

Risk tables

BSAI CRAB PLAN TEAM

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Risk tables – SSC feedback

- All annual assessments & eventually develop for SMBKC, PIBKC, PIRKC
- Develop table to track:
 - Buffers
 - Risk table scores
 - Buffer justifications
 - New and ongoing concerns

General BSAI Crab Comments

The SSC continues to recommend that the CPT consider whether there is value in defining full and update assessments.

The SSC notes that a historical retrospective is different from a within model retrospective and requests that crab assessments include a plot comparing the model-estimated time series of mature male biomass from the current assessment with the time series from the ten previous assessments (i.e., historical retrospective).

The SSC recommended that the CPT provide GMACS version updates in each CPT report with information on changes between versions and that authors clearly identify which GMACS versions were used and a brief summary of the effects of version changes on the assessment.

The SSC recommends that each crab SAFE chapter include a clear description of the buffers used in harvest specification over the most recent five years, as a basis for comparing the current year's buffer recommendations.

Risk Tables

Public testimony was provided by Scott Goodman (BSFRF) who noted that the CPT process of developing buffer recommendations was complex and confusing, and that he hoped that risk tables would make the process more transparent to stakeholders. He emphasized that there will be differences between groundfish and crab in application of risk tables, and thought that there would be a benefit to developing a record of previous buffers for crab stocks. The SSC agreed with these points (see SSC recommendation in General BSAI Crab Comments).

The SSC appreciated the extensive discussion in the CPT report on how it was planning to implement risk tables in upcoming assessments. The SSC concluded that the CPT was generally headed in the right direction with risk table implementation, but wishes to stress several points. First, **it is important to emphasize that the goal is not to change current practices for setting buffers, but to provide consistent and continuing documentation on the factors that led to a buffer recommendation. The SSC recommends that both new and ongoing concerns regarding the stock should be recorded in the risk table, not just new concerns.** While there are no default established buffers for crab by tier level, there is a history of established practice in which larger buffers are recommended for tiers with greater uncertainty (i.e., Tiers 4 and 5), and, within a tier level, larger buffers are associated with stocks where the uncertainty or concerns are greater. The risk tables should help facilitate this established practice, which may require identifying important tier-related concerns in the tables.

Discussion on buffers at the CPT and the SSC tends to revolve around the issue of whether the buffer recommended last year should be continued or whether it should be higher or lower due to changes in uncertainty or concerns. Comparison of the concerns listed in the current risk table with those listed in previous assessment would facilitate this discussion and make it more transparent.

The CPT proposed that risk tables be prepared for all annual crab assessments. In addition to these assessments, the SSC recommends that risk tables be developed for SMBKC, PIBKC, and PIRKC, though these are a lower priority given limited resources. While there may be a lack of environmental information for these stocks, the other categories in the risk table can be readily filled out and would be useful in buffer discussions. **The SSC also endorsed the CPT plan to develop a table to track buffers, risk table scores, and buffer justifications** (also see General BSAI Crab Comments).

For groundfish, the SSC previously indicated its intent that reductions in ABC below the maximum permissible should be applied sparingly. The situation is very different for crab, where a buffer is used for every stock to reduce the ABC below the maximum permissible that is functionally at the OFL in the absence of ABC control rules. The CPT intends to include the uncertainty due to the tier level in the risk table, since this uncertainty plays a role in the buffer consideration. The SSC suggests that if the CPT follows this course, that the tier level concern be listed separately in the risk table.

Risk table – scoring

Risk Table Levels of Concern

	<i>Assessment-related considerations</i>	<i>Population dynamics considerations</i>	<i>Ecosystem considerations</i>	<i>Fishery-informed stock considerations</i>
Level 1: Normal	Typical to moderately increased uncertainty/minor unresolved issues in assessment.	Stock population dynamics (e.g., recruitment, growth, natural mortality) are typical for the stock and recent trends are within normal range.	No apparent ecosystem concerns related to biological status (e.g., environment, prey, competition, predation), or minor concerns with uncertain impacts on the stock.	No apparent concerns related to biological status (e.g., stock abundance, distribution, fish condition), or few minor concerns with uncertain impacts on the stock.
Level 2: Increased concern	Substantially increased assessment uncertainty/unresolved issues, such as residual patterns and substantial retrospective patterns, especially positive ones.	Stock population dynamics (e.g., recruitment, growth, natural mortality) are unusual; trends increasing or decreasing faster than has been seen recently, or patterns are atypical.	Indicator(s) with adverse signals related to biological status (e.g., environment, prey, competition, predation).	Several indicators with adverse signals related to biological status (e.g., stock abundance, distribution, fish condition).
Level 3: Extreme Concern	Severe assessment problems; very poor fits to important data; high level of uncertainty; very strong retrospective patterns, especially positive ones.	Stock population dynamics (e.g., recruitment, growth, natural mortality) are extremely unusual; very rapid changes in trends, or highly atypical patterns compared to previous patterns.	Indicator(s) showing a combined frequency (low/high) and magnitude (low/high) to cause severe adverse signals a) across the same trophic level as the stock, and/or b) up or down trophic levels (i.e., predators and prey of the stock) that are likely to impact the stock.	Multiple indicators with strong adverse signals related to biological status (e.g., stock abundance, distribution, fish condition), a) across different sectors, and/or b) different gear types.

Examples of concerns by category:

1. “Assessment-related considerations—data-inputs: biased ages, skipped surveys, lack of fishery-independent trend data; model fits: poor fits to fits to fishery or survey data, inability to simultaneously fit multiple data inputs; model performance: poor model convergence, multiple minima in the likelihood surface, parameters hitting bounds; estimation uncertainty: poorly-estimated but influential year classes; retrospective bias in biomass estimates.
2. “Population dynamics considerations—decreasing biomass trend, poor recent recruitment, inability of the stock to rebuild, abrupt increase or decrease in stock abundance.
3. “Ecosystem considerations—adverse trends in environmental/ecosystem indicators, ecosystem model results, decreases in ecosystem productivity, decreases in prey abundance or availability, increases or increases in predator abundance or productivity.
4. “Fishery-informed stock considerations—fishery CPUE is showing a contrasting pattern from the stock biomass trend, unusual spatial pattern of fishing, changes in the percent of TAC taken, changes in the duration of fishery openings.”

BSAI SAFE Introduction, December 2024

Related Resources:

Groundfish Risk Table Report: 2024 Update (Dec 2024)



SSC Report (Dec 2023) – groundfish risk table wkshp comments (pgs. 2-3)

SSC Report (June 2021) – SSC Risk Table Workshop (pgs. 22-23)

Risk table - SOP

Ultimately, the following preliminary SOP was proposed for crab risk tables:

1. Given that baseline buffers or buffer ranges are not specified by tier level for crab stocks, buffers should consider uncertainty associated with tier level if warranted.
2. The risk table should also be used to evaluate additional uncertainty, on a stock-by-stock basis, that is not already incorporated in the assessment model, tier level, or harvest control rules.
3. No prescriptive formula will be used to adjust risk table scores or buffers across stocks. This is because identified concerns may not warrant an increase in risk table scores, and an increase in risk table scores does not necessarily require an increase in the ABC buffer. Responsibility for making these decisions will be shared by the assessment author, CPT, and SSC.
4. At their discretion, assessment authors should coordinate with ESP authors (and ESR authors when an ESP is not available) to discuss ecosystem considerations prior to completion of a risk table. The timing of this discussion will also be at the discretion of the author.
5. Risk tables should be conducted for all annual crab stock assessments (Snow crab, Tanner crab, BBRKC, NSRKC, and AIGKC). A full risk table will be contained as an appendix in each individual SAFE chapter with rationale given for risk table scoring. Brief risk table summaries will be included in the SAFE introduction (i.e., general description and risk table template, CPT-recommended risk table scores, and buffer for each stock).
6. The CPT will develop a summary table to track buffers, risk table scores/concerns, and justification for buffers. This table will also be used to ensure that risk table scoring and buffer considerations are consistent within a stock across years.

- Changes to preliminary SOP?

