

ECOSYSTEM WORKGROUP REPORT ON  
RESEARCH AND DATA NEEDS DOCUMENT – PRELIMINARY DRAFT

The Ecosystem Workgroup (EWG) is impressed with the scope of work considered in the Scientific and Statistical Committee’s (SSC’s) June preliminary draft Research and Data Needs Document. We particularly appreciated the SSC’s efforts to characterize scientific work that has been conducted since the 2013 Research and Data Needs Document. We reviewed the entire document, but focused most strongly on Section 2.0, Ecosystem-Based Fisheries Management and Marine Protected Areas, and Section 3.0, Economics and Social Science Components. This EWG report comments on both the contents of the Document, and on the potential applicability of some of the suggested research to the [Climate and Communities](#) Initiative.

The EWG particularly commends the SSC for, throughout the document, seeking out and articulating the many challenges associated with using and maintaining our widely-varied long-term data series on the many West Coast fish stocks and fisheries. This idea is summarized in the first bullet in Section 2.4, which calls for a strategic evaluation of ecosystem monitoring programs. The Research and Data Needs Document is not meant to solve all of the West Coast data collection and analysis challenges; however, the Council may be an appropriate body to express concerns about and ask for an evaluation of and improvements to our collective management of long-term databases.

***EWG Comments on Preliminary Draft Research and Data Needs Document***

Below, we occasionally note where the Document’s recommendations repeat each other. However, there are some repetitive recommendations throughout the document, either within or between sections. During the June-September review period for this draft, we recommend that Council staff and the SSC review the Document’s full suite of recommendations to minimize repetitiveness.

Section 2.0, Ecosystem-Based Fisheries Management and Marine Protected Areas

- In section 2.0, *Progress on Highest Priority EBFM Issues from 2013*, there is a bullet that reads, “Estimate total population size (or collect existing time series) of higher-level carnivores, including seabirds and marine mammals, and estimate forage needs and foraging efficiencies (to provide an estimate of not only their food requirements, but the prey density needed for them to acquire these food resources).” The EWG recommends that this bullet be revised so that the words “and prey population location” be added after “prey density,” or whatever revisions the SSC deems appropriate to capture the idea that, for place-based predators like seabirds at breeding colonies, prey location and migration patterns can be important to predator population size.
- In sub-section 2.3, *Progress on Highest Priority Research MPA Issues from 2013*, there is a bullet that reads, “Increased biological and socioeconomic monitoring of existing marine reserves and other areas of restricted fishing, such as EFH Conservation Areas (EFHCAs), in order to gain information that might be extrapolated to evaluate the creation of additional reserves on the west coast.” The EWG recommends adding the following information with respect to on-going progress in this area: Baseline monitoring

of California's MPAs across all four regions (Phase 1) has been completed and the state is preparing a Marine Protected Areas Monitoring Action Plan (Action Plan) to develop strategies and approaches that will guide effective implementation of long-term monitoring (Phase 2) and future evaluation of monitoring data. The primary objectives of the Action Plan include: building on local knowledge, capacity, and unique considerations from Phase 1 monitoring; incorporating quantitative and expert informed approaches that help prioritize MPA index sites, ecological and socioeconomic indicators, and other sampling design criteria for long-term monitoring; and, facilitating cost-efficient spending and funding for future monitoring projects.

- In section 2.4, *New High Priority Issue*, there is a bullet that reads, “Improve understanding of the effects of increasing predator populations (seabirds, marine mammals), in concert with environmental variability and forage variability, on salmon and other managed and fisheries resources. While the EWG supports this concept and the need for the described research, the ideas in this bullet are already discussed in section 2.3, under the bullet that begins “Estimate total population size . . . of higher-level carnivores . . .” We recommend combining these bullets.
- In section 2.4, *New High Priority Issue*, there is a bullet that begins, “Conduct comprehensive stomach analysis to determine trophic interactions among and within target and non-target species.” Based on our experience with Comprehensive Ecosystem-Based Amendment 1, we are strongly supportive of increasing and improving stomach content analyses for West Coast species. How might this work be prioritized? Are there existing stomach contents data that remain unprocessed or unpublished? Which species should be highest priority for initial efforts to improve West Coast diet data collection and processing? Perhaps this bullet could begin “Conduct comprehensive review of available West Coast stomach content data and analyses.”
- In section 2.4, *New High Priority Issue*, there is a bullet that begins, “Evaluate effects of fishing on habitat and non-target species on any rockfish conservation areas re-opened to fishing after long closures. . .” While the EWG supports this concept and the need for the described research, the ideas in this bullet are already discussed in section 2.3, under the bullet that begins “Evaluate the effects of fishing on habitat and response of habitat to spatial closures.” We recommend combining these bullets.
- In section 2.4, *New High Priority Issue*, there is a bullet that reads, “Investigate the potential for emerging technologies such as environmental DNA (eDNA) to complement and augment existing ocean monitoring. Focus in particular on the value of eDNA for difficult to sample species.” It is not clear how the work envisioned under this bullet is intended to be useful to the Council process. What type of ocean monitoring is being augmented here and why is eDNA particularly cited as being potentially useful to augmenting that monitoring?
- In section 2.4, *Newest High Priority Issue*, there is a bullet that reads, “Develop an improved understanding of how ecosystem science can be used effectively in the Council process.” This is a reasonable goal for ecosystem scientists and Council process participants, but it is not a research or data need.
- In section 2.5.2, *Moderate Benefit*, there is a bullet that reads, “Develop an approach for interpreting the values for indicators, including the development of thresholds, where appropriate.” This recommendation is vaguely worded and confusing. Does it refer to all of the indicators used in the Council process? If not, then which? What is meant by “an

approach for interpreting” values and how does it link to the Council’s research or data needs?

### Section 3.0, Economics and Social Science Components

- Will the data priorities and research suggested in this section provide the Council with a more complete picture of coastwide charterboat (a.k.a “commercial passenger fishing vessel) economic interests in our fisheries? Recent economic and social science work is providing the Council with a better understanding the portfolios of species taken by commercial fisheries. Analyses of Council actions within and across fisheries could benefit from a similar improvement in understanding the portfolios of charterboat businesses.
- Section 3.4.1, *Data Collection and Augmentation*, calls for “Cleaner codes for the fishing methods used in Council managed fisheries.” The EWG supports this recommendation. Would the Pacific Fisheries Information Network (PacFIN) Data Committee be the appropriate body for developing this idea? If so, this recommendation should be particularly drawn to the attention of that Committee.

### Section 4.0, Groundfish Fishery Management Plan, plus groundfish-related appendices

- The EWG appreciates the efforts made in this section and in the appendix in Section 8.0 to highlight the need for: increased seafloor mapping, reconstructing historical catch time series, improvements to stomach content data collection and analysis, and improvements to recreational fisheries data collection, collation, and analysis.

### Section 5.0, Salmon Fishery Management Plan

- In Section 5.2.2, High Priority Research Issues, under Ocean Distribution of Natural Stocks, the EWG recommends including research into the effects of climate anomalies and interannual and inter-decadal climate variability on salmon ocean distribution to the list of potential research areas.
- In Section 5.4, Emerging Issues, under Ecosystem and Essential Fish Habitat Issues, we recommend that the bullet reading “Assess the influence of sea surface temperature anomalies and other ocean indicators for incorporation in models used to forecast adult abundance” be revised to add “and distribution” at the end of that sentence.

### Section 7.0, Highly Migratory Species (HMS) Fishery Management Plan

- In Section 7.3.1, on Issues Relevant to All HMS Stocks, under Stock Assessment and Management Studies, the second bullet reads, “develop models of fisher participation that predict levels of effort and catch by region based on biological and ecological conditions in the target fishery as well as conditions in other fisheries in which fishers participate, particularly the salmon troll fishery” We support this recommendation and suggest that it be applied to both commercial and charterboat fisheries for HMS.

## *EWG Priorities for Ecosystem Science in Support of the Climate and Communities Initiative*

While the higher priority research areas throughout the draft Research and Data Needs document address the Council's general needs over the short and long term, the EWG thinks that the document also identifies research and data needs that may particularly support developing the Climate and Communities Initiative. From our perspective, the following research priorities, presented here in the order that they appear in the Document, have the potential to be useful to that Initiative in the near-term:

- From 2.2, “Identify key physical and biological indicators for prediction of salmon early ocean survival and groundfish recruitment, as well as other conditions that are directly applicable to management.” Research conducted in association with this recommendation will be important to understanding the potential effects of climate on our managed fish stocks.
- From 2.2, “Identify how the climate might be changing on long time scales in a way that will affect fisheries.”
- From 2.4, “Investigate how viability and resilience of coastal communities are affected by changes in ecosystem structure and function, including short- and long-term climate shifts.”
- From 2.4, “Monitor, model, and predict changes in distribution of species related to changes in ocean conditions and climate. Identify how climate change will affect spatio-temporal ocean distributions and the overlap between predator-prey assemblages. Identify how distribution will impact jurisdiction and communities.”
- From 2.4, “Continue development of ecosystem-based models (including Atlantis) that incorporate environmental variation and anthropogenic disturbances to guide harvest policies and enable risk assessment for fishing strategies.”
- From 2.5.1, “Assess high and low frequency changes in the availability of target stocks, and the vulnerability of bycatch species, in response to dynamic changes in climate and oceanographic conditions (such as seasonal changes in water masses, changes in temperature fronts or other boundary conditions, and changes in prey abundance).”
- From 2.5.1, “Develop indicators of harmful algal blooms (HABs) and the phytoplankton community (diatoms vs. dinoflagellates) for the entire CCE to identify and track changes to the base of the marine food web. Evaluate relationships with other indicators of climatic and oceanographic conditions, fisheries productivity, and fisheries participation (because HAB toxins can close important fisheries such as Dungeness crab, potentially redirecting effort to other fisheries).”
- From 2.5.1, “Evaluate the influence of climatic/oceanographic conditions on the population dynamics of FMP species. Develop indicators to track that influence, such as for upwelling, sea surface temperatures, Pacific Decadal Oscillation, chl-a, and zooplankton index. Evaluate the efficacy of incorporating environmental factors within the current stock assessment modeling framework (Stock Synthesis 3). Model effects of climate forcing and other ecosystem interactions (e.g., trophic interactions) 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.”
- All of the recommendations under 2.5.3 seem potentially useful to the Climate and Communities Initiative. Prioritizing the work described in this section will be important, particularly considering recommendations in Section 2.4 for a strategic

evaluation of ecosystem monitoring programs.

- From 3.1, “Continued development and validation of indicators of community dependence on fisheries and community well-being and resilience that can be linked to regulations, economic conditions, and other relevant factors.” This recommendation is also repeated in Section 3.2 under *Modeling and analysis priorities*, and is similar to recommendations in Section 2.4.
- From 3.4.2, “Evaluation of the economic and social effects of fishery disaster declarations.”

PFMC  
06/08/18