

PROPOSAL 51

5 AAC 24.360. Copper River District Salmon Management Plan.

Reduce commercial salmon fishing opportunity in the Copper River District, as follows:

To address this issue, we recommend that the *timing* of the commercial harvest be managed in a manner that avoids disproportionately high exploitation rates for early run Copper River salmon stocks, potential adverse effects on overall population diversity of Copper River salmon, and potential adverse impacts on food security for salmon-dependent subsistence users. To be clear and *sincerely respectful of all user groups* that are reliant on Copper River salmon, the solution that we propose is about *timing* of harvest *not allocation* of harvest among user groups with legitimate needs.

Specifically, we recommend that the board revise the Copper River District Salmon Management Plan, 5 AAC 24.360 as follows, with revised text **underlined in bold**, regulatory text to be deleted fully capitalized and enclosed in brackets, and explanatory comments (if any) *in italics* and enclosed in parentheses:

(a) The department shall manage the Copper River District commercial salmon fishery to achieve a sustainable escapement goal of 360,000 – 750,000 sockeye salmon into the Copper River.

(b) The department shall manage the Copper River District commercial salmon fishery to achieve an inriver goal of salmon, as measured at the sonar counter near Miles Lake, based on the total of the following categories:

Spawning escapement

Lower end of sockeye salmon escapement goal

17,500 other salmon

Glennallen Subdistrict subsistence fishery 61,000 – 82,500 salmon

Chitina Subdistrict personal use fishery 100,000 – 150,000 salmon

Sport fishery 15,000 salmon

Hatchery brood (sockeye salmon) estimated annually

Hatchery surplus (sockeye salmon) estimated annually

TOTAL announced annually

(c) Repealed 4/24/2009.

(d) Repealed 3/30/2000.

(e) The department shall manage the Copper River District commercial salmon fishery to conserve and avoid disproportionate exploitation of early-run Copper River sockeye and king salmon stocks by comparing cumulative sonar passage and management objectives by date, as follows:

(1) After two commercial drift gillnet openings, the Copper River District shall not open to commercial drift gillnet fishing when cumulative sonar passage is less than 70 percent of the cumulative management objective for the same date.

What is the issue you would like the board to address and why? The issue is that management of the Copper River District commercial fishery by the Alaska Department of Fish and Game (department) in five of the six most-recent years (2018-2023) resulted in disproportionately high harvest (exploitation) rates for early run Copper River salmon stocks. Without action by the board

to mitigate this issue, persistent disproportionate exploitation of stocks with early migratory timing has the potential to diminish the overall population diversity of Copper River sockeye and king salmon while threatening food security for Copper River subsistence users, and particularly those who fish upstream of the Gakona River in the uppermost portion of the Glennallen Subdistrict. The 2023 season is most representative of this concern, when more than 387,000 salmon were harvested by the commercial fishery before cumulative salmon passage at Miles Lake had reached 50 percent of the department's objective for cumulative inriver passage. (Note that this estimate for the degree to which Miles Lake salmon passage was lagging behind cumulative commercial harvest and management objectives accounts for the fact that the sonar sensor on the south bank was not operational for a full 24-hr period until 5/31.) Disproportionately high early season harvest rates occurred to a lesser extent in 2021 and 2022, and also occurred in low-run years of 2018 and 2020 before low sonar counts triggered extended closures of the commercial fishery.

Management that results in a recurring pattern of disproportionately high exploitation rates for early run salmon stocks is inconsistent with two statewide fisheries management policies. These are the Policy for the Management of Mixed Stock Salmon Fisheries (5 AAC 39.220), which specifies in part that "... conservation of wild salmon stocks consistent with sustained yield shall be accorded the highest priority;" and the Policy for the Management of Sustainable Salmon Fisheries (5 AAC 39.222), which specifies in part that "... salmon escapement should be managed in a manner to maintain genetic and phenotypic characteristics of the stock by assuring appropriate geographic and temporal distribution of spawners"

Management that has the potential to adversely affect population diversity of Copper River salmon would be contrary to the "portfolio-effect" principle, which holds that conservation of population diversity is an important means of enhancing the resilience of salmon populations and associated fisheries to changing environmental conditions (Hilborn et al. 2003, Schindler et al. 2010).

Management that results in disproportionately high harvest rates for early run stocks also may exacerbate known food-security concerns of upriver subsistence users. Because of their location in the watershed, subsistence users from headwater communities have access to the fewest spawning populations, some of which are characterized by early run timing. A preliminary National Park Service assessment of 2005-2021 harvest data found that year-to-year catch stability (one measure of food security, here estimated as interannual variability in catch-per-unit-effort) was lowest (interannual variability was highest) during this period for subsistence users who fished upstream of the Gakona River compared with downstream subsistence users who fished between the Chitina River bridge and the Gakona River. This pattern of low catch stability in the uppermost reach of the Copper River applied to participants in the state subsistence fishery and as well as the federal subsistence fishery and is consistent with findings for the Fraser River in Canada (Nesbitt and Moore 2016). Past research and Alaska Native traditional knowledge indicate that Copper River salmon stocks associated with headwater tributaries are among the earliest to enter the river. Since at least 2004 (board proposal 53 in 2005) and as recently as 2023 (RC019 submitted during the board's October 12-13, 2023 work session), subsistence users have repeatedly urged fisheries managers to allow more early run salmon to reach headwater spawning tributaries.

We considered an alternative solution to this issue, but rejected it in favor of this proposed solution after conferring with department staff from the Division of Commercial Fisheries and the Division

of Sport Fisheries. The alternative solution would have required the department to (1) establish a program for post-season estimation and assessment of annual exploitation rates for distinct spawning stocks of Copper River sockeye and king salmon on the basis of genetic stock composition data and other appropriate information; (2) ensure, to the extent practicable, that exploitation does not place distinct stocks at elevated risk of extirpation; and (3) report assessment results to the board on a schedule that conforms to the board cycle. We rejected the genetics-based solution in favor of *this sonar-based solution, which is far simpler and less expensive to implement, thereby enabling immediate action during this board cycle*. Nevertheless, we believe that the use of genetic data to estimate stock-specific exploitation rates ultimately may be required for ensuring the long-term conservation of diversity of Copper River sockeye and king salmon populations and the resilience of these populations and dependent fisheries, livelihoods, and cultural traditions in the context of changing environmental conditions.

We will provide further analyses and context for the issue and additional justification for the proposed regulatory change in a letter submitted to the board following issuance of the proposal book.

References

Hilborn, R., T.P. Quinn, D.E. Schindler, & D.E. Rogers. 2003. Biocomplexity and fisheries sustainability. *Proceedings of the National Academy of Sciences* 100(11):6564-6568.

Nesbitt, H.K., and J.W. Moore. 2016. Species and population diversity in Pacific salmon fisheries underpin indigenous food security. *Journal of Applied Ecology* 53:1489-1499.

Schindler, D.E., R. Hilborn, B. Chasco, C.P. Boatright, T.P. Quinn, L.A. Rogers, & M.S. Webster. 2010. Population diversity and the portfolio effect in an exploited species. *Nature* 465:609-612

Did you develop your proposal in coordination with others, or with your local Fish and Game Advisory Committee? Explain. Prior to submission of this proposal, we consulted with the following groups and benefitted from the perspectives that they offered: ADF&G Division of Commercial Fisheries staff, Cordova & Anchorage, ADF&G Division of Sport Fisheries staff, Glennallen & Fairbanks, Copper Basin Fish and Game Advisory Committee, Copper River / Prince William Sound Fish and Game Advisory Committee, and Wrangell-St. Elias National Park Subsistence Resource Commission

PROPOSED BY: Wrangell-St. Elias National Park and Preserve (HQ-F24-059)
