

MEMORANDUM

STATE OF ALASKA DEPARTMENT OF FISH AND GAME Division of Commercial Fisheries

TO: Jack Erickson and Bert Lewis
Regional Staff, Region II

DATE: 6/13/2022

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SUBJECT: Change to enumeration methodology at the Nushagak River sonar project

Purpose: This memo identifies a change in the method used to estimate salmon passage at the Nushagak River sonar project in 2022.

In 2022 the Division of Commercial Fisheries is modifying the methodology on how downstream fish are accounted for at the Nushagak River sonar site. A 2021 review of fish passage estimates found that the current method incorporating downstream fish resulted in undercounts of chum and Chinook salmon. After our evaluation, a method with increased statistical accuracy was identified and will be used to calculate fish passage at the Nushagak River sonar project in 2022. This change will need to be identified on department fish count web sites so that users recognize a change in the methodology used to estimate passage.

The finding of fish passage undercounts of Chinook and chum salmon and overestimates of sockeye salmon, led to a biometric review of the calculation methods used to generate counts at Nushagak Sonar. Three methods of calculation were reviewed, and the current methodology of including downstream migration counts to estimate passage was identified as having the largest potential bias. This bias is most apparent during years of large sockeye salmon returns, as recently experienced. Applying the number of downstream counts to the apportionment increases negative bias in the proportionally smaller runs of Chinook and chum salmon. For example, when the new methodology was applied to the 2021 estimates there was an absolute percent difference of 9% in Chinook, 1% in the sockeye, and 3% in the chum salmon counts. The results of the biometric review found that the least biased approach is to not incorporate downstream counts in fish passage estimates. Starting in 2022 the calculation method will not incorporate downstream counts in fish passage estimates. This method will be formalized in the Nushagak River Sonar Project operational plan this fall (*in prep*), and a formal review of historical run estimates is planned to begin after the salmon season.

Distribution: Forrest Bowers, Sam Rabung, Lee Borden, Jason Dye, Tom Vania, Tim McKinley, Tim Sands, and Dawn Wilburn.