

ECOSYSTEM WORKGROUP REPORT ON THE CALIFORNIA CURRENT ECOSYSTEM
AND INTEGRATED ECOSYSTEM ASSESSMENT REPORT AND SCIENCE REVIEW
TOPICS

During the Ecosystem Workgroup (EWG) February 23, 2021 public webinar meeting, Dr. Toby Garfield of the Southwest Fisheries Science Center and Dr. Chris Harvey of the Northwest Fisheries Science Center discussed the California Current Ecosystem Status Report (the ESR) with us, members of other advisory bodies, and the public. The EWG thanks Drs. Garfield and Harvey, the Integrated Ecosystem Assessment (IEA) team, and other contributors for their efforts to provide another comprehensive and informative report. Given the many data collection and analysis challenges posed in 2020 by the COVID-19 pandemic, we feel the team went above and beyond to generate this year's report. The EWG also appreciates how the ESR has continued to evolve over time and the dialogue it has facilitated between the Council and the Science Centers. We continue to look for additional opportunities to integrate the ESR and more real-time information into the Council's work.

Our general sense from the ESR is that ocean conditions are mixed but, relative to the past six years, more productive. Prominent ecosystem features in early 2021 included a moderate La Niña, a large and offshore marine heatwave (west of the Exclusive Economic Zone) and lower than average basin circulation. Oceanographic and basin-scale indicators suggest there are some signs that environmental conditions are returning to cooler conditions, although we don't yet know how the ecosystem will respond. Preliminary data on forage conditions in the California Current Ecosystem suggest average to above-average feeding conditions in 2020 in much of the ecosystem, with signs of improved abundance of nutritious zooplankton, high abundance of anchovy, and positive productivity signals for many top predators. Signals for Chinook salmon returns in 2021 are mixed, so we appreciate the Centers' efforts to further refine their explorations of threshold relationships between environmental drivers and performance of salmon preseason abundance forecasts. West Coast fishing communities have been through the unprecedented stress test of the COVID-19 pandemic as well as harmful algal blooms and the presence of whales close to shore, which has affected landings, revenues, operations, and markets for many fisheries, and has added a new layer of uncertainty for everyone participating at every level of commercial and recreational fisheries.

The EWG would like to emphasize the importance of the report and the continued collection, analyses, and syntheses of long-term data streams to monitor changing conditions. The ESR and related products feature prominently in the revised Fishery Ecosystem Plan, and we hope they will continue to complement each other moving forward. The EWG appreciates the use of Pacific Decadal Oscillation (PDO) thresholds as a proxy of key prey availability to inform sea lion pup growth rate this year and would like to see similar approaches for other species and stock dynamics, especially where mechanistic relationships are unclear. In addition, the EWG suggests that the IEA explore using direct indices of sea lion prey to elucidate the drivers of pup growth where and when possible. Specifically, forage data (e.g., anchovy, sardine, jack mackerel, Pacific mackerel, market squid) from the Rockfish Recruitment and Ecosystem Assessment Survey was highly correlated with sea lion pup condition from 2004-2014.

The EWG appreciates the use of fisheries participation networks and hopes that they can be used more broadly within the Council process. We have included similar information in updated Chapter 3 of the Fishery Ecosystem Plan, submitted as EWG Report 1 under Agenda Item I.3. and note that these networks may be useful to agencies exploring the effects of non-fishing activities on fisheries participants (e.g., C.2, Marine Planning Update). Council decision-making is usually separated by fishery management plan, which sometimes makes it difficult for the Council to see the potential effects of their decisions across fisheries. In addition to this annual report, the Council might also be interested in a retrospective analysis of the changes that have occurred in participation networks over time.

We offer the following points for consideration for future ecosystem status reports:

- The EWG appreciates the spotlight approach and its application to predicting salmon returns. We would like to see this expanded beyond salmon and applied to other Council managed stocks under advisement from the Scientific and Statistical Committee and other advisory bodies, as appropriate in the ESR or other Council documents.
- While the spotlight approach is a useful tool, the EWG feels a review or summary of how well those and other indicators have historically performed as indicators is merited, especially given the recent apparent “uncoupling” of some relationships (e.g., PDO and sea surface temperature patterns, anchovy population abundance during warm ocean conditions). We appreciate the IEA Team’s plan to use principal component and sibling regression analyses in the future and look forward to seeing the results.
- The EWG appreciates the inclusion of Theil Index to estimate revenue concentration across different fisheries and the introduction of fishery participation networks. These approaches look promising and we look forward to seeing if they can be useful in Council decision-making, particularly where the Council is considering decisions that may affect geographic distribution of harvest opportunities.
- The EWG and other advisory bodies may want to review the action items and indicators coming out of the Climate and Communities Initiative and Fishery Ecosystem Plan revisions to consider whether those include ideas for new indicators or other analyses for the ESR or other Council documents.

The EWG reviewed the Supplemental IEA Team Report 3, which provides review topics for the Scientific and Statistical Committee’s Ecosystem Subcommittee: threshold relationships between environmental drivers and performance of salmon preseason abundance forecasts; and, review of a technique to evaluate year class strength and distribution of post-settled groundfish. We feel that the IEA team chose thoughtful and timely topics for review by the Scientific and Statistical Committee, and support their choices.

PFMC
03/04/21