

February 25, 2019

**Supplemental material on the annual meeting of the SSC-ES and CCIEA, scheduled for September 2019, Boise, ID**

*Chris Harvey (NOAA Fisheries, Northwest Fisheries Science Center, Seattle) and Toby Garfield (NOAA Fisheries, Southwest Fisheries Science Center, La Jolla); co-leads, California Current Integrated Ecosystem Assessment project*

Since 2015, the Pacific Fishery Management Council's Scientific and Statistical Committee Ecosystem-Based Fisheries Management Subcommittee (SSC-ES) and the California Current Integrated Ecosystem Assessment team (CCIEA) have held approximately 1-day meetings at September Council meetings. The purpose of these meetings is for the SSC-ES to review science topics intended to improve the indicators and analyses that go into the CCIEA team's ecosystem status report, delivered each March. These meetings have been greatly beneficial to the CCIEA team, and have resulted in clear improvements to the quality and scope of the report, and the value of information provided to the Council.

As part of the Council-established process for planning these September SSC-ES / CCIEA meetings, the CCIEA team is asked to propose potential review topics prior to the preceding March Council meeting, with the understanding that the list could be amended during the March meeting between the CCIEA and the full SSC.

However, as discussed at previous meetings between the CCIEA team and the SSC-ES, a schedule of meeting every September may pose undue burden on the SSC-ES in odd years, due to the many groundfish stock assessments that are also up for review in those years. The CCIEA team does not wish to add to the workload of the SSC-ES to the point that it is unsustainable. Doing so would deter from the highly valuable collaboration that the CCIEA team and the SSC-ES currently share. Thus, the CCIEA team would be agreeable to holding these meetings in Septembers of even years only. The CCIEA team believes that the annual CCIEA ecosystem status report is nearing a level of maturity that should require gradually less technical review, which further supports the idea of holding meetings every other year.

Thus, while a topic is proposed below, the CCIEA team is willing to postpone technical review of this and any other topics that emerge until September 2020, unless the SSC or the Council deem otherwise.

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**Proposed topic:** Spatial indicators of bottom contact by trawl gear and fixed gear

**Presenter:** Mr. Kelly Andrews, Northwest Fisheries Science Center

**Justification:** The CCIEA team is developing indicators of the relative amount of bottom contact by commercial fishing gear in the California Current ecosystem (CCE), both at the coastwide level and at finer spatial scales (2 x 2 km grid). These indicators may provide information on the spatial and temporal dynamics of fishing effort being directed at demersal and benthic species (e.g., groundfish) on the shelf and slope at different points along the coast. It may also provide information on the amount of impact that bottom contact gears are having on benthic habitats, some of which may be especially vulnerable to this form of disturbance.

Data for bottom contact gears are derived from commercial logbooks, starting in 1999 for bottom trawling and 2002 for fixed gear. There are multiple ways in which bottom contact / effort by these gears can be estimated. For example, for bottom trawling, bottom contact or effort can be estimated relative to set and haulback locations, and/or trawl time and vessel speed. Fixed gear contact can be estimated by set and retrieval locations. There are also different assumptions to consider in how the data are analyzed and interpreted. For example, the impact of gear on benthic habitat is a function of contact as well as habitat-specific weighting that relates to benthic habitat sensitivity to disturbance. Also, summarizing effort (or impact) in a particular region may be constrained in certain years because of data confidentiality (“rule of three”).

Initial analyses have already shown that while total bottom contact by fishing gear has been trending downward at the scale of the entire coast, there is considerable variation at finer scales, including some areas where trawl effort has increased substantially over the most recent 5 years of data. Such information may be of value in determining how effort is responding to changes in the ecosystem or the management system, and how such change may relate to distributions of groundfish, essential fish habitat, and fishery opportunities.

The CCIEA team seeks SSC-ES input on the most statistically robust ways to estimate bottom contact by both trawl and fixed gears, and how to appropriately and effectively summarize those estimates in time and space, for presentation to the Council as indicators of both demersal effort and impact on benthic habitats. This input could also inform future analyses where spatiotemporal trends in bottom gear contact are examined in relation to different fishery or environmental covariates.