

Development of risk tables for 2025 assessments

Northwest Fisheries Science Center

Risk table recap

- Product from Fishery Ecosystem Plan initiative 4
- Synthesizes species-specific information on:
 - Ecosystem and environmental conditions
 - Data inputs
 - Model assumptions and performance
- Used to fine-tune setting of scientific uncertainty for category 1 assessments (Plans to expand to category 2 in the future)
- In September, SSC proposed assigning sigma of 0.25, 0.5, 0.75. Requested at least assessment columns filled out for all benchmark assessments.
- Council recommended using risk tables as pilot only, not for setting ABCs

Goals today

Specify details about how risk tables should be produced and reviewed for 2025 assessment cycle, to be added to the Accepted Practices document.

Communicate NWFSC plans for developing tables

Topics for consideration

- Rubric for factors to consider and how to determine level, for each column
- Timeline
- How to include risk tables in stock assessment documents

NWFSC staff plan to produce ecosystem and environment columns for sablefish, yellowtail rockfish, and possibly rougheye/blackspotted rockfish

Contractor is working on approaches that would be suitable for species without extensive ecosystem data and research

Proposed evaluation rubric (from CCIEA report)

	Ecosystem/Environmental conditions	Assessment data inputs	Assessment model fits and structural uncertainty
Level 1: favorable	<p>Indicators not used in the stock assessment show medium to high level of agreement and moderate to strong evidence supporting high species productivity</p> <p>Indicators explored include: Environmental drivers Prey & predators Competitors Habitat Non-fisheries human activities Climate vulnerability analysis rank</p>	<p>Reliable catch reconstruction, informative fishery-independent survey, age and length composition data for landed fish and bycatch for key fleets across a range of years, maturity data from based on samples collected across time and the model area, species-specific fecundity in the California Current</p>	<p>Good fits to data, most productivity parameters across multiple processes (recruitment, natural mortality, growth) are estimated internally, minimal evidence for temporally and/or spatially varying biology (or non-stationarity is accounted for in the model), sensitivity model results are within the estimated parametric uncertainty, no long-term trends in recruitment (or these trends are captured in the forecast), steep likelihood profiles and stable jitters indicating parameters are well-estimated, minimal evidence of retrospective bias</p>

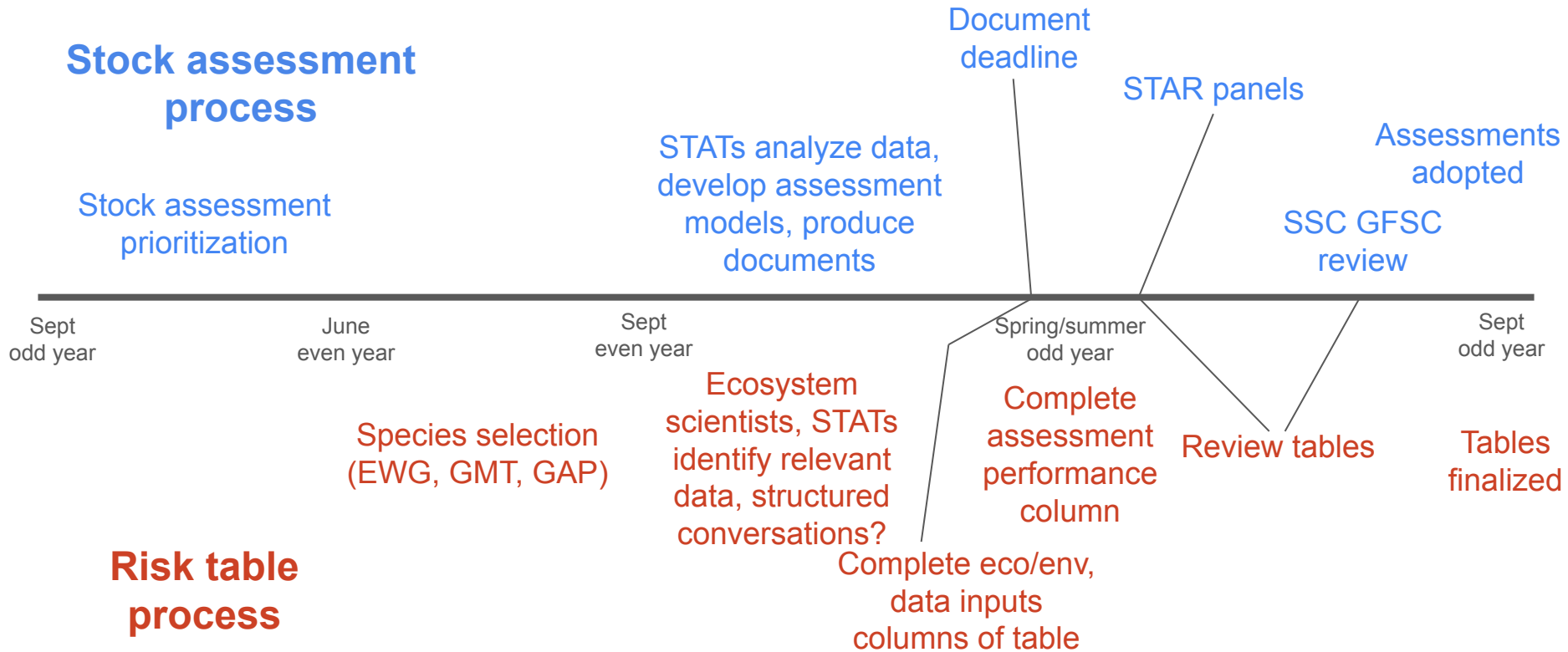
Proposed evaluation rubric (from CCIEA report)

	Ecosystem/Environmental conditions	Assessment data inputs	Assessment model fits and structural uncertainty
Level 2: neutral	<p>Majority of indicators show no notable trends and/or no apparent environmental/ ecosystem concerns</p> <p>Indicators explored include: Environmental drivers Prey & predators Competitors Habitat Non-fisheries human activities Climate vulnerability analysis rank</p>	<p>Historical catches with moderate uncertainty, but reliable catches over the last 4+ decades;, age and length composition data covering landed catch for key fleets, but may be some gaps in time and/or for bycatch;, species-specific maturity;, fecundity may be based across species or regions</p>	<p>Moderate fits to data, multiple productivity parameters (recruitment, natural mortality, growth) are estimated internally, possible weak-moderate evidence for temporally and/or spatially varying biology not captured by model, weak-moderate long-term trends in recruitment not captured in the forecast, likelihood profiles and stable jitters indicate most parameters are well-estimated, some possible evidence of retrospective bias</p>

Proposed evaluation rubric (from CCIEA report)

	Ecosystem/Environmental conditions	Assessment data inputs	Assessment model fits and structural uncertainty
Level 3: unfavorable	<p>Majority of indicators show medium to high level of agreement and moderate to strong evidence supporting adverse signals</p> <p>Indicators explored include: Environmental drivers Prey & predators Competitors Habitat Non-fisheries human activities Climate vulnerability analysis rank</p>	<p>Uncertain catch reconstructions both historically and more recently (e.g., due to difficulty in monitoring recreational fisheries); recruitment deviations may be estimated, but are only weakly informed by composition data; maturity and fecundity based on other species and/or regions</p>	<p>Some problematic fits to data, most productivity parameters (recruitment, natural mortality, growth) are estimated internally, although recruitment deviations are estimable for some portion of the time series, evidence for temporally and/or spatially varying biology not captured by model, long-term trends in recruitment not captured in the forecast, likelihood profiles and stable jitters indicate difficulty estimating parameters and a generally flat likelihood surface, evidence of retrospective bias</p>

Proposed implementation in groundfish harvest specifications process



A proposal

- A facilitated conversation between ecosystem and assessment scientists occur in the ~month prior to pre-STAR draft deadline
- Assessment document for STAR panel review contains ecosystem column written by ecosystem staff, data inputs column written by STAT, with candidate levels assigned by drafter
- STAT proposes model structure and performance column and level at STAR panel presentation, includes it in post-STAR panel draft
- In August, GFSC reviews risk tables for consistency across assessments, finalizes levels, chooses sigma

Risk tables in assessment documents

- Draft risk tables will be included in the executive summary under a “risk table” subsection or as an appendix
- They should be brief, no more than one paragraph per column.
- Following GFSC discussion of risk table-informed sigma, a second table of ABC values should be produced in the aforementioned “risk table” subsection that use the updated sigma.
 - If risk table-informed sigma = 0.5, the risk table subsection can just state that the ABCs determined by the risk table are the same as the ABCs under historical sigma policy.

Any other questions or outstanding concerns?