May 29, 2013

Dan Wolford, Chairman
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, Oregon 97220-1384

RE: Forage Fish Indicator for CCE

Dear Chairman Wolford,

Wild Oceans (formerly the National Coalition for Marine Conservation) commends the Council on its adoption of the Pacific Coast Fishery Ecosystem Plan (FEP), which among other things highlights the importance of maintaining a healthy forage base for ecosystem integrity. The next step for the Council is to create a new Report on the State of the California Current Ecosystem (CCE) as a means to integrate ecosystem information into the fishery management process beginning next year. **In preparation for the first State of the CCE Report in March 2014, we ask the Council to articulate a process for developing an index of forage status that would be used to inform future council decision-making, a task identified under the highest priorities for Ecosystem-based Fishery Management in the 5-year Research and Data Needs Plan.**

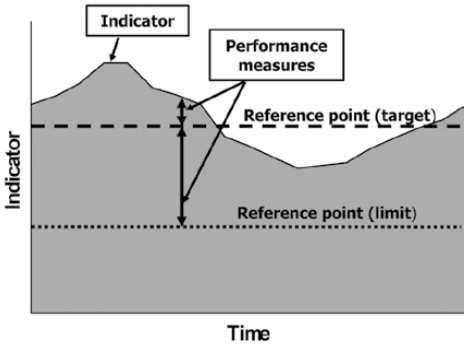
To date, the Council's State of the CCE Report has proceeded on a separate albeit parallel path with NOAA's CCE Integrated Ecosystem Assessment (IEA). Both initiatives were last reviewed by the Council in November 2012, and at that time, the Council affirmed its support for continuing with both reports. Indeed, the most recent draft of the State of the CCE Report was a collaborative effort of the Ecosystem Plan Development Team and NOAA's California Current Integrated Ecosystem Assessment Team. The Council specifically noted the utility of incorporating IEA indicators into the State of the CCE Report.

While the draft Report did include a section describing the CCE forage base, this description should not be considered a **forage base indicator**. To be useful in a management context, an indicator should identify "healthy" states to be maintained and "unhealthy" states to be avoided, so that managers can interpret ecosystem health status and trends.

Suggesting a framework for assessing ecosystem health in a fisheries context, Livingston *et al* (2005) discussed the need to a) develop indicators to assess the ecosystem-level impacts of fishing, and b) predict possible future trends in these indicators. Noting the goals of maintaining predator-prey relationships, energy flow and balance within the system and

species diversity, the authors recommended (among other things) a *quantitative* index of forage biomass, with a threshold for action, as an indicator for maintaining pelagic forage availability.[1]

As in this simple diagram (FAO 2003), an index of forage abundance should include an indicator (e.g., total biomass, species diversity, predator/prey ratios) and associated target and limit reference points, such as are used in conventional management. It is critical that the indicators be linked to performance measures that incorporate the Council's ecosystem level goals.



Ecosystem status indicators will only be useful if they translate ecosystem information into decision criteria. **Wild Oceans recommends two potential paths forward, using existing Council processes, for the development of a forage base indicator**:

- Organize a workshop on incorporating IEA results into the Council process and establish, as one of the workshop's terms of reference, an in-depth review of IEA forage fish products and tools and how they can be incorporated into a forage indicator for Council decision-making**.** *In November 2012, the Council directed Council staff to work with the West Coast Fisheries Science Centers to organize an IEA workshop to be hosted by NOAA. The tentative date for the workshop was slated for June 2013. The Council should revive this effort and provide a firm timeline for the workshop to be held by fall of this year.*

- Task the Ecosystem Initiative 1 Ad-Hoc Committee to begin laying the groundwork for an index of forage status that would be used to inform future council decision-making**.** *Since the primary task of this new team will be creating recommendations for protecting unmanaged forage fish in order to enhance forage availability, the expertise represented by team members could be applied as well to the task of determining how best to monitor, manage and maintain the forage base overall.*

We urge the Council to provide direction for its preferred path forward at the June 2013 Council meeting in order to give staff and scientific and technical experts sufficient time to present a proposal for a forage base indicator at the March 2014 meeting as part of the State of the California Current Ecosystem Report. Thank you for your consideration.

Sincerely,

Ken Hinman
President

Pam Lyons Gromen
Executive Director

[1] Livingston, P.A., Aydin, K., Boldt, J., Ianelli, J., and Jurado-Molina, J. 2005. *A framework for ecosystem impacts assessment using an indicator approach*. ICES Journal of Marine Science, 62: 592-597.