

SCIENTIFIC AND STATISTICAL COMMITTEE REPORT ON METHODOLOGY
REVIEW—FINAL TOPIC SELECTION

Will Satterthwaite (SWFSC, Sacramento River Fall Chinook [SRFC] Ad-Hoc Workgroup [SRWG] Chair) briefed the Scientific and Statistical Committee (SSC) on the three topics that the SRWG recommends for the Salmon Methodology Review this year. Michael O'Farrell (SWFSC, Salmon Technical Team [STT] Chair) gave a brief overview of the STT discussion on the topics. The SSC recommends that all three topics be reviewed on October 4, 2024. All materials are complete and can be reviewed in one day. The analysts will be available to present and answer questions on that day. The work has the potential to improve the scientific basis for salmon management by the Pacific Fishery Management Council.

1. **Derivation of proxy S_{MSY}/S_{MSP} ratio and F_{MSY} value suitable for use for SRFC.** This work addresses the first topic identified in the SRWG Terms of Reference. The SRWG proposed a review of its completed report that covers criteria for inclusion of analyses, a set of stocks and analyses it identified as appropriate for informing reference points, and the resulting proxy values for S_{MSY}/S_{MSP} and F_{MSY} .
2. **Sacramento River Fall Chinook cohort reconstruction and comparison to the Sacramento Index (SI).** Emily Chen (U.C. Berkeley) has completed a report describing a cohort reconstruction of hatchery- and natural-origin SRFC for recent years, which incorporates new methods for estimating uncertainty from sampling coded wire tags and scales.
3. **Uncertainty metrics and buffering approaches for SRFC forecasts.** A published paper by Satterthwaite and Shelton (2023) documented bias and substantial uncertainty in forecasts for several PFMC-managed salmon stocks. The approach described in that paper has the potential to address the portions of the SRWG Terms of Reference that call for evaluation and possible revisions of forecasts and the harvest control rule. This paper has also informed discussions in the SSC Ecosystem Subcommittee about the development of risk tables for salmon, and it addresses an SSC recommendation that uncertainty be accounted for in salmon forecasts. With proposals for quantifying bias and uncertainty in salmon forecasts, and derivation of buffers based on desired levels of risk tolerance, Satterthwaite and Shelton (2023) present a number of potential pathways for improving salmon management in the Council arena. Considering the uncertainty metrics and buffering approaches specifically for SRFC forecasts provides a tractable scope for the review while serving as a good demonstration of the approach. Satterthwaite and Shelton (2023) include a retrospective analysis of how buffers might have affected historical

management outcomes for the SRFC stock, thus informing the potential costs and benefits of this approach in terms of both harvest and conservation metrics. Describing uncertainty and identifying methodologies for developing buffers is a general and longstanding need for salmon management, and is incorporated into management of groundfish and coastal pelagic species. This need is independent of the current reference points for abundance and harvest control rules.

PFMC

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