



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

MEMORANDUM

Date: July 26, 2023
To: Council and Board
From: Karson Cisneros, Council staff
Subject: 2024-2025 Bluefish Specifications

On Wednesday, August 9, the Council and Board will set 2024-2025 bluefish specifications and 2024 recreational management measures after reviewing the recommendations of the SSC, Monitoring Committee, and Advisory Panel. Materials listed below are provided for the Council and Board's consideration of this agenda item.

As noted below, one material is behind another tab, and some will be available on the [August 2023 Meeting Page](#) at a later date.

- 1) Advisory Panel meeting summary from July 31, 2023 (*to be posted once available*)
- 2) Monitoring Committee meeting summary from July 26, 2023 (*to be posted once available*)
- 3) July 2023 Scientific and Statistical Committee meeting report (*to be posted behind Tab 16 once available*)
- 4) Staff memo on 2024 bluefish recreational measures dated July 19, 2023
- 5) Staff memo on 2024-2025 bluefish specifications dated July 14, 2023
- 6) 2023 Bluefish Management Track Assessment
- 7) 2023 Bluefish Advisory Panel Fishery Performance Report
- 8) 2023 Bluefish Fishery Information Document



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Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

Date: July 19, 2023
To: Dr. Chris Moore, Executive Director
From: Karson Cisneros, Staff
Subject: 2024 Bluefish Recreational Management Measures

Introduction and Background

In August 2023, the Council and Board will set 2024-2025 catch and landings limits and management measures. Before the August meeting, the Scientific and Statistical Committee (SSC) will meet to recommend 2024-2025 acceptable biological catches (ABCs) based on the 2023 bluefish management track assessment on Monday July 24. The Monitoring Committee (MC) will meet after the SSC, on Wednesday July 26, to recommend 2024-2025 commercial and recreational annual catch targets (ACTs), quotas and recreational harvest limits (RHLs), and recreational management measures.

There are 4 potential sets of 2024-2025 ABCs based on different stock projections. These differ based on assumptions related to 2023 removals and which coefficient of variation to the overfishing limit (OFL CV) is selected by the SSC. Depending on the SSC's recommended ABCs and the MC recommended sector catch and landings limits, a potential range of RHLs for 2024 is 11.96 – 15.11 million pounds. In 2020 and 2021 there were recreational ACL overages that triggered paybacks; however, in 2022 there was no recreational ACL overage, and no accountability measures are triggered for 2024. This memo describes recent bluefish recreational fishery performance and several considerations and recommendations related to setting recreational management measures for 2024.

Recent Fishery Performance

In 2022, estimated recreational landings were 11.03 million pounds and dead discards were 3.09 million pounds, based on the [2023 Management Track Assessment](#) (Table 1, Figure 1). Since 2018, recreational landings have dropped to the lowest values of the time series with a 2018-2021 average harvest of 12.81 million pounds.

More detailed recreational catch and harvest estimates by state and mode for 2022 are provided in the 2023 [Bluefish Fishery Information Document](#). The greatest harvest of bluefish by weight in 2022 occurred in New York with 3.45 million pounds, followed by Florida with 1.96 million

pounds, and North Carolina, Massachusetts, and New Jersey with a little over 1 million pounds harvested. Average weights, based on dividing MRIP landings in weight by landings in number for each state, suggest that bluefish size tends to increase along the north Atlantic coast.

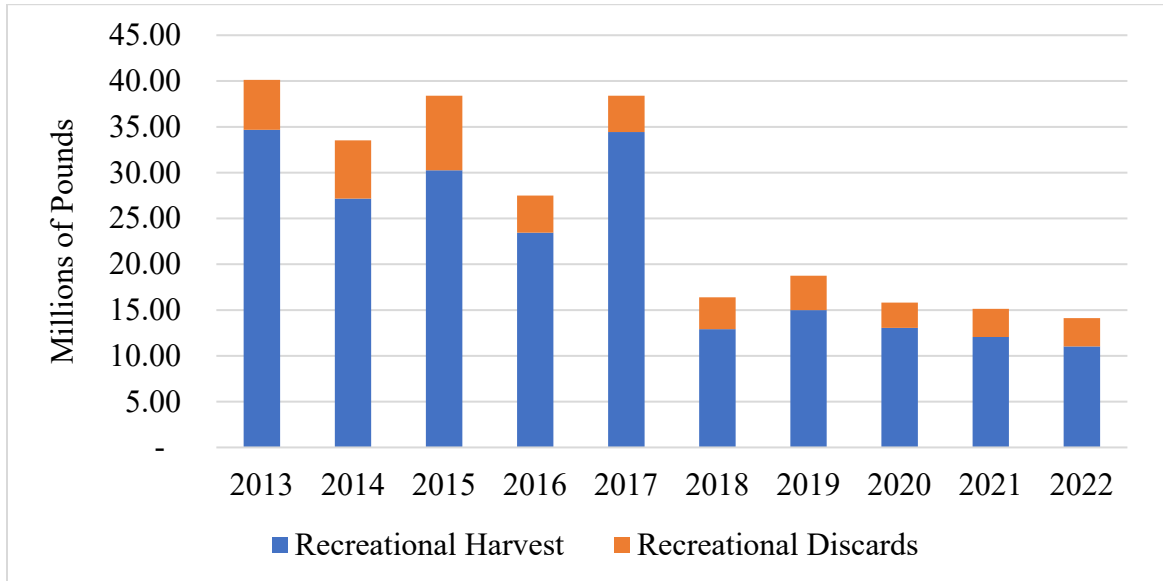


Figure 1: Recreational bluefish harvest and dead discards in millions of pounds from 2013-2022 using estimates from the 2023 Management Track Assessment, including an updated discard mortality rate of 9.4% (previously 15%).

Table 1: Summary of bluefish recreational harvest and management measures, 2016-2023. In 2019, recreational landings were provided using new MRIP estimates while the RHL was developed using old MRIP estimates so cannot be directly compared.

Management Measures	RHL	Rec. Harvest, Old MRIP	Rec. Harvest, New MRIP	RHL Overage/underage	Rec. Bag Limit (# fish)	
2016	11.58	9.54	23.44	-2.04	15	
2017	9.65	9.52	34.44	-0.13	15	
2018	11.58	3.64	12.91	-7.94	15	
2019	11.62	--	14.99	--	15	
2020*	9.48	--	13.06	+ 3.58	3: Private*	5: For-Hire*
2021	8.34	--	12.06	+ 3.72	3: Private	5: For-Hire
2022	13.89	--	11.03	-2.86	3: Private	5: For-Hire
2023	22.14	--	--	--	3: Private	5: For-Hire

* The bag limit reductions from 15 to 3/5 fish were not implemented by all states until mid-late 2020.

Dead Discard Estimation

In previous years, the MC has discussed two disparate approaches used to characterize discards in the recreational fishery. The Greater Atlantic Regional Fisheries Office (GARFO) and the Council implemented an approach that used the MRIP estimated mean weight (by year, state, and wave)

of harvested fish (A+B1) multiplied by the number of released fish (MRIP-B2s by year, state, and wave) and an assumed 15% release mortality. The second approach, used in NEFSC stock assessment discard estimates, applied a length-weight relationship to released fish data from the MRIP, American Littoral Society tag releases, and volunteer angler surveys from Connecticut, Rhode Island, and New Jersey.

Through the [2022 Bluefish Research Track Assessment](#), recreational discard estimation methodology and data inputs were evaluated. In this assessment, the recreational dead discard component of the catch was calculated using the season/region length frequency distributions developed from all the recreational biological sampling data for released fish. This includes additional lengths from a volunteer angler tagging program in South Carolina not incorporated in previous assessments. For each year, expanded lengths were calculated by season/region and summed to get a seasonal total length distribution. Seasonal length-weight parameters were then used to calculate total seasonal weight and summed for a total annual release weight. The discard mortality rate was also revised from 15% to 9.4% based on an updated literature review and analysis since the 2015 Benchmark Assessment.

The peer reviewed recreational discard estimation approach from the 2022 Research Track Assessment was used in the [2023 Management Track Assessment](#) and will also be used by GARFO for catch accounting.

Compliance

During recent management uncertainty discussions, the MC has requested information about compliance in the recreational fishery. To address federal enforcement, staff reached out to the Office of Law Enforcement and the U.S. Coast Guard for bluefish recreational fishery violations. Both offices reported no violations from 2019-2022; however, they also noted variable and sometimes limited numbers of recreational boardings.

In addition, individual states report violations through their annual bluefish compliance reports. From 2020-2022 there were a total of 71 citations and 64 warnings reported from 3 states and include bag and minimum size related violations (Table 2). Florida and Georgia have a minimum size of 12 inches total length, while Maryland and the Potomac River Fisheries Commission have an 8-inch minimum size.

Table 2. Bluefish compliance data by violation 2020-2022 from state compliance reports.

	Bag Limit Citations	Size Limit Citations	Bag Limit Warnings	Size Limit Warnings	# of States Reporting Violations
2020	13	4	8	5	3
2021	28	3	12	20	3
2022	19	4	9	8	3

2024 Recreational Harvest Limit

There are 4 potential 2024 ABCs and therefore sector ACLs based on different stock projections. These differ based on assumptions related to 2023 removals and which OFL CV is selected, both

of which will be recommended by the SSC. In previous years, the SSC has selected an OFL CV=100%, which is the value used in the [2024-2025 staff specifications memo](#). However, the SSC may change the CV to 60% given the stock assessment improvements.

From the ACLs, the MC can recommend a management uncertainty buffer to derive the ACTs. As discussed in the specifications memo, staff recommend setting the ACLs=ACTs due to the improvements to the stock assessment and specifically the recreational discard estimation. These improvements allow for a better understanding of total catch and decrease the management uncertainty related to differing discard estimates.

In the specifications memo, staff also recommend using 2021-2022 average recreational discards as expected discards to derive the RHLs from the ACTs. Bag limit reductions going from 15 fish to 3/5 fish were not implemented by all states until mid-late 2020. In addition, MRIP used data from 2018 and 2019 to fill in COVID-19 related data gaps in 2020. Because of this, there are imputed 2020 data using years that had a 15 fish bag limit. Given these considerations, 2021-2022 average discards of 3.08 million pounds may be more indicative of 2024-2025 expected discards. Last year, the MC recommended using 2021 discards for 2023 projected discards using this rationale. Based on these recommendations for ACTs and discards, the range of RHLs for 2024 is 11.96 – 15.11 million pounds and described in Table 3.

Table 3. Calculations of the 2024 RHL under different OFL CVs and assumptions of total removals in 2023, to be determined by the SSC, and using staff recommended ACTs and expected discards.

	2024 RHL (mil lb)	
	OFL CV=100%	OFL CV=60%
2023 ABC caught	11.96	14.06
2023 Frebuild caught	13.06	15.11

2024 Expected Recreational Harvest

As mentioned in the previous section, COVID-related MRIP imputations used 2018 and 2019 data to estimate 2020 harvest, which were years where the 3 and 5-fish bag limits were not in place. Therefore, the 2020 data may not reflect a harvest estimate that takes into consideration the smaller bag limits. The first full year of the currently implemented recreational management measures of a 3 fish bag limit for private and shore modes and a 5 fish bag limit for the for-hire mode was 2021. Because of this, **staff recommend using 2021-2022 average recreational harvest of 11.54 million pounds as the expected harvest in 2024, for comparison with the 2024 RHL.**

Under the scenarios in Table 3, expected recreational harvest of 11.54 million pounds falls close to the RHLs under the OFL CV=100% and further below the RHLs under and OFL CV=60% (Table 4).

Table 4. The percentage increase between the expected 2024 harvest of 11.54 mil lb and the four potential 2024 RHLs as outlined in Table 3.

% RHL increase from expected 2024 harvest		
	OFL CV=100%	OFL CV=60%
2023 ABC caught	3.6%	21.8%
2023 Frebuild caught	13.2%	30.9%

2024 Recreational Management Measures

Given the potential to liberalize measures under some of the RHLs described above (Table 4), two sets of estimates of percent change in harvest relative to status quo measures are presented in Table 5 for the MC’s consideration. In the past, the MC has discussed that comparing multiple methods of calculating the impacts of liberalized measures can be useful. Both methods use the 2021-2022 MRIP survey microdata available for download and assume equal levels of noncompliance to status quo conditions.¹

The first method calculates the percent reduction in harvest and assumes that the percent liberalization would be equal to that reduction. Percent reduction is calculated by assuming those that harvested the full bag at the current bag limit would harvest the full bag limit at a lower limit. The second method assumes a log linear relationship between the bag limit and percent change in harvest. Under this modeling approach, harvest still increases as bag limits liberalize, however the rate of increase tapers, which may better describe the data. This method was used for summer flounder bag limit liberalizations by some states in 2022.

Given that the size of bluefish available to anglers can vary across the coast, and the importance of the snapper fishery (small bluefish) to some states, size limits may be a more appropriate tool for individual states to consider. Similarly, seasonal availability varies by state so coastwide seasonal closures to allow for increased bag limits are currently not recommended for consideration for federal waters measures.

If the SSC selects an OFL CV=100%, staff recommend no changes to the current recreational management measures of 5 fish (for-hire) and 3 fish (private angler) bag limits in 2024. Based on the 2023 management track assessment, the bluefish stock was no longer overfished, however it was not rebuilt to the biomass target in 2022. The bluefish stock remains under a 7-year rebuilding plan with a rebuilt target of 2028. The ability to maintain status quo measures without a predicted overage can provide stability in recreational management measures as the stock continues to rebuild. In addition, as described in [the 2023 Fishery Performance Report \(FPR\)](#), advisors are reporting more and larger bluefish in 2023. Bluefish can be spatially and temporally patchy, however a potential increase in availability to anglers up and down the coast may result in increased harvest under the same bag limits. **If the SSC selects an OFL CV=60%, staff recommend that the MC consider these stock, availability, and stability factors along with Table 5 to inform any bag limit liberalizations for 2024.**

¹ <https://www.fisheries.noaa.gov/recreational-fishing-data/recreational-fishing-data-downloads>

Table 2: Two sets of calculations estimating the percent change in harvest relative to status quo bag limits by sector. Negative numbers indicate a reduction in harvest and positive numbers indicate an increase in harvest.

Percent liberalization or reduction: liberalization = inverse reduction					
Bag Limit	3	4	5	6	7
Private Angler	SQ	7.32%	24.69%	62.77%	*
For Hire	-0.21%	-0.07%	SQ	0.07%	0.21%
Total	-0.21%	7.25%	24.69%	62.84%	0.21%

Percent liberalization or reduction: regression analysis					
Bag Limit	3	4	5	6	7
Private Angler	SQ	7.28%	12.36%	16.51%	20.01%
For Hire	-0.29%	-0.08%	SQ	0.22%	0.34%
Total	-0.29%	7.20%	12.36%	16.73%	20.35%

*This methodology would require calculating a reduction based on a negative bag limit so cannot be used for liberalizations over a 6 fish bag limit.



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MEMORANDUM

Date: July 14, 2023
To: Dr. Chris Moore, Executive Director
From: Karson Cisneros, Staff
Subject: 2024-2025 Bluefish Specifications

Executive Summary

This memorandum includes information to assist the Mid-Atlantic Fishery Management Council's (Council's) Scientific and Statistical Committee (SSC) and Monitoring Committee (MC) in recommending 2024-2025 specifications for bluefish.

The Magnuson-Stevens Act (MSA) requires each Council's SSC to provide ongoing scientific advice for fishery management decisions, including recommendations for acceptable biological catch (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 address scientific uncertainty, while the MC recommends annual catch targets (ACTs) that address management uncertainty and management measures to constrain harvest to the landings limits.

Bluefish Management Track Assessments in 2019 and 2021 indicated that the stock was overfished, and overfishing was not occurring in 2018 and 2019, respectively. The Council and the Atlantic States Marine Fisheries Commission's Bluefish Board (Board) approved the Bluefish Allocation and Rebuilding Amendment at their June 2021 meeting. The rebuilding portion of the Amendment includes a 7-year constant fishing mortality plan that began in 2022. Projections are planned to be rerun every two years through the Northeast Region Coordinating Council (NRCC) assessment process to ensure adequate rebuilding progress is being made.

A Research Track Assessment for bluefish was peer reviewed in December 2022. This assessment incorporated data through 2021 and made several changes to data inputs and the modeling framework used for bluefish. A Management Track Assessment conducted in June 2023 concluded that the stock was not overfished, however not fully rebuilt to the biomass target reference point, and overfishing was not occurring in 2022.

Two sets of 2024-2025 ABC projections are included in this document for the SSC's consideration. The first set assumes that 2023 removals are equal to the 2023 ABC, and the second set assumes 2023 removals are equal to the catch associated with $F_{rebuild}$. Both use an OFL CV=100%, consistent with previous SSC recommendations. The total removals from the first assumption are closer to the most recent 10-year average of total catch, while the total removals from the second assumption are closer to the most recent 3-year average of total catch (as outlined on page 10-11). Staff recommend ABCs under the second assumption, resulting in a 2024 ABC of 18.78 million pounds (8,517 mt) and a 2025 ABC of 23.04 million pounds (10,450 mt). These ABCs represent a 39% and 25% decrease from the 2023 ABC, respectively.

Staff recommend no buffers for either sector for management uncertainty, resulting in ACLs=ACTs (Table 2). Staff recommend using 2021-2022 average discards from the 2023 Management Track Assessment as expected discards for both the recreational and commercial sector to derive landings limits. Lastly, staff recommend no transfers while the stock remains under a rebuilding plan. A separate memo will outline staff recommendations for 2024-2025 recreational management measures to be discussed by the MC at their July 2023 meeting.

Table 1. Bluefish specifications for 2024-2025 under the Council’s 7-year rebuilding plan, using ABC projections that assume 2023 removals will be equal to the 2023 ABC and an OFL CV=100%.

Management Measure	Year				Basis
	2024		2025		
	mil lb.	mt	mil lb.	mt	
OFL	25.90	11,734	27.49	12,467	Stock assessment projections
ABC	17.48	7,929	21.83	9,903	Derived by SSC
Commercial ACL	2.45	1,110	3.06	1,386	ABC x 14% (per FMP)
Commercial Management Uncertainty	0	0	0	0	Derived by the Monitoring Committee
Commercial ACT	2.45	1,110	3.06	1,386	Comm. ACL - Comm. Management Uncertainty
Recreational ACL	15.03	6,819	18.78	8,517	ABC x 86% (per FMP)
Recreational Management Uncertainty	0	0	0	0	Derived by the Monitoring Committee
Recreational ACT	15.03	6,819	18.78	8,517	Rec. ACL - Rec. Management Uncertainty
Commercial Discards	0.02	11	0.02	11	2021-2022 ave. discards (2023 MTA)
Recreational Discards	3.08	1,396	3.08	1,396	2021-2022 ave. discards (2023 MTA)
Commercial TAL	2.42	1,100	3.03	1,376	Commercial ACT - commercial discards
Recreational TAL	11.96	5,423	15.70	7,121	Recreational ACT - recreational discards
Combined TAL	14.38	6,523	18.73	8,497	Commercial TAL + Recreational TAL
Transfer	0	0	0	0	No transfer recommended while rebuilding
Commercial Quota	2.42	1,100	3.03	1,376	Commercial TAL +/- transfer
RHL	11.96	5,423	15.70	7,121	Recreational TAL +/- transfer

Note: six decimal places were used for calculations and rounded to two decimal places for table display purposes, therefore slight mismatches may appear due to rounding.

Table 2. Staff recommended bluefish specifications for 2024-2025 under the Council’s 7-year rebuilding plan, using ABC projections that assume 2023 removals will be equal to the catch associated with fishing at the revised $F_{rebuild} = 0.183$ and an OFL CV=100%.

Management Measure	Year				Basis
	2024		2025		
	mil lb.	mt	mil lb.	mt	
OFL	26.82	12,166	28.26	12,818	Stock assessment projections
ABC	18.78	8,517	23.04	10,450	Derived by SSC
Commercial ACL	2.63	1,192	3.23	1,463	ABC x 14% (per FMP)
Commercial Management Uncertainty	0	0	0	0	Derived by the Monitoring Committee
Commercial ACT	2.63	1,192	3.23	1,463	Comm. ACL - Comm. Management Uncertainty
Recreational ACL	16.15	7,325	19.81	8,987	ABC x 86% (per FMP)
Recreational Management Uncertainty	0	0	0	0	Derived by the Monitoring Committee
Recreational ACT	16.15	7,325	19.81	8,987	Rec. ACL - Rec. Management Uncertainty
Commercial Discards	0.02	11	0.02	11	2021-2022 ave. discards (2023 MTA)
Recreational Discards	3.08	1,396	3.08	1,396	2021-2022 ave. discards (2023 MTA)
Commercial TAL	2.61	1,182	3.20	1,453	Commercial ACT - commercial discards
Recreational TAL	13.07	5,929	16.74	7,592	Recreational ACT - recreational discards
Combined TAL	15.68	7,111	19.94	9,044	Commercial TAL + Recreational TAL
Transfer	0	0	0	0	No transfer recommended while rebuilding
Commercial Quota	2.61	1,182	3.20	1,453	Commercial TAL +/- transfer
RHL	13.07	5,929	16.74	7,592	Recreational TAL +/- transfer

Note: six decimal places were used for calculations and rounded to two decimal places for table display purposes, therefore slight mismatches may appear due to rounding.

Recent Catch and Landings

Total fishery removals, including recreational harvest and dead discards, and commercial landings and dead discards from 1985-2022, are presented in Figure 1. These values are from the 2023 Bluefish Management Track Assessment and may differ from the preliminary values in the Fishery

Information Document. Recreational landings were 11.03 million pounds in 2022, a 1.03 million pound decrease compared with 2021, and the lowest harvest for the time series. This coincides with lower effort, as the number of recreational trips¹ in 2022 (7,409,375) is the lowest reported in the 2000-2022 period. Recreational catch and harvest and commercial landings by state are shown in Table 3. In 2019, the Council and Board approved recreational management measures to constrain harvest to the RHL, which included going from a 15 fish bag limit across all modes to a 3-fish bag limit for private and shore modes and a 5-fish bag limit for the for-hire mode. The recreational management measures were not implemented by all states until mid-late 2020. The first full year of these more restrictive bag limits was 2021.

Based on dealer data, commercial landings were 2.14 million pounds in 2022, a 0.07 million pound increase compared with 2021, which had the lowest commercial landings in the time series. Dealer data for 2022 indicate that most of the bluefish commercial landings were taken by gillnet (47%), trawl/dredge (44%), handline (6%), and other (3%).

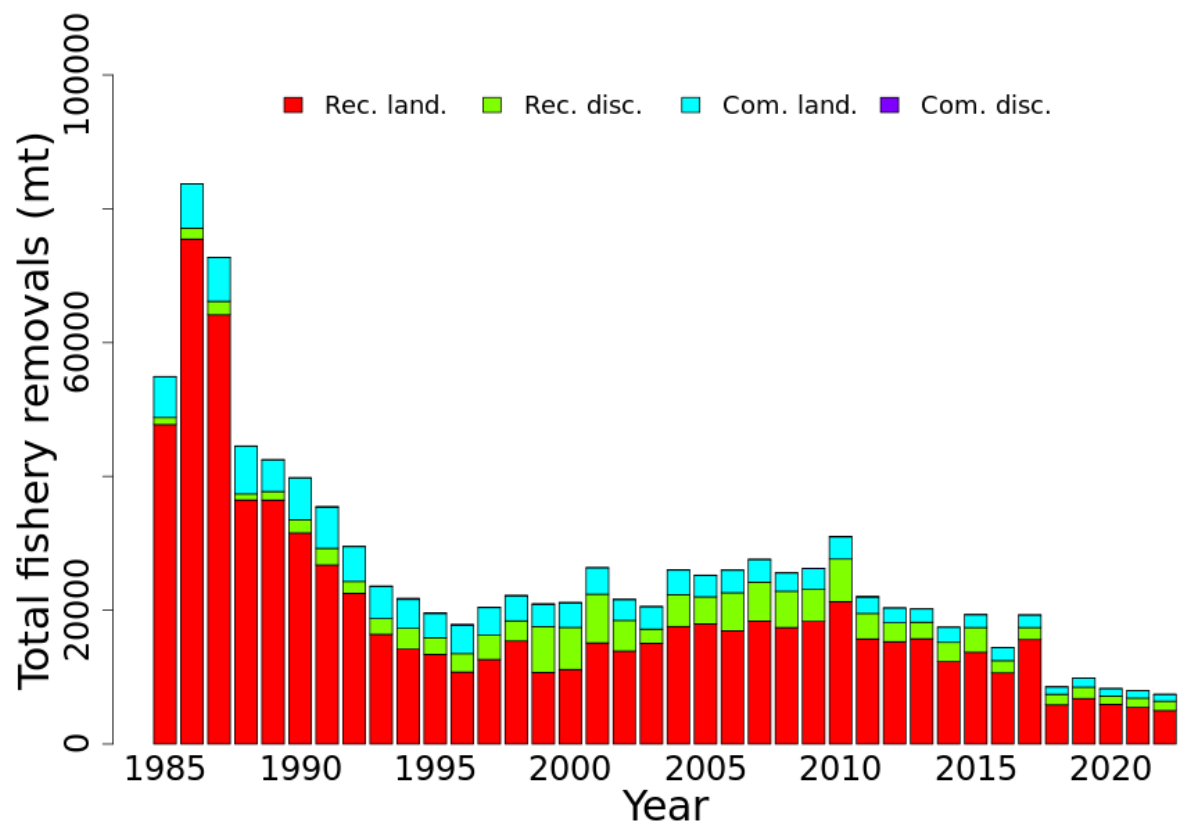


Figure 1. Bluefish total catch from 1985-2022. Source: 2023 Bluefish Management Track Assessment.

¹ Estimated number of recreational fishing trips where the primary target was bluefish or bluefish were harvested regardless of target, Maine – Florida's East Coast. Source: MRIP.

Table 3. Bluefish recreational catch and commercial landings information by state in 2022. Sources: MRIP query May 2023; Commercial dealer data retrieved May 2023. These values may differ from the NMFS final 2023 catch accounting.

State	Recreational						Commercial
	Harvest			Catch	Released Alive	Dead Discards ²	Landings
	Pounds	Number	Ave. Wt. ¹ (lbs)	Number	Number	Number	Pounds
ME	73,697	8,326	8.9	31,061	22,735	2,137	0
NH	1,598	181	8.8	1,397	1,216	114	0
MA	1,277,203	183,470	7.0	1,533,782	1,350,312	126,929	254,138
RI	593,444	92,704	6.4	341,709	249,005	23,406	240,460
CT	541,930	105,910	5.1	715,327	609,417	57,285	41,597
NY	3,446,600	1,710,502	2.0	7,144,950	5,434,448	510,838	368,473
NJ	1,077,834	510,820	2.1	1,728,918	1,218,098	114,501	203,595
DE	51,550	38,676	1.3	548,873	510,197	47,959	6,716
MD	213,345	249,382	0.9	484,947	235,565	22,143	10,059
VA	215,999	262,360	0.8	1,534,477	1,272,117	119,579	187,526
NC	1,336,592	1,533,911	0.9	9,731,098	8,197,187	770,536	736,595
SC	259,372	487,654	0.5	3,194,059	2,706,405	254,402	0
GA	35,911	43,335	0.8	317,567	274,232	25,778	0
FL	1,957,211	1,125,847	1.7	3,768,905	2,643,058	248,447	93,018
Total	11,354,535	6,353,078	1.8	31,077,070	24,723,992	2,324,055	2,142,304

¹ Average weight is the pounds harvested divided by the number of fish harvested. ²Recreational dead discards are calculated as 9.4% of total recreational discards based on the updated discard mortality rate from the 2022 Research Track Assessment.

2023 Harvest to Date

As of July 5, 2023, preliminary recreational estimates from MRIP are only available for waves 1 and 2 combined (January through April). Preliminary 2023 recreational harvest for waves 1-2 is approximately 0.8 million pounds and total catch is 5.1 million fish. For comparison, in 2018-2022, waves 1-2 harvest has ranged from 1.2-3.6 million pounds, and total catch has ranged from 4.5-11.8 million fish.

Preliminary commercial harvest is available through June 28, 2023 and shows increased landings relative to this time last year (Figure 2). So far in 2023, 1.2 million pounds have been landed, comprising 29% of the coastwide commercial quota.

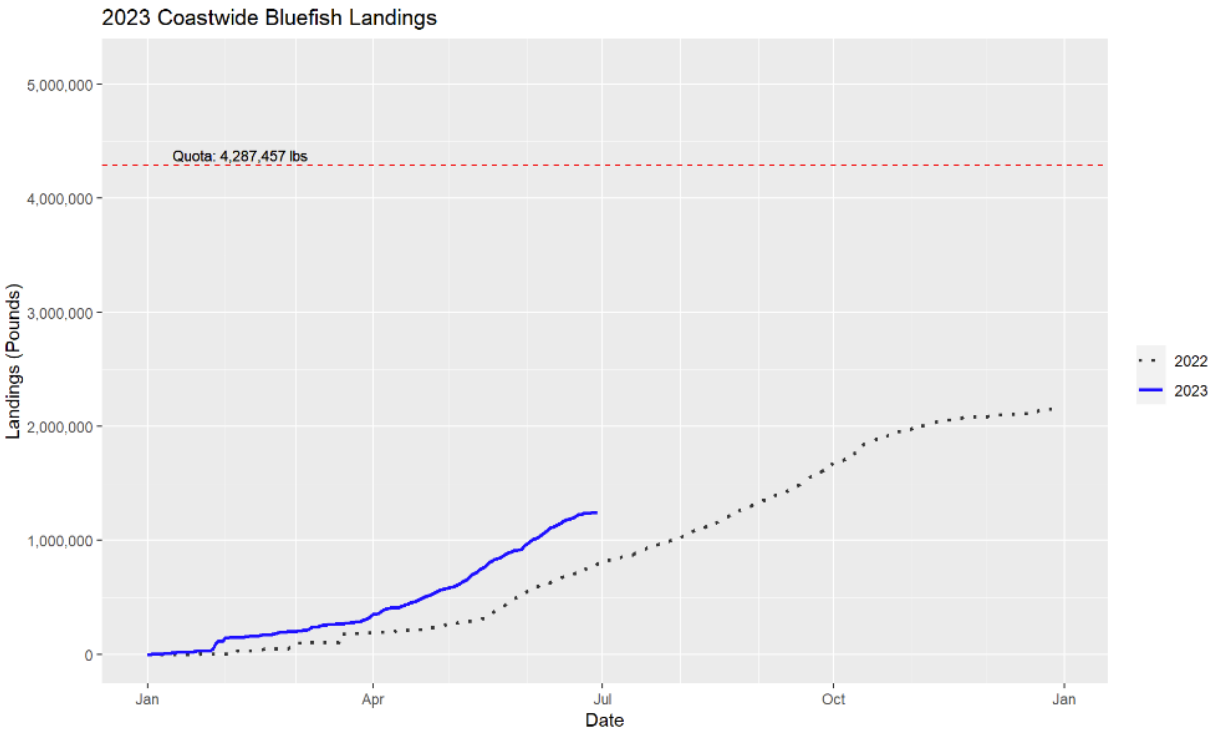


Figure 2. Bluefish landings coastwide in 2023 (blue solid line) through June 28, compared with 2022 (dotted line). Source: [NOAA Fisheries Atlantic Bluefish Quota Monitoring Site](#), accessed July 5th, 2023. Quota monitoring by state is also available on this page.

Stock Status and Biological Reference Points

Bluefish Management Track Assessments in 2019 and 2021 indicated that the stock was overfished, and overfishing was not occurring in 2018 and 2019, respectively. The Council and Board approved a rebuilding plan that began in 2022 and includes a 7-year constant fishing mortality.

In December 2022, a Bluefish Research Track Assessment was peer reviewed and accepted which found that the stock was not overfished, however not fully rebuilt, and overfishing was not occurring in 2021. This assessment underwent several updates relative to past research recommendations including the development of an MRIP index using a species-association method to identify bluefish trips, updating the estimate of natural mortality used in the assessment model, evaluating model results that aggregated all model input data at a seasonal and regional level of resolution, combining multiple fishery independent surveys using Vector Autoregressive Spatiotemporal (VAST) as part of this assessment, examination of differences in the calibrated and uncalibrated MRIP estimates of bluefish catch, spatial stratification of recreational release length frequencies when calculating the weight of dead recreational releases, and the migration to the Woods Hole Assessment Model (WHAM) framework.

The June 2023 Management Track Assessment built upon the 2022 research track assessment and found that the bluefish stock was not overfished and overfishing was not occurring in 2022

(Figures 3 and 4; Table 4). Spawning stock biomass (SSB) in 2022 was estimated to be 52,747 mt which is 60% of the biomass target (SSB_{MSY} proxy = 88,131 mt; Figure 3). The 2022 fully selected fishing mortality was estimated to be 0.152 which is 64% of the overfishing threshold (F_{MSY} proxy = 0.239; Figure 4).

The bluefish stock has experienced a slight increase in SSB over the past 5 years, coinciding with a decrease in F. Recruitment has increased each year since 2019, and the terminal year recruitment (137 million fish) is the highest value since 2005. Both commercial and recreational fisheries have had low catches since 2018, all well below the time series average of 26,386 mt. With the low catches since 2018, fishing mortality has decreased and remained well below F_{MSY} (0.239).

Table 4. Summary of stock status and biological reference points resulting from the SAW/SARC 60 process in 2015 to the Management Track Assessment in 2023. There was an Operational Stock Assessment in 2019 not included below with very similar reference points and the same stock status as the 2021 Management Track Assessment.

	2015 SAW/SARC 60	2021 Management Track Assessment	2022 Research Track Assessment	2023 Management Track Assessment
Stock Status	Not Overfished, Not Overfishing	Overfished, Not Overfishing	Not Overfished, Not Overfishing	Not Overfished, Not Overfishing
SSB_{MSY}	223.42 mil lb (101,343 mt)	444.74 mil lb (201,729 mt)	202.60 mil lb (91,897 mt)	194.30 mil lb (88,131 mt)
½ SSB_{MSY}	111.71 mil lb (50,672 mt)	222.37 mil lb (100,865 mt)	101.30 mil lb (45,949 mt)	97.15 mil lb (44,066 mt)
F_{MSY}	0.190	0.181	0.249	0.239
Terminal Year of data	2014	2019	2021	2022

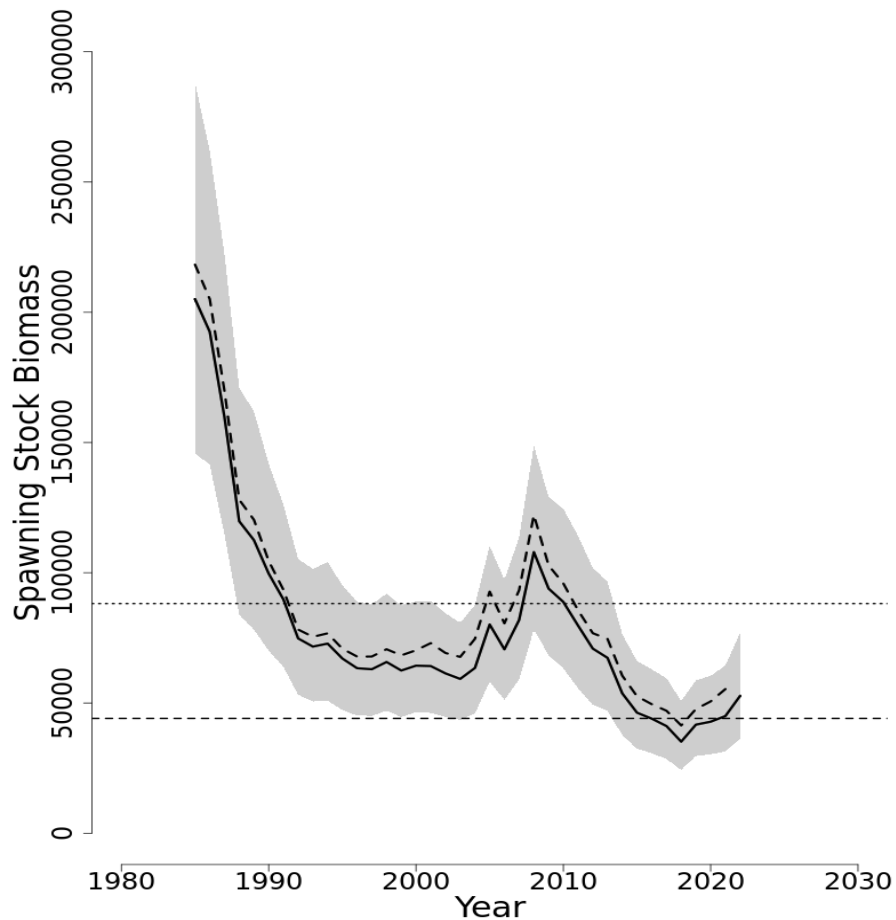


Figure 3. Atlantic bluefish spawning stock biomass (SSB) from 1985-2022 from the 2023 Management Track Assessment (solid line) and the 2022 Research Track Assessment (dashed line). The horizontal dotted black line is the updated SSB_{MSY} proxy = $SSB_{35\%}$ = 88,131 mt, and the dashed line is the $SSB_{Threshold}$ = 44,066 mt from the 2023 Management Track Assessment. The shaded areas represent the approximate 90% lognormal confidence intervals. Source: 2023 Bluefish Management Track Assessment.

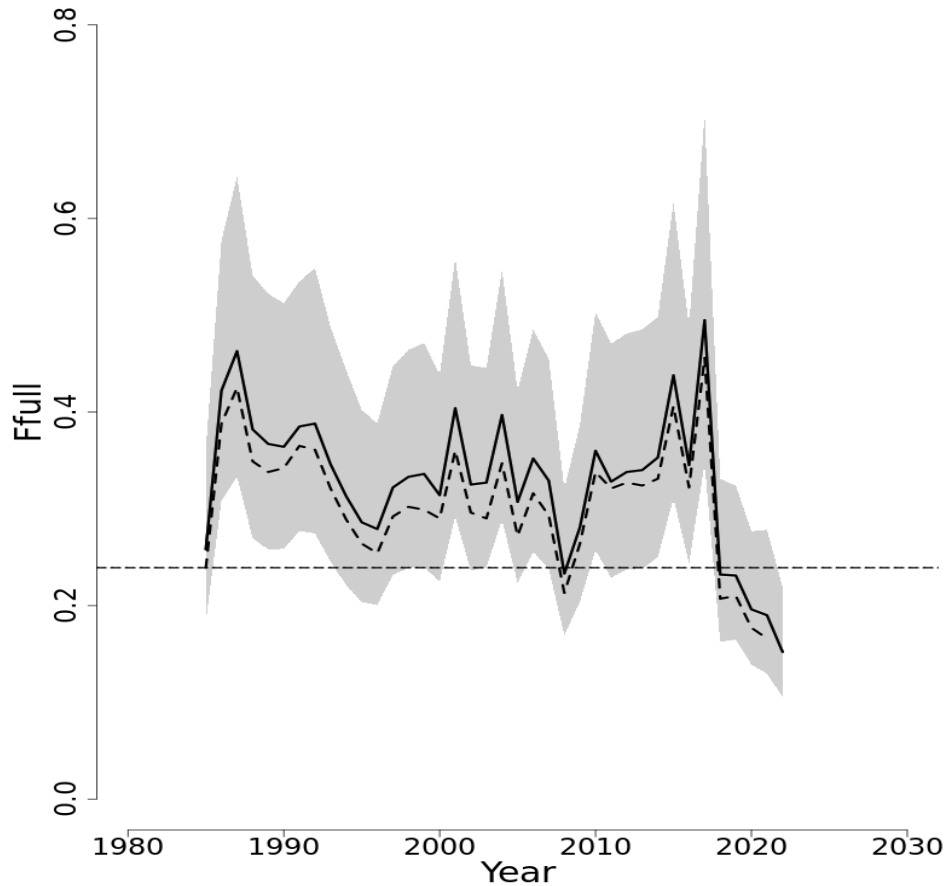


Figure 4. Trends in fishing mortality (F_{full}) for Atlantic bluefish from the 2023 Management Track Assessment (solid line) and the 2022 Research Track Assessment (dashed line). The horizontal dashed line is the updated F_{MSY} proxy = $F_{35\%}$ = 0.239. The shaded areas represent the approximate 90% lognormal confidence intervals. Source: 2023 Bluefish Management Track Assessment.

Projections

The Council’s rebuild policy for bluefish is to achieve rebuilding within a seven-year period, commencing in 2022. A constant F strategy was selected such that biomass in 2028 has a 50% chance of exceeding the B_{msy} proxy rebuilding target. Based on the 2023 Management Track Assessment, $F_{rebuild}$ was re-calculated to be 0.183 using a projection that assumes the plan’s constant F strategy. The MAFMC risk policy (assuming an OFL CV = 100%) was applied to OFL proxies at $F_{rebuild}$ in short term projections to generate ABC values for 2024-2025 that are consistent with implementing the rebuilding schedule as recommended by the SSC in 2021. ABC projections assuming an OFL CV=60% are also available in the July 2023 SSC meeting materials should the SSC change their OFL CV based on the recent assessment improvements.

Tables 5 and 6 below provide two different sets of projections based on different assumptions of removals in 2023 (Source: Tony Wood, NEFSC, Personal Communication). The first set (Table 5) assumes 2023 removals will be equal to the 2023 ABC of 13,890 mt. From 2020-2022, the total catch ranged from 7,436 mt to 8,294 mt and averaged 7,898 mt. Given that total catch over the past 3 years has fallen well below the 2023 ABC of 13,890 mt, this value may not be the

preferred assumption for catch in 2023. However, when comparing catch over a longer time period, the most recent 10-year average total catch is 13,285 mt, and 2013-2017 total catches were all above the 2023 ABC.

The second set of projections (Table 6) assumes 2023 removals will be equal to the catch associated with fishing at the revised $F_{rebuild} = 0.183$, which is very close to the average F over the past three years (0.18). Because of this, catch associated with $F_{rebuild}$ (10,827 mt) may be a more reasonable assumption for catch in 2023 (Table 6).

Table 5. Short term projection of total fishery catch, spawning stock biomass (SSB: with 90% CI), and fishing mortality on fully selected ages for bluefish based on a harvest scenario assuming annual ABC values calculated from OFLs at $F_{rebuild}$ (0.183) and the Council risk policy (CV = 100%) for 2024 and 2025. **Removals in 2023 were assumed to be equal to the previously established ABC value of 13,890 mt (grey cells).** Source: Tony Wood, NEFSC, Personal Communication.

Year	OFL Catch (mt)	OFL SSB (mt)	OFL Ffull
2023	13,890	59,135 (39,120 - 89,391)	0.239
2024	11,734	65,030 (41,240 - 102,546)	0.183
2025	12,467	70,974 (43,350 - 116,201)	0.183
Year	ABC Catch (mt)	ABC SSB (mt)	ABC Ffull
2023	13,890	59,135 (39,120 - 89,391)	0.239
2024	7,929	66,706 (41,439 - 107,379)	0.121
2025	9,903	75,757 (43,303 - 132,534)	0.137

Table 6. Short term projection of total fishery catch, spawning stock biomass (SSB: with 90% CI) for bluefish based on a harvest scenario assuming annual ABC values calculated from OFLs at $F_{rebuild}$ (0.183) and the Council risk policy (CV = 100%) for 2024 and 2025. **Removals in 2023 were assumed to be the resulting catch of fishing at $F_{rebuild} = 0.183$ (grey cells).** Source: Tony Wood, NEFSC, Personal Communication.

Year	OFL Catch (mt)	OFL SSB (mt)	OFL Ffull
2023	10,827	60,471 (41,382 - 88,364)	0.183
2024	12,166	67,719 (45,503 - 100,782)	0.183
2025	12,818	73,426 (46,758 - 115,304)	0.183
Year	ABC Catch (mt)	ABC SSB (mt)	ABC Ffull
2023	10,827	60,471 (41,382 - 88,364)	0.183
2024	8,517	69,335 (45,753 - 105,074)	0.125
2025	10,450	77,982 (46,763 - 130,043)	0.141

Review of Prior SSC Recommendations

In July 2021, the SSC recommended new ABCs for 2022-2023, which incorporated the results of the 2021 Management Track Assessment. To make this recommendation, the SSC reviewed 2020 fishery performance and materials from the Management Track Assessment.

The SSC also discussed the Council-approved rebuilding schedule, including the treatment of the rebuilding F proposed by the Council and its implications for generating ABCs. The Council’s rebuild policy is to achieve rebuilding within a seven-year period commencing in 2022. A constant F strategy was selected such that biomass in 2028 has a 50% chance of exceeding the Bmsy proxy rebuilding target. Given the basis for the rebuilding, the SSC determined that the constant F for rebuilding in seven years (denoted as $F_{\text{rebuild},7} = 0.154$) should be treated as a Fmsy proxy. As such, the usual Council risk policy, P* criteria, and OFL CV process should apply. Failure to include scientific uncertainty through the direct application of $F_{\text{rebuild},7}$ alone could generate instances where the probability of overfishing exceeded 0.5 between 2022 and 2028. Accounting for scientific uncertainty and the resulting lower ABCs should also increase the chance (i.e., greater than 50%) of exceeding the Bmsy target to rebuild the stock within the seven-year timeframe.

The SSC recommended that a CV of 100% be applied to the OFL estimate as an appropriate ABC and noted that the chief uncertainty for bluefish relates to patterns in the revised MRIP estimates.

The SSC also discussed the most significant sources of uncertainty, ecosystem considerations, and research recommendations to reduce uncertainty. These discussions can be found summarized here: <https://www.mafmc.org/s/July-2021-SSC-Report.pdf>.

In 2022, the SSC reviewed 2021 bluefish fishery performance and did not recommend any changes from the previously implemented 2023 ABC of 30.62 million pounds (13,890 mt).

Staff Recommendation for 2024-2025 ABCs

Staff recommend ABCs of 18.78 million pounds (8,517 mt) in 2024 and 23.04 million pounds (10,450 mt) in 2025. These ABCs implement the bluefish rebuilding plan consistent with previous years (as described above) and assume that the catch associated with F_{rebuild} is caught in 2023 (Table 6). This catch is closer to recent years’ average catch than the assumption that the full 2023 ABC is caught, while still allowing for some increase in catch. It is too early to determine whether catch in 2023 will be higher than recent years, however commercial harvest is trending higher than this time last year (Figure 2) and the bluefish Advisory Panel commented on seeing many more bluefish last year than in previous years in several states.² An increase in availability may not necessarily result in increased harvest in the recreational fishery due to the high catch and release nature of the fishery, however it may result in an increased total catch due to increased discards.

Table 7. Staff recommended bluefish ABCs for 2024-2025 which use the catch associated with F_{rebuild} as 2023 total removals as shown in Table 6. These ABCs are consistent with the Council’s agreed upon rebuilding plan.

Year	ABC (mt)	ABC (mil lb)
2024	8,517	18.78
2025	10,450	23.04

² See 2023 Fishery Performance Report: <https://www.mafmc.org/council-events/2023/july-2023-ssc-meeting>

Sector Specific Catch and Landings Limits

The flow chart in Figure 4 on page 15 was used to derive the sector specific catch and landings limits shown in Tables 1 and 2.

Management Uncertainty

The option to use management uncertainty buffers were formally incorporated into the specifications process through the [2011 Omnibus Amendment](#), which also implemented ABCs and ACLs and brought FMPs into compliance with the 2007 reauthorization of the MSA. In 2021, [Amendment 7 to the Bluefish FMP](#) was implemented, allowing for the consideration of sector specific management uncertainty buffers rather than a buffer applied before the sector specific limits are derived.

Due to recent recreational overages (2020 and 2021) and uncertainty in discards for the commercial and recreational fisheries, the MC has discussed the need to develop justified quantitative approaches to recommend a management uncertainty buffer between the ACL and ACT. The Bluefish MC/TC met in March 2023 to initiate this discussion and a small subgroup formed to further develop tools for quantifying management uncertainty. The subgroup modified the ASMFC risk and uncertainty tool to apply to areas identified by the subgroup to be potential sources of uncertainty in the bluefish fishery. The tool converts a combination of quantitative and qualitative scores into a quantitative representation of uncertainty. The full MC is reviewing the subgroup's proposed tool (emailed to the MC/TC June 27, 2023) and will consider its use while discussing management uncertainty in each sector. At their March meeting, the MC also recommended the inclusion of recent discard variability for each sector within the specifications memo to approach discard uncertainty more quantitatively (Table 8).

Table 8. Most recent 5- and 3-year recreational and commercial discard variability in millions of pounds as requested by the MC/TC in March 2023.

	2018-2022		2020-2022	
Discards (mil lb)	Range	Standard deviation	Range	Standard deviation
Recreational	0.99	0.3875	0.32	0.1817
Commercial	0.01	0.0042	0.01	0.0055

As discussed in previous sections, the Bluefish Research Track Assessment passed peer review in December 2022. This assessment incorporated commercial discard estimates that were previously unknown (though assumed to be negligible) and updated data and methods for recreational discard estimates. This accepted methodology for estimating recreational discards will be used by the Greater Atlantic Regional Fisheries Office (GARFO) and the Northeast Fisheries Science Center (NEFSC) moving forward, ensuring alignment between GARFO's catch accounting and the assessments. The improvements to discard estimation in both sectors allow for a better understanding of catch in each sector, therefore decreasing the amount of management uncertainty. Because of this, staff do not recommend buffers for either sector between the ACLs and ACTs in 2024-2025. Next year, the MC will review 2025 specifications and will revisit the need for an uncertainty buffer in 2025.

Recreational

In 2022, the recreational fishery landed 11.03 million pounds compared to the 14.11 million pounds RHL. Recreational catch totaled 14.11 million pounds and fell below the 2022 ACL; therefore, no accountability measures will be applied in 2024.

Staff recommend using the 2021-2022 average recreational discards from the 2023 Management Track Assessment for expected discards to derive the 2024-2025 RHLs. This is based on the previous MC recommendation, starting with the 2023 RHL, to use years after the decrease in bag limits which were implemented throughout 2020 (timing varied by state and federal waters).

Given the considerations in this section, staff recommend a recreational ACL=ACT of 16.15 million pounds in 2024 and 19.81 million pounds in 2025, and an RHL of 13.07 million pounds in 2024 and 16.74 million pounds in 2025 (Table 2). A separate recreational memo will outline staff recommendations for 2024-2025 recreational management measures to be discussed by the MC at their July 2023 meeting.

Commercial

In 2022, the commercial fishery landed 2.26 million pounds compared to the 3.54-million-pound quota and commercial discards were 0.02 million pounds. No commercial accountability measures have been triggered to be applied in 2024. Staff recommend using the 2021-2022 average commercial discards from the 2023 Management Track Assessment for expected discards in 2024-2025. Although a 3-year average may be preferred, staff selected 2021-2022 and excluded 2020 due to large COVID-related data gaps in 2020 observer coverage.

Based on these considerations, staff recommend a commercial ACL=ACT of 2.63 million pounds in 2024 and 3.23 million pounds in 2025, and a commercial quota of 2.61 million pounds in 2024 and 3.20 million pounds in 2025 (Table 2).

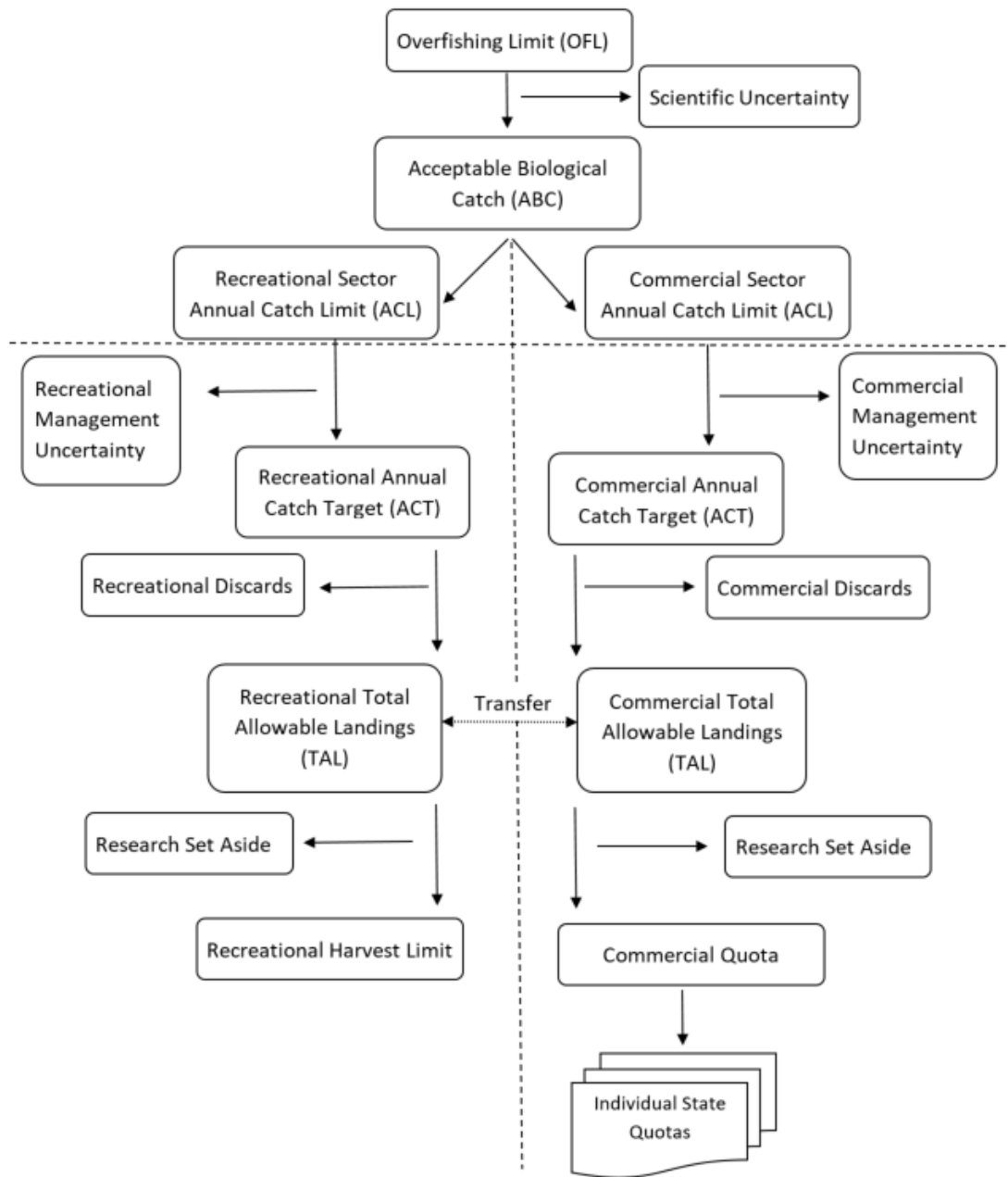


Figure 4. Flowchart of bluefish catch and landings limits. The research set aside program is currently discontinued so no further calculations are needed from the sector specific TALs to the RHL and commercial quota.

draft working paper for peer review only



Atlantic Bluefish

2023 Management Track Assessment Report

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Northeast Fisheries Science Center
Woods Hole, Massachusetts

Compiled 06-27-2023

This assessment of the Atlantic Bluefish (*Pomatomus saltatrix*) stock is a management track update assessment of the existing 2022 research track assessment (NEFSC 2022). Stock status for bluefish from the research track assessment (data through 2021) found the stock was not overfished, and overfishing was not occurring. The current assessment updates commercial fishery catch data, recreational fishery catch data, research survey indices of abundance, and the analytical state-space WHAM assessment model and reference points through 2022.

Additionally, stock projections have been updated through 2025

State of Stock: Based on this updated assessment, the Atlantic Bluefish (*Pomatomus saltatrix*) stock is not overfished and overfishing is not occurring (Figures 1-2). Retrospective bias in model results was considered minor and retrospective adjustments were not necessary. Spawning stock biomass (SSB) in 2022 was estimated to be 52,747 (mt) which is 60% of the biomass target ($SSB_{MSY} proxy = 88,131$ (mt); Figure 1). The 2022 fully selected fishing mortality was estimated to be 0.152 which is 64% of the overfishing threshold ($F_{MSY} proxy = 0.239$; Figure 2).

Table 1: Catch and status table for Atlantic Bluefish. All weights are in (mt) recruitment is in (000s) and F_{Full} is the fishing mortality on fully selected ages (age 2). Model results are from the current updated WHAM assessment.

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<i>Data</i>										
Recreational landings	15,732	12,324	13,725	10,634	15,620	5,857	6,800	5,923	5,471	5,002
Recreational discards	2,472	2,880	3,690	1,838	1,794	1,578	1,702	1,253	1,391	1,400
Commercial landings	1,977	2,251	1,917	1,946	1,876	1,105	1,359	1,112	1,090	1,025
Commercial discards	12	18	14	14	7	8	10	7	12	9
Catch for Assessment	20,194	17,473	19,345	14,431	19,297	8,548	9,871	8,294	7,963	7,436
<i>Model Results</i>										
Spawning Stock Biomass	67,325	53,698	46,283	43,981	41,153	35,152	41,702	42,811	44,979	52,747
Ffull	0.34	0.353	0.438	0.345	0.495	0.232	0.231	0.196	0.19	0.152
Recruits (age 0)	136,314	120,570	101,743	69,713	112,997	111,734	68,541	74,543	97,120	137,139

Table 2: Comparison of reference points estimated in the 2022 research track assessment and from the current assessment update. An $F_{35\%}$ proxy was used for the overfishing threshold and was based on SPR calculations. The SSB_{MSY} is calculated using the value of SPR_{35%} and mean recruitment.

	2022	2023
$F_{MSY} proxy$	0.249	0.239 (0.199 - 0.287)
SSB_{MSY} (mt)	91,987	88,131 (65,576 - 118,445)
MSY (mt)	19,618	18,979 (14,025 - 25,684)
Median recruits (age 0) (000s)	103,133	108,035
<i>Overfishing</i>	No	No
<i>Overfished</i>	No	No

Projections: Short-term projections were conducted in WHAM, and incorporate model uncertainty, auto-regressive processes and uncertainty in recruitment and numbers-at-age. Removals in 2023 were assumed to be equal to the 2023 ABC (13,890 MT), and projections were carried forward for years 2024-2025 at $Frebuild = 0.183$. The MAFMC council risk policy ($CV = 100\%$) was used to develop ABC values in each year, and the projection was re-iterated using these values as annual removals in place of $Frebuild$. Projected ABC catch in 2024 and 2025 based on this approach is 7,929 MT and 9,903 MT, respectively.

The projection uses 5-year averages for natural mortality, maturity, fishery selectivity and weights-at-age. The

5-year average was selected for those parameters to capture the most recent conditions while still smoothing some interannual variability. Projections were not retrospectively adjusted, as the adjusted terminal year estimates of F and SSB fell within the 90% confidence intervals of the unadjusted values.

Table 3: Short term projections of total fishery catch and spawning stock biomass for Atlantic Bluefish based on a harvest scenario assuming annual ABC values calculated from Frebuild (0.183) and the MAFMC risk policy between 2024 and 2025. Catch in 2023 was assumed to be the previously established ABC value of 13,890 (mt).

Year	Catch (mt)	SSB (mt)	Ffull
2023	13890	59135 (39120 - 89391)	0.239
Year	Catch (mt)	SSB (mt)	Ffull
2024	7929	66706 (41439 - 107379)	0.121
2025	9903	75757 (43303 - 132534)	0.137

Special Comments:

- What are the most important sources of uncertainty in this stock assessment? Explain, and describe qualitatively how they affect the assessment results (such as estimates of biomass, F, recruitment, and population projections).

Some of the important sources of uncertainty relate to assessment data inputs and the availability of information that would help better understand the dynamics of bluefish. Research recommendations from the recent research track assessment fully detail these uncertainties and data needs. A list of some of the research ideas designed to improve the bluefish stock assessment and reduce some of the uncertainties include:

- 1. Expanding the collection of recreational release length frequency data. The bluefish assessment stratifies recreational release lengths by region, and data in the southern region is lacking. These southern fish tend to be smaller and improved information pertaining to the size distribution of the southern fish would help refine the estimate of recreational discard weight.*
- 2. Addressing the uncertainty around temporal availability of bluefish to the fisheries and surveys. The research track assessment made significant advancements in developing an index of bluefish availability based on forage fish in the diets of bluefish like predators. This forage fish index was incorporated into a companion assessment model as a covariate on MRIP CPUE catchability. Further developing this index will help improve the assessment model fit to the MRIP CPUE information, which is an important index that helps scale biomass estimates from the model.*
- 3. Develop fishery dependent or independent sampling programs to provide information on larger, older bluefish. The dynamics of this size class are not well sampled or understood.*
- 4. Develop an updated recreational release mortality study to derive a more informed estimate of recreational discard mortality. Recreational discards are a significant proportion of the total catch so reducing the uncertainty around the release mortality is important.*

- Does this assessment model have a retrospective pattern? If so, is the pattern minor, or major? (A major retrospective pattern occurs when the adjusted SSB or F_{Full} lies outside of the approximate joint confidence region for SSB and F_{Full}).

The 7-year Mohn's ρ , relative to SSB, was 0.14 in the 2022 assessment and was 0.22 in 2022. The 7-year Mohn's ρ , relative to F, was 0.10 in the 2022 assessment and was 0.14 in 2022. This is considered a minor retrospective pattern for both SSB and F because the ρ adjusted estimates of 2022 SSB ($SSB_{\rho}=43235$) and 2022 F ($F_{\rho}=0.177$) were within the approximate 90% confidence regions around SSB (36,194 - 76,871) and F (0.105 - 0.219).

- Based on this stock assessment, are population projections well determined or uncertain? If this stock is in a rebuilding plan, how do the projections compare to the rebuilding schedule?

Population projections for Atlantic Bluefish are reasonably well determined. Shifting to WHAM for model projections has allowed for the incorporation of model uncertainty, auto-regressive processes, and the uncertainty in recruitment and numbers-at-age. The retrospective pattern in F and SSB is considered minor (within the 90% CI of both F and SSB), however, the ρ values of F and SSB have increased when compared to the previous research track assessment.

The Atlantic Bluefish stock is in a rebuilding plan with a rebuild date of 2028. Frebuild was re-calculated using a projection that assumes a constant F strategy, such that biomass in 2028 has a 50% chance of exceeding the SSB_{msy} proxy; Frebuild was calculated to be 0.183. The MAFMC risk policy was applied using this Frebuild strategy in short term projections to generate ABC values that are consistent with the rebuilding schedule for the next two years.

- Describe any changes that were made to the current stock assessment, beyond incorporating additional years of data and the effect these changes had on the assessment and stock status.

A change to the way the age-length keys (ALKs) were developed from the research track, which used full multinomial age-length keys, was implemented for this Atlantic Bluefish assessment update. Instead of using full multi-nomial age-length keys, a hybrid approach was used, and the holes in the ALKs were filled with the multi-nomial model fits. This approach to filling ALK holes is now consistent with the methodology used for other NEFSC stock assessments and with the NEFSC STOCKEFF program. This new method resulted in minor changes to the results of SSB and F compared to the 2022 research track assessment results.

- If the stock status has changed a lot since the previous assessment, explain why this occurred.

Stock status of Atlantic Bluefish has not changed from the status determined in the research track assessment.

- Provide qualitative statements describing the condition of the stock that relate to stock status.

The Atlantic Bluefish stock has experienced a slight increase in SSB over the past 5 years, coinciding with a decrease in F . Recruitment has increased each year since 2019, and the terminal year recruitment (137 million fish) is the highest value since 2005. Both commercial and recreational fisheries have had low catches since 2018, all well below the time series average of 26,386 MT. With the low catches since 2018, fishing mortality has decreased and remained well below F_{MSY} (0.239). The low catches in recent years are partially a result of bag limit implementation as part of the rebuilding plan. However, these lower catches could also be due to decreased bluefish availability. Anecdotal evidence suggests larger bluefish stayed offshore and inaccessible to most of the recreational fishery in recent years.

- Indicate what data or studies are currently lacking and which would be needed most to improve this stock assessment in the future.

The recent bluefish research track identified several new research recommendations that would improve our understanding of bluefish dynamics and help better assess the population through the current or future models. These recommendations include: expand collection of recreational release length frequency data, continue development and refinement of the forage fish / availability index as well as incorporation of this index into a base model for bluefish management advice, initiate additional fisheries-independent surveys or fishery-dependent sampling programs to provide information on larger, older bluefish, continue coastwide collection of length and age samples from fishery-independent and -dependent sources, refinement and development of indices of abundance, and develop a recreational demand model.

- Are there other important issues?

WHAM allows for incorporation of environmental covariates on the catchability of survey indices, and a companion model was developed for the research track that leveraged this capability. The companion model investigated a forage fish index as a covariate on catchability of the MRIP CPUE and showed promise for

continued development. The covariate led to an overall decreasing trend in catchability over time. This model will be further developed leading up to the 2025 management track assessment, at which time it could be considered for the primary model.

References:

Northeast Fisheries Science Center. 2022. 2022 Bluefish Research Track Assessment NOAA Fisheries, Northeast Fish Sci Cent Ref Doc. TBD; 116 p. <https://apps-nefsc.fisheries.noaa.gov/saw/sasi.php>

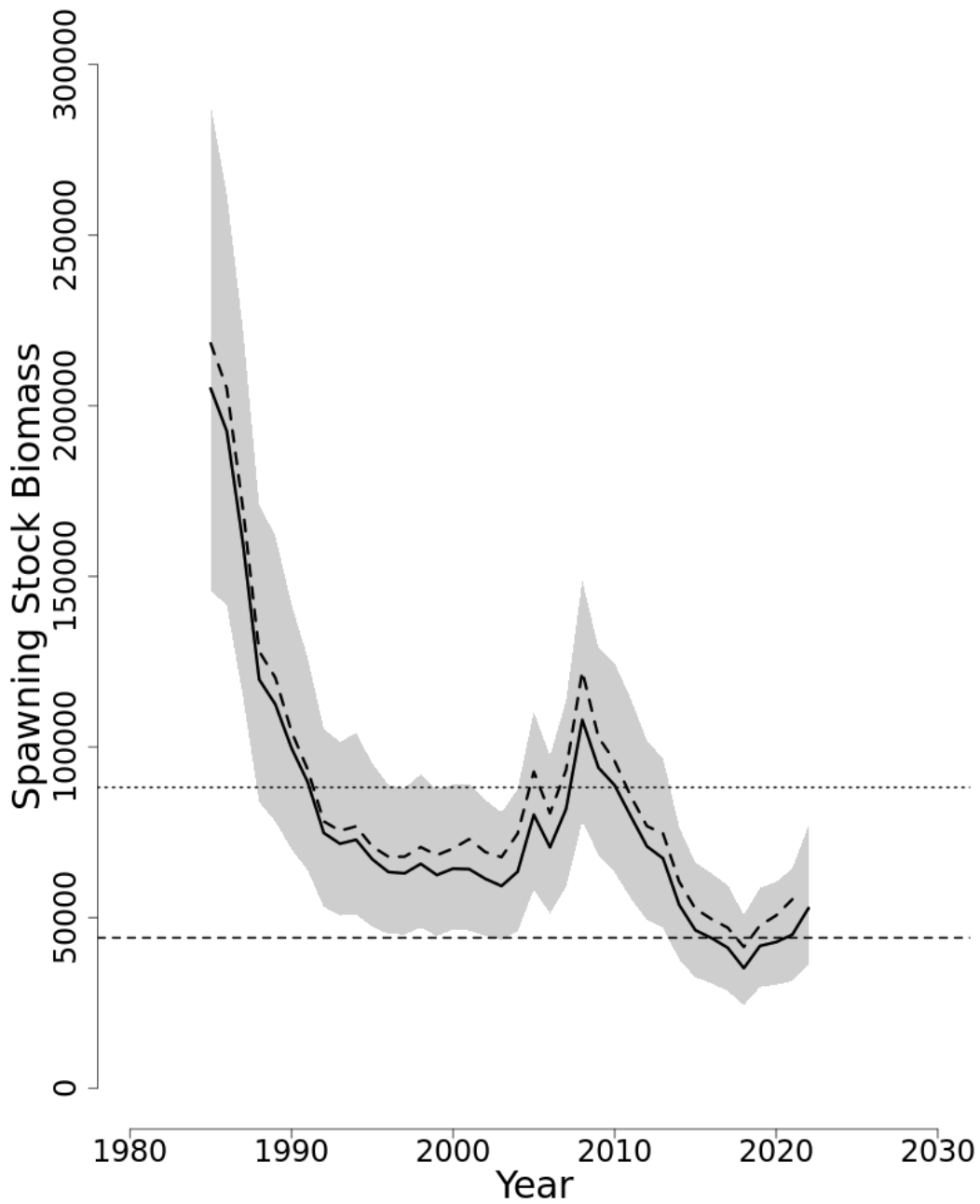


Figure 1: Trends in spawning stock biomass of Atlantic Bluefish between 1985 and 2022 from the current (solid line) and previous (dashed line) research track assessment and the corresponding $SSB_{Threshold}$ ($\frac{1}{2} SSB_{MSY}$ proxy; horizontal dashed line) as well as SSB_{Target} (SSB_{MSY} proxy; horizontal dotted line) based on the 2023 assessment. The approximate 90% lognormal confidence intervals are shown.

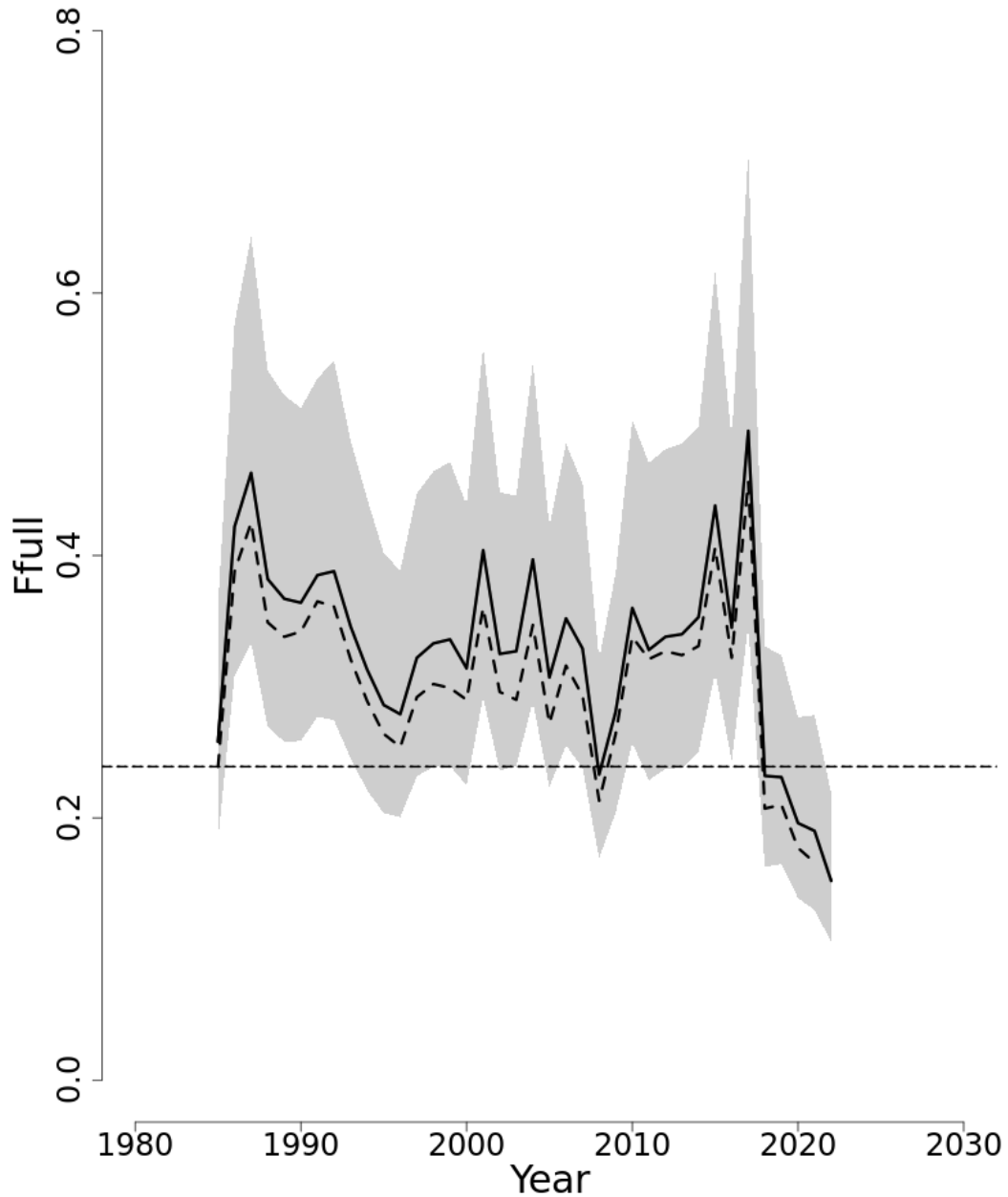


Figure 2: Trends in the fully selected fishing mortality (F_{Full}) of Atlantic Bluefish between 1985 and 2022 from the current (solid line) and previous (dashed line) research track assessment and the corresponding $F_{Threshold}$ ($F_{MSY proxy}=0.239$; horizontal dashed line). The approximate 90% lognormal confidence intervals are shown.

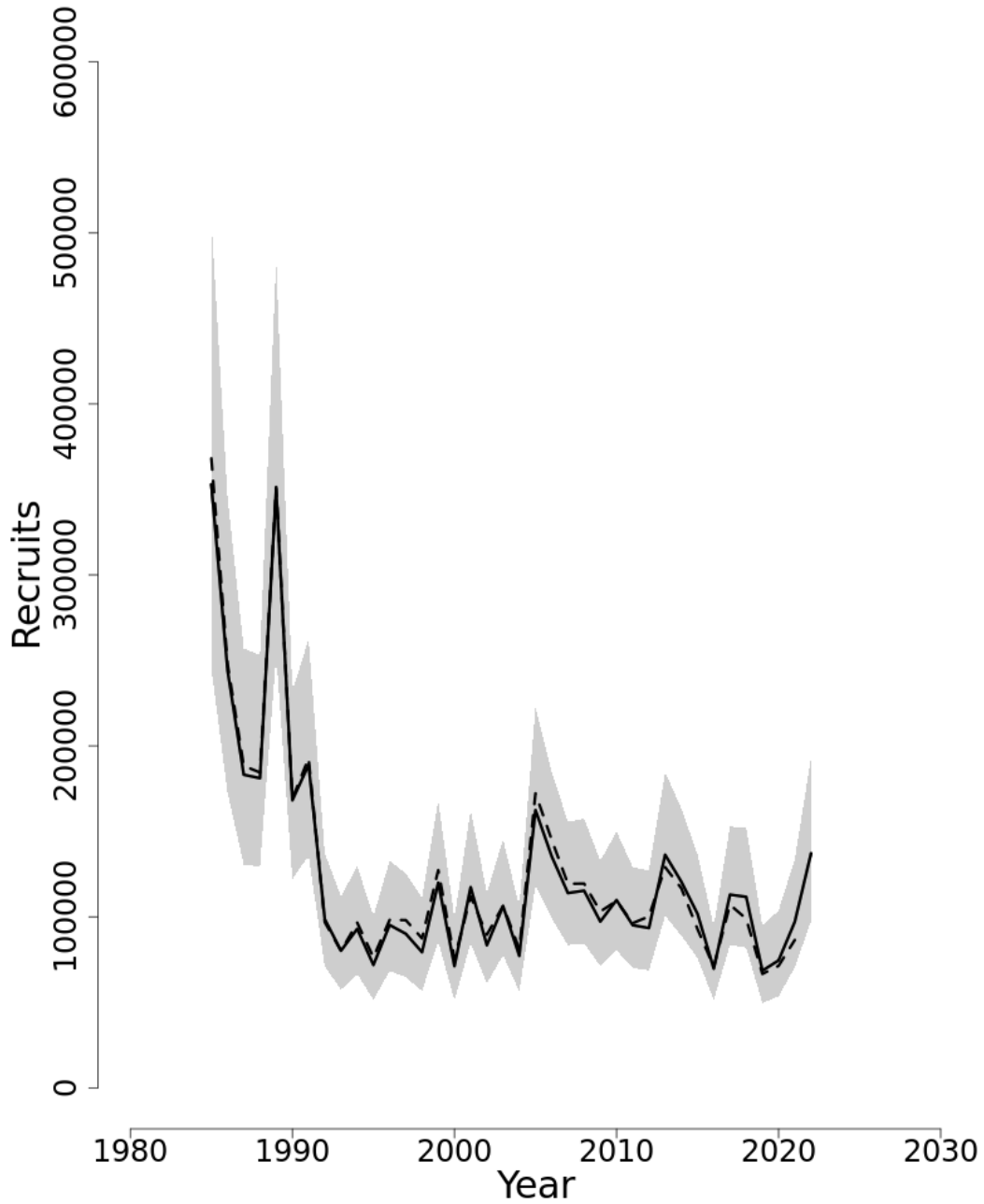


Figure 3: Trends in Recruits (age 0) (000s) of Atlantic Bluefish between 1985 and 2022 from the current (solid line) and previous (dashed line) research track assessment. The approximate 90% lognormal confidence intervals are shown.

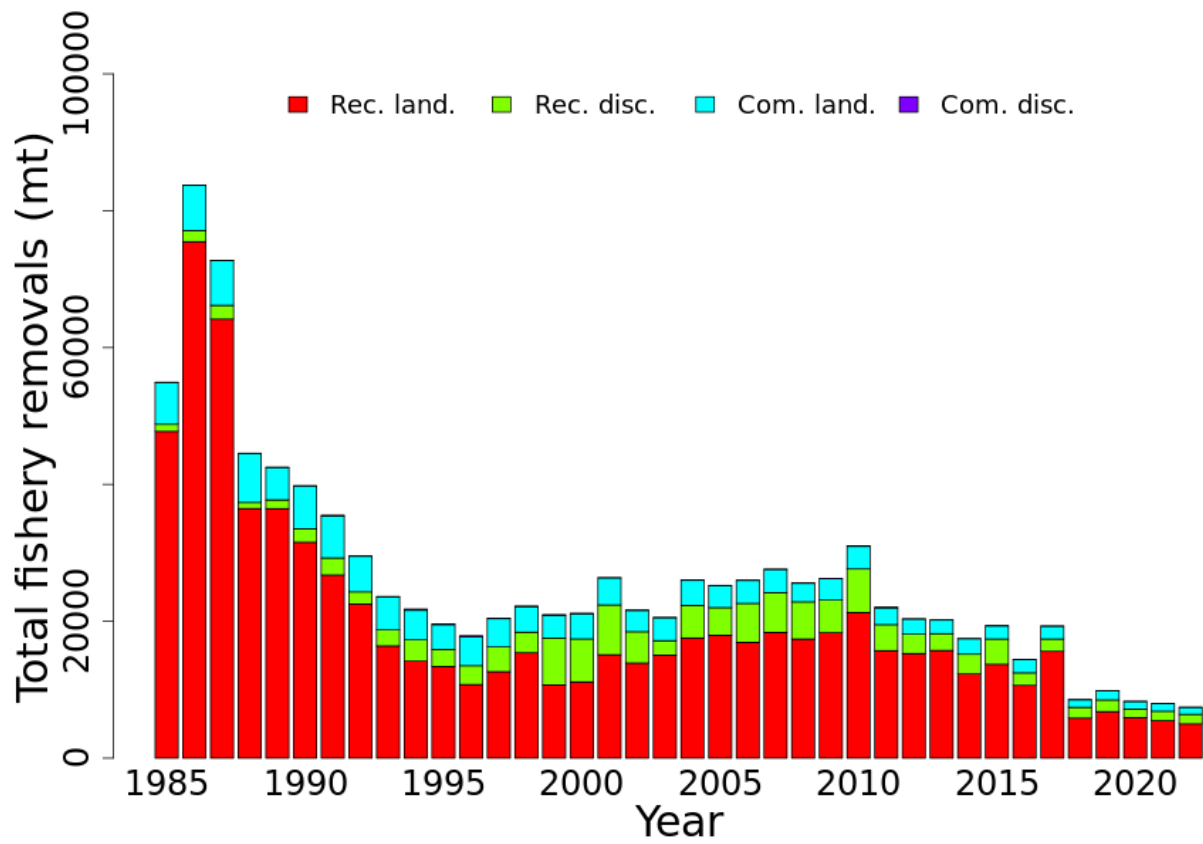


Figure 4: Total catch of Atlantic Bluefish between 1985 and 2022 by fleet (Recreational and Commercial) and disposition (landings and discards).

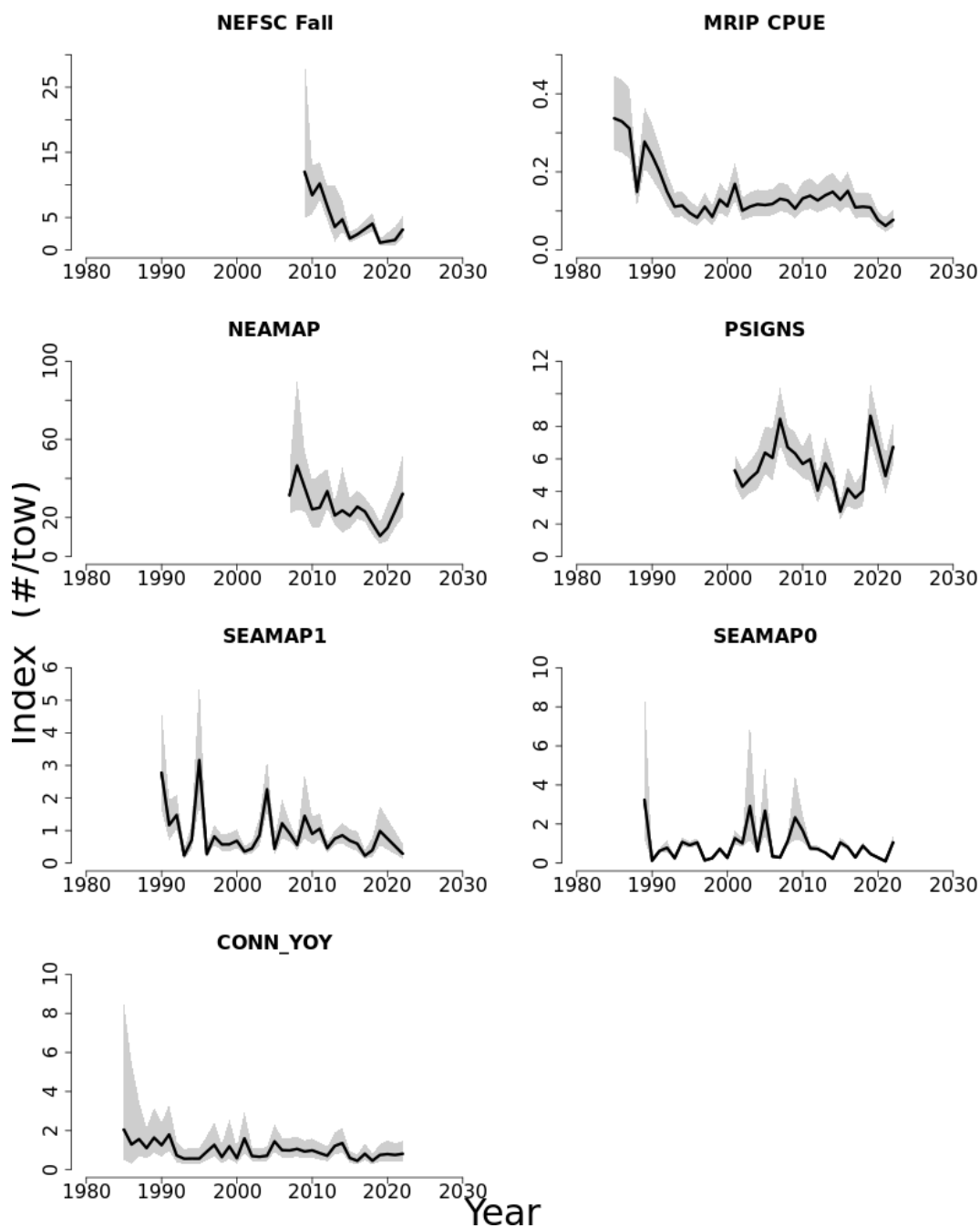


Figure 5: Atlantic Bluefish indices of abundance for the most important regional and state surveys. The approximate 90% lognormal confidence intervals are shown.



Bluefish Fishery Performance Report

June 2023

The Mid-Atlantic Fishery Management Council's (Council) and the Atlantic States Marine Fisheries Commission's (Commission) Bluefish Advisory Panels (AP) met via webinar on June 22, 2023 to review the Fishery Information Document and develop the following Fishery Performance Report. The primary purpose of this report is to contextualize catch histories by providing information about fishing effort, market trends, environmental changes, and other factors. A series of trigger questions listed below were posed to the AP to generate discussion of observations in the bluefish fishery. Please note: Advisor comments described below are not necessarily consensus or majority statements.

MAFMC Advisory Panel members present: Victor Hartley (NJ), Philip Simon (NJ), Willy Goldsmith (MA), James Kaczynski (RI), Thomas Roller (NC), Mike Waine (NC), Steve Heins (NC), Steve Witthuhn (NY).

ASMFC Advisory Panel members present: Peter Fallon (ME), Frank Blount (RI), Gordon Churchill (NC), Ray Jarvis (MA).

Others present: Karson Cisneros (MAFMC Staff), Chelsea Tuohy (ASMFC Staff), Cynthia Jones (MAFMC SSC), Maureen Davidson (MAFMC), Wes Townsend (MAFMC), Chris Batsavage (MAFMC), Mike Celestino (NJ DEP), Alan Bianchi (NC DMF), Will Poston (ASGA), Haley Clinton, Andrew Scheld (MAFMC SSC), James Fletcher (UNFA), Greg DiDomenico (Lund's Fisheries), Jason Didden (MAFMC Staff)

Trigger questions

1. What factors have influenced recent catch (markets/economy, environment, regulations, other factors)?
2. Are the current fishery regulations appropriate? How could they be improved?
3. What would you recommend as research priorities?
4. What else is important for the Council to know?

Environmental Factors Influencing Catch

Advisors noted the variability in the average weight of fish landed by state, particularly the jump from 5 lbs in CT to 2 lbs in NY. One advisor did not feel this was realistic and wanted to compare this to an average weight of a commercially caught fish; however, commercial harvest data is not available in numbers of fish. Staff noted that this has been discussed in the past and lower average weights compared with what people are seeing out on the water may be due to the snapper fishery. Anglers will catch their bag limit of small fish from the dock with a very low

weight which is sampled by MRIP and brings down the average overall. Staff also noted that these state-by-state weights tend to fluctuate year to year.

Many advisors commented that there are much more bluefish this year than last year and noted an increasing trend in recent years. One advisor from NJ said that last year the bluefish were absent 10-15 miles offshore. Another advisor added that off of Montauk this year the bluefish fishing is phenomenal with a lot of large fish at sizes between 8-12 lbs. They added that they hoped these big fish will provide a good upcoming year class. Fishermen in RI and NC also observed that there have been a lot of bluefish this spring and summer.

An advisor in MA agreed that there have been a lot of really big fish in the area, more so in the past few years. They added that generally the big fish come in first to spawn and then move away but the size and number of fish are both impressive this year. In MA, there is a slot limit on striped bass, so the bluefish are filling a need where fish can be harvested. This advisor has a lot of clients that want to keep bluefish in recent years.

An advisor from NJ said that 2021 and 2022 were great bluefish years from Point Pleasant north into the southern end of New York. They added that the fish are about to 5-8 pounds. They are not seeing the little fish that are being accounted for by MRIP.

Market/Economic Conditions and Management Issues

One advisor noticed that the bag limit change in 2020 corresponds with a decrease in the proportion of overall catch by the shore mode and an increase in private rental mode, while the for-hire mode stayed at the same level. He wondered if this was because of more anglers in the private rental mode. Staff added that we do not have data on number of anglers, however another factor that could influence harvest by mode is bluefish availability from shore which advisors have commented on in the past. Another advisor added that boats will switch over to black sea bass until it is closed and then switch back to bluefish.

An advisor added that from their perspective, people tend to hire charter captains for summer flounder, striped bass, and black sea bass. Most people go after bluefish for fun but not to take them home to eat. They added that they didn't understand why changing the bag limit from 15 fish to 3 fish would have an impact.

A for-hire operator in NC observed that over the last 5-6 years there has been an increased interest in harvesting and eating bluefish. This species is filling the need for customers who want to go out and catch fish for dinner when other species' regulations don't allow it. This advisor did not think that the bag limit had a negative impact because people only want to take home 2 or 3 fish.

For the NJ and NY party boats, bluefish is an important fishery that brings in a lot of money. The head boats in the region want to see an increase in the bag limit because this helps the passengers come and there is a lot of availability of bluefish right now. Another advisor felt that the differing bag limits between the for-hire and private angler modes was not thoroughly analyzed before being implemented and should be pursued through sector separation.

One advisor noted that there is a lot of targeting and interest in bluefish but it is often not considered a bluefish directed trip, so bluefish as a secondary target in MRIP would also be important to look at. Another advisor added that in MA, if you interviewed customers, they would not say they were targeting bluefish, but they catch bluefish on at least 50% of the trips and on some trips, a lot of bluefish are caught.

A member of the public commented that the people that can afford private boats and come back to private docks are not having their catch reported. They added that 80% of the people that are fishing come back to non-surveyed dock areas. They also felt that anglers fishing from shore should be allowed to keep more fish while those that can afford boats should have a lower limit because they are fishing for fun.

Another member of the public asked about the number of for-hire vessels in MA that target or fish for bluefish. Staff responded that they did not have the number of for-hire vessels broken down by state. An advisor added that there is a large percentage of for-hire vessels in MA that don't have federal permits.

Three advisors said they would like to see continued support for the conservation of bluefish and did not think there was a need to increase the bag limit too soon. One added that as a guide, bluefish are very valuable and you can always rely on them. They did not want to see a similar situation to what happened with striped bass in the early 2000s. They added that ensuring that there are still fish in 10-15 years is more important to them than taking home more fish.

Research Priorities and Data Issues

Advisors discussed the discard mortality rate change in the research track assessment. One advisor asked whether the updated rate of 9.4% (previously 15%) was the result of a specific study and whether there is a difference between the discard mortality rate by fish size. Staff responded that the rate was updated based on an analysis of the literature and updated information since the benchmark assessment in 2015 when the 15% rate was used; however, the rate is not size specific.

Another advisor commented that people that work in the aquarium system in NC have noted that bluefish have a high mortality rate when they are handled so it would be valuable to have bluefish-specific discard studies, not studies based on other species. Another advisor agreed with the recommendation for a bluefish post release mortality study, and added that analyzing mortality on the early fish that are larger and later fish that are smaller would be helpful. Another advisor agreed with the need for a species-specific post-release mortality study and felt it was still a concern.

One advisor felt that since the research track stock assessment already evaluated the discard mortality rate, this should be a lower research priority compared with the need to get better data on the larger older bluefish that tend to be offshore. They are inshore now but we don't know where they came from or where they were in past years. Another advisor commented that they have known for years that there are bigger fish offshore just farther from where people want to fish from but we don't know why they are coming in now. They observed that there are a lot of

bunker and that the bluefish run with the striped bass.

An advisor commented that if the stock assessment isn't taking into account commercial bluefish discards in the NC shrimp trawl fishery then that should be another research recommendation. A member of the public disagreed and stated that there is no bycatch of bluefish in the shrimp trawl fishery because they are too fast for the trawl net.

Both an advisor and a member of the public asked about the updated bluefish reference points from the recent research track assessment. The advisor was surprised that there wasn't more discussion of the scaling down in biomass from the 2019 management track assessment to the 2022 research track assessment. The member of the public asked whether the SSC commented on this change in their May 2023 discussion on the research track assessment. Staff responded that they did discuss the changes and noted that the most recent reference points are similar to those from the 2015 benchmark assessment. The May SSC meeting summary can be found [here](#).

One advisor suggested bioeconomic models for bluefish similar to what has been done for summer flounder, scup and black sea bass.

Other issues

Advisors discussed the timing of this meeting and a future AP meeting in late July or early August to recommend recreational management measures. One advisor noted that this time of year is challenging to meet and suggested the Fishery Performance Report meeting should be farther apart from the summer flounder, scup, and black sea bass meeting, which was held the previous day. One advisor was grateful for the meeting start time of 4:00 pm and said the evening was helpful. Advisors generally preferred a second AP meeting in late July or early August rather than soliciting feedback on 2024-2025 measures via email or some other format. This discussion was raised due to the difficult time of year and advisors' busy schedules on the water.

Advisor Comments Received Via Phone or Email

Email: TJ Karboski

From: Capt. TJ Karbowski <tedkarbowski@yahoo.com>
Sent: Friday, June 16, 2023 4:34 AM
To: Cisneros, Karson <KCisneros@mafmc.org>
Subject: Re: June 22 Bluefish AP Meeting

Good morning. Unless there is a weather event I will be on the water fishing. I'm a charter boat Captain. 4:00 in the middle of the season is an unrealistic time for a meeting for people who work on the water. These meetings should be during the winter. That being said, the bluefish are thriving this year. Although the general public and charter customers typically don't keep them for the table, the amount of fish around is (old school) and the fishing is as good as it gets. And, the fish range in sizes from little harbor size all the way up to true "alligators". Many year classes have succeeded.

Thank you, Capt. TJ Karbowski

Phone Call: Steve Witthuhn

- The 2 lb average weight for NY is because snappers are diluting the average weights and snappers should be considered as a completely different category. Otherwise, it is misrepresenting the fishery. The average weight jumps around with neighboring states. These values are not reasonable.
- Fish are now 9-12 lbs off of Montauk and are up to 7 lbs in MA
- Where were these large fish hiding in past years, were these the fish from a strong year class several years ago? We are inundated with bluefish. Do we know how big a 10 year old fish is?
- CT and the north shore of Long Island should be its own region where the bag/size/season regulations need to stay the same for all recreational species.
- Next year we should see a good snapper year with all of these larger fish spawning
- Bluefish school together by size, you don't see small fish in a school with the larger fish
- Bluefish are feeding like crazy on the sand eels to the point that they are not paying attention to a hooked porgy, when they used to attack those.

Phone Call: Bill Mandulak

- Bluefish haven't been around in the Outer Banks area where in the past you'd catch a lot of them. Specifically in areas such as Hatteras and Cape Point. They seem to be patchy, we do hear reports of them but in my experience this year and last May, even the small ones weren't there.
- The MRIP landings in NC from last year are substantial which is surprising and doesn't jive with what we are seeing.



Bluefish Fishery Information Document

June 2023

This Fishery Information Document provides a brief overview of the biology, stock condition, management system, and fishery performance for bluefish with an emphasis on 2022. Data sources for Fishery Information Documents are generally from unpublished National Marine Fisheries Service (NMFS) survey, dealer, vessel trip report (VTR), permit, and Marine Recreational Information Program (MRIP) databases and should be considered preliminary. For more resources, including previous Fishery Information Documents, please visit <http://www.mafmc.org/bluefish/>.

Key Facts

- The bluefish stock entered a rebuilding plan in 2022 to rebuild the stock. The 2023 Management Track Assessment will use data through 2022 and provide updated stock status and biological reference points to be used for management in 2024-2025.
- Recreational landings were 11.35 million pounds in 2022, a 1.11 million pound decrease compared with 2021.
- In 2022, 80% of recreational bluefish catch was released while 20% was harvested, with the majority of harvest occurring from the shore mode and in state waters.
- Commercial landings were 2.14 million pounds in 2022, a 0.07 million pound increase compared with 2021.

Basic Biology

Bluefish are found worldwide in tropical and subtropical waters, but in the western North Atlantic range from Nova Scotia and Bermuda to Argentina. Bluefish travel in schools of like-sized individuals and undertake seasonal migrations, moving into the Middle Atlantic Bight (MAB) during spring and then south or farther offshore during fall. Within the MAB they occur in large bays and estuaries as well as across the entire continental shelf. Juvenile stages have been recorded in all estuaries within the MAB, but eggs and larvae occur in oceanic waters (Able and Fahay 1998). Bluefish have fast growth rates and reach lengths of 3.5 ft and can weigh up to 27 pounds (Bigelow and Schroeder 1953). Bluefish live to age 12 and greater (Salerno et al. 2001).

Bluefish eat a wide variety of prey items. The species has been described by Bigelow and Schroeder (1953) as “perhaps the most ferocious and bloodthirsty fish in the sea, leaving in its

wake a trail of dead and mangled mackerel, menhaden, herring, alewives, and other species on which it preys."

Bluefish born in a given year (young of the year) typically fall into two distinct size classes suggesting that there are two spawning events along the east coast. Studies suggest, however, that spawning is a single, continuous event, but that young are lost from the middle portion resulting in the appearance of a split season (Smith et al. 1994). As a result of the bimodal size distribution, young are referred to as spring-spawned or summer-spawned. In the MAB, spring-spawned bluefish appear to be the dominant component of the stock.

Status of the Stock

2021 Management Track Assessment

In June 2021, a bluefish management track assessment, which included revised bluefish MRIP estimates and commercial landings through 2019 indicated the bluefish stock is still overfished and overfishing is not occurring. This update builds upon the 2019 operational assessment with data through 2018 that first indicated the stock was overfished and overfishing was not occurring. This assessment has been used for management for 2022-2023.

2022 Research Track Assessment and 2023 Management Track Assessment

A bluefish research track stock assessment underwent peer review in December 2022. This research track assessment evaluated new datasets and model changes to develop an improved stock assessment for bluefish. This assessment will serve as the basis for a 2023 management track assessment. The 2023 management track assessment (MTA) will use data through 2022 and provide updated stock status and biological reference points to be used for management in 2024-2025. This management track assessment will undergo peer review June 26-28 and more information will be posted to [this NOAA Fisheries Assessment Site](#) as it becomes available.

Management System and Fishery Performance

Management

The Mid-Atlantic Fishery Management Council (Council or MAFMC) and the Atlantic States Marine Fisheries Commission (ASMFC) work cooperatively to develop fishery regulations for bluefish off the east coast of the United States. The Council and Commission work in conjunction with the National Marine Fisheries Service (NMFS), which serves as the federal implementation and enforcement entity. This cooperative management endeavor was developed because a significant portion of the catch is taken from both state waters (0-3 miles offshore) and federal waters (3-200 miles offshore, also known as the Exclusive Economic Zone or EEZ). The management unit for bluefish is the U.S. waters in the western Atlantic Ocean.

The Bluefish Fishery Management Plan (FMP) was implemented in 1990 and established the Mid-Atlantic Fishery Management Council's management authority over the fishery in federal waters. Amendment 1, implemented in 2000, addressed stock rebuilding and created the Bluefish

Monitoring Committee which meets annually to make management measure recommendations to the Council. Amendment 3 incorporated the development of annual catch limits (ACLs) and accountability measures (AMs) into the specification process and Amendment 4 modified recreational accountability measures to accommodate uncertainty in recreational management and catch estimation. The original FMP and subsequent amendments and frameworks are available at: <http://www.mafmc.org/fisheries/fmp/bluefish>.

Until 2022, the annual catch limit was split 83 percent and 17 percent into recreational and commercial limits, respectively, and the discarded component of that catch was deducted to arrive at recreational and commercial total allowable landings (TAL). Additionally, landings above the expected recreational harvest could be “transferred” from the recreational to the commercial fishery as long as the final commercial quota did not exceed 10.5 million pounds. In June 2021, the Council and ASMFC’s Bluefish Board took final action on the Bluefish Allocation and Rebuilding Amendment. This action allocates 14 percent of the fishery annual catch limit to the commercial fishery and 86 percent to the recreational fishery, which is a 3-percentage point shift to the recreational sector from the prior allocations. This amendment also adjusted the commercial state quota allocations and allows bi-directional quota transfers. Amendment documentation is available at: <https://www.mafmc.org/actions/bluefish-allocation-amendment>.

The Council's SSC reviews stock assessment results and the Advisory Panel’s fishery performance report and sets the ABCs on a two year cycle with a review occurring between those two years. The Council's Bluefish Monitoring Committee develops and recommends specific coastwide management measures (commercial quota, recreational harvest limit) that will achieve the catch target and makes further adjustments to total catch as needed based on management uncertainty. Finally, the Council and Board meet jointly to develop recommendations to be submitted to the NMFS.

Table 1. Summary of bluefish catch, harvest, and management measures, 2014 – 2023 (Values are in millions of pounds). In 2019, recreational landings were provided using new MRIP estimates while the RHL was developed using old MRIP estimates so cannot be directly compared.

Management Measures	2014	2015	2016	2017	2018	2019	2020	2021	2022²	2023
ABC	24.43	21.54	19.45	20.64	21.81	21.81	16.28	16.28	25.26	30.62
TAL	21.08	18.19	16.46	18.19	18.82	19.33	12.25	12.25	17.43	18.40
Comm. Quota	7.46	5.24	4.88	8.54	7.24	7.71	2.77	2.77	3.54	4.29
Comm. Landings	4.77	4.02	4.1	3.64	2.20	2.78	2.16	2.07	2.14	--
Rec. Harvest Limit	13.62	12.95	11.58	9.65	11.58	11.62	9.48	8.34	13.89	14.11
Rec. Harvest, Old MRIP	10.46	11.67	9.54	9.52	3.64	--	--	--	--	--
Rec. Harvest, New MRIP	27.04	30.10	24.16	32.07	13.27	15.56	13.58	12.46	11.35	--
Rec. Possession Limit (# fish)	15	15	15	15	15	15	3: Private 5: For-Hire	3: Private 5: For-Hire	3: Private 5: For-Hire	3: Private 5: For-Hire
Total Landings	15.23	15.69	13.64	13.16	5.84	18.34	15.74	14.53	13.49	--
Overage/Underage	-5.85	-2.5	-2.82	-5.03	-12.98	N/A	+3.49	+2.28	-3.94	--
Total Catch ¹	17.96	18.65	16.09	15.65	6.96	23.50	19.93	21.25	17.85	--
Overage/Underage	-6.47	-2.89	-3.36	-4.99	-14.85	N/A	+3.65	+4.97	-7.41	--

¹ Recreational discards were calculated assuming MRIP mean weight of fish harvested in a given year multiplied by the MRIP B2s and the assumed discard mortality rate from the stock assessment (15% through 2021, 9.4% starting in 2022). ²Catch and landings values are preliminary and are not the final values to be used for catch accounting. Estimates from the 2023 Management Track Assessment will be used once available.

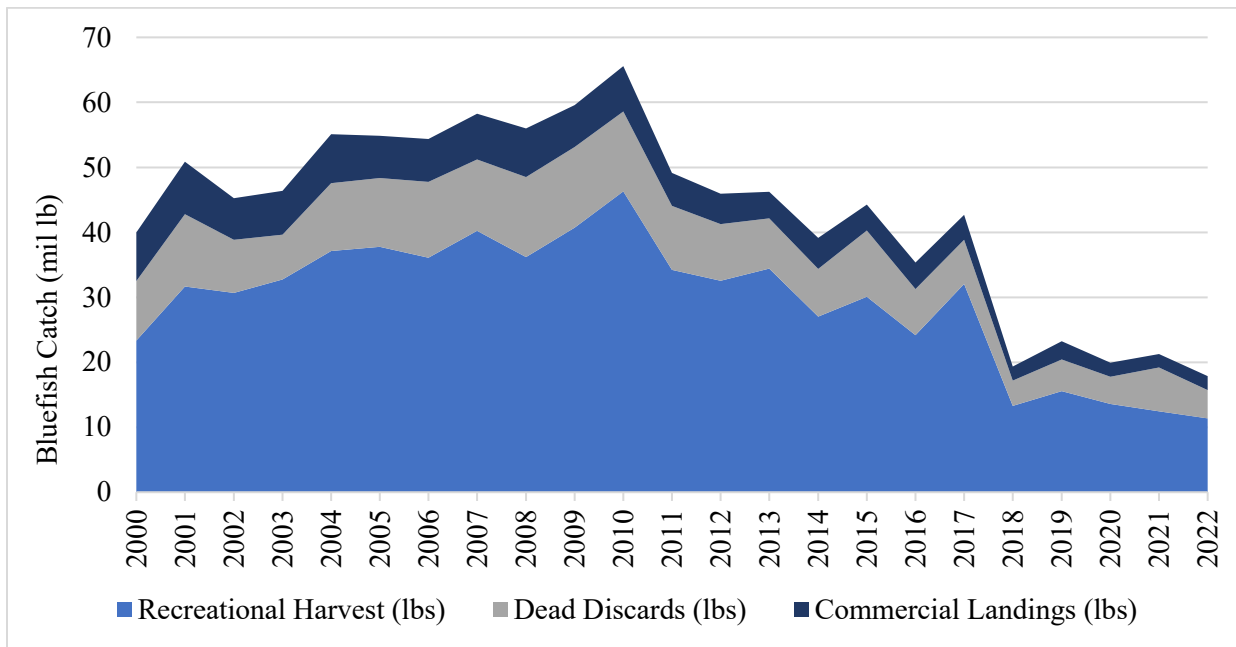


Figure 2. Bluefish catch (landings and dead discards), 2000-2022. Recreational dead discards are calculated as the average weight of a harvested fish by year and state multiplied by the B2s and 15% (2000-2021) or 9.4% (2022) discard mortality rate (Source: MRIP and Dealer data – cfders). Commercial discards are thought to be negligible. The full time series will be updated to account for commercial discards and updated discard mortality rates after the 2023 MTA.

Fishery Performance Relative to Management Measures

The recreational and commercial landings relative to specified management measures through 2023 are provided in Table 1. In 2022, the recreational fishery landed 11.35 million pounds compared to the 13.89 million pounds RHL and the commercial fishery landed 2.14 million pounds compared to the 3.54-million-pound quota.

Recreational Fishery

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 estimates of catch and landings are several times higher than the previous estimates for shore and private boat modes. All recreational estimates in this document reflect revised MRIP estimates except where otherwise noted. Recreational harvest estimates for 2020 were impacted by temporary suspension of shoreside intercept surveys due to the COVID-19 pandemic. NMFS used imputation methods to fill gaps in 2020 catch data with data collected in 2018 and 2019.

Trends in recreational trips associated with targeting or harvesting bluefish from 2013 to 2022 are provided in Table 2. During the past ten years, the lowest annual estimate of bluefish trips was 6.32 million (2022) and the highest annual estimate of bluefish trips was 12.82 million in

2012. Over the last 5 years (2017-2021), the number of bluefish trips averaged 7.57 million trips and the number of trips has been decreasing in recent years.

Table 2. Number of bluefish recreational fishing trips, landings per trip, harvest, catch and releases for the past 10 years, ME-FL.

Year	bluefish trips ¹ (N)	Landings per trip	Rec. Harvest (N)	Rec. Harvest (lbs)	Released (N)	Catch (N)
2013	9,353,805	2.14	19,975,051	34,398,327	33,519,613	53,494,664
2014	12,441,771	1.73	21,510,651	27,044,276	33,583,115	55,093,766
2015	9,406,704	1.46	13,725,106	30,098,649	28,423,854	42,148,960
2016	10,626,957	1.4	14,899,723	24,155,304	27,629,023	42,528,746
2017	9,952,090	1.39	13,845,806	32,071,432	28,317,327	42,163,133
2018	7,169,536	1.43	10,245,710	13,270,862	20,682,992	30,928,703
2019	8,250,853	1.47	12,137,290	15,555,889	26,494,646	38,631,936
2020	8,745,993	1.07	9,336,222	13,581,218	21,345,604	30,681,826
2021	7,409,375	0.83	6,183,783	12,462,781	23,566,217	29,750,000
2022	6,324,069	1.00	6,353,081	11,354,535	25,930,541	32,283,622

¹ Estimated number of recreational fishing trips where the primary target was bluefish or bluefish were harvested regardless of target

From the early 1980s to the early 1990s, recreational harvest declined about 70% (avg. 1981-1983 = 156.34 million pounds; avg. 1991-1993 = 46.14 million pounds). Recreational harvest continued to decline at a slower rate until reaching a low level in 1999-2000 but then grew to a peak of over 46 million pounds in 2010. Since 2018, recreational harvest dropped to the lowest values of the time series with a 2018-2022 average harvest of 13.25 million pounds. In 2022, landings were 11.35 million pounds. From 2000 to 2010 landings were relatively stable, however, recreational landings have been trending downward since 2010 (Figure 2).

Recreational catch and harvest estimates by state for 2022 are provided in Table 3. The greatest catches (harvest plus discards) occurred in North Carolina with 9.73 million fish, followed by New York with 7.14 million fish, and Florida and South Carolina with over 3 million fish.

The greatest harvest of bluefish by weight in 2022 occurred in New York with 3.45 million pounds, followed by Florida with 1.96 million pounds, and North Carolina, Massachusetts, and New Jersey with a little over 1 million pounds harvested. Average weights landed, based on dividing MRIP landings in weight by landings in number for each state, suggest that bluefish size tends to increase along the north Atlantic coast. In 2022, 80% of recreational bluefish catch was released while 20% was harvested, however this varied by state (Figure 3).

Table 3. MRIP estimates of 2022 bluefish recreational harvest, total catch, and average weight.

State	Harvest			Catch	Total Released	Dead Discards
	Pounds	Number	Average Weight ¹ (pounds)	Number	Number	Number
ME	73,697	8,326	8.9	31,061	22,735	2,137
NH	1,598	181	8.8	1,397	1,216	114
MA	1,277,203	183,470	7.0	1,533,782	1,350,312	126,929
RI	593,444	92,704	6.4	341,709	249,005	23,406
CT	541,930	105,910	5.1	715,327	609,417	57,285
NY	3,446,600	1,710,502	2.0	7,144,950	5,434,448	510,838
NJ	1,077,834	510,820	2.1	1,728,918	1,218,098	114,501
DE	51,550	38,676	1.3	548,873	510,197	47,959
MD	213,345	249,382	0.9	484,947	235,565	22,143
VA	215,999	262,360	0.8	1,534,477	1,272,117	119,579
NC	1,336,592	1,533,911	0.9	9,731,098	8,197,187	770,536
SC	259,372	487,654	0.5	3,194,059	2,706,405	254,402
GA	35,911	43,335	0.8	317,567	274,232	25,778
FL	1,957,211	1,125,847	1.7	3,768,905	2,643,058	248,447
Total	11,354,535	6,353,078	1.8	31,077,070	24,723,992	2,324,055

¹ Average weight is the pounds harvested divided by the number of fish harvested. Recreational dead discards in numbers of fish were calculated as 9.4% of total recreational discards.

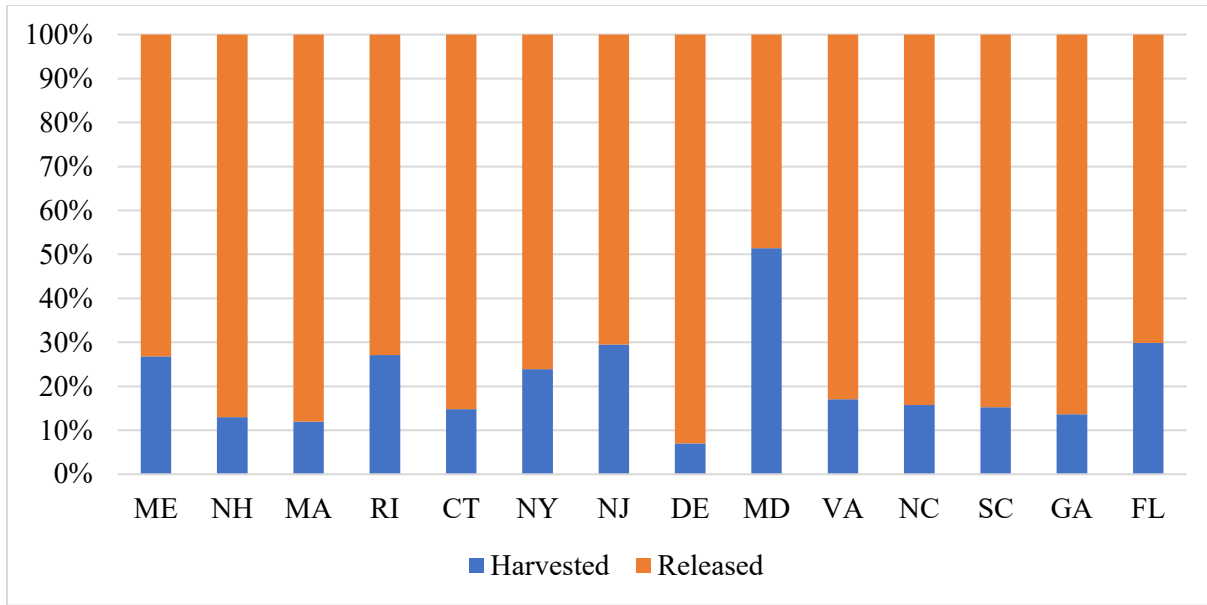


Figure 3. Proportion of bluefish recreational catch that was harvested and released by state in 2022 (in numbers of fish). Source: MRIP.

Figure 4 presents new MRIP estimates of landings by mode since 2002 and indicates that the recent primary modes landing bluefish are shore mode and private boats. Based on recreational harvest in 2022, landings from shore represented 55% of overall landings, followed by private rental mode at 41% and the for-hire sector at 5%. Over the last five years (2018-2022), ~65% of the total bluefish landings came from shore, ~31% from private/rental boats, and ~4% from for-hire boats. In 2022, 988 federal for-hire permits were issued for bluefish.

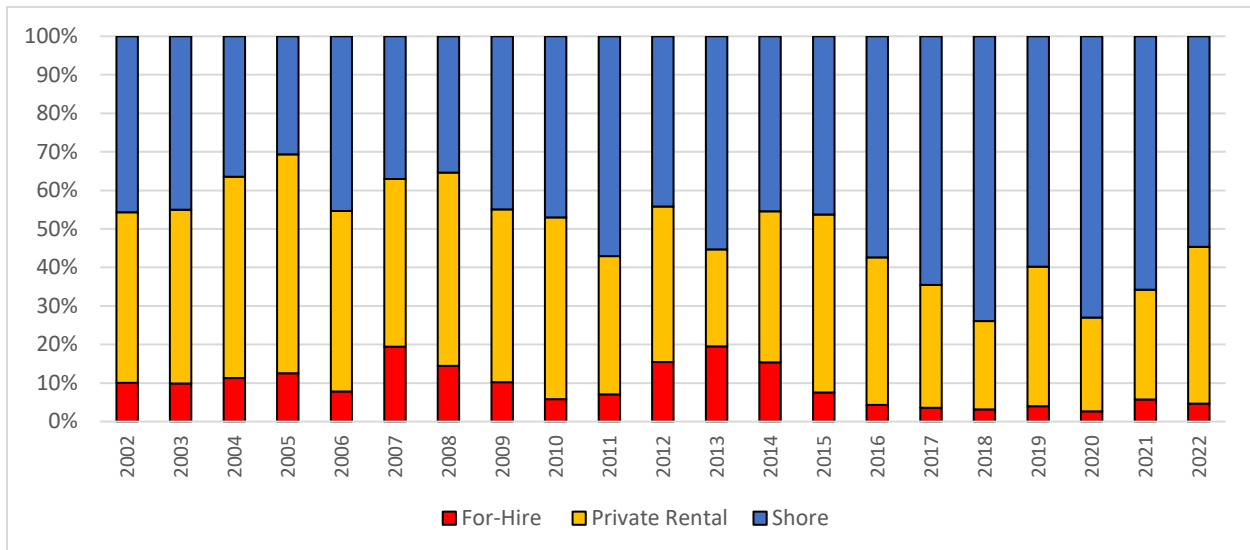


Figure 4. Bluefish recreational harvest (pounds) by mode on the Atlantic Coast, 2002-2022. Source: MRIP.

MRIP classifies catch into three fishing areas: inland, nearshore ocean (< 3 mi), and offshore ocean (> 3 mi). In 2022, the majority of coastwide bluefish harvest occurred in inland waters at 55%, followed by 40% from nearshore ocean, and 4% from offshore waters. Inland and nearshore ocean are considered state waters while offshore ocean (>3 miles) is federal waters, therefore 96% of bluefish harvest by weight occurred in state waters in 2022.

Commercial Fishery

Federal permit data indicate that 2,324 commercial bluefish permits were issued in 2022. A subset of federally permitted vessels was active in 2022 with dealer reports identifying 380 vessels with commercial bluefish permits that landed bluefish. Of the 165 federally permitted bluefish dealers in 2022, there were 137 dealers who bought bluefish.

In 2022, the commercial fishery landed 2.14 million pounds. Dealer data for 2022 indicate that most of the bluefish commercial landings were taken by gillnet (47%), trawl/dredge (44%), handline (6%), and other (3%).

Across states, 2022 commercial landings were the highest in North Carolina with 0.74 million pounds of bluefish landed, followed by New York at 0.37 million pounds and Massachusetts at 0.25 million pounds (Table 4). VTR catch data was used to identify all NMFS statistical areas that accounted for at least 5 percent of the total bluefish catch (Table 5). Seven statistical areas accounted for approximately 81% of the VTR-reported catch in 2022. The highest percentage of catch was from statistical area 612 with the most trips targeting bluefish conducted in statistical area 539. A map of the proportion of bluefish catch by statistical area based on federal VTR data is shown in Figure 5.

Table 4. Commercial landings by state for 2022 based on dealer data (cfders). Note that state only commercial landings from North Carolina and Florida are not always present in the cfders database. Final commercial catch accounting will be made available by GARFO prior to setting specifications.

State	2022 Landings (Pounds)
ME	C
NH	0
MA	254,138
RI	240,460
CT	41,597
NY	368,473
NJ	203,595
DE	6,716
MD	10,059
VA	187,526
NC	736,595
SC	0
GA	0
FL	93,018
Total	2,142,304

Table 5. Statistical areas that accounted for at least 5 percent of the total bluefish catch. Source: VTR database.

Statistical Area	Catch (lbs)	Percent of total catch	Number of trips
612	104,767	18%	218
613	82,719	14%	484
626	76,973	13%	28
539	64,511	11%	528
537	53,608	9%	369
635	48,929	9%	204
611	30,661	5%	463

2022 Commercial Bluefish Catch - VTRs

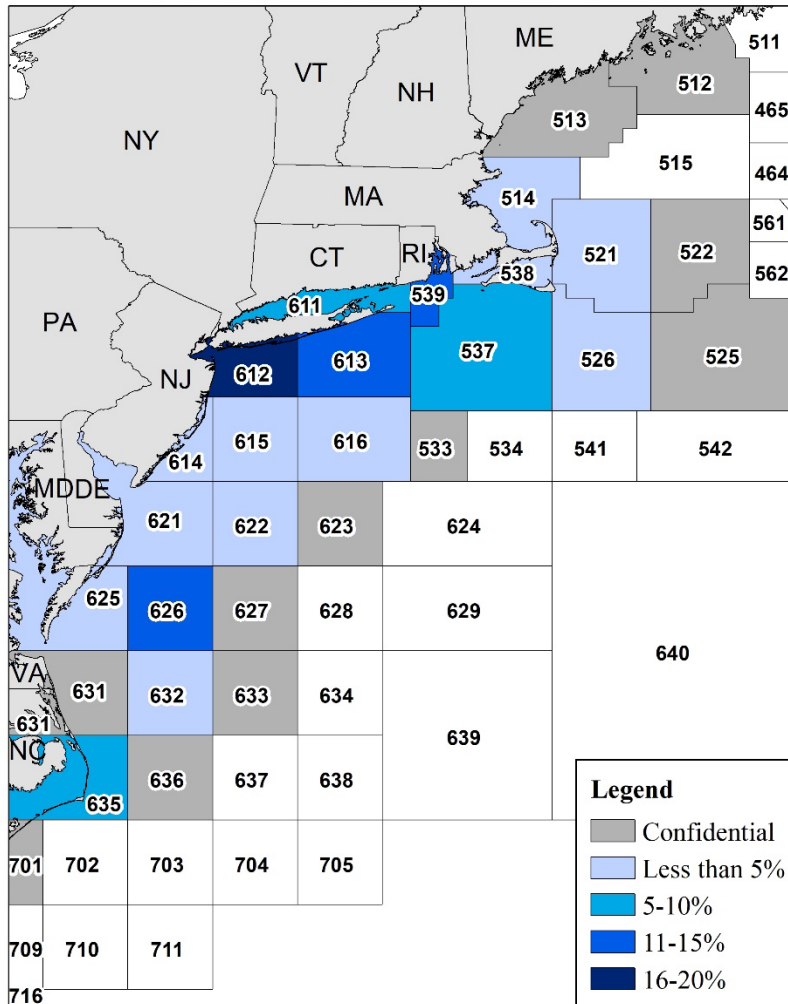


Figure 5. Proportion of bluefish catch by NMFS Statistical Area in 2022 based on federal VTR data. The amount of catch not reported on federal VTRs (e.g., catch from vessels permitted to fish only in state waters) is unknown.

The top commercial landings ports for bluefish in 2022 are shown in Table 6. Five ports qualified as "top bluefish ports," i.e., those ports where 100,000 pounds or more of bluefish were landed. Hatteras, NC landed the most commercial bluefish with 273,871 pounds landed. The ports and communities that are dependent on bluefish are described in Amendment 1 to the FMP (available at <http://www.mafmc.org/fisheries/fmp/bluefish>). Additional information on "Community Profiles for the Northeast US Fisheries" can be found at http://www.nefsc.noaa.gov/read/socialsci/community_profiles/.

According to dealer data, commercial vessels landed about 2.14 million pounds of bluefish valued at approximately \$1.87 million in 2022. Average coastwide ex-vessel price of bluefish was \$0.87 per pound in 2021, a \$0.07 decrease from the previous year (2021 price = \$0.94 per pound). A time series of bluefish revenue and price is provided in Figure 6.

Table 6. Bluefish landings in pounds for top ports (landings > 100,000 pounds) based on NMFS 2022 dealer data (cfdrs).

Port	Pounds	% of total commercial landings	# vessels
Hatteras, NC	273,871	13%	<10
Wanchese, NC	264,359	12%	12
Point Judith, RI	175,841	8%	93
Montauk, NY	160,317	7%	71
Provincetown, MA	100,299	5%	<10

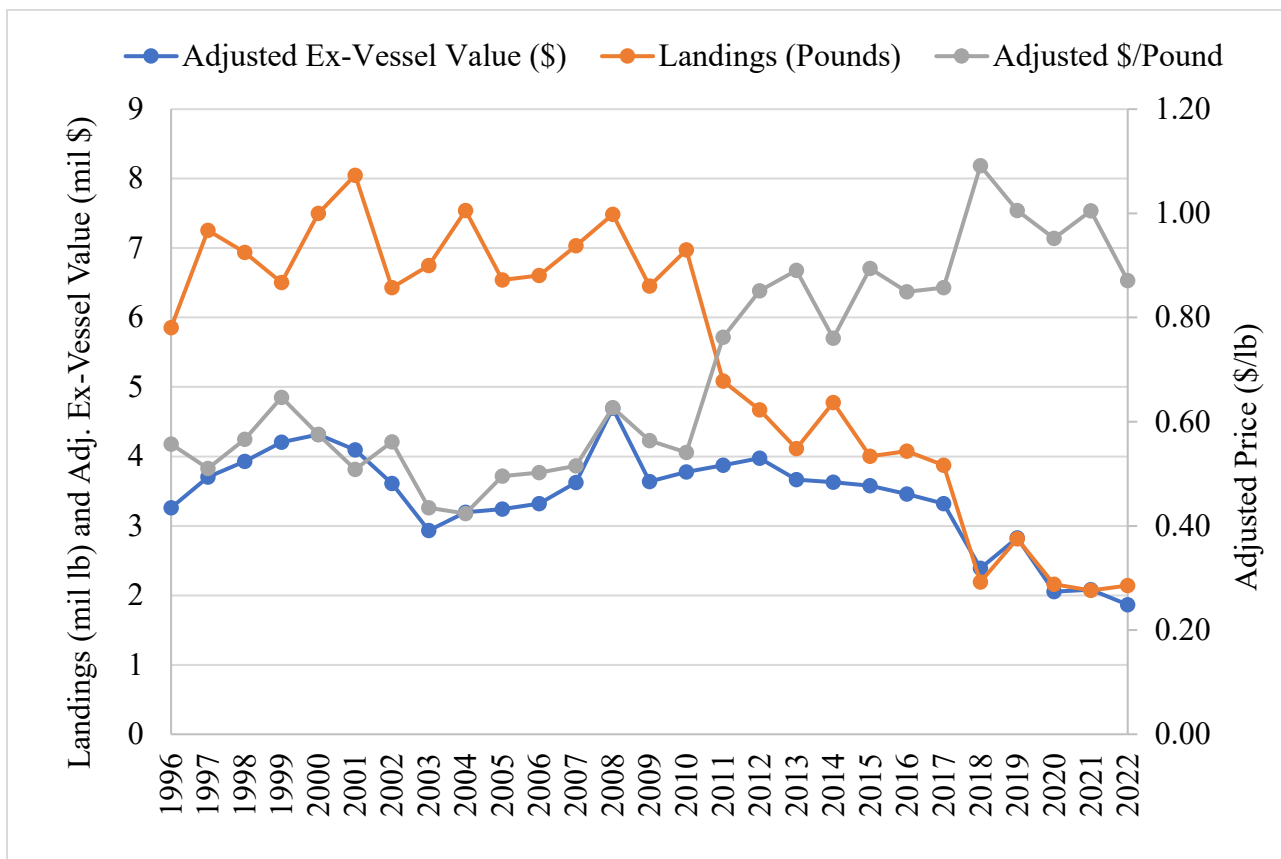


Figure 6. Bluefish commercial landings (in millions of pounds), ex-vessel value, and price per pound (adjusted to 2022 real dollars) from 1996-2022.

Bycatch species caught on bluefish targeted trips based on observer data are shown in Table 7. The commercial bluefish fishery is primarily prosecuted with gillnets and handlines, although there are other small localized fisheries, such as the beach seine fishery that operates along the Outer Banks of North Carolina. Many of these fisheries do not fish exclusively for bluefish, but target a combination of species including croaker, mullet, Spanish mackerel, spot, striped bass, and weakfish. Given the mixed-species nature of the bluefish fishery, incidental catch of non-target species is not directly attributable to the bluefish fishery.

Table 7. Percent of top commercial non-target species caught (kept or discarded) by weight on observed trips where bluefish was either target species 1 or 2 from 2018-2022. Source: Observer data retrieved April 2022.

Species	% by weight
Smooth dogfish	10%
Scup	4%
Striped bass	3%
Spiny dogfish	2%
Atlantic bonito	2%
Black sea bass	1%

References

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