

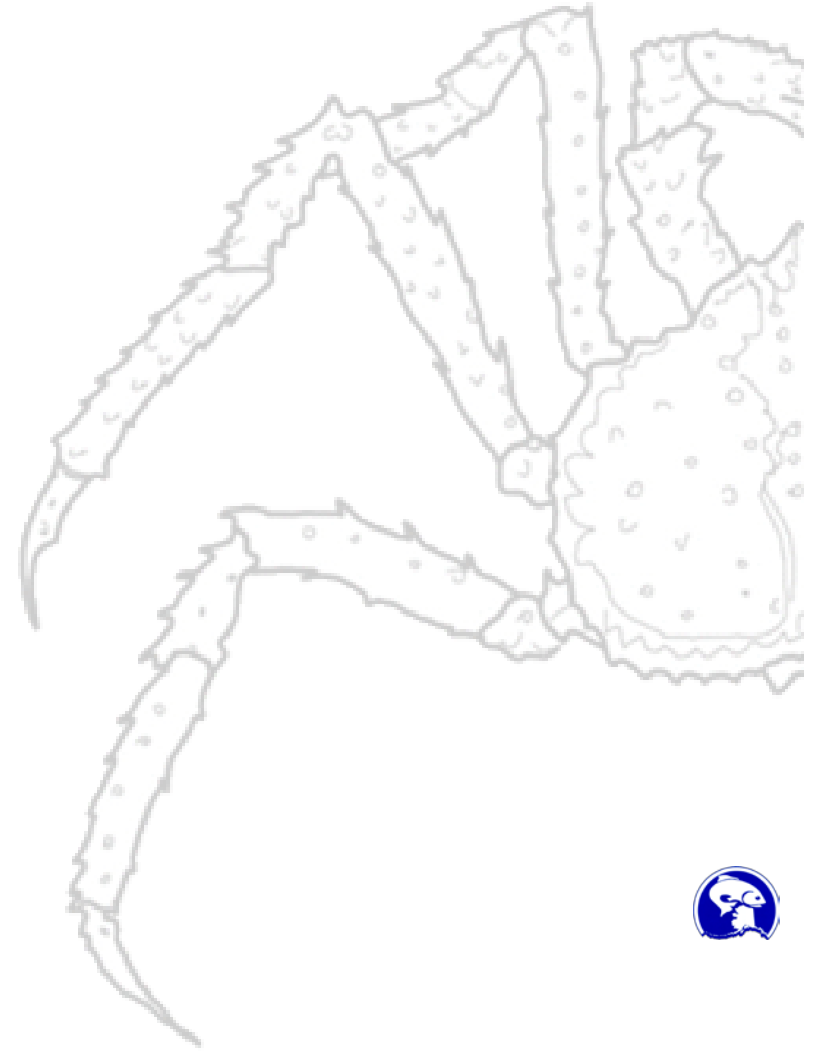
C3 ST MATTHEW IS. BLUE KING CRAB REBUILDING PLAN FINAL ACTION

JIM ARMSTRONG, JUNE 2020



MEETING MATERIALS

- Action Memo
- Public Review Draft
- Written public comment (N=0)



TIMELINE

- October 22, 2018 – declared overfished
 - Deadline for implementation: Oct 2020
- June 2019 Rebuilding plan alternatives
- December 2019 Initial Review
- June 2020 Final Action
- October 2020 Effective



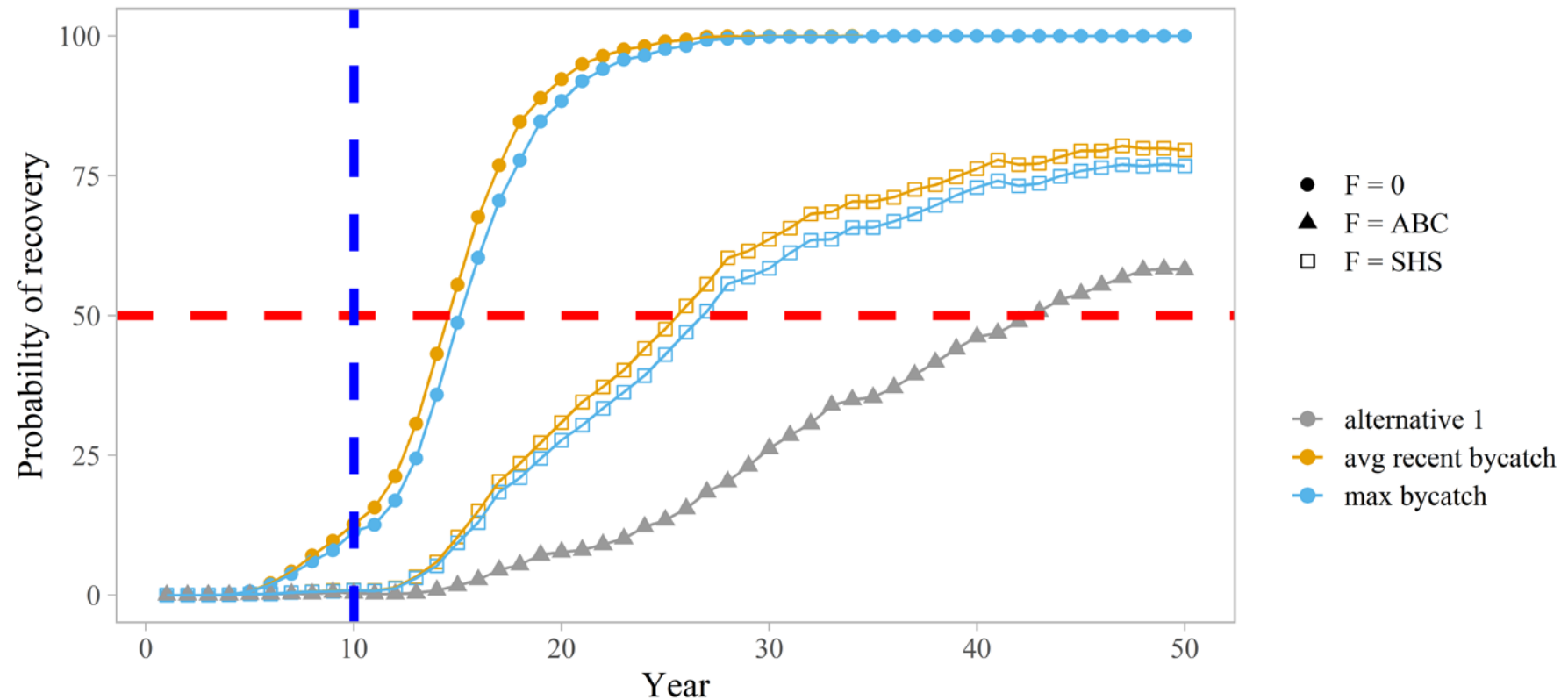
ALTERNATIVES (PRELIMINARY)

- Alternative 1 (No Action)
 - No rebuilding plan
- Alternative 2 (Rebuilding)
 - Option 1 – no harvest during rebuilding
 - Option 2 – State harvest strategy



REBUILDING TIMES

Ricker stock-recruit relationship (B_{MSY} proxy 1978 - 2018)



REBUILDING TIMES

Alternative	T_{Rebuild}	F_{Direct}	$\text{Diff_}T_{\text{min}}$	$\text{Diff_}T_{\text{max}}$
Alt 1	>50 years*	F_{ABC}	+29 years	> +15 years
Alt 2, Option 1	14.5 years	zero	$=T_{\text{min}}$	-17 years
Alt 2, Option 2	25.5 years	SHS	+11 years	-3 years



SSC FINDINGS

- The SSC recommended that the current draft is adequate for final action and meets the requirements for a formal rebuilding plan.
- The SSC tentatively supports Alternative 2, Option 2, allowing for the possibility of a state fishery during the rebuilding period.



SSC RECOMMENDATIONS

- What level of bycatch is above status quo, and what would be done.
- Relative biomass at rebuilding compared to the level for opening under the State of Alaska harvest strategy.
- Figure illustrating fit of the Ricker model.
- Discussion of the pros and cons of the Ricker versus random sampling of recruitment.
- Projections using only the most recent recruitment estimates, with figs, tables of rebuilding times.
- Addition of a few years of community engagement and dependency data.



SSC RECOMMENDATIONS

- What level of bycatch is above status quo, and what would be done. [Section 3.3.3](#)
- Relative biomass at rebuilding compared to the level for opening under the State of Alaska harvest strategy. [Section 2.2](#)
- Figure illustrating fit of the Ricker model. [Section 3.3.6](#)
- Discussion of the pros and cons of the Ricker versus random sampling of recruitment. [Section 3.3.4](#)
- Projections using only the most recent recruitment estimates, with figs, tables of rebuilding times. [Section 3.3.4](#)
- Addition of a few years of community engagement and dependency data. [Section 3.4](#)



SSC RECOMMENDATIONS

- Level of bycatch is above status quo, and what would be done. **Section 3.3.3**

State and federal observer programs monitor bycatch with State coverage of the crab fisheries and federal monitoring of the groundfish trawl, pot, and longline fisheries. Estimates of crab bycatch from all commercial fisheries will be reported annually in the SAFE. The BSAI Crab Plan Team will assess bycatch relative to the expectations and assumptions of the rebuilding plan. Additionally, if bycatch were to increase substantially, inseason actions could be taken to restrict harvest or area in the groundfish fisheries, if necessary, to reduce bycatch.

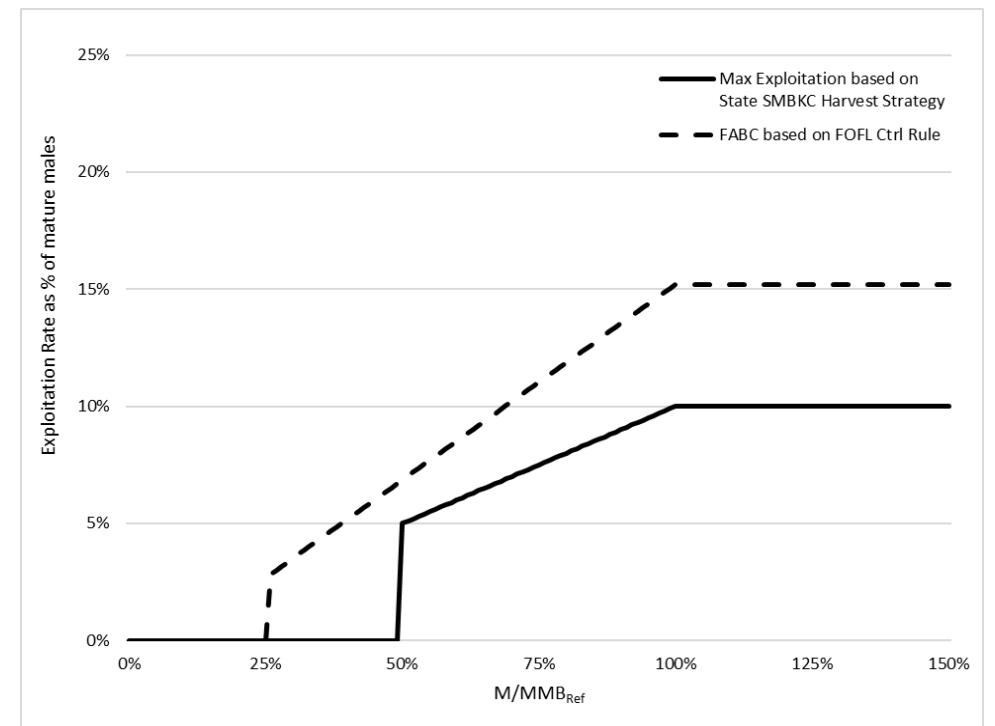


SSC RECOMMENDATIONS

- Relative biomass at rebuilding compared to the level for opening under the State of Alaska harvest strategy. **Section 2.2**

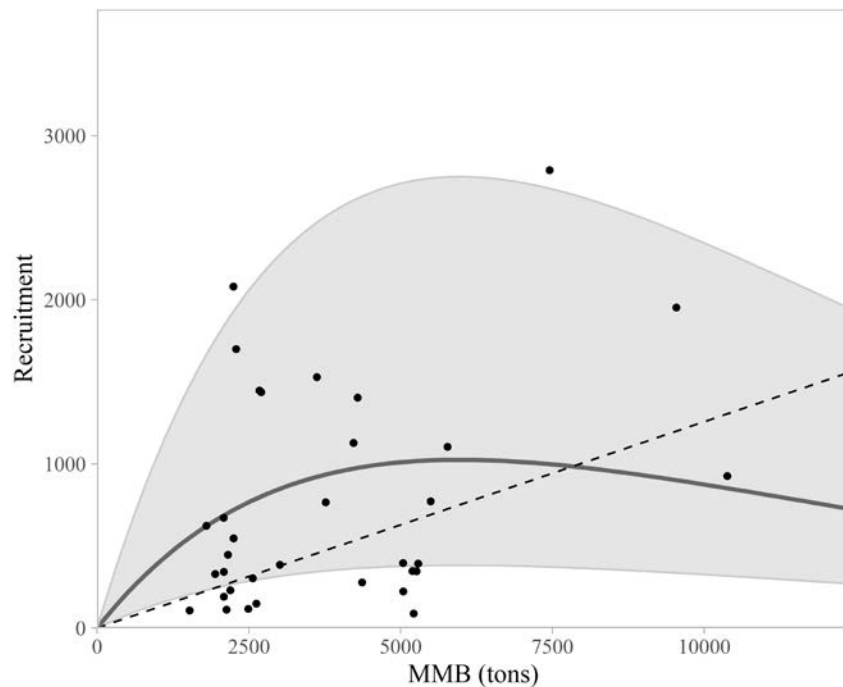
Directed fishing is prohibited under the Council's FOFL control rule at $B/B_{msy} = \beta = 25\%$, while the State harvest strategy prohibits fishing at biomass levels below $B_Y/B_{1978-2012} = 50\%$.

- Council rebuilding target: $B_{MSY} (1978-2018)$ 3,484 t
- SHS threshold for opening: $1/2 B_{1978-2012}$: 1,440 t



SSC RECOMMENDATIONS

- Figure illustrating fit of the Ricker model. **Section 3.3.4** Discussion of the pros and cons of the Ricker versus random sampling of recruitment. Dec PPT

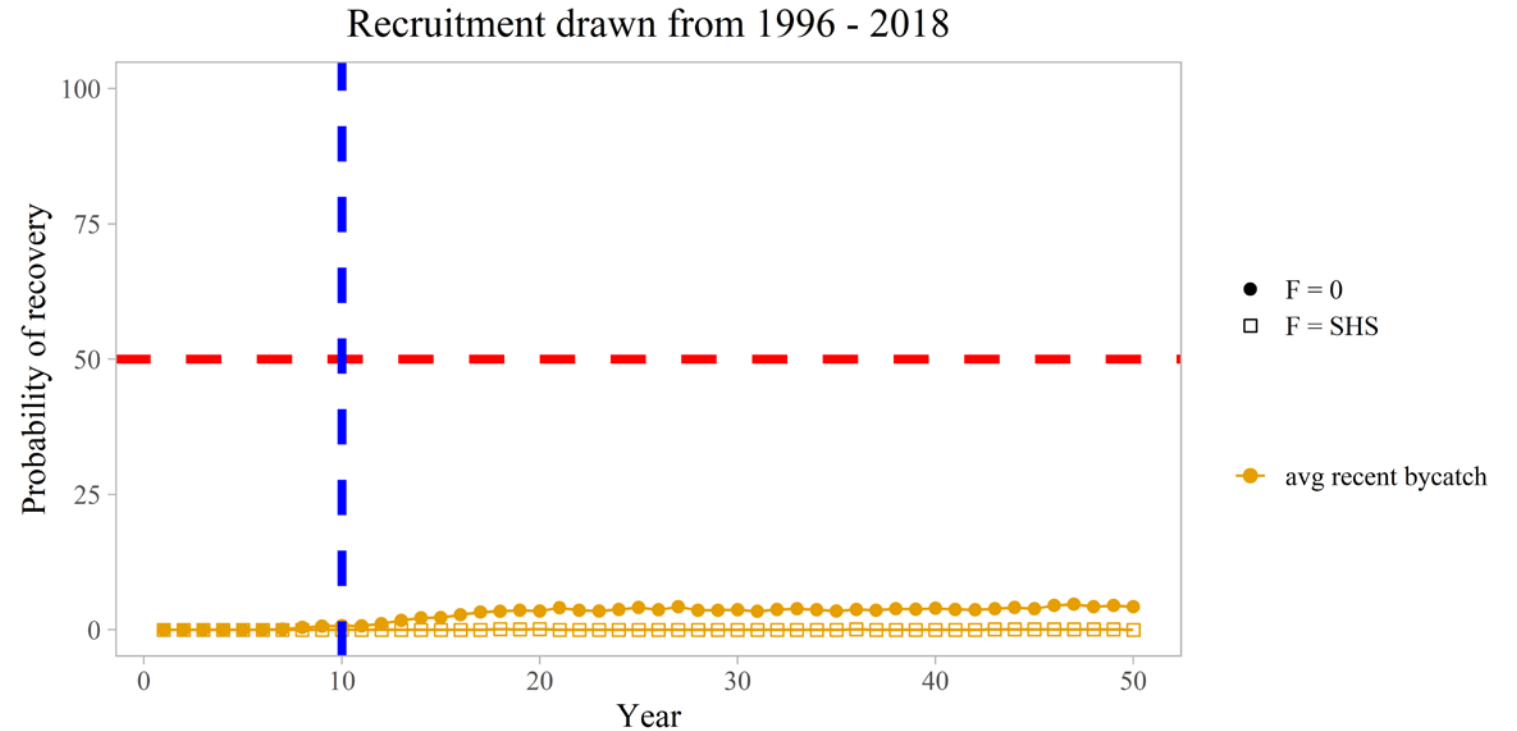


- Random recruitment: All years (1978 – 2018)
 - PRO: allows for high recruitment possibilities
 - CON: optimistic with current environment, stock status, etc.
- Random recruitment: Current regime (1996 – 2018)
 - PRO: realistic recruitment expectations for near future
 - CON: does NOT allow for increased recruitment
- Ricker stock-recruit model
 - PRO: Fluctuates with stock size
 - CON: weak relationship



SSC RECOMMENDATIONS

- Projections using only the most recent recruitment estimates, with figs, tables of rebuilding times.
Section 3.3.4



SSC RECOMMENDATIONS

- Projections using only the most recent recruitment estimates, with figs, tables of rebuilding times.

Section 3.3.4

Projection Name	Rec. years	No directed fishing Ave. bycatch	No directed fishing Max bycatch	Fishing under SHS Ave. bycatch	Fishing under SHS Max bycatch
random_all_yrs	1978-2018	6.05 years	6.5 years	9.0 years	11.0 years
random_recent_yrs	1996-2018	> 100 years	> 100 years	> 100 years	> 100 years
Ricker S-R	1978-2018	14.5 years	15.2 years	25.5 years	26.8 years



SSC RECOMMENDATIONS

- Addition of a few years of community engagement and dependency data. **Section 3.4**
- Limited data
 - Fishery closed 14 of last 20 years, last open in 2015
 - Landings and value since 1999 only reportable in 2009-2012 due to closures and confidentiality



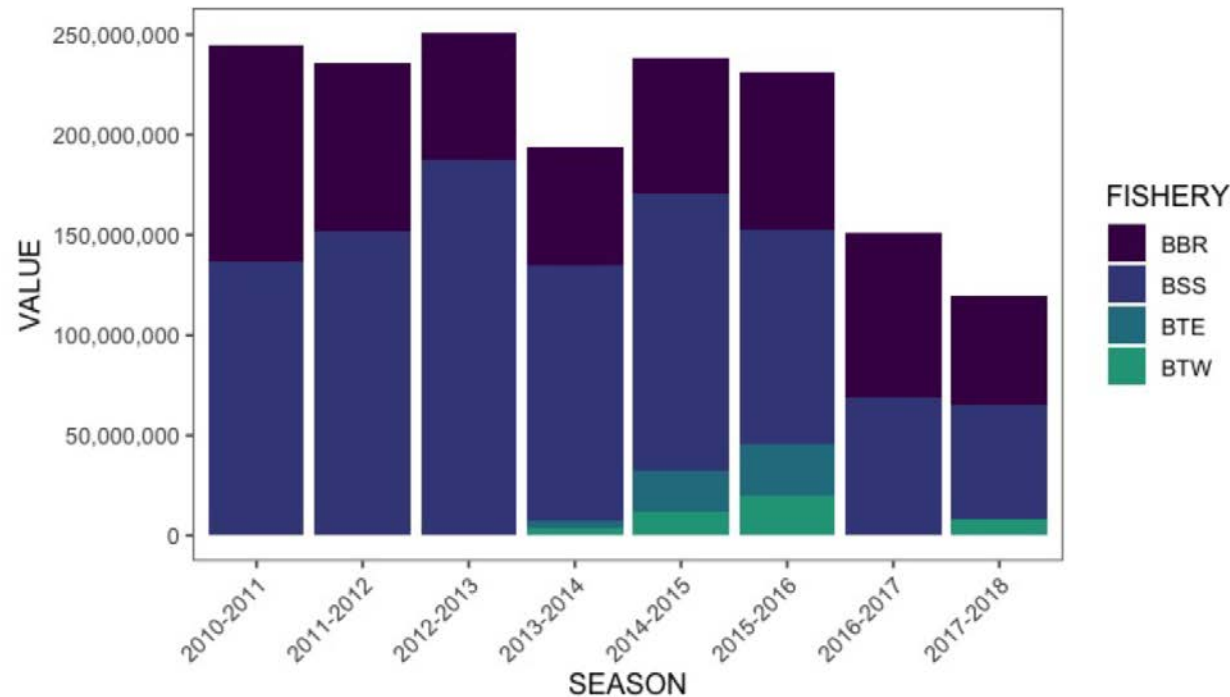
SOCIAL AND ECONOMIC EFFECTS

Table 10. Fishery characteristics for the directed St. Matthew Island blue king crab pot fishery. Source: 2019 SAFE (GHL/TAC) and Comprehensive fish tickets sourced through AKFIN. *Data are not reported due to confidentiality.

Fishing Year	GHL/TAC (mil lbs)	Crab	Pounds	Value	Pot lifts	CPUE	CVs	Landings	Trips
1999/00 - 2008/09									
FISHERY CLOSED									
2009/10	1.17	101,074	460,857	986,770	10,697	9	7	21	16
2010/11	1.6	296,183	1,263,974	6,225,905	29,346	10.1	11	47	39
2011/12	2.54	430,813	1,880,606	8,695,968	48,554	8.9	18	61	58
2012/13	1.63	374,278	1,616,048	6,966,710	37,065	10.1	17	54	46
2013/14									
FISHERY CLOSED									
2014/15	0.66	67,872	*	*	10,133	6.7	4	18	14
2015/16	0.41	24,045	*	*	5,475	4.4	3	6	6
2016/17 - 2018/19									
FISHERY CLOSED									



SOCIAL AND ECONOMIC EFFECTS



Value of other fisheries that SMBKC participants are engaged in has declined in recent years (p.53)



Figure 21. Landed value of crab fisheries engaged in by SMBKC participants. Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive FT



SOCIAL AND ECONOMIC EFFECTS

- Low levels of vessel and community dependence on SMBKC given current closure and intermittent openings and decreasing TACs over the last 20 years
- Alternative 2 represents a continuation of status quo in short term
 - Direct social and economic impacts associated with closing the directed fishery have already occurred
 - The potential for opening the SMBKC fishery earlier under the state harvest policy (Option 2), may provide participants with additional flexibility to help offset the cumulative losses of other crab stock declines
- Based on previous participation patterns, benefits of rebuilding would likely accrue to Alaska, Washington and Oregon communities associated with vessels and the processing sector in St. Paul, AK
- Given the uncertainty of recruitment and ecosystem conditions, it is possible that fishery may not rebuild
 - Under this scenario, communities will see no future benefits from the SMBKC fishery.
 - Short-term impacts of this may be minimal as the fishery is currently closed
 - May impact long term planning for participants who would enter the fishery in future openings
 - This would represent a substantial decline in asset value for current SMBKC QS holders.



ALTERNATIVES (PRELIMINARY)

- Alternative 1 (No Action)
 - No rebuilding plan
- Alternative 2 (Rebuilding)
 - Option 1 – no harvest during rebuilding
 - Option 2 – State harvest strategy



ALTERNATIVES (AFTER INITIAL REVIEW)

- Alternative 1 (No Action)
 - No rebuilding plan (State Harvest Strategy)
- Alternative 2 (Rebuilding)
 - Option 1 – no harvest during rebuilding
 - Option 2 – State harvest strategy



REBUILDING TIMES (PRELIMINARY)

Alternative	T_{Rebuild}	F_{Direct}	$\text{Diff_}T_{\text{min}}$	$\text{Diff_}T_{\text{max}}$
Alt 1	>50 years*	F_{ABC}	+29 years	> +15 years
Alt 2, Option 1	14.5 years	zero	$=T_{\text{min}}$	-17 years
Alt 2, Option 2	25.5 years	SHS	+11 years	-3 years



REBUILDING TIMES (AFTER INITIAL REVIEW)

Alternative	T_{Rebuild}	F_{Direct}	$\text{Diff_}T_{\text{min}}$	$\text{Diff_}T_{\text{max}}$
Alt 1	>25.5 years*	SHS	11 years	<>-3 years
Alt 2, Option 1	14.5 years	zero	= T_{min}	-17 years
Alt 2, Option 2	25.5 years	SHS	+11 years	-3 years



SUMMARY –ANY ALTERNATIVE...

- Protracted rebuilding period (14-26 years)
 - Rebuilding progress monitored throughout rebuilding
- SHS prohibition on harvest until stock has achieved SHS min threshold
- Bycatch minimal effect on $T_{rebuild}$
 - Bycatch (total catch) monitored throughout rebuilding
- Ecosystem conditions may not improve
 - Ecosystem indicators monitored during rebuilding
 - May never reach existing B_{MSY} .



SUMMARY – AMONG ALTERNATIVES...

- Alt 2, Opt 1
 - Prioritizes rebuilding speed
- Alt 2, Opt 2
 - Responsive to uncertainty
 - Ecosystem conditions
 - Crab fisheries
 - Affected communities



QUESTIONS?

Presentation prepared with input from:

- *Katie Palof*
- *Anna Henry*
- *Kendall Henry*
- *Megan Mackey*

JIM ARMSTRONG

JAMES.ARMSTRONG@NOAA.GOV

907-271-2809