

## SALMON TECHNICAL TEAM REPORT ON THE SACRAMENTO RIVER FALL CHINOOK WORKGROUP PROGRESS REPORT

The Salmon Technical Team (STT) has reviewed Agenda Item E.1.a, the Sacramento River Fall Chinook Ad-hoc Workgroup (Workgroup) Report, and appreciates the substantial efforts of the Workgroup members to produce this document. Given the extent of the report, and the short amount of time to develop this statement, it was not possible to evaluate all potential actions. Instead, we have provided some comments on what the STT felt were key issues to bring to the Council's attention.

The STT supports the idea of developing a cohort reconstruction for Sacramento River fall Chinook (SRFC) as mentioned in section 4.1.3 of the Workgroup report. We understand that this would require a great deal of effort and the inclusion of scientists outside of the Workgroup. We also understand that due to data limitations, this effort would only provide information for a limited range of years, and confine the range of abundances to generally lower levels. However, development of a cohort reconstruction would provide a foundation for soundly managing the population into the future

With regard to item 1 in Section 8 of the Workgroup's report (Workgroup Questions for Council), the STT agrees that there is a potential inconsistency between managing for optimum yield (OY) based on maximum sustainable yield (MSY) per the National Standard 1 guidelines, versus managing for maximum sustainable production (MSP) per the fishery management plan (FMP). In practice, SRFC have not been managed to maximize natural production and thus the STT recommends refocusing on management measures that are based on MSY but take into account other factors to achieve OY, consistent with the National Standard 1 guidelines. The STT recommends that the FMP language identified in section 3.1 of the Workgroup report that refers to management of California fisheries to maximize natural production be re-evaluated to better align with current management practices.

Regarding item 2 in section 8 of the Workgroup's report, the STT recommends that the Workgroup pay particular attention to the treatment of hatchery and natural-origin escapement in the stock-recruit analysis. The Workgroup noted in section 3.2 that the SRFC conservation objective and reference points based on combined hatchery and natural area escapement are not consistent with maximizing natural production or for deriving maximum sustainable yield escapement ( $S_{MSY}$ ) from a spawner-recruit relationship. Given the level of hatchery contribution to natural spawning areas and hatcheries, the STT agrees that giving thought to the right metrics will be necessary when choosing how hatchery fish will be treated in developing a new SRFC conservation objective. Additionally, if there are changes in the form of the conservation objective (e.g., based on natural-area or natural-origin spawners), there would be implications to fisheries, current models, and potentially hatchery practices.

The STT recommends caution if considerations are given to SRFC fishery management goals that are in terms of natural-origin fish. We are not aware of other management strategies that consist of objectives based on natural-origin fish only, where the composite stock is comprised of a large percentage of hatchery-origin fish. Furthermore, implementation of a natural-origin fish

conservation objective could be difficult for SRFC in the absence of mass marking. Estimates of the hatchery and natural fraction of escapement are routinely made by the California Department of Fish and Wildlife, but are not available in time to inform the preseason fishery planning process shortly after spawning ends.

The STT agrees with the Workgroup's conclusion of "not recommended" on the topic of implementing year-specific escapement goals (section 3.4). The Workgroup's intention regarding year-specific control rules included looking at indicators that could be relevant to the following management year, and adjusting allowable exploitation rates in the current year such that more (or fewer) fish would be exposed to good (or poor) conditions in the following year. This idea would be a relatively large departure from the current single year management approach for salmon.

In Section 4.2.3 the Workgroup noted logical inconsistencies in estimating  $F_{MSY}$  and  $S_{MSY}$  from a stock-recruitment relationship where the natural-origin spawners are not the only source of natural area production (and thus the "stock" and "recruit" components are not in the same units). However, the escapement that results in Maximum Sustainable Production (MSP) can be estimated under this scenario. The STT is supportive of identifying a reasonable ratio between  $S_{MSY}$  and  $S_{MSP}$  to inform a data-based estimate of  $S_{MSY}$ . The STT is less supportive of development of a proxy based on escapement maximizing production- because of the inconsistencies with National Standard 1 identified previously.

In Section 5.2, the Workgroup report states that the Sacramento Index (SI) forecast had over-forecasted the postseason estimate in seven of the last ten years. While this factually correct, there is more nuance to the SI forecast performance. The existing forecast method has been in place since 2014. Forecast skill has increased over the years since the adoption of the current forecast method. From 2014 to 2017, the SI was over predicted in each year. Since 2017, forecasts can be characterized as being over forecast by a modest amount in two years, very close to observed in three years, and under predicted in two years. A plot of forecast performance for SRFC (and other key Chinook stocks) can be found in Figure II-4 of the 2024 Preseason Report I. The STT recommends not modifying the preseason abundance forecast until a formal cohort reconstruction is developed.

PFMC  
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