



THE STATE
of ALASKA
GOVERNOR BILL WALKER

Department of Fish and Game

DIVISION OF COMMERCIAL FISHERIES
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Dr. James Balsiger, Administrator
NOAA Fisheries, Alaska Region
PO Box 21668
Juneau, Alaska 99802-1668

Dear Dr. Balsiger:

In April 2015, the North Pacific Fishery Management Council (Council) adopted an action that lowers Chinook salmon bycatch caps in the Bering Sea pollock fishery when Chinook salmon abundance in Western Alaska is at historically low levels.¹ The Council's action identifies historically low Western Alaskan Chinook salmon abundance using a 3-system index of in-river adult Chinook salmon run sizes from the Unalakleet, Upper Yukon, and Kuskokwim rivers combined at or below the threshold level of 250,000 fish. The Council's action also specified a process by which the Alaska Department of Fish and Game would provide postseason abundance estimates to the National Marine Fisheries Service (NMFS) by October 1, following the salmon season each year, to determine if the combined adult Chinook salmon abundance in the indexed systems falls at or below the threshold level of 250,000 fish. The performance standard and hard cap applicable to the Bering Sea pollock fishery would be lowered in the year following the year in which the index was $\leq 250,000$ Chinook salmon.

Postseason run size estimates include all available escapement and commercial harvest data, and estimates of all other harvest in each system. Detailed information on methods and trend patterns in these assessments can be found in the Council's public review analysis.² As noted in the public review analysis, the primary difference between postseason run size estimates and final run size data is that the subsistence harvest estimate is based upon manager's expectation of subsistence harvest rather than an estimate based on survey data. Given the nature of subsistence use, Chinook salmon subsistence harvest estimates for Upper Yukon, Kuskokwim, and Unalakleet rivers are generally stable in years of adequate run size and no fishery restrictions. In years of restrictions, subsistence harvest can be expected to be somewhat lower than typical harvest, depending on the severity of the restrictions. Because the majority of the run in low run abundance years is realized as escapement, postseason estimates are a good

¹ <https://npfmc.legistar.com/LegislationDetail.aspx?ID=2237783&GUID=89E4DA9C-19B8-4BDE-8643-B19D68DD9EE3>

² Public Review draft Environmental Assessment/ Regulatory Impact Review/ Initial Regulatory Flexibility Analysis for Proposed Amendment to the Fishery Management Plan for Bering Sea Aleutian Islands Groundfish Bering Sea Chinook and Chum salmon bycatch management measures, March 2015.

surrogate for finalized run estimates. **Methods and analysis used to estimate the postseason run size for the Unalakleet, Upper Yukon, and Kuskokwim river systems have not changed and are consistent with what is outlined in the Council's public review analysis.** As required by NMFS, changes to run reconstruction methods used in the assessment of the 3-system index would first need to be evaluated and approved through the Council process. Despite using consistent methods outlined in the public review analysis, Department staff continually work to improve assessment data, and it is anticipated that an amendment to the Kuskokwim River run reconstruction may be available for Council consideration in April or June, 2018. At that time, any proposed modifications to the current methods will be presented to the SSC and Council to determine if revisions to the run assessment methods should be incorporated into the 3-system index estimate.

2017 Postseason Chinook Salmon Run Size Estimates

Unalakleet River

Preliminary Chinook salmon escapement in the Unalakleet River was 3,978 fish, measured by escapement projects on the North River tributary and mainstem Unalakleet River. Although the North River escapement counting project was impaired by high water, this occurred after the Chinook salmon run had passed, and the observed escapement is considered a reliable measure of the total Chinook salmon escapement. Harvest of Unalakleet River Chinook salmon included 327 commercially caught fish and approximately 350 subsistence caught fish. The subsistence catch was estimated based on harvests in recent years where similar fishing restrictions were enacted. The total **Unalakleet River postseason run size estimate is 4,655.**

Upper Yukon River

The entire escapement of the Upper Yukon, or Canadian-origin, stock group into Canada is assessed by a sonar project at Eagle, AK. The 2017 preliminary sonar estimate is 73,268 fish. Although minor subsistence harvest restrictions were enacted this year, overall far more subsistence opportunity was available in 2017 compared to recent years. Information from subsistence fishermen indicates subsistence harvest was similar to years without fishing restrictions, which averages 30,000 Upper Yukon Chinook salmon according to rigorous subsistence harvest surveys conducted in the fall/winter annually. Although a small number of Chinook salmon were caught and sold commercially during the fall season, given the timing of harvest, these fish are not believed to be Upper Yukon origin Chinook salmon, which primarily migrate through the river early in the summer. The estimated sonar border passage combined with the estimated harvest results in a total **Upper Yukon postseason run estimate of 103,268.** This postseason Upper Yukon run size estimate is corroborated by inseason forecasting using sonar in the lower river and genetic stock composition information that indicated approximately 105,000 Upper Yukon Chinook salmon passed the lower Yukon River sonar site. Furthermore, this total run estimate is also corroborated by preseason forecasts using juvenile Chinook salmon information from the Northern Bering Sea that predicted 93,000–134,000 fish would return in 2017.

Kuskokwim River

Total run in the Kuskokwim River is estimated using a maximum likelihood model published in 2012 (see public review analysis and referenced documents). Model estimates were informed by direct observations of the 2017 escapement at 17 locations combined with historical observations of escapement, harvest, and commercial fishing effort since 1976. Though lower river inseason run assessment overwhelmingly suggested poor run abundance, observed drainage-wide escapements indicated a higher total Chinook salmon return and an improvement upon the recent years' escapements.

Of the escapement assessment projects operated in 2017, 87% reported higher escapements compared to the recent five-year average, 67% exceeded their recent ten-year average, and 33% exceeded their long-term average. No commercial or sport fishery harvest of Kuskokwim River Chinook salmon occurred during the 2017 season. A total of 290 and 83 fish were harvested from the Bethel Test Fishery and Aniak Test fishery, respectively, which were donated for subsistence use. Significant restrictions were placed on subsistence harvest in 2017. A preliminary subsistence harvest estimate of 15,000 fish was generated using the best available inseason harvest data as well as input from fisheries managers, assessment biologists and stakeholders. The postseason total run estimate using these data inputs into the published run reconstruction model, and all published starting values, is 148,848 fish. However, biometric staff recommended changing the starting value for the commercial catch and effort component of the model from -10 to -8 to ensure that the model would properly converge across all ranges of likely harvest. The run reconstruction with the -8 starting value, which is what is recommended for proper model convergence, yields a **Kuskokwim River postseason run size of 165,102.**

Given the sum of the postseason run estimates from Unalakleet, Upper Yukon and Kuskokwim rivers, the 3-system index is 273,025 Chinook salmon. It should be noted that if the convergence problems with the Kuskokwim run reconstruction model were ignored and the -10 starting value were used for the commercial harvest and effort component of the model, the sum of the three systems would be 256,771.

Sincerely,

A handwritten signature in black ink, appearing to read 'MS Kelley', is written over a light blue horizontal line.

Scott Kelley
Commercial Fisheries Division Director

cc: Glenn Merrill, NMFS AKR