C2 BSAI CRAB STOCKS

KATIE PALOF & MIKE LITZOW (CPT CO-CHAIRS)

JUNE 2026 NPFMC MEETING

CPT MEETING MINUTES – MAY 11TH – 15TH VIRTUAL

BSAI CRAB STOCKS MANAGEMENT TIMING

Aleutian Islands golden king crab
Pribilof Islands golden king crab *
Western Aleutian Islands(Adak) red king crab *

→ Assessed in May/June

→ Triennial cycle, 2026

→ Triennial cycle, postponed to 2027

EBS snow crab
Bristol Bay red king crab
EBS Tanner crab
Pribilof Islands blue king crab *
Pribilof Islands red king crab *
St. Matthew blue king crab *

→ Quadrennial cycle, next assessment in 2029

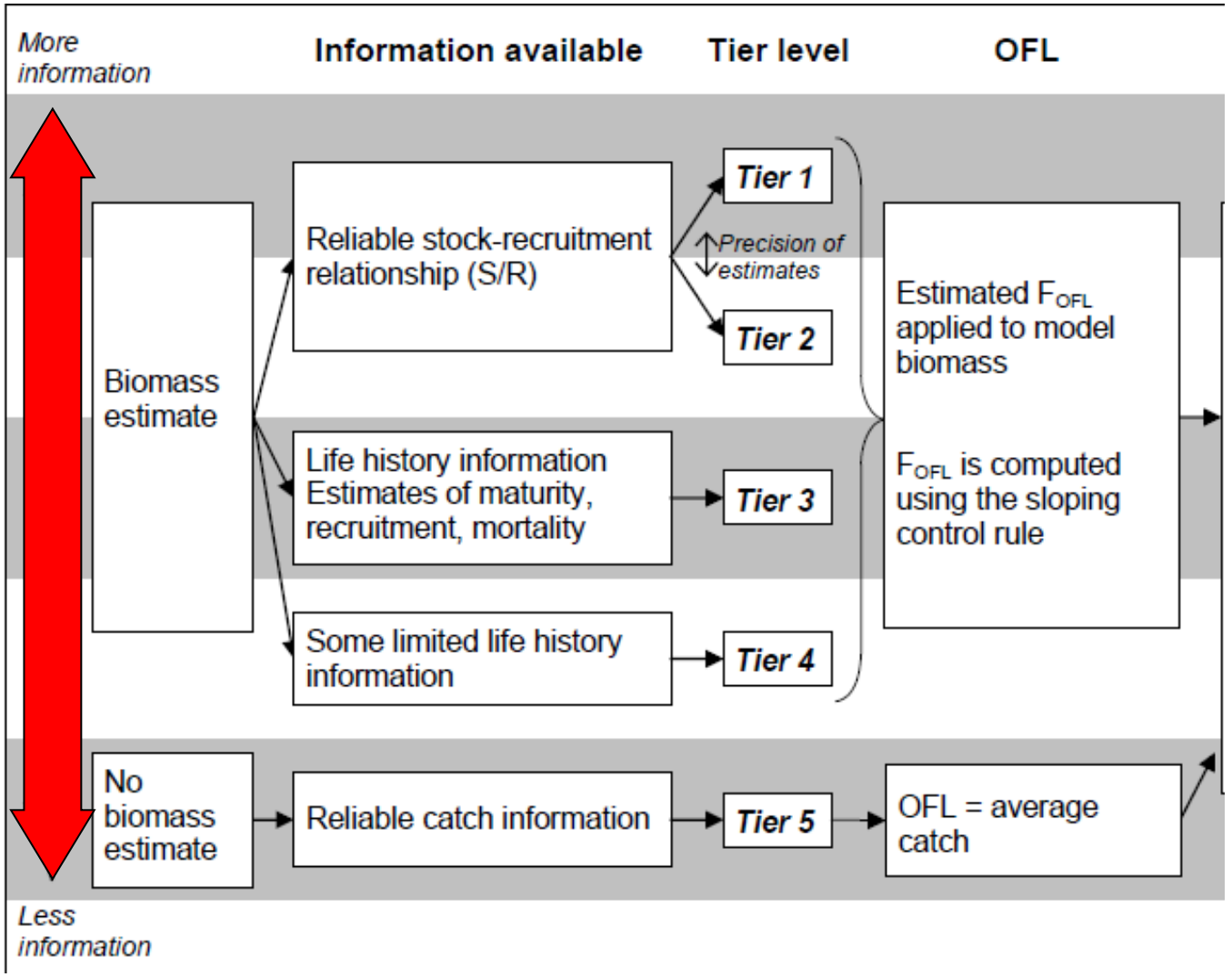
→ Assessed in September/ October

→ Triennial cycle, next assessment in 2028

→ Biennial cycle, next assessment in 2026

Norton Sound red king crab

→ Nov (virtual) / Dec council



ABC buffer:

Determined based on stock information available and uncertainties not incorporated in the assessment model.

MAY 2026 AGENDA

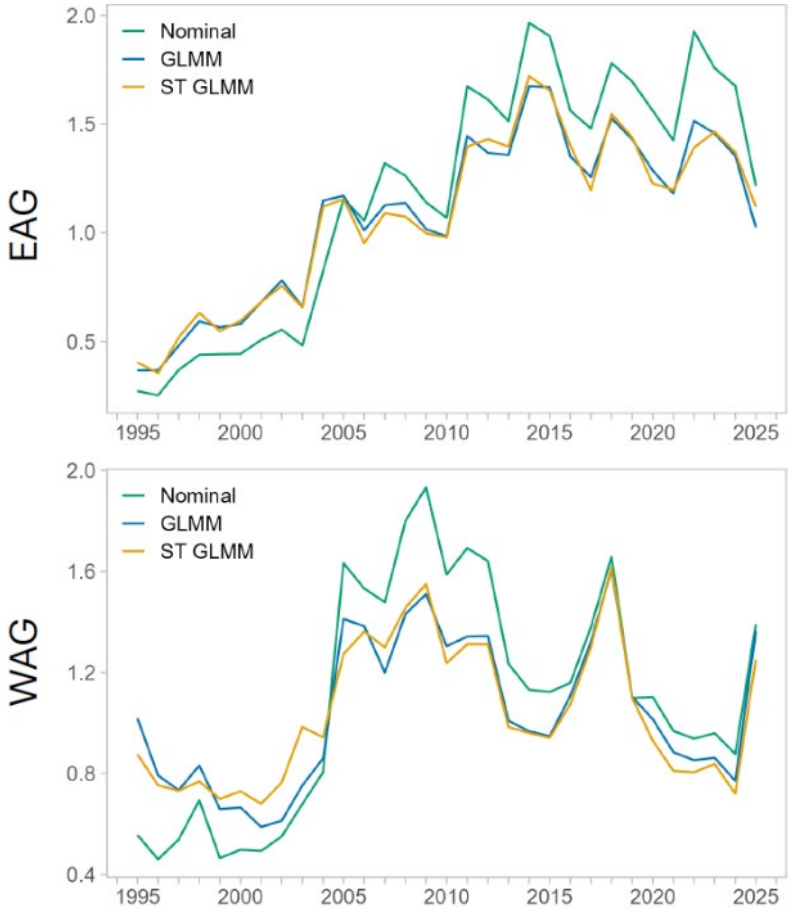
- ✓ **AIGKC final assessment, OFL and ABC**
- ✓ **PIGKC final assessment, OFL and ABC**
- ✓ Hybrid discussion
- ✓ Proposed model runs: Tanner crab, Snow crab, BBRKC, NSRKC, SMBKC
- ✓ Balance of CPT report:
  - ✓ Risk table progress
  - ✓ Jan modeling workshop report, GMACS updates
  - ✓ SAFE guideline updates
  - ✓ General ESP updates
  - ✓ Maturity workflow – *Chionoecetes* crab
  - ✓ Research updates: skipper survey, BSFRF, and others

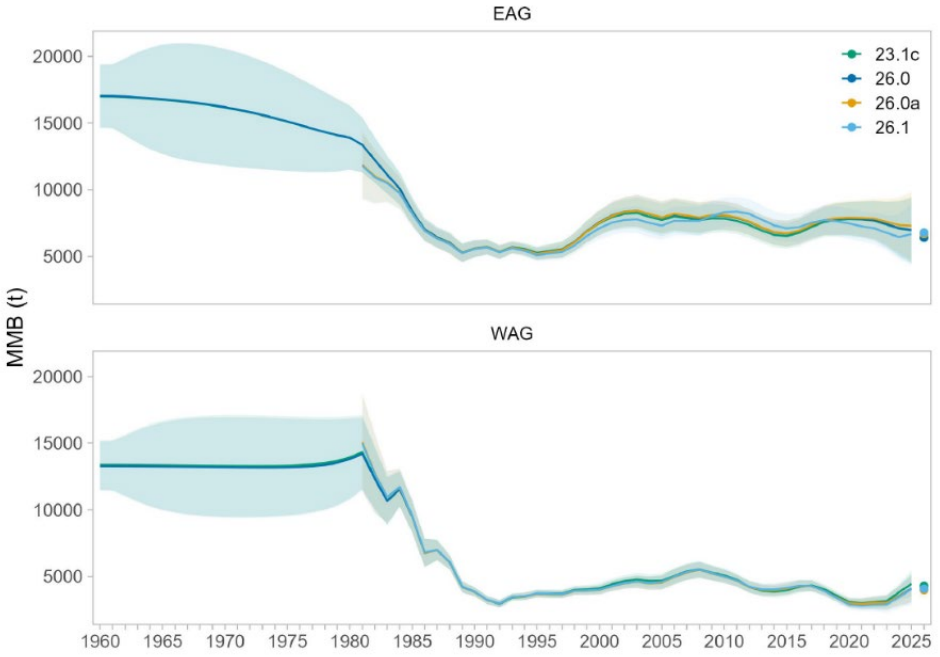
ALEUTIAN ISLAND GOLDEN KING CRAB (AIGKC)

FINAL SAFE, OFL / ABC 2026

AIGKC EXPLORATIONS

- Data updates from 2025 final assessment
  - 2025/26 Retained / Total Catch ; retained and total catch size composition
  - 2024/25, 2025/26 Groundfish Bycatch
- CPUE standardization – legacy vs. spatiotemporal
- Stock status:
  - EAG – CPUE down, biomass stable
  - WAG – CPUE up, biomass increase





FINAL SPECIFICATIONS

Table 17: Comparison of biological reference points for models 23.1c, 26.0, 26.0a, and 26.1. Stock status, F_{OFL}, and OFL are computed using the combined approach detailed in Section F above.

Subdistrict	Model	MMB (t)	$B_{35\%}$ (t)	Status	$\bar{R}_{1987-2022}$	$F_{35\%}$	F_{OFL}	OFL (t)	Total OFL (t)
EAG	23.1c	6,406	6,630	0.96	2,648	0.522	0.501	2,146	3,534
WAG		4,279	4,488		1,799	0.516	0.496	1,388	
EAG	26.0	6,412	6,659	0.94	2,662	0.518	0.484	2,104	3,355
WAG		4,035	4,477		1,793	0.523	0.489	1,251	
EAG	26.0a	6,680	6,687	0.96	2,669	0.516	0.492	2,232	3,493
WAG		3,990	4,470		1,790	0.523	0.500	1,261	
EAG	26.1	6,774	6,590	0.98	2,631	0.481	0.472	2,044	3,343
WAG		4,075	4,462		1,787	0.512	0.504	1,299	

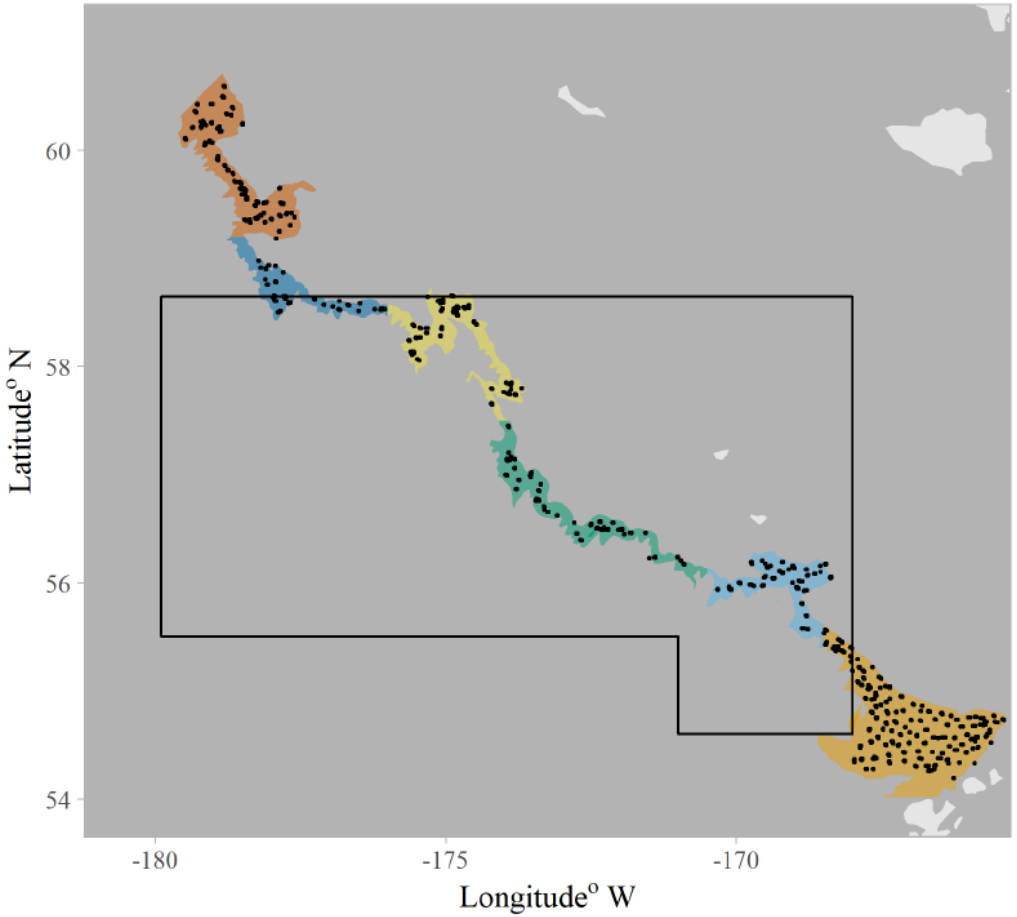
- 2017 OFL method: recompute F_{OFL} control rule using area specific $F_{35\%}$, but combined stock status
- Use combined-status F_{OFL} to computer OFL by area
- Sum OFLs.
- Recommendation: OFL = 3,493 t, ABC = 2,620 t

CPT RECOMMENDATIONS

- Model 26.0a for both areas
  - Makes use of spatiotemporal model approach to CPUE Std, starts in 1981, which is closer to when index and size-composition data first become available
- 25% ABC buffer consistent with previous assessments
  - Draft risk table draft provided (Appendix B); but not utilized for buffer setting at this meeting
  - Level of uncertainty similar
    - No fishery independent data
    - OFL for the entire stock but the assessments are by subdistrict
    - Retrospective patterns still prevalent in EAG
- Future work:
  - Development of a combined area model
  - Re-design of cooperative survey to develop a recruitment index
  - Address past CPT/SSC comments on maturity data

PIGKC FINAL SAFE

- Triennial assessment, last assessment in 2023, no new model developments or data
- Directed fishery is opened annually by Commissioner's Permit
  - GHL of 59t (130,000 lb)
  - Low participation therefore catch data are confidential, catch does not reach the GHL
- 2023 assessment SSC recommendation was GF Tier 5 based on EBS Slope survey
  - OFL = M * MMB; where M = 0.22 yr^{-1} and size at maturity = 107 mm CL (both borrowed from AIGKC)
  - Slope data: 2002, 2004, 2008, 2010, 2012, 2016
  - Size/sex not recorded in 2002, 2004



Data courtesy of J. Hoff (ASFC)

PIGKC FINAL SAFE

Metric t

Year	Tier	Biomass (MMB)	Reference Years	GHL	Retained Catch	Total Catch	OFL	ABC
2021	5	N/A	1993-1998	59	15.5	21.6	93.0	70.0
2022	5	N/A	1993-1998	59	CF	CF	93.0	70.0
2023	5	N/A	1993-1998	59	CF	CF	93.0	70.0
2024	5 GF	517	2002-2016	59	CF	CF	113.7	85.3
2025	5 GF	517	2002-2016	59	CF	CF	113.7	85.3
2026	5 GF	517	2002-2016	59	CF	CF	113.7	85.3
2027	5 GF	512	2002-2016				112.6	84.5
2028	5 GF	512	2002-2016				112.6	84.5
2029	5 GF	512	2002-2016				112.6	84.5

CPT 30% buffer
ABC = 78.8 t

- OFL calculation from 2023 slightly different due to small error in mapping data to the PI management area
- CPT recommended a 30% buffer (up from 25% previously accepted)
  - It has now been 10 years since new survey data were collected increasing uncertainty
  - One-third of MMB data used are interpolated values
  - Comparability/consistency with other GKC stocks

SNOW (*C. opilio*) x TANNER (*C. bairdi*) HYBRIDS

SSC requests (October 2025)

- *At minimum, there needs to be consistency within the assessment process. The SSC highlights the disconnect between catch, which combines hybrids and snow crab, and survey biomass in the snow crab assessment model. The SSC also provided comments in the Tanner and snow crab assessments, soliciting input from assessment authors on the inclusion of hybrids in their respective assessments.*
- *The SSC recommends consideration of different inclusions/exclusions of hybrids into the snow/Tanner crab assessments (i.e., in survey and catch data) to evaluate sensitivity to these options and ensure an internally consistent approach.*
- *Addition of a section in the ESP on hybrids with a focus on their interaction with Tanner crab. This will hopefully provide a consistent place to track hybrids over time.*

SNOW x TANNER HYBRIDS

Background

- ADF&G observers record three codes: hybrid non-specific, hybrid–bairdi, and hybrid–opilio
  - Hybrid–bairdi constitute ~1-2% of hybrids
  - Possible to separate hybrids from retained catch data
- State regulations result in ~98% of landed hybrids being delivered as opilio
- NMFS survey IDs are qualitative, based on seven morphological characteristics
  - Developed from study using 1,114 genotyped carapaces – large males only
  - ID quality on survey degrades below ~ 50mm carapace width
  - IDs subject to unknown error, but survey data are coherent in time and space

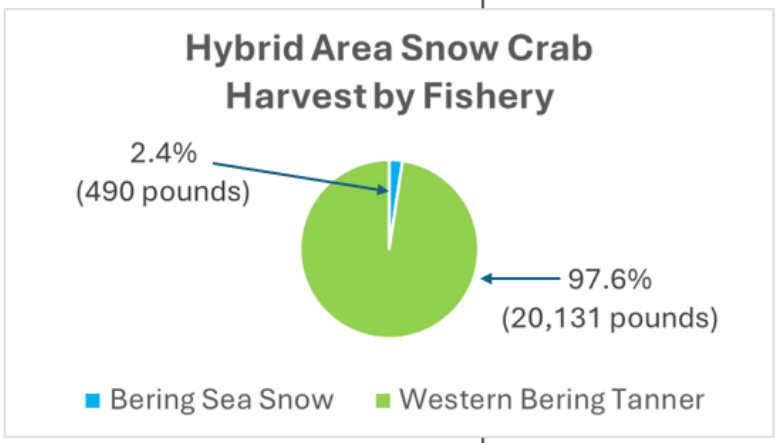
SNOW x TANNER HYBRIDS

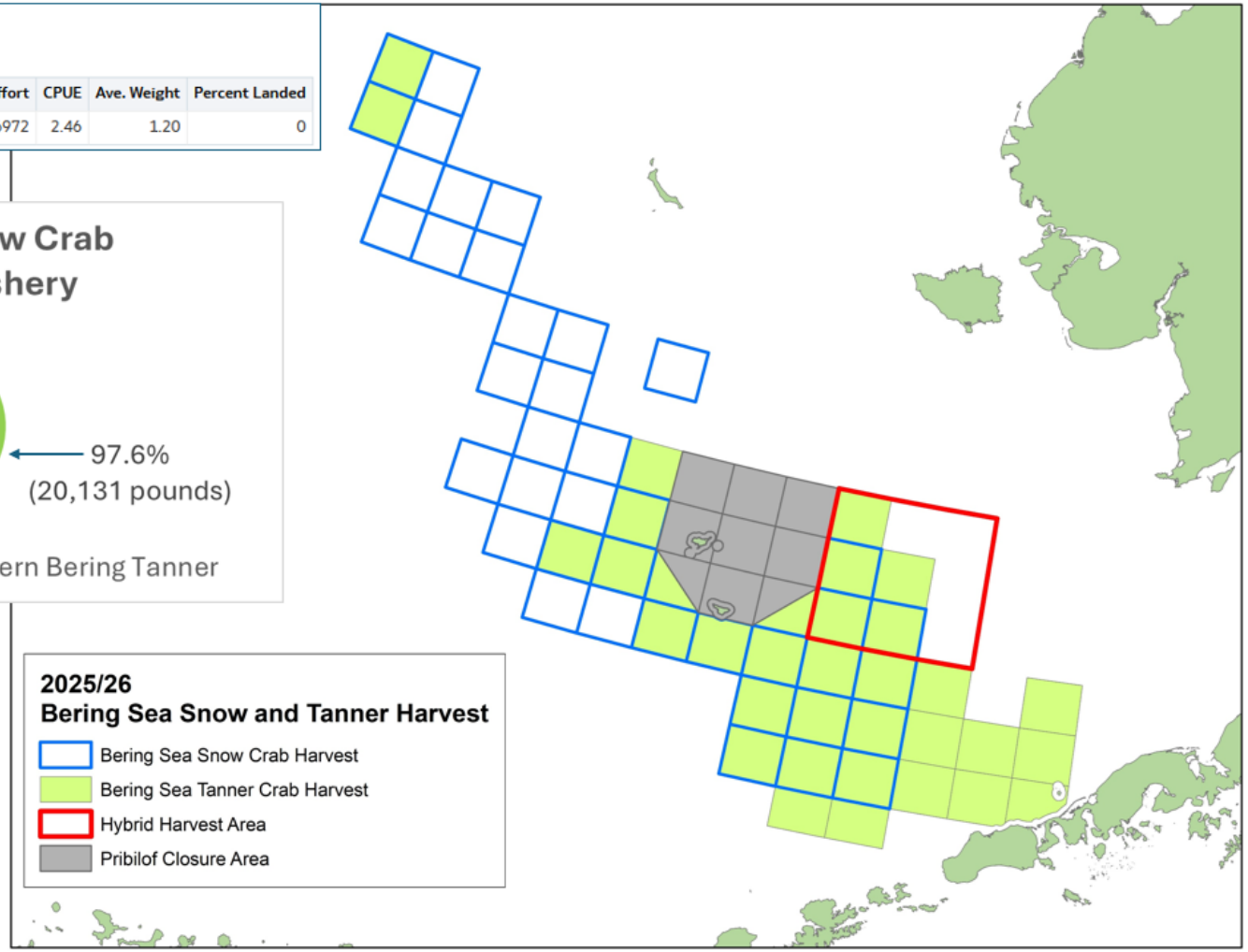
Background: 2025-26 TAC Setting

- 1 million pounds added to snow crab TAC (9.3 M lb. total) to allow vessels to target hybrids
- Expectation that 1M lb. / 11% of TAC would come from area of highest hybrid abundance (red box)
- As of 5/12/26, area not targeted by snow crab fishery, 3.17% hybrids in snow crab retained catch

2025/26 BSSC Hybrid Box

Vessels	Landings	Landed Weight	Number of Crab	Effort	CPUE	Ave. Weight	Percent Landed
14	21	20,621	17,116	6972	2.46	1.20	0





*Preliminary as of 5/12/26

SNOW CRAB REFERENCE POINTS WITH AND WITHOUT HYBRIDS

Model*	Hybrids	BMSY	Status	Mature M (2024)	Immature M (2024)
Model 25.1c	None	179.46	0.89	0.285	0.292
Model 25.3a	Fishery	169.34	0.91	0.293	0.277
Model 25.3b	Survey	176.33	0.93	0.285	0.270
Model 25.3c	Fishery + Survey	168.16	0.95	0.293	0.271

*Model numbers will be corrected to 26.xx in September.

- Estimated status 7% higher than base when hybrid survey & fishery data included
- Similar effects (differences < 5%) for Tanner crab assessment

HYBRIDS – CPT RECOMMENDATIONS

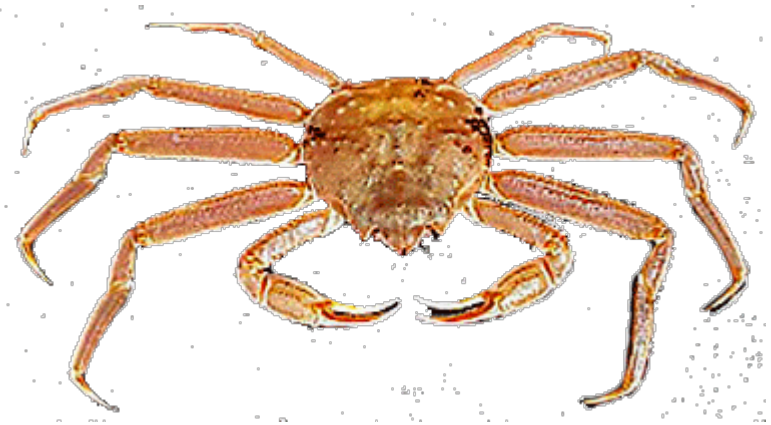
- Do not include hybrids in assessment models
  - Sensitivity runs show limited effects of including hybrid data
  - Necessary life history data lacking for hybrids (growth, maturity, mating dynamics, etc.)
  - Higher priorities for model development, especially for snow crab
- Continue tracking hybrid abundance in annual survey Tech Memo
  - Necessary information on trends in abundance, size comps, distribution already presented in this venue
  - Do not add hybrids to Tanner crab ESP – concern at overloading this document with extraneous information
- Address hybrid abundance with current FMP flexibility
  - Possibility for e.g. reducing ABC buffer to account for elevated hybrid abundance
  - State of Alaska retains TAC-setting flexibility
  - Addressing hybrids with FMP amendment as a possible future step if current flexibility proves to be insufficient

PROPOSED MODEL RUNS FALL 2026

TANNER CRAB PROPOSED MODEL RUNS

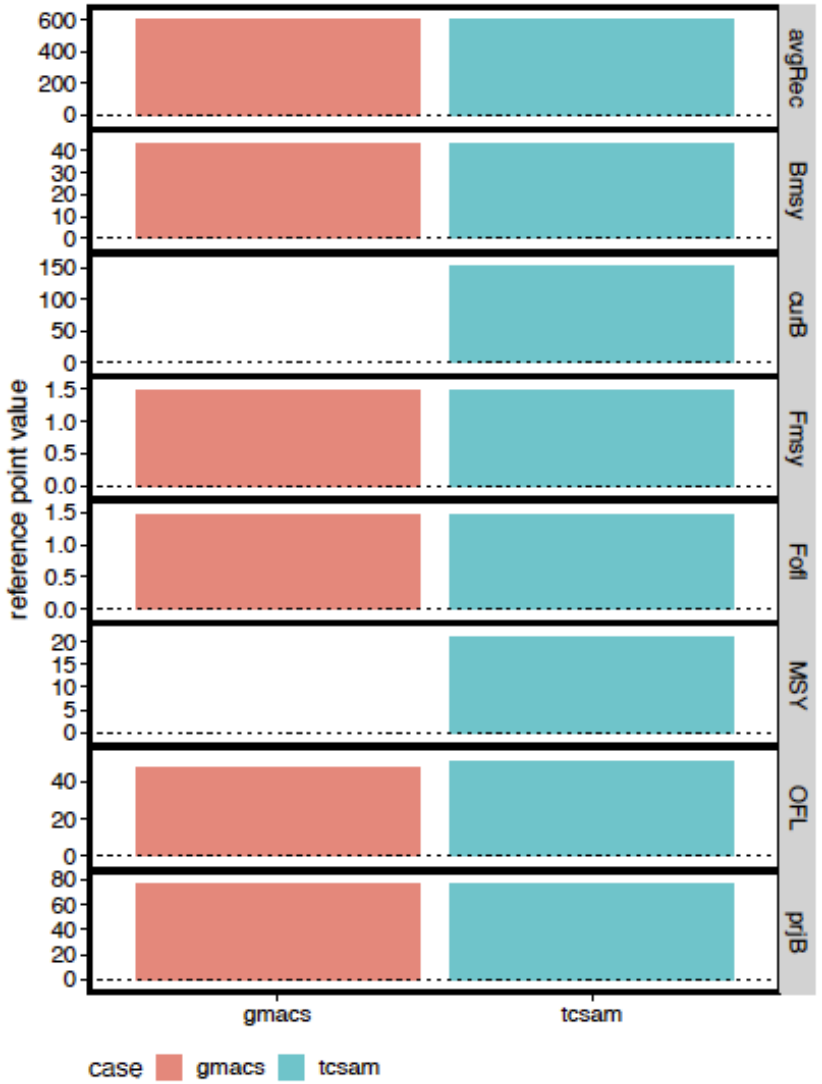
Outline

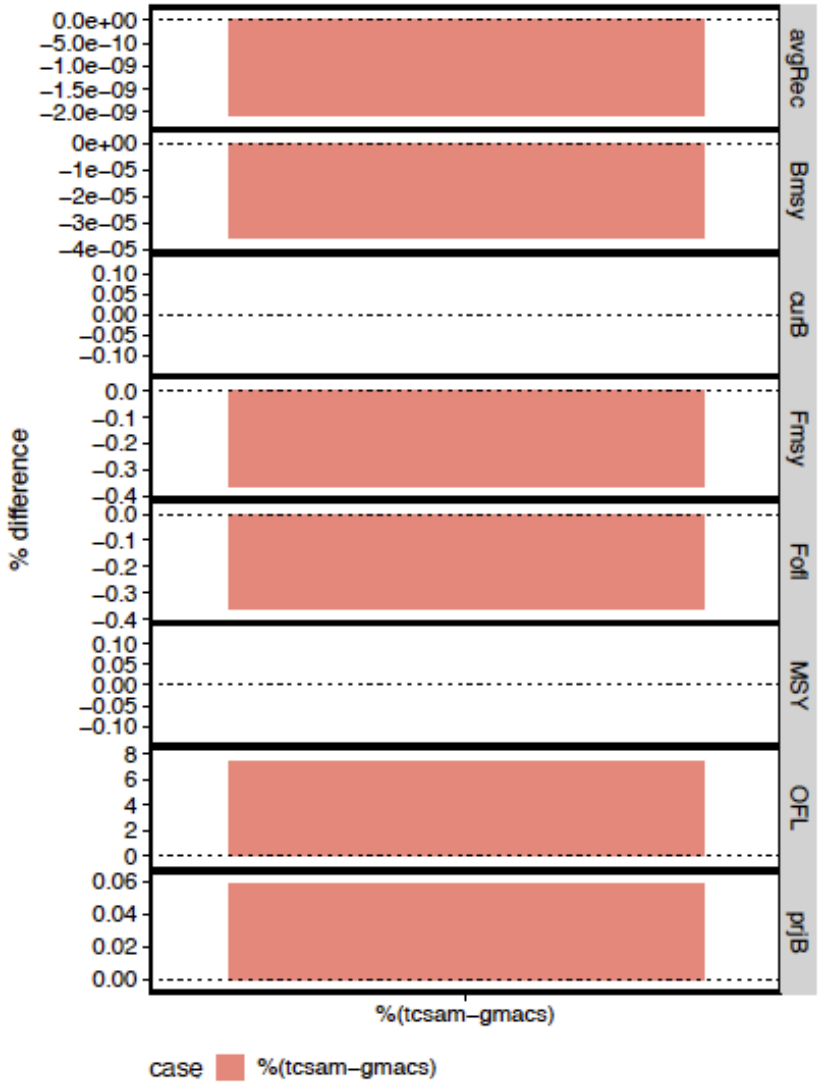
- TCSAM02 25_02 and GMACS G25_05 presented
- Sensitivity run for new survey data maturity workflow presented (author and CPT recommend adoption)
- CIE review in June 2026



TANNER CRAB: GMACS BRIDGING ANALYSIS

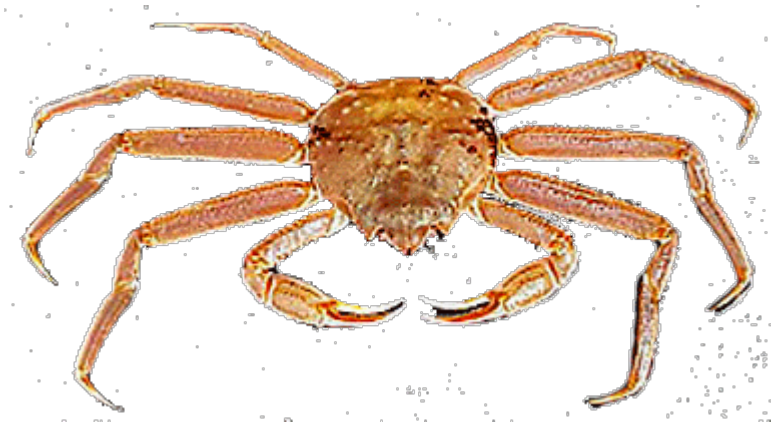
- Predicted values, derived quantities, and reference points all highly similar
- F_{OFL} and F_{MSY} < 0.5% difference
- OFLs differ by ~ 7.5%
  - Author proposes examining priors and penalties to align estimation frameworks
  - CPT finds OFL difference is reasonable; cautions against pursuing diminishing returns





TANNER CRAB: CPT RECOMMENDATIONS

- Bring forward TCSAM02 25_02 and GMACS G25_05 in September
- CPT anticipates using GMACS for setting specifications in September
- SSC recommends addressing OFL difference before GMACS model is adopted



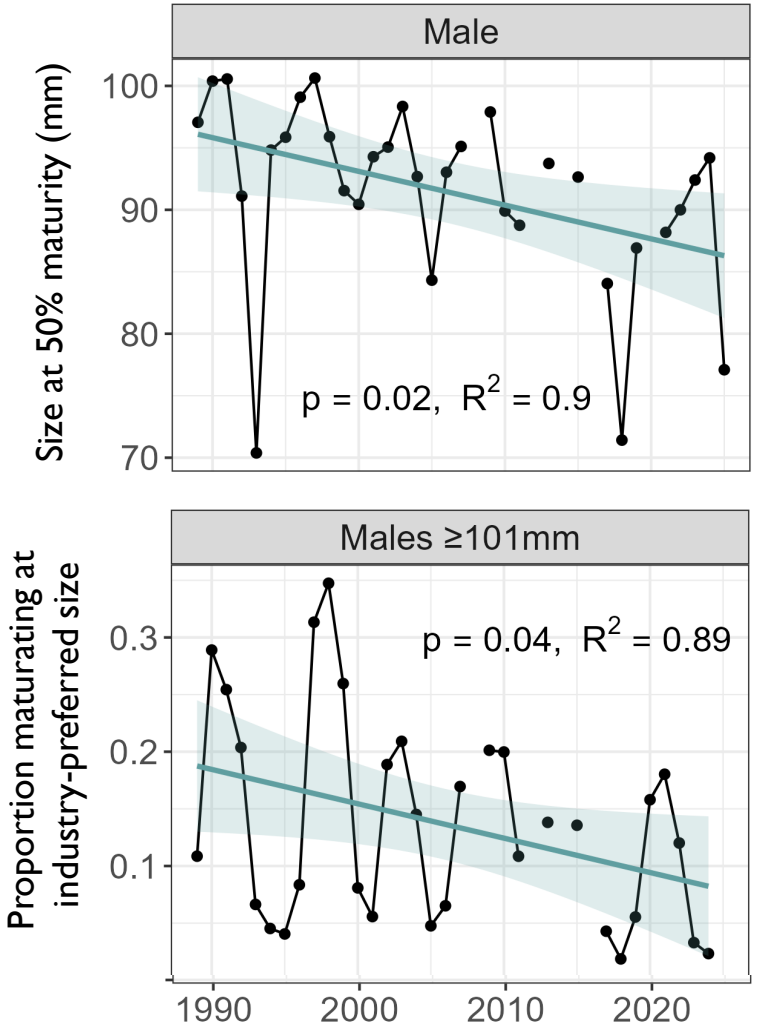
SNOW CRAB PROPOSED MODEL RUNS

Outline

- Size at maturity research update
- CPT recommendations

SNOW CRAB SIZE AT MATURITY RESEARCH UPDATE (E. RYZNAR, AFSC)

- Size at 50% maturity and proportion reaching industry-preferred size both show declining trend
- Size at 50% maturity explained by:
  - Abundance entering terminal molt window (negative effect)
  - Abundance of large male competitors (positive effect)
- Proportion reaching commercial size explained by:
  - Abundance entering terminal molt window (negative effect)
  - Abundance of large males x exploitation rate (interactive effect)
- Consistent with Canadian research
- Suggests proportion reaching commercial size may respond to management action
- In prep for journal submission

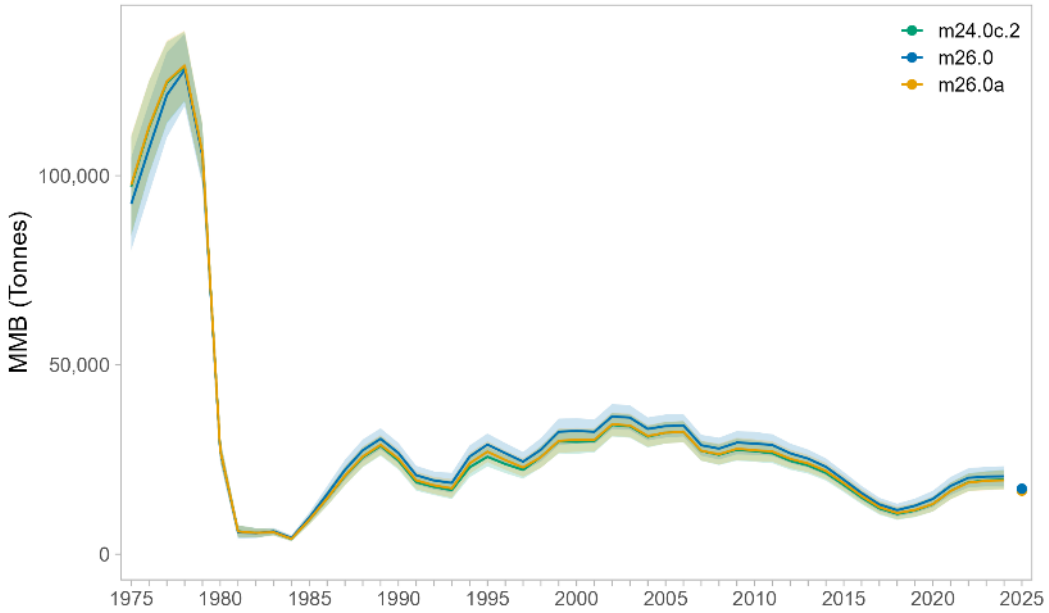


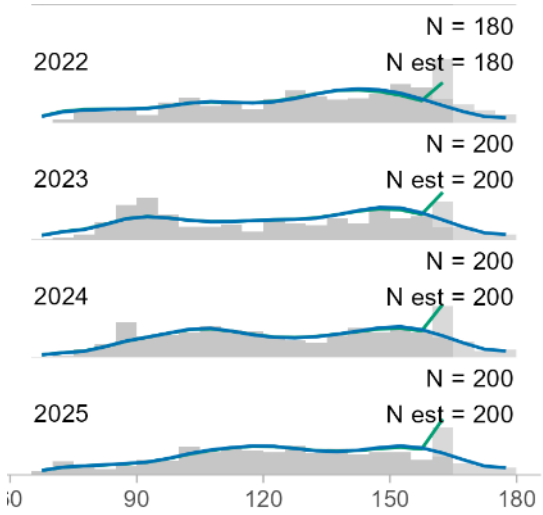
SNOW CRAB: CPT RECOMMENDATIONS

- New assessment author (Grant Adams, AFSC)
- Brought forward 14 models dealing with data updates and convergence issues
- Convergence difficulties remain
- Given ongoing convergence issues, CPT expects Tier 4 model will again be used in September
- Bring forward 25.2c as base Tier 3 model (corrected size comp and plus size group data, inclusion of new survey maturity workflow)
- Series of recommendations for addressing model convergence issues.

BBRKC PROPOSED MODEL WORK

- Stable model in GMACS since 2018
- Directed fishery was open last three seasons after being closed for 2 seasons (2021/22, 2022/23) due to low mature female abundance
- Model explorations around a few themes:
  - Housekeeping updates: GMACS version, bycatch size comp historical data updates
  - Increasing number of size bins for males and females in size composition data. These fit better and reduces need for plus group "build up" (recent years for NMFS male size comps to the right)
- CPT recommendations:
  - Base model, model 26.0 (increased size bins)
  - Future work: increased size bins, growth data/assumption review, Northern area red crab monitoring

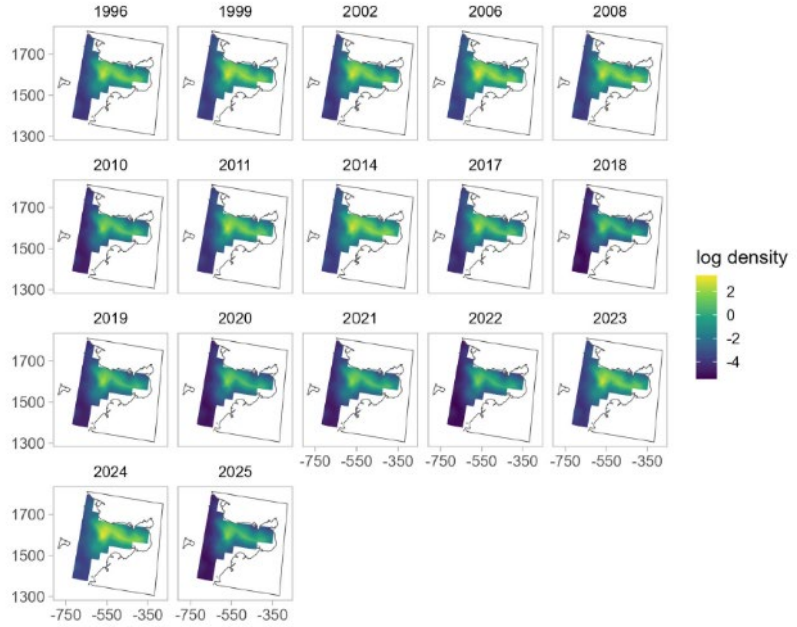




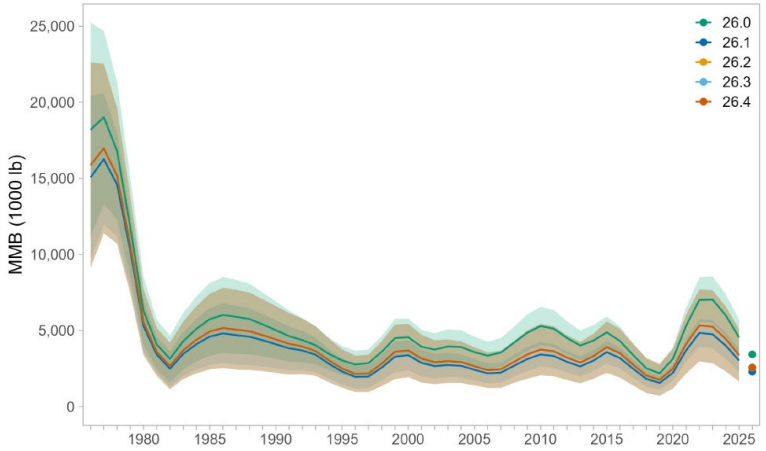
NSRKC PROPOSED MODEL WORK

- Proposed models include:
  - GMACS model updates
  - Model-based indices
    - Includes both ADF&G and NBS (NMFS) trawl survey data into one index
    - Aligns spatial footprint with the entire stock and not just he center of distribution
  - Explorations of catchability and selectivity estimation
- CPT recommended bringing forward models:
  - 26.0 (updated GMACS base model)
  - 26.1 (MBI with catchability fixed at 1, historic NS survey selectivity estimated, ADF&G and NBS survey selectivities mirrored)
  - 26.2 (26.1 + catchability for MBI estimated)
  - Both MBI models should bring forward MBI estimates with and without depth as a covariate with diagnostics
- Future work:
  - Model-based estimation for size compositions
  - Update fishery CPUE Std
  - Add subsistence catch to the assessment

Spatial predictions

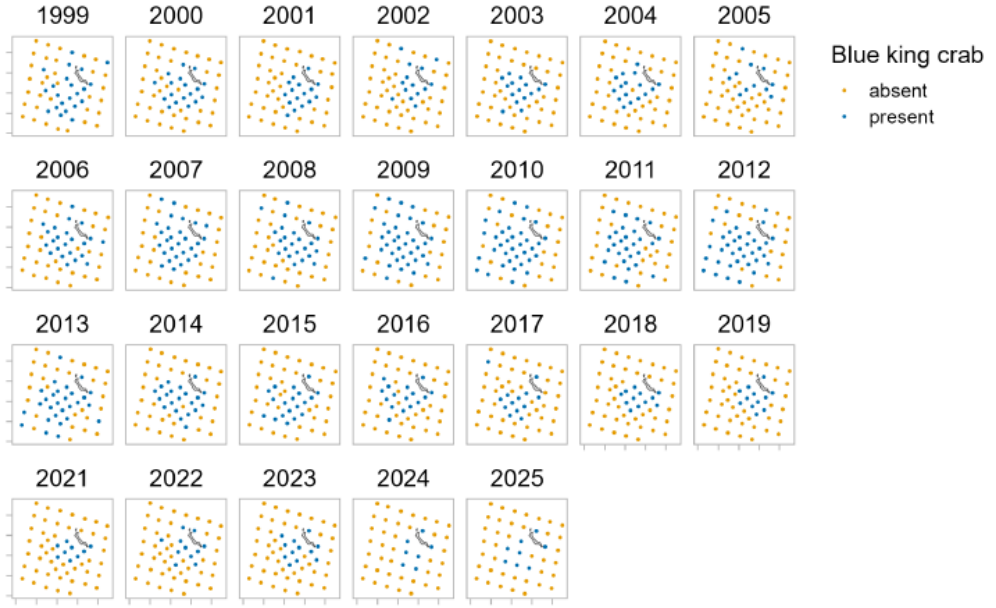


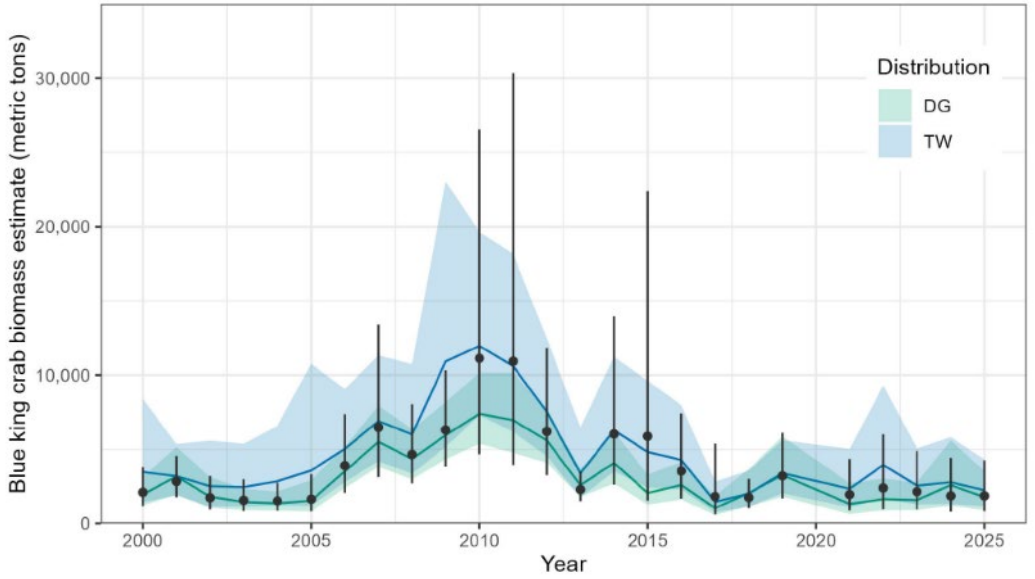
Mature male biomass



SMBKC PROPOSED MODELS

- Biennial assessment cycle, last assessment in 2024
- Currently under a rebuilding plan since 2020
- Model explorations
  - Update GMACs versions and data from "off" years
  - Model-based index (MBI) to deal with loss of "corner" stations (starting in 2023)
    - Model results are similar and this creates consistency in data over time
- CPT recommends bringing forward:
  - Model 26.1 (updated base)
  - Model 26.2 – MBI with catchability = 1
- Future work:
  - MB size-composition
  - Other SSC / CPT recommendations





BALANCE OF CPT REPORT

RISK TABLES

- Cindy Tribuzio, Stephani Zador, Kalei Shotwell (NOAA-AFSC) presented on groundfish experience
- Core difference for crab stocks: ABC is set below max using qualitative information
- CPT recommends two-tier risk tables for crab
  - Top tier to include persistent considerations (e.g., lack of SR relationship) that create uncertainty in the OFL, creating persistent buffer for each stock
  - Top tier does not set a baseline buffer, merely codifies persistent sources of uncertainty
  - Bottom tier to include considerations for the current year that may motivate a change in ABC buffer from previous years

RISK TABLES: PROPOSED CRAB FORMAT

	Assessment-related considerations	Population dynamics considerations	Ecosystem considerations	Fishery-informed Stock Considerations
Long-term/persistent	- Ongoing uncertainties related to stock specific or model specific uncertainty - Includes data related or assessment related uncertainties not accounted for in the model. - This uncertainty represents historical buffer considerations			
Current	"risk table" section. Should be used similar to groundfish risk tables to determine whether we would adjust the "long-term" buffer for each stock based on current uncertainty in the risk table categories			
	Level: 1,2, or 3	Level: 1,2, or 3	Level: 1,2, or 3	Level: 1,2, or 3

RISK TABLES: ADDITIONAL GUIDELINES

- No prescriptive formula will be used to adjust risk table scores, and an increase in risk table scores does not necessarily require an increase in the ABC buffer.
- Risk tables for all stocks going forward (SSC recommendation).
- Summary table in full SAFE introduction to track buffer history for each stock.

QUESTIONS?

- Thanks to all CPT members and crab assessment authors.
- Congrats to Mike Litzow on his retirement!