ECOSYSTEM ADVISORY SUBPANEL REPORT ON THE
FISHERY ECOSYSTEM PLAN INITIATIVE WORK PLAN

The Ecosystem Advisory Subpanel (EAS) met to discuss the Ecosystem Plan Initiative Workplan put forth by the Ecosystem Workgroup (EWG); Agenda Item H.2.a, EWG Report 1, March 2023). We commend the EWG for advancing this important initiative. Our discussion and comments concern the selection of species, the opportunity for workshops, initiative conclusion, and pathways forward.

Choice of Species
First, we considered the many ideas that were proposed as methods to inform which species should be prioritized for inclusion in the risk table exploration, and the ramifications of selecting petrale sole as the test case for this exercise. Overall, we thought additional attention should be paid to selecting species as demonstration species (under Fishery Ecosystem Plan [FEP] Initiative 4) that are linked to climate indicators will demonstrate the utility and pathways forward for this process. Additionally, we noted that the species selected can provide informative action within follow-on Initiatives 2.6 and 2.8 from the FEP appendix, regarding community resilience and adaptive fisheries, respectively. We had concerns about using a single species to demonstrate the use of risk tables (or other tools) for this important enterprise; a single species will be unlikely to demonstrate the breadth and likely further impact of incorporating risk assessment into various points of management processes for multiple fishery management plans. As such, choosing two or three species is more likely to accomplish an objective of Initiative 4, which is to develop (and test) clear pathways to use climate and ecosystem information to inform Council decision-making. Additionally, choosing multiple species for Initiative 4 will provide options to choose those with divergent characteristics that will result in different risk tables, and thus inform the breadth of the process. To that end, we suggest the following considerations for choosing species for inclusion in this exercise:

1. **Interannual variation in spatial distribution along the coast.** Within that context, we feel that a species that is most likely to be impacted by shifts in oceanographic conditions will lead to shifting fishing opportunities and directly inform Initiative 2.6 (Supporting Fishery and Fishing Community Resilience). Species that have large distributional shifts will have specific impacts and risks that will likely have different effects on our coastal fishing communities, and thus a risk table connecting community resilience and climate vulnerability.

2. **Linkage to oceanographic variables quantified on a near-real time basis.** Species life history characteristics (e.g., natural mortality, recruitment, distribution) that are influenced by climate factors quantified by data that are made available in near real-time and are able to be informed by forecast models would be good candidates for Initiative 2.8 (Assess Flexibility in Fisheries Management Process). For this purpose, petrale sole is a good fit as is sardine. In either case, it is anticipated that such an analyses will require significant effort; however, we note that significant effort has already been made regarding the linkage between oceanographic drivers and sardine distribution within the California Current

Ecosystem Status Report (ESR) (Agenda Item H.1.a, CCIEA Team Report 1, Figure F-2, Page S-21).

3. **No directed fishery due to stock status.** Species managed by the Pacific Fishery Management Council (Council), but that are currently not actively fished, would provide insights into the use of risk tables without triggering immediate concerns about use of the risk table resulting in reductions in fishing opportunities. Such a choice could reduce apprehensions surrounding future use of this new approach to fisheries management and pave the way via clarity for a more widespread understanding and acceptance of risk tables as tools.

4. **Representative of a broader group of managed fish.** In particular, choosing species whose life history and climate vulnerability are representative of or similar among multiple species can maximize the utility of the exercise for a comparable workload. As such, we support the reasoning by the EWG, as encompassed by "multiple species of rockfishes appear to be synchronous through time, suggesting that the same environmental driver affects the entire complex" (EWG Report 1).

5. **Currently utilize stoplight tables.** We recognize the importance of the salmon stoplight tables (e.g., *2022-2023 California Current Ecosystem Status Report*, Table 3.2, page 16) in the ESR and including species with existing stoplight tables would inform how the stoplight tables can translate into risk tables. We noted that including salmon as a candidate species would allow for the comparison among different risk tables (i.e., likely a very different risk table in comparison to species like sardine or groundfish.)

The reasoning set forth by the EWG for selecting petrale sole was that it is "shovel ready" (i.e., there are already linkages between an ecosystem indicator and stock abundance) and could be accomplished this year. We considered suggesting other groundfish species, but the assessment cycle made us appreciate that such a suggestion would not be timely. We also identified that petrale sole is harvested by only a few sectors and that a risk table for a species caught by multiple sectors may be more broadly applicable and a more informative alternative. That said, we acknowledge the potential simplicity, and straight forward path to management consideration for a species harvested in limited sectors.

Need for Workshop(s)
While we recognize that increasing the number of demonstration species for the risk table approach comes with an associated increase in workload, we believe there is an opportunity to make significant progress during dedicated workshops to support and improve the efficacy of Initiative 4. The EAS received a report from The Nature Conservancy on resources they had available to fund two workshops for this effort. The EAS agreed that these workshops could help advance the dialogue on understanding and managing for climate effects on Council-managed species and fisheries perhaps more effectively and efficiently than what can reasonably be accomplished at a Council meeting given the multitude of concurrent activities and associated deadlines.

The EAS identified that focused workshops with a smaller group of participants could facilitate moving the initiative forward in a way that bi-annual meetings with ecosystem agendas cannot. The EAS identified a number of discussions that could benefit from this type of engagement, such as:
- understanding the capabilities of the ESR

- understanding the risk table tool and identifying additional tools that may be beneficial in future analyses
- completing the risk table with a focused but diverse group of participants
- identifying species that would inform Initiative 2.6 (Supporting Fishery and Fishing Community Resilience Initiative) and Initiative 2.8 (Assess Flexibility in Fisheries Management Process) and those species that have broad and environmentally driven geographic ranges

Further, identifying species that are representative of larger groups of fish, such as those with similar spawning times, physiological constraints (pH, temperature) or susceptibility to temporal climate effects (e.g., Harmful Algal Blooms), could keep the overall workload for the various advisory bodies to a level comparable to addressing single species without broader representation.

Identifying Initiative Completion
The EAS appreciates the inclusion of criteria to determine when the initiative is complete However, we note that more detail would be helpful to understand how the objective of identifying clear pathways to incorporate climate and ecosystem information into Council decision-making would be achieved and how that outcome fits into the criteria. There is concern that the Council could prematurely call the initiative complete if the criteria in the current description are satisfied prior to fully accomplishing the pathway objective. To be most effective, the process should take a species from associated indicator selection, through indicator-informed species risk assessment table, to fishery management application. As currently written, however, the initiative completion criteria appears to end at new species process selection, even though we do not believe that was the EWG's intent. Hence, our suggestion to include more detail.

Conclusions
In summary, the EAS suggests testing the risk table approach with species that encompass a broader range of life history characteristics, links between climate indicators and stock distribution, and divergent management processes as it will help build better frameworks to facilitate broader application to other FMPs, which in turn, ultimately helps strengthen the resilience of our coastal communities. The initial steps to develop Initiative 4 can be assisted by focused workshops, which can serve as a collaborative effort among scientists, fishery managers, and advisory body members to bolster the risk table approach, improve understanding, and increase buy-in. The EAS applauds identification of an endpoint of this initiative, and while some further specificity is suggested, we look forward to the "Initiative Accomplished" banner in the future.

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