February 20, 2024

To: Dr. Dan Holland, chair, PFMC Scientific and Statistical Committee (SSC)
Dr. Kristin Marshall, chair, SSC Ecosystem-Based Management Subcommittee (SSC-ES)
Ms. Marlene Bellman, SSC staff officer, Pacific Fishery Management Council (PFMC)

From: Dr. Andrew Leising, NOAA Fisheries / Southwest Fisheries Science Center
Dr. Mary Hunsicker, NOAA Fisheries / Northwest Fisheries Science Center
California Current Integrated Ecosystem Assessment team (CCIEA); co-lead editors, California Current Ecosystem Status Report (ESR)

Re: Potential topics for SSC-ES / CCIEA in September 2024 (Spokane, WA)

Dear Dan, Kristin and Marlene,

For the past several years, members of the CCIEA team have met with the SSC-ES at September Council meetings to facilitate SSC-ES review of topics intended to improve the indicators and analyses that go into the annual ESR. As per Council-established processes for planning these meetings, the CCIEA leads have compiled a list of potential review topics, with the understanding that the list could change during the March meeting of the CCIEA leads and the full SSC. Here we propose three potential topics for the September 2024 SSC-ES / CCIEA meeting: 1) New prey indicators for the ESR, 2) Best practices for salmon stoplight tables, and 3) Development of risk tables and their applications in support of FEP Initiative 4, based on prior SSC-ES feedback (see attached pages for short descriptions).

All topics are pending the availability of the investigators to present on the day of the meeting. The first two topics will likely require short discussions (2 hours), whereas the third topic could require a longer discussion (half day) and possibly engagement with other PFMC advisory bodies. We are open to discussing some or all these topics and also welcome other ideas that may arise during SSC / CCIEA discussions at the March meeting.

In addition, the CCIEA team recently added a climate change appendix to the ESR in response to a recommendation from the EAS and the team has been incrementally expanding the content of this appendix over the past three years. At the SSC / CCIEA March meeting, the CCIEA team leads would appreciate a brief discussion on how and when new information in this appendix should be formally reviewed by the SSC-ES, given that this section of the ESR is still in a stage of fairly constant ongoing development and upgrading.

Thank you for your continuing support of the CCIEA team and our products.

Sincerely, Andrew Leising and Mary Hunsicker

cc: Kit Dahl, PFMC

Topic 1: Review of new prey indicators for the ecosystem status report
Presenters: Dr. Elizabeth Phillips

Justification: In September 2022, the SSC-ES met with members of the CCIEA team to provide a strategic review of the salmon indicator portfolio presented in the annual ecosystem status report (ESR). One of the SSC-ES recommendations for the CCIEA team was to include more coastwide surveys of prey in the ESR (Agenda Item H.1.a SSC-ES Report 1 March 2023). While this recommendation was made within the context of key indicators for West Coast salmon stocks, coastwide information on forage species is valuable for many managed and protected species in the California Current Ecosystem (CCE).

Over the past few years, the CCIEA team has incorporated information from the NMFS SWFSC's acoustic and trawl surveys of coastal pelagic species (CPS) in the ESR, including estimates of total biomass of key CPS stocks and their spatial distribution over time. In this year's report, we expanded the coastwide prey data to include estimates of krill abundance (2007-2023) from the biennial Joint U.S.- Canada Pacific Hake Ecosystem and Acoustic Trawl survey, which is conducted in June-September and spans from Point Conception to British Columbia (see Section 3.1 and Appendix H in H.1.a CCIEA Team Report 1 March 2024). Krill are among the most important prey in the CCE and until this year time series of krill abundance presented in the ESR have been limited to the Trinidad Head Line off of northern California.

The CCIEA team requests that the SSC-ES consider a review of the approach to estimating krill abundance across time and space in the CCE, as well as the development of other prey indicators that may arise between the March Council meeting and the September 2024 SSC-ES / CCIEA meeting.

Topic 2: Review of best practices for salmon stoplight tables
Presenters: Drs. Brian Burke, Correigh Greene, Chris Harvey

Justification: In September 2022, the SSC-ES provided a strategic review of the salmon indicator portfolio for the ESR. The SSC-ES provided guidance on three key topics, including linking ecosystem indicators to salmon life cycles, best practices for stoplight tables, and nonstationarity and projections (Agenda Item H.1.a SSC-ES Report 1 March 2023). In July 2023, members of the CCIEA led a 3-day workshop that brought together salmon experts to further discuss and make advancements on these important topics (Agenda Item D.1.b Supplemental NMFS Report 1 November 2023). Workshop participants included state and Science Center staff, as well as representatives of the PFMC's Habitat Committee, Ecosystem Workgroup, Salmon Technical Team, and CPS Management Team. The overarching goals of the workshops were to: 1) develop conceptual and real-world improvements for indicators and stoplight tables related to select West Coast salmon stocks, and 2) make progress in developing robust ecosystem indicators and indices that can be applied to support salmon management.

The CCIEA team requests that the SSC-ES consider a review of some key outcomes of this workshop, including the development of best practices for generating salmon indicator stoplight

tables stemming from workshop activities and SSC-ES discussions, as well as quantitative improvements to stoplight tables.

Topic 3: Review developments of risk tables and their potential application to groundfish management based on prior SSC-ES feedback
Presenters: TBD

Justification: In September 2023, the SSC-ES and SSC-GS reviewed the ad-hoc Ecosystem Workgroup's (EWG) approach for developing ecosystem risk evaluation tables and pilot risk tables for two groundfish species, sablefish and petrale sole, in support of the Fishery Ecosystem Plan's Initiative 4: Ecosystem and Climate Information for Species, Fisheries, and Fishery Management Plans (Agenda Item F.1.a EWG Report 1 September 2023). Overall, both subcommittees were supportive of the risk table approach proposed by the EWG and thought the pilot risk tables represented a good starting point. The subcommittees also provided many useful recommendations and considerations for improving risk table methodology and connecting them to management decisions (SSC-ES/GS September 2023 report). For example, they identified four potential pathways for how risk tables could inform the selection of ABCs: 1) informing the choice of scientific uncertainty (sigma) when an assessment is adopted, 2) informing the policy choice of risk tolerance (P*) when an assessment is adopted, 3) informing how sigma and/or P* might vary over the course of a projection interval between assessments, and 4) direct specification of the ABC.

The CCIEA team proposes that Science Center stock assessment and ecosystem scientists refine the risk table approach and pilot risk tables for sablefish and petrale sole based on feedback from the SSC-ES and SSC-GS, and generate examples of how they could inform groundfish management through one or more of the pathways identified by the subcommittees. We are also open to focusing on CPS instead of, or in addition to, groundfish. The CCIEA requests that the SSC-ES consider a review of new developments to the risk table approach, including methodological frameworks for evaluating the ecosystem, assessment uncertainty, and population dynamics considerations the risk tables contain, and example applications for fisheries management. This review would also benefit from participation by members of the SSC-GS and other advisory bodies.