

PACIFIC FISHERY MANAGEMENT COUNCIL STAFF REPORT ON SALMON RISK TABLES EXPLORATION AND PROGRESS TO DATE

Introduction

The Pacific Fishery Management Council's (Council) Fishery Ecosystem Plan (FEP) Ecosystem and Climate Information for Species, Fisheries, and Fishery Management Plans (FMP) (Initiative 4) was conducted between 2023 and 2025 to develop approaches for integrating ecosystem and climate information into the Council's harvest-setting and other fishery management processes across its FMPs. One of the potential FMP-specific on-ramps considered for Salmon, Groundfish, and Coastal Pelagic Species was ecosystem-informed risk tables.

FEP Initiative 4 is scheduled to formally conclude in March 2027 with the Council's consideration of a new section (Section 1.4) of the [FEP Initiative Appendix](#) that summarizes the work accomplished under Initiative 4 and classifies it as a completed initiative. In a March 2026 summary report describing Initiative 4's process, components, and outcomes ([Informational Report 8](#)), the Ecosystem Workgroup (EWG) identified salmon risk tables as an unfinished item and noted the topic may warrant future Council consideration.

This report was developed by Council staff, in consultation with members of the EWG, to provide the Council with an overview of the work done to date on salmon risk tables and bridge the EWG's work under Initiative 4 with Council salmon-focused discussions on risk approaches. This information is intended to help support future Council discussions on whether salmon risk tables should be prioritized for further development under the Salmon FMP.

Exploration and Development of Salmon Risk Tables to Date

In [March 2024](#), the Council directed the EWG and appropriate advisory bodies (ABs) to work with National Marine Fisheries Service (NMFS) Science Center staff to explore application of salmon risk tables for Sacramento River fall Chinook (SRFC) and Klamath River fall Chinook (KRFC), and in September 2024, the Council [requested](#) the EWG work with Salmon ABs to discuss these potential risk assessment methodologies and report back to the Council.

The EWG met with the Salmon Technical Team (STT) in January 2025. The EWG and Drs. Correigh Greene, Stu Munsch, and Will Satterthwaite presented the STT with background information on the proposed risk tables structure for groundfish and preliminary ideas on how the framework could be modified to be applicable to SRFC and KRFC. Among the topics included in the presentation were: a condensed list of indicators that could give outlooks on the likely abundance of KRFC and SRFC both one and two years into the future; an assessment of the predictive accuracy, which was comparable to many salmon forecasts used in management (since published as Munsch et al.,¹ in press); a description of a qualitative approach in which the degree

¹ Munsch, S. H., C. M. Greene, and W. H. Satterthwaite. In press. California salmon returns track deteriorating freshwater and marine conditions. Canadian Journal of Fisheries and Aquatic Sciences. <https://doi.org/10.1139/cjfas-2026-0128>.

of precaution in interpreting the current year's abundance forecast could be informed by ecosystem conditions (potentially as captured in the set of indicators mentioned above); and a review of current forecast data and performance. They also emphasized focusing on factors not already directly incorporated into the forecast as inputs, to avoid double-counting.

Prior Advisory Body Statements Related to Salmon Risk Tables

Both the Habitat Committee (HC) and the Scientific and Statistical Committee (SSC) recommended the development of salmon risk tables in March 2024 ([March 2024 H.2.a, Supplemental HC Report 1](#), [March 2024 H.1.b, Supplemental SSC Report 1](#)). The SSC has also noted that if scientific uncertainty buffers were used in harvest specifications for salmon management, then a risk table framework could also be used to incorporate ecosystem conditions into the decision-making process ([September 2024 Agenda Item H.1.a, Supplemental SSC Report 1](#)).

The STT has previously acknowledged that a tool to assess risk and/or consistently inform salmon management on measurable environmental factors could be a positive step toward ecosystem-based fisheries management. The STT supported meeting with the EWG to explore how incorporating environmental factors could improve salmon management for SRFC and KRFC ([September 2024 Agenda Item H.1.a, Supplemental STT Report 1](#)). As noted, this meeting took place in January 2025.

The Salmon Advisory Subpanel (SAS) has commented that it is not clear what the objective of using risk tables in salmon management would be or what salmon conservation or management problem they would solve. The SAS has previously recommended not continuing to work on salmon risk tables at this time, pointing to other ongoing Council salmon workgroups and recently adopted salmon management measures intended to help protect California Coastal Chinook ([September 2024 Agenda Item H.1.a, Supplemental SAS Report 1](#)).

Current Status of Salmon Risk Tables and Other Salmon Climate Information Work

Since January 2025, there has been no additional discussion or progress on the development of salmon risk tables. This is due in part to competing priorities under the Salmon FMP and staffing losses and changes at the Science Centers, which have reduced the capacity to advance this work. In March 2026, the EWG submitted the *Summary Report on Ecosystem and Climate Information for Species, Fisheries, and Fishery Management Plans Initiative (FEP Initiative 4)* ([Informational Report 8](#)), which notes that salmon risk tables remain an unfinished item that may warrant future Council discussion.

Risk tables are one potential on-ramp for incorporating ecosystem and climate information into salmon management, and previous EWG reports have highlighted other ongoing efforts (see, for example, [March 2024 Agenda Item H.2.a](#) and [March 2026 Informational Report 8](#)). The EWG has consistently indicated it would like to see how these related efforts evolve before recommending additional actions under FEP Initiative 4 for the Salmon FMP. Other ongoing and related efforts include:

- Salmon stoplight tables, which are produced annually as part of the California Current Integrated Ecosystem Assessment's (CCIEA) [Ecosystem Status Report](#) and summarize ecosystem indicators for KRFC, SRFC, Central Valley spring Chinook, and some Columbia Basin stocks. These stoplight tables are increasingly being used by salmon managers and scientists.
- In May 2021, the Coho Technical Committee and the Committee for Scientific Cooperation of the Pacific Salmon Commission hosted a virtual workshop titled [Introduction to Using Environmental Indicators to Inform Salmon Management](#).
- In November 2023, NMFS submitted [Supplemental Report D.1.b](#), summarizing a July 2023 Salmon Ecosystem Indicators Workshop hosted by NOAA's CCIEA program.
- The [Resilient Salmon Initiative](#) was presented to the Council by Long Live the Kings in March 2023 ([March 2023, Agenda Item B.1.b](#)). The initiative continued through 2024 and included participation from government and private entities that regularly coordinate with the Council.
- And most recently, in May 2026, the North Pacific Anadromous Fish Commission hosted a workshop on [Interactions Between Salmon, Ecosystems, and Climate](#).

The EWG also highlights in its March 2026 summary report that, “The potential utility of salmon risk tables to address the issues outlined by the STT and SSC needs to be clearly shown. Given the intensive fisheries review, forecasting, and season setting process for salmon that the Council takes up in March, any discussion on the applicability of risk tables to salmon management should take into account the salmon advisory bodies’ availability to provide input, and should include sufficient advance notice to ensure they can engage effectively based on capacity.”

PFMC
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