

C2 BSAI CRAB STOCKS

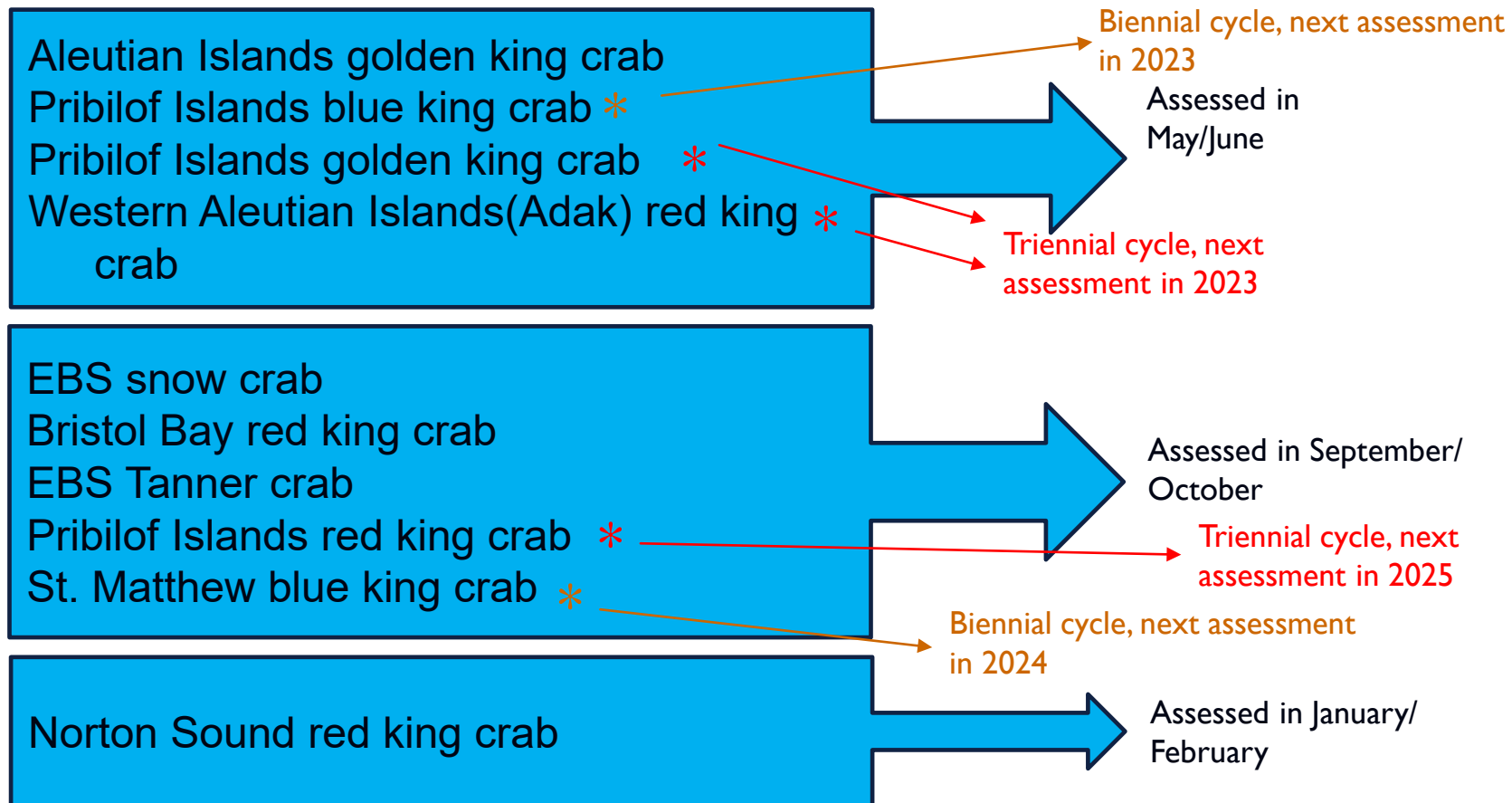
KATIE PALOF & MIKE LITZOW (CPT CO-CHAIRS)

FEB 2023 NPFMC MEETING – FEB 6TH – 13TH SEATTLE, WA

CPT MEETING MINUTES – JAN 17TH- 20TH, 2023 ANCHORAGE, AK



BSAI CRAB STOCKS MANAGEMENT TIMING



JANUARY 2023 AGENDA

- ✓ **NSRKC final assessment, OFL and ABC**
- ✓ AIGKC proposed model runs for May/June
- ✓ PIGKC Tier 4/5 work for May/June
- ✓ Council motion on crab conservation priorities
- ✓ Research updates: BSFRF updates, **BBRKC distribution models, tagging updates, OA research updates**
- ✓ **Simpler models workshop scoping**
- ✓ **Discussion on guidelines for start date of data**
- ✓ **Modeling workshop/GMACS updates and progress**
- ✓ **Crab Economic SAFE**
- ✓ **Snow crab rebuilding final action**

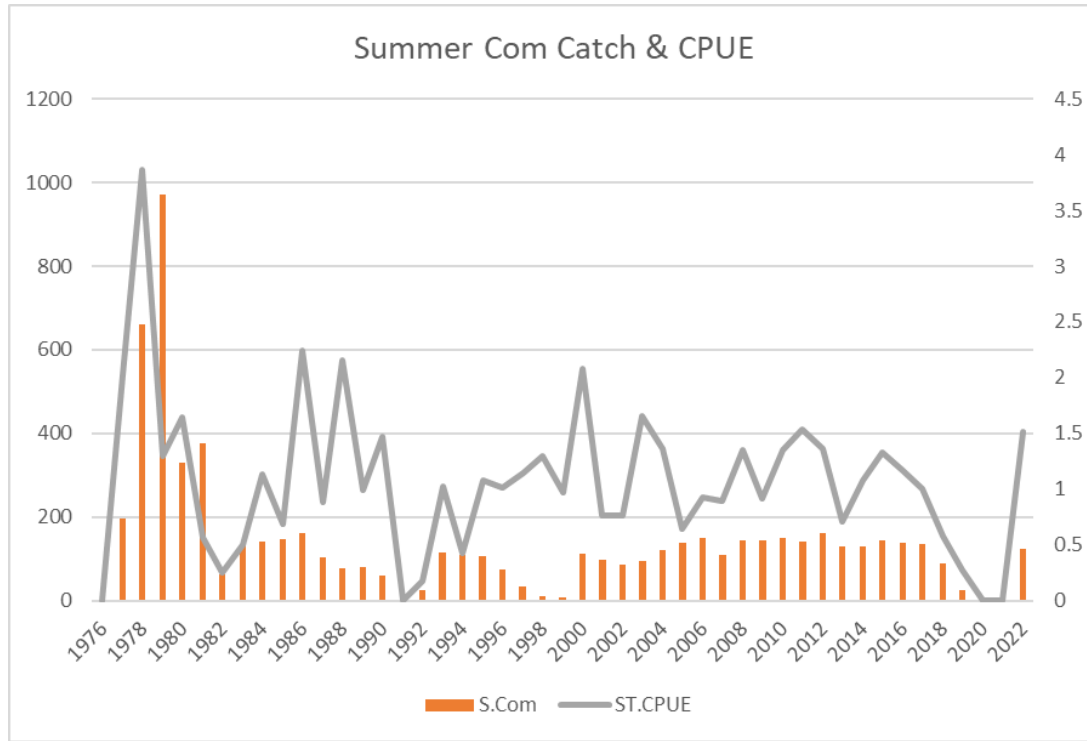


NORTON SOUND RED KING CRAB (NSRKC)

FINAL ASSESSMENT 2023

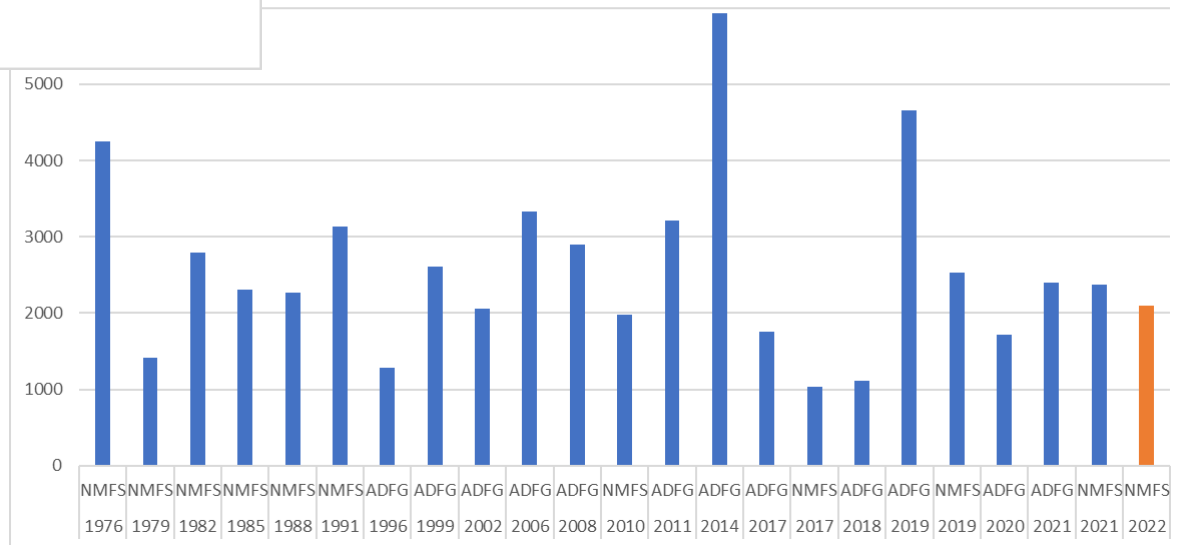


Summer Com Catch and CPUE , and Trawl abundance

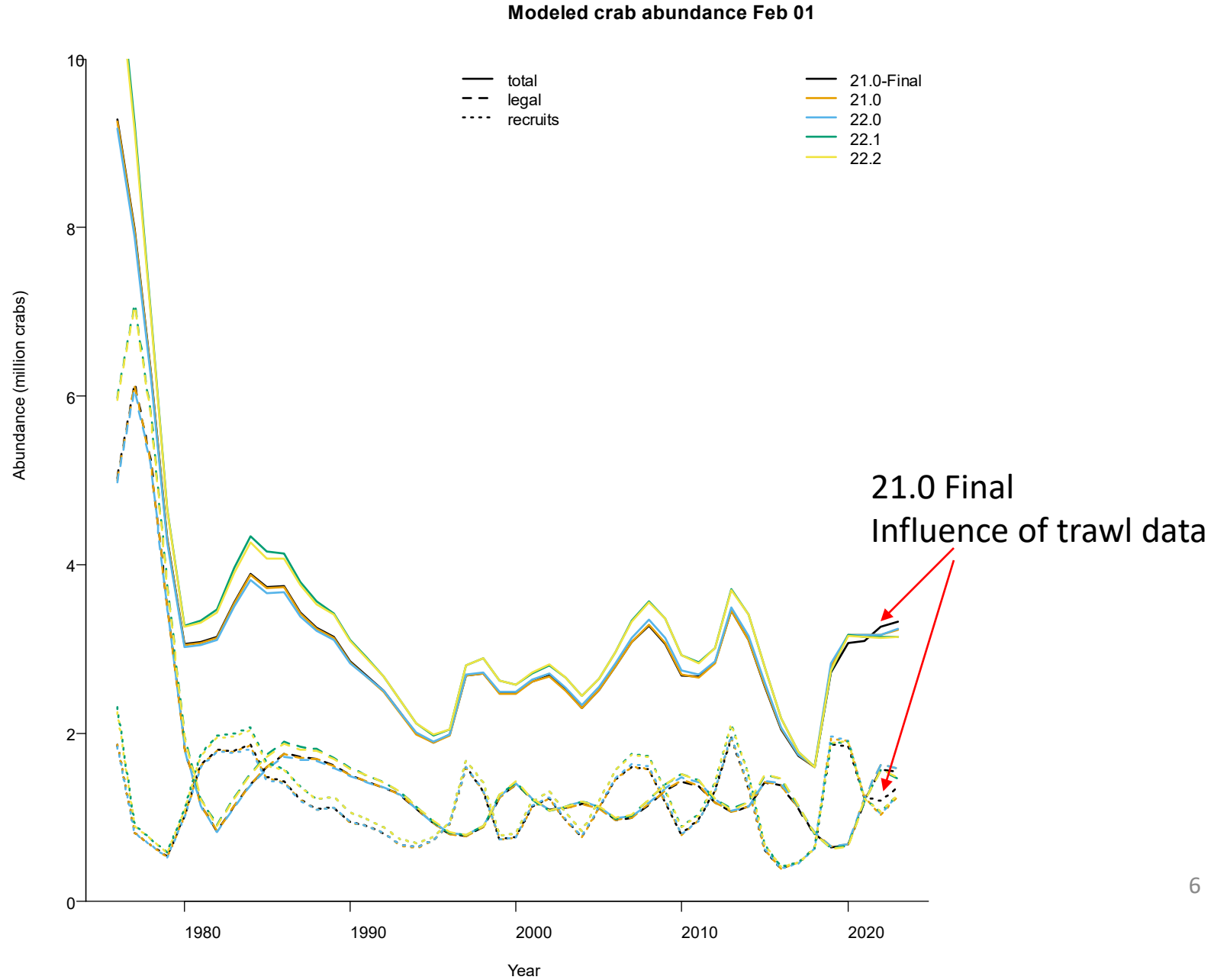


Abundance

- Male only length-based assessment model, status quo modeling framework
- 2022 summer commercial fisheries (not open in 2020, 2021)
- New data includes fishery and survey



Abundance



CPT RECOMMENDATIONS

Year	MSST	Biomass (MMB)	GHL	Retained Catch Mortality ¹	Total Catch Mortality ²	OFL ³	ABC ³		
2018	1.09	1.85	0.13	0.14	0.15	0.20	0.16		
2019	1.03	1.41	0.07	0.04	0.04	0.11	0.09		
2020	1.04	1.66	0.08	Conf.	Conf.	0.13	0.09		
2021	1.03	2.27	0.14	0.003	0.003	0.29	0.16		
2022	0.95	2.42	0.15	0.15	0.16	0.30	0.18		
2023	1.20	2.40				0.292	0.204	<u>Total catch OFL</u>	<u>ABC</u>
								0.31	0.22

- **Endorsed base model 21.0, 30% buffer, and length-independent F_{OFL} (status quo)**
 - Reduction in buffer from 40% in 2022 to 30% 2023, less concerns for stock in general
- **Discard mortality estimates**
 - **CPT recommend** model estimated discard rate to be used for 2022 total catch
- **Total vs retained catch OFLs**
 - **CPT recommends** going back to retained catch OFL for 2023
 - No new observer data, using model estimated discards to established total catch (circular)
 - **SSC recommended** using total catch OFL for 2023, 30% buffer as recommended by CPT



AIGKC PROPOSED MODELS 2023

- Addressing CPT/SSC comments
 - Models to address retrospective patterns – size composition changes, CPUE weighting, time-varying catchability, inclusion of co-operative survey data for EAG (21.1g), transition to GMACS, maturity differences between EAG and WAG
- Change in authorship – Tyler Jackson (ADF&G)
- CPT recommends for May 2023:
 - Models 21.2e2, 21.1f, and EAG only - 21.1g and 21.1g-like (with 21.1f as base)
 - ONLY GMACS models in May 2023
 - Bridging analysis successful and recommends the transition to GMACS
 - Differences between bespoke and GMACS defined well in documentation and not concerning for modeling outcome



PIGKC PROPOSED MODELS - 2023

- Tier 5 stock (OFL determined using average catch), triennial assessment
- Many SSC/CPT comments were addressed
- Models presented:
 - Previously accepted Tier 5 with updated catch estimates
 - Tier 4 models using *rema* (Sullivan et al. 2022) to fit EBS slope survey data
 - Tier 4/5 approach (from spiny dogfish/groundfish) – uses “raw” estimates of survey biomass to determine the current year biomass using an average MMB
- Final decisions made in May/June – CPT currently recommends keeping with the Tier 5 status until new survey data exists





BALANCE OF CPT REPORT



D2 Crab Conservation Workplan Motion

Council requests the Crab Plan Team add discussion of the following items to their 2023 CPT schedule and provide feedback on the relative prioritization of these issues and their ability to improve stock condition.

- 1. Consider the efficacy and ability to identify areas (static and/or dynamic) for groundfish fishery closures to protect snow crab, and suggested areas that could bring meaningful savings.*
- 2. Align crab PSC limit boundaries with the crab stock management area for snow crab*
- 3. Remove or revise trawl crab PSC limit floors for Bristol Bay red king crab and Eastern Bering Sea snow crab*
- 4. Update trawl crab PSC limits based on status of crab stocks*
- 5. Establish non-trawl crab PSC limits*

The Council approves the SSC recommendation to form a working group to develop a framework for how to estimate the magnitude of unobserved mortality for crab stocks and how these estimations may be utilized in BSAI crab stock assessments.



Crab Conservation Prioritization

- December 2022 Motion: **Council requests the Crab Plan Team add discussion of the following items to their 2023 CPT schedule and provide feedback on the relative prioritization of these issues and their ability to improve stock condition.**
- Motion presented five possible actions for evaluation.
- CPT approach:
 - Evaluate whether the directional effect of a proposed action (positive or negative), and the likely magnitude of the effect, are known
 - If the direction and magnitude are currently unknown, can a study be designed to determine the likely consequences?
 - Additional CPT discussion: Is PSC the correct metric for monitoring impact of fisheries that may interact with crab without catching them to be observed? Other tools may be more useful (e.g. fishing effects model and EFH maps).



Crab Conservation Prioritization

1) Consider the efficacy and ability to identify areas (static and/or dynamic) for groundfish fishery closures to protect snow crab, and suggested areas that could bring meaningful savings.

- Direction and magnitude of effects unknown
- Effect could be positive (decreased bycatch) or negative (increased predation)
- Need better understanding of distribution for juveniles / molting-mating crab, especially outside summer season
- Modeling of existing information (fisheries data, fishing effects model output, etc.) may improve understanding of relative benefit
- Increased analysis of groundfish stomachs could help evaluate predation consequences
- Analysis of established closure areas may also improve understanding of relative benefit



Crab Conservation Prioritization

2) Align crab PSC limit boundaries with the crab stock management area for snow crab.

- Likely to have a positive effect, but the magnitude is likely low – bycatch has little impact on modeled population
- Would provide transparency and simplicity in management, but these considerations are outside the purview of CPT
- Adequate information available from previous analyses and discussion papers to evaluate likely effect
- Best scientific practice is to account for all observed bycatch affecting the stock, which implies support for adopting this measure



Crab Conservation Prioritization

3) Remove or revise trawl crab PSC limit floors for Bristol Bay red king crab and Eastern Bering Sea snow crab.

- Best scientific advice for management of crab populations at low abundance would be a reduction of PSC limits resulting in a reduction of bycatch rates, rather than a static PSC floor that results in increasing bycatch rates as the population falls.
- Consistent with control rules, exploitation rates should at least decrease proportionally as stock abundance decreases.
- Likely to have a positive approach, though magnitude is uncertain.
- Could be enacted as a precautionary response to low crab abundance.
- No research is necessary for this measure, as required data already exist in past analyses and papers.



Crab Conservation Prioritization

4) Update trawl crab PSC limits based on status of crab stocks.

- This is a scientifically valid response to low abundance: exploitation rates should not increase as stock abundance decreases to very low levels.
- Effect likely positive, magnitude uncertain.
- No research is necessary - data already exist in past analyses.



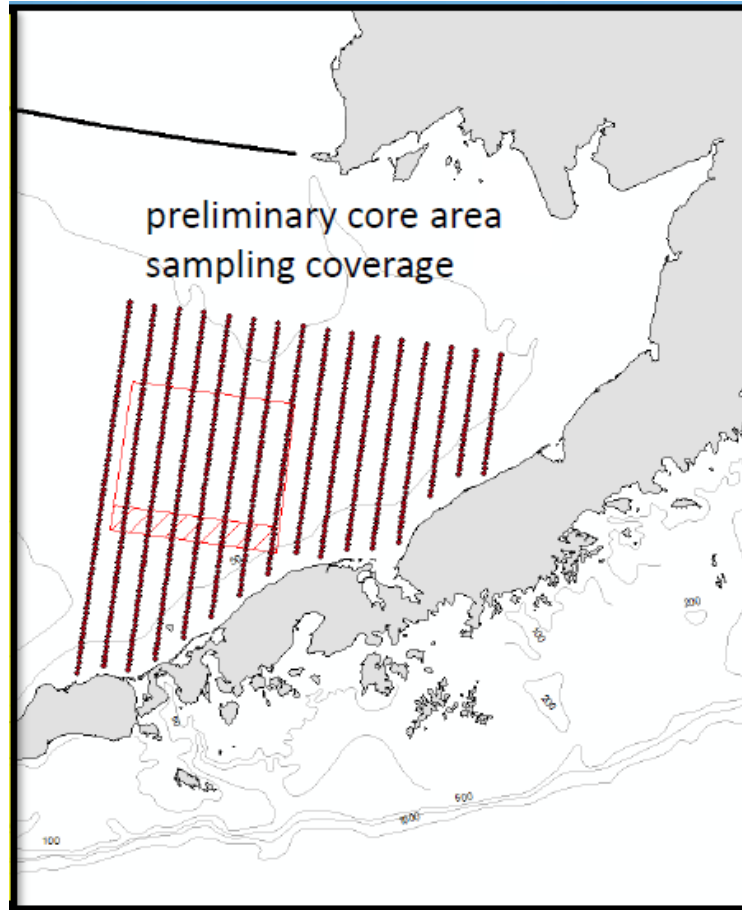
Crab Conservation Prioritization

5) Establish non-trawl crab PSC limits.

- Effect likely positive, magnitude uncertain.
- PSC in pot gear is extremely variable year to year, which would make it difficult to determine an appropriate limit. May be related to limited number of observers.
- Considerations include: determining appropriate boundaries, determining appropriate observer coverage, standardizing the approach across all stocks, deciding if a hard cap is necessary, and determining if the COBLZ area is an appropriate boundary for snow crab non-trawl fishing.



Bering Sea Fisheries Research Foundation (BSFRF) update



- Cooperative BSFRF / ADF&G / NOAA winter BBRKC pot survey
- Start date ~March 12
- 2 vessels, 20-25 days each
- Three goals:
 - Winter distribution
 - Winter movement (~175 satellite tag releases tied to centers of abundance)
 - Research to reduce female & sublegal catches in directed fishery
- Additional \$2.75M Congressionally Directed Spending to fund BSFRF research



QUESTIONS?

- Thanks to all CPT members and crab authors.
- Thanks to Siddeek for his time served on crab plan team and as AIGKC assessment author

