



1976
2026

NORTH PACIFIC FISHERY MANAGEMENT COUNCIL

Angel Drobica, Chair | Diana Evans, Executive Director
1007 W. 3rd Avenue, Suite 400, Anchorage, AK 99501
Phone 907-271-2809 | www.npfmc.org

BSAI Crab Plan Team REPORT

Sept 14-17, 2026

In-person meeting, Seattle, WA

Committee Members in attendance:

Katie Palof, **Co-Chair** (ADF&G-Juneau)
Anita Kroska, **Coordinator** (NPFMC)
Andrew Olson (NMFS-Juneau)
Ben Daly (ADF&G-Kodiak)
Brian Garber-Yonts (AFSC-Portland)*
Caitlin Stern (ADF&G-Juneau)
Cody Szuwalski (AFSC-Seattle)
Erin Fedewa (AFSC-Kodiak)

Ginny Eckert (UAF/CFOS-Juneau)
Tyler Jackson (ADF&G-Kodiak)
William Bechtol (UAF-Homer)
William Stockhausen (AFSC-Seattle)

Vacant, Co-Chair
Vacant, quantitative expert
Vacant (ADF&G-Dutch Harbor)

CPT Members absent: André Punt (Univ. of Washington)

*virtual attendance

All documents and presentations are available on the Sept CPT [eAgenda](#), including final SAFE documents for Tanner crab, snow crab, Bristol Bay red king crab, and St. Matthew Island blue king crab.

Council Updates

Anita Kroska (NPFMC) and Katie Palof (ADF&G; CPT Co-Chair) summarized Council administrative updates, upcoming deadlines, and ongoing assessment and modeling activities. The CPT discussed recent membership changes with departures of Mike Litzow (AFSC) and Ethan Nichols (ADF&G), the search for a new CPT co-chair, and the continued need for members with quantitative expertise.

Anita reviewed four general SSC recommendations from the June 2026 report directed to the CPT. The first supported merging with the Scallop Plan Team (SPT) to form a Crab and Scallop Plan Team to provide support for the scallop assessment. Scallops will continue to be assessed triennially and individuals with scallop expertise will be included, and the potential for expertise from other regions will be explored. The CPT agreed with the recommendation to merge the Plan Teams and recommended the new Plan Team name “Crab and Scallop Plan Team” moving forward. CPT members were asked to provide recommendations for other expertise. The second provided an update that the full assessment for WAIRKC was postponed due to staffing capacity and the full assessment will be reviewed at the April 2027 CPT meeting. The third encouraged

continued communication between agencies and data streams if hybrid *Chionoecetes spp.* abundance continues to remain at relatively high levels. The SSC agreed with the CPT that updates to hybrid abundance will not be incorporated into either the Tanner or snow crab assessments, but rather provided during the annual EBS trawl survey at each September CPT meeting. The fourth concerned Risk Tables which have gone through several iterations. The SSC agreed with the CPT that this continues to be an ongoing process and the SSC recommended that stock assessment authors produce a draft risk table for all stocks, regardless of tier, during the next full assessment.

Lastly, Anita provided an update on the CPT meeting schedule for 2027 which includes a January modeling workshop, the spring CPT meeting occurring earlier in the year in April to accommodate the timing of the NPFMC meeting in May, and the September CPT meeting which may overlap with the Groundfish Plan Team meeting. Anita highlighted that recent updates to GMACS should be referenced in SAFE reports, and that the GMACS short report will be updated annually every May. Anita also noted upcoming NPFMC actions related to crab stocks and fisheries include Gulf of Alaska (GOA) Tanner crab protection areas and the essential fish habitat (EFH) 5-year review currently scheduled for the February 2027 NPFMC meeting.

EBS Ecosystem Status Report

Elizabeth “Ebett” Siddon (NOAA) presented the Bering Sea Ecosystem Status Report which included environmental process indicators and crab prey, competitor, and predator indicators relevant to crab pelagic and benthic stages. When available, data were updated through 2026. Ebett noted that Ecosystem Status Reports (ESRs) and Ecosystem and Socioeconomic Profiles (ESPs) are complementary and both inform stock assessment risk tables.

Ebett reviewed environmental process indicators. A very weak Aleutian Low occurred in winter 2025/2026, which contributed to the extensive sea ice in the EBS. Ebett noted that cold conditions are typical of a weak Aleutian Low, as occurred last winter. For the Eastern Bering Sea, March-April winds drove sea ice south and sea surface temperatures over the southeastern shelf was $>2^{\circ}\text{C}$ below average through the summer. Ebett noted other areas of the Arctic had below average sea ice levels, but was unsure about how typical it is to have high levels of sea ice in the EBS but low sea ice elsewhere in the Arctic. Sea surface temperature (SST) projections from the National Multi-Model Ensemble predict warm anomalies in Nov 2026-Jan 2027 throughout much of the western north Pacific, Bering Sea, and Aleutian Islands with neutral SST anomalies in the eastern and northern Bering Sea shelves and central/eastern Aleutian Islands in Jan-Mar 2027.

The El Niño forecast for fall and winter 2026/2027 indicates a 90% chance of a very strong El Niño with a 59% chance of being the strongest since 1950. Impacts on Alaskan waters are less predictable, but could be associated with surface warming, increased circulation, prey limitations on seabirds and marine mammals, or groundfish distribution shifts in the Gulf of Alaska. A greater potential for warming is predicted in the eastern Bering Sea and Aleutian Islands for a “Central Pacific” type El Niño rather than an “Eastern Pacific” type El Niño, but it is not yet clear which type will occur. There was a question about whether the 2018 and 2019 heat waves in the eastern

Bering Sea were linked to warming water in the Gulf of Alaska. Ebett noted that the warm conditions in 2018 and 2019 were largely related to EBS wind patterns driving sea ice to the north with relatively warm winds. Sea ice extent was largely below average until early March 2026. A 6-week period of above average ice extent occurred between March and April (to Aleutian Islands and into Bristol Bay), but the ice was thin. The sea ice retreated quickly beginning in mid-April and by late April ice extent was below average. Ebett discussed along-shelf winds and noted potential impacts on pelagic stages of various crab stocks. The 2°C cold pool extent was the largest since 2012 but the 0°C cold pool extent, which may be more relevant for the snow crab stock, was near the long-term average. Sea ice is expected to arrive later in the southern Chukchi Sea and northern Bering Sea in 2026/2027, but is expected to arrive earlier near St. Matthew Island and over the central Bering Sea. Asked about the relationship between early ice formation, ice thickness, and the subsequent cold pool, Ebett didn't have access to a prediction about the expected ice thickness, but noted that the residence time of the sea ice will impact the extent of the subsequent cold pool. Water pH decreased in 2025, then increased slightly in 2026 with cooler temperatures, but continued the multi-decadal declining trend.

Crab prey indicators were presented for pelagic and benthic crab stages. Diatom abundance anomalies were positive for 2023-2025, possibly suggesting above-average feeding conditions for pelagic crab stages. Benthic foragers remained low in 2025, possibly indicating low prey availability. For crab competitors, pelagic competition was average/low in spring 2026 with average/low copepod abundance. Motile benthic epifauna (including all crab species) increased from 2024 to 2026, possibly indicating increased competition with and among crabs for space. Ebett noted that removing commercial crab species from the motile benthic epifauna guild does not substantially change the trend because sea stars, brittle stars, and sea cucumbers are big drivers of the overall trend. Indicators of predation pressure in the pelagic and benthic crab stages decreased in 2025. Asked about *Chionoecetes* hybrids identification in fish stomachs, it was noted that hybrids were identified back into the 1980s. Hybrid identification protocols are unclear for the 1980s, but have been consistent since the early 2000s. However, identification of snow/Tanner/hybrids in cod stomachs is difficult for small crab. A point was made that increases in hybrid crab consumption by Pacific cod may be a predictor for impending increases in hybrid abundance of larger size classes. A question was asked about whether hybrid consumption due to Pacific cod predation should be included in ESPs, but it was recommended that predation on hybrid crab remain in the Ecosystem Status Report presentation. Consultation with Kerim Aydin after CPT suggested that the hybrid portion of this graph was on a different scale and therefore the CPTs interpretation was skewed. The borealization index is projected to be near the long-term average in 2026. The CPT thanked Ebett for her presentation.

Summer Trawl Survey Results

Emily Ryznar (NOAA – Kodiak) summarized results from the 2026 NOAA summer bottom trawl survey for eastern Bering Sea (EBS) crab stocks including survey effort, bottom temperatures, abundance estimates, and spatial distribution data for: red king crab (Bristol Bay, Northern, and Pribilof Districts), blue king crab (Saint Matthew Island and Pribilof District), Tanner crab, snow crab, and *Chionoecetes* hybrids. A total of 349 stations were sampled during May 31–August 4 by the F/V *Alaska Knight* and the F/V *Northwest Explorer*. The bottom temperature showed the

largest cold pool in the past five years and the most eastern extension of the cold pool since 2012. Mean bottom temperature was 0.8°C lower than the 1979-2026 average, but the CPT noted that waters less than 0°C were near average in extent in 2026. The total harvestable biomass across crab species (defined as legal males for king crabs, industry-preferred males for *Chionoecetes*, and excluding hybrids) increased by 68% over 2025, with a general increase since 2021. The recent increase was largely driven by Tanner west of 166°W. The CPT requested that the author add *Chionoecetes* hybrids to the total biomass plot in future years and that the author also include a plot with mature male biomass for all stocks.

Survey trawl net spread values were updated for the 2024-2026 EBS and 2025 NBS due to changes in the net sensor and to better align with historical data. This update resulted in biomass decreases of ~4% across crab stocks. The need for this update was identified last week, so most assessment authors have not had time to include the updated data in their assessments aside from Grant Adams for snow crab, and these updates were not included in the NOAA tech memo. **Updated data should be incorporated into stock assessments moving forward, including at the April CPT meeting.** The CPT noted that this directional change in biomass estimates may be an appropriate consideration for adjusting the buffer in stock assessments this cycle.

Bristol Bay red king crab (BBRKC) abundance increased for most size/sex categories, with large increases for immature crabs. However, one station accounted for ~65% of the catch of immature crabs. The size distribution was centered around 100 mm CL for both sexes. The 2026 survey did not resample any Bristol Bay survey stations, even though 56% of mature females had not completed the mate/molt phase. It was noted that this percentage exceeded the 10% threshold when resampling has historically been conducted. The NMFS and ADF&G biologists and the assessment author decided after review that resampling later in the summer would not materially affect survey results or the assessment. An industry participant, recalled a CPT agenda item in 2022 exploring resampling criteria and thresholds, questioned if resampling will be dropped in the future if it is determined that resampling would not have a substantial impact. The BBRKC stock assessment author plans to complete a retrospective analysis to evaluate the effects of resampling on size composition and abundance estimates, and to develop more consistent protocols for when resampling is needed. The plan is to work on the retrospective analysis during the January modeling workshop and to present results to the CPT in April 2027. The CPT noted the main resampling goal is to get more accurate size compositions, and the model may be able to compensate with adjusted assumptions on growth and molt timing annually. Given that the BBRKC mature female center of distribution in 2026 is near the long-term average, the CPT suggested comparing crab centers of distribution with the original versus resampling data in the retrospective analysis, which may shed light on mature female availability to the survey gear in cold years. The legal male spatial distribution remained centered in southern Bristol Bay with some extension into the Northern District. Survey catches of red king crab in the Northern district increased slightly from 2025, but still remained at fairly low levels. The CPT asked whether the southwest hotspot along the Alaska Peninsula resulted in an increase in BBRKC in the Tanner crab fishery. An industry participant replied that Tanner crab fishing occurs further west. Emily noted that 73% of new-shell males were legal RKC.

Other king crab stocks increased or were stable this year. The Pribilof Island RKC population saw a large increase in abundance but remained low compared to the historical time series. Survey abundances of St. Matthew Island blue king crab (BKC) remained low but stable for mature males, and large increases were seen in immature males and females with the highest abundances in the historical time series. Survey abundances of Pribilof Islands BKC were the highest observed in recent years but were driven by a few high catches and remain low overall.

Survey abundances of Tanner crab east of 166°W increased for most size and sex categories, with the largest increases for both legal and industry-preferred sizes, and smaller increases for mature females and small males. Tanner abundance west of 166°W reached a record high in 2026 for legal and industry-preferred males, with continued high numbers of mature females and declines in juveniles. The distribution centers were near average for mature females but continued to move northwest for industry-preferred males. Tanner crab legal and industry preferred male distribution remains centered around and to the northeast of the Pribilof Islands with a developing hotspot northeast of Unimak. The center of distribution for industry preferred males had its northernmost point in 2026.

Snow crab survey abundances revealed a 28% decrease in industry preferred males (≥ 101 mm), an increase in mature females, and declines for immature females, small males, and legal males. Fewer males are maturing to large sizes similar to levels seen in the 1980s and 1990s, with 96.5% of males completing the terminal molt to maturity, after which growth ceases, at a size smaller than the industry preferred size. The size frequency data suggest low recruitment in 2025 and 2026. The large females observed in 2024–2025 are still present, but at reduced abundances. The spatial distribution of mature females revealed multiple hotspots in 2026, notably more westward than in recent years. The center of distribution of mature females was further south than in all past years. The hotspots in immature female distribution seen in recent years largely disappeared in 2026. Density hotspots of small males (< 95 mm) east of St. Matthew Island and north of the Pribilof Islands declined in 2026. Large male snow crab and industry-preferred males continued to be widely distributed in 2026, but with density declines, the distribution center for industry-preferred males was near the long-term average. The CPT suggested plotting the cold pool onto the spatial distribution plots to explore potential links among distributions and bottom temperature.

Survey abundance of *Chionoecetes* hybrids declined across most size and sex categories, except for industry-preferred males, which were more abundant than in any other year in the time series with an increase of 12% over last year. The relative abundance of *Chionoecetes* males ≥ 101 mm was similar between snow (14%) and hybrid (15%) crabs in 2026. The distribution of hybrids showed similar patterns for most size and sex categories. The CPT discussed the need to better understand hybrid biology. Currently, chela height is not sampled on hybrids during the survey, and thus data on male maturity are not available. However, the survey did collect hybrid weights this year and will use these data to update length:weight regressions. It is unclear whether there is capacity to collect chela heights on the survey, but CPT encouraged support to do so in the future and cautioned that detection of hybrids at small sizes will need to be considered when developing maturity cutlines. A member of the public questioned whether the large abundance of

juvenile snow crab observed in 2018 could have been hybrids, but the CPT noted that the hybrids observed now would have been spawned during heatwave years so the previous juvenile crab pulse was unlikely to be hybrids. The CPT noted that hybrids are not incorporated into the snow crab assessment, and that there's capacity for addressing hybrids in the State of Alaska's TAC setting process. Under existing regulations, the majority of hybrids are retained as snow crab. If further discussion on hybrids is needed it will be taken up at the April 2027 CPT meeting.

The CPT asked if there were updates on survey modernization. NOAA is currently comparing gear and completed 13 side by side comparisons in 2026; survey modernization changes are anticipated for 2030 or 2031. Gear comparisons occur in alternate years to the Northern area survey.

Fishery Summary 2025/26 - Directed and Bycatch

Tyler Jackson (ADF&G) and Andrew Olson (NOAA / AKRO) presented the 2025/26 fishery summary, which included directed fishery performance and incidental catch in groundfish fisheries for each BSAI crab stock.

Observer Coverage: Mandatory catcher-vessel observer coverage requirements for BSAI fisheries range from discretionary up to 100%, allowing coverage to scale up if necessary. For most fisheries, observer coverage calculated by both boat and pot has remained fairly stable over time. However, Tyler noted that observer coverage in the Western Aleutian Islands Golden King Crab (WAG) fishery calculated by pot has lowered over time, but the exact cause remains unclear. Andrew Olson reviewed full coverage, partial coverage, and no coverage vessel categories within groundfish fisheries. He noted that bycatch trends differed this year primarily due to significant sea ice extent in the Bering Sea, which altered fleet fishing behavior.

Western Aleutian Islands Red King Crab (WAIRKC): The directed WAIRKC fishery remained closed for the 2025/26 season. Minimal fixed-gear fishing and observer coverage occur within this stock area, and State Pacific Cod fisheries operating in the area carry no observer or Electronic Monitoring (EM) coverage. Overall, bycatch levels of WAIRKC have been very low in recent years and most incidental catch was encountered by trawl gear targeting Atka Mackerel and rockfish.

Bristol Bay Red King Crab (BBRKC): The total allowable catch (TAC) for BBRKC was 2.68 million lbs, with 2.721 million lbs retained. Directed discard mortality saw a small increase, while BBRKC discard mortality in the Eastern Tanner Crab (EBT) fishery remained very low. Directed fish ticket CPUE was slightly lower than the previous season at 29 crab/pot, whereas observer CPUE reached 37 crab/pot, displaying a slight decoupling. Catch was heavily concentrated in one statistical area, shifting slightly west from the prior year and generally remaining southwest of historic fishing grounds. Female discard mortality increased slightly in the directed fishery, but remained extremely low in non-directed fisheries. In response to Alaska Bering Sea Crabbers (ABSC) requests regarding drivers of female bycatch, Tyler noted that ADF&G could evaluate factors such as soak time and shell condition in the future. In federal groundfish fisheries, most fixed-gear incidental catch occurred in the Pacific Cod pot fishery, though fixed-gear bycatch has generally decreased in recent years. Trawl bycatch occurred throughout the year and was driven

primarily by yellowfin sole and rock sole targets. Spatial maps indicate that sea ice extent during February, March, and April pushed the trawl fleet south and west of the Red King Crab Savings Area.

Bering Sea Snow Crab: The snow crab TAC was 9.3 million lbs, with 8.710 million lbs retained in the directed fishery and 0.385 million lbs retained incidentally. Directed CPUE declined this season and the catch center shifted substantially southward from the previous year, although the highest CPUE grounds were observed furthest northwest. Regulations allow up to 35% incidental retention per landing, and the proportion of total retained snow crab catch coming from incidental retention in the Western Tanner (WBT) fishery increased significantly to over 4% in 2025/26. Female discard mortality increased in both the directed snow crab fishery and the WBT fishery. This season, a 1-million lb hybrid harvest opportunity was encouraged in an area of high hybrid abundance southeast of the Pribilof Islands based on the 2025 survey. Dockside retention of hybrids increased by both weight and number, with estimated hybrid catch landed as snow crab rising to 0.678 million lbs. Observer hybrid encounters occurred primarily southeast of the Pribilofs, where little directed snow crab fishing took place. Estimated hybrid discard mortality weights were negative and smaller than expected, likely due to non-hybrid specific length-weight regressions used in the calculation. Federal groundfish bycatch of snow crab was slightly up from 2024. Fixed-gear bycatch was dominated by pot and hook-and-line Pacific Cod fishing, while trawl fleets experienced higher bycatch rates in the spring in the northern EBS as fleets adjusted targets and locations due to sea ice and market conditions.

Bering Sea Tanner Crab: For Western Tanner crab (W166 / WBT), the TAC increased substantially to 10.12 million lbs, with 10.122 million lbs retained. Fishery CPUE reached the highest level in the time series, and bycatch mortality in the snow crab fishery increased slightly from the past season. Catch shifted north relative to the past season, taking place mainly around the Pribilof Closure Area, with the largest CPUE slightly east of the main catch center. For Eastern Tanner crab (E166 / EBT), the TAC was 1.13 million lbs, with 1.124 million lbs retained. CPUE saw a slight increase, and catch shifted south relative to the past season, with the largest harvest and CPUE located one row east of the 166° W longitude line. Tanner crab bycatch mortality in the BBRKC fishery remained very low, while female bycatch mortality increased in WBT due to the larger TAC. In federal groundfish fisheries, fixed-gear bycatch occurred mostly in Pacific Cod pot fisheries. Trawl bycatch occurred primarily in yellowfin sole, rock sole, and flathead sole fisheries. An uptick in flathead, yellowfin, and rock sole bycatch was driven by sea ice extent pushing the fleet west, changing market conditions, and unprecedented Bairdi abundance in the West.

Aleutian Islands Golden King Crab (AIGKC): In the Eastern Aleutian Islands (EAG), the TAC was 3.32 million lbs, with 3.42 million lbs retained. Directed fishery discard mortality was minimal. CPUE decreased to 32 crab/pot, and female bycatch mortality remained small. In the Western Aleutian Islands (WAG), the TAC was the smallest in the time series at 0.870 million lbs, with 0.868 million lbs retained. CPUE saw a large increase to 18 crab/pot, while female bycatch mortality was the lowest on record. Federal groundfish bycatch originated mainly from the Pacific Cod pot fishery, although there is no federal pot cod observer coverage in the State GHL fishery area so data extrapolation tends to result in large spikes in the historical time series.

Pribilof Islands Golden King Crab (PIGKC): PIGKC is managed as a calendar-year fishery, and one vessel participated in 2025 (directed catch is confidential, and non-directed catch was 0 lbs). Very little bycatch occurred overall in 2025, although regulations allowed longline pots for directed Greenland Turbot fishing, which may increase future PIGKC bycatch.

Other BSAI Crab Stocks: The Saint Matthew Island Blue King Crab (SMBKC) directed fishery remained closed; the stock is overfished and experiences very little trawling due to spatial closure areas. Directed fisheries for Pribilof Islands Red and Blue King Crab (PIRKC / PIBKC) also remained closed. PIBKC is overfished, but gear prohibitions in the Pribilof Islands Habitat Conservation Zone continue to protect the stock from pot and trawl encounters. Incidental bycatch for Norton Sound Red King Crab (NSRKC) in groundfish fisheries remained below 1 kg.

Overall, the CPT thanks Tyler and Andrew for an informative presentation. **Based on feedback from ABSC, CPT recommends a deeper analysis into the uptick in female BBRKC bycatch mortality during the 2025/26 directed fishery, which Tyler Jackson plans to present to industry during upcoming TAC discussions.**

Council Updates continued - GMACS updates

William “Buck” Stockhausen presented recent updates to GMACS. The GitHub repository for the GMACS code can be found at this [link](#). The current version of GMACS, as of the end of the CPT meeting, is 2.20.45d, which can be found on the “devel_202608-45” branch. While the complete PowerPoint [presentation](#) includes changes starting from the January Modeling Workshop, Buck only discussed changes made since the May CPT meeting because the previous changes had been reviewed at that meeting. Most of the changes were made to facilitate one-to-one comparison between GMACS results and those from the bespoke Tanner crab model, but Andre Punt added the option and code to calculate F_{MEY} given economic data. Other changes were mainly cosmetic to improve readability or provide additional model output.

Tanner Crab CIE Review

William “Buck” Stockhausen presented the 2026 Tanner crab CIE report. The CIE review took place in June 2026 and the report has only been available for a few weeks, therefore the author’s plans to address these comments will occur in future meetings. The CIE reviewer responses were broken down by specific terms of reference for the review:

TOR 1: Transition to GMACS

All reviewers supported the transition to GMACS, with two noting no concern about transition during the next assessment cycle. One reviewer suggested that equivalence of parameterization is not quite sufficient to transition yet, and to maintain models in parallel at this time.

The CPT and assessment author agreed that maintaining parallel operations in the interim is the appropriate path forward until GMACS can be accepted (see Tanner crab below for more details).

TOR 2: BSFRF Side by Side Selectivity Experiment

All reviewers thought the analytical approach to the side by side experiment was sound, although there was some conversation about using parametric terms as opposed to GAMS. Reviewers agreed that the best use of these data was to not use them directly in the assessment model, but rather to use the results of the analysis as priors informing selectivity, as the snow crab assessment model has done in the recent past. Reviewers also highlighted the need to conduct further validation of the assumption of absolute efficiency for nephrops trawl. Further work on this is planned for the January modeling workshop.

TOR 3: Reference Points

None of the reviewers supported the use of SPR-based reference points for Tanner crab. Given that only large males are harvested, the reviewers agreed that F35% does not approximate FMSY for this stock. Reviewers were in agreement on the inappropriateness of F35%, but were unable to provide specific alternatives. Instead, reviewers offered examples of using empirical simulation based approaches or tuning historical catch levels to recent survey biomass as possibly more useful methods for reference point estimation. Given the large fluctuations in abundance, reviewers also suggested that it may be prudent to include females in limit reference points.

The CPT noted that changing reference points cannot be done in isolation for a single stock, but should be addressed across BSAI crab stocks as a whole. The CPT also noted that changing reference points requires broader input from the SSC, and suggested the development of a collaborative process.

TOR 4: Two-Area Model

All reviewers agreed that a two-area model would be unnecessary at this time given the perceived level of population connectivity. One reviewer suggested that a spatial operating model within an MSE could address any future changes to spatial stock structure and related management performance.

TOR 5: Consideration of *Chionoecetes* Hybrids

None of the reviewers identified an immediate need for hybrids to be included in the Tanner crab assessment and noted that there is a general paucity of biological information specific to hybrids that would be necessary for inclusion in the stock assessment. Reviewers suggested that hybrids could instead be used as a strategic uncertainty within the current stock assessment framework.

Tanner Crab Final SAFE/Risk Table

William “Buck” Stockhausen presented the 2026 final assessment for BSAI Tanner crab. The 2025/26 fishery was open in both the section to the east and to the west of 166°W, with a substantially larger TAC in the 166°W area. The 2026 survey estimated even greater increases in biomass, particularly in industry-preferred size males (i.e., males with carapace width ≥ 125 mm). The recent large recruitment, first evident in 2023, is primarily happening in the 166°W section with males now growing into industry-preferred sizes.

Buck presented the base model, 22.03d5 as implemented in the bespoke framework (TCSAM02) and two alternative GMACS models:

22.03d5 (GMACS) – same as 22.03d5 (TCSAM02), except

- recruitment deviations during the model “spin-up” period were modeled assuming a normal IID distribution rather than a normal random walk;
- fixed the size-specific probability of having undergone terminal molt (from TCSAM02);
- natural mortality and selectivity parameters were estimated on a log scale; and
- slightly different prior and penalty functions were used for natural mortality parameters, fishing mortality, and recruitment deviations.

26.2 (GMACS)

- Parameters previously fixed (at a bound) were estimated; and
- Annual male maturity ogives from the new maturity workflow were used as known probabilities of having undergone terminal molt.

Model 22.03d5 (TCSAM02) is the same model as that adopted for the 2025 assessment, but updated with new data for 2026.

Buck conducted a bridging analysis between TCSAM02 and GMACS in two steps: first by running a single function call to evaluate the alignment of model parameterizations and then running models in both frameworks with estimation to convergence. Since May 2026, Buck has undertaken much effort to add GMACS functionality that would allow for a near duplicate parameterization to TCSAM02. Still, some differences remain (above). Under a single function call with no estimation, TCSAM02 and GMACS produce nearly identical population quantities and likelihoods. With estimation, both GMACS versions of the model failed to converge (i.e., very few jitter runs were successful and had unacceptably high maximum gradients). Retrospective runs also failed. Despite poor convergence diagnostics, derived quantities of GMACS models were fairly similar to those from TCSAM02. Buck noted that the similarity between models was a promising result but, due to clear convergence issues, more work is necessary before transitioning to GMACS.

Jittering of TCSAM02 provided strong evidence for convergence to the MLE, with no parameters at bounds and successful uncertainty estimation. The addition of 2025/26 data resulted in minor differences to the model spin up period, probability of having undergone terminal molt, and predicted growth. Derived quantities and fits to data are nearly identical throughout much of the time series, with some separation near the terminal year, which is expected given the addition of new data. The 2025 assessment estimated an anomalous F during the 1970s in the directed fishery, which resulted in different MMB trajectories during that time period. The 2026 model did not estimate the large spike in F . Overestimation of large size classes in the total catches remains, relative to previous assessments.

The CPT questioned the duration of post-terminal molt survival, noting large swings in mature biomass in short time scales. Buck suggested that mortality rate likely increases each year after terminal molt and may also depend on other factors including density dependence. The CPT recommended future assessments should consider tracking post-terminal molt age, and perhaps

explorations of increased, post-terminal molt mortality could coincide with future research on more appropriate reference points.

The 2026 TCSAM02 model had a considerable retrospective pattern relative to the 2025 version. Peels going back to 2024 were in good alignment, but peels 2023 and earlier were clearly on separate trajectories for recruitment and MMB. Buck was able to track the difference down to a difference in the estimation of natural mortality. Buck noted that starting values for successive peels are determined using the estimated values from the previous peel, and it was suggested that doing so could possibly result in this disparity due to recent closures in the BBRKC and snow crab fisheries and the resulting lack of continuity in estimated characteristics for these fisheries. The CPT recommended running the retrospective analysis forward from the 10-year peel, as opposed to backwards, to see if it resulted in a different outcome.

The CPT concurred with the authors recommended model (Model 22.03d5) using the bespoke modeling framework (TCSAM02). This stock is not overfished (status is above Bmsy proxy) and total catch was below OFL for the 2025/26 season therefore overfishing did not occur. The computed OFL for this recommended model was 67.39 kt. Buck highlighted that the long term/persistent risk table concerns remained similar to last year and that the poor retrospective patterns were not cause for increased uncertainty about estimated management quantities. In addition, the CPT expected that the correction in survey area swept estimates since 2024 would likely have an immaterial effect on OFL calculations (see the survey minutes section of this report for more details). As a result, there was no recommended change to the previous 20% ABC buffer. The recommended ABC was 53.91 kt. Buck also produced OFL and ABC options based on a fallback model as requested by the SSC, but the CPT did not review it given the viability of the Tier 3 option. For the January modelling workshop and proposed models in April (2027), the **CPT placed high priority on Buck's work toward the transition to GMACS.**

BBRKC ESP Report Card

Erin Fedewa (AFSC) provided general updates on the ESP workflow that was adopted by the CPT and GPT last year. The snow crab ESP transitioned to dynamic structural equation modeling this year, so takes a different approach than the BBRKC ESP. This year's BBRKC ESP analysis used the Bayesian Adaptive Sampling (BAS) approach, but will move to a dynamic structural equation modeling (DSEM) approach next year.

Erin provided a response to past CPT/SSC comments. In response to the October 2025 SSC recommendation regarding the need for research on clutch fullness and its role as an indicator of reproductive output, Erin reviewed the literature and concluded that there are few observations in the field of females carrying unfertilized eggs and that past concerns were likely laboratory artifacts from females mated experimentally. The AFSC Kodiak lab has not observed evidence of unfertilized clutches in crab that mated in the field and were brought to the lab for evaluation. Erin concluded that extrusion of unfertilized clutches is unlikely to be a major concern for females mated outside of laboratory settings. Furthermore, the new indicator used in the BBRKC ESP analysis is clutch failure (i.e., when females fail to produce a clutch and are barren), and clutch fullness is no longer used in the ESP process.

Erin presented the BBRKC ESP. The ecosystem indicators and their lags remain unchanged in 2026. The response variable in the analysis this year was survey abundance of male BBRKC (95-120 mm CL), which represents males ~ 6-7.9 years post-settlement and 1 molt away from recruitment to the fishery. None of the ecosystem indicator effect sizes estimated by Bayesian Adaptive Sampling this year differed significantly from 0, and the final BAS model explained very little variation in BBRKC recruitment. There was a big uptick in recruitment this year, which may have led to the poor predictive capacity observed by this year's BAS model. It was noted that these indicators require a long time series for analysis, particularly when the parameter is lagged.

Erin reviewed results for the contextual ecosystem indicators in the report card. Female reproductive failure, spring pH, fishery catch distance from shore, Northern District RKC ratio, and the proportion of mature males in closure areas are all near the long-term mean. The area occupied by BBRKC mature males and mature females were both above the long-term mean. Researcher Sean Hardison is studying the spatial distribution of BBRKC throughout the year, potentially providing a more fine-scale view of crab distributions relative to closure areas. The pH estimates are from the MOM6 model, and recent in-situ pH measurements generally align with model estimates. The CPT asked whether ice coverage is considered; it is not. In summary, Bristol Bay bottom temperature was cold, the population continues to occupy cold habitats, and bottom water pH has declined over the past three decades, but increased from 2025 to 2026.

Socioeconomic indicators based on the ABSC Skipper Survey suggested few changes in fishing behavior and a perceived increase in abundance. Fishery CPUE is above the long-term mean. Fishery total potlifts, annual incidental catch, and number of active vessels are all below the long-term mean. Economic indicators, listed as "TBD" in the ESP reference document were not available for CPT feedback during the meeting.

The CPT made two suggestions for next year: 1) using a smaller size class as the response variable for indicator analysis; and 2) update the long-term mean for fishery information to only include the rationalized time period, while still plotting both pre- and post-rationalization periods.

BBRKC Final SAFE/Risk Table

Katie Palof (ADF&G-Juneau) presented the final SAFE for Bristol Bay red king crab (BBRKC). The directed fishery was open during 2025/26, with fishery CPUE similar to the 2024/25 season. Mature male biomass increased from 2025, although uncertainty also increased and biomass remained low relative to the long-term average. Estimated mature female biomass was higher than in recent years but remained below levels observed since the mid-1990s. Recruitment has remained low over approximately the last 10–15 years. Some potential recruitment was visible in the 2026 survey size-composition data, but this signal was based on only a few tows. The female molt/mate cycle was delayed in 2026 and no resampling was conducted.

Katie reviewed responses to previous CPT and SSC comments and noted that some recommendations had been addressed at the May 2026 CPT meeting, while others remain

ongoing. GMACS was updated from version 2.20.34a used in May to version 2.20.44. Bridging analyses showed no meaningful differences in survey estimates, mature male biomass, or model fit between GMACS versions, although likelihood components associated with the affected size-composition data changed. Additional 2025/26 data from the directed fishery, crab and groundfish bycatch, and the NMFS EBS bottom trawl survey were then added to the models. The new data increased the estimate of the previous year's recruitment and produced an increase in estimated mature male biomass, but otherwise had minimal effects on model performance.

Two Tier 3 models were presented:

- Model 24.0c.2 was the previously accepted base model, updated to GMACS version 2.20.44 and with 2025/26 data;
- Model 26.0 added larger size bins to the base model to better represent the accumulation of large crab evident in recent survey size compositions.

Estimates of NMFS survey biomass and mature male biomass were very similar between the two models, as were molting probabilities and most other model outputs. Katie noted that the additional size bins should ultimately be accompanied by a review and update of growth assumptions. One motivation for adding larger size bins was to better characterize the biomass contribution of large crab, because weight increases with size. However, the weight-at-size vector was not extended with the additional size bins; all bins above the previous maximum size were assigned the same weight as the former maximum size bin. The CPT noted that this limits one of the intended benefits of the expanded size structure and recommended updating weight at size for these bins in future assessments.

Katie presented model diagnostics including retrospective analyses, jittering, MCMC output, and projections. More than 80% of jitter runs converged to the maximum-likelihood estimate, and runs that did not converge to the MLE produced substantially poorer fits. Mohn's rho for mature male biomass was 0.1428 for model 24.0c.2 and 0.1749 for model 26.0. MCMC analyses were used to characterize uncertainty in mature male biomass and OFL estimates. Projections using recruitment from the low-recruitment period since 2015 indicated that the stock was not likely to be approaching an overfished condition during the next two years. Katie recommended model 26.0 for status determination because it better represented the observed size composition while producing results very similar to the base model.

Under model 26.0, BMSY was 19.23 kt, projected mature male biomass for 2026/27 was 18.77 kt, and B/BMSY was 0.98. The stock was therefore in Tier 3b and was not overfished. The 2026/27 FOFL was 0.40 and the resulting OFL was 7.13 kt. Katie recommended retaining a 20% ABC buffer, consistent with recent years, because there had been no large changes or improvements in uncertainty. The corresponding ABC was 5.70 kt. The 2026 risk table assigned Level 1 to assessment-related, population-dynamics, ecosystem, and fishery-informed stock considerations. Assessment considerations included the retrospective pattern in mature male biomass, the historical natural-mortality event, and potential effects of the delayed female molt/mate cycle on female size-composition data. Population-dynamics considerations included potential spatial shifts, a weak or absent stock-recruit relationship, and low abundance relative to historical levels. Ecosystem conditions were generally favorable or of minor concern, with cool shelf and Bristol Bay conditions, an extensive cold pool, favorable pelagic feeding conditions,

mixed benthic prey indicators, and near-average predation pressure. Fishery-informed indicators were generally consistent with stable stock condition and distribution. The CPT agreed with the author's risk table decisions.

CPT recommendations (following the author's recommendations):

- Use model 26.0 for 2026 status determination; continue development of growth assumptions appropriate for the expanded size bins.
- Use a 20% ABC buffer for the Tier 3 assessment, yielding an OFL of 7.13 kt and ABC of 5.70 kt for 2026/27.

Future work:

- The weight at size vector needs to be updated so that all bins larger than the previous maximum size bin reflect the actual weight at size in those bins.
- Continue work on resampling/retow protocols and evaluate sensitivity of female biomass and size-composition data to resample years. Evaluate the advantages and disadvantages of accounting for variation in molt timing within the model (e.g., time-varying, sex-specific seasonal timing of growth) versus outside the model (e.g., advancing old-shell females using a size-transition matrix and molting probability).
- Reanalyze historical growth data and continue work on BSFRF catchability information, selectivity/retention, spatial fishery analyses, and model-based survey indices.
- If MCMC results continue to be presented, include appropriate diagnostics to evaluate MCMC performance.
- Check the timing for OFL calculations, projections, and plotting. There were questions about what the projection figures were showing with respect to the timing of mortality/growth/mating/fishery. Also, it would be useful to have the range of recruitments used for projection written on the projection figures.
- Add text to table 1 and 3 to clarify what MMB quantities are being presented, which applies to all crab stocks. Particularly, clarifying whether the MMB values are estimated or are projected and used to establish the OFL.

Saint Paul BBRKC Hatchery Application Review

Mark Stichert (ADF&G) presented a shellfish hatchery permit application for the Saint Paul Hatchery aimed at enhancing the BBRKC stock. A 2022 State of Alaska statute expanded fishery enhancement to shellfish to use natural, artificial, or semiartificial production systems to augment the yield and harvest of shellfish indigenous to State waters above naturally occurring levels. The application process encompasses multi-step scoping, internal ADF&G and external expert reviews, management plan development, and public hearings under precautionary genetic policies. Part of the external expert review process is to solicit feedback from the CPT.

The proposed operation would be at a seafood processing facility in Saint Paul and build on the previous work conducted by the Alaska King Crab Research, Rehabilitation, and Biology Program (AKCRRAB). The operation would collect 45 adult female BBRKC broodstock to produce an estimated 2 million larvae, of which up to 640,000 juvenile crabs (C1 life stage) are estimated to survive based

on an expected 32% cumulative survival rate. At the time of release to size at maturity, applicants assume an approximate 5% survival rate (~6,000-25,000 mature crab). The C1 juveniles (2 mm CW) will be transported in containers on vessels and released into suitable juvenile crab habitat outside Port Moller in Bristol Bay, with ADF&G overseeing post-release monitoring and anticipating fishery recruitment within 5 to 7 years. The CPT questioned the timeline for fishery recruitment given that laboratory studies have tracked growth for 6-8 years for crabs that are not yet legal size. While any unexpected increases in juvenile abundance in the EBS bottom trawl survey may suggest contributions from hatchery-origin crab, there is no plan for marking hatchery-reared crab to differentiate them from wild crab.

Part of the application review process through ADF&G requires a Management Feasibility Analysis (MFA) that evaluates six criteria specific to the hatchery application: 1) potential contributions to common property fisheries, 2) potential size and location of special harvest area, 3) potential broodstock sources, 4) management considerations or need for additional studies, 5) assessment of production potential each species, and additional relevant factors considered. The CPT reviewed the shellfish hatchery permit application using the established MFA criteria and determined that the objective and goals of this project present many challenges. The CPT discussed the lack of a physical marking system for hatchery reared crab, making the development of genetic markers a top research priority; the potential for harm to the wild stock via the release of hatchery-derived crab carrying gene variants that would impede early survival in the wild but not in a hatchery; the inability to determine reproductive potential linkage to the OFL/ABC given the projected 5% return rate; and the potential negative impact on the stock if operations are scaled up given that females collected each year would be sacrificed after producing broodstock, eliminating any future reproductive contributions to the stock.

The CPT recommended that shellfish hatchery enhancement for BBRKC proceed with caution due to unknown selective genetic components when collecting broodstock, the potential impact on the BBRKC stock of the sacrifice of females each year post broodstock collection, the potential impact on the BBRKC stock of altering selection on genetic variants associated with early life survival, and the lack of a well-defined monitoring plan. The CPT stressed that hatchery production must not negatively affect wild stock health or compromise existing stock assessment metrics (such as ABC/OFL determination), and advised establishing regulatory hatchery capacity limits and defined metrics to measure success prior to scaling up operations.

Snow Crab ESP Report Card

Erin Fedewa and Kalei Shotwell presented the 2026 Ecosystem and Socioeconomic Profile (ESP) report card for Eastern Bering Sea (EBS) snow crab using Dynamic Structural Equation Models (DSEM) to evaluate hypothesized relationships between ecosystem indicators and survey abundance of 40–50 mm immature male snow crab. Candidate pathways represented climate forcing, larval and juvenile food availability, cold-water habitat, disease, and predation. Model performance was evaluated using effect sizes, marginal AIC, and reduction in unexplained recruitment variance. This work responded in part to previous CPT and SSC recommendations,

with additional evaluation of observation error, alternative lag structures, back-transformed effects, and out-of-sample predictive performance planned for 2027.

The strongest DSEM support was for the juvenile food-availability pathway. Greater sea ice extent was positively related to juvenile energetic condition, which was positively related to subsequent recruitment, and this model reduced unexplained recruitment variance by 71% relative to the null model. Cold pool extent was negatively related to juvenile temperature of occupancy, which was negatively related to subsequent recruitment. Sea ice extent, cold pool extent, juvenile energetic condition, and juvenile temperature of occupancy were consequently classified as predictive indicators. However, the energetic-condition time series contains only seven years and its estimated relationship with recruitment was strongly influenced by the 2019 observation. Additional diagnostics are planned to evaluate the robustness of this relationship. Other indicators were retained as contextual or monitoring indicators.

The CPT discussed whether recruitment is the most appropriate response variable for the DSEM. Unlike many groundfish stocks, crab cohorts are observed in surveys for several years before entering the fishery, potentially making recruitment less directly relevant to management decisions. Mortality may therefore be a useful alternative response, particularly if DSEM results are intended to inform risk-table considerations. More generally, the CPT noted that the intended management application should help determine which response variables and indicators are modeled. The CPT also discussed whether environmental relationships should be incorporated inside a population dynamics model or estimated externally, what size classes should define recruitment, and whether survey observations or assessment-model estimates should be used as the DSEM response. Comparison of DSEM survey recruitment with recruitment estimated by the stock assessment is planned once a Tier 3 snow crab model is recommended.

Ecosystem conditions in 2026 were generally favorable for juvenile survival and rebuilding. Juvenile snow crab occupied temperatures below 0°C, cold-pool extent was near average, spring sea ice extent was above average, and juvenile energetic condition remained elevated. Bitter crab disease prevalence and Pacific cod predation remained below average. Record-high mature female abundance resulted in a strongly female-skewed operational sex ratio of approximately 85 mature females per large male >95 mm, but only about 3% of mature females had empty clutches. The CPT discussed whether mean clutch score or the prevalence of partial clutches could provide a more informative reproductive-failure metric than the proportion of empty clutches, noting relevant Canadian work. Sperm storage could also introduce lags between mating conditions and observed clutch fullness. The CPT additionally discussed whether genetic analyses of clutches could help determine reproductive success and parentage given increasing snow crab–Tanner crab hybridization.

Fishery participation remained below the long-term average, while CPUE, total pot lifts, fishery centroid, and incidental catch were near their respective long-term averages. Fishing shifted substantially southeast during 2025/26, with weather/sea ice, sorting, and fuel costs commonly reported as reasons for changes in fishing behavior. Approximately half of surveyed skippers reported a >10% increase in perceived abundance of industry-preferred males, and 47% reported seeing more hybrid crab than during the previous season.

The CPT discussed potential interactions between snow and Tanner crab as an additional area for investigation, including whether large male Tanner crab could influence maturation of snow crab. Because any such interaction would depend on spatial co-occurrence, the CPT recommended examining the distribution and degree of overlap between the species.

Snow Crab Final SAFE/Risk Table

Grant Adams (AFSC) presented the 2026 final stock assessment for BSAI snow crab. The stock was declared overfished in October 2021 and is rebuilding under Amendment 53. The directed fishery was closed for the 2022/2023 and 2023/2024 seasons and has since reopened at a reduced scale. The total allowable catch for 2025/2026 was 4.22 kt, of which 4.13 kt was retained. The stock was not overfished in 2025/2026. The authors updated EBS survey biomass estimates using the net mensuration error correction for 2024-2026 and those updated values are reflected in the assessment.

The Tier 3 model has often failed to achieve convergence criteria in recent assessment cycles. The authors bridged the Tier 3 base model (25.3) to an updated version (26.1) including the new maturity workflow, an expanded plus group, corrections to the size composition data, updated 2025/2026 fishery and 2026 survey data, and GMACS version 2.20.34. Model 26.1 did not converge to a single solution, showing several minima with similar likelihoods but substantially different management quantities when starting values were jittered.

The authors presented the fallback option for harvest specifications as well as Tier 3 research models aimed at improving convergence performance and diagnosing the causes of convergence problems. Research models included model 26.1c, which included only data through 2019 to test whether data from more recent years are driving multimodality, and model 26.2, which removed the female population. Removing the female population was identified as a promising research direction, as model 26.2 showed reduced multimodality, recovering its accepted fit in a higher proportion of jitter runs that reached a minimum than any of the other Tier 3 models.

The CPT thanked the authors for their work on diagnosing the causes of Tier 3 model convergence failure and supported the authors' proposed next steps for working towards a converged Tier 3 model. The CPT recommended **focusing on a simplified male-only model with stepwise addition of parameter estimation, adding complexity while testing convergence at each step. Progress on this Tier 3 model exploration will be presented at the January 2027 modeling workshop.**

The authors recommended the fallback option for harvest specifications due to the lack of a converged Tier 3 model. The fallback option involves calculating the B_{MSY} proxy as the mean of the REMA-smoothed NMFS EBS trawl survey mature male biomass (MMB) estimates over a specified time period; the authors used the time period 1982-2026.

The CPT discussed in detail three key points related to using the fallback option for harvest specifications: 1) which years should be included in the B_{MSY} proxy estimate, 2) the calculation of

the OFL for the fallback option, and 3) the appropriate definition of mature male biomass for the snow crab stock. The discussions are summarized here.

Which years to include in the B_{MSY} proxy estimate: The CPT noted that some BSAI crab stock assessments calculate the B_{MSY} proxy as average MMB over the entire time series (snow crab, SMBKC, NSRKC), while others use a subset of years (PIBKC, PIRKC). CPT members noted that the years chosen should in theory be years in which fishing at F_{MSY} occurred, but that F_{MSY} may be unknown. The Crab FMP section on Tier 4 states, “The proxy B_{MSY} is the average biomass over a specified time period, with the understanding that the Council’s Scientific and Statistical Committee may recommend a different value for a specific stock or stock complex as merited by the best available scientific information.” After discussion, the CPT determined that leaving out years in which a fishery did not occur from the B_{MSY} proxy calculation is likely best practice, although the CPT did not recommend a change to the year range used for the snow crab stock assessment at this time. **The CPT requested input from the SSC on whether they would like to see stock assessments include a comparison of reference points calculated using time series for the B_{MSY} proxy that include all years versus only years during which the directed fishery was prosecuted.**

Calculation of the OFL for the fallback option: The fallback option used for snow crab in 2024/2025, and regularly presented as an option in the Tanner crab and BBRKC stock assessment, uses an OFL calculation different from that used in Tier 4 stock assessments that model population dynamics using GMACS (SMBKC, NSRKC).

Calculating the OFL using the SSC’s requested ‘fallback’ method (used in the previous cycle) of $F_{OFL} * B$ gives an OFL = 21.22 kt. However, BSAI crab Tier 4 stock assessments use the Baranov catch equation to calculate OFL. An approximation of the Baranov OFL calculation is $B * (F_{OFL} / Z) * (1 - \exp(-Z))$, where B is the projected biomass estimate and Z is the proportion of natural mortality that has occurred in the crab year prior to mating (typically assumed to occur on 15 February). This equation provides an OFL of 16.98 kt.

The authors recommended using the Baranov catch equation to calculate the OFL for snow crab this year, noting that this approach would account for natural mortality between the time of the survey and the fishery, resulting in a less biased result than the $F_{OFL} * B$ method. The CPT agreed that the authors’ recommended OFL calculation is more appropriate but recognized that the SSC has requested the use of the $F_{OFL} * B = OFL$ equation for the fallback option aligned with keeping this option simple and straightforward.

The CPT discussion highlighted the problems with terming the fallback option “Tier 4”, given that 1) the fallback option does not use the same OFL calculation method as is used for Tier 4 stocks modeled in GMACS, and 2) the crab FMP specifies that Tier 4 is for stocks for which “there is sufficient information for simulation modeling that captures the essential population dynamics of the stock as well as the performance of the fisheries.” A reasonable interpretation of the crab FMP is that a stock assessed using only a REMA smooth on survey results to estimate biomass is not a Tier 4 stock, as the REMA model captures neither the essential population dynamics of the stock nor the performance of the fisheries, but this clarification was not discussed by CPT at this

meeting. It may be prudent for the CPT to consider a new naming/tier convention for this option in the future

Defining mature male biomass for the snow crab stock: In 2025, the CPT recommended using biomass of males ≥ 95 mm in carapace width (CW) as mature male biomass, based on the best available scientific evidence (see the September 2025 CPT report for references). The CPT determined that, as in 2025, **it is the consensus of CPT members that using CW ≥ 95 mm to define functional maturity for male EBS snow crab is preferred given concerns about stock reproductive potential and the best scientific evidence available at this time.** However, the CPT recognized that the SSC disagreed with the CPT's recommendation to use only males with CW ≥ 95 mm to define mature male biomass in 2025 and requested that the CPT not advance this recommendation again until further research becomes available. In 2026, 96.5% of snow crab males that completed the terminal molt to maturity, after which no growth occurs, were smaller than industry-preferred size (> 101 mm). Using morphometric maturity, the recommended OFL is more than 100% of the 2026 industry-preferred male survey biomass. Comparing OFLs calculated using different definitions of maturity shows that this choice changes the OFL 26-fold.

The CPT recommended the fallback option for 2026/2027 snow crab harvest specifications, including a B_MSY proxy estimated over 1982-2026, mature male biomass defined using morphometric maturity, and the same SSC-recommended fallback OFL calculation as used in 2025 for 2025/2026 harvest specifications. This approach produces an OFL of 21.22 kt. The CPT recommended applying a 50% buffer, giving an ABC of 10.61 kt.

As justification for the 50% buffer recommendation, the CPT highlighted concerns including 1) only 3.5% of terminally molting males molted into the industry-preferred size range in 2026; 2) recruitment appears to be very low; 3) the sex ratio is highly skewed, with approximately 85 mature female crab for every 1 mature male crab; 4) morphometrically mature male biomass is used to calculate the OFL rather than biomass of males ≥ 95 mm in carapace width, which the CPT considers more appropriate for the OFL calculation; and 5) the 'fallback' $F_{OFL} * B$ method for calculating OFL produces a biased result.

In response to questions from members of the public, the CPT revisited discussion of hybrid *Chionoecetes* crab in the EBS, while noting that a topic on *Chionoecetes* hybrids will tentatively be added to the April 2027 CPT agenda. The CPT noted that both the Tanner crab and snow crab assessment authors presented model runs including hybrid crab at the May 2026 CPT meeting, and both the CPT and SSC did not recommend bringing forward those model runs in September 2026, due in part to the absence of crucial life history information about hybrid crab including growth, natural mortality, fertility, and reproductive potential.

The CPT noted that, because *Chionoecetes* hybrids are not a recognized stock in the crab FMP, there is no stock assessment for hybrids and the CPT cannot recommend an OFL or ABC for hybrids. The CPT also noted that the State of Alaska sets the TAC for snow crab and has the latitude to include hybrids in the snow crab TAC setting process, as was done in 2025, as long as harvest does not exceed the ABC. However, inclusion of hybrids has the potential for overexploiting snow crab. Generally, hybrid crab are legally landed as snow crab and therefore

an increased snow crab harvest may result in increased snow crab landings and not direct harvest of hybrid crab. At this time we have limited understanding of hybrids, including their influence on the snow crab stock. **Research on hybrids, addressing topics including life history, distribution, movement, and genetics, remains a very high priority for the CPT. The CPT noted that, in addition to recommended research avenues, it would be useful to have more information about Federal policy and regulatory pathways to allow for future harvest and management of *Chionoecetes* hybrids.**

SMBKC Final SAFE

Caitlin Stern (ADF&G) presented the 2026 final assessment for the Saint Matthew Island blue king crab (SMBKC) stock. This stock is currently on a biennial assessment cycle and 2026 was an "on" year, so this was a full assessment with the last full assessment in 2024. The SMBKC stock was declared overfished in 2018 and has been under a rebuilding plan since 2020. The directed fishery has been closed since 2016/17, so no retained catch occurred in 2025/26. The 2025/26 OFL was 129 t and total catch mortality was 2 t, so overfishing did not occur. The design-based estimate of mature male (≥ 90 mm CL) biomass in the annual NMFS bottom trawl survey increased to 2,915 t in 2026 from 1,861 t in 2025; this was the largest value since 2019, but still below the time series mean of 5,134 t.

Caitlin discussed recent developments in model-based approaches to estimating NMFS survey biomass and size compositions for inputs to the SMBKC stock assessment model. As part of a modernization of the NMFS EBS bottom trawl survey, ten "corner" stations in the SMBKC survey stratum were dropped from further sampling beginning in 2024 to reduce overall survey time and effort. These stations were added to the 20 x 20 nmi grid in 1983 to improve coverage in this area, but subsequent SMBKC stock declines made the extra stations ineffective from a cost/benefit standpoint. However, dropping these stations may introduce bias into the time series of design-based estimates of survey biomass and increase the uncertainty associated with recent estimates. As an alternative to using design-based estimates for survey biomass in the assessment, Caitlin recommended using a spatiotemporal, generalized linear mixed model (GLMM) approach to estimate annual survey biomass. This has the advantage over design-based approaches by producing unbiased estimates from unbalanced sampling designs. Caitlin presented results from fitting haul-level biomass data using the sdmTMB R package for three models using: (1) year as a fixed effect; 2) year and scaled depth as fixed effects; and 3) year and a smooth function of depth as fixed effects. Although several distribution families were explored, only the Tweedie distribution yielded models that converged and passed diagnostic tests. The model using the Tweedie distribution with year and depth as fixed factors resulted in a lower negative log-likelihood and a smaller root-mean-square error than the other models. However, estimates from the year-as-fixed-effect model were chosen to be used in the stock assessment model based on previous discussions at the May CPT meeting and suggestions from the SSC that there wasn't enough contrast in depth across the survey area to justify including depth as an explanatory factor.

Caitlin also presented preliminary results from using similar spatiotemporal GLMMs to estimate annual size compositions from the NMFS survey data in the three size bins included in the assessment model. The CPT discussed what hypotheses for correlation across size classes might be needed to define the covariance structure for the random walk spatiotemporal parameters, but did not reach any definitive conclusions. This approach appears promising and would be consistent with a model-based approach to index standardization. The CPT made the following recommendations for further work:

- use abundance, not biomass, as the basis for the size compositions
- Explore using correlation between size-specific spatial fields, similar to how groundfish assessments deal with age composition data in their spatio-temporal models.

The SMBKC stock is in Tier 4 with the current assessment based on models using the GMACS framework. Caitlin presented results from three GMACS models for the CPT to consider recommending for harvest specifications: 1) model 26.1b, the recommended model from the May CPT (26.1) meeting updated with 2025/26 fishery, 2026 design-based survey estimates, and using GMACS version 2.20.44; 2) model 26.2: model 26.1b fitted to model-based estimates for NMFS survey biomass; and 3) model 26.2a: model 26.2 but fitted to model-based size compositions rather than design-based size compositions. Caitlin noted that 26.2a was a research model and not intended to be considered for harvest specifications at this time. Caitlin demonstrated that the changes from model 26.1 to 26.1b due to updating the GMACS version and adding the new data were minimal and within expectations. On the whole, the fits to data by models 26.1b and 26.2 were similar, as were estimates for model processes other than fully-selected fishing mortality rates, which were somewhat higher (particularly for the pot fishery) for model 26.1b than 26.2. Estimated recruitment and MMB trajectories exhibiting similar temporal patterns in the two models but with different scales. Both models exhibited good jittering behavior and retrospective patterns. **The CPT concluded that using the model-based index for the NMFS survey biomass was the appropriate way to incorporate this index into the assessment, and supported the author's recommendation of model 26.2 for status determination and harvest specification.**

Because SMBKC is a Tier 4 stock, F_{MSY} is estimated to be equal to natural mortality, M (0.23). B_{MSY} is mature male biomass averaged over some time period. After some discussion on the choice of the averaging time period, the CPT supported Caitlin's recommendation to, as in the last full assessment, use the "default" time series, 1978-present, to determine B_{MSY} . This resulted in a B_{MSY} of 4,497 t and a stock status of 0.47, putting the stock on the sloping portion of the Tier 4 harvest control rule and resulting in an F_{OFL} of 0.1 and an OFL of 182 t. A risk table has not been developed yet for this stock, so discussion on an appropriate ABC buffer focused on whether the transition to the model-based survey biomass index and the improvements to the model retrospective pattern since 2024 constituted enough of a change, relative to continued low stock size and little sign of recent recruitment, to warrant reducing the buffer from 25%. **The CPT agreed that, while the changes to the data and assessment model were improvements, concerns regarding the continued low stock size and projected warmer winter temperatures were enough to keep the buffer at 25%. Consequently, the recommended ABC is 136 t.**

Finally, Caitlin presented results from projections using the models under two recruitment scenarios: 1) drawing recruitment randomly from the full model time series (1978-2024, dropping the final year), and 2) drawing recruitment randomly from the more recent time period (2015-2024). Under the first scenario, the stock was projected using model 26.2 to exceed B_{MSY} by 2031 only under 0 directed fishing mortality. Under the second scenario, the stock was not projected to exceed MSST by 2031 even under no direct fishing mortality.

Although the SSC had previously suggested that the SMBKC assessment could be moved to a 3-year cycle, Caitlin recommended continuing to follow the current 2-year cycle in order to complete development of model-based size compositions and an integrated NMFS survey/ADFG pot survey biomass index. The CPT concurred with this recommendation.

Research update - BSFRF

Scott Goodman (Executive Director, Bering Sea Fisheries Research Foundation - BSFRF) provided research updates covering three core initiatives: OPS-1 Surveys, Simulated Pot Loss Research, and Snow Crab Management Strategy Evaluation (MSE). Across projects, the Foundation's overarching research approach addresses how focused snow crab sampling can support improved understanding of stock recovery dynamics, how *Opilio* catch rates and size compositions differ across gear types and in particular areas within the survey grounds, and how to integrate industry stakeholders into disaster relief research.

The primary objectives of the OPS-1 Survey project are to quantify differences in *Opilio* CPUE rates and size composition between trawls and pots, and uses greater sampling density than the NMFS survey, with targeted sampling in key areas, including some outside the NMFS survey grid. Operations currently utilize 3 charter vessels (*Pacific Mariner*, *Confidence*, and *Best Route*) with NOAA and ADF&G collaboration. Scott reviewed the original survey sampling design, and explained design adjustments made in the field due to weather, gear, and other issues. Approximately 5 days were added per vessel due to weather and gear challenges, and revised targets stand at 563 pot lifts and 157 Nephrops trawl stations, reallocating sampling to northern and deep-water EEZ boundaries. Heavy mud in Nephrops trawls damaged multiple nets and hardware, requiring additional backup gear to be sent out. The pot survey sampling standard involves 30-hour soaks using 7x7 commercial pots with escape mechanisms closed. Scott noted that pot sets adhered to standardized survey practice rather than commercial fishing practice. Data remains preliminary and data analysis is largely qualitative for now. Scott noted observations of hybrid crab clusters in certain survey areas, adding that greater focus on hybrids is likely in future iterations (OPS-2 or OPS-3).

The simulated pot loss research project plans to deploy 50 fully baited red king crab pots around November 1, 2026, leaving them in the water for 12 months to study ghost fishing effects and pot degradation, testing escape cord (rot cord) degradation via custom Monarch cameras and pop-up satellite tags (mini-PATs/Mr. PATs) attached to escape panels. The project will deploy ordinary, used commercial pots, to be placed in closed/low-trawl areas near northeastern Bristol Bay fishing grounds. Longlining and Smart Buoys (Blue Ocean Gear) are under consideration to prevent gear loss from ice. Rot cord is expected to fail in 30–60 days. Industry and/or observer

spot checks and mid-project camera checkup alternatives are under consideration. The goal of the Snow Crab MSE project is to update the Alaska state harvest strategy (in place since 2002) to reflect current science, size/maturity dynamics, ecosystem shifts, and heat wave impacts. The project is modeled after the earlier Tanner crab MSE, and involves collaboration with CPT members. An ad-hoc stakeholder committee (~20–30 processors, harvesters, and industry reps) will be established to provide feedback targeted toward a future Alaska Board of Fisheries meeting. Scott briefly discussed BSFRF's funding and next steps. Jamie Goen noted an upcoming round of disaster research funding in ~1-2 years covering snow crab and hybrid research. Council research priorities will be reviewed next year, with hybrid crab issues slated for higher prioritization.

Overfishing Status Updates (WAIRKC, AIGKC, PIBKC, PIRKC)

Overfishing status updates for the 2025/26 fishing season were presented for Pribilof Islands blue king crab (PIBKC), Pribilof Islands red king crab (PIRKC), Aleutian Islands golden king crab (AIGKC), and Western Aleutian Islands red king crab (WAIRKC). The PIBKC directed fishery has been closed since 1999/00. Bycatch mortality in non-directed fisheries was 0.029 t, which was less than the OFL for 2025/26 (1.16 t), thus **overfishing did not occur for PIBKC**. For PIRKC, no directed fishery occurred in 2025/26. Bycatch mortality in non-directed fisheries was 0.27 t which was lower than the OFL (490 t), thus **overfishing did not occur for PIRKC**. For AIGKC, completed total fishery removals for the 2025/26 season were 2,040 t: 1,943 t retained catch, 61.38 t discard mortality in the directed fishery, and 36.22 t bycatch mortality in groundfish fisheries. Since total fishery-related mortality was less than the OFL for 2025/26, **overfishing did not occur for AIGKC**.

The WAIRKC directed fishery was closed in 2025/26 and there was no bycatch in the non-directed fisheries. Total fishery mortality was 0.00, thus **overfishing did not occur for WAIRKC**. The CPT recommended rolling over the WAIRKC specifications for the 2026/27 season, with a full SAFE report to be completed in April 2027.

SAFE Document & Review Guidelines

Anita Kroska (NPFMC) and Katie Palof (ADF&G) led a discussion on the CPT SAFE guidelines with the intent that: (1) SAFE chapters are structured similarly and consistently so that components are reported and can be easily located; and (2) to aid review of the documents. Between the May and September CPT meetings, Anita and Katie received some feedback but there were some unresolved questions. Draft documents posted to the CPT eAgenda included: (1) a draft SAFE report review checklist with some elements highlighted for review; (2) a 2-page draft General Reminders document for documents and presentations; (3) a template for a new table to be located in the Executive Summary; and (4) brief draft guidelines for rounding reported management quantities.

The CPT discussed model numbering, particularly with respect to GMACS. For numbering, “year” should be crab year for the year that the current model structure was adopted. For versioning, if only data are updated (i.e., additional year[s] of fishery or survey data without model structural changes), then the model number doesn’t change. However, a new model number should be used if the underlying model structure changes. If this is a “small” model change, i.e. using a different prior, this may result in only a letter change and not a model number change. The CPT leaves the specifics of these changes up to the stock authors.

The CPT discussed criteria for the use of projections, noting that not all assessments are capable of performing projections. For assessments using projections, the projection should extend a minimum of five years with recruitment based on either MCMC (as in the current SMBKC assessment) or as a random draw from recruitments over a selected time frame, with the default years being those used for OFL and B_{MSY} estimation. Options of F values used in projections are at the author’s discretion but should encompass a range of alternatives from $F = 0$ to F_{MSY} and include the F for estimated catches over the past five years.

The CPT also discussed the utility of standardizing appendices, but recognized that not all assessments include the same information. Standardized appendices, with the potential for placeholders, would include: risk table and buffer history appendix, ESP, and the fallback option for Tier 3 stocks. Other appendices could be specific to an assessment such as data sources, tables and figures associated with model transitions (bridging), and data manipulation outside of the model. Where appropriate, information moved to the appendices could streamline the document. Guidance for appendices usage is ongoing and will be reevaluated as needed.

The CPT pointed out that there is some repetition in the structure of the assessment documents, and that the review checklist and SAFE Guidelines will need to be iteratively refined over time. For example, a potential change could include retitling the section “Model Selection and Evaluation” to “Methods for Model Selection and Evaluation”. If any stock authors, reviewers, and/or other consumers of SAFE documents find sections that are not clear or repetitive, they should relay concerns to Anita or Katie.

The CPT also discussed guidelines for what to include under the rebuilding section of SAFE documents. At minimum, authors should include: when the rebuilding plan was adopted, what the rebuilding target is, and when rebuilding is projected to be achieved (if possible to project), with a link to the rebuilding plan.

For risk tables, it was clarified that the top line should contain long-standing (historic) concerns for assessment and population dynamics considerations categories only, and should not include scores.

The CPT discussed guidance for rounding reported management quantities as stocks can differ greatly in size, and have varied in consistency in the number of decimals reported. Separate

thresholds were developed for metric and imperial units. Authors should refer to the posted document for details by unit and quantity size.

Finally, the CPT agreed that a simple composite table that summarizes buffers across stocks should be included in the SAFE Introduction. The table will cover the last 5 years, have separate rows for stocks that change tier (e.g., snow crab), and will not include any buffer rationale.

New Business

In new business, the CPT discussed the ongoing vacancies in the Crab Plan Team, including the co-chair position and how that continues to translate to reduced capacity. Katie announced a need for a temporary vice chair to volunteer for the April CPT meeting; Caitlin volunteered to assist in planning the January Modeling Workshop. The CPT also discussed tentative upcoming topics for the November 5 CPT meeting, the January Modelling Workshop, and the April CPT meeting. Finally, CPT meeting dates were finalized for 2027 (see list below).

Tentative November 2026 meeting topics

- NSRKC Final SAFE
- AIGKC proposed models
- SAFE guidelines - interim and proposed model SAFEs

Tentative January Modelling Workshop topics

- GMACS updates
 - Adjustments to other assessments based on new updates? Best practices for GMACS use
 - Incorporate MSE capability?
 - Resampling protocols, crab growth and molt timing/probability in GMACS
 - Run time optimization for users, base TPL, modular functionality
 - Check on jittering issues and clean up
 - Progress on next gen RTMB GMACS prototype
 - allow for density-dependent M, multi-area models, multi-stock models
 -
- GMACS updates - Tanner specific
 - retrospective analysis failure
 - projections scaling issues
 - implement estimated nonparametric curve for male terminal molt
 - Potential additional alignment with bespoke Tanner model if needed
 - implement alternative M parameterization to match TCSAM02
 - finish aligning priors and penalties with TCSAM02
- Snow crab
 - Convergence with male only model, simplification process
 - Likelihood profiles if model stable
 - Match survey data processing to Tanner?
 - Growth data audit, actual composition sample sizes, and discard mortality handed inside GMACS
 - Yield per recruit

- Tanner crab
 - TCSAM02: explore issues with retrospective analysis
 - Complete BSFRF/NMFS catchability analysis for Tanner crab and BBRKC
 - finish draft Tech Memos
- Model-based size compositions
- Differences between snow and Tanner use of maturity ogives
- Hybrid research updates
- Tier 4 model practices, BMSY basis years static vs add terminal year (snow vs SMBKC vs PIRKC etc) vs a range of years based on logic (e.g., years with fishery)
 - Exploration of exploitation rates related to basis years
 - Present scenarios of different basis years in SAFE doc for tier 4 (e.g., only years w/ fishery)

Tentative April 2027 meeting topics

- Council and GMACS updates
- AIGKC final SAFE
- WAIRKC final SAFE
- Proposed models
 - NSRKC
 - Snow crab
 - Tanner crab
 - BBRKC
- January Modelling Workshop Report
- ESP Updates
- Risk table debrief
- Crab Economic SAFE and socioeconomic reporting update
- Research Updates (T)
- Skipper survey updates (T)
- Hybrid crab research (T)
- Research priorities (T or Sept)

Upcoming CPT meeting dates and locations:

- November 5, 2026: Virtual
- January 11 - 14, 2027: January Modelling Workshop, Anchorage (T)
- April 19 - 23, 2027: Virtual
- Sept. 13 - 17, 2027: In-person, Seattle

Others in attendance: **indicates presenter, **indicates in person*

Angela Abolhassani**
Grant Adams* **
Rachel Alinsunurin
Kerim Aydin
Lewis Barnett**
Asia Beder
Forrest Bowers
Carlton Burnside**
Scott Campbell Jr
KC Dochtermann
Martin Dorn
Lance Farr**

Ron Felthoven
Bridget Ferriss
Ivone Maria Ortiz Fortunat
Heather Fulton-Bennett
Jen Gardner
Jason Gasper
Jamie Goen**
Scott Goodman**
Melissa Haltuch**
Dana Hanselman
Shannon Hennessey
Charlie Hensel

Lenny Herzog
Jim Ianelli**
Wes Jones**
Frank Kelty
Tim Kennedy
Knut Knutsen
Meghan Korte
Sarah La Belle**
Alix Laferriere**
Rick Laitinen
Aaron Lambert
Cory Lescher**
Mike Litzow
Oystein Lone
Chad Low
Craig Lowenberg
Dan Martin
Heather McCarty
Ray Melovidov
Danielle Mercurief
Cole Monnahan**
Harrison Moore**
Andrew Nault
Mateo Paz-Soldan
Landry Price**
Steven Ricci**
Sean Rohan**
Lorena Rosenberger
Dana Rudy
Emily Ryznar* **
Chad See
Mike Shelford
Kalei Shotwell
Chris Siddon
Ebett Siddon*
Nikolai Sivertstol
Jeff Steele
George Steers
Mark Stichert* **
Erin Strand
Gary Stauffer
Henry Tashjian**
Anne Vanderhoeven
Vicki Vanek
Patrick Weber**
Sarah Webster
Jared Weems
Ernie Weiss
Doug Wells**
Andrew Whetten
Bo Whiteside**
Ali Whitman
Paul Wilkins
Lorna Wilson
Chris Woodley
Leah Zacher**