



Mid-Atlantic Fishery Management Council  
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Michael P. Luisi, Chairman | G. Warren Elliott, Vice Chairman  
Christopher M. Moore, Ph.D., Executive Director

## MEMORANDUM

**Date:** June 29, 2020  
**To:** Dr. Chris Moore, Executive Director  
**From:** Matthew Seeley, Staff  
**Subject:** 2021 Bluefish Specifications Review

### Executive Summary

An operational assessment update for bluefish was peer reviewed in August 2019. The assessment incorporates data through 2018, including the revised time series (1985-2018) of recreational catch provided by the Marine Recreational Information Program (MRIP).<sup>1</sup>

2020 catch and landings limits for bluefish (Table 1) were adopted by the Council and Board in October/December 2019. The measures currently implemented for 2020 include an Acceptable Biological Catch (ABC) of 16.28 million lbs or 7,385 mt. The Scientific and Statistical Committee (SSC) should review and recommend any necessary revisions to the 2021 ABC for the Council and Atlantic States Marine Fisheries Commission's (Commission) Bluefish Board (Board) to consider at their joint August 2020 meeting.

Similarly, the Monitoring Committee (MC) should review recent fishery performance and make a recommendation to the Council and Board regarding 2021, annual catch targets (ACTs), total allowable landings (TALs), commercial quotas, recreational harvest limits (RHLs), and any other associated management measures.

Bluefish will be entering a rebuilding plan in 2022 due to the overfished status. All rebuilding projections were developed using the new risk policy for 2022 and beyond. However, 2020-2021 ABCs use the old risk policy since they were projected prior to finalization of the new risk policy. Since there is only one year left in the current two-year specifications package, staff recommends not revising the ABCs using the new risk policy to encourage stability in quotas for the overfished fishery. Also, the new risk policy would only result in an increase in the ABC of ~6.8% compared to the old risk policy under the same  $B/B_{MSY}$  ratio = 0.46. Furthermore, a bluefish management

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<sup>1</sup> In July 2018, MRIP released revisions to their time series of recreational catch and landings estimates based on adjustments for a revised angler intercept methodology and a new effort estimation methodology (i.e., a transition from a telephone-based effort survey to a mail-based effort survey). The revised, or calibrated, estimates of catch and landings for most years are several times higher than the previous estimates for shore and private boat modes, substantially raising the overall bluefish catch and harvest estimates.

track assessment is scheduled in 2021 where we will receive data updating the stock status and rebuilding projections.

This memo provides recommendations for review of the 2021 bluefish specifications. For 2021, staff recommends a status quo acceptable biological catch (ABC) of 16.28 million pounds (7,385 mt).

**Table 1. Staff recommended 2021 bluefish specifications.**

Management Measure	2021		Basis
	mil lb.	mt	
<b>Overfishing Limit (OFL)</b>	37.98	17,228	Stock assessment projections
<b>ABC</b>	16.28	7,385	Derived by SSC, based on old Council risk policy (2019)
<b>ACL</b>	16.28	7,385	Defined in FMP as equal to ABC
<b>Management Uncertainty</b>	0	0	Derived by the Monitoring Committee
<b>Commercial ACT</b>	2.77	1,255	(ACL – Management Uncertainty) x 17%
<b>Recreational ACT</b>	13.51	6,130	(ACL – Management Uncertainty) x 83%
<b>Commercial Discards</b>	0	0	Value used in assessment
<b>Recreational Discards</b>	5.17	2,343	2019 discards
<b>Commercial TAL</b>	2.77	1,255	Commercial ACT – commercial discards
<b>Recreational TAL</b>	8.34	3,782	Recreational ACT – recreational discards
<b>Combined TAL</b>	11.11	5,039	Commercial TAL + Recreational TAL
<b>Transfer</b>	0	0	Calculated so Expected Rec. Landings = RHL
<b>Expected Recreational Landings</b>	15.56	7,056	2019 Recreational Landings
<b>Commercial Quota</b>	2.77	1,255	Commercial TAL + transfer
<b>RHL</b>	8.34	3,782	Recreational TAL – transfer

## Introduction

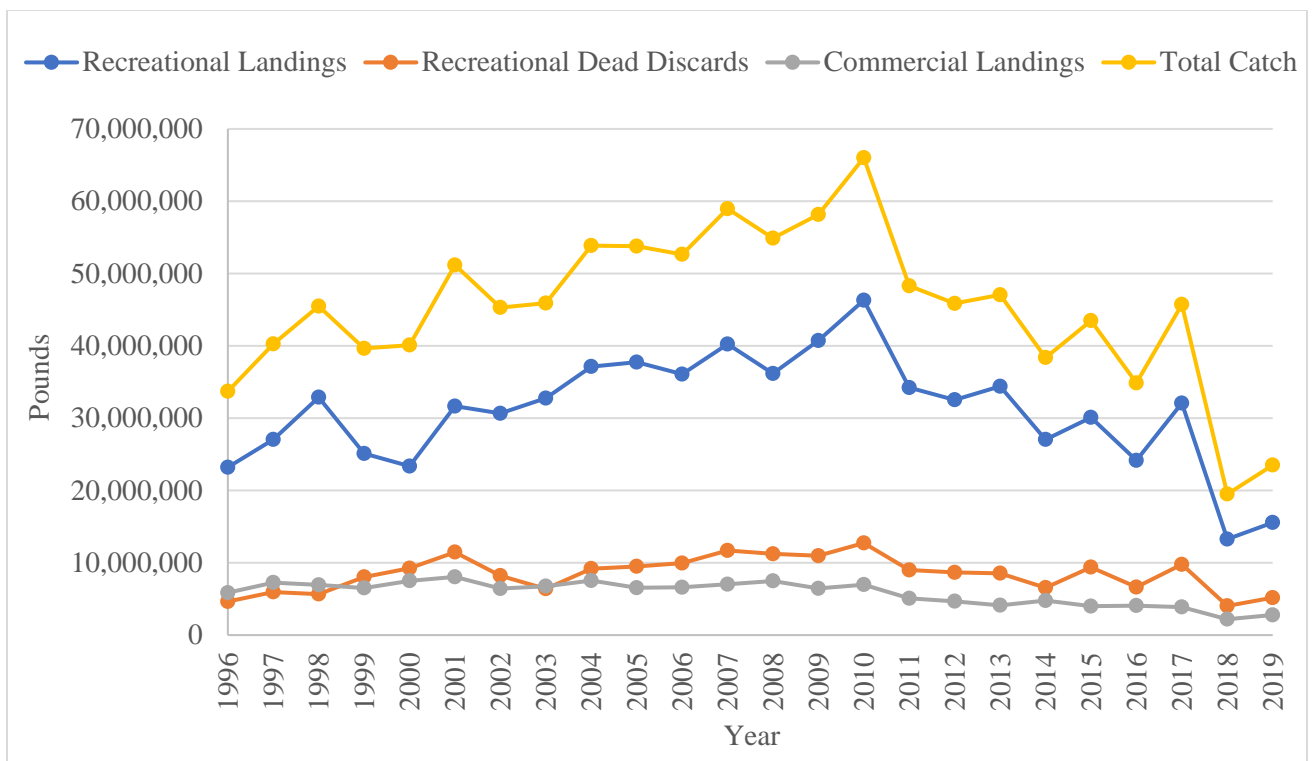
The Magnuson-Stevens Act (MSA) requires each Council's SSC to provide ongoing scientific advice for fishery management decisions, including recommendations for ABC, preventing overfishing, and achieving maximum sustainable yield. The Council's catch limit recommendations for the upcoming fishing year(s) cannot exceed the ABC recommendation of the SSC. In addition, the MC established by the Fishery Management Plan (FMP) is responsible for developing recommendations for management measures designed to achieve the recommended catch limits. The SSC recommends ABCs that addresses scientific uncertainty, while the MC recommends ACTs that address management uncertainty and management measures to constrain catch to the TALs.

In late 2019, the Council/Board adopted recommendations for 2020-2021 catch and landings limits for bluefish based on the results of the new operational stock assessment update.

This year, both the SSC and MC will review the 2021 measures and recommend revisions (if necessary) for 2021. The Council/Board will meet jointly to consider these recommendations in August 2020.

## Recent Catch and Landings

Commercial and recreational landings and dead discards 1996-2019 are shown in Figure 1.



**Figure 1. Bluefish catch components from 1996-2019 including the revised MRIP time series for recreational data.**

MRIP recreational landings increased by approximately 17% from 2018 to 2019 (13.27 million pounds to 15.56 million pounds) and reported the second lowest recreational landings (2018 is lowest) for the time series. This coincides with effort, as the number of recreational trips<sup>2</sup> in 2019 (8,301,107) is the third lowest reported in the 2000-2019 period.

Commercial landings increased by approximately 26% from 2018 to 2019 (2.20 million pounds to 2.78 million pounds). This increase came off the lowest recorded landings in the commercial time series (2018). Landings identified through the dealer database (cfders) were broken down with the following gear: gillnet (44%), followed by unknown gear (28%), otter trawl/bottom fish (12%), other (11%) and handline (5%). Recreational and commercial landings and recreational discards (assuming an average coastwide weight of 1.3 pounds) by state are available in Table 2.

**Table 2. Recreational landings and discards and commercial landings by state for 2019.**

State	Recreational (MRIP) Landings (Pounds)	Recreational (MRIP) Discards (Pounds)	Commercial Landings (Pounds)
ME	0	0	0
NH	0	0	0
MA	719,130	91,871	184,182
RI	931,991	119,316	415,836
CT	1,161,103	159,840	33,392
NY	3,521,431	651,115	594,822
NJ	1,660,208	500,941	203,047
DE	415,267	83,922	4,505
MD	154,451	44,259	22,776
VA	581,458	219,430	169,179
NC	3,011,480	1,396,674	934,883
SC	502,699	1,086,428	0
GA	21,886	48,172	0
FL	2,874,785	764,488	214,338
Unknown	N/A	N/A	262
Total	15,555,889	5,166,456	2,777,222

### **Review of Prior SSC Recommendations**

In September 2019, the SSC recommended new ABCs for 2020-2021, which incorporated the results of the 2019 operational stock assessment. To make this recommendation, the SSC reviewed 2018 fishery performance, the 2019 data update, and materials from the SAW 60 benchmark assessment.

<sup>2</sup> Estimated number of recreational fishing trips where the primary or secondary target was bluefish, Maine – Florida's East Coast. Source: MRIP.

To derive the 2020-2021 ABCs, a CV of 100% was applied to the OFL with a typical life history. The SSC offered ABCs using the constant/average and varied approach (Table 3). Upon review, the Council selected to move forward with the average ABC approach. This resulted in ABCs of 7,385 mt.

**Table 3. 2019 bluefish operational assessment ABC projections for 2020-2021. The projections assume the 2019 ABC of 9,897 mt with recreational catch in ‘New’ MRIP equivalents will be taken in 2019, providing an estimated catch of 22,614 mt in 2019. OFL Total Catches are catches in each year fishing at  $F_{MSY} = 0.183$ , prior to calculation of the associated annual ABC. The projections sample from the estimated recruitment for 1985-2018 and use the MAFMC SSC OFL CV working group recommended OFL CV = 100%.**

<b>Average ABC 2020-2021</b>					
Total Catch, Landings, Discards, Fishing Mortality (F) and Spawning Stock Biomass (SSB) Catches and SSB in metric tons					
Year	OFL Total Catch	ABC Total Catch	ABC F	ABC P* value	ABC SSB
2019	15,373	22,614	0.279	0.679	92,773
2020	14,956	7,385	0.087	0.198	102,166
2021	17,228	7,385	0.075	0.154	115,041

### **Stock Status and Biological Reference Points**

#### ***Projections***

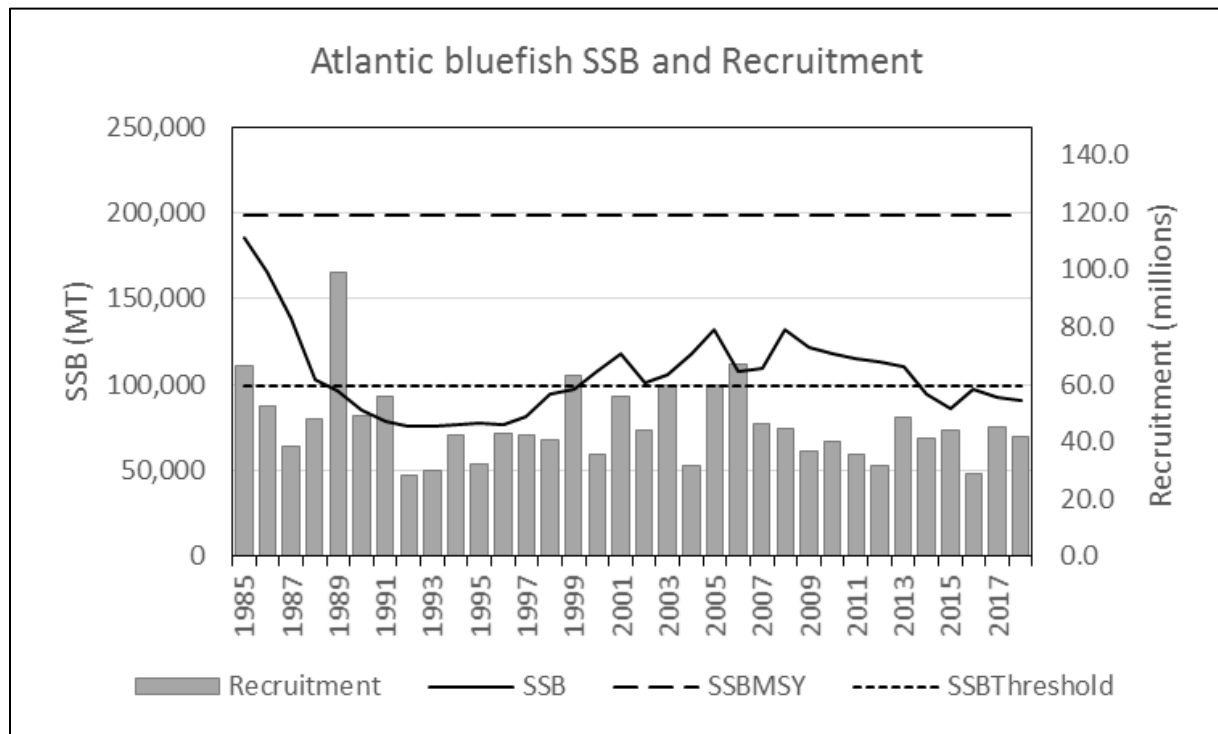
In August 2019, a bluefish operational assessment, which included revised bluefish MRIP estimates through 2018 changed the stock status and biological reference points from SAW 60, which utilized data through 2014.

The biological reference points for bluefish revised through the 2019 operational assessment include a fishing mortality threshold of  $F_{MSY} = F_{35\%}$  (as the  $F_{MSY}$  proxy) = 0.183, and a biomass reference point of  $SSB_{MSY} = SSB_{35\%}$  (as the  $SSB_{MSY}$  proxy) = 438.10 million lbs (198,717 mt). The minimum stock size threshold ( $1/2 SSB_{MSY}$ ), is estimated to be 219.05 million lbs (99,359 mt); Table 4. SSB in 2018 was 200.71 million lbs (91,041 mt) (Figure 2).

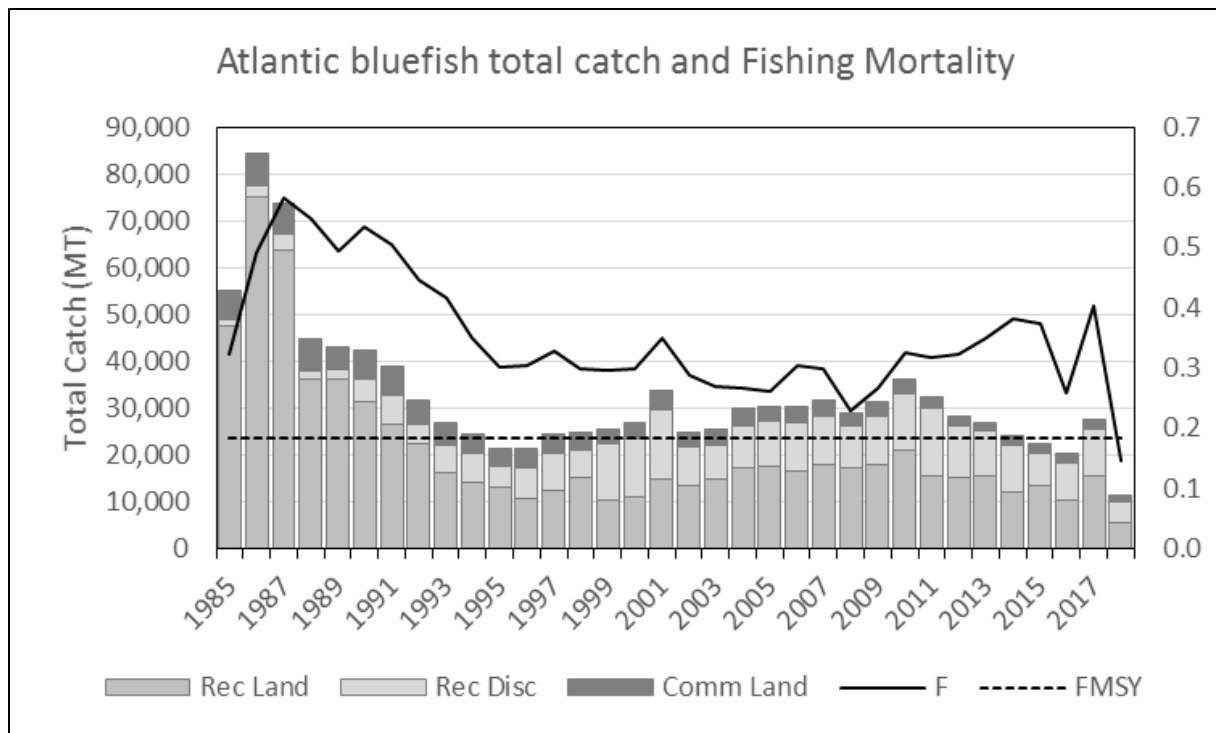
Operational assessment results indicated that the bluefish stock was overfished and overfishing was not occurring in 2018 relative to the biological reference points. Fishing mortality on the fully selected age 2 fish was 0.146 in 2018, 80% of the updated fishing mortality threshold reference point  $F_{MSY}$  proxy =  $F_{35\%} = 0.183$  (Figure 3). There is a 90% probability that the fishing mortality rate in 2018 was between 0.119 and 0.205.

**Table 4. Summary of changes in biological reference points and terminal year SSB and F estimates resulting from the SAW/SARC 60 process.**

	<b>SAW/SARC 60 (2015) Biological Reference Points and most recent update stock status results (data through 2014)</b>	<b>Bluefish Operational Assessment (2019) Biological Reference Points and stock status results (data through 2018)</b>
<b>Stock Status</b>	Not Overfished, Not Overfishing	Overfished, Not Overfishing
<b>SSB<sub>MSY</sub></b>	223.42 million lbs (101,343 mt)	438.10 million lbs (198,717 mt)
<b>½ SSB<sub>MSY</sub></b>	111.71 million lbs (50,672 mt)	219.05 million lbs (99,359 mt)
<b>Terminal year SSB</b>	2014: 258.76 million lbs (86,534 mt) 85% of SSB <sub>MSY</sub>	2018: 200.71 million lbs (91,041 mt) 46% of SSB <sub>MSY</sub>
<b>F<sub>MSY</sub></b>	0.190	0.183
<b>Terminal year F</b>	2014: 0.157 83% of F <sub>MSY</sub>	2018: 0.146 80% of F <sub>MSY</sub>



**Figure 2. Atlantic bluefish spawning stock biomass (SSB; solid black line) and recruitment at age 0 (R; gray vertical bars) by calendar year. The horizontal dashed line is the updated SSB<sub>MSY</sub> proxy = SSB<sub>40%</sub> = 198,717 mt, and the dotted black line is the SSB<sub>Threshold</sub> = 99,359 mt.**



**Figure 3. Total fishery catch (metric tons; mt; solid line) and fishing mortality (F, peak at age 3; squares) for Atlantic bluefish. The horizontal dashed line is the updated  $F_{MSY}$  proxy =  $F_{35\%}$  = 0.183.**

The 2019 operational assessment indicated the bluefish stock has experienced a decline in SSB over the past decade, coinciding with an increasing trend in F. Recruitment has remained fairly steady, fluctuating just below the time-series mean of 46 million fish. Both commercial and recreational fisheries had poor catch in 2016 (44.91 million lbs or 20,370 mt) and 2018 (24.89 million lbs or 11,288 mt), resulting in the second lowest and lowest catches on record (excluding 2019), respectively. As a result of the very low catch in 2018, fishing mortality was estimated below the reference point for the first time in the time-series. These lower catches are possibly a result of availability. Anecdotal evidence suggests larger bluefish stayed offshore and inaccessible to most of the recreational fishery during these two years.

### ***Staff Recommendations for 2021 ABCs***

For 2021, staff recommends a status quo ABC of 16.28 million pounds (7,385 mt) based on the projections developed from the 2019 bluefish operational assessment, recent fishery performance (Data update and Fishery Information Document), and an understanding that bluefish will enter a rebuilding plan in 2022 (Table 5). Since bluefish is scheduled for a management track assessment in 2021, will enter a rebuilding plan in 2022 due to the overfished status, and development of rebuilding projections alternatives have been drafted (Appendix A), Council staff recommends not updating ABCs with the new risk policy for 2021. Furthermore, consistent ABCs would offer stability in a fishery that is currently overfished.

**Table 5. Current fishing year specifications (2020) and 2021 staff recommended specifications for bluefish.**

Management Measure	2020 (Current Measures set in 2019)		Basis for 2021 Staff Recommendation	2021 (Staff recommended)	
	M lbs	mt		M lbs	mt
Overfishing Limit	37.98	17,228	Stock assessment projections	37.98	17,228
ABC	16.28	7,385	Derived by SSC, based on old Council risk policy (2019)	16.28	7,385
ACL	16.28	7,385	Defined in FMP as equal to ABC	16.28	7,385
Management Uncertainty	0	0	Derived by the Monitoring Committee	0	0
Commercial ACT	2.77	1,255	(ACL – Management Uncertainty) x 17%	2.77	1,255
Recreational ACT	13.51	6,130	(ACL – Management Uncertainty) x 83%	13.51	6,130
Commercial Discards	0	0	Value used in assessment	0	0
Recreational Discards	4.03	1,829	2019 discards	5.17	2,343
Commercial TAL	2.77	1,255	Commercial ACT – commercial discards	2.77	1,255
Recreational TAL	9.48	4,301	Recreational ACT – recreational discards	8.34	3,782
Combined TAL	12.25	5,556	Commercial TAL + Recreational TAL	11.11	5,039
Transfer	0	0	Calculated so Expected Rec. Landings = RHL	0	0
Expected Rec Landings	13.27	6,020	2019 Recreational Landings	15.56	7,056
Commercial Quota	2.77	1,255	Commercial TAL + transfer	2.77	1,255
Recreational Harvest Limit	9.48	4,301	Recreational TAL – transfer	8.34	3,782



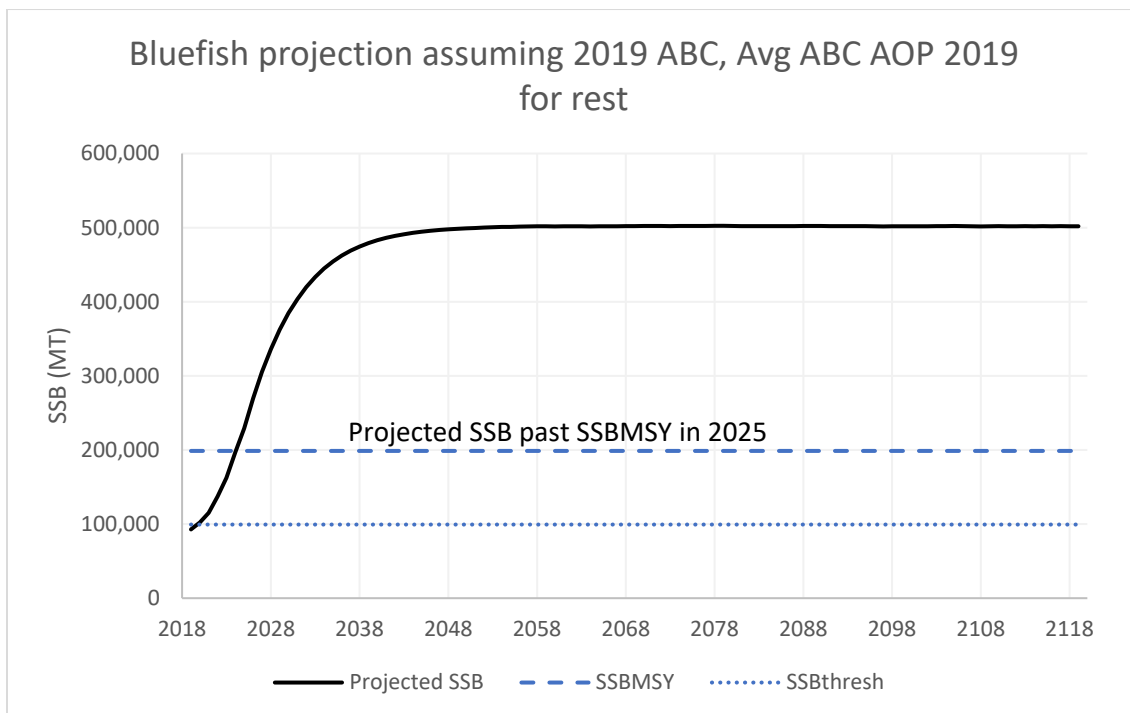
**Appendix (A) – Rebuilding Projections**

**Constant Harvest: 4-year Rebuilding Plan**

For this projection alternative, the FMAT requested a constant harvest approach (current ABC) be utilized until the stock is rebuilt (Table A1 and Figure A1). This projection rebuilds the stock by end of year 2025 (4-year rebuilding plan). *This alternative does not require an adjustment to the Council risk policy because the catches are less than those described under the P\* approach.*

**Table A1. Constant harvest rebuilding projection.**

Year	SSB (MT)	Recruits (000s)	F	Catch (MT)	SSBMSY (MT)	SSBthresh (MT)
2019	92,779	43,282	0.279	22,614	198,717	99,359
2020	102,165	43,455	0.087	7,385	198,717	99,359
2021	115,085	43,428	0.075	7,385	198,717	99,359
2022	137,450	43,460	0.064	7,385	198,717	99,359
2023	162,495	43,353	0.052	7,385	198,717	99,359
2024	197,141	43,239	0.045	7,385	198,717	99,359
2025	229,121	43,379	0.039	7,385	198,717	99,359
2026	269,777	43,362	0.034	7,385	198,717	99,359



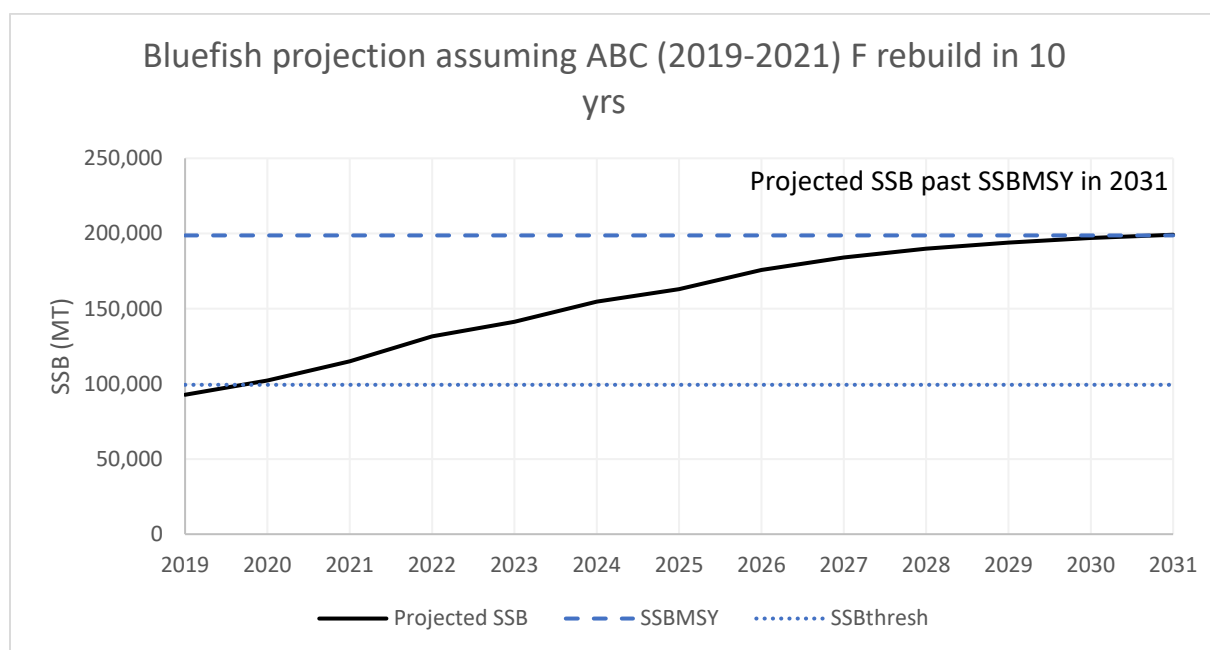
**Figure A1. Constant harvest rebuilding projection.**

## Constant Fishing Mortality (10 years): 10-year Rebuilding Plan

For this projection alternative, the FMAT requested a constant fishing mortality approach (F) be utilized until the stock is rebuilt (Table A2 and Figure A2). This projection rebuilds the stock by end of year 2031 (10-year rebuilding plan). *This alternative requires an adjustment to the Council risk policy for this rebuilding plan only because the catches are higher than those described under the P\* approach.*

**Table A2. Constant 10-year F rebuilding projection.**

Year	SSB (MT)	Recruits (000s)	F	Catch (MT)	SSBMSY (MT)	SSBthresh (MT)
2019	92,732	43,262	0.281	22,614	198,717	99,359
2020	102,174	43,402	0.088	7,385	198,717	99,359
2021	115,012	43,304	0.076	7,385	198,717	99,359
2022	131,624	43,389	0.177	19,616	198,717	99,359
2023	141,297	43,274	0.177	21,894	198,717	99,359
2024	154,661	43,462	0.177	22,990	198,717	99,359
2025	162,976	43,235	0.177	24,398	198,717	99,359
2026	175,734	43,367	0.177	25,907	198,717	99,359
2027	184,062	43,488	0.177	26,904	198,717	99,359
2028	189,900	43,425	0.177	27,595	198,717	99,359
2029	193,952	43,561	0.177	28,100	198,717	99,359
2030	197,035	43,300	0.177	28,463	198,717	99,359
2031	199,167	43,326	0.177	28,723	198,717	99,359



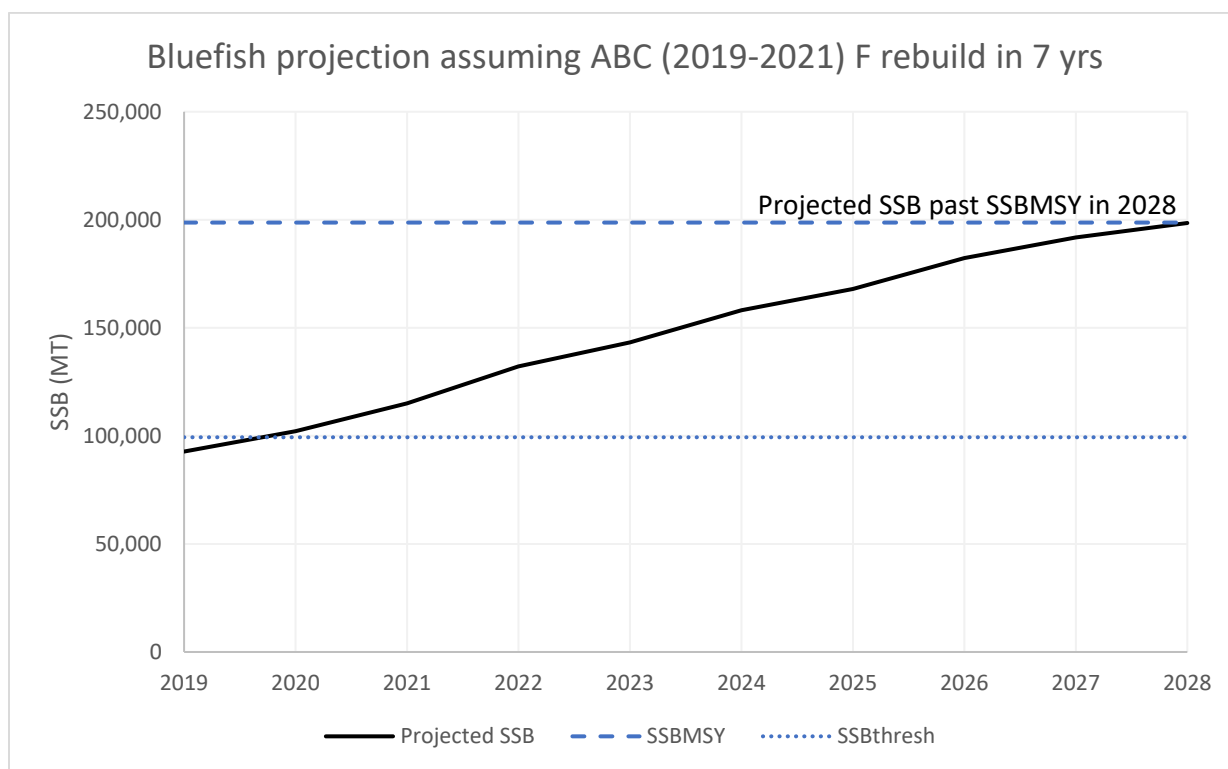
**Figure A2. Constant 10-year F rebuilding projection.**

### Constant Fishing Mortality (7 years): 7-year Rebuilding Plan

For this projection alternative, the FMAT requested a constant fishing mortality approach (F) be utilized until the stock is rebuilt (Table A3 and Figure A3). This projection rebuilds the stock by end of year 2028 (7-year rebuilding plan). *This alternative requires an adjustment to the Council risk policy for this rebuilding plan only because the catches are higher than those described under the P\* approach.*

**Table A3. Constant 7-year F rebuilding projection.**

Year	SSB (MT)	Recruits (000s)	F	Catch (MT)	SSBMSY (MT)	SSBthresh (MT)
2019	92,755	43,320	0.279	22,614	198,717	99,359
2020	102,186	43,531	0.087	7,385	198,717	99,359
2021	115,073	43,310	0.075	7,385	198,717	99,359
2022	132,150	43,390	0.166	18,477	198,717	99,359
2023	143,271	43,292	0.166	20,813	198,717	99,359
2024	158,152	43,272	0.166	22,033	198,717	99,359
2025	168,006	43,395	0.166	23,532	198,717	99,359
2026	182,311	43,336	0.166	25,121	198,717	99,359
2027	191,855	43,578	0.166	26,191	198,717	99,359
2028	198,520	43,411	0.166	26,939	198,717	99,359



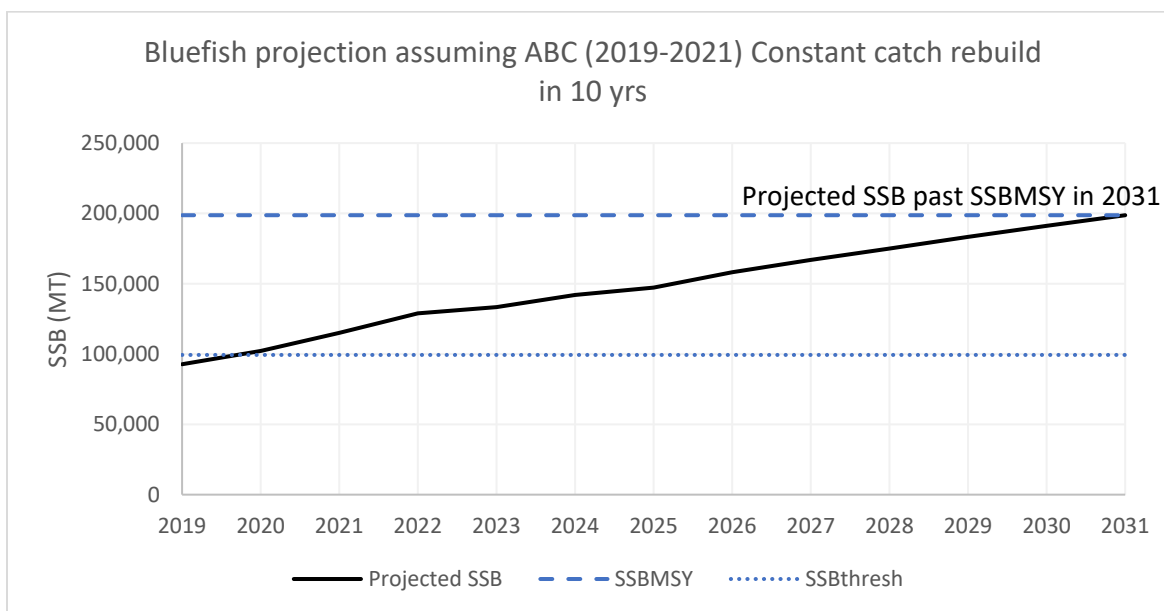
**Figure A3. Constant 7-year F rebuilding projection.**

### Constant Harvest (Highest Catch): 10-year Rebuilding Plan

For this projection alternative, the FMAT requested a constant harvest approach with the highest possible catch to rebuild the stock in 10 years (Table A4 and Figure A4). This projection rebuilds the stock by end of year 2031 (10-year rebuilding plan). *This alternative requires an adjustment to the Council risk policy for this rebuilding plan only because the catches are higher than those described under the P\* approach.*

**Table A4. Constant harvest rebuilding projection using the highest catch to rebuild over 10-years.**

Year	SSB (MT)	Recruits (000s)	F	Catch (MT)	SSBMSY (MT)	SSBthresh (MT)
2019	92,732	43,262	0.280	22,614	198,717	99,359
2020	102,174	43,402	0.087	7,385	198,717	99,359
2021	115,012	43,304	0.075	7,385	198,717	99,359
2022	128,975	43,389	0.231	25,094	198,717	99,359
2023	133,420	43,274	0.215	25,094	198,717	99,359
2024	142,065	43,462	0.209	25,094	198,717	99,359
2025	147,216	43,235	0.200	25,094	198,717	99,359
2026	158,145	43,367	0.188	25,094	198,717	99,359
2027	166,971	43,488	0.180	25,094	198,717	99,359
2028	175,055	43,425	0.173	25,094	198,717	99,359
2029	183,301	43,561	0.166	25,094	198,717	99,359
2030	191,143	43,300	0.160	25,094	198,717	99,359
2031	198,717	43,326	0.154	25,094	198,717	99,359



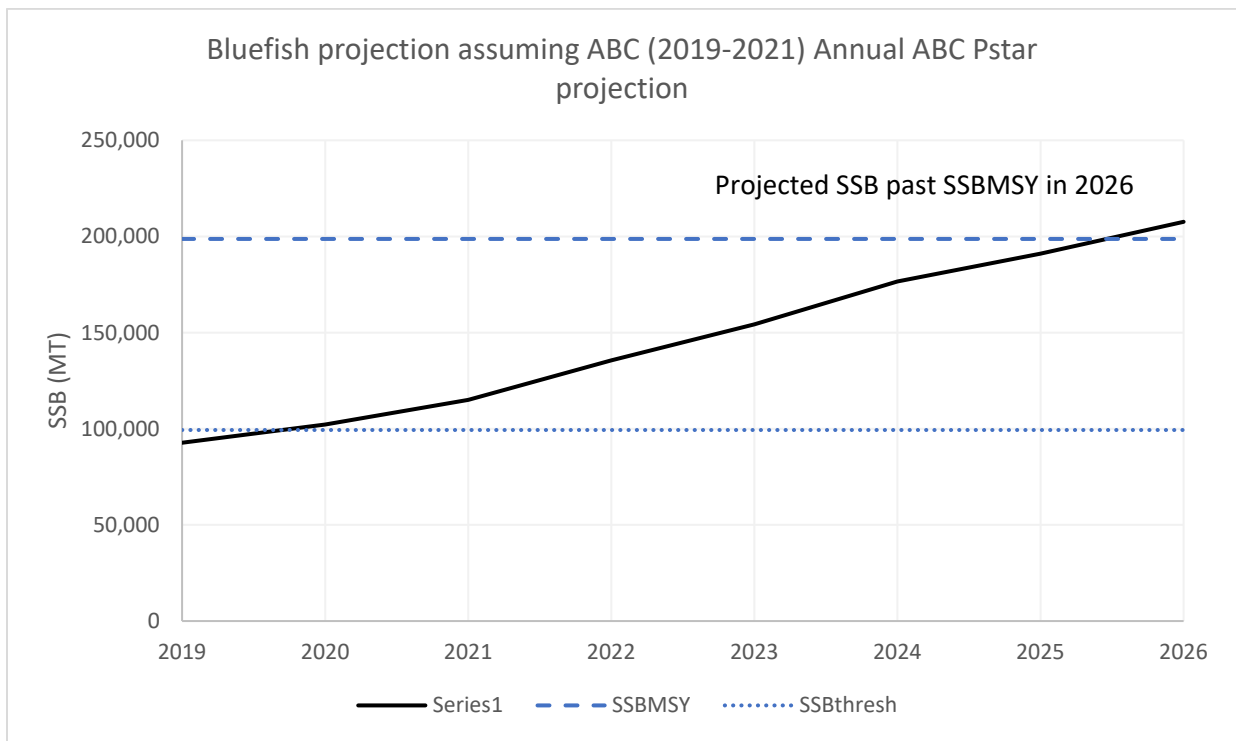
**Figure A4. Constant harvest rebuilding projection using the highest catch to over 10-years.**

### P\* Approach (Council Risk Policy): 5-year Rebuilding Plan

For this projection alternative, the FMAT requested using the Council’s risk policy to rebuild the stock (Table A5 and Figure A5). This projection rebuilds the stock by end of year 2026 (5-year rebuilding plan).

**Table A5. Rebuilding projection based on P\* using the Council’s risk policy to rebuild over 5-years.**

Year	OFL Total Catch (MT)	ABC Total Catch (MT)	ABC F	ABC Pstar	ABC SSB (MT)	SSBMSY (MT)	SSBthresh (MT)
2019	15368	22,614	0.280	0.183	92,732	198,717	99,359
2020	16212	7,385	0.087	0.207	102,174	198,717	99,359
2021	17205	7,385	0.075	0.239	115,012	198,717	99,359
2022	20237	11,222	0.098	0.291	135,586	198,717	99,359
2023	23998	15,181	0.113	0.338	154,257	198,717	99,359
2024	26408	18,653	0.127	0.394	176,619	198,717	99,359
2025	28807	23,048	0.144	0.431	191,063	198,717	99,359
2026	30848	26,677	0.157	0.450	207,619	198,717	99,359



**Figure A5. Rebuilding projection based on P\* using the Council’s risk policy to rebuild over 5-years.**

Below, catch and spawning stock biomass are compared for all five rebuilding projections. The spawning stock biomass target is 198,717 mt.

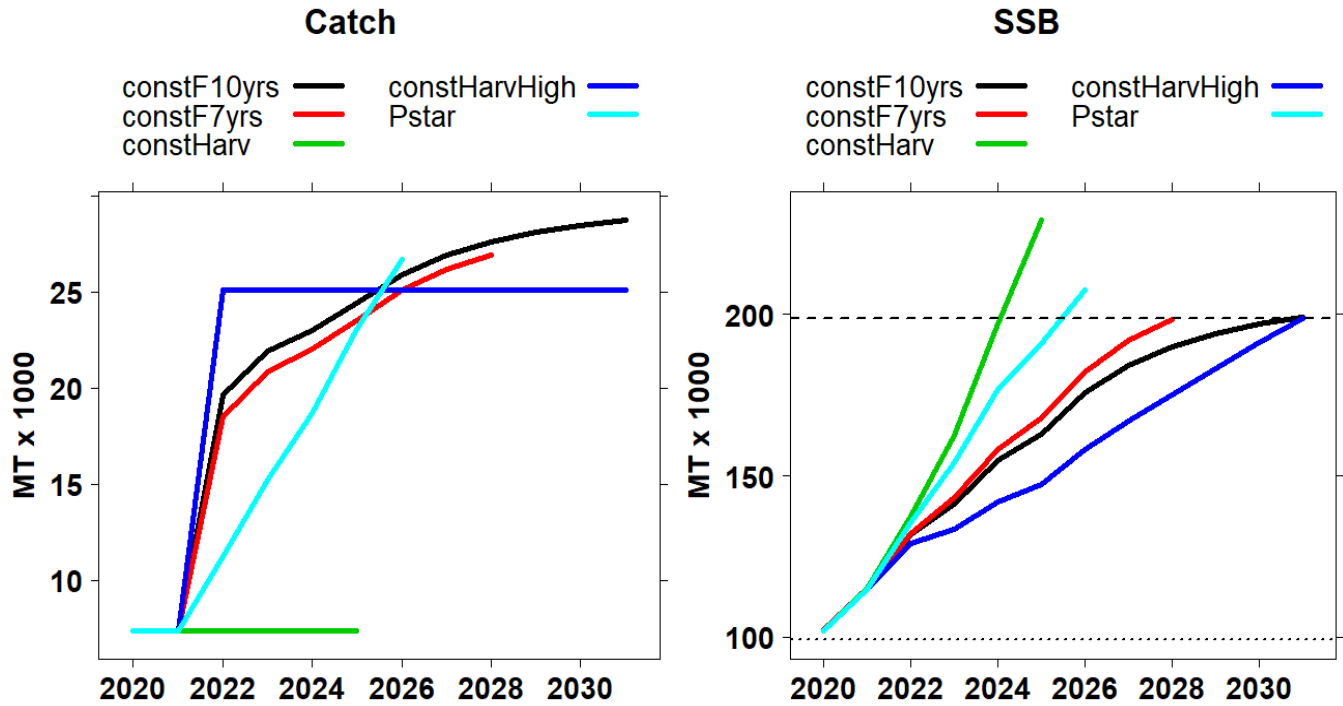


Figure A6. Rebuilding projection comparisons for catch and spawning stock biomass.