

# C3 NSRKC FINAL SAFE

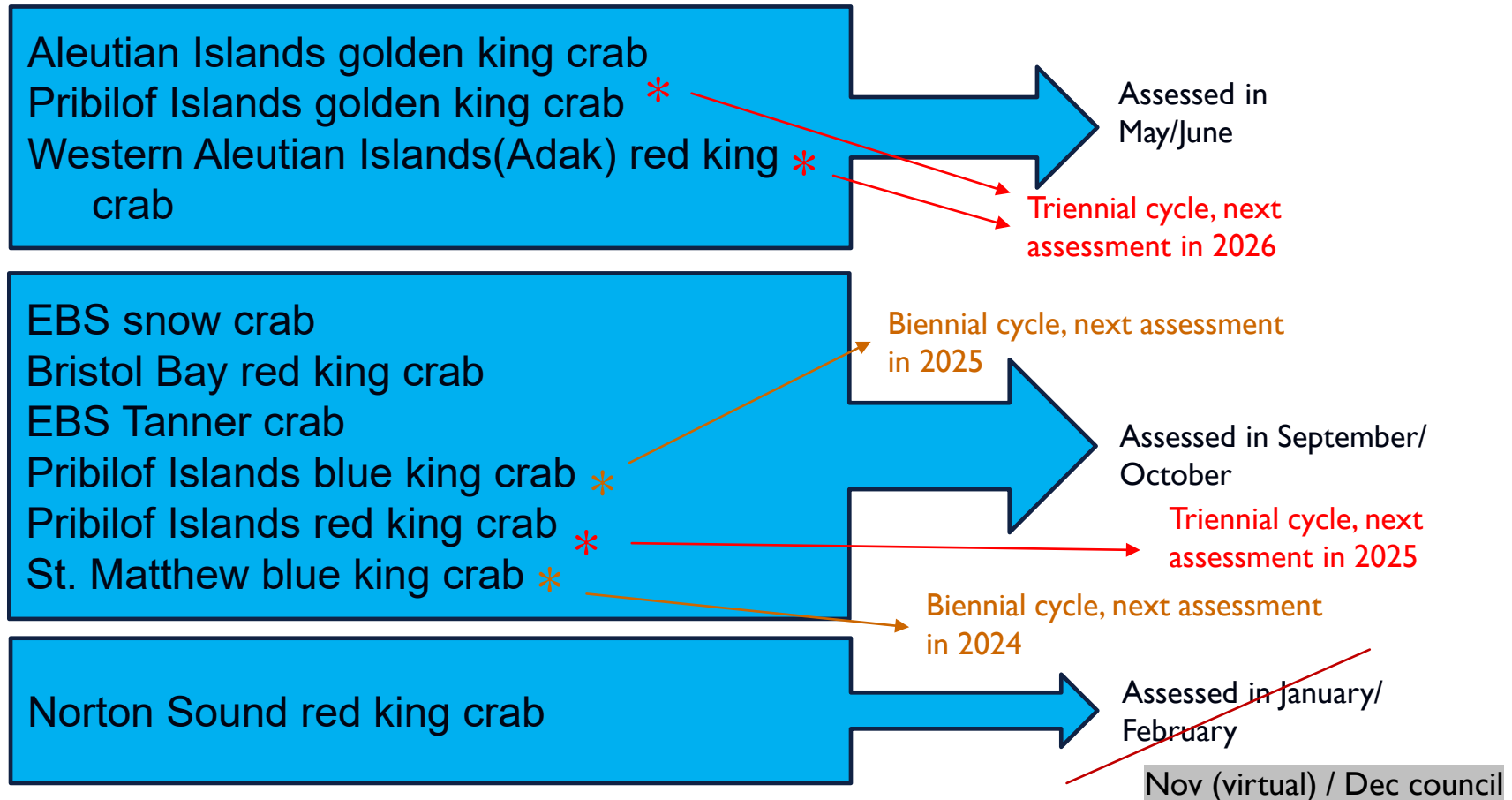
KATIE PALOF & MIKE LITZOW (CPT CO-CHAIRS)

DECEMBER 2024 NPFMC MEETING | ANCHORAGE, AK

CPT MEETING MINUTES – NOV. 5<sup>TH</sup>



# BSAI CRAB STOCKS MANAGEMENT TIMING





# NORTON SOUND RED KING CRAB (NSRKC)

FINAL SAFE

# NORTON SOUND RED KING CRAB (NSRKC)

## Overview

- **Annual Tier 4 assessment, transitioning to GMACS this cycle**
- Two models: Model 21.0 = accepted model and Model 24.0 = GMACS version of 21.0
- CPT **recommends** adopting model 24.0 in GMACS
- Author worked on SSC and CPT requests, specifically:
  - Model comparison table
  - Revise trawl survey model fit figures
  - Jitter analyses (jittering performed as expected, new authors will look to CPT guidance on how to present these results in the future)
  - Retrospective analyses – worse retrospective pattern in GMACS, but not surprising due to model framework changes
- OFL calculations for multiple directed fleets is still under development, therefore author used GMACS output to calculate these using traditional methods.
- Author transition underway for next assessment cycle



# 21.0 VS. 24.0: GMACS

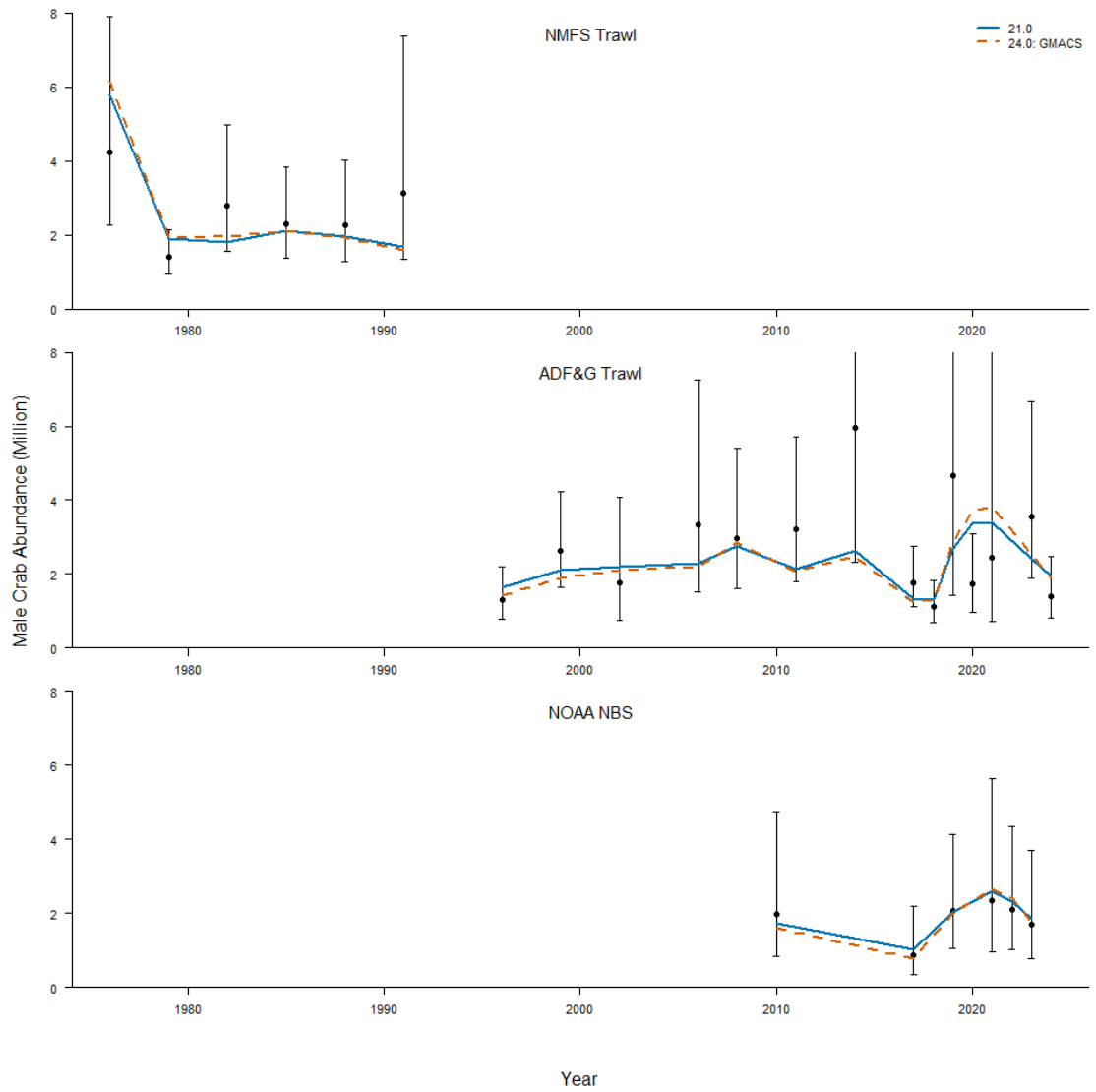
	Model 21.0	Model 24.0 GMACS
Structure	Discrete	Continuous
Fishery	Instantaneous	Instantaneous (Winter) Continuous (Summer)
Fishery Retained Catch	Fixed (use data): Subtract observed catch from the modeled population	Estimate: Estimate F and fit observed retain data ( <b>Winter subsistence total catch data ignored</b> )
Fishery Discards	Fixed (use data): Winter Subsistence (Total-retain) Estimate: Winter and Summer commercial	Estimate: all fisheries



	Model 21.0	Model 24.0 (GMACS)
<b>Model Timing</b>		
<b>Feb 01</b>	Winter fishery (instantaneous)	Winter fishery (instantaneous)
<b>Mortality between</b>	Feb 01 to Mid-summer fishery	Feb 01 to First day of summer fishery
<b>Summer fishery</b>	Instantaneous	Continuous: First to last day of summer fishery
<b>Molting and Growth</b>	Mid-summer fishery (right after fishery)	The last day of summer fishery (right after fishery)
<b>Mortality</b>	Mid-summer fishery to Jan 31	The last summer fishery to Jan 31
<b>Recruit</b>	Jan 31	Jan 31
<b>Trawl survey Assessment</b>		
<b>Survey period:</b>	Mid survey period.	Mid survey period.
<b>Case 1: Survey occurs AFTER fishery</b>	Post-fishery population x mortality till the survey period	Mortality extended to the survey period
<b>Case 2: Survey occurs DURING fishery</b>	Summer population – harvest till the survey period x mortality till the survey period	Mortality trimmed to the survey period



### Trawl Survey Abundance

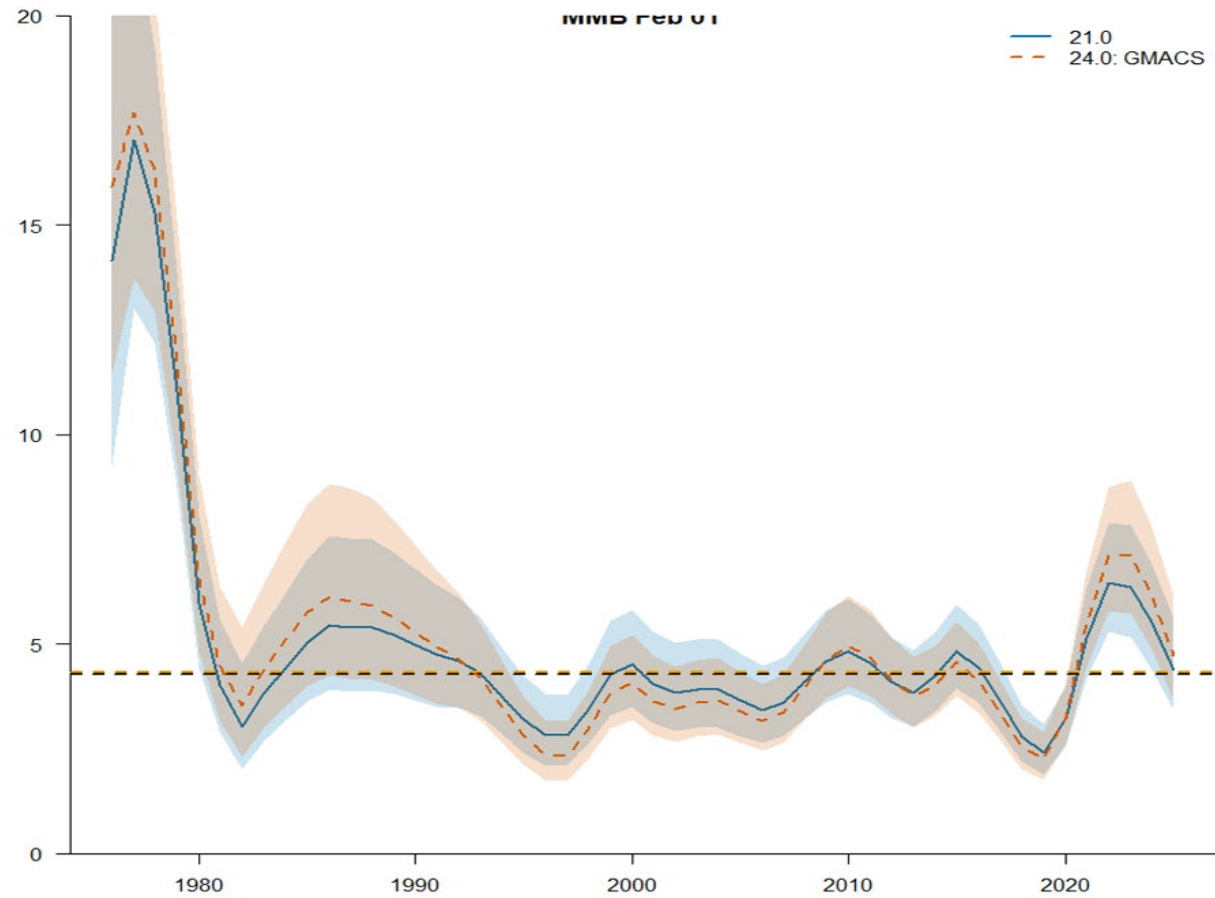


**SURVEY FITS:**  
**21.0 vs. 24.0**



# MMB: 21.0 vs. 24.0

- 24.0 (GMACS) similar  $B_{MSY}$  but higher  $B$





# SPECIFICATIONS

	Model 21.0	Model 24.0 - GMACS
$B_{MSY}$ (mil lb)	4.28	4.34
MMB (2025) (mil lb)	4.39	4.72
$B/B_{MSY}$	1.03	1.09
OFL	0.58	0.63
$F_{OFL}$	0.18	0.18

CPT recommends GMACS model specifications.

The stock is in Tier 4a ( $B > B_{MSY}$ ), therefore it is not overfished.

The total catch for 2024 was less than the OFL therefore overfishing did not occur.

CPT recommends retaining the 30% buffer for ABC (uncertainties remain from last assessment, which are detailed in Jan 2024 CPT minutes).



# FUTURE WORK AND RECOMMENDATIONS

- Author transition (Stern / Palof)
- Implement OFL for multiple directed fleets in GMACS
- Display fits to catch data on figures in SAFE
- Investigate influence of shell condition on size composition fits
- Investigate retrospective pattern changes with GMACS model
- Follow upcoming CPT guidance on jittering analysis methods and summary
- VAST/sdmTMB model-based indices of the three trawl surveys planned for presentation at January modeling workshop



# QUESTIONS?

- Thanks to all CPT members and crab assessment authors.

