	139	76	2,718	636	7,339	2,713	844	491	10	5
Pilot Station	131	61	1,581	576	5,817	1,564	232	115	0	0
Marshall	99	50	1,261	402	2,703	981	644	300	212	102
District 2 total	564	299	7,888	1,000	21,282	3,321	2,073	595	280	102
Russian Mission	75	28	1,561	705	1,483	801	469	387	104	158
Holy Cross	53	33	1,483	501	199	70	171	51	63	31
Shageluk	32	28	262	60	673	226	114	0	65	14
District 3 total	160	89	3,306	842	2,355	809	754	378	232	157
Anvik	32	23	655	258	223	172	45	28	55	66
Grayling	56	24	1,446	596	879	533	45	79	75	53
Kaltag	50	24	1,225	396	180	255	103	179	1	1
Nulato	84	39	2,396	755	157	188	662	264	27	22
Koyukuk	42	17	1,088	520	21	38	287	393	38	57
Galena	139	62	2,895	859	1,223	242	1,129	246	120	13
Ruby	48	19	1,036	452	464	117	242	170	32	57
Huslia/Hughes	113	60	871	868	3,915	2,625	420	0	80	0
Allakaket/Alatna/Bettles	82	48	134	114	472	186	1,299	120	69	3
District 4 total	646	316	11,746	1,712	7,534	2,673	4,232	576	497	112
Tanana	99	54	3,408	1,357	530	263	12,039	5,525	82	60
Rampart/Stevens Village	18	7	197	359	0	0	35	69	0	0
Beaver	32	26	1,413	457	27	29	17	9	0	0
Fort Yukon/Birch Creek	214	83	4,563	1,363	12	0	7,153	3,076	4	4
Venetie/Chalkyitsik	100	50	660	341	0	0	2,804	649	12	17
District 5 total	463	220	10,241	1,998	569	260	22,048	6,260	98	61
Survey total	2,712	1,360	40,690	3,048	57,382	5,271	32,744	6,353	3,689	850

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, 2019.

	Setnet		Driftnet		Fish wheel		Dip net		Hook & Line	
Community	Est	CI	Est	CI	Est	CI	Est	CI	Est	CI
Hooper Bay	90	10	13	2	0	0	0	0	0	0
Scammon Bay	64	7	2	1	0	0	2	0	0	0
Coastal District total	154	12	14	2	0	0	2	0	0	0
Nunam Iqua	20	5	0	0	0	0	1	0	0	0
Alakanuk	47	10	34	6	0	0	3	1	0	0
Emmonak	18	3	77	9	0	0	0	0	2	1
Kotlik	46	10	40	7	0	0	0	0	0	0
District 1 total	131	15	151	13	0	0	4	1	2	1
Mountain Village	4	0	64	6	0	0	0	0	0	0
Pitkas Point	1	1	16	2	0	0	0	0	0	0
St. Mary's	5	1	86	7	0	0	0	0	0	0
Pilot Station	6	3	63	7	0	0	0	0	0	0
Marshall	0	0	53	4	0	0	0	0	0	0
District 2 total	16	3	283	12	0	0	0	0	0	0
Russian Mission	20	7	23	8	0	0	0	0	0	0
Holy Cross	7	2	20	5	0	0	0	0	0	0
Shageluk	11	2	1	1	0	0	0	0	0	0
District 3 total	39	7	44	9	0	0	0	0	0	0
Anvik	5	2	11	4	0	0	0	0	0	0
Grayling	1	0	40	5	0	0	0	0	3	2
Kaltag	0	0	26	4	0	0	0	0	0	0
Nulato	3	1	46	5	0	0	0	0	0	0
Koyukuk	2	1	18	7	0	0	0	0	0	0
Galena	15	3	59	12	1	1	0	0	0	0
Ruby	11	5	11	4	1	0	0	0	0	0
Huslia/Hughes	8	1	12	3	0	0	0	0	0	0
Allakaket/Alatna/Bettles	17	4	1	0	0	0	0	0	0	0
District 4 total	62	8	225	16	2	1	0	0	3	2
Tanana	31	5	1	0	12	3	0	0	2	0
Rampart/Stevens Village	2	0	0	0	5	3	0	0	0	0
Beaver	15	3	0	0	3	1	0	0	0	0
Fort Yukon/Birch Creek	22	7	0	0	34	7	0	0	0	0
Venetie/Chalkyitsik	23	4	0	0	2	2	0	0	2	1
District 5 total	95	10	1	0	55	8	0	0	4	1
Survey total	496	24	720	26	56	8	7	1	9	2

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, 2019.

Yukon River test fishery sites	Community	Chinook	Summer chum	Fall chum	Coho	Pink [a]	Total
Lower Yukon test fishery (LYTF)	Nunam Iqua	0	200	0	0	0	200
	Alakanuk	131	807	30	10	0	978
	Emmonak	927	2,652	1,299	164	0	5,042
	Kotlik	490	514	100	10	0	1,114
	St. Mary's	17	10	0	0	0	27
LYTF project subtotal:		1,565	4,183	1,429	184	0	7,361
Mountain Village test fishery	Mountain Village	6	0	966	215	1	1,188
Pilot Station sonar test fishery	Pilot Station	338	1,054	765	147	1	2,305
Eagle sonar test fishery	Eagle	0	0	0	0	0	0
Test fishery totals		1,909	5,237	3,160	546	2	10,854

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

Appendix A4.–Estimated number of Chinook salmon harvested and 95% confidence interval (CI) by gear type in surveyed communities, Yukon Area, 2019.

	Gillnet mesh size (inches)													
	4 in or less		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	1	0	464	195	318	120	0	0	0	0	0	0	0	0
Scammon Bay	0	0	1,068	274	144	84	0	0	21	3	0	0	0	0
Coastal District total	1	0	1,532	333	462	145	0	0	21	3	0	0	0	0
Nunam Iqua	0	0	288	99	145	234	0	0	38	14	0	0	0	0
Alakanuk	0	0	1,492	500	176	58	0	0	19	9	0	0	0	0
Emmonak	0	0	1,152	179	339	77	0	0	0	0	0	0	0	0
Kotlik	112	50	1,405	300	326	60	0	0	0	0	0	0	0	0
District 1 total	112	49	4,337	609	986	249	0	0	57	16	0	0	0	0
Mountain Village	0	0	994	297	239	28	0	0	0	0	0	0	0	0
Pitkas Point	0	0	489	99	608	114	0	0	0	0	0	0	0	0
St. Mary's	0	0	1,154	263	1,565	386	0	0	0	0	0	0	0	0
Pilot Station	0	0	917	375	663	213	0	0	0	0	0	0	0	0
Marshall	0	0	238	49	1,023	377	0	0	0	0	0	0	0	0
District 2 Total	0	0	3,792	549	4,097	582	0	0	0	0	0	0	0	0
Russian Mission	0	0	593	277	969	491	0	0	0	0	0	0	0	0
Holy Cross	0	0	361	136	1,123	379	0	0	0	0	0	0	0	0
Shageluk	0	0	169	60	93	0	0	0	0	0	0	0	0	0
District 3 total	0	0	1,123	305	2,184	603	0	0	0	0	0	0	0	0
Anvik	0	0	26	2	629	257	0	0	0	0	0	0	0	0
Grayling	0	0	390	291	1,056	393	0	0	0	0	0	0	0	0
Kaltag	0	0	155	69	1,069	371	0	0	0	0	0	0	0	0
Nulato	0	0	1,587	546	809	276	0	0	0	0	0	0	0	0
Koyukuk	0	0	375	204	714	328	0	0	0	0	0	0	0	0
Galena	0	0	971	404	1,889	517	35	0	0	0	0	0	0	0
Ruby	0	0	701	417	236	92	100	0	0	0	0	0	0	0
Huslia/Hughes	0	0	11	7	860	868	0	0	0	0	0	0	0	0
Allakaket/Alatna/Bettles	0	0	134	114	0	0	0	0	0	0	0	0	0	0
District 4 total	0	0	4,349	850	7,262	1,218	135	0	0	0	0	0	0	0

-continued-

Appendix A4.–Page 2 of 2.

	Gillnet mesh size (inches)													
	4 in or less		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
Tanana	0	0	1,702	1,107	273	187	1,433	344	0	0	0	0	0	0
Stevens Village	0	0	51	72	32	61	114	221	0	0	0	0	0	0
Beaver	0	0	738	247	39	17	616	208	0	0	0	0	0	0
Fort Yukon/Birch Creek	0	0	707	450	17	14	3,839	1,066	0	0	0	0	0	0
Venetie/Chalkyitsik	0	0	210	110	272	143	0	0	0	0	0	0	177	229
District 5 total	0	0	3,408	1,205	634	237	6,002	1,140	0	0	0	0	177	225
Survey total	113	49	18,541	1,740	15,625	1,517	6,137	1,135	78	16	0	0	177	224

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

Appendix A5.–Estimated number of summer chum salmon harvested and 95% confidence intervals (CI) by gear type in surveyed communities, Yukon Area, 2019.

	Gillnet mesh size (inches)													
	4 in or less		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	13	2	2,198	546	788	170	0	0	0	0	0	0	0	0
Scammon Bay	0	0	3,900	913	116	19	0	0	21	3	0	0	0	0
Coastal District total	13	2	6,099	1,051	903	171	0	0	21	3	0	0	0	0
Nunam Iqua	0	0	869	318	0	0	0	0	36	13	0	0	0	0
Alakanuk	0	0	5,374	1,940	6	2	0	0	89	21	0	0	0	0
Emmonak	0	0	5,733	1,188	16	3	0	0	0	0	0	0	2	1
Kotlik	145	42	6,195	1,596	140	37	0	0	0	0	0	0	0	0
District 1 total	145	42	18,171	2,760	162	36	0	0	124	25	0	0	2	1
Mountain Village	0	0	4,176	678	144	17	0	0	0	0	0	0	0	0
Pitkas Point	0	0	1,007	295	96	30	0	0	0	0	0	0	0	0
St. Mary's	0	0	6,897	2,475	439	239	0	0	3	0	0	0	0	0
Pilot Station	0	0	5,659	1,553	158	30	0	0	0	0	0	0	0	0
Marshall	0	0	2,688	980	15	3	0	0	0	0	0	0	0	0
District 2 total	0	0	20,427	3,125	853	241	0	0	3	0	0	0	0	0
Russian Mission	275	182	1,207	624	0	0	0	0	0	0	0	0	0	0
Holy Cross	0	0	128	46	71	32	0	0	0	0	0	0	0	0
Shageluk	0	0	637	226	36	0	0	0	0	0	0	0	0	0
District 3 total	275	176	1,972	644	107	31	0	0	0	0	0	0	0	0
Anvik	0	0	130	109	92	65	0	0	0	0	0	0	0	0
Grayling	0	0	468	269	412	430	0	0	0	0	0	0	0	0
Kaltag	0	0	30	31	150	253	0	0	0	0	0	0	0	0
Nulato	0	0	37	21	120	173	0	0	0	0	0	0	0	0
Koyukuk	0	0	21	38	0	0	0	0	0	0	0	0	0	0
Galena	0	0	523	242	600	0	100	0	0	0	0	0	0	0
Ruby	0	0	314	117	0	0	150	0	0	0	0	0	0	0
Huslia/Hughes	0	0	2,096	2,041	1,819	638	0	0	0	0	0	0	0	0
Allakaket/Alatna/Bettles	0	0	472	186	0	0	0	0	0	0	0	0	0	0
District 4 total	0	0	4,091	2,052	3,193	807	250	0	0	0	0	0	0	0

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	Gillnet mesh size (inches)													
	4 in or less		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
Tanana	0	0	199	135	0	0	319	196	0	0	0	0	12	14
Stevens Village	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Beaver	0	0	27	29	0	0	0	0	0	0	0	0	0	0
Fort Yukon/Birch Creek	0	0	12	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
District 5 total	0	0	238	136	0	0	319	192	0	0	0	0	12	14
Survey total	434	179	50,997	4,792	5,218	858	569	191	148	25	0	0	14	14

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

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, 2009–2019.

Community	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2009–2013 Average	2014–2018 Average
Hooper Bay	183	584	252	1,090	1,210	455	534	284	314	456	784	664	409
Scammon Bay	722	716	517	1,014	332	108	432	602	747	666	1,233	660	511
Coastal District total	905	1,300	769	2,104	1,542	563	966	886	1,061	1,122	2,017	1,324	920
Nunam Iqua	200	404	250	195	12	62	210	190	235	78	470	212	155
Alakanuk	634	944	1,464	1,081	275	214	436	465	838	414	1,818	880	473
Emmonak	1,634	2,194	2,172	1,864	553	463	612	939	1,731	1,203	2,419	1,683	990
Kotlik	1,657	2,314	2,369	1,173	794	617	661	1,158	1,767	1,556	2,333	1,661	1,152
District 1 subtotal	4,125	5,856	6,255	4,313	1,634	1,356	1,919	2,752	4,571	3,251	7,040	4,437	2,770
Mountain Village	1,482	1,601	2,063	1,789	266	178	370	809	1,060	1,021	1,238	1,440	688
Pitkas Point	265	580	246	261	37	79	44	156	492	365	1,096	278	227
St. Mary’s	1,929	2,800	1,734	2,344	215	68	261	1,032	919	1,172	2,735	1,804	690
Pilot Station	1,258	1,585	1,340	1,078	258	163	382	652	818	581	1,919	1,104	519
Marshall	1,201	2,110	2,686	1,409	328	128	128	512	1,554	914	1,261	1,547	647
District 2 subtotal	6,135	8,676	8,069	6,881	1,104	616	1,185	3,161	4,843	4,053	8,249	6,173	2,772
Russian Mission	978	924	1,550	1,711	236	16	365	321	1,368	1,043	1,561	1,080	623
Holy Cross	1,745	3,098	2,231	576	204	0	68	557	822	580	1,483	1,571	405
Shageluk	201	277	353	75	4	32	14	23	86	181	262	182	67
District 3 subtotal	2,924	4,299	4,134	2,362	444	48	447	901	2,276	1,804	3,306	2,833	1,095
Lower Yukon River total	13,184	18,831	18,458	13,556	3,182	2,020	3,551	6,814	11,690	9,108	18,595	13,442	6,637
Anvik	796	1,069	1,052	435	121	0	58	241	709	566	655	695	315
Grayling	1,133	2,122	1,374	1,081	226	3	22	370	749	888	1,446	1,187	406
Kaltag	1,970	3,191	2,488	1,346	348	10	119	1,358	1,959	570	1,225	1,869	803
Nulato	1,551	2,989	1,538	1,955	602	0	33	1,957	2,132	1,260	2,396	1,727	1,076
Koyukuk	982	867	1,349	614	898	52	26	612	648	859	1,088	942	439
Galena	1,370	1,357	1,434	742	275	1	372	993	2,224	1,262	2,895	1,036	970
Ruby	542	1,102	482	1,316	357	6	68	344	568	1,126	1,036	760	422
District 4 subtotal	8,344	12,697	9,717	7,489	2,827	72	698	5,875	8,989	6,531	10,741	8,215	4,433
Huslia/Hughes	1,070	128	131	165	68	51	38	94	454	170	871	312	161
Allakaket/Alatna/Bettles	100	63	45	8	6	9	35	46	31	48	134	44	34
Koyukuk River subtotal	1,170	191	176	173	74	60	73	140	485	218	1,005	357	195
District 4 total (incl. Koyukuk R.)	9,514	12,888	9,893	7,662	2,901	132	771	6,015	9,474	6,749	11,746	8,572	4,628

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Community	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2009–2013 Average	2014–2018 Average
Tanana	2,950	3,215	2,936	2,100	1,200	88	141	2,129	2,961	5,108	3,408	2,480	2,085
Rampart/Stevens Village	933	731	616	520	274	0	1	228	155	284	446	615	134
Fairbanks (FNSB) [a]	1,509	1,670	2,186	558	610	14	263	1,318	2,521	1,475	2,479	1,307	1,118
Beaver	516	198	356	71	107	0	69	165	585	332	1,413	250	230
Fort Yukon/Birch Creek	861	1,756	2,521	2,141	1,561	93	480	1,225	4,224	4,704	4,563	1,768	2,145
Circle/Central	539	414	363	346	178	0	185	260	744	683	694	368	374
Eagle	446	867	728	167	175	76	395	864	1,730	1,011	788	477	815
Other District 5 [b]	541	779	777	477	125	0	7	306	830	474	944	540	323
District 5 subtotal	8,295	9,630	10,483	6,380	4,230	271	1,541	6,495	13,750	14,071	14,735	7,804	7,226
Venetie/Chalkyitsik	622	767	10	86	311	17	308	586	780	443	660	359	427
Teedriinjik/Draanjik R. subtotal	622	767	10	86	311	17	308	586	780	443	660	359	427
District 5 total [c]	8,917	10,397	10,493	6,466	4,541	288	1,849	7,081	14,530	14,514	15,395	8,163	7,652
Manley	345	337	287	174	165	92	121	230	103	210	94	262	151
Minto	0	43	61	99	60	0	23	35	101	–	35	53	40
Nenana/Healy	473	660	681	296	87	139	263	464	309	181	404	439	271
Fairbanks (FNSB) [d]	396	91	330	58	49	41	33	87	144	53	82	185	72
Other District 6 [e]	71	12	8	0	6	11	0	0	0	49	9	19	12
District 6 Tanana R. total	1,285	1,143	1,367	627	367	283	440	816	657	493	624	958	538
Upper Yukon River total	19,716	24,428	21,753	14,755	7,809	703	3,060	13,912	24,661	21,756	27,765	17,692	12,818
Yukon Area total [f]	33,805	44,559	40,980	30,415	12,533	3,286	7,577	21,612	37,412	31,986	48,377	32,458	20,375
Personal use (District 6) [g]	127	162	89	71	42	1	5	57	125	206	244	98	79
Yukon Area total with personal use	33,932	44,721	41,069	30,486	12,575	3,287	7,582	21,669	37,537	32,192	48,621	32,557	20,453

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

[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 River) and Draanjik (formerly Black River).

[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 was used in assessing U.S./Canada harvest share objectives under the Yukon Salmon Agreement).

[g] Harvest from the personal use fishing area on the Tanana River near Fairbanks; these data were 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, 2009–2019.

Community	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2009–2013 Average	2014–2018 Average
Hooper Bay	9,195	17,020	13,460	15,799	13,629	13,236	11,870	6,324	7,818	8,346	2,999	13,821	9,519
Scammon Bay	3,602	5,405	4,845	7,442	9,506	6,068	8,598	5,520	6,033	6,850	4,037	6,160	6,614
Coastal District total	12,797	22,425	18,305	23,241	23,135	19,304	20,468	11,844	13,851	15,196	7,036	19,981	16,133
Nunam Iqua	2,280	2,267	2,077	1,977	2,651	2,010	2,239	2,130	1,759	1,549	1,105	2,250	1,937
Alakanuk	5,152	7,722	7,447	9,012	7,520	9,120	4,469	6,527	4,993	5,448	6,276	7,371	6,111
Emmonak	9,038	10,918	12,468	15,829	8,209	7,143	9,973	8,976	6,933	7,036	8,404	11,292	8,012
Kotlik	7,528	4,265	6,598	8,552	10,136	5,621	4,960	8,925	8,776	7,007	6,994	7,416	7,058
District 1 subtotal	23,998	25,172	28,590	35,370	28,516	23,894	21,641	26,558	22,461	21,040	22,779	28,329	23,119
Mountain Village	7,204	7,071	9,355	9,031	11,861	7,059	6,063	8,782	7,230	5,414	4,320	8,904	6,910
Pitkas Point	994	633	585	1,153	2,186	1,588	1,225	1,485	1,489	1,390	1,103	1,110	1,435
St. Mary's	5,831	7,443	6,760	10,763	9,167	5,570	8,216	7,379	4,967	4,486	7,349	7,993	6,124
Pilot Station	4,888	6,196	4,182	5,716	5,299	5,728	4,702	4,796	4,952	4,015	6,871	5,256	4,839
Marshall	2,172	2,395	3,810	5,903	3,986	6,189	4,351	5,180	5,166	3,311	2,703	3,653	4,839
District 2 subtotal	21,089	23,738	24,692	32,566	32,499	26,134	24,557	27,622	23,804	18,616	22,346	26,917	24,147
Russian Mission	849	528	1,225	2,508	3,967	3,181	2,626	1,798	2,645	2,245	1,483	1,815	2,499
Holy Cross	194	463	363	1,147	262	97	421	991	242	306	199	486	411
Shageluk	103	350	1,145	5,035	463	470	80	275	804	495	673	1,419	425
District 3 subtotal	1,146	1,341	2,733	8,690	4,692	3,748	3,127	3,064	3,691	3,046	2,355	3,720	3,335
Lower Yukon River total	46,233	50,251	56,015	76,626	65,707	53,776	49,325	57,244	49,956	42,702	47,480	58,966	50,601
Anvik	277	451	220	1,371	830	2,052	777	1,117	330	437	223	630	943
Grayling	1,429	1,612	838	2,616	618	1,617	509	878	738	779	879	1,423	904
Kaltag	50	102	163	186	67	954	216	467	185	25	180	114	369
Nulato	133	416	246	254	401	158	6	1,001	1,588	241	157	290	599
Koyukuk	1,378	352	890	828	4,459	300	0	119	96	150	21	1,581	133
Galena	1,718	1,702	3,414	718	179	377	1,059	1,689	1,228	349	1,223	1,546	940
Ruby	603	1,971	775	3,891	681	29	88	678	107	970	464	1,584	374
District 4 subtotal	5,588	6,606	6,546	9,864	7,235	5,487	2,655	5,949	4,272	2,951	3,147	7,168	4,263
Huslia/Hughes	4,277	2,227	4,120	7,734	4,070	3,214	4,609	4,764	9,295	4,726	3,915	4,486	5,322
Allakaket/Alatna/Bettles	5,093	2,887	2,500	3,957	2,456	1,280	2,513	3,015	2,857	4,844	472	3,379	2,902
Koyukuk River subtotal	9,370	5,114	6,620	11,691	6,526	4,494	7,122	7,779	12,152	9,570	4,387	7,864	8,223
District 4 total (incl. Koyukuk R.)	14,958	11,720	13,166	21,555	13,761	9,981	9,777	13,728	16,424	12,521	7,534	15,032	12,486

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Community	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2009–2013 Average	2014–2018 Average
Tanana	4,665	1,856	4,381	4,333	9,565	2,612	3,162	3,685	3,086	2,733	530	4,960	3,056
Rampart/Stevens Village	118	189	110	259	55	70	0	629	10	1	0	146	142
Fairbanks (FNSB) [a]	44	427	688	172	1,350	300	575	461	1,413	521	179	536	654
Beaver	22	22	393	27	12	0	0	23	98	8	27	95	26
Fort Yukon/Birch Creek	275	722	1,297	0	225	19	0	12	98	44	12	504	35
Circle/Central	2	37	48	0	66	0	0	0	0	0	0	31	0
Eagle	0	25	2	0	50	0	0	0	0	0	0	15	0
Other District 5 [b]	29	144	790	101	94	91	8	180	321	37	55	232	127
District 5 subtotal	5,155	3,422	7,709	4,892	11,417	3,092	3,745	4,990	5,026	3,344	803	6,519	4,039
Venetie/Chalkyitsik	143	133	0	0	0	16	0	0	0	114	0	55	26
Teedriinjik/Draanjik R. subtotal	143	133	0	0	0	16	0	0	0	114	0	55	26
District 5 total [c]	5,298	3,555	7,709	4,892	11,417	3,108	3,745	4,990	5,026	3,458	803	6,574	4,065
Manley	367	102	142	58	45	182	9	32	16	78	3	143	63
Minto	1	8	27	64	258	24	0	4	234	–	0	72	52
Nenana/Healy	508	113	471	370	642	275	60	19	603	440	409	421	279
Fairbanks (FNSB) [d]	372	183	185	114	143	237	183	41	271	82	31	199	163
Other District 6 [e]	5	16	0	72	6	13	0	0	7	5	0	20	5
District 6 Tanana R. total	1,253	422	825	678	1,094	731	252	96	1,131	605	443	854	563
Upper Yukon River total	21,509	15,697	21,700	27,125	26,272	13,820	13,774	18,814	22,581	16,584	8,780	22,461	17,115
Yukon Area total [f]	80,539	88,373	96,020	126,992	115,114	86,900	83,567	87,902	86,388	74,482	63,296	101,408	83,848
Personal use (District 6) [g]	308	319	439	321	138	235	220	176	438	515	294	305	317
Yukon Area total with personal use	80,847	88,692	96,459	127,313	115,252	87,135	83,787	88,078	86,826	74,997	63,590	101,713	84,165

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

[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 River) and Draanjik (formerly Black River).

[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 was used in assessing U.S./Canada harvest share objectives under the Yukon Salmon Agreement).

[g] Harvest from the personal use fishing area on the Tanana River near Fairbanks; these data were 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, 2009–2019.

Community	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2009–2013 Average	2014–2018 Average
Hooper Bay	41	116	267	1	91	137	79	105	137	158	210	103	123
Scammon Bay	117	70	48	10	58	115	119	657	416	364	605	61	334
Coastal District total	158	186	315	11	149	252	198	762	553	522	815	164	457
Nunam Iqua	41	143	51	210	93	128	210	111	52	188	102	108	138
Alakanuk	116	860	881	449	328	593	1067	743	424	510	352	527	667
Emmonak	1,589	1,718	1,540	5,890	2,165	2,465	3,244	2,501	2,735	2,208	1,868	2,580	2,631
Kotlik	171	481	962	1,073	1,087	886	1,356	1,217	1,370	759	1,929	755	1,118
District 1 subtotal	1,917	3,202	3,434	7,622	3,673	4,072	5,877	4,572	4,581	3,665	4,251	3,970	4,553
Mountain Village	926	133	800	685	2,174	1,484	1,398	1,210	1,560	872	1,180	944	1,305
Pitkas Point	76	10	30	9	65	400	172	232	172	112	139	38	218
St. Mary’s	106	387	611	1,423	1,009	2,037	1,611	1,088	753	470	844	707	1,192
Pilot Station	265	833	575	1,031	777	796	1,346	903	1,065	1,116	997	696	1,045
Marshall	190	56	562	184	853	1,100	1,731	1,106	532	415	644	369	977
District 2 subtotal	1,563	1,419	2,578	3,332	4,878	5,817	6,258	4,539	4,082	2,985	3,804	2,754	4,736
Russian Mission	205	104	11	282	804	365	449	235	671	349	469	281	414
Holy Cross	627	21	94	339	855	1,840	763	583	324	176	171	387	737
Shageluk	105	1,200	249	16	105	252	176	179	289	174	114	335	214
District 3 subtotal	937	1,325	354	637	1,764	2,457	1,388	997	1,284	699	754	1,003	1,365
Lower Yukon River total	4,417	5,946	6,366	11,591	10,315	12,346	13,523	10,108	9,947	7,349	8,809	7,727	10,655
Anvik	176	169	202	569	763	1,028	680	527	296	500	45	376	606
Grayling	490	202	1,152	804	471	1,451	1,184	499	272	750	45	624	831
Kaltag	200	658	196	2,830	583	2,828	1,255	680	142	66	103	893	994
Nulato	552	1,049	652	2,729	2,995	3,839	2,248	2,681	1,762	869	662	1,595	2,280
Koyukuk	578	792	1,388	1,331	5,308	998	2,838	297	166	295	287	1,879	919
Galena	4,306	1,968	2,739	2,947	602	3,368	2,542	3,319	4,760	1,401	1,129	2,512	3,078
Ruby	134	1,026	592	4,408	2,505	972	713	526	97	842	242	1,733	630
District 4 subtotal	6,436	5,864	6,921	15,618	13,227	14,484	11,460	8,529	7,495	4,723	2,513	9,613	9,338
Huslia/Hughes	374	403	247	1,911	1,257	927	1,226	954	543	859	420	838	902
Allakaket/Alatna/Bettles	572	521	92	526	707	525	588	551	1,535	362	1,299	484	712
Koyukuk River subtotal	946	924	339	2,437	1,964	1,452	1,814	1,505	2,078	1,221	1,719	1,322	1,614
District 4 total (incl. Koyukuk R.)	7,382	6,788	7,260	18,055	15,191	15,936	13,274	10,034	9,573	5,944	4,232	10,935	10,952

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Community	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2009–2013 Average	2014–2018 Average
Tanana	19,595	14,984	21,728	20,465	31,546	14,131	19,627	21,261	21,952	16,731	12,039	21,664	18,740
Rampart/Stevens Village	1,770	3,441	1,251	467	940	6,700	186	4,500	0	1,417	98	1,574	2,561
Fairbanks (FNSB) [a]	229	822	1,696	793	1,160	1,406	2,454	2,143	3,075	2,077	4,104	940	2,231
Beaver	120	37	122	174	21	323	76	228	0	141	17	95	154
Fort Yukon/Birch Creek	2,829	6,006	7,188	12,659	16,453	8,025	6,257	7,728	4,523	3,487	7,153	9,027	6,004
Circle/Central	110	927	299	161	1,397	1,277	1,652	1,306	2,182	2,877	2,069	579	1,859
Eagle	10,941	15,008	17,455	18,731	18,871	17,450	17,185	15,765	19,126	16,539	16,610	16,201	17,213
Other District 5 [b]	71	120	208	443	121	222	229	17	12	175	52	193	131
District 5 subtotal	35,665	41,345	49,947	53,893	70,509	49,534	47,666	52,948	50,870	43,444	42,142	50,272	48,892
Venetie/Chalkyitsik	2,418	2,989	1,938	457	5,589	1,663	2,594	5,883	10,574	2,544	2,804	2,678	4,652
Teedriinjik/Draanjik R. subtotal	2,418	2,989	1,938	457	5,589	1,663	2,594	5,883	10,574	2,544	2,804	2,678	4,652
District 5 total [c]	38,083	44,334	51,885	54,350	76,098	51,197	50,260	58,831	61,444	45,988	44,946	52,950	53,544
Manley	4,126	2,696	2,333	2,164	1,539	2,579	1,697	414	809	3,645	2,457	2,572	1,829
Minto	–	70	1,500	2	593	472	140	40	18	–	13	541	168
Nenana/Healy	8,396	7,870	6,218	9,260	3,852	4,545	3,981	3,544	2,640	4,937	1,801	7,119	3,929
Fairbanks (FNSB) [d]	3,460	678	4,317	3,876	5,651	5,190	3,496	884	1,137	822	658	3,596	2,306
Other District 6 [e]	97	77	8	0	5	12	31	0	18	0	3	37	12
District 6 Tanana R. total	16,079	11,391	14,376	15,302	11,640	12,798	9,345	4,882	4,622	9,404	4,932	13,758	8,210
Upper Yukon River total	61,544	62,513	73,521	87,707	102,929	79,931	72,879	73,747	75,639	61,336	54,110	77,643	72,706
Yukon Area total [f]	66,119	68,645	80,202	99,309	113,393	92,529	86,600	84,617	86,139	69,207	63,734	85,534	83,818
Personal use (District 6) [g]	78	3,209	347	410	383	278	80	283	626	505	408	885	354
Yukon Area total with personal use	66,197	71,854	80,549	99,719	113,776	92,807	86,680	84,900	86,765	69,712	64,142	86,419	84,173

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

[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 River) and Draanjik (formerly Black River).

[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 was used in assessing U.S./Canada harvest share objectives under the Yukon Salmon Agreement).

[g] Harvest from the personal use fishing area on the Tanana River near Fairbanks; these data were 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, 2009–2019.

Community	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2009–2013 Average	2014–2018 Average
Hooper Bay	24	45	0	7	73	118	95	121	218	119	342	30	134
Scammon Bay	222	79	55	86	214	86	79	234	206	746	462	131	270
Coastal District total	246	124	55	93	287	204	174	355	424	865	804	161	404
Nunam Iqua	71	73	23	18	83	153	229	58	20	184	21	54	129
Alakanuk	194	449	431	252	167	443	581	183	199	190	380	299	319
Emmonak	401	362	472	2,660	517	613	852	717	723	329	379	882	647
Kotlik	181	238	201	420	457	573	438	273	102	264	1,182	299	330
District 1 subtotal	847	1,122	1,127	3,350	1,224	1,782	2,100	1,231	1,044	967	1,962	1,534	1,425
Mountain Village	413	127	261	256	271	202	723	436	729	267	273	266	471
Pitkas Point	45	116	37	53	41	123	72	22	224	54	0	58	99
St. Mary’s	151	92	230	141	124	408	391	128	213	37	10	148	235
Pilot Station	203	189	145	329	136	568	305	136	91	121	147	200	244
Marshall	245	33	150	567	508	468	1511	409	139	112	212	301	528
District 2 subtotal	1,057	557	823	1,346	1,080	1,769	3,002	1,131	1,396	591	642	973	1,578
Russian Mission	96	300	0	319	152	124	154	6	483	123	104	173	178
Holy Cross	120	0	0	237	0	103	246	134	0	23	63	71	101
Shageluk	105	53	36	0	219	113	28	0	14	8	65	83	33
District 3 subtotal	321	353	36	556	371	340	428	140	497	154	232	327	312
Lower Yukon River total	2,225	2,032	1,986	5,252	2,675	3,891	5,530	2,502	2,937	1,712	2,836	2,834	3,314
Anvik	137	28	19	214	97	197	46	184	11	15	55	99	91
Grayling	318	132	119	26	34	403	212	35	0	0	75	126	130
Kaltag	40	0	258	928	306	514	18	53	3	34	1	306	124
Nulato	171	242	118	41	125	454	48	0	85	220	27	139	161
Koyukuk	198	254	137	62	3,267	50	416	1	6	22	38	784	99
Galena	2,353	549	1,013	276	170	718	654	201	136	216	120	872	385
Ruby	314	148	312	1,806	345	335	185	226	22	26	32	585	159
District 4 subtotal	3,531	1,353	1,976	3,353	4,344	2,671	1,579	700	263	533	348	2,911	1,149
Huslia/Hughes	412	289	83	165	360	282	310	93	171	1020	80	262	375
Allakaket/Alatna/Bettles	43	88	13	38	236	109	52	33	92	27	69	84	63
Koyukuk River subtotal	455	377	96	203	596	391	362	126	263	1,047	149	345	438
District 4 total (incl. Koyukuk R.)	3,986	1,730	2,072	3,556	4,940	3,062	1,941	826	526	1,580	497	3,257	1,587

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Community	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2009–2013 Average	2014–2018 Average
Tanana	2,373	2,314	312	3,060	1,135	1,788	2,434	639	874	1,355	82	1,839	1,418
Rampart/Stevens Village	90	452	0	0	0	0	2	52	0	11	7	108	13
Fairbanks (FNSB) [a]	13	2	2	0	0	0	0	101	112	72	506	3	57
Beaver	0	1	0	2	0	2	0	0	0	0	0	1	0
Fort Yukon/Birch Creek	2	244	1,040	4	7	201	2	1	7	0	4	259	42
Circle/Central	13	164	0	5	150	0	0	38	0	0	0	66	8
Eagle	0	1	1	0	0	1	0	0	0	0	0	0	0
Other District 5 [b]	7	0	0	21	0	0	0	0	1	11	1	6	2
District 5 subtotal	2,498	3,178	1,355	3,092	1,292	1,992	2,438	831	994	1,449	600	2,283	1,541
Venetie/Chalkyitsik	0	426	34	0	6	38	24	30	18	0	12	93	22
Teedriinjik/Draanjik R. subtotal	0	426	34	0	6	38	24	30	18	0	12	93	22
District 5 total [c]	2,498	3,604	1,389	3,092	1,298	2,030	2,462	861	1,012	1,449	612	2,376	1,563
Manley	2,308	1,832	1,482	1,374	447	1,177	1,263	323	750	918	381	1,489	886
Minto	0	0	0	0	266	37	270	0	0	–	0	53	61
Nenana/Healy	4,166	3,511	4,248	6,664	1,962	3,002	3,359	2,970	1,392	1,622	475	4,110	2,469
Fairbanks (FNSB) [d]	577	212	1,109	1,502	2,576	3,689	3,108	978	362	121	213	1,195	1,652
Other District 6 [e]	0	0	3	0	6	6	0	0	11	0	0	2	3
District 6 Tanana R. total	7,051	5,555	6,842	9,540	5,257	7,911	8,000	4,271	2,515	2,661	1,069	6,849	5,072
Upper Yukon River total	13,535	10,889	10,303	16,188	11,495	13,003	12,403	5,958	4,053	5,690	2,178	12,482	8,221
Yukon Area total [f]	16,006	13,045	12,344	21,533	14,457	17,098	18,107	8,815	7,414	8,267	5,818	15,477	11,940
Personal use (District 6) [g]	70	1,062	232	100	109	174	145	266	200	131	68	315	183
Yukon Area total with personal use	16,076	14,107	12,576	21,633	14,566	17,272	18,252	9,081	7,614	8,398	5,886	15,792	12,123

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

[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 River) and Draanjik (formerly Black River).

[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 was used in assessing U.S./Canada harvest share objectives under the Yukon Salmon Agreement).

[g] Harvest from the personal use fishing area on the Tanana River near Fairbanks; these data were 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, 2009–2019.

Community	2009	2010	2011	2012	2013 [a]	2014	2015 [a]	2016	2017	2018	2019	Even years Average	Odd years Average	All years Average
Hooper Bay	957	219	210	1,101	302	712	451	4,007	315	635	2,393	1,335	447	891
Scammon Bay	1,186	2,245	1,888	1,343	507	1,923	1,414	2,490	988	2,427	1,322	2,086	1,197	1,641
Coastal District total	2,143	2,464	2,098	2,444	809	2,635	1,865	6,497	1,303	3,062	3,715	3,420	1,644	2,532
Nunam Iqua	61	306	8	1,051	0	670	352	352	484	377	269	551	181	366
Alakanuk	24	151	13	174	92	970	15	713	99	7	190	403	49	226
Emmonak	5	206	0	199	0	588	7	228	0	31	23	250	2	126
Kotlik	42	124	32	195	23	1,064	14	502	159	29	398	383	54	218
District 1 subtotal	132	787	53	1,619	115	3,292	388	1,795	742	444	880	1,587	286	937
Mountain Village	6	217	24	207	0	233	57	93	152	92	270	168	48	108
Pitkas Point	0	143	0	2	2	45	288	48	0	122	0	72	58	65
St. Mary’s	5	543	1	643	0	614	18	104	171	35	80	388	39	213
Pilot Station	4	125	34	23	131	27	0	8	5	0	1	37	35	36
Marshall	0	21	66	5	7	1	0	5	44	53	1	17	23	20
District 2 subtotal	15	1,049	125	880	140	920	363	258	372	302	352	682	203	442
Russian Mission	0	2	0	76	12	8	0	0	0	0	0	17	2	10
Holy Cross	0	0	0	0	0	0	0	2	1	0	0	0	0	0
Shageluk	9	0	9	24	0	3	0	9	1	0	2	7	4	6
District 3 subtotal	9	2	9	100	12	11	0	11	2	0	2	25	6	16
Lower Yukon total	156	1,838	187	2,599	267	4,223	751	2,064	1,116	746	1,234	2,294	495	1,395
Anvik	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Grayling	0	0	40	0	0	39	0	33	0	16	0	18	8	13
Kaltag	0	0	0	0	0	0	0	73	0	0	0	15	0	7
Nulato	0	0	0	0	0	8	0	0	0	0	0	2	0	1
Koyukuk	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Galena	0	0	0	3	0	6	16	11	8	0	0	4	5	4
Ruby	0	0	0	0	0	13	0	0	0	0	0	3	0	1
District 4 subtotal	2	0	40	3	0	66	16	117	8	16	0	40	13	27
Hughes/Huslia	0	0	0	101	0	0	0	0	5	20	82	24	1	13
Allakaket/Alatna/Bettles	0	0	0	0	0	0	0	0	0	5	0	1	0	1
Koyukuk River subtotal	0	0	0	101	0	0	0	0	5	25	82	25	1	13
District 4 total (incl. Koyukuk R.)	2	0	40	104	0	66	16	117	13	41	82	66	14	40

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Community	2009	2010	2011	2012	2013 [a]	2014	2015 [a]	2016	2017	2018	2019	Even years Average	Odd years Average	All years Average
Tanana	0	0	0	3	0	8	13	34	0	0	0	9	3	6
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	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
District 5 total	0	0	0	3	0	8	13	34	0	0	0	9	3	6
Survey totals	2,301	4,302	2,325	5,150	1,076	6,932	2,645	8,712	2,432	3,849	5,031	5,789	2,156	3,972
CI (95%) [b]	1,184	1,209	918	918	918	1,356	612	2,064	748	1,299	1,210	1,369	876	1,123
Test fishery [b,c]	1	103	34	216	0	120	0	9	8	65	2	103	9	56

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

[a] No test fishery catch reported.

[b] 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.

[c] 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, 2009–2019.

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]													
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	1015	155	650	0	85	1	0	1	0	0
2018	21	21	19	463	23	465	21	54	0	0	1	0	0
2019	36	34	23	1300	42	196	7	66	1	10	0	0	50
2009–2013 Avg.	27	27	23	1,089	374	957	10	161	1	4	10	2	3
2014–2018 Avg.	21	21	15	424	155	640	5	163	20	1	2	0	0
Yukon River Bridge Area subsistence fishery[b]													
2009	68	66	38	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	63	46	2,392	1,605	1,803	113	565	83	15	50	0	0
2018	82	81	59	1,627	600	2,088	73	646	53	32	38	3	0
2019	90	87	46	2,440	182	3,961	507	927	35	12	66	6	1
2009–2013 Avg.	67	66	34	1,018	556	912	22	115	13	11	29	4	0
2014–2018 Avg.	58	57	36	1,035	682	1,670	57	393	50	11	42	1	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 harvests taken under authority of a permit in the Circle–Eagle Area of District 5, Yukon Area, 2009–2019.

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]													
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[c]	61	61	23	967	0	7,824	0	115	15	5	0	0	17
2019	62	61	20	875	30	8,110	0	285	13	4	5	4	22
2009–2013 Avg.	49	47	24	598	33	5,797	36	141	29	4	21	41	163
2014–2018 Avg.	36	36	20	566	0	6,257	8	94	13	3	6	1	14
Subsistence salmon fishery above mainstem Yukon sonar project near Eagle[d]													
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[c]	–	–	23	602	0	11,715	0	86	22	1	3	2	20
2019[c]	–	–	21	742	0	10,631	0	125	19	0	5	2	8
2009–2013 Avg.	–	–	16	328	11	11,045	0	118	21	4	4	8	10
2014–2018 Avg.	–	–	18	652	0	12,991	0	80	37	2	2	4	32

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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 includes 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 the community of Circle, to the mainstem Yukon sonar project near Eagle.

[b] The number of permits issued and returned included households that fished above and below the sonar site.

[c] Beginning in 2018, permits in the Circle-Eagle Area were combined into 1 permit with 2 fishing locations: (1) Upstream of Eagle sonar and (2) Downstream of the Eagle sonar. Number of permits issued and returned are not reported by fishing location.

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

Appendix B8.–Harvest from permits in Subdistrict 6-A of the Tanana River and the Kantishna River, Yukon Area, 2009–2019.

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]													
2009	24	23	16	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	9	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	135	1	4	2	0	0
2019	28	28	10	101	56	2,639	547	18	0	4	26	0	0
2009–2013 Avg.	22	22	13	336	154	3,103	1,512	101	4	5	6	0	0
2014–2018 Avg.	19	18	11	164	67	2,087	983	56	1	1	3	0	0
Kantishna River subsistence fishery[b]													
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
2019	24	24	0	0	0	0	0	0	0	0	0	0	0
2009–2013 Avg.	4	4	3	0	10	363	127	21	0	9	17	20	0
2014–2018 Avg.	4	4	1	0	0	66	42	6	0	1	3	1	0

Note: En dash indicates value could not be computed due to confidentiality. 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, 2009–2019.

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]													
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	38	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	69	35	552	700	3,524	1,727	353	8	7	47	7	0
2018	83	82	31	283	228	5,361	1,585	433	5	2	0	0	0
2019	76	72	33	519	329	2,059	522	376	47	1	11	5	0
2009–2013 Avg.	85	81	38	506	657	8,840	4,667	767	25	19	24	24	3
2014–2018 Avg.	74	72	32	319	349	5,543	3,687	699	11	7	31	11	3
Tolovana River drainage subsistence fishery[b]													
2009	113	108	52	0	1	0	0	202	14	6	563	0	0
2010	96	91	41	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	44	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
2019	245	243	155	4	0	2	0	1,088	48	4	1,633	0	0
2009–2013 Avg.	86	82	40	0	0	12	8	113	12	17	311	4	0
2014–2018 Avg.	139	138	79	0	0	0	0	42	2	0	688	0	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] Includes 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, 2009–2019.

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]													
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	17	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
2019	31	29	11	0	0	4	0	621	0	2	199	8	23
2009–2013 Avg.	47	42	20	2	0	19	0	2,166	0	13	89	80	69
2014–2018 Avg.	24	24	12	0	0	9	0	1,493	0	13	53	24	10
Upper south and middle forks of the Koyukuk River subsistence fishery permit area[b]													
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	4	0	0	0	0	32
2016	1	1	1	0	0	0	0	5	0	0	0	1	19
2017	1	1	1	0	0	0	0	3	0	0	0	0	7
2018	6	5	1	0	0	0	0	2	0	0	0	0	5
2019	19	18	1	0	0	0	0	0	0	0	0	0	0
2009–2013 Avg.	1	1	1	0	0	0	0	11	0	1	0	12	21
2014–2018 Avg.	2	2	1	0	0	0	0	5	0	1	0	2	16

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, 2009–2019.

Year	No. of permits issued	No. of permits returned	No. reported harvest	Chinook	Summer chum	Fall chum	Coho	Whitefish	Sheefish	Burbot	Northern pike	Longnose sucker	Arctic grayling
Subdistrict 6-C Personal Use salmon fishery[a]													
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	29	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
2019	92	90	49	244	294	408	68	88	10	0	73	66	0
2009–2013 Avg.	61	60	31	100	305	881	320	48	1	1	1	2	2
2014–2018 Avg.	66	66	33	79	317	352	183	18	1	0	2	0	0
Upper Tanana River Personal Use whitefish/sucker fishery[b]													
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	13	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
2019	15	14	2	0	0	0	0	11	0	0	0	38	0
2009–2013 Avg.	10	10	5	0	0	6	3	37	0	0	1	173	0
2014–2018 Avg.	19	19	10	0	0	2	0	165	0	0	1	210	1

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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, 2009–2019.

Year	Number of households with dogs	Number of dogs	Salmon fed to dogs				
			Summer chum	Fall chum	Coho	Unknown species [a]	Total
2009	1,495	4,220	17,090	23,549	4,296	21,902	66,837
2010	1,752	5,064	8,363	23,779	3,089	25,718	60,949
2011	1,727	5,353	17,265	33,662	2,421	30,899	84,247
2012	1,655	6,171	28,054	37,302	2,572	30,970	98,898
2013	1,770	5,007	18,890	51,427	4,257	24,873	99,447
2014	1,759	5,388	5,105	28,218	1,946	31,419	66,688
2015	1,795	5,175	7,848	24,184	3,654	29,259	64,945
2016	2,058	5,371	9,241	36,286	1,027	19,021	65,575
2017	1,965	5,615	18,071	32,162	1,241	24,039	75,513
2018	1,918	5,318	12,095	24,500	2,217	21,318	60,130
2019	1,870	4,906	3,724	23,180	51	23,843	50,798
2009–2013 Avg.	1,680	5,163	17,932	33,944	3,327	26,872	82,076
2014–2018 Avg.	1,899	5,373	10,472	29,070	2,017	25,011	66,570

Note: The estimated number of salmon includes 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] 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, 2009–2019.

Reporting groups	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2009–2013 Average	2014–2018 Average
Survey estimates [a]													
Northern pike	8,061	14,086	14,270	18,450	11,264	14,852	20,109	24,580	22,060	20,776	15,703	13,226	20,475
Sheefish	7,861	9,231	10,139	17,094	15,553	12,583	12,828	14,451	12,768	11,728	14,838	11,976	12,872
Whitefish [b]	51,778	50,232	44,890	70,486	64,766	84,889	79,740	69,578	64,202	57,780	66,074	56,430	71,238
Survey reported [c]													
Alaska blackfish	47,320	68,873	87,064	62,731	63,235	92,080	97,586	90,207	109,888	61,896	88,009	65,845	90,331
Arctic grayling	667	1,571	1,273	2,674	1,435	1,772	1,832	1,518	1,572	1,833	744	1,524	1,705
Arctic lamprey [d]	9,083	13,611	10,574	1,657	2,608	19,888	42,237	17,609	19,357	1,027	4	7,507	20,024
Burbot	2,027	2,743	2,477	2,422	2,115	2,016	3,364	2,501	2,811	2,975	1,946	2,357	2,733
Herring [e]	–	–	–	10,449	9,082	17,164	24,591	15,959	16,508	28,907	12,267	9,766	20,626
Tomcod	2,709	3,978	6,797	4,023	5,221	10,020	4,697	5,795	6,741	5,243	10,006	4,546	6,499
Permit reported													
Arctic grayling	363	201	475	104	210	83	131	62	49	62	104	271	77
Burbot	119	45	140	68	68	27	23	43	32	69	37	88	39
Longnose suckers	518	170	420	396	347	371	358	214	179	149	38	370	254
Northern pike	736	267	329	827	403	648	891	1,190	281	1,156	2,010	512	833
Sheefish	76	160	103	147	48	215	166	70	128	99	175	107	136
Whitefish [b]	4,039	3,112	4,907	4,016	2,766	3,747	3,771	3,562	2,380	2,547	3,596	3,768	3,201
Total harvest of species from survey and permit communities in the Yukon Area													
Alaska blackfish	47,320	68,873	87,064	62,731	63,235	92,080	97,586	90,207	109,888	61,896	88,009	65,845	90,331
Arctic grayling	1,030	1,772	1,748	2,778	1,645	1,855	1,963	1,580	1,621	1,895	848	1,795	1,783
Arctic lamprey [d]	9,083	13,611	10,574	1,657	2,608	19,888	42,237	17,609	19,357	1,027	4	7,507	20,024
Burbot	2,146	2,788	2,617	2,490	2,183	2,043	3,387	2,544	2,843	3,044	1,983	2,445	2,772
Herring [e]	–	–	–	10,449	9,082	17,164	24,591	15,959	16,508	28,907	12,267	9,766	20,626
Longnose suckers	518	170	420	396	347	371	358	214	179	149	38	370	254
Northern pike	8,797	14,353	14,599	19,277	11,667	15,500	21,000	25,770	22,341	21,932	17,713	13,739	21,309
Sheefish	7,937	9,391	10,242	17,241	15,601	12,798	12,994	14,521	12,896	11,827	15,013	12,082	13,007
Whitefish [b]	55,817	53,344	49,797	74,502	67,532	88,636	83,511	73,140	66,582	60,327	69,670	60,198	74,439
Annual total	132,648	164,302	177,061	191,521	173,900	250,335	287,627	241,544	252,215	191,004	205,545	167,886	244,545

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Note: En dash means 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 to 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 totals.