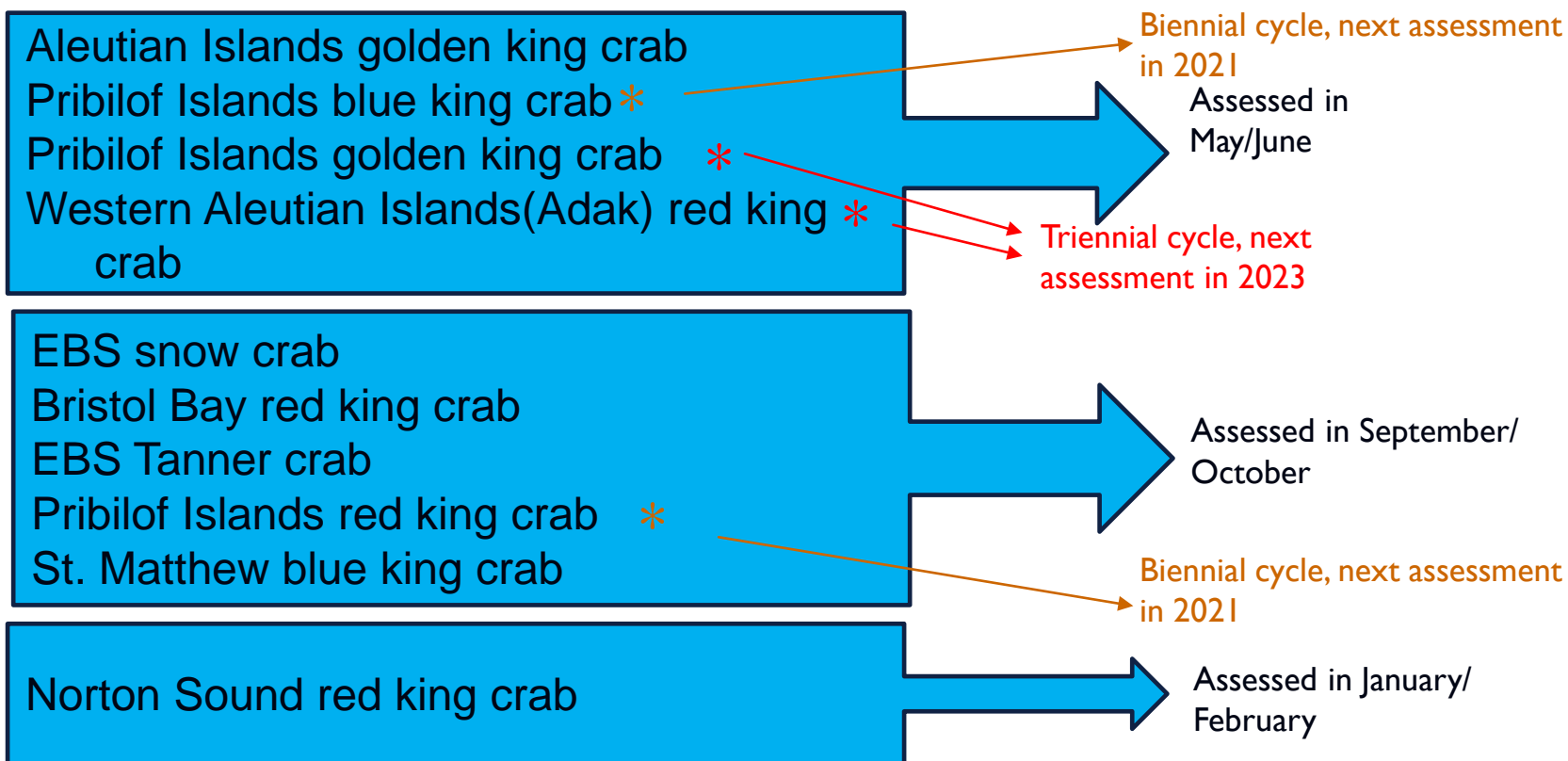

C5 BSAI CRAB STOCKS

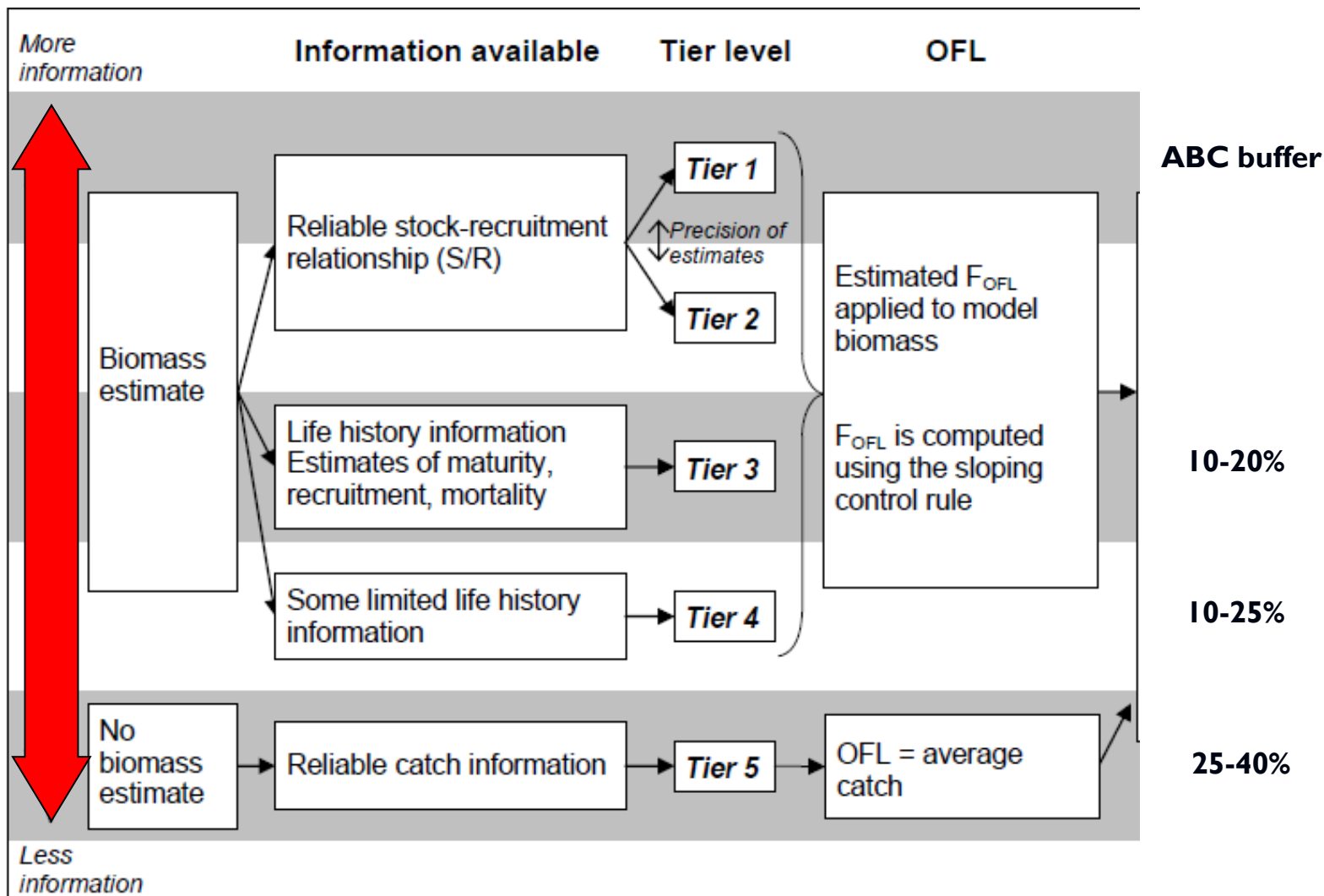
KATIE PALOF & MARTIN DORN,

CPT MEETING MINUTES - JANUARY 11-14, 2021



BSAI CRAB STOCKS MANAGEMENT TIMING





JANUARY 2021 AGENDA

- **NSRKC final assessment, OFL and ABC**
- AIGKC proposed model runs for May/June
- Draft risk tables
- Updating TOR for crab SAFEs
- Stock prioritization and frequency review
- 2021 crab survey planning
- Industry (ABSC) fishery questionnaire
- Crab PSC in groundfish fisheries initial review
- Research priorities (Top 5)
- Climate change and crab management considerations
- Crab Economic SAFE
- Updating survey weight-length relationships
- VAST model diagnostics updates
- Research updates: IBM snow crab, BSFRF research projects, tagging projects
- Modeling workshop



NSRKC

FINAL ASSESSMENT 2021

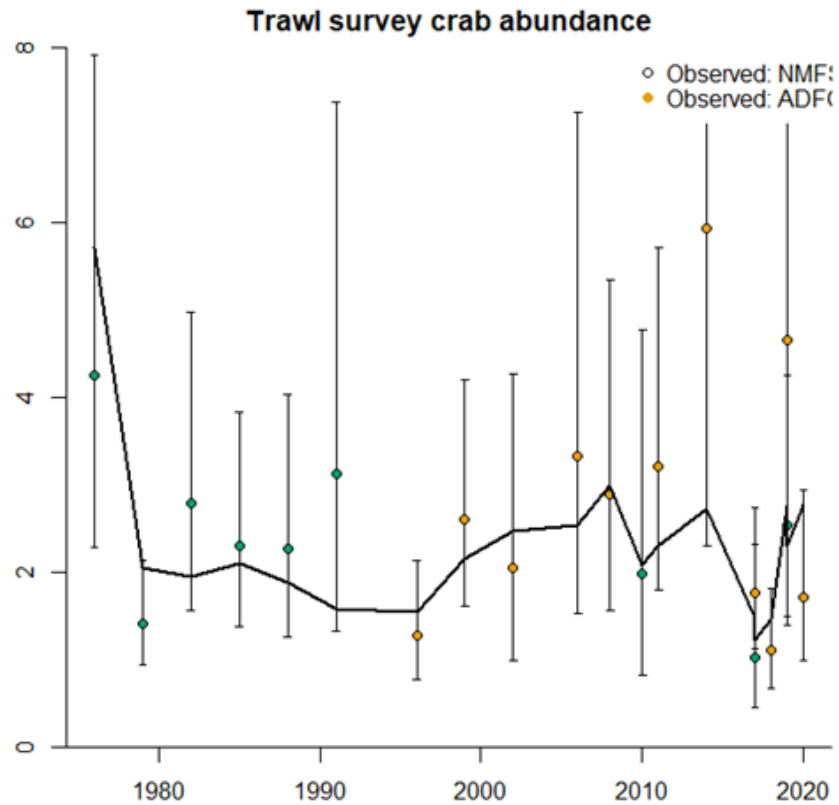


NORTON SOUND RED KING CRAB - FINAL 2021 ASSESSMENT: STOCK STATUS, OFL/ABC

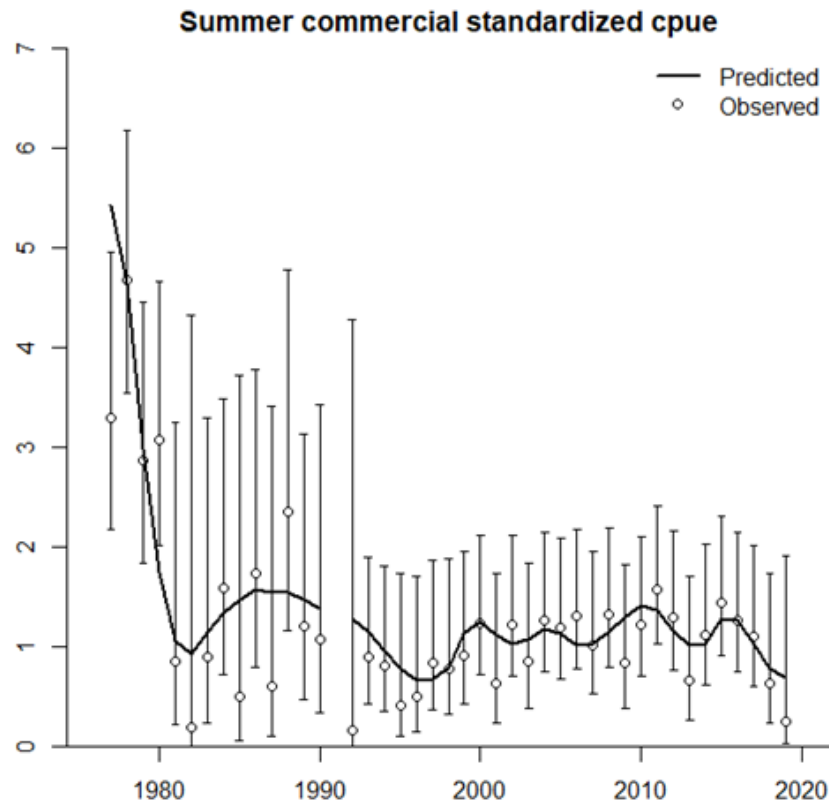
- Single model (Model 19.0) was presented at the request of the CPT in September.
- Fishery data available for assessment the same as in Sept 2020. No summer fishery since NSEDC was not buying crab (fishery closed in 2020).
- ADF&G summer 2020 trawl survey data point added
- CPT reviewed draft GMACS model for NSRKC, but the model is not ready for use.
- CPT also received reports about ongoing research to evaluate
 - Barren females
 - Tagging studies
 - Pot loss



NSRKC MODEL FITS



NSRKC MODEL FITS



NSRKC: CPT RECOMMENDATIONS ON OFL/ABC

- CPT recommends Model 19.0 for ABC and OFL setting
- CPT recommends a total catch OFL, using method LNR2 to estimate discards.
- Assessment author recommended a retained catch legal crab OFL, as in previous assessments.
- CPT recommends that SSC continue use of 30% buffer to set ABC
 - Models appear to be overestimating growth -> more large crab
 - Differences between NMFS and ADF&G surveys
 - High M on large crab
 - 2019 fishery concerns
 - Poor recruitment, female health



NSRKC: CPT RECOMMENDATIONS ON OFL/ABC

Status and catch specifications (million lb.)

Year	MSST	Biomass (MMB)	GHL	Retained Commercial Catch	Total Retained Catch	OFL*	ABC*
2017	2.31	5.14	0.50	0.49	0.50	0.67	0.54
2018	2.41	4.08	0.30	0.31	0.34	0.43	0.35
2019	2.24	3.12	0.15	0.08	0.08	0.24	0.19
2020	2.28	3.67	0.17	Conf.	Conf.	0.29	0.20
2021	2.26	5.00				0.63	0.44

Status and catch specifications (1000t)

Year	MSST	Biomass (MMB)	GHL	Retained Commercial Catch	Total Retained Catch	OFL*	ABC*
2017	1.05	2.33	0.23	0.22	0.24	0.30	0.24
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				0.29	0.20

Notes:

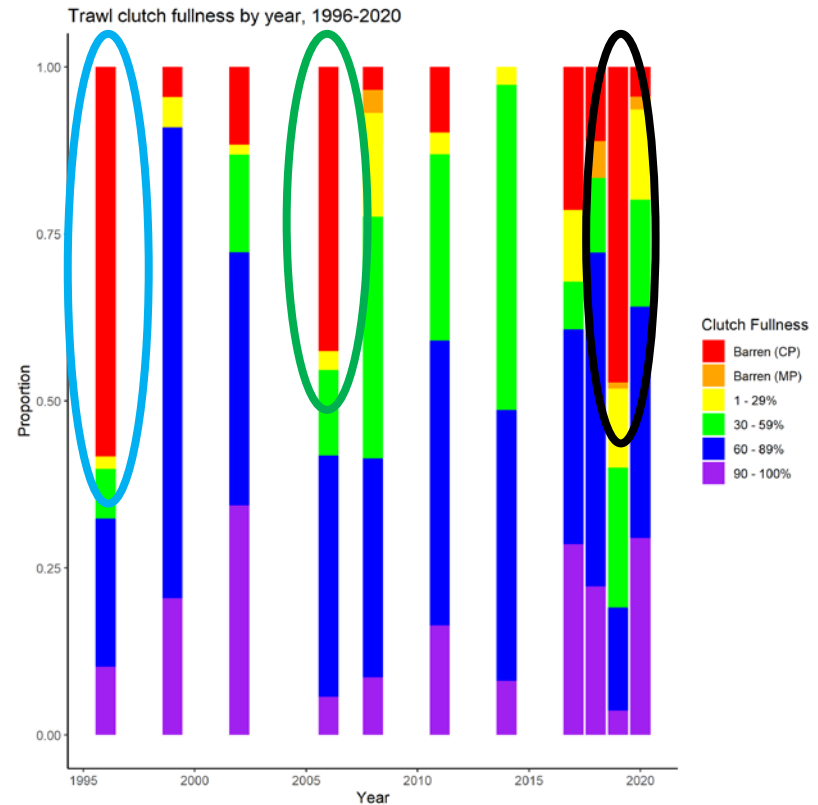
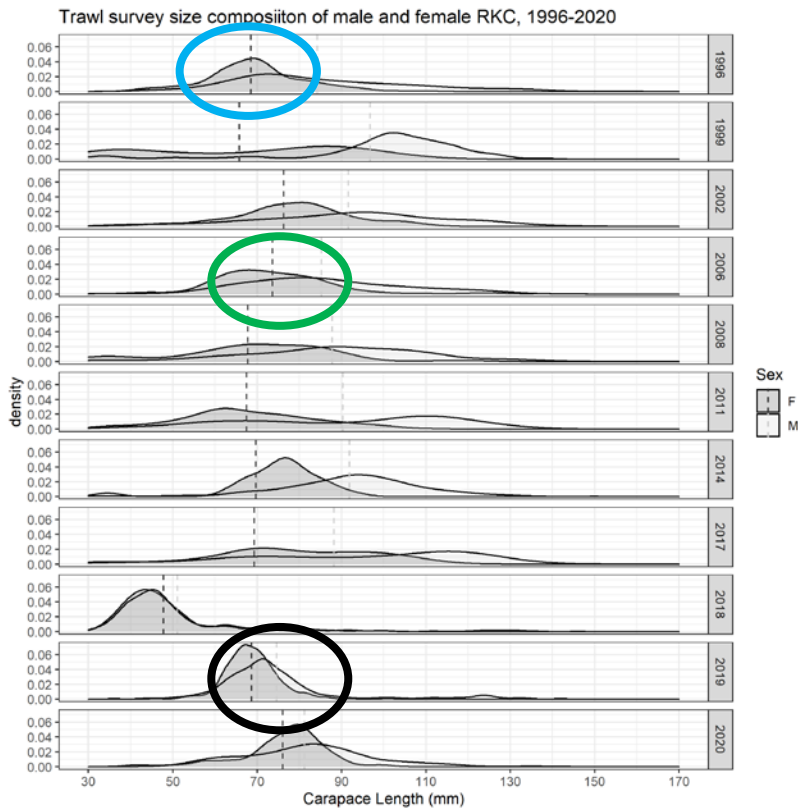
MSST was calculated as $B_{MSY}^{1/2}$

*OFL/ABC is a total catch in 2021. (Retained OFL/ABC in previous years)

Conversion to Metric ton: 1 Metric ton (t) = 2.2046×1000 lb



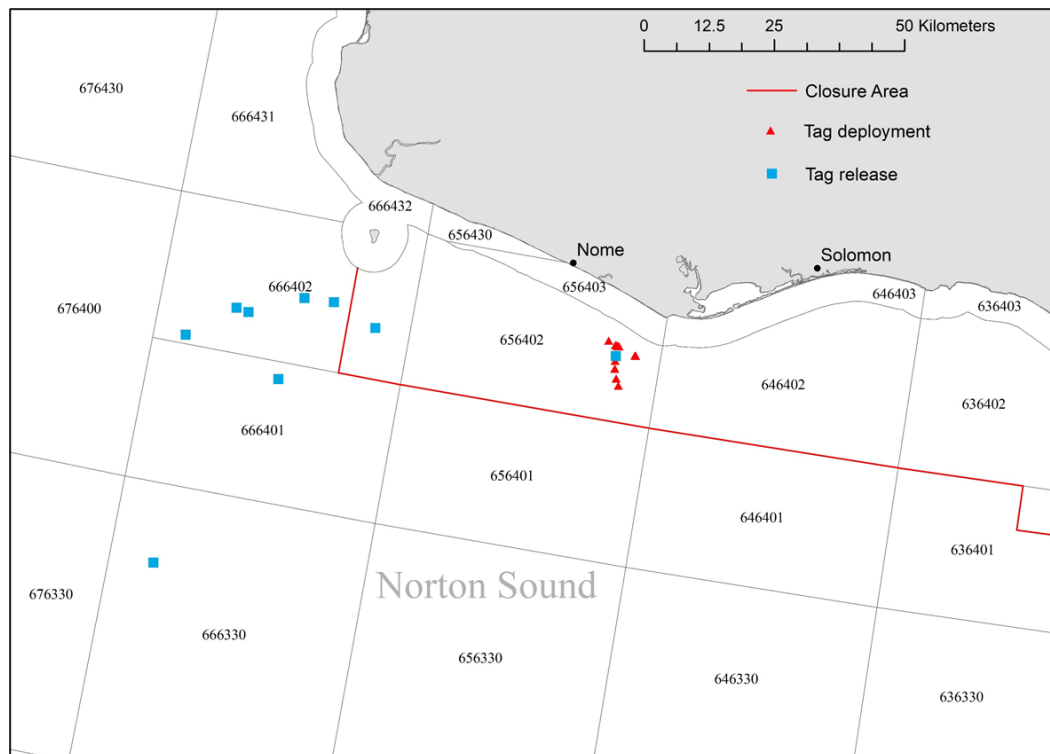
RESEARCH UPDATE: FEMALE CLUTCH FULLNESS: WE'VE SEEN THIS BEFORE



In 1996, 2006, and 2019 surveys crab cohort was 65-75 mm CL and predominantly female



RESEARCH UPDATE: LOCATING LARGE MALES



- The issue: RKC >123 mm CL are rarer than expected in fisheries and trawl survey.
- Assessment handles this by estimating a higher natural mortality for the largest two size bins
- 16 satellite tags deployed July 2020
 - 106 – 135 mm CL
 - Tags were set to collect data for four months
- 9 tags popped up on predetermined date
 - Oct 6 and Oct 7
 - 8 locations high confidence
- Will tag up to 140 crabs in spring 2021 (with ADF&G Kodiak and NOAA)



RESEARCH UPDATE: LOST POTS

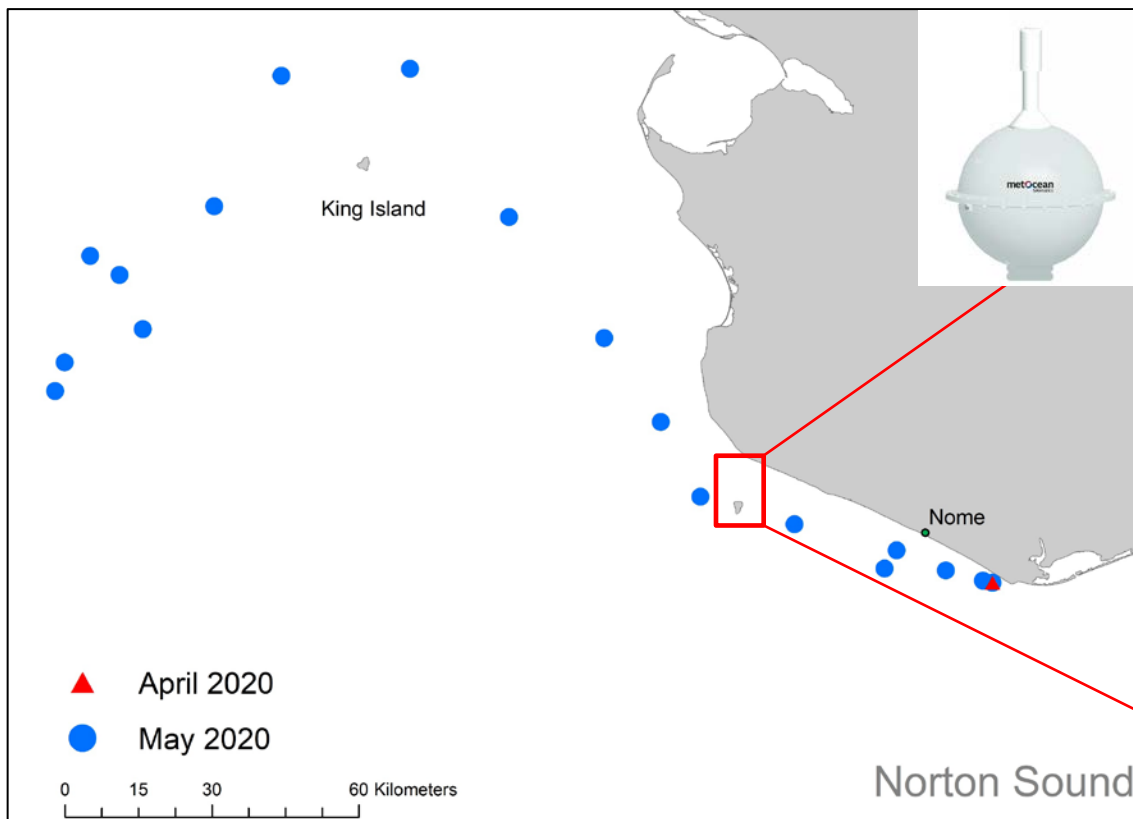
Lost pots (2005-2020)

- Crab pots are lost when the ice breaks off unexpectedly; pots are dragged with the ice to some unknown destination
- Predominantly a winter fishery occurrence
- 2017- 20 pot limit in winter fishery

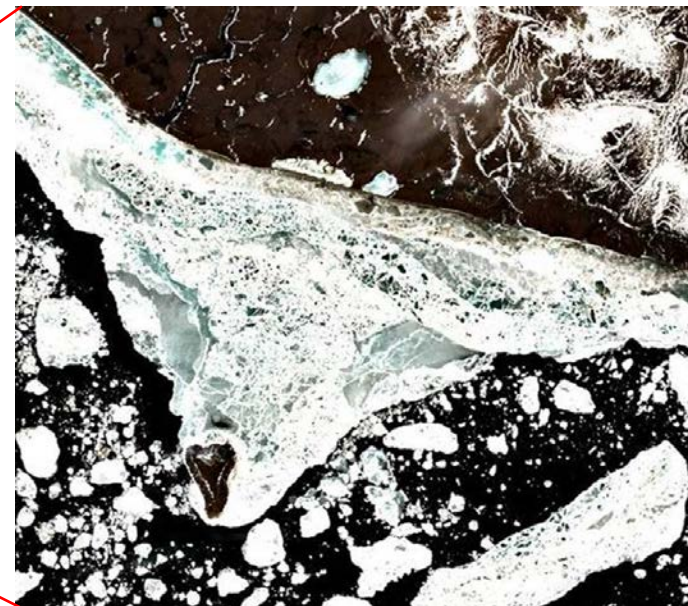
Year	Winter Commercial	Winter Subsistence	ADF&G pot studies	Summer Subsistence	Total
2005–06	ND	50	6	1	57
2006–07	ND	132	7	0	139
2007–08	ND	6	4	4	14
2008–09	ND	8	2	0	10
2009–10	30	23	2	1	56
2010–11	3	8	0	9	20
2011–12	64	19	4	0	87
2012–13	23	4	3	7	37
2013–14	105	16	1	4	126
2014–15	104	16	0	1	121
2015–16	38	20		11	69
2016–17	201	11		6	218
2017–18	179	33		5	217
2018–19	32	59		10	101
2019–20	3	33			36



Lost Pots: 2020 Ice Movement



Average daily location by month



- 2021- Purchase additional ice trackers (Funded by: NSEDC-Outside Entity Funding)
- 2021/ 2022- Obtain funds to start searching for lost pots?



AIGKC PROPOSED MODELS FOR MAY 2021

- Authors brought forward 7 models for the EAG and 4 for the WAG
- CPT recommended 4 models for consideration in May
- Additional models for EAG included:
 - GMACS implementation (Jan 2022/ May 2022)
 - Appendix to show continued progress
 - Common modeling framework will make technical review easier
 - Models to include the cooperative survey CPUE index (2015-2019)
 - Appendix for this model – use observer CPUE until cooperative CPUE is available
- 4 models for May:
 - 2020 accepted model
 - 2020 accepted with change in mean recruitment years
 - Time varying selectivity periods
 - CPUE standardization with Year:Area interaction



STOCK ASSESSMENT PRIORITIZATION AND FREQUENCY- CPT DISCUSSION

SAFE chapter assessment frequency	Latest SAFE Update	Next SAFE Update
1 Eastern Bering Sea snow crab -annual	Oct 2020	Oct 2021
2 Bristol Bay red king crab -annual	Oct 2020	Oct 2021
3 Eastern Bering Sea Tanner crab -annual	Oct 2020	Oct 2021
4 Pribilof Islands red king crab -biennial	Oct 2019	Oct 2021
5 Pribilof Islands blue king crab –biennial	Jun 2019	Jun 2021
6 Saint Matthew Island blue king crab -annual	Oct 2020	Oct 2021
7 Norton Sound red king crab -annual	Feb 2020	Feb 2021
8 Aleutian Islands golden king crab -annual	Jun 2020	Jun 2021
9 Pribilof Islands golden king crab -triennial	Jun 2020	Jun 2023
10 West. Aleutian Islands red king crab -triennial	Jun 2020	Jun 2023



ST. MATTHEWS BLUE KING CRAB - CPT DISCUSSION

- Currently assessed annually, with the next assessment scheduled for Oct 2021
- Stock is under a multi-year rebuilding plan. There is no targeted fishery.
- CPT proposes moving a biennial cycle, at least temporarily, with the next assessment scheduled for Oct 2022.
- Advantages: Additional survey results would be available for each assessment, reducing potential for misleading signal on stock recovery
- Advantage: Would align the assessment cycle with the requirements to report on the rebuilding progress.
- Also help to align the assessment years with the next two expected ADF&G pot surveys



PRIBILOF ISLANDS RED KING CRAB - CPT DISCUSSION

- Currently at biennial cycle, with the next assessment scheduled for Oct 2021
- Data-limited stock
- Fishery closed due to conservation concerns about PIBKC.
- Assessment uses GMACS, limited potential for further model development.
- Would not impact potential harvest or opportunities to improve understanding of the stock
- Proposed a triennial cycle with next assessment in Oct 2022.



ABSC FISHERY QUESTIONNAIRE

- Skipper survey; pilot survey after 2020/21 BBRKC fishery (last fall), currently underway for snow crab
- GOAL: utilize industry and community data collection to help fill data gaps
- Update from industry on this effort, weigh in on questions and what maybe useful in management in the future
 - CPT appreciates this effort and overall goal of increased interaction with harvesters
 - CPT suggested refining and expanding current information being collected
- Updates on this in Sept CPT meeting
- Maybe helpful to incorporate into risk table? Or TAC setting process?
- Current questions in ABSC presentation to CPT



CRAB PSC IN GROUND FISH FISHERIES – COUNCIL ACTION

- Update from Council staff on preliminary/initial review
- CPT comments:
 - Inconsistencies across stocks in PSC inputs and calculations, largely due to when these were developed
 - BBRKC – thresholds match those in the state harvest strategy, but snow and Tanner crab were based on industry negotiations
 - Discussion on if values that PSC are based on should account for survey catchability (next slides)
 - Clarification on what data should be used to set PSC levels needed (where does this fit in?)
 - Industry comment on “unobserved mortality”





QUESTIONS