ECOSYSTEM ADVISORY SUBPANEL REPORT ON AN ECOSYSTEM FISHERY MANAGEMENT PLAN

The Ecosystem Advisory Subpanel (EAS) met on February 16, 2011 to review an Ecosystem Plan Development Team (EPDT) draft report that was prepared in response to Pacific Fishery Management Council (Council) requested tasks on the initiation of an Ecosystem Fishery Management Plan (EFMP). The EAS reviewed the EPDT report and found it to be a very helpful review of information relevant to ecosystems work on the west coast.

Thus far, the EFMP development process has focused on gathering information and developing a foundation of shared understanding about ecosystem management concepts and learning from experiences elsewhere. In order to facilitate efficient and effective next steps in the EFMP process, we recommend that the Council schedule formal action at the June 2011 Council meeting to adopt the purpose and need of the EFMP.

In addition to recommending that the Council adopt the purpose and need, the EAS requests a primary role in developing information to aid the Council in the plan development process. The EAS has tentative plans to meet in April 2011 to prepare information for the June Council meeting about alternative approaches to incorporating ecosystem management into the Council process, the pros and cons of those alternatives, and guidance on a recommended approach.

Our efforts would seek to build upon the solid foundation laid by the EPDT and our prior recommendations because the development of an EFMP effort will benefit from creative collaboration.

For example, in May 2010 the EAS developed the following working definition of EBFM to facilitate our discussions:

> *EBFM is a systems approach that looks at interactions of habitats and species to optimize ecosystem services in ways that encourage sustainability of the broader marine ecosystem and the health and resilience of fisheries, fish stocks, and fishing communities.*

At the February 2011 meeting, the EAS discussed the following principles and goals for the Ecosystem Plan:

> *The EAS believes that an EBFM framework should provide tools for the Council to improve the precision, accuracy, and an improved understanding of the effect of fishery management decisions; to provide for a flexible and adaptive system able to be tuned to prevailing or forecasted environmental conditions; and an awareness of how these conditions drive fisheries.*

Specific to the purpose of and need for an EFMP, the EAS identified several specific items to be considered by the EPDT in developing the purpose and need statement, specifically: the EBFM document should provide a vehicle to (1) improve information and improve decision making; (2)

identify gaps in information; (3) integrate across species-specific FMPs; (4) provide a nexus to regional and national ecosystem-related endeavors; (5) establish a platform or framework that enables management at the appropriate ecosystem scale for a species or complex of species, (6) create incentives for improved stewardship and (7) encourage innovation by offering an alternative pathway for management of a complex of species that might yield a more robust portfolio of fishing opportunities.

As noted above, the EAS reviewed the current EPDT report and found it to be a very helpful. We highlight several key points from their document, which we believe warrant greater emphasis, including:

> Section 3.1 (page 9) – A more organized ecosystem-based management effort could help better address larger scale harvest issues like: maintaining long-term age- and size-distribution in managed stock populations, assessing the evolutionary effects of fishing season timing and location; and climate shift effects on stock productivity and predator-prey relationships.
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> Section 3.4 (page 12) – One challenge of the Council's current process is that the Council regularly finds itself having to make a management decision under one FMP without necessarily having a clear picture of how that decision might affect fishing opportunities under other FMPs. Expanding our thinking about the socio-economic effects of the Council's decisions to an ecosystem context could provide the Council with more resources and information for assessing how their decisions on individual issues fit within the larger picture of Council-managed fisheries.
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> Section 4.1.1 (page 14) – Hypotheses on ecosystem considerations for or impacts on a specific stock could be used to define alternative states of nature within current single species stock assessments. The SSC could include methods for incorporating ecosystem considerations into single species stock assessments in the terms of reference. Agency ecologists and fisheries oceanographers should be included on stock assessment teams to facilitate inclusion of ecosystem considerations into stock assessments.
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> Section 4.1.2 (page 18) – Develop a Council-focused California Current report (based, for example, on the annual CalCOFI Report about the State of the California Current Ecosystem) because this would facilitate incorporation of this information into the Council policy and science processes.
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> Section 4.2.1 (page 19) – The EPDT provided a useful and comprehensive list of considerations. The EAS suggests there is a need to develop criteria to prioritize the 15 listed items. The EAS also suggests 1, 3, and 7 as potentially high priority items:
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> > 1. Evaluate the influence of climatic/oceanographic conditions on FMP species. Investigate the potential for incorporating environmental factors within the current stock assessment modeling framework (Stock Synthesis 3). Model effects of climate forcing on productivity and assess utility of simulated estimates of the unexploited biomass over time (a "dynamic B0") rather than the static estimate of long-term, mean, unfished abundance (Sibert et al. 2006). This is now done for

many assessments in order to represent relative depletion from both a static and dynamic perspective (Maunder and Aires-da-Silva 2010).

3. Examine ecological interactions for influencing managed species, including predator-prey relationships, competition, and disease. Investigate the role of FMP species in the food web, including analysis of behavioral interactions (e.g. functional response) between predators and prey.

7. Investigate how fishing activity affects ecosystem structure and function, particularly spatial and temporal fishing patterns and their relation to changing patterns in the ecosystem (cumulative impacts of all FMP fisheries).

In summary, the EAS believes that important progress has occurred in developing an understanding of ecosystem management concepts and applications. We believe that ecosystem understandings have value for the Council's policies. We recommend that the focus turn to development of the purpose and need of ecosystem fisheries management planning so that there is a shared foundation for further development efforts. The EAS offers its collaboration to help frame and evaluate options on this topic for the Council's consideration.