Risk Table Wrap Up

Crab Plan Team meeting
Sept. 11, 2025

For reference: Sept. 8, 2025 CPT Risk Table Presentation

Risk & buffer table examples - Tanner crab

Assessment-related considerations	*Population dynamics considerations*	*Environmental/ecosystem considerations*	*Fishery Performance*
Level 2: increased concern	***Level 1: Normal***	***Level 1: Normal***	***Level 1: Normal***
Fails to achieve the dynamic range seen in survey biomass, concern regarding currency for reproductive potential, concern regarding proxies used for Fmsy and Bmsy	The majority of stock-specific ecosystem indicators related to natural mortality, growth, and recruitment suggest no additional concerns. While bitter crab disease prevalence was high, the magnitude of impact on the stock remains unknown. The abundance of Tanner/snow crab hybrids in all population categories was the largest seen in the survey time series (which starts in 1998).	Warm conditions with a reduced cold pool extent in 2024; forecast to be warm with delayed sea ice arrival in 2025. While bottom waters were warm in 2025, ecosystem concerns are minor with uncertain impacts on the stock. Corrosive bottom waters remain a concern for growth and survival. Competitive pressure may be low, while predation pressure may be increasing.	Fishery-informed indicators generally support stable stock condition relative to the most recent seasons and the post-2005 historical record. No considerations observed in the most recent fishery suggest greater than normal risk of overfishing, independent of other considerations captured in the assessment and risk table.

Table 1. Rationales for recent recommended (author, CPT) and adopted (SSC) ABC buffers.

	SSC		CPT		Author	
Assessment	ABC buffer	Rationale	buffer	Rationale	buffer	Rationale
2020	20%	The SSC endorsed all OFL and ABC recommendations of the CPT, with the exception of the EBS snow crab OFL and ABC	20%	The CPT recommends a 20% buffer to account for model uncertainty and stock productivity uncertainty ...the 20% buffer is the same that the SSC recommended for determination of the 2019/20 ABC. The CPT concluded that no additional buffer was needed to account for the cancelled NMFS EBS bottom trawl survey in 2020.	20%	the author remains concerned that the OFL calculation, based on F35% as a proxy for FMSY, is overly optimistic regarding the actual productivity of the stock. Fishery-related mortality similar to the P* ABC level has occurred only in the latter half of the 1970s and in 1992/93, coincident with collapses in stock biomass to low levels. This suggests that F35% may not be a realistic proxy for FMSY and/or that MMB may not be a good proxy for reproductive success, as are currently assumed for this stock. In addition, the estimates of survey catchability for this stock remain problematic and contribute to this year's inflated OFL recommendation (relative to last year's) despite a continued decline in survey biomass across the last few years.
2021	20%	The SSC endorsed all of the OFL and ABC recommendations of the CPT	20%	The CPT recommends a 20% buffer to account for model uncertainty and stock productivity uncertainty ...the 20% buffer is the same that the SSC recommended for determination of the 2020/21 ABC.	20%	F35% may not be a realistic proxy for FMSY and/or that MMB may not be a good proxy for reproductive success, as are currently assumed for this stock. In addition, the estimates of survey catchability for this stock remain problematic and contribute to this year's inflated OFL recommendation (relative to last year's) despite a continued decline in survey biomass across the last few years
2022	20%	The SSC endorsed all of the OFL and ABC recommendations of the CPT	20%	The CPT recommended a 20% buffer to account for model uncertainty and stock productivity uncertainty	20%	The author remains concerned that the OFL calculation, based on F35% as a proxy for FMSY , is overly optimistic regarding the actual productivity of the stock. Fishery-related mortality similar to the P-star ABC level has occurred only in the latter half of the 1970s and in 1992/93, coincident with collapses in stock biomass to low levels. This suggests that F35% may not be a realistic proxy for FMSY and/or that MMB may not be a good proxy for reproductive success, as are currently assumed for this stock. In addition, the estimates of survey catchability for this stock remain problematic and contribute to this year's inflated OFL despite a continued decline in survey biomass across the last few years.
2023	20%	The SSC endorsed all of the OFL and ABC recommendations of the CPT, with the exception of EBS snow crab and Tanner crab. the SSC recommends a buffer of 20% given that, despite uncertainty in recent recruitment events, the current influx of small crab is both high in magnitude and extensive across space beyond the southern extent of the cold pool.	25%	The CPT recommended a 25% buffer to account for model uncertainty and stock productivity uncertainty ...the 25% buffer is an increase from previous years due to increased concerns regarding the appropriateness of B35% and F35% as proxies due to uncertainty related to MMB as the currency of management, similar to those expressed for snow crab.	20%	p35% may not be a realistic proxy for F_{MSY} and/or that MMB may not be a good proxy for reproductive success, as are currently assumed for this stock. In addition, the estimates of survey catchability for this stock remain problematic and contribute to this year's inflated OFL despite a continued decline in survey biomass across the last few years. Furthermore, the model appears overly-optimistic in terms of recent scale and trends.
2024	20%	The SSC endorsed the OFL and ABC recommendations of the CPT, with the exception of EBS snow crab	20%	The CPT recommended a 20% buffer to account for model uncertainty and stock productivity uncertainty...the 20% buffer is consistent with previous years' concerns, but the CPT wishes to highlight its increasing concerns regarding the appropriateness of B35% and F35% as proxies for MSY-related management quantities due to uncertainty related to MMB as the appropriate currency of management, similar to concerns expressed for snow crab.	20%	The author remains concerned that the OFL calculation, based on p35% as a proxy for F_{MSY} , is overly optimistic regarding the actual productivity of the stock. Fishery-related mortality similar to the p * ABC level has occurred only in the latter half of the 1970s and in 1992/93, coincident with collapses in stock biomass to low levels. This suggests that p35% may not be a realistic proxy for F_{MSY} and/or that MMB may not be a good proxy for reproductive success, as are currently assumed for this stock. In addition, the estimates of survey catchability for this stock remain problematic and contribute to this year's inflated OFL despite a continued decline in survey biomass across the last few years. Furthermore, the model appears overly-optimistic in terms of recent scale and trends. However, these concerns are not new and are reflected in the previous ABC buffer.

Appendix B & Appendix C, 2025

Risk & buffer table examples - BBRKC

Level 2

Level 2

Assessment-related Considerations	Population Dynamics Considerations	Ecosystem Considerations	Fishery-informed Stock Considerations
Level: 1 Normal	Level: 1 Normal	Level: 1 Normal	Level: 1 Normal
- 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)	- Unknown reasons behind recruitment failure - Potential shifting spatial distributions	- 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	- 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

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

Appendix D & E, 2025

Risk table examples - Snow crab

Category Summary:

Assessment-related Considerations	Population Dynamics Considerations	Ecosystem Considerations	Fishery-informed Stock Considerations
Level 2: Increased concern	**Level 2:** Increased concern	**Level 1:** Normal	**Level 1:** Normal
Instability in the model seen through jittering analyses increases uncertainty in output.	Stock-specific indicators related to natural mortality, growth and recruitment suggest no apparent population dynamics concerns. Directional downward shifts in male snow crab size at terminal molt have large implications for the fate of the medium-sized crab in the population.	Ecosystem indicators show current and projected warm conditions and reduced ice extent in the EBS, but warming is not yet approaching critical thresholds for highly stenothermic juvenile snow crab. Overall, ecosystem concerns are minor with uncertain impacts on the stock.	Fishery-informed indicators generally support improved stock condition relative to the most recent (2021/22) fishery. Despite continued extreme northerly shift in the center of distribution of fishing activity, no considerations observed in the most recent fishery suggest greater than normal risk of overfishing, independent of other considerations captured in the assessment and risk table.

Appendix B, 2025

Draft template

Stock	Year	Assessment related considerations	Population dynamics considerations	Ecosystem considerations	Fishery informed considerations	Buffer Rationale	CPT suggested ABC buffer	SSC recommended ABC buffer	Rationale for CPT/SSC buffer discrepancy (if applicable)
BBRKC	2021								
BBRKC	2022								
BBRKC	2023								
BBRKC	2024								
BBRKC	2025	1	1	1	1	Summary of rationale for increasing/decreasing/maintaining buffer from year prior based on new and ongoing concerns documented in the risk table (although not all concerns documented in the risk table will warrant changes in buffer) *e.g. "No new concerns identified in risk table. Concerns for this stock that are still present (cold pool distributional shifts, declining trends in mature biomass, lack of large recruitment pulses, retrospective patterns), as well as low mature female abundance the in some of last few years, all contribute to a recommended 20% buffer for 2025/26.*	20%	20%	N/A

Draft table link

CPT Prelim Risk Table SOPs

Risk table goal statement?

Edits?

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.

From: May 2025 CPT Report

Questions

- Buffer discussion (historically) vs risk table discussion
  - Can we use risk tables to contain buffer concerns but NOT include all risk table items in our buffer rationale?
- How do we record conservation concerns?
- How do we record ongoing vs new concerns?
- Should we record positive trends (since the buffer could also theoretically be reduced)?
- What constitutes 'double-dipping'?
- What is a tier-related concern and how do we distinguish them from other concerns?
- Scoring
  - Naming (e.g., 'normal' vs 'minimal to moderate' concern)
  - Do we need more than 3 scores?
  - How do we develop the starting point of where we are at now (i.e., do we go with Buck's idea of using the existing buffer to inform this round of risk scores)?
  - Do/should scores translate across stocks?