



# 2016 Yukon River Salmon Season Overview

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This overview provides a preliminary report to the 2016 Yukon River Fall Regional Advisory Council meetings.

## Overview

Although well below the historical average, the 2016 Yukon River Chinook Salmon run came in near the upper end of preseason expectations and above the recent five year average. Both the Summer and Fall Chum Salmon returns performed well above expectations with above average runs. The Coho Salmon run was above average based on the Pilot Station sonar index.

Management of the 2016 Summer Salmon season was challenged with the typical wide disparity in run strength between overlapping Chinook and Summer Chum Salmon mixed stock fisheries. Due to the anticipated below average Chinook Salmon outlook and uncertainty in assessment, efforts to conserve Chinook Salmon were initiated at the beginning of the season in the lower river and implemented chronologically in upriver districts as the run progressed. Conservation strategies and actions were applied through most of the Summer season in all areas of the drainage. During the first half of the Summer season, all fishing for Chinook Salmon was closed in most districts and fishing gear restrictions were used to direct harvest towards other species. Sport fishing and personal use fishing were closed, and commercial fishing opportunity for Summer Chum Salmon was initially restricted to dip nets and beach seines, both less efficient gear types. Furthermore, conservative management actions also limited subsistence access to the abundant Summer Chum Salmon, however more selective fishing opportunities were offered this year than in previous years. In the lower and middle Yukon River sections, dip nets and beach seines were allowed for the harvest of Summer Chum Salmon while releasing Chinook Salmon back into the river unharmed. In District 4 subsistence fishermen were provided the option to use manned fishwheels requiring the live release of Chinook Salmon in addition to dip nets and beach seines. However, fishermen in the middle river reported less success and use to target Summer Chum Salmon. Many lower river fishermen took advantage of this gear opportunity and were successful in meeting their Summer Chum Salmon needs. This option was also provided in Subdistricts 5-A, 5-B, and 5-C however, subsistence fishermen may not have taken advantage of this opportunity as few fishermen in this area utilize summer chum as the abundance and quality tends to be low. Fishermen in Subdistrict 5-D were not offered the option to use selective gear types as few fishermen in the upper sections harvest Summer Chum due to low local abundance or poor flesh quality. However, Subdistrict 5-D was open to subsistence fishing with 6-inch or smaller mesh gillnet gear on the early portion of Chinook Salmon run prior to the arrival of the first pulse. This specific action for Subdistrict 5-D had wide public support prior to the season to allow for some subsistence harvest of Chinook Salmon because of the low availability to harvest alternative species. Some fishermen opted to wait for the Fall Chum Salmon run when flesh quality is better.

Verbal reports and anecdotal information indicate many fishermen voluntarily avoided Chinook Salmon in their subsistence fishing activity for the 2016 season. After the first quarter point of the run, assessment information was indicating a Chinook Salmon run that was better than expected. Managers began to methodically relax subsistence salmon fishing restrictions starting in the lower Yukon River to allow for some harvest of Chinook Salmon with opportunities increasing as confidence in run assessment improved. All Chinook Salmon escapements are believed to have met or surpassed established goals, however, high water hindered counts at the Salcha and Chena towers, and aerial surveys were not flown due to poor weather conditions. Likewise, the Summer Chum Salmon run size came in above average

and all escapement goals were met, with the exception of the Anvik River, with estimated passage falling just short of the escapement goal.

Fall season salmon stocks provided liberal opportunities for subsistence harvest and near record commercial harvests. Fall Chum Salmon are expected to meet or exceed most escapement objectives and Coho Salmon escapement is expected to be sufficient.

#### Preseason

The 2016 Chinook Salmon run was projected to be below average, the Summer Chum Salmon run was projected to be average to above average, the Fall Chum Salmon run was projected to be below average, and Coho Salmon were expected to be average to above average. The Chinook Salmon outlook range of 131,000 to 176,000 was an increase over recent years outlooks and was based on the adjusted Canadian-origin model estimate, which attempts to account for low productivity since 2007. With a run size at the low end of the range, abundance would not be sufficient to meet all escapement objectives. Furthermore, it would support very little subsistence harvest and would preclude a directed Chinook Salmon commercial fishery. However, for a run size at the high end of this range, the abundance would be sufficient to meet escapement objectives and provide for some subsistence harvest opportunity. The Summer Chum Salmon outlook incorporated recent production rates which predicted an average to above average run strength, adequate to meet escapement objectives and subsistence harvest needs as well as potential surpluses for commercial harvest. The Summer Chum Salmon run was predicted to range from 1.3 million to 1.8 million. The Fall Chum Salmon run preseason forecast was for a range from 555,000 to 780,000 fish. Prior to the start of the fall season, the Fall Chum projection was adjusted to 800,000 to 900,000 based on the Summer Chum / Fall Chum relationship which was surpassed due to an exceptional return of age-4 fish. The Coho Salmon run outlook was based on parent year escapements assuming average survival. Based on the last two years of Coho Salmon returns the run was predicted to range from average to above average.

There has been a great deal of public involvement this past winter with the Federal Subsistence Board and the Alaska State Board of Fisheries during their regulatory meetings. The three primary Yukon River RAC's, numerous State Advisory Committees, U.S./Canada JTC and Yukon River Panel, as well as the Yukon River Drainage Fisheries Association (YRDFA), all met at various times to share information and receive input on conservation approaches. YRDFA hosted a pre-season meeting in Anchorage that brought fishermen throughout the Alaskan portion of the drainage together to discuss the Chinook Salmon outlook and advise managers on strategies for conserving Chinook Salmon. Prior to the season, using input from stakeholders, ADF&G and USFWS distributed the joint "2016 Yukon River Salmon Fisheries Outlook" that described expectations of run strength and management approaches for the coming season. The bright yellow informational sheet was mailed to all listed Yukon River tribal and city offices, subsistence households, and commercial fishing permit holders. Key conservation approaches to be expected included: 1) gillnet fishing gear would be restricted to 6-inch or smaller mesh prior to the entry of Chinook Salmon into the river; 2) fishing for Chinook Salmon would be closed prior to the entry of Chinook Salmon into each district except Subdistrict 5-D where some fishing would be allowed on the early portion of Chinook Salmon run; 3) subsistence fishing for non-salmon species would be allowed utilizing 4-inch or less mesh size gill net gear; 4) when Summer Chum Salmon become abundant, subsistence and commercial fishing for Summer Chum Salmon may be allowed utilizing selective gear such as, dip nets, beach seines, and manned fish wheels; and 5) if confidence is high that the Chinook Salmon escapement goals will be met, some subsistence harvest of Chinook Salmon utilizing 6-inch or possibly 7.5-inch or less mesh gillnet gear may be allowed.

#### Summer Season

Inseason run strength assessment of Chinook and Summer Chum Salmon was primarily based on the lower river test fisheries at Emmonak, the mainstem Yukon River sonar near Pilot Station, and subsistence fishermen catch reports. The summer season began with ice breakup twenty days earlier than average and an early arrival of the first Chinook Salmon, which lead managers to anticipate an early run. The Lower

Yukon Test Fishery (LYTF) project cumulative CPUE was above the historical average. However, to conserve Chinook Salmon, the project was operated with reduced fishing time and less gear than in previous years. The preliminary end of season Pilot Station sonar estimate was approximately 175,500 Chinook Salmon, which was near the recent year's average passage of 178,300 fish and near the upper end of the pre-season run projection. The 1.9 million Summer Chum Salmon passage estimated by the Pilot Station sonar was above the average for the project.

With the 2016 pre-season Chinook Salmon outlook for a below average run, managers worked on the assumption that there would be very few Chinook Salmon available for subsistence harvest. However, based on the unexpected improvement seen in 2015, managers were optimistic that the 2016 run would also exceed expectations. Restrictions to conserve Chinook Salmon were initiated early and stayed in effect through the early portion of the run. No commercial fishing was allowed to target Chinook throughout the Yukon River drainage. During the early season, prior to Chinook Salmon arrival, in most districts, subsistence fishermen were restricted to target other fish species utilizing 6-inch or less mesh gill net gear. Once Chinook Salmon began arriving, subsistence salmon fishing was closed for 24 hours throughout most of the river and immediately reopened with selective gears, such as, dip nets, beach seines, and fish wheels with a live-release requirement, to allow subsistence fishermen to target Summer Chum Salmon, where abundant. These gear types enabled Chinook Salmon to be released alive while selectively retaining Chum Salmon. In addition, fishing for non-salmon species was allowed in most districts utilizing 4-inch or less mesh size gill net gear during closed salmon fishing periods. The exception was that Subdistrict 5D was provided some subsistence fishing opportunity with 6-inch or less mesh gillnets on the early portion of Chinook Salmon before arrival of the first pulse. Subsistence fishermen reports indicated that many fishermen did abide by the request to release Chinook Salmon alive when using selective gear. Near the midpoint of the run, subsistence salmon fishing was relaxed back to 6-inch or less mesh gill net gear on a reduced regulatory windows schedule after managers had gained confidence that the assessment was indicating a small surplus of Chinook Salmon would be available for harvest. A short period allowing for 7.5-inch or less mesh gillnet gear was also scheduled in most districts. As each district transitioned into fall season management, subsistence salmon fishing was relaxed further to allow fishing with 7.5-inch or less mesh gill net gear and increased fishing time.

More specific by area, subsistence salmon fishing restrictions began in the Coastal District on May 29 with gear restricted to 6-inch or less mesh size gill nets in the Southern Coastal District and salmon fishing remained closed in the Northern Coastal District. Subsistence salmon fishing was then closed and reopened to dipnets and beach seines only in Districts 1, 2 and 3 on May 30, June 1, and June 4, respectively, when assessment information indicated Chinook Salmon were entering the river. When managers were confident that Chinook Salmon abundance was better than expected, near the mid-point of the run, subsistence fishing targeting Summer Chum was relaxed to 6-inch or less mesh gill net gear until the beginning of the fall season when all gear restrictions were lifted. A short, 7.5-inch or less mesh gillnet opening was allowed in Districts 2 and 3 to provide a brief opportunity to target Chinook Salmon.

Subdistricts 4-A, 4-B, 4-C, 5-A, 5-B, and 5-C had similar subsistence restrictions as the fish moved through these areas. Additionally, fish wheels were required to release all Chinook Salmon alive during the same time when selective gear was being utilized. Once subsistence was relaxed to gillnets with 6-inches or less mesh size, fish wheel operators could retain Chinook Salmon for subsistence use. The Innoko and Koyukuk Rivers were managed independently of the mainstem Yukon River. Because fewer Chinook Salmon utilize these rivers, subsistence salmon fishing was only restricted to 6-inch or less mesh gillnet gear for approximately one week when Chinook Salmon were believed to be moving into these areas.

Subdistrict 5-D was restricted to 6-inch or less mesh gillnet gear and fish wheels early in the Chinook Salmon season, then closed to subsistence salmon fishing for approximately two weeks, to allow the first two pulses of Chinook Salmon to pass to the border. Few Summer Chum Salmon migrate through the upper Yukon River and those that do, tend to be of poor quality, and are less desirable for people food.

This precluded the use of selective gear to target Summer Chum Salmon in Subdistrict 5-D. Gear was relaxed to 6-inch or less mesh gillnets and fish wheels as the third pulse of Chinook Salmon entered the subdistrict. The Eagle sonar began indicating a border passage projection above the upper end of the border passage goal so fishing time was increased. After the fourth and final pulse had passed, there was confidence that the Canadian escapement would be adequate and harvest sharing objective would be met so subsistence salmon fishing restrictions were relaxed to allow 7.5-inch or less mesh gillnets, seven days per week.

District 6, the Tanana River drainage, is managed under a separate management plan. The district maintained its normal subsistence salmon fishing schedule of two, 42-hour periods per week with unrestricted gear early in the season. When Chinook Salmon were assessed to be migrating through District 6, subsistence fishing gear was restricted to 6-inch or less mesh gillnet gear and live release fish wheels for three periods. The personal use fishery on the Tanana River near Fairbanks was restricted to 6-inch or less mesh gillnet gear, live-release fish wheels, and dip nets from June 20 through July 13.

Under new commercial fishing regulations adopted by the Alaska Board of Fisheries in January 2013, the department (ADF&G) may, by emergency order, allow the use of specially equipped fish wheels, dip nets, and beach seines. These new gear options are intended to provide some Summer Chum Salmon directed commercial fishing opportunity while allowing for the release of incidentally caught Chinook Salmon. Commercial dip net and beach seine gear were employed during the first half of the summer season when Chinook Salmon could not have been avoided with traditional gill net gear. Between the average mid-point and three-quarter point of the summer season, commercial fishing periods were opened utilizing 5.5-inch or less mesh size and 30 meshes deep gill net gear in District 1 and 6-inch gill nets in District 2 to provide harvest opportunity on the remaining Summer Chum Salmon. At that time, managers were confident that the Chinook Salmon run was coming in better than expected when three pulses had already passed out of the area and Summer Chum Salmon were still abundant. After most of the Chinook Salmon cleared District 1, 6-inch gillnets were allowed to target Summer Chum Salmon. Further upriver, in District 6, nine commercial periods were opened to target Summer Chum Salmon. All Chinook Salmon caught in commercial dip nets, and beach seines were released. Those Chinook caught later in gillnets could be not sold, but were allowed be kept for subsistence use. Preliminary commercial harvests from the summer season fishery were approximately 525,863 Summer Chum Salmon; 8,255 Chinook Salmon caught and released; and 5,623 Chinook Salmon caught but not sold. The 2016 Summer Chum Salmon commercial harvest was the highest on record since 1989.

Due to the conservation efforts and a return near the top end of the pre-season projection, the estimated Eagle sonar passage of 72,300 Chinook Salmon was above the Interim Management Escapement Goal (IMEG) range of 42,500 – 55,000 with additional surplus available for the Canadian harvest share as stipulated in the Yukon River Salmon Agreement. Chinook Salmon escapement projects throughout both the U.S. and Canadian portions of the drainage showed that escapement goals were met or exceeded, and for projects without goals, most had above average escapements. The Eagle sonar passage estimate was in line with expectations based on the Pilot Station sonar estimate. However, postseason review of the data will still be conducted in order to evaluate the actual total run size.

#### Fall Season

Based on the Summer to Fall Chum Salmon relationship, managers revised the 2016 fall season projection to a run size between 800,000 to 900,000 Fall Chum Salmon. An expected run of this size is considered adequate for escapement needs, full subsistence use, as well as provide a surplus for commercial harvest and other uses. At the beginning of the fall season in Districts 1, 2, and 3, subsistence salmon fishing reverted to its standard fishing gear and schedule of 7 days per week with closures 12 hours before, during, and 12 hours after announced commercial fishing periods. Since little or no commercial fishing effort was anticipated in District 4 and Subdistricts 5-A, 5-B, and 5-C, these sections of river began their fall season on a 5 day per week schedule as specified in regulation and were later relaxed to 7 days per week in an effort to compensate for lost opportunity during the summer season.

District 6 continued on its standard two 42-hour periods per week regulatory schedule and Subdistrict 5-D continued their normal 7 days per week schedule. Many subsistence fishermen indicated to managers that they intended to make up for low Chinook Salmon harvest with good quality Fall Chum Salmon from the front of the run.

Commercial fishing was initiated in the lower river at the start of the fall season to take advantage of the overlap in Summer and Fall Chum Salmon runs. A strong first pulse of over 366,000 Chum Salmon passed the Pilot Station sonar beginning on July 18, two days after the start of the fall season which began in the Lower Yukon Area on July 16. The second pulse was weaker at over 90,000, however the third pulse was also very strong at over 372,000 Chum Salmon. The fourth and fifth pulses came in at over 92,000 and 69,000 respectively. A sixth pulse appears to have entered after Pilot Station sonar operations ceased at the end of August. Managers took a standard approach to scheduling commercial periods to ensure fish passed upriver for subsistence fishermen who were looking to harvest the early Fall Chum Salmon to make up for the lack of Chinook Salmon. However, due to the better than expected Fall Chum Salmon run, additional periods were scheduled with attempts made to align commercial openings with pulses as each passed through the districts. Meanwhile, the slightly later overlapping Coho Salmon run appeared to be coming in better than expected based on the LYTF and harvest reports. The estimated passage of 132,000 Coho Salmon by the Pilot Station sonar was below the average. Yet, when taking into account the strong commercial harvests below the sonar, the total Coho Salmon run was assessed to be well above average. The Fall Chum Salmon commercial fishing season closed by regulation on midnight, August 31. However, an extended Coho Salmon directed commercial fishery in Districts 1 and 2 was allowed, as stipulated in the *Yukon River Coho Salmon Management Plan*, from September 1 through September 10 because of continued Coho Salmon abundance that was above average and adequate Fall Chum Salmon passage. Additionally, a small commercial harvest occurred in Subdistricts 5-B, and 5-C and in District 6 where the season was extended to harvest late Coho Salmon. The combined fall season commercial harvest through October 7 was approximately 450,000 Fall Chum and 184,000 Coho Salmon. Both the Fall Chum Salmon and the Coho Salmon commercial harvests were the highest on record.

Though Fall season salmon assessment will continue into November, some monitoring projects are complete at the time of this report and most are expected to end with Fall Chum Salmon escapement goals being met or exceeded. The Chandalar River sonar project has exceeded the upper end of the Biological Escapement Goal (BEG) of 152,000 Fall Chum Salmon with an estimated passage of 295,000 fish. The Eagle sonar ceased operations on October 6 with a preliminary total passage of 144,000 Fall Chum Salmon which is adequate to provide for the Canadian escapement goal of 70,000-104,000 and typical Canadian harvest levels. The post season expansion will increase this estimate (approximately 8,000). However, the passage of Fall Chum Salmon may end short of Canada's total allowable catch (TAC) which is their harvest share specified in the Treaty Agreement. Escapement monitoring within the Tanana drainage will continue through November, but indications at this time are that all Fall Chum Salmon escapements are expected to adequate. The one exception to the strong Fall Chum Salmon run is the Fishing Branch River weir, located within the upper Porcupine River which has consistently performed much poorer than other Fall Chum Salmon stocks in recent years. At the time of this report, it is projected to meet the lower end of its escapement goal of 22,000 Fall Chum Salmon.

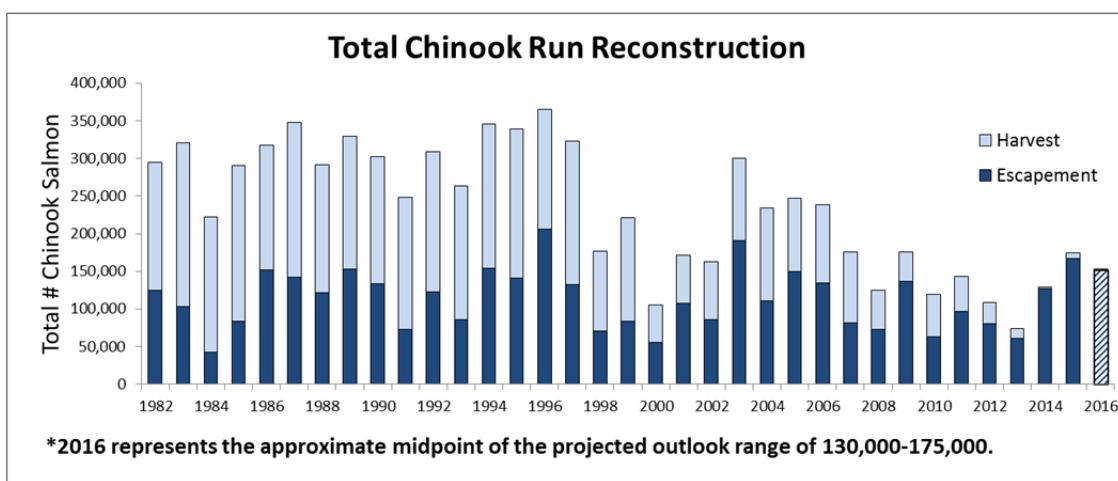
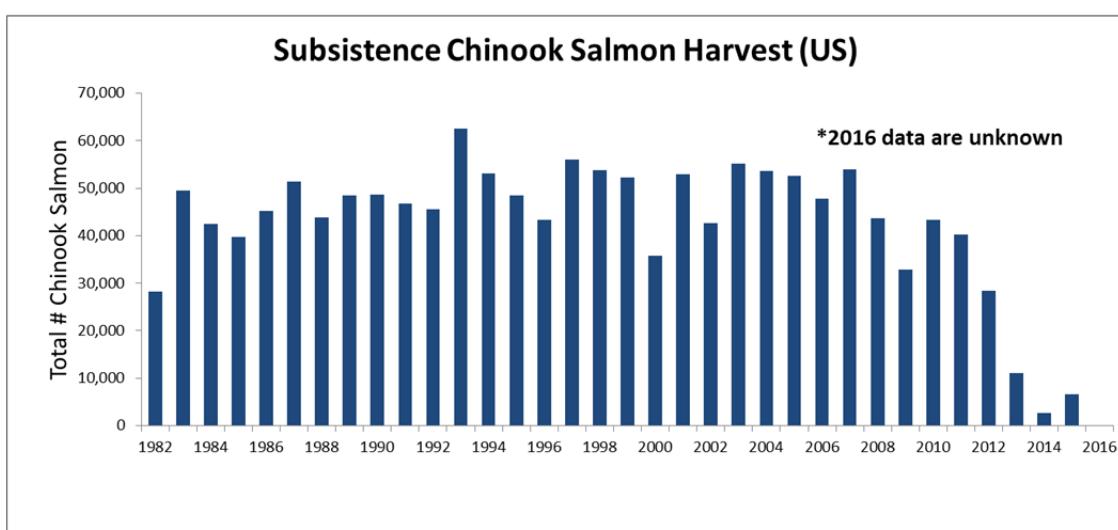
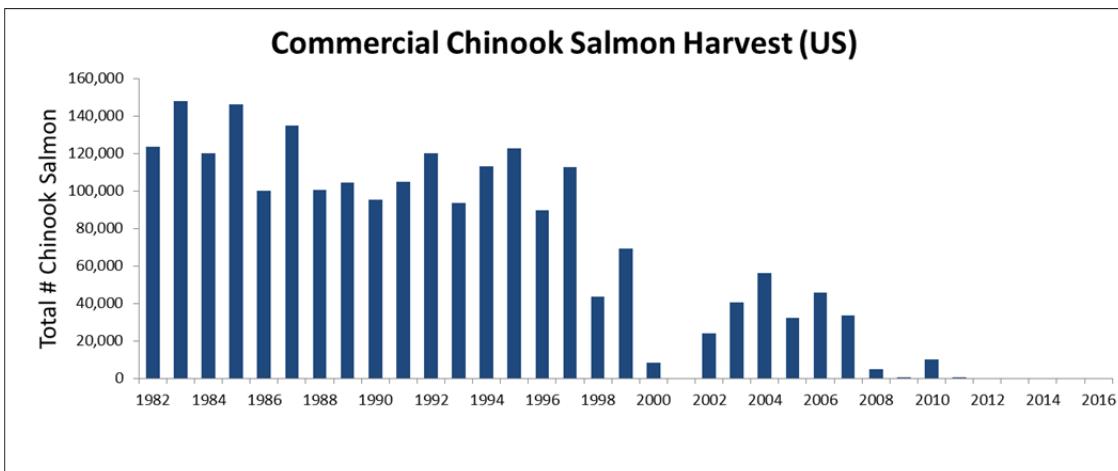
Coho Salmon escapement surveys on the Delta Clearwater River will continue into November. This is the only established escapement goal in the Yukon River drainage for Coho Salmon. Although the estimated Coho Salmon passage by Pilot Station sonar was well above average, it is difficult to predict the Delta Clearwater River escapement due to weak correlations between the two projects. It should also be noted that the parent year escapement exhibits a weak correlation to the return four years later. Consequently, the expectation is that the Coho Salmon escapement will likely be adequate based on past performance.

#### Postseason

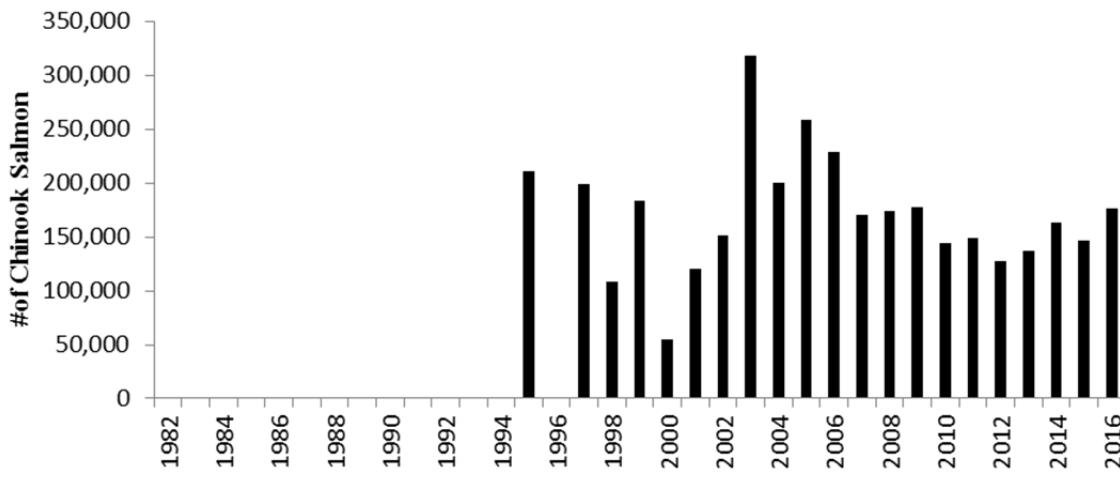
As expected, subsistence salmon harvest information collected inseason indicated that most fishermen did

not meet their Chinook Salmon subsistence harvest goals. Generally, fishermen reported a lack of fishing opportunity, having to fish later in the season, or having to shift their fishing efforts to other species. However, fishermen did report harvesting some Chinook Salmon during the limited or restricted times that harvest was allowed. This was expected in light of the current trend in low Chinook Salmon abundance and conservative management efforts. Post season subsistence surveys are expected to reflect a subsistence Chinook Salmon harvest larger than reported in 2015 and well below average. Based on assessment projects, particularly the Eagle sonar, the 2016 Chinook Salmon total run appears to have been above the recent 5-year's average, and near the high end of the preseason outlook range. Because of the uncertainty around productivity in recent years, management approached this season very cautiously. With implementation of conservative management actions that restricted the Chinook Salmon subsistence harvest and a return near the high end of the preseason projection, it is believed that most of the Alaska escapement objectives were attained and the U.S./Canada Treaty agreement was met.

It is recognized that the sacrifices of the Yukon River fishing community are heavily relied upon for assistance in conserving the Chinook Salmon run. To sustain this important resource, fishermen incurred a significant hardship through reduced harvest and inefficient gear types. Given the trend in Chinook Salmon runs in recent years, managers will continue to work with fishermen and interested parties to develop conservative strategies with the primary goal to provide for escapement needs and subsistence uses during low abundance years while looking for ways to accommodate other fishing opportunities.



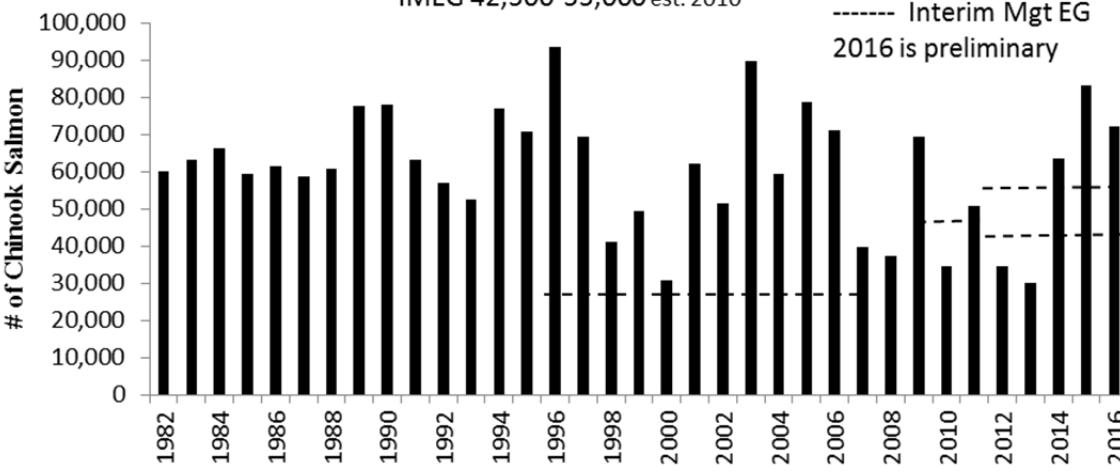
## Pilot Station Sonar Chinook Passage Estimate

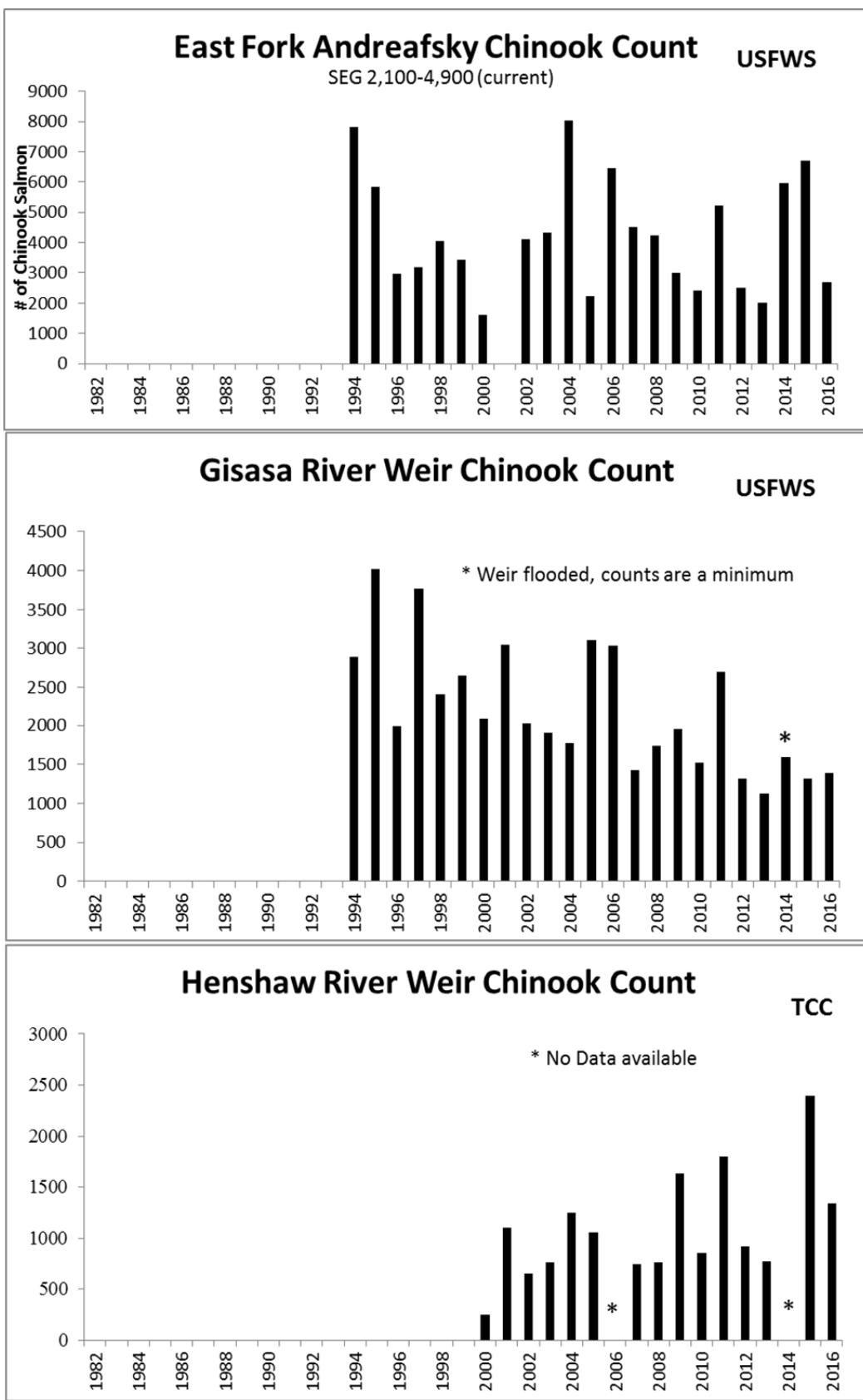


## Border M/R & Eagle Sonar

IMEG 42,500-55,000 est. 2010

----- Interim Mgt EG  
2016 is preliminary

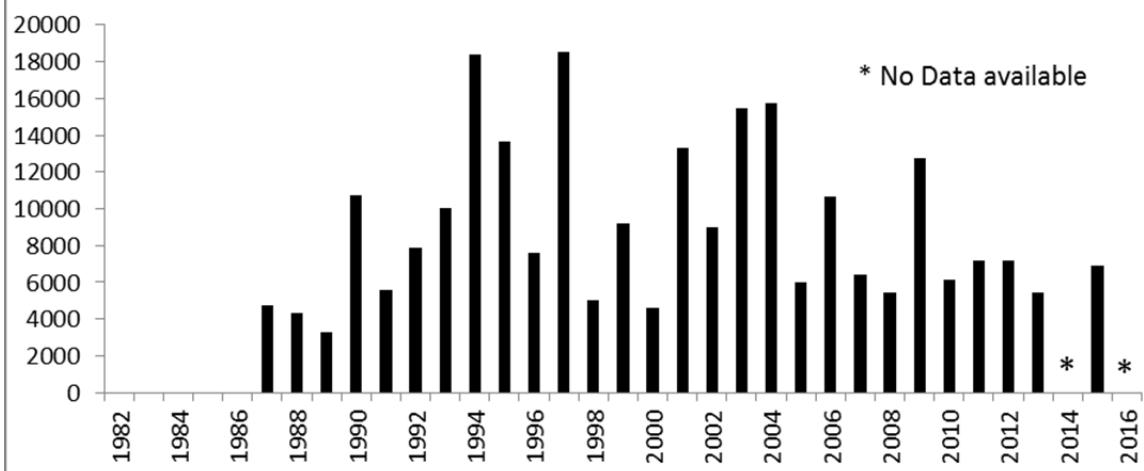




2016 is preliminary

## Salch River Tower

BSFA/ADFG



## Chena River Tower

ADF&G

