

ECOSYSTEM ADVISORY SUBPANEL REPORT ON
REVIEW OF THE STATE OF THE CALIIFORNIA CURRENT REPORT, 2015

The Ecosystem Advisory Subpanel (EAS) received a presentation on the State of the California Current Report from Drs. Chris Harvey and Toby Garfield of the Integrated Ecosystem Assessment (IEA) team on March 7, 2015, and engaged in a productive discussion with the presenters. This report to Council comprises our review of the report, with observations on its strengths and utility as well as some ideas for improving future annual editions.

Over-arching comments on the report as a whole

Overall, the EAS noted substantial progress in the analysis and presentation of data compared to prior annual reports, particularly in the way time series data are presented. Summarizing this complex ecosystem and the many streams of data and model outputs available is a challenging task. We congratulated the IEA team on the report, and the EAS is unanimous in supporting a sustained effort along this line as essential to the Council's interest in implementing Ecosystem-Based Fishery Management. The data about recent events (e.g., "the warm blob") highlight the importance of these data and analyses—and tracking trends over time—to understand their importance.

We also recognize that the indices and time series data for human dimensions of the ecosystem presented in this report are preliminary and need additional development. Because people are such an important component of the ecosystem, developing the human dimension elements of the report is a critical task.

An underlying assumption in the discussion of large-scale drivers is that the observed warming conditions prompt concern because they are associated with changes in productivity in the ocean. These factors need to be discussed in terms of their implications for both the ecosystem and managed species to understand the positive and negative impacts of such changes. (I.e., some species may decline and others may benefit.)

In addition:

- The time series data are very helpful to understanding trends and the current condition of the ecosystem. The report provides a unique contribution to the Council process in this respect.
- We encouraged the presenters to include an executive level summary about the implications of the report for PFMC management considerations. The Highlights inset on page 1 is very useful, but more interpretation across the featured data sets would add value to the report.
- The IEA team could benefit from a round of discussions with the Council's advisory bodies so that the conceptual models, the choice of indicators, and the analyses can be adjusted to best support Council management decisions. This could be undertaken as an ecosystem initiative, as proposed in the Supplemental Ecosystem Work Group Report under Agenda Item E.2.b. (The EAS comments further in its report on that agenda item.)

- The time series data would be more useful if they reached back to years when significant changes occurred in fishery management. (For instance, for salmon and groundfish that would be the early to mid-1980s.)
- The EAS appreciated the simple conceptual models and the consistent graphic presentation of time series data, both of which make the extensive data behind the report more accessible to non-technical readers.

More specific comments

The EAS discussion of the report highlighted the need for additional work on the following topics:

- The report will be improved by incorporating more data on Highly Migratory Species and recreational fisheries, which the presenters noted is already in process.
- The presentation of data related to ocean acidification (Figure 3.7) could benefit from further consultation with acidification experts so that the report is more pertinent to understanding both variation and trends.
- Data on unusual mortality events (e.g., in 4.5 Marine Mammals & 4.6 Seabirds) are difficult to interpret as ecosystem indicators without long-term contextual information, like that provided for the Cassins auklet and sooty shearwaters. Marine mammal contextual data should extend back to years prior to the implementation of the Marine Mammal Protection Act.
- Fisheries production statistics (5.1 Total Landings by Major Fisheries & 5.2 Aquaculture Production and Seafood Demand) would be more useful if presented in the context of imports and exports. Landings alone may not be good indicators of the state of stocks or fisheries, because they can be affected by other factors such as competition, price, markets and regulatory regimes.
- Indicators or indices are needed to better convey changes in fishing fleets, the fishing population, and fishing communities. The Fleet Diversity Indices (Figure 6.1) are difficult to understand and may aggregate data to an extent that important information is lost. (E.g., using a threshold of \$5,000 of revenue seems arbitrary and may not present a meaningful look at socioeconomic impacts; information on vessel construction and rebuilds weren't included.)
- The Coastal Community Vulnerability Indices (Figure 6.2) represent a promising approach that needs additional development and input from stakeholders. We provided the presenters with some detailed input about how particular coastal fishing economies work, pointing to the need to aggregate data at a different scale than individual port towns and include additional data, like recreational fishing.
- We see the primary purpose of Section 6. Human Wellbeing to be to present data on the nature of the commercial fishing population and their economic resilience. The EAS does not have expertise on the data that are accessible or most appropriate for this purpose, but the result should be an ability to track trends and identify anomalies, as with other elements of the ecosystem.

Integrating the report with management decisions

The EAS reviewed this report with the purpose of informing the IEA team on its strengths, benefits, and opportunities for improvements. Our advice going forward is that management teams and advisory subpanels review subsequent annual reports with the purpose of offering the Council assessments of what the report implies for management of species and fisheries within their areas of expertise.

PFMC
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