Agenda Item F.1.b
Supplemental EWG Report 1
March 2025

ECOSYSTEM WORKGROUP SUPPLEMENTAL REPORT ON THE CALIFORNIA CURRENT ECOSYSTEM STATUS REPORT AND SCIENCE REVIEW TOPICS

Dr. Mary Hunsicker of the Northwest Fisheries Science Center and Dr. Andrew Leising of the Southwest Fisheries Science Center presented the California Current Ecosystem Status Report (ESR) in a public online webinar on February 25, 2025, and during an Ecosystem Workgroup (EWG) meeting on March 6, 2025. The EWG commends the California Current Integrated Ecosystem Assessment (IEA) team on another excellent report that continues to improve each year with input from Pacific Fishery Management Council (Council) advisory bodies, the public, and the hard work of ESR authors and the many contributors. The EWG has the following recommendations, with further discussion below:

- Continue splitting climate and ocean condition information into the two separate appendices (Appendices D and E in this year's ESR).
- Add an assessment of the Pacific Decadal Oscillation's (PDO) continued relevance as an indicator as one of the Ecosystem Science Review Topics for 2025, pending NMFS staff availability.
- Have the ESR continue assessing its forecast accuracy (see Table D.1), potentially looking back more than one year as additional forecasts become available.
- Consider whether an interactive version of the fisheries participation networks in Figure 4.3 on page 37 of the ESR would be useful for future Council discussions of the interacting effects of its decisions on different fisheries and communities.
- The IEA team should continue to explore synergies between the fisheries participation networks and revenue diversification sub-sections, as well as within the entire human dimensions section.
- Continue or expand the integration of information based on fishermen's knowledge into the ESR.
- Include a per-capita pup time series (no. pups/no. females) in addition to California sea lion pup counts.
- Continue shifting methodology into the new on-line repository so that the ESR focuses on results and interpretation.
- Consider moving Appendix B (Summary Infographics) to the front of the document and using that as an executive summary in support of the document.

For this year's ESR, the IEA team separated the climate and ocean condition information into two separate appendices. Appendix D of the ESR provides a useful array of climate and ecosystem forecasts on seasonal and annual timescales, as well as an evaluation of last year's predictions (Table D.1). Appendix E looks at projected changes in the California Current on longer time scales. The evolution of climate change content in the ESR in recent years has been exciting to track, and splitting these two time scales into separate sections was a useful improvement. The EWG finds this content informative and recommends that it continue.

The PDO index has become less correlated to local oceanographic conditions in the California Current Ecosystem (CCE) in recent decades. In the past, low PDO indicated cool, productive conditions. Since at least 2014, however, the PDO has often been low when the ocean was warm and less productive. Historically, the PDO has been important to understand the shift in ocean conditions and circulation that affect fishes and protected species in the CCE and was commonly used in models forecasting, for example, salmon abundances. However, the nature of the ocean in relation to the PDO has become less predictable since 2014, impacting models that utilize the index (e.g., Agenda Item E.2.a Supplemental WDFW/ODFW Report 1, March 2025). The ESR's climate change appendix suggests the Pan-Basin Warming Pattern (PBWP) may have surpassed the PDO in terms of influencing the warming patterns on our coast. Examining the PDO alone may no longer have the same inference as pre-2014 and including both the PBWP and the PDO will likely provide better inference than the PDO alone. Additional detail in the main document would be helpful to understand the shift in the strength of the PDO, and the associated implications of utilizing it as a driver in models. The EWG suggests that an assessment of the PDO's continued relevance as an indicator be added as one of the Ecosystem Science Review Topics for 2025, pending NMFS staff availability. The review could be informed by the Cluett et al. paper (in review) cited in Appendix E of the ESR. Cluett et al. show that the PDO is no longer a good proxy on its own for absolute temperature changes in the CCE, only variability relative to a trend. It highlights the need for fisheries scientists to explore whether species of interest are actually responding to variability associated with the PDO, total warming, or some combination of the two.

The EWG appreciated Table D.1. of Appendix D, which compares predictions made for last year's ESR to the observed impacts that occurred in 2024. When we discussed this table with Drs. Leising and Hunsicker, they noted that, while they were pleased with the relative accuracy of the predictions, El Niño is such a strong signal that predicting impacts of environmental and biological conditions is more skillful in El Niño years. We encourage the ESR to continue assessing forecast accuracy, potentially looking back more than one year as additional forecasts become available, as many impacts of climate on fisheries take several years to come into focus.

The EWG believes that an on-demand map of fisheries participation networks or a similar fisheries landing mapping project could be beneficial to Council members as they consider the interacting effects of their different decisions for the diverse fisheries of West Coast ports. We recommend that the Council consider whether an interactive version of the map in Figure 4.3 on page 37 of the ESR (Agenda Item F.1.a, CCIEA Report 1) would be useful for future Council deliberations. The EWG also encourages the IEA team to continue to explore synergies between the fisheries

participation networks and revenue diversification sub-sections, as well as within the entire human dimensions section.

The integration of information based on fishermen's knowledge to the ESR (Section 3.2.2, Appendices I, L, and W) and ESR presentation is a useful addition to the report, and we encourage the CCIEA team to consider continuing or even expanding this practice in future reports if capacity allows.

We recommend a slight amendment to the California sea lion pup index in future ESRs. At present, the index is the number of live pups. However, this could reflect the overall increase in adult females that occurred during the time series rather than changes to system productivity. We suggest that in addition to California sea lion pup counts, the ESR include a per-capita pup time series (no. pups/no. females).

We understand that the SSC stated that the EWG may be the most appropriate body to advise on streamlining the ESR. See *Topic 2: Streamline and modernize the ESR by creating a methodological appendix and online living document* (F.1.a, Supplemental CCIEA Team Report 4). The EWG encourages the IEA team to continue shifting methodology into the on-line repositories so that the ESR focuses on results and interpretation. The EWG also recommends that the IEA team consider moving Appendix B (Summary Infographics) to the front of the document and using that as an executive summary in support of the document.

As the Council heard under Open Comment, government cost-cutting efforts have impacted NOAA, and these cuts and layoffs have already impacted the contributors to the ESR. The EWG appreciates the role that the ESR plays in providing the Council and the public with a synthesized understanding of our ecosystem. While we cannot foresee what further changes will occur, the EWG recognizes that further reductions may erode the high quality and thorough work of the IEA team as well as the many partners who provide contributions for analysis and reporting. As the Council continually recognizes, NOAA produces science on the ocean ecosystem not available elsewhere and makes it available for stock assessments and decision making in a transparent and concise way that improves the efficiency and effectiveness of the federal system.

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