
C1 Snow Crab Rebuilding Final Action

Jon McCracken, Sarah Rheinsmith, January 2023 CPT



Rebuilding timeline

- Oct 19, 2021 - NMFS notified Council that BS snow crab status has been changed to overfished therefore MSA section 304 requires a rebuilding plan be developed and implemented within two years of stock being declared overfished
- June 2022 - Council selected a purpose and need (section 1.1 on page 8) to facilitate compliance with MSA to rebuild the overfish stock
- Oct 2022 - SSC selected rebuilding parameters of $T_{\min} = 6$ years ($T_{\max} = 10$ years) with recruitment and mortality time frame scenarios 1982-2017
- Dec 2022 – Council reviewed initial review analysis and recommended analysis for final action and selected Alt 2/option 2 as PPA
- February 2023 Council meeting – Council will take final action and select a preferred alternative to recommend to the Secretary of Commerce



December 2022 Council Motion

The Council recommends scheduling the analysis for final action with the following preliminary preferred alternative (in bold):

Alternative 1: No Action: State harvest strategy with no rebuilding plan.

Alternative 2: Set target rebuilding time frame for the number of years necessary to rebuild the stock to the BMSY level at a probability $\geq 50\%$. The stock will be considered “rebuilt” once it reaches BMSY.

Option 1: No directed fishing until the stock is rebuilt.

Option 2: Allow the directed fishery to open based on the state harvest strategy while the stock is rebuilding.

Per the SSC recommendations, if possible, the analysts should add:

- 1) the projected catch during the rebuilding period to inform the evaluation of the potential economic effects; and
- 2) information on the status of fishing-dependent communities through the 2021/22 season and CDQ ownership/participation.
- 3) The analysis should also address Alternative 1 in the section on expected effects of the alternatives.



ALTERNATIVE 2 DETAILS

- 1982-2017 recruitment and mortality scenarios used for projections, the time with a greater than 50% probability of rebuilding to B_{msy} at $F=0$ is $T_{min} = 6$ years. Since $T_{min} = 6$ years, then $T_{max} = 10$ years
- Under Alt 2, a federal rebuilding plan for EBS snow crab will be incorporated into the BSAI King and Tanner Crab FMP.
 - Under Option 1, the FMP language would be amended to reflect a prohibition on directed harvest of EBS snow crab until stock is declared rebuilt and would prohibit the State of Alaska from setting a TAC under the State harvest strategy(SHS).
 - Option 2 would allow for a directed fishery as defined by the SHS

Projection specifications			T_{min}		
Fishing Scenario	Recruitment	Mortality	Median	5%	95%
No fishing	1982-2017	1982-2017	2029	2027	2034
bycatch	1982-2017	1982-2017	2029	2027	2034
State + bycatch	1982-2017	1982-2017	2029	2027	Inf
State - bycatch	1982-2017	1982-2017	2029	2027	Inf
ABC	1982-2017	1982-2017	2030	2027	Inf

Modified Table 4; Section 2.2.1

The projected catch during the rebuilding period to inform the evaluation of the potential economic effects; and

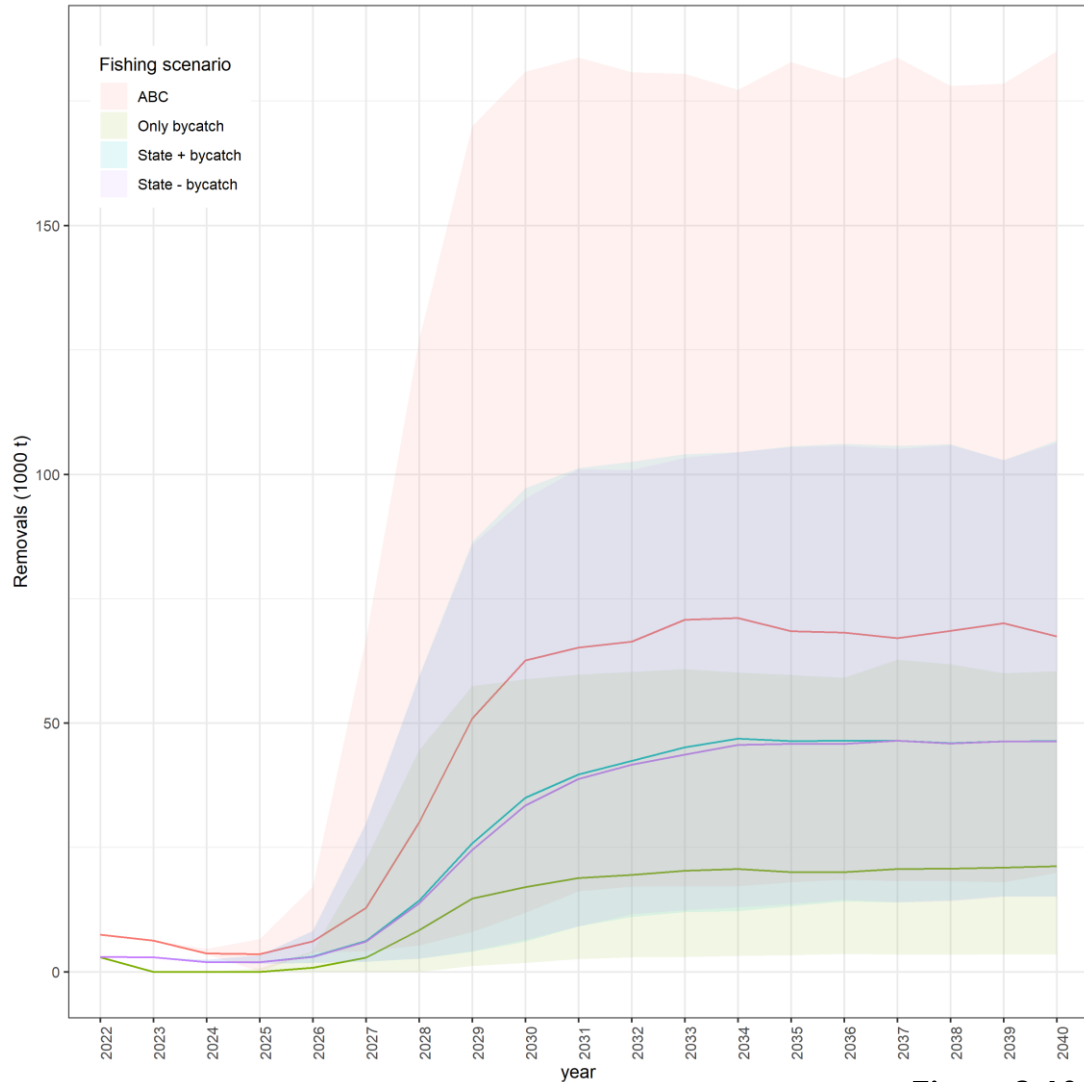


Figure 3-10

Sum of removals (mil lbs)		
Year	bycatch only*	state + bycatch*
2022	6.59	6.73
2023	0.05	6.53
2024	0.02	4.43
2025	0.03	4.33
2026	1.93	6.89
2027	6.37	13.83
2028	18.57	31.62
2029	32.56	57.01
2030	37.59	77.13
2031	41.62	87.56
2032	43.06	93.55
2033	44.93	99.51
2034	45.68	103.43
2035	44.30	102.24
2036	44.30	102.50
2037	45.65	102.41
2038	45.76	101.31
2039	46.27	102.22
2040	46.85	102.30



Table 3-6

Information on the status of fishing-dependent communities through the 2021/22 season and CDQ ownership/participation.

Snow crab year	TAC/GHL 1000t	TAC/GHL million lbs	Vessels	Retained catch 1000t	Retained catch million lbs	Gross ex-vessel revenue \$ million	Ev-vessel price \$/lb	Plants	Gross first wholesale revenue \$ million	Gross first wholesale price \$/lb
2005-2006	16.86	37.18	78	16.77	36.97	\$55.79	\$1.51	13	\$96.27	\$2.60
2006-2007	16.59	36.57	69	16.47	36.31	\$72.67	\$2.00	18	\$118.89	\$3.27
2007-2008	28.59	63.03	78	28.59	63.02	\$133.69	\$2.12	17	\$209.31	\$3.32
2008-2009	26.56	58.55	77	26.55	58.54	\$101.24	\$1.73	16	\$163.64	\$2.80
2009-2010	21.78	48.02	69	21.69	47.82	\$76.48	\$1.60	11	\$125.92	\$2.63
2010-2011	24.62	54.28	68	24.61	54.26	\$164.80	\$3.04	14	\$231.51	\$4.27
2011-2012	40.32	88.89	72	39.99	88.16	\$224.00	\$2.54	13	\$323.57	\$3.67
2012-2013	30.1	66.35	70	29.71	65.49	\$173.96	\$2.66	12	\$259.17	\$3.96
2013-2014	24.48	53.98	70	24.49	53.98	\$144.25	\$2.67	10	\$222.86	\$4.13
2014-2015	30.82	67.95	70	30.79	67.88	\$157.49	\$2.32	11	\$227.73	\$3.36
2015-2016	18.42	40.61	69	18.41	40.60	\$119.89	\$2.95	9	\$174.12	\$4.29
2016-2017	9.78	21.57	63	9.76	21.53	\$75.82	\$3.52	10	\$127.00	\$5.90
2017-2018	8.6	18.96	63	8.60	18.95	\$76.25	\$4.02	9	\$86.39	\$4.56
2018-2019	12.51	27.58	61	12.47	27.50	\$109.49	\$3.98	9	\$154.02	\$5.60
2019-2020	15.4	33.95	59	15.43	34.02	\$133.53	\$3.92	9	\$177.81	\$5.23
2020-2021	20.4	44.97	62	20.41	45.00	\$219.16	\$4.87	9	\$286.37	\$6.36
2021-2022*	2.5	5.51	42	2.5	5.51	\$33.56	\$6.09	Not available	\$40.61	\$7.37

Source: AKFIN (ADF&G fish ticket data and ADF&G COAR data). 2021/2022 retained catch from 2021/2022 Snow Crab SAFE. Source for 2021/2022 vessel count from September 2022 Ecosystem & Socioeconomic Profile for Eastern Bering Sea Snow Crab.

Data includes CDQ harvest

All price data is in real 2021 dollars

*Note that 2022 official ex-vessel prices are not yet available so preliminary prices were estimated using in-season ex-vessel prices inflated for post-season adjustment and first wholesale prices were estimated using the 2021/2022 preliminary ex-vessel price plus the average difference between ex-vessel price and first wholesale price 2005/2006 - 2020/2021 seasons.



CDQ ownership/participation of EBS snow crab quota shares

- Section 3.6.3.5 (starting on page 111) provides an updated overview of the CDQ snow crab allocation and a description of the CDQ groups
 - Table 3-35 which is annual percent of EBS snow crab CP owner shares, CV owner shares, and processor shares owned by all CDQ groups in aggregate
 - Table 3-36 shows percent of EBS snow crab CP owner shares, CV owner shares, and processors shares owned by the CDQ groups for 2021
 - Data in table was masked to protect confidential information

Year	Percent of EBS snow catcher processor owner shares owned by all CDQ groups combined	Percent of EBS snow crab catcher vessel owner shares owned by all CDQ groups combined	Percent of EBS snow crab processor shares owned by all CDQ groups combined
2005	19.8%	6.9%	0.1%
2006	19.8%	7.4%	0.1%
2007	19.8%	10.7%	0.0%
2008	23.9%	12.9%	0.0%
2009	43.8%	14.1%	11.5%
2010	43.8%	14.5%	11.5%
2011	43.8%	16.6%	11.5%
2012	43.8%	16.6%	11.5%
2013	43.8%	16.6%	11.1%
2014	54.1%	18.4%	11.1%
2015	54.1%	20.0%	22.9%
2016	54.1%	20.0%	22.9%
2017	54.1%	20.0%	23.0%
2018	54.1%	20.0%	22.9%
2019	54.1%	20.0%	22.9%
2020	54.1%	20.0%	22.9%
2021	54.1%	20.0%	23.0%

Source: AKFIN; source file Crab_QS_by_CDQ_BSS(12-29--22)

Groupings	Percent of EBS snow crab catcher processor owner shares owned by individual CDQ groups	Percent of EBS snow crab catcher vessel owner shares owned by individual CDQ groups	Percent of EBS snow crab processor shares owned by individual CDQ groups
CDQ group 1	0.0%	0.8%	5.7%
CDQ group 2	0.0%	6.2%	0.0%
CDQ group 3	9.7%	2.9%	17.3%
CDQ group 4	10.6%	4.4%	0.0%
CDQ group 5	7.7%	2.4%	0.0%
CDQ group 6	26.2%	3.2%	0.0%
Non-CDQ Group	45.9%	80.0%	77.0%

Source: AKFIN; source file Crab_QS_by_CDQ_BSS(12-29--22)(1)



Economic and Social Impacts

Harvesters, crew, and shareholders

- Section 3.6.4.1
 - Under Alt 2/opt 2, would allow a directed fishery based on state harvest strategy, therefore the socioeconomic impacts could improve
 - Based on projected snow crab removals, there is the potential for the fishery to be closed during these early years of the rebuilding period
 - Assuming there is a directed fishery, the ex-vessel payments from snow crab harvest that would keep the vessels and crew active and provide downstream benefits for owners, crew, quota shareholders and communities
 - Based on projected removals, the estimated annual ex-vessel gross revenue could range from \$11 million (using \$3.03 price) to \$36 million (\$6.09 price) during the first 4 years of the rebuilding period
 - Harvesting operations that are highly dependent on the snow crab fishery and not diversified in other fisheries may have greater difficulty maintaining their credit and debt instruments and could be forced to refinance or business sale/bankruptcy during this period
 - The loss of vessels during this period would be lost crew positions, lost revenue for share holders, and communities of these participants
 - Ex-vessel gross revenue during the last 2 years of rebuilding could range from \$76 million to \$109 million (based on projected removals and ex-vessel prices of \$3.98 - \$4.02)



Economic and Social Impacts Processor

- Section 3.6.4.1
 - Alt 2/opt 2 would provide opportunity for a directed fishery under State harvest strategy
 - However, based on projected snow crab removals, there is the potential for the fishery to be closed during these early years of the rebuilding period
 - Assuming there is a directed fishery and assuming similar first wholesale gross prices from the 2021/2022 season for snow crab deliveries during early years of rebuilding period, gross first wholesale revenue during that season (\$41 million) could be similar for the first 4 years of the rebuilding period
 - Given the potential for lower processor revenue, processors with little dependency on the snow crab fishery would likely see some reduced operating revenue from loss of snow crab deliveries which could result in reduced processor workers and/or reduced wages and subsequent expenditures in the local communities
 - For those processors highly dependent on snow crab and limit diversification, the low projected removals of snow crab during first 4 years of rebuilding period could result in these processors not operating during this period would represent a severe socioeconomic impact to the processor, plant workers, and the local community



The analysis should also address Alternative 1 in the section on expected effects of the alternatives.

- Alternative 1 was addressed and analyzed for all resource components in the section on expected effects of the alternatives. However, this is not a feasible choice as Alt. 1 is not in compliance with MSA requirements of rebuilding an overfished stock.
 - No changes to any conclusions drawn
 - Alternative 1 and Alternative 2 are similar in outcome
 - Note: Marine mammals may be negatively impacted by not implementing a rebuilding plan with intentions to rebuild the stock.

