



## **Bluefish Fishery Information Document**

**June 2022**

This Fishery Information Document provides a brief overview of the biology, stock condition, management system, and fishery performance for bluefish with an emphasis on 2021. Data sources for Fishery Information Documents are generally from unpublished National Marine Fisheries Service (NMFS) survey, dealer, vessel trip report (VTR), permit, and Marine Recreational Information Program (MRIP) databases and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**

- According to the 2021 Management Track Assessment, bluefish is overfished and overfishing is not occurring. The bluefish stock entered a rebuilding plan in 2022 to rebuild the stock. A research track assessment will undergo peer review in late 2022.
- Recreational landings were 12.46 million pounds in 2021, a 1.12 million pound decrease compared with 2020.
- Recreational dead discards in 2021 were 3.53 million fish, which represents a slight increase compared with 3.20 million fish in 2020.
- Commercial landings were 2.07 million pounds in 2021, a 0.09 million pound decrease compared with 2020.

### **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.

The biological reference points for bluefish revised through the 2021 management track assessment include an updated fishing mortality threshold of  $F_{MSY} = F_{35\%}$  (as the  $F_{MSY}$  proxy) = 0.181, and a biomass reference point of  $SSB_{MSY} = SSB_{35\%}$  (as the  $SSB_{MSY}$  proxy) = 444.74 million lbs. The minimum stock size threshold ( $1/2 SSB_{MSY}$ ) is estimated to be 222.37 million lbs. SSB in 2019 was 211.07 million lbs.

Fishing mortality on the fully selected age 2 fish was estimated to be 0.172 in 2019, 95% of the updated fishing mortality threshold reference point  $F_{MSY}$  proxy =  $F_{35\%}$  = 0.181. There is a 90% probability that the fishing mortality rate in 2019 was between 0.140 and 0.230.

The 2021 management track assessment indicated the bluefish stock has experienced a decline in SSB over the past decade, coinciding with an increasing trend in  $F$ . Recruitment has remained fairly steady, fluctuating just below the time-series mean of 46 million fish. Both commercial and recreational fisheries have had lower catches in recent years. These lower catches are possibly a result of availability. Anecdotal evidence suggests larger bluefish stayed offshore and inaccessible to most of the recreational fishery during the past few years.

### *2022 Research Track Assessment*

There is an ongoing bluefish research track stock assessment which will undergo peer review in late 2022. Research track assessments evaluate new datasets that can either inform or be used in new or existing stock assessment models. The goal is to develop an improved stock assessment for bluefish that can be used for future management track assessments.

## 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>.

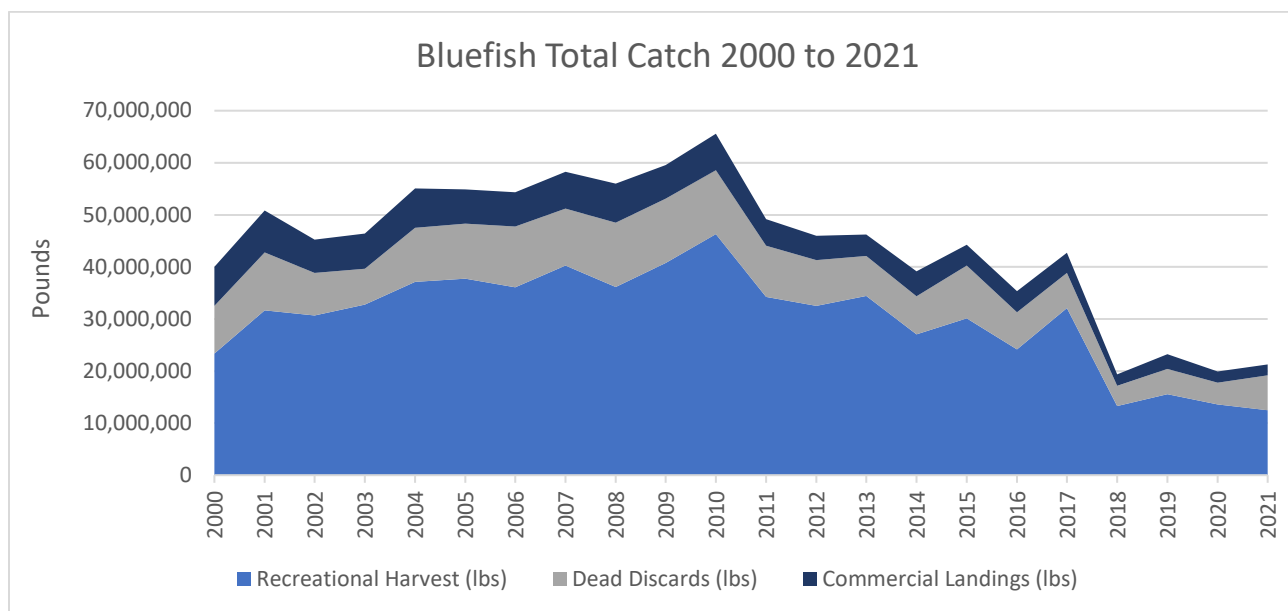
Until 2022, the annual catch limit was split 83 percent and 17 percent into recreational and commercial limits, respectively, and the discarded component of that catch was deducted to arrive at recreational and commercial total allowable landings (TAL). Additionally, landings above the expected recreational 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, 2013 – 2022 (Values are in millions of pounds). 2019 is the transition year for when recreational landings are reported using only new MRIP estimates. In 2019, recreational landings were provided using new MRIP estimates while the RHL was developed using old MRIP estimates so cannot be directly compared. In 2020 onward, the new MRIP estimates were used in setting the RHL and estimating catch and landings.

Management Measures	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
ABC	27.47	24.43	21.54	19.45	20.64	21.81	21.81	16.28	16.28	25.26
TAL	23.86	21.08	18.19	16.46	18.19	18.82	19.33	12.25	12.25	17.43
Comm. Quota	9.08	7.46	5.24	4.88	8.54	7.24	7.71	2.77	2.77	3.54
Comm. Landings <sup>1</sup>	4.12	4.77	4.02	4.1	3.64	2.20	2.78	2.16	2.07	--
Rec. Harvest Limit	14.07	13.62	12.95	11.58	9.65	11.58	11.62	9.48	8.34	13.89
Rec. Harvest, Old MRIP	16.46	10.46	11.67	9.54	9.52	3.64	--	--	--	--
Rec. Harvest, New MRIP	34.40	27.04	30.10	24.16	32.07	13.27	15.56	13.58	12.46	--
Rec. Possession Limit (# fish)	15	15	15	15	15	15	15	3: Private 5: For- Hire	3: Private 5: For- Hire	3: Private 5: For- Hire
Total Landings	20.58	15.23	15.69	13.64	13.16	5.84	18.34	15.74	14.53	--
Overage/Underage	-3.28	-5.85	-2.5	-2.82	-5.03	-12.98	N/A*	+3.49	+2.28	--
Total Catch <sup>2</sup>	24.06	17.96	18.65	16.09	15.65	6.96	23.50	19.93	21.25 <sup>3</sup>	--
Overage/Underage	-3.41	-6.47	-2.89	-3.36	-4.99	-14.85	N/A*	+3.65	+4.97	--

<sup>1</sup>Dealer data (cfders) was used to generate commercial landings. <sup>2</sup>Recreational discards were calculated assuming MRIP mean weight of fish harvested by state in a given year multiplied by the MRIP B2s and assumed discard mortality rate of 15%. <sup>3</sup>A previous version of this document reported a lower catch value due to a calculation error, 2021 catch data are preliminary.



**Figure 2.** Bluefish catch (landings and dead discards), 2000-2021. Recreational dead discards are calculated as the average weight of a harvested fish by year and state multiplied by the B2s and 15% discard mortality rate (Source: MRIP and Dealer data – cfders). Commercial discards are thought to be negligible.

## Fishery Performance Relative to Management Measures

The recreational and commercial landings relative to specified management measures through 2022 are provided in Table 1. In 2021, MRIP reported the recreational fishery landed 12.46 million pounds compared to the 8.34 million pounds RHL. This RHL overage will be reviewed by the Monitoring Committee and Council and Board, as well as the Greater Atlantic Regional Fisheries Office to identify if/how accountability measures will be triggered. In 2021, the commercial fishery landed 2.07 million pounds compared to the 2.77-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 2012 to 2021 are provided in Table 2. During the past ten years, the lowest annual estimate of bluefish trips

was 7.17 million (2018) 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 8.95 million trips.

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

<b>Year</b>	<b>bluefish trips<sup>1</sup> (N)</b>	<b>Rec. landings per trip</b>	<b>Recreational Harvest (N)</b>	<b>Recreational Harvest (lbs)</b>	<b>Released (N)</b>	<b>Catch (N)</b>
<b>2012</b>	12,817,838	1.45	18,578,838	32,530,917	32,079,529	50,658,367
<b>2013</b>	9,353,805	2.14	19,975,051	34,398,327	33,519,613	53,494,664
<b>2014</b>	12,441,771	1.73	21,510,651	27,044,276	33,583,115	55,093,766
<b>2015</b>	9,406,704	1.46	13,725,106	30,098,649	28,423,854	42,148,960
<b>2016</b>	10,626,957	1.40	14,899,723	24,155,304	27,629,023	42,528,746
<b>2017</b>	9,952,090	1.39	13,845,806	32,071,432	28,317,327	42,163,133
<b>2018</b>	7,169,536	1.43	10,245,710	13,270,862	20,682,992	30,928,703
<b>2019</b>	8,250,853	1.47	12,137,290	15,555,889	26,494,646	38,631,936
<b>2020</b>	8,745,993	1.07	9,336,222	13,581,218	21,345,604	30,681,826
<b>2021</b>	7,409,375	0.83	6,183,783	12,462,781	23,566,217	29,750,000

<sup>1</sup> 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 landings declined about 70% (avg. 1981-1983 = 156.34 million pounds; avg. 1991-1993 = 46.14 million pounds). Recreational landings continued to decline at a slower rate until reaching a low level in 1999-2000 but have since grown to a peak of over 46 million pounds in 2010. Since 2018, recreational landings have dropped to the lowest values of the time series with a 2018-2021 average harvest of 13.72 million pounds. In 2021, landings were 12.46 million pounds. From 2000 to 2010 landings were relatively stable, however, recreational landings have been trending downward since 2010 (Figure 2). Commercial discards are insignificant and are not estimated in the current assessment.

Recreational catch and harvest by state for 2021 are provided in Table 3. The greatest catches (includes discards) occurred in Florida with 13.88 million fish, followed by North Carolina with 4.52 million fish, and New York and New Jersey with over 2 million fish.

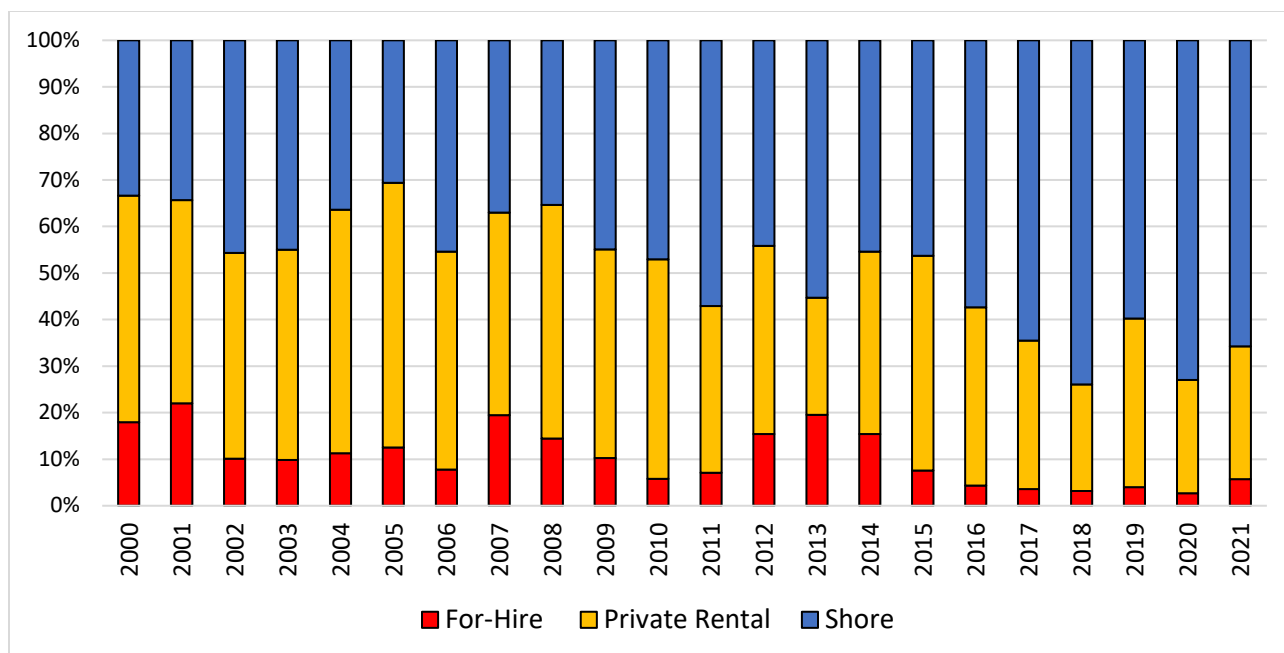
The greatest harvest of bluefish by weight in 2021 occurred in Florida with 3.55 million pounds, followed by New Jersey with 3.36 million pounds, New York with 2.35 million pounds and North Carolina with just over 1 million pounds. Average weights, based on dividing MRIP landings in weight by landings in number for each state, suggest that bluefish size tends to increase along the north Atlantic coast.

**Table 3.** MRIP estimates of 2021 bluefish recreational harvest, total catch, and average weight.

State	Harvest			Catch	Total Released	Dead Discards
	Pounds	Number	Average Weight <sup>1</sup> (pounds)	Number	Number	Number
ME	3,633	673	5.4	6,104	5,431	815
NH	3,796	698	5.4	698	-	-
MA	833,962	116,547	7.2	855,041	738,494	110,774
RI	718,950	140,504	5.1	774,409	633,905	95,086
CT	206,429	263,966	0.8	1,180,092	916,126	137,419
NY	2,353,527	861,060	2.7	3,565,667	2,704,607	405,691
NJ	3,357,809	921,667	3.6	2,895,008	1,973,341	296,001
DE	8,460	14,019	0.6	179,562	165,543	24,831
MD	117,545	105,711	1.1	316,949	211,238	31,686
VA	153,199	216,317	0.7	719,804	503,487	75,523
NC	1,031,761	982,391	1.1	4,521,724	3,539,333	530,900
SC	107,268	172,528	0.6	722,532	550,004	82,501
GA	12,870	13,811	0.9	136,588	122,777	18,417
FL	3,553,572	2,373,891	1.5	13,875,822	11,501,931	1,725,290
<b>Total</b>	12,462,781	6,183,783	-	29,750,000	23,566,217	3,534,932

<sup>1</sup> Average weight is the pounds harvested divided by the number of fish harvested. Recreational dead discards are calculated as 15% of total recreational discards.

Figure 3 presents new MRIP estimates of landings by mode since 2000 and indicates that the recent primary modes landing bluefish are shore mode and private boats. Based on recreational harvest in 2021, landings from shore represented 66% of overall landings, followed by private rental mode at 29% and the for-hire sector at 6%. Over the last five years (2017-2021), ~67% of the total bluefish landings came from shore, ~29% from private/rental boats, and ~4% from for-hire boats. In 2021, 926 federal for-hire permits were issued for bluefish.



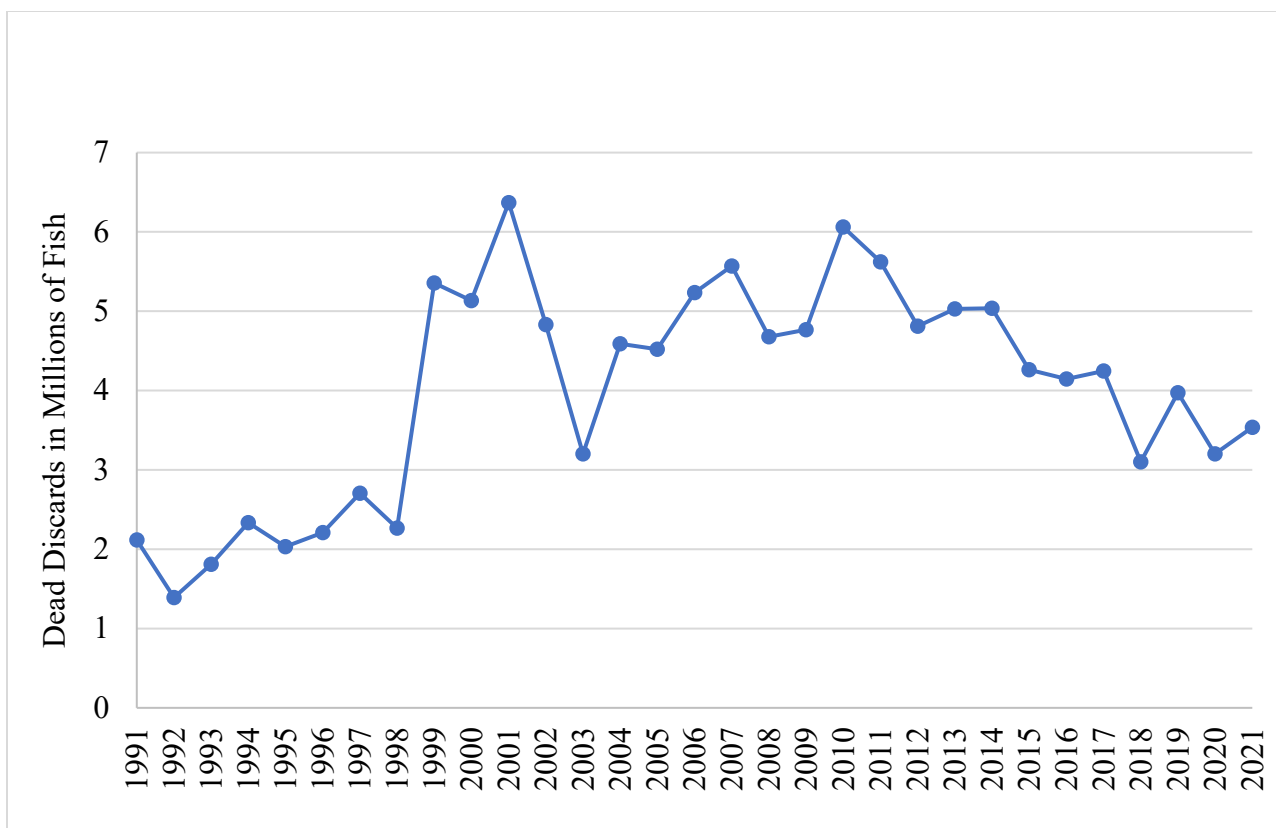
**Figure 3.** Bluefish recreational harvest (pounds) by mode on the Atlantic Coast, 2000-2021.  
Source: MRIP.

MRIP classifies catch into three fishing areas: inland, nearshore ocean (< 3 mi), and offshore ocean (> 3 mi). In 2021, the majority of coastwide bluefish harvest occurred in nearshore ocean waters at 62%, followed by 35% from inland waters, and 3% from offshore waters. Inland and nearshore ocean are considered state waters while offshore ocean (>3 miles) is federal waters, therefore 97% of bluefish harvest by weight occurred in state waters in 2021. Over the last five years (2017-2021), 37% of the total bluefish landings came from inland waters, 59% from nearshore ocean, and 4% from offshore ocean.

In the recreational fishery, bluefish released alive (B2) are estimated by MRIP. To calculate discard mortality<sup>1</sup>, a 15% mortality rate is applied to the B2 value. In 2021, there were 3.53 million bluefish dead discards, which represents a slight increase compared with 3.20 million fish in 2020 however there is an overall downward trend from the 2001 peak of 6.37 million bluefish dead discards (Figure 4).

<sup>1</sup> To estimate discards in pounds, multiply the number of dead discards times the average weight of fish in a given year. For more detailed results, which are used in Table 2, characterize the average weight of a bluefish by state and mode using the MRIP query tool: <https://www.st.nmfs.noaa.gov/recreational-fisheries/data-and-documentation/queries/index>.





**Figure 4.** Bluefish dead discards in numbers of fish (all areas and modes combined) from 1991-2021. Fish released alive (B2) are assumed to have a 15% mortality rate. Source: MRIP.

### ***Commercial Fishery***

Federal permit data indicate that 2,291 commercial bluefish permits were issued in 2021. A subset of federally permitted vessels was active in 2021 with dealer reports identifying 248 vessels with commercial bluefish permits that landed bluefish. Of the 141 federally permitted bluefish dealers in 2021, there were 119 dealers who bought bluefish.

In 2021, the commercial fishery landed 2.07 million pounds. Dealer data for 2021 indicate that most of the bluefish commercial landings were taken by gillnet (59%), followed by unknown gear (26%), trawl/dredge (7%), handline (5%), and other (3%).

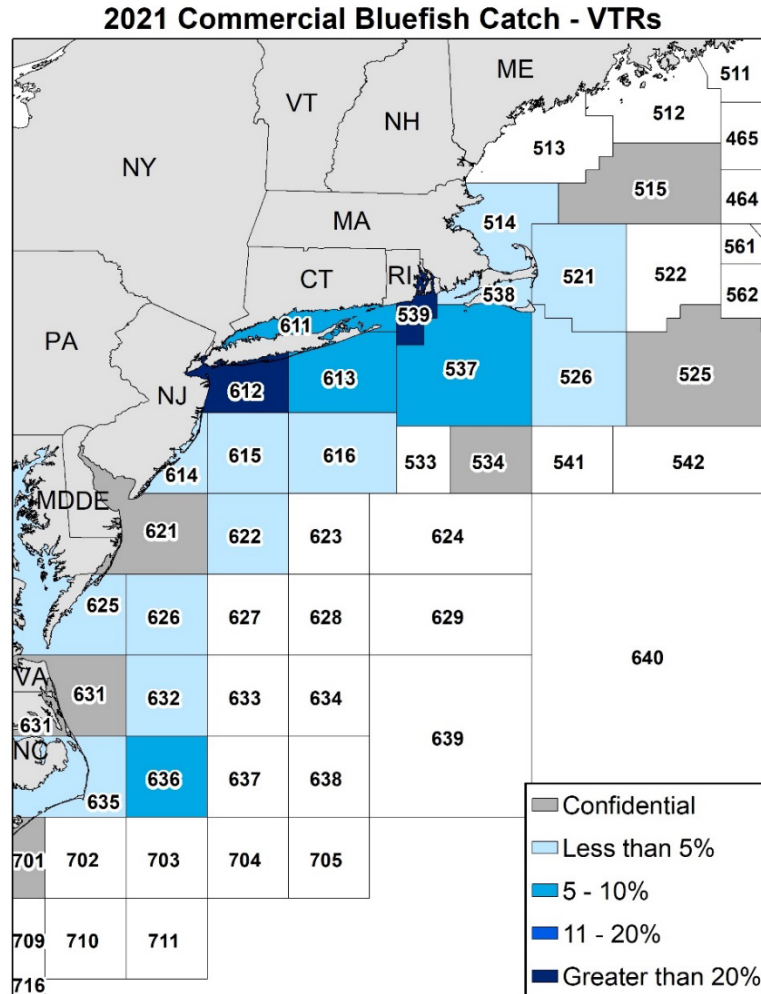
Across states, 2021 commercial landings were the highest in North Carolina with 0.85 million pounds of bluefish landed, followed by New York at 0.32 million pounds and Rhode Island at 0.25 million pounds (Table 4). VTR catch data was used to identify all NMFS statistical areas that accounted for at least 5 percent of the total bluefish catch (Table 5). Six statistical areas accounted for approximately 86% of the VTR-reported catch in 2021. The highest percentage of catch was from statistical area 612 with the most trips targeting bluefish conducted in statistical area 611. 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 2021 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	2021 Landings (Pounds)
ME	0
NH	0
MA	223,723
RI	254,607
CT	33,648
NY	324,186
NJ	230,157
DE	2,171
MD	3,065
VA	44,626
NC	851,860
SC	0
GA	0
FL	102,623
<b>Total</b>	2,070,666

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

Statistical area	Pounds of bluefish caught	Percent of 2021 commercial bluefish catch	Number of trips
612	141,311	27%	382
539	136,954	26%	688
611	53,380	10%	968
636	44,208	8%	13
613	42,194	8%	526
537	37,134	7%	334



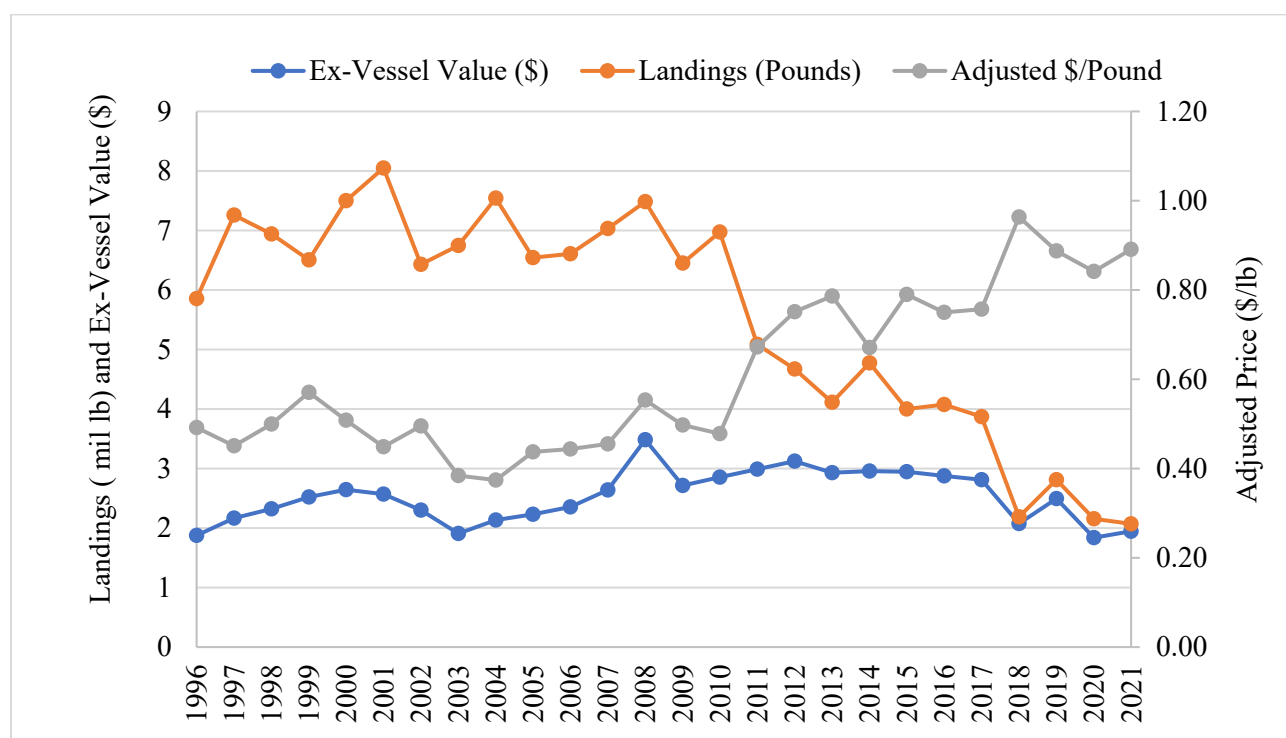
**Figure 5.** Proportion of bluefish catch by NMFS Statistical Area in 2021 based on federal VTR data. The amount of catch not reported on federal VTRs (e.g., catch from vessels permitted to fish only in state waters) is unknown.

The top commercial landings ports for bluefish in 2021 are shown in Table 6. Six ports qualified as "top bluefish ports," i.e., those ports where 100,000 pounds or more of bluefish were landed. Wanchese, NC landed the most commercial bluefish with over 350,000 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/](http://www.nefsc.noaa.gov/read/socialsci/community_profiles/).

According to dealer data, commercial vessels landed about 2.07 million pounds of bluefish valued at approximately \$1.94 million in 2021. Average coastwide ex-vessel price of bluefish was \$0.89 per pound in 2021, a \$0.05 increase from the previous year (2020 price = \$0.84 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 2021 dealer data (cfders).

Port	Pounds	% of total commercial bluefish landings	# vessels
Wanchese, NC	352,350	17%	<10
Hatteras, NC	306,615	15%	<10
Point Judith, RI	201,228	10%	96
Montauk, NY	140,827	7%	83
Point Pleasant, NJ	129,975	6%	28
Boston, MA	124,787	6%	<10



**Figure 6.** Bluefish commercial landings (in millions of pounds), ex-vessel value, and price per pound (adjusted to 2021 real dollars) from 1996-2021.

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.

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