Risk table discussion

BSAI CRAB PLAN TEAM

May 11th, 2026

Group presentation

Outline

- ❑ Goals
- ❑ Groundfish process
- ❑ Groundfish examples - EBS Skates, Greenland Turbot
- ❑ Crab process
- ❑ Crab example - BBRKC
- ❑ CPT discussion - updated SOPs
- ❑ Plan for Fall 2026 and beyond

SSC/CPT comments

- Utilize current groundfish risk table, recognize parallels
  - well vetted and many examples to utilize
- Include groundfish experience when finalizing risk table guidance
  - Invited groundfish folks to be here during our discussion
- Suggested evaluating buffers relative to maxABC (essentially OFL) rather than the previous year
  - This will come up again in discussion, not sure this is best process
- Discouraged CPT from changing level descriptions or number of levels

Goals

- Understand the risk table process - as it applies to groundfish stocks
- Define the goal / objective of risk tables in the crab process
- Propose a process to include risk tables into our crab ABC buffer process
  - Draft ideas:
    - Consistency within each stock year to year
    - Consistency with historic buffer setting
    - Risk table contents and scoring up to authors discretion (groundfish example)
    - Historic buffer represents ongoing uncertainties, annual risk tables would address current year changes

Groundfish risk table process

- Mechanism to incorporate other sources of information into management advice
- Authors can raise concerns about the stock, or highlight issues that are being monitored
- Risk tables can be used to support or NOT support recommended reductions from the maximum permissible ABC
- Developing the risk table has been an iterative process and some categories are completed through a team approach

Risk Table Levels of Concern

	Assessment-related considerations	*Population dynamics considerations*	*Ecosystem considerations*	*Fishery-informed stock considerations*
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.

History of groundfish risk table development (2024)

Groundfish examples

2023 EBS Skates

Summary and ABC recommendation

Assessment-related considerations	*Population dynamics considerations*	*Environmental/ ecosystem considerations*	*Fishery Performance considerations*
Level 2 for Alaska skates Level 1 for Other skates	Level 1: no increased concerns	Level 1: no increased concerns	Level 1: no increased concerns

While there are increased concerns in the assessment considerations for Alaska skate, we feel that these are not sufficient to warrant a reduction in ABC at this time. Similarly, there are not sufficient concerns to warrant a reduction in the ABC for Other skates. Therefore, no reductions from maximum permissible ABC are recommended for the BSAI skate stock complex.

2024 Greenland Turbot

Assessment-related considerations	*Population dynamics considerations*	*Environmental/ecosystem considerations*	*Fishery Performance considerations*
Level 3	Level 2	Level 1	Level 2

A reduction in maximum ABC may be warranted given the uncertainty about stock status, the loss of fishery-independent data in areas where the adult population is found, model structural uncertainty, uncertainty about future recruitment, and declining catch with a declining population. We suggest a 10% reduction in ABC from maximum ABC.

Crab process

- Current buffer process
  - Buffer needed because essentially maxABC = OFL
  - Historically buffers have been at minimum 10%, usually range 20 to 30 % the past 5 years
  - Buffer justifications vary by stock but remain consistent year to year for each stock
- Crab options for risk tables?
  - Build buffer up from 0 using risk table (SSC suggestion)
  - Start with “inherited” base buffer for each stock and assess change from that in annual risk table

Crab example - BBRKC

- Risk table process is designed to address condition in the CURRENT year
- Crab buffer process includes ongoing stock specific uncertainties
    - e.g. retrospective patterns, recruitment failures - BBRKC
    - Risk tables weren’t designed to have the ongoing processes be part of the process therefore we need to either adapt risk table or process
- Review history of buffer (next slide)
- Average buffer the last 5 years has been 20%
- Review risk table from fall 2025

Appendix E: History of buffer considerations

- 20% (no large changes or improvements in uncertainty)
  - Retrospective pattern (slightly improved but still present)
  - General variable environmental conditions
    - E.g. wind stress and ph
  - Lack of fit to last three years of NMFS female survey biomass
  - Non-stationary of recruitment
  - ~~Unknown reasons behind recruitment failure~~

Table 1: History of Acceptable Biological Catch (ABC) buffers and buffer justifications for the Bristol Bay red king crab stock. Source: Crab Stock Assessment and Fishery Evaluation (SAFE) Report Introductions, https://www.npfmc.org/library/safe-reports/.

Year	ABC buffer	Justifications
2020	25%	- increased from previous years buffer due to lack of survey data (increase from 20% to 25%)
2021	20%	- continued lack of recent recruitment - poor environmental conditions (as reflected in the ESP) - continued decline in female survey biomass in 2021 - model's lack of fit to the 2018-2021 female survey biomass
2022	20%	- continued lack of recent recruitment - poor and variable environmental conditions - NMFS female survey biomass in 2022 remains at historically low levels - lack of fit to the 2018-2022 NMFS female survey biomass - restrospective patterns exhibited by the recommended model
2023	20%	- continued lack of recent recruitment - poor and variable environmental conditions (e.g., cold pool distributional shifts) - NMFS female survey biomass in 2023 increased above historically low levels for the first time in 5 years, but this was predicated on a single exceedingly large tow (thus the accompanying uncertainty was large) - lack of fit to 2018-2023 NMFS female survey biomass - retrospective patterns exhibited by the recommended model, even though this was improved over last year's assessment model (21.1b)
2024	20%	- continued lack of recent recruitment - poor and variable environmental conditions (e.g., cold pool distributional shifts) - lack of fit to 2021 - 2024 NMFS female survey biomass - retrospective patterns exhibited by the recommended model

BBRKC

Risk Table 2025 (App D)

Assessment-related considerations	**Population dynamics considerations**	**Ecosystem considerations**	**Fishery-informed Stock Considerations**
• Retrospective pattern in MMB (high Mohn's rho). This has been present for the last few years • Stable GMACS reference model since 2018 • Historic natural mortality event (early 80s) **Conclusion: Level 1**	• Unknown reasons behind recruitment limitation (early life stages survival most likely) • Potential shifting spatial distributions • Weak to no stock-recruit relationship • Low levels of abundance compared to historic levels (shifting baseline, non-stationarity) **Conclusion: Level 2**	• Corrosive bottom waters and increased wind stress in Bristol Bay remain a concern for growth and survival of larval and juvenile BBRKC • BB bottom waters were warm in 2025 but there is uncertainty what impacts this has on the stock **Conclusion: Level 2**	• Recent year fishery CPUE was higher than last 10-year average • Total potlifts and number of active vessels at or near historic lows • Skipper survey reported high CPUE and majority saw an increase in legal males **Conclusion: Level 1**

Sept/Oct 2024 recommended ABC = 80% of max ABC (20% buffer).

Crab example - BBRKC

- Average buffer the last 5 years has been 20%
- Review risk table from fall 2025 - no “new” concerns for this year
- Risk table should reflect THIS years conditions
- Does risk table reflect new uncertainties or decreases in ongoing uncertainties?
    - Risk table encompasses uncertainties present previously therefore no need to “reduce from max ABC” if we assume max ABC is 20%
    - This method would rely on CPT / authors having a “maxABC” for each stock based on last 5 years of buffer history

CPT discussion

Potential options for proposed next steps:

1) Utilize both historic buffer and risk table in the process
2) Determine a “baseline” historic buffer for each stock, explain this in risk table text, then adjust annually based on “new” risk table considerations
3) (Alternative option) Ignore historic buffer and build risk table up from maxABC = OFL

CPT - draft SOPs

Draft Risk Table SOPs for Sept 2026 (based on May 2026 draft with **new updates in bold**):

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, and an increase in risk tables 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. 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.

Plan for Fall 2026 & beyond

What do we want brought forward

- Use BBRKC as the example?
- Where to put risk tables?
  - Calc of the OFL, SAFE Section F?
  - Appendix with buffer history?
- Include both Risk table vs buffer history in that section or just one?

SSC/CPT comments

setting process may be more appropriate. A draft template to track risk table scoring, concerns, and buffer rationale, as well as separate tables to track buffers for the past five years were discussed. **The CPT will revisit implementing this tracker following guidance from the SSC and a follow up discussion at the May 2026 CPT meeting.** The CPT acknowledged that while this tracker is redundant to the SSC request that each crab SAFE include a description of buffers and rationale over the most recent five years, it is important to include documentation in each SAFE.

The CPT concluded the discussion with a list of potential questions that warrant further CPT discussion, scheduled for the May 2026 meeting:

1) What is the overarching goal/objective of the crab risk table? The CPT continues to acknowledge that this is different from the groundfish use of risk tables and feel that a better definition of the goal/objective would help guide future discussion and decisions.
2) Can we utilize risk tables to encompass buffer concerns but NOT include all risk table concerns in our buffer rationale?
3) How should we track and document conservation concerns (e.g., continued low recruitment) vs. concerns that are only relevant to the risk of exceeding the true OFL?
4) How do we record ongoing vs. new concerns, and how do we distinguish between the two in risk tables and buffer tracking?
5) Should we record positive trends/reduced concern (i.e., since the buffer can be reduced for crab)?

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6) What constitutes "double dipping" in risk tables and buffer considerations?
7) What constitutes a tier-related concern and how do we distinguish these from other concerns? Should these be listed each year in the risk table? Or should they be included in a "general crab uncertainty" statement in the SAFE intro where the Tier system is detailed?
8) Risk table scoring
    a. Do we need more than 3 scores?
    b. How do we develop the "baseline" levels for where we are currently?
    c. Do/should scores translate across stocks?

Sept 2025 CPT Report

Risk Tables

Substantial progress was made by BSAI crab assessment authors to implement draft risk tables this cycle. While the CPT discussed the implementation of risk tables at their September 2025 meeting, they did not define a complete approach for crab and a follow-up discussion is planned for the May 2026 CPT meeting. The SSC appreciates the work that the CPT and the authors have put into making risk tables useful for BSAI crab stocks and how risk tables interact with buffer setting. The SSC looks forward to hearing the results of those discussions. The SSC finds the summaries of information in the risk tables to be extremely valuable, particularly the ecosystem category, and continues to request risk tables for PIRKC, PIBKC, recognizing these will only be updated in four years, for the next stock assessment.

While the CPT highlighted differences in the assessment of risk and the application of risk tables between crab and groundfish, the SSC strongly suggests that there are many parallels that should be considered for BSAI crab and that the structure of the risk table approach is sufficiently general to be applicable to both crab and groundfish. The SSC discussed the definition of risk and the implicit acceptance of a relatively greater risk through the adoption of the $P^* = 0.49$ approach for BSAI crab, which implies that maxABC is essentially equal to the OFL. As for groundfish, the ABC may be reduced from its maximum value based on other considerations such as the potential for bias in estimated reference points (model uncertainty) or concerns about the appropriate definition of reproductive potential. The SSC continues to encourage the CPT to include groundfish experience when finalizing risk table guidance as some of the aspects under discussion have already been vetted by the GPTs. The SSC suggests the CPT consider evaluating buffers relative to the maxABC, rather than relative to the previous year, as a comprehensive assessment of risk is challenging when considering only year-over-year changes. Finally, the SSC is also concerned that renaming aspects of the risk tables might be confusing, given the stated goal of transparency.

Oct 2025 SSC Report