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DIVISION OF COMMERCIAL FISHERIES
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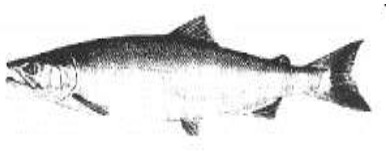

Contact:
Holly Carroll, Area Management Biologist
Deena Jallen, Assistant Area Management Biologist
Phone: (907) 267-2324
Fax: (907) 267-2442

Anchorage Regional Office
333 Raspberry Road
Anchorage, Alaska 99518
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2017 Preliminary Yukon River Summer Season Summary

The following is a summary of the 2017 Yukon River Chinook and summer chum salmon fisheries. All data reported here are considered preliminary. For management purposes, the Yukon River is divided into several fishing districts and subdistricts (Figure 1).

During the "summer season" (early May until July 16 in District 1) management and research staff are based in the Emmonak office and the focus is on assessing and managing the summer chum and Chinook salmon runs. After July 16, in Emmonak, Chinook salmon are nearly done entering the river and fall chum start to replace summer chum as the dominant species. At that time management transitions to the "fall season" and assessment and management become focused on fall chum and coho salmon. Data presented in this summary applies to "summer season" species only.

2017 Management Outreach

The summer season management team consists of ADF&G staff: Area management biologist, assistant area management biologist, Area research and assistant area research biologists, and the manager and assistant manager from U.S. Fish and Wildlife Service. This season, staff from ADF&G's Subsistence Division joined the management team. The team met preseason to form the management strategy based on public input, and met daily inseason to discuss the summer chum and Chinook salmon assessment and escapement data, and subsistence and commercial fishery openings. In an effort to improve outreach with communities, the area manager and subsistence division staff visited select villages including Grayling, Nulato, Beaver, and Fort Yukon during the fishing season.

In addition to these visits, the Area manager, the ADF&G commissioner and other staff attended a three day charter-tour of many Yukon and Koyukuk River communities funded by Tanana Chiefs Conference. The trip was important for ADF&G staff to hear directly from fishermen about Chinook salmon management and how it affects their lives uniquely in each village. The hosting communities were: Huslia, Hughes, Allakaket, Koyukuk, Nulato, Kaltag, Galena, and Ruby.

In an effort to more effectively reach fishermen, ADF&G launched a Facebook page called "Yukon River Fishing-ADFG". Daily test fish counts and news releases were posted here, including subsistence and commercial fishing schedules for each district.

2017 Preseason Outlook

Chinook Salmon

The Yukon River Chinook salmon stocks have experienced a drastic decline in production since 1998 (Figure 2), reaching an all-time low in 2013. The cause of this decline remains largely unknown, though it is generally believed that many factors (e.g., freshwater survival, marine conditions, climate change) are involved. Preseason run forecasts have had variable accuracy over the years, particularly in years with low returns or changing productivity. However, since 2014 the forecast models have been performing better as an indicator of potential run sizes. The 2017 drainage-wide Chinook salmon outlook was for a run size of 140,000 to 195,000 fish. Though a run of this size should be large enough to meet escapement objectives, the surplus available for harvest could vary. Due to the uncertainty associated with the outlook, a cautious management approach was taken to ensure minimum escapement objectives would be met.

Summer Chum Salmon

Yukon River summer chum salmon generally exhibit strong run size correlations among adjacent years and it was expected that the 2017 total run would be similar or better than the 2016 run. The 2017 preseason outlook was for approximately 2.4 million summer chum salmon. A run of this size was anticipated to provide for escapements, a normal subsistence harvest, and a surplus for commercial harvest. Summer chum salmon runs have provided for a harvestable surplus in each of the last 10 years (2007–2016). Based on the preseason outlook, it was expected that a commercially harvestable surplus of up to 1.5 million summer chum salmon would be available. Similar to last year, the harvest of summer chum salmon in 2017 was anticipated to be affected by the management of a below average Chinook salmon run. Because Chinook salmon are incidentally harvested in summer chum salmon-directed fisheries, the use of gillnets for the summer chum commercial fishery was delayed and restricted. It was anticipated that gear types that allow for the live release of Chinook salmon, such as beach seines, dip nets, and live-release fish wheels, would be employed for both the subsistence and commercial harvest of summer chum salmon in the early part of the season.

2017 Preseason Management Strategy

In response to below-average Chinook salmon runs, the Yukon River Drainage Fisheries Association (YRDFA) facilitated a preseason planning meeting funded by the Yukon River Panel to provide managers, fishermen, tribal council representatives, and other stakeholders the opportunity to share information, provide input, and discuss management options available for the 2017 salmon fisheries. The purpose of this meeting was to cooperatively identify practical management strategies that would assist in getting adequate numbers of Chinook salmon to their spawning grounds in Alaska and Canada while also providing limited subsistence harvest opportunity.

Fishermen from all districts gave feedback about the previous year's management actions and suggested improvements for 2017. These improvements included: offering dip net opportunity for subsistence harvest of summer chum salmon instead of a complete salmon fishing closure early in the season; less short, or "surgical", openings; more fishing on a schedule preferred; and

better notice of the fishing schedules. These suggestions were implemented during the 2017 season.

Based on input from this meeting, a conservative preseason management plan was developed for the Yukon River summer season fishery. The preseason plan and publicly-distributed "Outlook Flier" included the following key management strategies:

- Before Chinook salmon enter the river, subsistence fishing will be open 24 hours a day 7 days a week with 7.5-inch or smaller mesh gillnets.
- As early Chinook salmon enter each district, subsistence salmon fishing will be provided on a reduced regulatory schedule with 6-inch or smaller mesh gillnets.
- By regulation, fishing will close just before the first pulse of Chinook salmon enters each area.
- One day after salmon fishing with gillnets closes (just before first pulse is present), subsistence opportunity will begin with selective gear to target summer chum salmon. This opportunity will be offered up through Subdistrict 5-C based on migration timing. Selective gear includes dip nets, beach seines, and manned fish wheels and requires the immediate release of all Chinook salmon alive.
- During subsistence salmon fishing closures, fishing is allowed with 4-inch or smaller mesh gillnets not exceeding 60-feet in length.
- When confidence is high that the Chinook salmon run is adequate and escapement goals are likely to be met, the use of 6-inch gillnets on a reduced regulatory schedule will be considered, as well as short openings with 7.5-inch gillnets.
- Commercial fishing for summer chum will begin with selective gear, based on inseason run assessment.
- The sport fishery for Chinook salmon will begin the season closed throughout the U.S. portion of the Yukon River drainage, excluding the Tanana River drainage.

2017 Stock Assessment Overview

The department monitors a suite of assessment projects that provide critical information regarding salmon run timing, relative abundance, and stock composition. Inseason run assessments included test fisheries, sonar passage estimates, subsistence and commercial harvest reports, and age, sex, and length (ASL) data. In addition, tissue samples were collected from Chinook and summer chum salmon at the sonar project near Pilot Station to determine stock contribution. Assessment of the salmon runs in the lower river is critical to implementing an inseason management plan throughout the drainage. However, managers use information from all inseason assessment projects and fishermen reports in order to make daily management decisions and adjustments to fishing schedules based on the best currently available data and projections.

Ice break-up at the mouth of the Yukon River (near Alakanuk) occurred on May 14, which was nearly one week earlier than the average break up date of May 20 (based on the years 1997–2016). The first summer chum of the year was caught in the subsistence fishery on May 21, nearly two weeks earlier than the average date of June 2 (based on the years 1997–2016). The first Chinook salmon was harvested on May 26 in the subsistence fishery, four days earlier than the average date of May 30 (based on the years 1997–2016). The department relied on subsistence harvest reports to guide initial management actions during the early portion of the salmon runs.

The Lower Yukon Test Fishery (LYTF) program is primarily designed to assess salmon run timing and consists of two Chinook salmon test fisheries. An 8.5-inch mesh set gillnet operated in the Middle and South mouths of the Yukon River and an 8.25-inch mesh drift gillnet operated at Big Eddy in the south mouth, near Emmonak. The LYTF also has a summer chum salmon-directed drift gillnet test fishery using 5.5-inch mesh gear operated in the Middle and South mouths. These test fisheries provide relative catch data and Catch Per Unit Effort (CPUE) which gives an index of abundance and indicates the presence of large groups of fish or "pulses" entering the mouths of the river.

The LYTF was operational at the South Mouth drift gillnet site on May 25 and at the Middle Mouth site on June 6. The first Chinook salmon caught in the test fishery was on May 31. The Big Eddy set net site was fished until June 28. The LYTF set gillnets concluded operations on July 13 with a cumulative CPUE of 38.58, which was above the historical[1] average CPUE of 29.6 for years with early run timing. The first quarter point, midpoint, and third quarter point were June 13, June 20, and June 26, respectively. The 8.25-inch drift gillnet project for Chinook salmon operated in Big Eddy until July 15 and provided valuable supplemental run timing information for Chinook salmon entering the South Mouth of the Yukon River. This season, 797 Chinook salmon were released alive from the LYTF and 939 Chinook were distributed to locals in mostly lower Yukon communities, with emphasis given to elders and people who are unable to fish. This fish donation program was coordinated with village tribal councils and with the assistance of Yukon Delta Fisheries Development Association.

During the summer season, the mainstem sonar project near Pilot Station provides abundance estimates for Chinook and summer chum salmon. The test fishery at the sonar project is used to apportion the daily sonar counts by species, and is also used to sample the salmon runs for ASL and genetic data. The department has endeavored to reduce Chinook salmon mortality in test fisheries by releasing all Chinook salmon deemed healthy alive immediately. Any Chinook salmon mortalities were delivered to Tribal Councils in various nearby communities for distribution to elders.

The cumulative passage estimate at the sonar project located near Pilot Station was approximately 263,000 Chinook salmon (with a 90% confidence interval of 234,000 to 292,000 Chinook salmon). This passage was well above the recent historical average[2] of approximately 178,000 fish. Chinook salmon entered the river in four pulses consisting of 20,800 fish; 79,900 fish; 69,400 fish; and 55,200 fish. Inseason run analysis was focused on making comparisons to years with similar early run timing. The first quarter point, midpoint, and third quarter point for the sonar project near Pilot Station were on June 17, June 21, and June 28, respectively. The 2017 Chinook salmon run appears to have been three days earlier than average based on the midpoint at the sonar project near Pilot Station.

Tissue samples were taken from the majority of Chinook salmon caught in the test fishery at the sonar project located near Pilot Station and analyzed in three strata for genetic mixed stock analysis (MSA). The three strata periods were May 31–June 13 (number sampled (n) = 101), June 14–June 20 (n=181), and June 21–July 25 (n=116). Genetic MSA indicated the Canadian-

[1] Includes early run timing years only: 1993, 1995, 1996, 2003, 2004, 2014, and 2016.

[2] Average includes years 1995, 1997, 2000, 2002–2008, and 2010–2016. The sonar did not operate in 1996 and project difficulties occurred in 2000, 2001, and 2009.

origin stock proportion of each stratum to be 43%, 49%, and 43% for the first, second, and third stratum, respectively. For more background information on genetic MSA for Yukon River Chinook salmon, please refer to the department's Gene Conservation Laboratory webpage[3].

At Pilot Station sonar approximately 3.1 million summer chum salmon were counted (with 90% confidence interval of approximately 2.9 million to 3.2 million salmon), which was above the historical median of 1.9 million fish for the project. The first quarter point, midpoint, and third quarter point were June 19, June 23, and June 29, respectively, which is consistent with historical early run timing. Three large pulses of summer chum salmon were detected at the sonar project with the largest group consisting of approximately 957,800 fish, which passed by the sonar between June 21 and June 25.

2017 Subsistence Fishery Overview

In accordance with discussions at the fishermen's pre-season planning meeting, managers expected to provide limited subsistence harvest opportunity for Chinook salmon while providing liberal subsistence and commercial opportunity for summer chum salmon. If managers were confident that the Chinook run strength was in the mid to upper range of the outlook, more subsistence opportunity would be provided with gear to target Chinook salmon.

The use of 4-inch or smaller mesh gillnets not exceeding 60 feet in length was allowed for the harvest of non-salmon species, such as sheefish, whitefish species, and Northern pike. This opportunity to harvest non-salmon species was allowed at all times during subsistence salmon fishing closures throughout the season, in all districts.

Lower River Subsistence Fishery Management

In previous years, gillnets were restricted to 6-inch or smaller mesh immediately following ice-out. However, in 2016 and 2017, managers waited for increased Chinook salmon catches at the LYTF assessment project before restricting the subsistence gillnet fishery in order to provide opportunity to target sheefish and other species.

In 2017, the North Coastal area was managed as part of District 1, so all actions affecting District 1 applied to the North Coastal area as well. The South Coastal area (from the Naskonat Peninsula north to 62 degrees North latitude including the communities of Hooper Bay and Scammon Bay) was managed separately. South Coastal fishermen were restricted to 6-inch or smaller mesh gillnets from May 31 until June 18, when the mesh size restriction was removed.

On June 1, Chinook salmon were detected in the river, but in relatively small numbers. These fish were considered the early part of the run, and in District 1 fishing with gillnets was restricted to 6-inch or smaller mesh and fishermen were placed on the regulatory schedule of two 36-hour periods per week. Districts 2 and 3 were placed on the same restrictions and regulatory schedule effective June 4 and June 7, respectively.

Beginning June 11, subsistence salmon fishing with gillnets closed and reverted to fishing with selective gear in anticipation of the first pulse passing thru in Districts 1 (including the North Coastal area), 2, and 3. Fishing was open 24 hours a day, seven days per week, with dip nets and beach seines only. Both dip nets and beach seines require the live release of Chinook salmon. Although the use of selective gear was initiated early in the season prior to the arrival of large

[3] http://www.adfg.alaska.gov/index.cfm?adfg=fishinggeneconservationlab.yukonchinook_baseline

groups of summer chum salmon, the intent was to give fishermen ample time to prepare without issuing short-notice news releases once summer chum salmon were present.

On June 18, a short 12-hour period of gillnet fishing with 7.5-inch gillnets or smaller was opened in Districts 1 (including the North Coastal area) and 2, and a 24-hour opportunity was provided in District 3 on June 20. The management strategy was to provide some Chinook-directed opportunity in the lower river at a time when high abundance of summer chum salmon make it hard for fishermen in the lower river to catch Chinook salmon with 6-inch or smaller mesh nets.

By June 21 (the midpoint of the Chinook run at Pilot Station), all districts up through 4-A Lower were relaxed to 7.5-inch gillnets and placed on regulatory schedule, except for Districts 1 and 2, which were given 10 hours per day of subsistence-only fishing to provide opportunity around commercial fishing openings and closures which varied throughout the season.

Upper River Subsistence Fishery Management

Similar to management actions taken in the lower river, subsistence salmon fishing was restricted to 6-inch or smaller mesh gillnets on June 11 in Subdistrict 4-A and reverted to selective gear types on June 14 in Subdistrict 4-A Lower and on June 17 in Subdistrict 4-A Upper. These selective gear types required the live-release of Chinook salmon. Selective gear types were discontinued and subsistence salmon fishing with 7.5-inch or smaller mesh gillnets was allowed on the regulatory schedule in Subdistrict 4-A Lower on June 21 and 4-A Upper on June 25. Fishermen in subdistricts 4-B and 4-C could use 7.5-inch or smaller mesh gillnets and fish wheels from the start of the season until June 19 when fishing reverted to selective gear only for a six day period to protect the first pulse of Chinook as it passed through these Subdistricts. By June 25, fishing was allowed on regulatory schedule with no mesh restrictions, as confidence in the strength of the run was high.

Similarly, in subdistricts 5-A, 5-B, and 5-C, fishermen could use 7.5-inch or smaller mesh gillnets and fish wheels from the start of the season until June 23 when fishing reverted to selective gear only for a four day period to protect the part of the first pulse of Chinook salmon as it passed through these Subdistricts. By June 27, fishing was allowed on regulatory schedule with no mesh restrictions, as confidence in the strength of the run was high.

Due to the strength of the Chinook salmon run, no subsistence closures or gear restrictions were enacted in Subdistrict 5-D. Early fish were predicted to arrive in the lower portion of Subdistrict 5-D by June 21. This date coincided with the mid-point of the run at the sonar project near Pilot Station with an estimated cumulative passage of 134,702 Chinook salmon.

By regulation, the Koyukuk and Innoko rivers remained open 24 hours a day, seven days a week with 7.5-inch or smaller mesh gillnets and fish wheels to harvest salmon. Similarly, in the Tanana River (Subdistricts 6-A, 6-B, and 6-C), subsistence salmon fishing remained on its regulatory schedule for the entirety of the Chinook salmon season and mesh size was not restricted.

The 2017 Chinook salmon run was conservatively managed in the early part of the season when run assessment had higher uncertainty; however, restrictions were relaxed or removed once run projections at the sonar project near Pilot Station coincided with the upper end of the preseason forecast, and the predicted total run estimate at the project was projected to be the highest since 2003. Therefore, fishing restrictions were relaxed in the upper river districts, as certainty in the run abundance was better by the time Chinook were reaching Districts 4 and 5. The final

cumulative passage at the sonar projects near Pilot Station and Eagle indicated that the total run size was at or above the upper end of the preseason projection range. The management strategy in 2017 was to provide more Chinook-directed subsistence fishing opportunity, possibly earlier in the run, while using regulatory schedule when possible to avoid short openings. Over the last several years, Yukon River fishermen have exhibited incredible flexibility in complying with schedule changes and gear restrictions. The department acknowledges the continued commitment made by Yukon River fishermen to conserve the Chinook salmon resource for future generations and relies heavily on input from fishermen post-season about how management strategies worked and didn't work for their area.

The 2017 preliminary subsistence harvest estimates will not be available until later this winter. Based on inseason harvest reports that many fishermen were able to meet their needs for Chinook and summer chum salmon, it is likely that the 2017 Chinook salmon subsistence harvest will be much higher than what was observed in 2016, which was approximately 21,000 Chinook.

2017 Commercial Fishery

Lower Yukon Districts Commercial Fishery

With the forecasted large run of summer chum and the return of a buyer to District 4, liberal commercial fishing opportunity was provided for summer chum salmon in Districts 1, 2, 4, and 6. However, there was a considerable reduction in buyer capacity in District 2. Only one buyer operated in that district for most of the summer season and tendering capacity and ice production were limited to Mountain Village. This reduction of buying capacity meant that far fewer commercial periods were scheduled in District 2. A second, smaller-scale buyer began operating out of St. Mary's during the fall season. These reductions in opportunity likely created economic hardship on fishermen in District 2. There was a marked increase in number of fishing permits harvesting salmon in District 1 over previous years which may be partially due to fishermen shifting their effort from District 2 to District 1.

Since Chinook salmon are encountered incidentally in the commercial summer chum salmon fishery, a suite of strategies was used to conservatively manage the fishery in order to minimize the impact to the Chinook salmon run. In Districts 1 and 2, dip nets and beach seines were used, and in District 4, manned fish wheels were used. Chinook salmon are required to be released alive from these selective gear types. Once commercial fishing was allowed with gillnets, all Chinook salmon could be released alive, or kept for subsistence use.

For the tenth consecutive year, no commercial periods targeting Chinook salmon were allowed in the Yukon or Tanana Rivers during the summer season. Sale of incidentally-caught Chinook salmon was prohibited for the seventh consecutive year in the summer season. However, on July 17, during the first fall season commercial opening, when 99% of the Chinook salmon run had passed, the department allowed the sale of 168 incidentally-caught Chinook salmon. While this represented a fraction of the number of Chinook already retained by commercial fishermen for subsistence use, much concern and confusion regarding that decision was heard from the public, on both the Yukon River Drainage Fisheries Association teleconference, and in person at meetings in many Yukon villages attended by the area manager and other high level ADF&G staff including the commissioner. The department decided to reverse its decision to allow the sale of incidentally-caught Chinook salmon until guidance from the Board of Fisheries could be sought regarding the regulations on Chinook sales.

Selective fishing for summer chum salmon using dip nets and beach seines began June 10 in District 1. The first commercial fishing period in District 2 was provided on June 21. For details about the number of openings see Appendix A. Approximately 316 permit holders fished these selective commercial openings but only 4% of the fishermen used beach seines, the majority used dip net gear. The combined harvest in Districts 1 and 2 with selective gear types was 135,043 summer chum salmon with 4,618 Chinook salmon reported released alive.

The use of gillnets in the summer chum commercial fishery was delayed until after the midpoint of the Chinook run and the passage estimate at Pilot Station sonar was around 166,000 fish. In District 1, commercial opportunity with 5.5-inch or smaller mesh size gillnets not exceeding 30 meshes in depth was provided beginning June 23 in order to reduce the incidental harvest of Chinook salmon. Gillnet opportunity with 6-inch or smaller mesh was provided beginning July 1 in District 1 (Appendix A). The 5.5-inch gillnet gear restriction was not applied in District 2 since most fishermen do not have that gear type. Commercial fishing with 6-inch or smaller mesh gillnets began July 11 in District 2. Fishermen were required to report any Chinook salmon caught but not sold on fish tickets. An estimated 5,589 Chinook salmon were kept for personal use in Districts 1 and 2 during the summer season commercial gillnet fishery.

The cumulative summer chum salmon commercial harvest for Districts 1 and 2 for all gear types combined was 393,165 fish (Appendices A and B). No pink salmon or coho salmon were sold during the summer season. The summer chum salmon harvest was 4% above the 2012–2016 average harvest of 378,054 fish (Appendix B).

Upper Yukon Districts Commercial Fishery

Commercial fishing occurred in District 4 due to the presence of a buyer. Fishing opened in District 4 on June 25, with 34 periods offered through July 31 with live-release fish wheels. Fishermen were required to continuously monitor fish wheels and immediately release any Chinook salmon alive. The District 4 summer chum salmon harvest of 157,831 fish was the largest harvest since 1996. Less than 50 Chinook salmon were encountered and released alive in District 4; this is because migrating Chinook are not typically found on the same bank that the summer chum are migrating along in this area of the river, so they are not frequently caught in the commercial fish wheels.

The department scheduled the first summer chum salmon-directed commercial fishing period in District 6 on July 14 (Appendix A). By this time, nearly 260,000 Chinook salmon and over 3 million summer chum salmon had been counted at the Pilot Station Sonar, indicating a strong run for both species. Therefore, gear restrictions were not implemented during the commercial fishery; fishermen could use 7.5-inch or smaller mesh gillnets and fish wheels. Chinook salmon could not be sold but could be retained for subsistence use. The department scheduled eight commercial fishing periods. The preliminary cumulative harvest was 4,300 summer chum salmon and 185 Chinook kept for personal use (Appendix A). The 2017 District 6 commercial harvest was 14% below the recent five-year average of 5,029 summer chum salmon (Appendix B).

The total 2017 commercial harvest for the entire Yukon Area was 555,296 summer chum salmon, which was 25% above the 2012–2016 average harvest of 444,105 fish (Appendix B). The total 2017 summer chum harvest was the largest on record since 1996.

2017 Fishing Effort and Exvessel Value

A total of 401 permit holders participated in the summer chum salmon commercial fishery, approximately 9% below the 2007–2016 average of 440 permit holders. The Lower Yukon Area (Districts 1–3) and Upper Yukon Area (Districts 4–6) are separate Commercial Fisheries Entry Commission (CFEC) permit areas. A total of 388 permit holders fished in the Lower Yukon Area in 2017, which is below the 2007–2017 average of 430 permits. In the Upper Yukon Area, at least 13 permit holders fished, which was above the 2007–2016 average of 11.

Lower Yukon Area fishermen received an average $0.60 per pound for summer chum salmon and estimated $1.47 million for their summer chum harvest in 2017 (Appendix C). The estimated average income for Lower Yukon Area fishermen in the 2017 summer season was $3,790 per fisherman, which was above the recent 10-year average (2007–2016) income of $3,019 per fishermen from commercial sales. This does not include value from Chinook salmon sold in the fall season. Upper Yukon Area fishermen received an average of $0.34 per pound for summer chum salmon for a total exvessel value of $274,608. The estimated average income for upper Yukon Area fishermen in the 2017 summer season was $21,124, which was above the recent 10-year average (2007–2016) income of $6,893 per fisherman.

In the 2017 fall season, the sale of Chinook salmon was allowed for one period, during which 1,804 pounds were sold at an average price of $5.50 per pound for a total of $9,922. The average weight of the Chinook salmon that were sold was 10.7 pounds. This harvest is considered part of the fall season harvest.

2017 Age, Sex and Stock Composition

Age and Sex Composition in LYTF

The Chinook salmon age composition from the 8.5-inch mesh LYTF set nets (Big Eddy and Middle Mouth sites combined) was 0% age-3, 4% age-4, 43% age-5, 51% age-6, and 2% age-7 fish. The sample size was 748 fish and females comprised 51% of the samples. The age-5 percentage was above average; the age-6 and age-7 percentages were below average; and females were near average based on the years 2007–2016. It is important to note that catch in the large mesh used at LYTF is likely biased toward older, larger fish.

The summer chum salmon age composition from the 5.5-inch mesh LYTF drift nets was less than 1% age-3, 51% age-4, 47% age-5, and 2% age-6 fish. The sample size was 982 fish and females comprised 60% of the samples. All age classes and percent females were near average.

Age and Sex Composition in Pilot Station Sonar test fishery

The Chinook salmon age composition from the 547 samples that were aged from the test fishery at the Pilot station sonar project (all mesh sizes combined) was less than 1% age-3, 9% age-4, 53% age-5, 36% age-6, and 2% age-7 fish. Females comprised 51% of the 613 fish sampled. The age-3, age-4, and age-6 percentages were near average; age-5 and age-7 percentages were above average; and females were above average based on the years 2007–2016. It is important to note that while the project uses a wide range of mesh sizes and likely captures a representative sample across sizes and age classes, the sex is determined visually, and this method has reduced accuracy compared to internal inspection.

Stock identification in Pilot Station test fishery

Genetic mixed stock analysis (MSA) on the first strata of Chinook salmon, which included early fish and the first pulse of Chinook salmon sampled at the Pilot Station sonar (May 31 to June

13), estimated 43% of the sampled fish were of Canadian-origin. Genetic MSA on the second strata, which included all of the second pulse of Chinook salmon (June 14–20), estimated 43% of the sampled fish were of Canadian-origin. Genetic MSA on the third strata (third pulse) of Chinook salmon (June 21–25) estimated 43% of the sampled fish were of Canadian-origin. Final MSA information will be available post season.

Four strata of chum salmon genetic samples were processed from the 2017 summer season. The strata from May 31–June 19 consisted of 99% summer chum salmon; 73% of which were lower river stocks, 23% were bound for the middle river; and about 4% were bound for the Tanana River. The strata from June 20–June 26 also consisted of 99% summer chum salmon; 91% lower river stocks, 5% were bound for the middle river; and about 4% were bound for the Tanana River. The strata from June 27–July 9 consisted of 96% summer chum salmon; 69% were lower stocks, 22% were middle river stocks; and 5% were Tanana River stocks. The strata from July 10–18 consisted of 98% summer chum salmon; 71% were lower stocks, 18% were middle river stocks; and 10% were Tanana River stocks.

Age and Sex Composition in Eagle Sonar test fishery

The Chinook salmon age composition from the 271 samples that were aged from the test fishery at the Eagle sonar project (all mesh sizes combined) was 0% age-3, 2% age-4, 48% age-5, 49% age-6, and 1% age-7 fish. This is only a partial season age composition of data collected through July 20 and remaining samples are being processed. Females comprised 45% of the 300 fish sampled. All ages and percent female are near the 2007–2016 averages but samples to date only account for the front portion of the run. It is important to note that while the project has used a consistent suite of mesh sizes, the smallest mesh used is 5.25-inch, so the smallest fish may be underrepresented in the samples. Furthermore, the sex is determined visually, and this method has reduced accuracy compared to internal inspection.

Age and Sex Composition in Subsistence Harvest

ASL and genetic samples were taken by subsistence fishermen in Districts 1 through 5 to estimate the age and genetic composition from Chinook salmon kept for subsistence. These data were collected as part of a Yukon River Panel's Restoration and Enhancement fund project. These data are especially important since fishing practices (e.g., timing of harvest, gear types used) have changed in recent years due to conservation concerns and fishing restrictions. Subsistence and personal use harvest numbers for 2017 are not available at this time. Results from this project will be available later in the year.

Age and Sex Composition in Commercial Harvest

The summer chum salmon age composition from the District 1 dip net commercial fishery was less than 1% age-3, 52% age-4, 48% age-5, and less than 1% age-6 fish. The sample size was 445 fish and females comprised 41% of the harvest. The summer chum salmon age composition from the District 1 gillnet commercial fishery was 0% age-3, 72% age-4, 27% age-5, and 1% age-6 fish. The sample size was 601 fish and females comprised 49% of the harvest. No summer chum commercial samples were collected from Districts 2, 4 or 6.

2017 Escapement

Chinook Salmon Escapement

In 2017, most systems with Chinook salmon escapement goals were met or exceeded (Table 1). Tower counts for Chinook salmon were hampered by high water conditions in the Chena and Salcha rivers. The goal on the Salcha River was met. The goal for the Chena River was not met inseason; however, once passage estimates are expanded to account for missed days using sonar counts, it is likely the Chena goal will be met. Sonar estimates of passage at Chena and Salcha rivers will not be available until later this winter.

Preliminary Chinook salmon passage at the border sonar project near Eagle was 73,268 fish. This is not considered a true escapement estimate as it does not account for harvest between Eagle and the border in Alaska or Canadian harvests. This passage exceeded the Interim Management Escapement Goal (IMEG) of 42,500–55,000 salmon. This passage also provided for the additional 20–26% of the estimated total allowable catch needed for the Canadian harvest share as agreed to in the U.S./Canada Yukon River Salmon Treaty.

Although there are no escapement goals on the Gisasa and Henshaw rivers, Chinook salmon passage is monitored there and passage to both of these tributaries of the Koyukuk were below average in 2017.

Table 1.–Escapement goals and passage estimates for Chinook salmon at selected Yukon River tributaries, 2017. Estimates are preliminary.

Project	Current Goal	Type of Goal	2017 Escapement
Eagle Sonar	42,500–55,000	IMEG	73,268 *
East Fork Andreafsky Weir	2,100–4,900	SEG	2,970
Chena River Tower	2,800–5,700	BEG	1,785[a]
Salcha River Tower	3,300–6,500	BEG	3,534 [a]
Anvik River Aerial survey	1,100–1,700	SEG	1,101 [b]
West Fork Andreafsky Aerial	640–1600	SEG	942
Nulato River Aerial survey	940–1,900	SEG	943
Stream	**Historical Average**	**Years Included**	**2017 Escapement**
Gisasa River Weir	2,203	1995–2016[c]	1,083
Henshaw Creek Weir	1,175	2001–2016[d]	677

*Note: The passage estimate at Eagle Sonar is not an escapement estimate. There is some harvest that occurs between the project and the border, and harvest that occurs in Canada, but it is assumed that the Eagle Sonar passage likely met the goal and provided for harvest share objectives laid out in the Yukon River Salmon Agreement.

[a] Partial tower count. Project was hindered by unfavorable water conditions. Full sonar passage estimates will not be available until late 2017.

[b] Partial estimate due to poor visibility in parts of the index area.

[c] Excludes the years 2001 and 2014.

[d] Excludes the years 2003, 2006, and 2014.

Summer Chum Salmon Escapement

Three escapement goals exist for summer chum salmon: a drainage-wide goal of 500,000–1,200,000 fish (established in 2016) and goals at the East Fork Andreafsky River and the Anvik River (Table 2). The drainage-wide escapement goal was exceeded and the goals on the East Fork Andreafsky and Anvik rivers were met. The summer chum salmon tower counts were considered incomplete for the Chena and Salcha rivers for most of the 2017 season due to

unfavorable water conditions, yet summer chum passage was still considered above average (Table 2). Estimates derived from sonar counts will be provided at a later date.

Table 2.–Escapement goals and passage estimates for summer chum salmon at selected Yukon River tributaries, 2017. Estimates are preliminary.

Stream	Current Goal	Type of Goal	2017 Escapement
Drainage-wide	500,000–1,200,000		3,093,735 [a]
East Fork Andreafsky River Weir	> 40,000	SEG	55,532
Anvik River Sonar	350,000–750,000	BEG	415,136
Stream	**Historical Median**	**Years Included**	**2017 Escapement**
Gisasa River Weir	44,502	1995–2016 [b]	73,584
Henshaw Creek Weir	156,933	2001–2016 [c]	360,068
Chena River Tower	8,620	1993–2015 [d]	15,384 [f]
Salcha River Tower	26,485	1993–2015 [e]	24,671 [f]

[a] Estimate of abundance at the Pilot Station sonar. Though some estimated subsistence and commercial harvest occurred above the project it is assumed the upper end of the goal was exceeded.

[b] Excludes the years 2001, and 2014.

[c] Excludes the years 2003, 2006, and 2014.

[d] Excludes 1995, 1996, 2000, 2002, 2005, 2011, and 2016.

[e] Excludes 1996, 2003, 2008, 2011, 2014, and 2016.

[f] Project was hindered by unfavorable water conditions. These are partial tower counts, full passage estimates will not be available until late 2017.

Canadian Fisheries

The preseason outlook was for a run size of approximately 70,000 to 97,000 Canadian-origin Chinook salmon. Fishery Managers at the Department of Fisheries and Oceans (DFO) conduct Canadian Chinook salmon fisheries based on available abundance and international harvest sharing provisions. Based on the border passage of approximately 73,000 Chinook salmon and a Canadian Management target of 48,750 fish, the Chinook salmon run was classified to be in the "green management zone". While the "green management zone" allows for an unrestricted First Nation fishery and considers some opportunity for commercial, recreational, and domestic fisheries, a conservative approach was followed in light of recent concerns over productivity, quality of escapement, and recent poor returns of Chinook salmon to the Yukon River. DFO, in consultation with the Yukon Salmon Sub-committee and First Nation Governments, maintained closures in the commercial, domestic, and recreational fisheries throughout the 2017 Chinook salmon run. A full First Nation subsistence harvest was available; however, harvest opportunities were at the discretion of individual First Nation governments. While not all information is currently available, preliminary data indicates that First Nation harvest on the mainstem Yukon River and Porcupine Rivers is likely to be near or less than 50% of historical average.

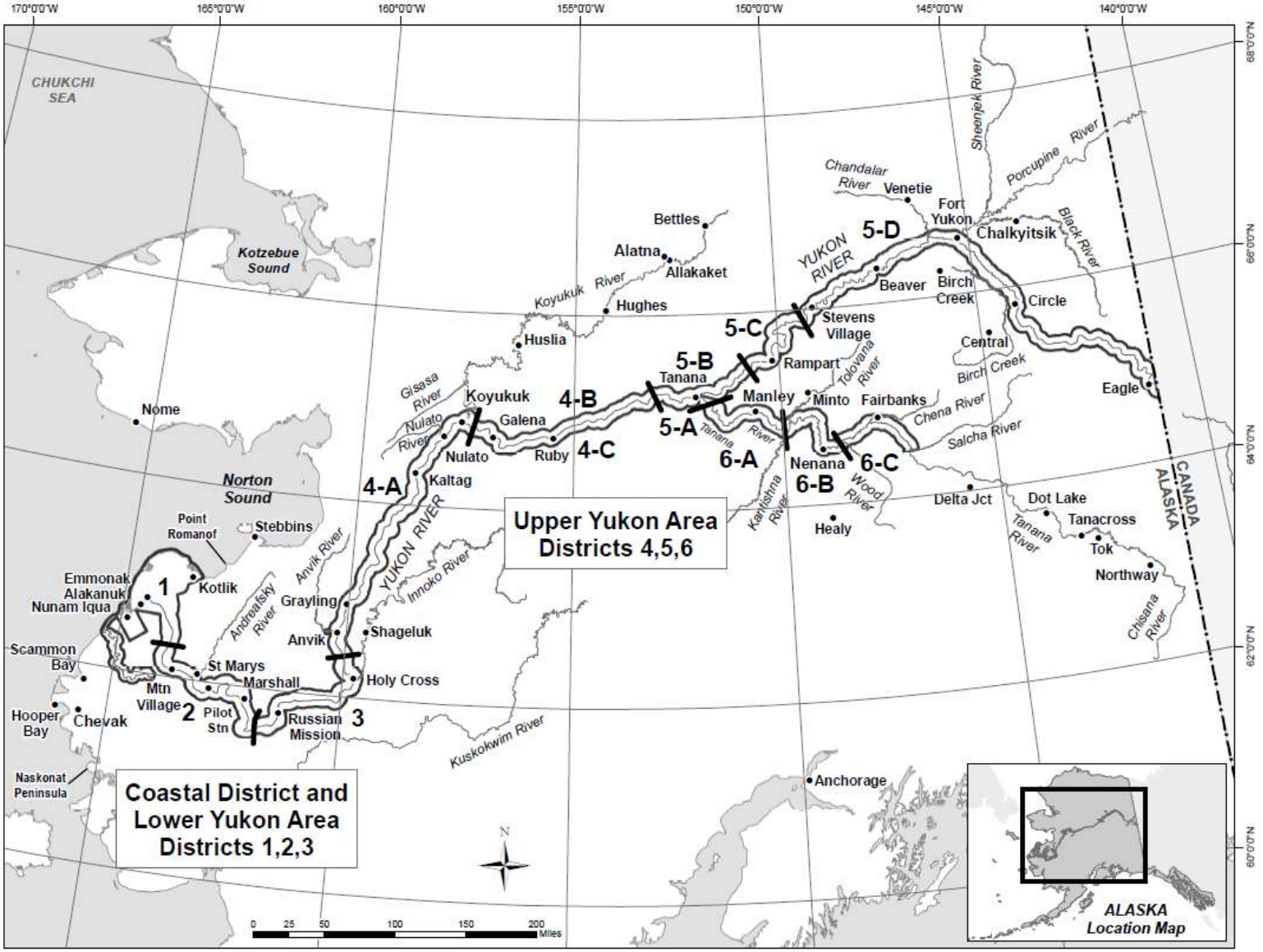

Figure 1.–Yukon Area communities and fishing districts.

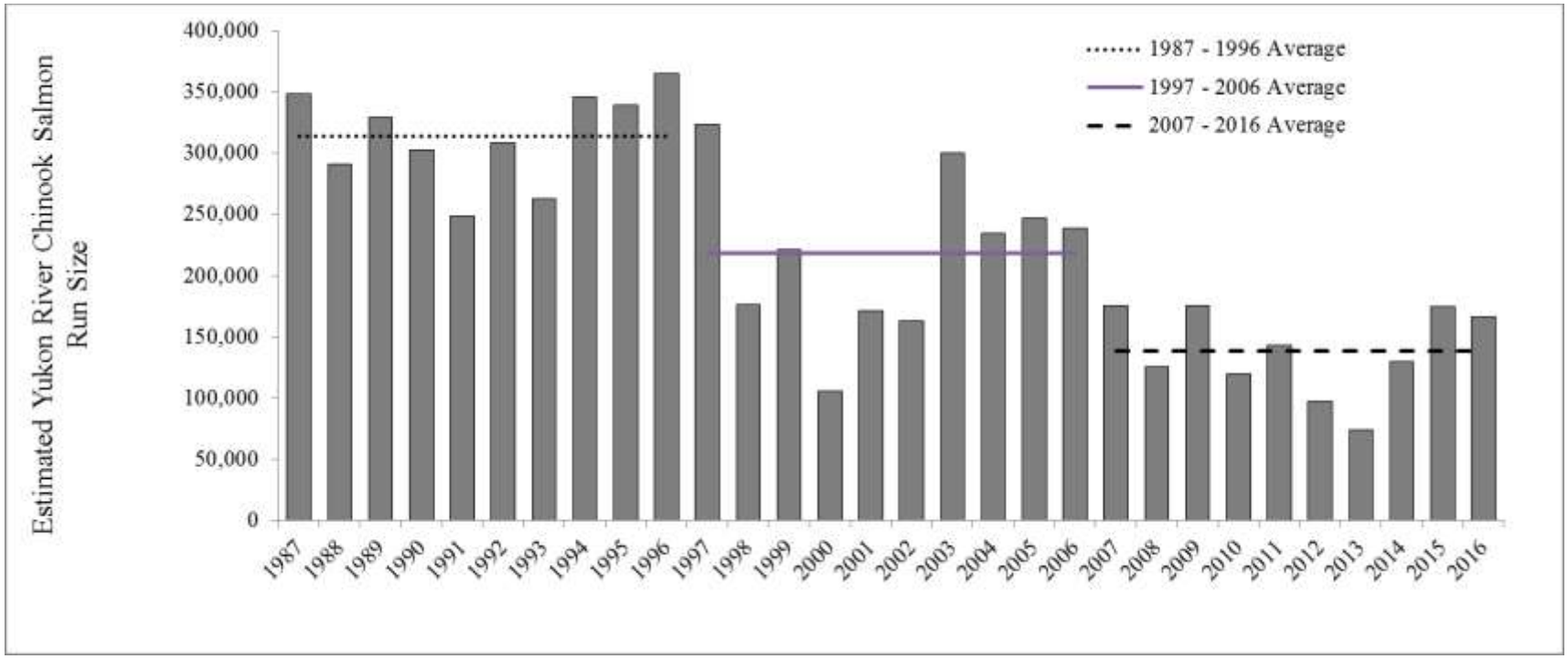

Figure 2.–Yukon River Chinook salmon estimated total run size 1987–2016 with 10-yr average run sizes to illustrate changing productivity.

Appendix A.–Preliminary summer season commercial harvest summary, Yukon Area, 2017. Page 1 of 2.

District 1													
									Chinook Salmon		Summer Chum Salmon		
Period	Start Time	Start Date	End Time	End Date	Hours Fished	Gear Type	Mesh Size	Number of Fishermen	Number Caught and Released	Number Caught but Not Sold	Number	Pounds	Avg. Wt.
1	3:00 PM	10-Jun	3:00 AM	11-Jun	12	DN/BS		62	153		1,105	6,854	6.2
2	3:00 PM	12-Jun	3:00 AM	13-Jun	12	DN/BS		88	344		8,473	52,067	6.1
3	3:00 PM	13-Jun	3:00 AM	14-Jun	12	DN/BS		117	376		8,886	54,255	6.1
4	3:00 PM	14-Jun	3:00 AM	15-Jun	12	DN/BS		73	230		4,006	24,974	6.2
5	3:00 PM	15-Jun	3:00 AM	16-Jun	12	DN/BS		73	363		4,150	25,287	6.1
6	3:00 PM	16-Jun	3:00 AM	17-Jun	12	DN/BS		133	597		15,726	96,851	6.2
7	3:00 PM	17-Jun	3:00 AM	18-Jun	12	DN/BS		111	373		9,011	54,902	6.1
8	3:00 PM	19-Jun	3:00 AM	20-Jun	12	DN/BS		115	675		17,059	102,063	6.0
9	3:00 PM	20-Jun	3:00 AM	21-Jun	12	DN/BS		109	413		11,578	69,511	6.0
10	3:00 PM	21-Jun	3:00 AM	22-Jun	12	DN/BS		108	352		11,399	68,635	6.0
11	9:00 PM	23-Jun	1:00 AM	24-Jun	4	GN	5.5	176		616	20,841	132,285	6.3
12	9:00 PM	27-Jun	1:00 AM	26-Jun	4	GN	5.5	175		652	27,040	169,254	6.3
13	4:00 PM	28-Jun	10:00 PM	28-Jun	6	GN	5.5	187		664	34,379	214,683	6.2
14	5:00 PM	29-Jun	11:00 PM	29-Jun	6	GN	5.5	199		916	25,259	156,463	6.2
15	5:00 PM	1-Jul	1:00 AM	2-Jul	8	GN	6	199		892	28,629	183,217	6.4
16	5:00 PM	3-Jul	1:00 AM	4-Jul	8	GN	6	162		537	16,570	107,343	6.5
17	5:00 PM	5-Jul	1:00 AM	6-Jul	8	GN	6	200	5	449	48,118	307,555	6.4
18	5:00 PM	7-Jul	1:00 AM	8-Jul	8	GN	6	182		422	34,250	220,953	6.5
19	5:00 PM	10-Jul	2:00 AM	11-Jul	9	GN	6	180		238	15,208	98,306	6.5
20	5:00 PM	12-Jul	2:00 AM	13-Jul	9	GN	6	99		75	1,490	9,272	6.2
21	5:00 PM	14-Jul	2:00 AM	15-Jul	9	GN	6	41		17	580	3,603	6.2
22	5:00 PM	15-Jul	2:00 AM	16-Jul	9	GN	6	40		34	1,638	10,232	6.2
Fall Season									1	187			
District 1 Subtotal [a, b]:					208			284	3,881	5,699	345,395	2,168,565	6.3

Appendix A.–Preliminary summer season commercial harvest summary, Yukon Area, 2017. Page 2 of 2.

District 2													
									Chinook Salmon		Summer Chum Salmon		
Period	Start Time	Start Date	End Time	End Date	Hours Fished	Gear Type	Mesh Size	Number Fishermen	Number Caught and Released	Number Caught but Not Sold	Number	Pounds	Avg. Wt.
1	9:00 PM	21-Jun	3:00 AM	22-Jun	6	DN/BS		56	143		5,416	32,459	6.0
2	9:00 PM	23-Jun	3:00 AM	24-Jun	6	DN/BS		71	81		6,868	40,370	5.9
3	7:00 PM	26-Jun	3:00 AM	27-Jun	8	DN/BS		69	96		8,537	50,436	5.9
4	4:00 PM	28-Jun	11:59 PM	28-Jun	8	DN/BS		76	112		8,936	52,537	5.9
5	4:00 PM	30-Jun	11:59 PM	30-Jun	8	DN/BS		76	194		6,821	39,679	5.8
6	4:00 PM	4-Jul	11:59 PM	4-Jul	8	DN/BS		39	39		1,584	8,927	5.6
7	4:00 PM	6-Jul	11:59 AM	6-Jul	8	DN/BS		55	77		5,488	31,792	5.8
8	6:00 PM	11-Jul	8:00 PM	11-Jul	2	GN	6	50		53	2,560	16,105	6.3
9	6:00 PM	13-Jul	8:00 PM	13-Jul	2	GN	6	43		24	1,560	9,718	6.2
Fall Season									1	37			
District 2 Subtotal [a]:					56			114	743	114	47,770	282,023	5.9
Districts 1 and 2 Subtotal [a, b, c]:					264			388	4,624	5,813	393,165	2,450,588	6.2

Upper Yukon Summer Season [d]												
							Chinook Salmon		Summer Chum Salmon			
	Start Date	End Date	Hours Fished	Gear Type	Mesh Size	Number Fishermen	Number Caught and Released	Number Caught but Not Sold	Number	Pounds	Avg. Wt.
District 4	25-Jun	Jun-31	798	FW [e]	6 [e]	10	41	0	157,831	789,239	5.0
District 6	14-Jul	7-Aug	336	FW/GN	7.5	3	62	185	4,300	24,943	5.8
Upper Yukon Area Subtotal:			1,134			13	103	185	162,131	814,182	5.0
Districts 1 Through 6 Total [a, b, d]:			1,398			401	4,727	5,998	555,296	3,264,770	5.9

Note: Chinook salmon caught in gillnets were not allowed to be sold throughout the summer season. Chinook salmon caught in dip nets and beach seines were required to be immediately released alive. DN = dip net; BS = beach seine; GN = gillnet; FW = fish wheel. No commercial fishing occurred in Districts 3 and 5.

[a] Includes Chinook salmon caught but not sold in the fall season.

[b] Does not include 168 Chinook salmon sold on July 17 in District 1.

[c] The number of fishermen is the unique number of permits fished. Some fishermen may fish multiple areas, therefore the subtotals may not add up by district.

[d] To preserve confidentiality in Upper Yukon commercial fisheries with few permit holders only the district totals are presented.

[e] Commercial fishing was open with fish wheels from June 25 to July 28. Commercial fishing with fish wheels and gillnets was open July 29 to July 31.

Appendix B.–Summer chum salmon commercial harvests by district for 2007–2017.

District/ Subdistrict	Guideline Harvest Range	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	5-yr Average (2012–2016)
District 1		106,790	67,459	71,355	102,267	163,439	150,800	207,871	198,240	172,639	293,576	345,395	204,625
District 2		69,432	58,139	86,571	80,948	103,071	57,049	171,272	229,107	181,447	228,267	47,770	173,428
Subtotal Districts 1– 2	251,000–755,000	176,222	125,598	157,926	183,215	266,510	207,849	379,143	427,347	354,086	521,843	393,165	378,054
Subdistrict 4-A	113,000–338,000	7,304	23,746	4,589	44,207		108,222	100,507	96,385			157,831	101,705
District 6	13,000–38,000	14,674	1,842	7,777	5,466	8,651	3,504	5,937	6,912	4,770	4,020	4,300	5,029
Total Districts 1-6	400,000–1,200,000	198,201	151,186	170,292	232,888	275,161	319,575	485,587	530,644	358,856	525,863	555,296	444,105

Note: Commercial harvest only includes summer chum salmon sold in the round. The guideline harvest ranges for District 3 and District 5 are 6,000–19,000 fish, and 1,000–3,000 fish. Only 1 summer chum salmon was sold in 2007 from District 3 and none were sold in Districts 3 and 5 from 2007–2017.

Appendix C.–Value of commercial salmon fishery to Yukon Area fishermen, 1997–2017.

	Chinook					Summer Chum						Value by Species		Value by Area		
	Lower Yukon		Upper Yukon			Lower Yukon			Upper Yukon							
Year	$/lb	Value	$/lb	$/Roe	Value	$/lb	$/Roe	Value	$/lb	$/Roe	Value	Chinook	Summer Chum	Lower	Upper	Total
1997	2.46	5,450,433	0.97	1.62	110,713	0.10		56,535	0.07	1.08	96,806	5,561,146	153,341	5,506,968	207,519	5,714,487
1998	2.51	1,911,370	0.91	2.00	17,285	0.14		26,415	0.18	1.90	821	1,928,655	27,236	1,937,785	18,106	1,955,891
1999	3.80	4,950,522	1.10	2.11	74,475	0.10		19,687	0.18	2.25	1,719	5,024,997	21,406	4,970,209	76,194	5,046,403
2000	4.57	725,606				0.17		8,633				725,606	8,633	734,239		734,239
2001																
2002	3.77	1,691,105	0.75	1.75	20,744	0.06		4,342	0.32	2.25	6,176	1,711,849	10,518	1,695,447	26,920	1,722,367
2003	2.37	1,871,202	0.80		40,957	0.05		1,585	0.27		6,879	1,912,159	8,464	1,872,787	47,836	1,920,623
2004	2.80	3,063,667	0.77		38,290	0.05		8,884	0.27		9,645	3,101,957	18,529	3,072,551	47,935	3,120,486
2005	3.43	1,952,109	0.87		24,415	0.05		11,004	0.25		13,479	1,976,524	24,483	1,963,113	37,894	2,001,007
2006	3.94	3,290,367	1.30		32,631	0.05		23,862	0.16		42,988	3,322,998	66,850	3,314,229	75,619	3,389,848
2007	3.73	1,939,114	1.33		27,190	0.19		220,715	0.25	2.36	34,421	1,966,304	255,136	2,159,829	61,611	2,221,440
2008	4.64	325,470				0.40		326,930	0.25	3.00	65,840	325,470	392,770	656,606 [a]	65,840	722,896
2009	5.00	20,970				0.50		514,856	0.26	3.00	20,430	20,970	535,286	535,826 [b]	20,430	556,256
2010	5.00	639,230				0.70		821,180	0.23		61,534	639,230	882,714	821,209 [b]	61,534	882,743
2011						0.75		1,301,008	0.26		12,966		1,313,974	1,301,103 [b]	12,966	1,314,069
2012						0.75		979,531	0.37		187,272		1,166,803	980,424	187,272	1,166,803
2013						0.75		1,720,703	0.30		152,903		1,873,606	1,720,731 [b]	152,903	1,873,634
2014						0.60		1,648,866	0.29		154,959		1,803,825	1,662,634 [c]	154,959	1,817,593
2015						0.60		1,259,908	0.23		7,166		1,267,074	1,262,034 [c]	7,166	1,269,200
2016						0.60		1,903,490	0.26		6,030		1,909,520	1,958,311 [c]	6,030	1,964,341
2017						0.60		1,470,353	0.34		274,608		1,744,961	1,470,353 [d]	274,608	1,744,961
2007–2016 Average	4.59	731,196	1.33		27,190	0.58		1,069,719	0.27	2.79	70,352	737,993	1,140,071	1,305,871	73,071	1,378,898

Note: Blank cells indicate no sales occurred or harvest level was insufficient to generate summary information.

[a] Includes sales of pink salmon in Districts 1 and 2.

[b] Includes sales of coho salmon in Districts 1 and 2.

[c] Includes sales of pink and coho salmon in Districts 1 and 2.

[d] Does not include value from Chinook salmon sold during fall season.