



Bluefish Fishery Information Document

June 2020

This Fishery Information Document provides a brief overview of the biology, stock condition, management system, and fishery performance for bluefish with an emphasis on 2019. Data sources for Fishery Information Documents are generally from unpublished National Marine Fisheries Service (NMFS) survey, dealer, vessel trip report (VTR), permit, and Marine Recreational Information Program (MRIP) databases and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 2019 operational assessment, bluefish is overfished and overfishing is not occurring. The bluefish stock will enter a rebuilding plan in 2022 to rebuild the stock to the SSB_{MSY} proxy = 438.10 million lbs (198,717 mt).
- In 2019, specifications remained status quo from 2018. However, 2019 is the transition year for when recreational landings are reported using only new MRIP estimates. The 2019 ABC, RHL, and Commercial Quota was developed using old MRIP estimates and cannot be directly compared to the new recreational landings estimates.
- Recreational landings increased from 13.27 million pounds to 15.56 million pounds from 2018 to 2019 (~17% increase).
- Commercial landings increased from 2.20 million pounds to 2.78 million pounds from 2018 to 2019 (~26% increase).

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

The last bluefish benchmark stock assessment was peer reviewed in June 2015 and approved for use by management at SAW/SARC 60. This benchmark assessment uses a forward-projecting statistical catch-at-age model called ASAP (Age Structured Assessment Program). For the most recent benchmark, the catch-at-age matrices were completely reconstructed to incorporate new age data, including archived historical samples that had not been processed at the time the last benchmark (SAW/SARC 41; 2005) was conducted, and to correct aging errors in the earlier years of the time series (NEFSC 2015).

2019 Operational Assessment Update

In August 2019, a bluefish operational assessment, which included revised bluefish MRIP estimates through 2018 changed the stock status and biological reference points from SAW 60, which utilized data through 2014. All information from this operational assessment were and should be interpreted as preliminary results until publication of the final report.

The biological reference points for bluefish revised through the 2019 operational assessment include a fishing mortality threshold of $F_{MSY} = F_{35\%}$ (as the F_{MSY} proxy) = 0.183, and a biomass reference point of $SSB_{MSY} = SSB_{35\%}$ (as the SSB_{MSY} proxy) = 438.10 million lbs (198,717 mt). The minimum stock size threshold ($1/2 SSB_{MSY}$), is estimated to be 219.05 million lbs (99,359 mt); Table 3. SSB in 2018 was 200.71 million lbs (91,041 mt).

Operational assessment results indicated that the bluefish stock was overfished, and overfishing was not occurring in 2018 relative to the biological reference points. Fishing mortality on the fully selected age 2 fish was 0.146 in 2018, 80% of the updated fishing mortality threshold reference point F_{MSY} proxy = $F_{35\%}$ = 0.183.

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>.

For bluefish, the annual catch target (ACT) is split 83 percent and 17 percent into recreational and commercial ACTs, respectively, and the discarded component of that catch is deducted to arrive at recreational and commercial total allowable landings (TAL). Additionally, landings above the expected recreational harvest can be "transferred" from the recreational to the commercial fishery as long as the final commercial quota does not exceed 10.5 million pounds.

The Council's Scientific and Statistical Committee (SSC) reviews assessment results and the Advisory Panel's fishery performance report and determines the allowable biological catch (ABC) for the upcoming year. 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.

An amendment to the Bluefish FMP is being developed to address a variety of changes and concerns with the fishery. The amendment is addressing sector FMP Goals and Objectives, sector allocations, commercial allocations to the states, transfer processes, the rebuilding plan, and other issues. More information can be accessed here: <https://www.mafmc.org/actions/bluefish-allocation-amendment>.

Fishery Performance Relative to Management Measures

The current commercial landings are slightly behind the 2019 landings (Figure 1; as of May 19, 2020). The recreational and commercial landings relative to specified management measures are provided in Table 1. In 2019, MRIP reported the recreational fishery landed 15.56 million pounds compared to the 11.62 million pounds RHL. The recreational landings cannot be directly compared to the RHL because the RHL was set using old MRIP data while the 2019 recreational landings are being reported in new MRIP estimates. 2020 will be the first year that all catch/landings can be compared to the ABC/Commercial quota/RHL. The commercial fishery

landed 2.78 million pounds compared to the quota of 7.71 million pound. Total landings in 2019 are 18.34 million pounds when calculated using the new MRIP estimates and commercial landings.

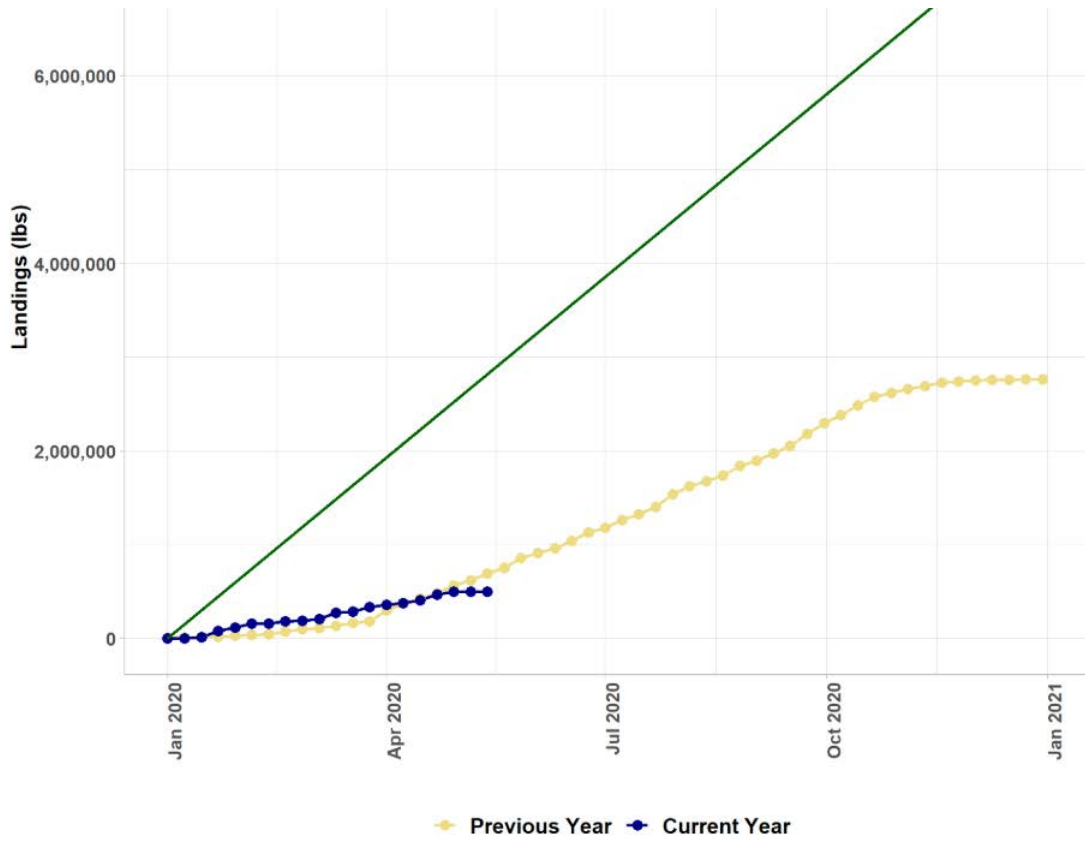


Figure 1. Atlantic bluefish commercial landings for 2020 fishing year to date (May 19, 2020).

Table 1. Summary of bluefish management measures, 2009 – 2020 (Values are in million pounds).

Management Measures	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 ⁸	2020 ⁹
TAC ¹ / ABC ²	34.08	34.38	31.74	32.04	27.47	24.43	21.54	19.45	20.64	21.81	21.81	16.28
TAL ³	29.36	29.26	27.29	28.27	23.86	21.08	18.19	16.46	18.19	18.82	19.33	12.25
Comm. Quota ⁴	9.83	10.21	9.38	10.32	9.08	7.46	5.24	4.88	8.54	7.24	7.71	2.77
Comm. Landings ⁵	7.1	7.55	5.61	4.66	4.12	4.77	4.02	4.1	3.64	2.20	2.78	
Rec. Harvest Limit ⁴	19.53	18.63	17.81	17.46	14.07	13.62	12.95	11.58	9.65	11.58	11.62	9.48
Rec. Landings, Old MRIP ⁶	14.47	16.34	11.5	11.84	16.46	10.46	11.67	9.54	9.52	3.64	N/A	
Rec. Landings, New MRIP	40.73	46.30	34.22	32.53	34.40	27.04	30.10	24.16	32.07	13.27	15.56	
Rec. Possession Limit (# fish)	15	15	15	15	15	15	15	15	15	15	15	3: Private 5: For-Hire
Total Landings	21.57	23.89	17.11	16.5	20.58	15.23	15.69	13.64	13.16	5.84	18.34	
Overage/Underage	-7.79	-5.37	-10.18	-11.77	-3.28	-5.85	-2.5	-2.82	-5.03	-12.98	N/A*	
Total Catch ⁷	25.10	27.93	20.39	19.26	24.06	17.96	18.65	16.09	15.65	6.96	23.50	
Overage/Underage	-8.98	-6.45	-11.35	-12.78	-3.41	-6.47	-2.89	-3.36	-4.99	-14.85	N/A*	

¹ Through 2011. ² 2012 fwd. ³ Not adjusted for RSA. ⁴ Adjusted downward for RSA. ⁵ Dealer and South Atlantic Canvas data used to generate values from 2000-2011; Dealer data (cflders) was used to generate commercial landings. ⁶ Old MRIP. ⁷ Recreational discards were calculated assuming MRIP mean weight of fish landed or harvested in a given year multiplied by the MRIP B2s and assumed discard mortality rate of 15% . ⁸ Values for 2019 and beyond are presented using the new MRIP estimates. ⁹ 2020 will be the first year that the new MRIP landings can be compared to the RHL – this will allow for calculation of total landings, catch, and overage/underages.

*Note: 2019 is the transition year for when recreational landings are reported using only new MRIP estimates. The 2019 ABC, RHL, and Commercial Quota was developed using old MRIP estimates and cannot be directly compared to the new recreational landings estimates.

Landings History

Bluefish catches were estimated via the Marine Recreational Fisheries Statistic Survey (MRFSS) starting in 1981 through 2003. Recreational data for years 2004 and later are available from the Marine Recreational Information Program (MRIP), the data collection that followed MRFSS.

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) when using new MRIP estimates. 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 (new MRIP). In 2018, recreational landings dropped to an all-time low of 13.27 million pounds. In 2019, landings still remain low but increased slightly to 15.56 million pounds.

Historically, landings have been relatively stable, however, overall landings have been trending downward since 2010 (Figure 2). Commercial discards are insignificant and are not estimated in the current assessment.

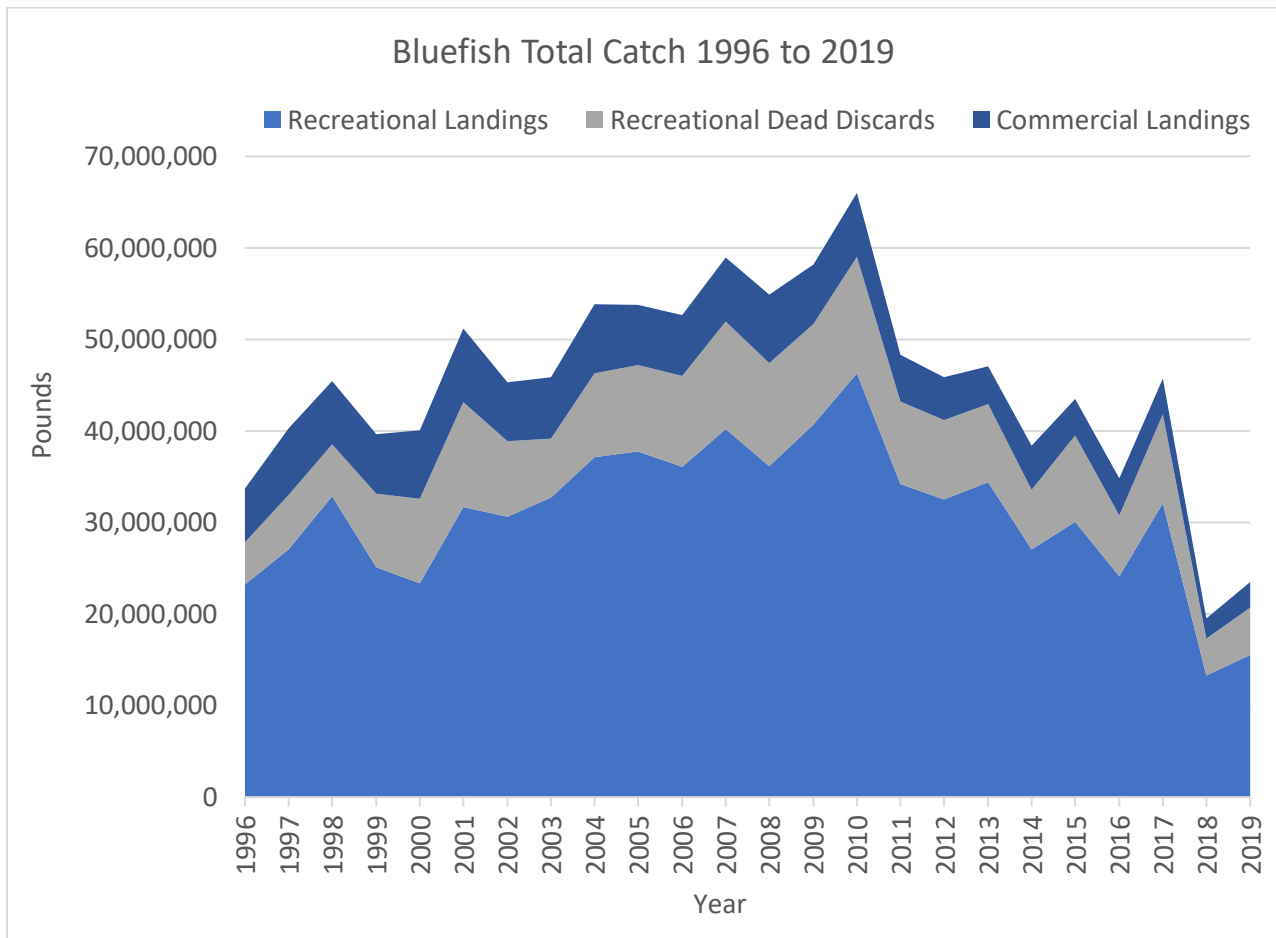


Figure 2. Bluefish catch (landings [AB1] and dead discards [B2*0.15*Avg wt. each year]), 1996-2019. Average weight of a harvested fish is the MRIP rounded average weight in pounds for a given year. (Source: 2019 MRIP and Dealer data – cfders)

Recreational Fishery

Recreational fishery data is reported from MRIP using the new re-calibrated estimates. Trends in recreational trips associated with targeting or harvesting bluefish from 2000 to 2018 are provided in Table 2. Since 2000, the lowest annual estimate of bluefish trips was 7.00 million (2018). The highest annual estimate of bluefish trips in this timeframe was 12.57 million in 2007. For the last 5 years (2015-2019), the number of bluefish trips have ranged from 7.00 million trips in 2018 to 11.16 million trips in 2016 using MRIP data.

Table 2. Number of bluefish recreational fishing trips, recreational harvest, and recreational landings per trip from 2000 to 2019.

Year	# of bluefish trips ^a	Recreational Harvest (N)	Recreational Harvest (lbs)	Recreational landings per “bluefish” trip
New MRIP Estimates				
2000	7,326,957	12,879,485	23,357,120	1.76
2001	9,491,374	18,048,645	31,654,978	1.90
2002	9,617,742	17,607,380	30,654,388	1.83
2003	9,586,532	16,411,932	32,758,670	1.71
2004	10,673,976	18,631,904	37,133,463	1.75
2005	10,927,244	18,341,452	37,742,807	1.68
2006	11,417,723	19,397,272	36,081,958	1.70
2007	12,574,704	19,189,747	40,239,101	1.53
2008	11,259,497	14,845,435	36,166,834	1.32
2009	10,926,384	18,085,386	40,731,438	1.66
2010	12,224,816	21,929,517	46,302,792	1.79
2011	11,057,635	20,814,884	34,218,748	1.88
2012	11,802,073	18,578,838	32,530,917	1.57
2013	9,171,936	19,975,051	34,398,327	2.18
2014	11,814,231	21,510,651	27,044,276	1.82
2015	9,121,415	13,725,106	30,098,649	1.50
2016	11,164,613	14,899,723	24,155,304	1.33
2017	10,354,921	13,845,806	32,071,432	1.34
2018	7,007,966	10,245,710	13,270,862	1.46
2019	8,301,107	12,137,290	15,555,889	1.46

^a 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.

Recreational Landings by State

Recreational catch and harvest by state for 2019 are provided in Table 3. The greatest overall catches (includes discards) occurred in North Carolina with 9.92 million fish, followed by South Carolina, New York, and Florida, which all exceeded 6 million fish.

The greatest harvest of bluefish by weight in 2019 occurred in New York with 3.52 million pounds, followed by North Carolina with 3.01 million pounds, Florida with 2.87 million pounds, and New Jersey and Connecticut over 1 million pounds. According to MRIP, 0 bluefish were caught in Maine and New Hampshire. Average weights, based on dividing MRIP landings in weight by landings in number for each state, suggest that bluefish size tends to increase toward the north along the Atlantic coast (outside of Florida).

Table 3. MRIP estimates of 2019 bluefish recreational harvest, total catch, and average weight.

State	Harvest			Catch
	Pounds	Number	Average wt (lbs)	Number
New MRIP Estimates				
ME	0	0	0	0
NH	0	0	0	0
MA	719,130	265,628	2.7	736,761
RI	931,991	379,715	2.5	991,593
CT	1,161,103	670,401	1.7	1,490,095
NY	3,521,431	3,037,380	1.2	6,376,431
NJ	1,660,208	741,722	2.2	3,310,648
DE	415,267	151,469	2.7	581,840
MD	154,451	111,769	1.4	338,737
VA	581,458	756,717	0.8	1,882,000
NC	3,011,480	2,752,589	1.1	9,915,020
SC	502,699	877,372	0.6	6,448,797
GA	21,886	26,364	0.8	273,400
FL	2,874,785	2,366,165	1.2	6,286,615
Total	15,555,889	12,137,291	-	38,631,937

Recreational Landings by Mode

Figure 3 reflects new MRIP estimates of landings by mode (1991 through 2019) and indicates that the recent primary modes landing bluefish are private boats and shore mode. Based on recreational harvest in 2019, landings from shore represented 60% of overall landings, followed by private rental mode at 36% and the for-hire sector at 4%. Over the last five years (2015-2019), 60% of the total bluefish landings came from shore, 35% from private/rental boats, and 5% from for-hire boats.

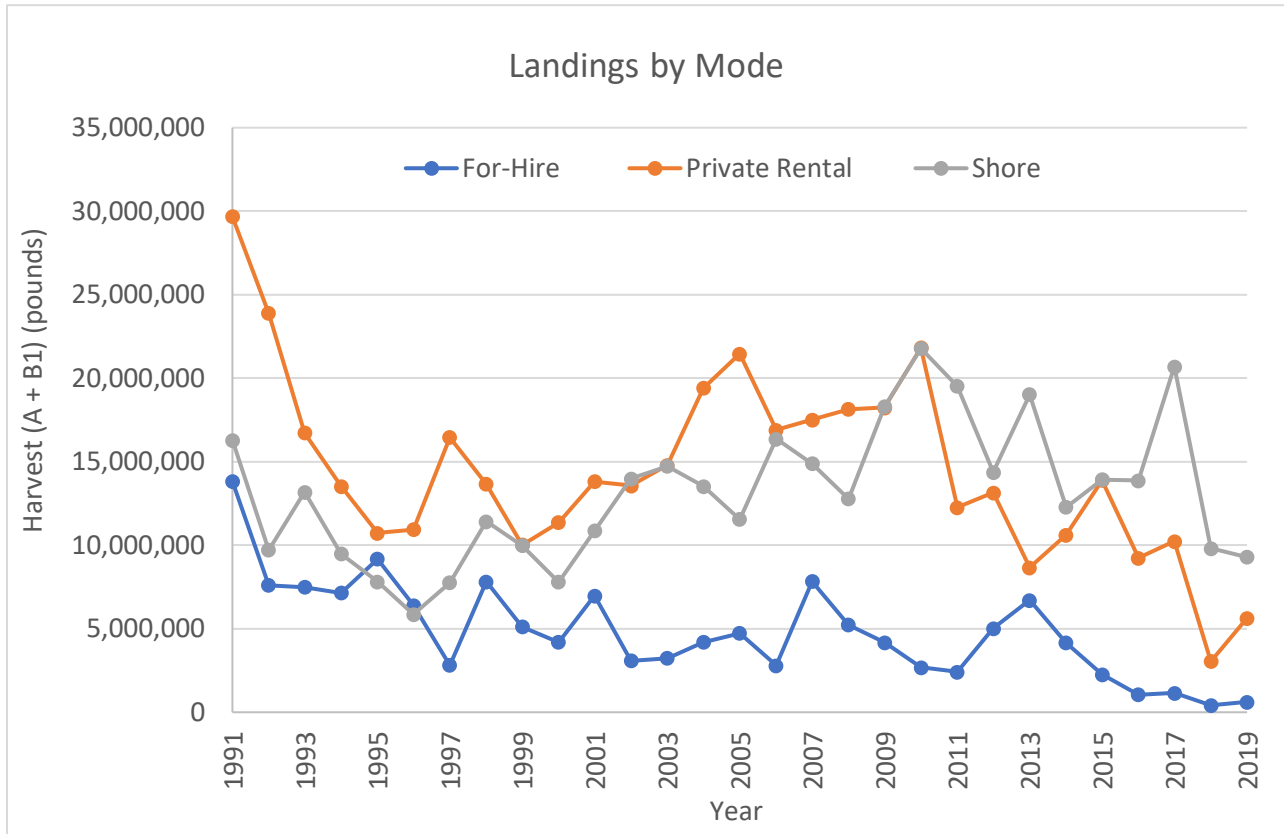


Figure 3. Bluefish recreational harvest (pounds) by mode on the Atlantic Coast, 1991-2019.
Source: MRIP.

Recreational Landings by Area

MRIP classifies catch into three fishing areas, inland, nearshore ocean (< 3 mi), and offshore ocean (> 3 mi). In 2019, ~42% of the landings of bluefish on a coastwide basis came from inland waters, followed by nearshore ocean at ~51%, and offshore waters at ~6% (Figure 4). Over the last five years (2015-2019), 42% of the total bluefish landings came from inland waters, 54% from nearshore ocean, and 4% from offshore ocean.

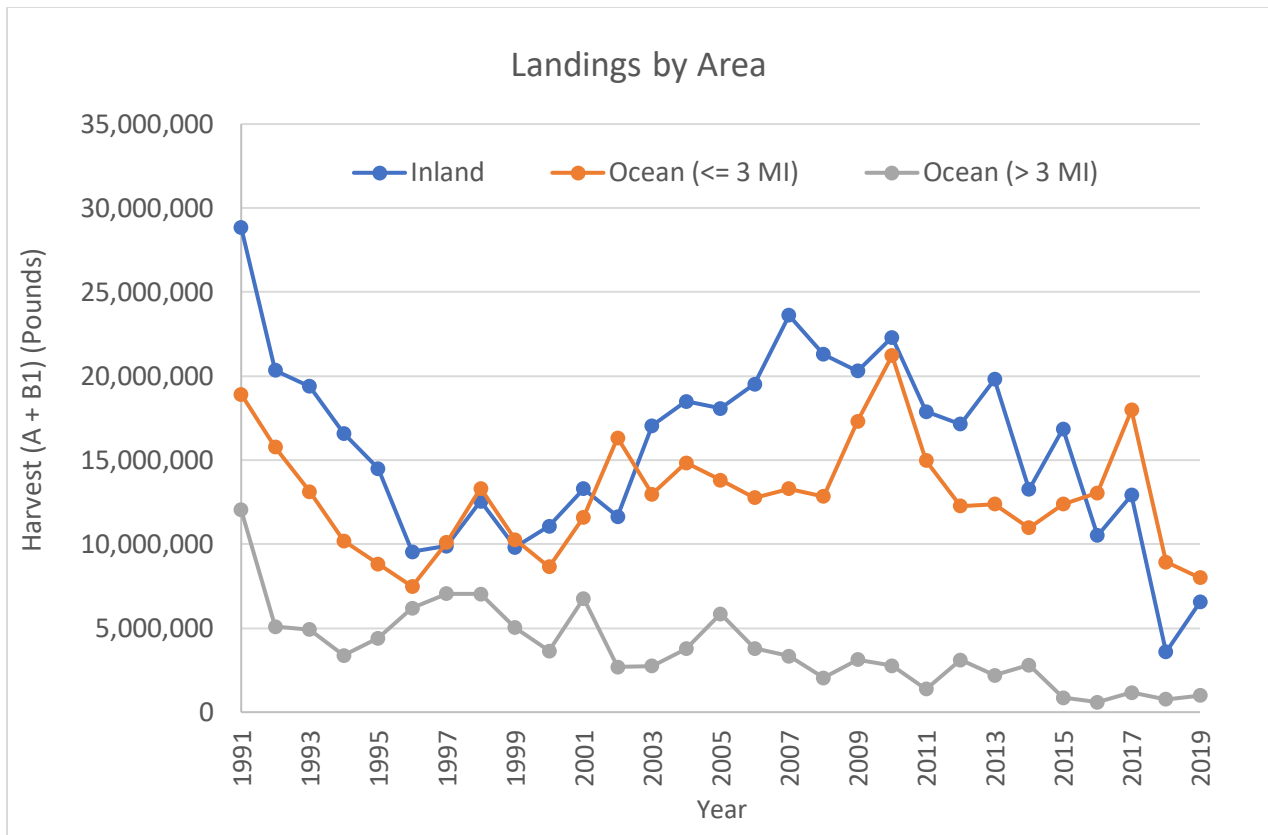


Figure 4. Bluefish recreational harvest (pounds) by area on the Atlantic Coast, 1991-2019.
Source: MRIP.

Recreational Discards

In the recreational fishery, bluefish released alive (B2) are estimated by MRIP. To calculate discards¹, a 15% mortality rate is applied to the B2 value. In 2019, there were 3.97 million bluefish dead discards, which represents a downward trend from the 2001 peak of 6.37 million bluefish dead discards (Figure 5).

¹ 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, 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>.

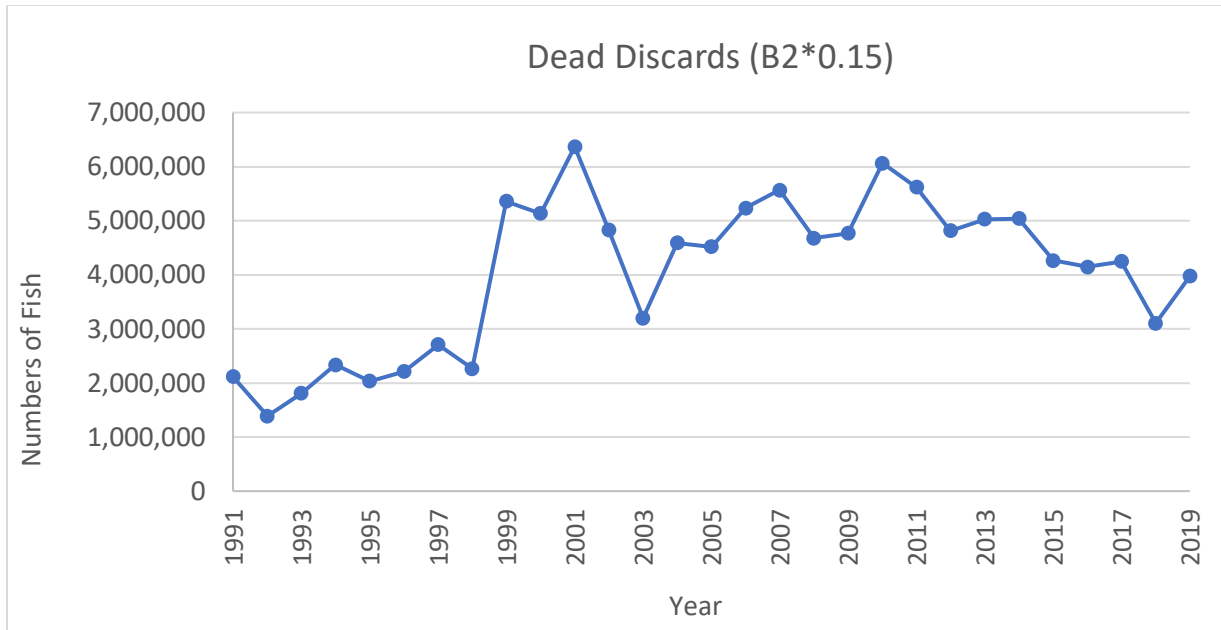


Figure 5. Bluefish dead discards (all areas and modes combined) from 1991-2018. Released alive (B2) fish are assumed to have 15% mortality. Source: MRIP.

Commercial Fishery

Vessel and Dealer Activity

Federal permit data indicate that 2,442 commercial bluefish permits were issued in 2019.² A subset of federally permitted vessels was active in 2019 with dealer reports identifying 483 vessels with commercial bluefish permits that actually landed bluefish. Of the 389 federally permitted bluefish dealers in 2019, there were 146 dealers who actually bought bluefish.

Landings by Gear

Dealer data for 2019 indicate that the majority of the bluefish landings were taken by gillnet (44%), followed by unknown gear (28%), otter trawl/bottom fish (12%), other (11%) and handline (5%).

Landings/Catch by Area

Commercial landings in 2019 were 2.78 million pounds and landings by state are available in Table 4. To present data by area, VTR catch data were used to identify all NMFS statistical areas that accounted for 5 percent or more of the Atlantic bluefish catch or areas which individually accounted for 5 percent or greater of the trips which caught bluefish in 2019 (Table 5). Six

²In addition, there were 851 party/charter bluefish permit issued in 2019. A subset of federally permitted party/charter vessels was active in 2019 with VTR reports identifying 278 vessels with party/charter bluefish permits that actually landed bluefish.

statistical areas accounted for approximately 69% of the VTR-reported catch in 2019. Statistical area 611 was responsible for the highest percentage of the catch and trips that caught bluefish. A map of statistical areas that accounted for a percentage of the Atlantic bluefish catch is shown in Figure 6.

Note: Commercial VTR landings may differ from landings reported through the dealer database because VTR data are only federal landings and some state vessels are not required to submit VTRs.

Table 4. Commercial landings by state for 2019. Source: Dealer data (cfders).

State	2019 Landings (Pounds)
ME	0
NH	0
MA	184,182
RI	415,836
CT	33,392
NY	594,822
NJ	203,047
DE	4,505
MD	22,776
VA	169,179
NC	934,883
FL	214,338
Unknown	262
Total	2,777,222

Table 5. Statistical areas that accounted for at least 5 percent of the total bluefish catch or 5 percent or greater of the trips which caught bluefish in 2019. Source: VTR database.

Statistical area	Pounds of bluefish caught	Percent of 2018 commercial bluefish catch	Number of trips	Percent of 2018 commercial bluefish trips that caught bluefish
611	169,338	18%	1,667	31%
539	166,201	18%	1,051	20%
613	130,35	14%	727	14%
626	80,566	9%	84	2%
632	53,364	6%	27	<1%
612	37,076	4%	287	5%

2019 Commercial Bluefish Catch - VTRs

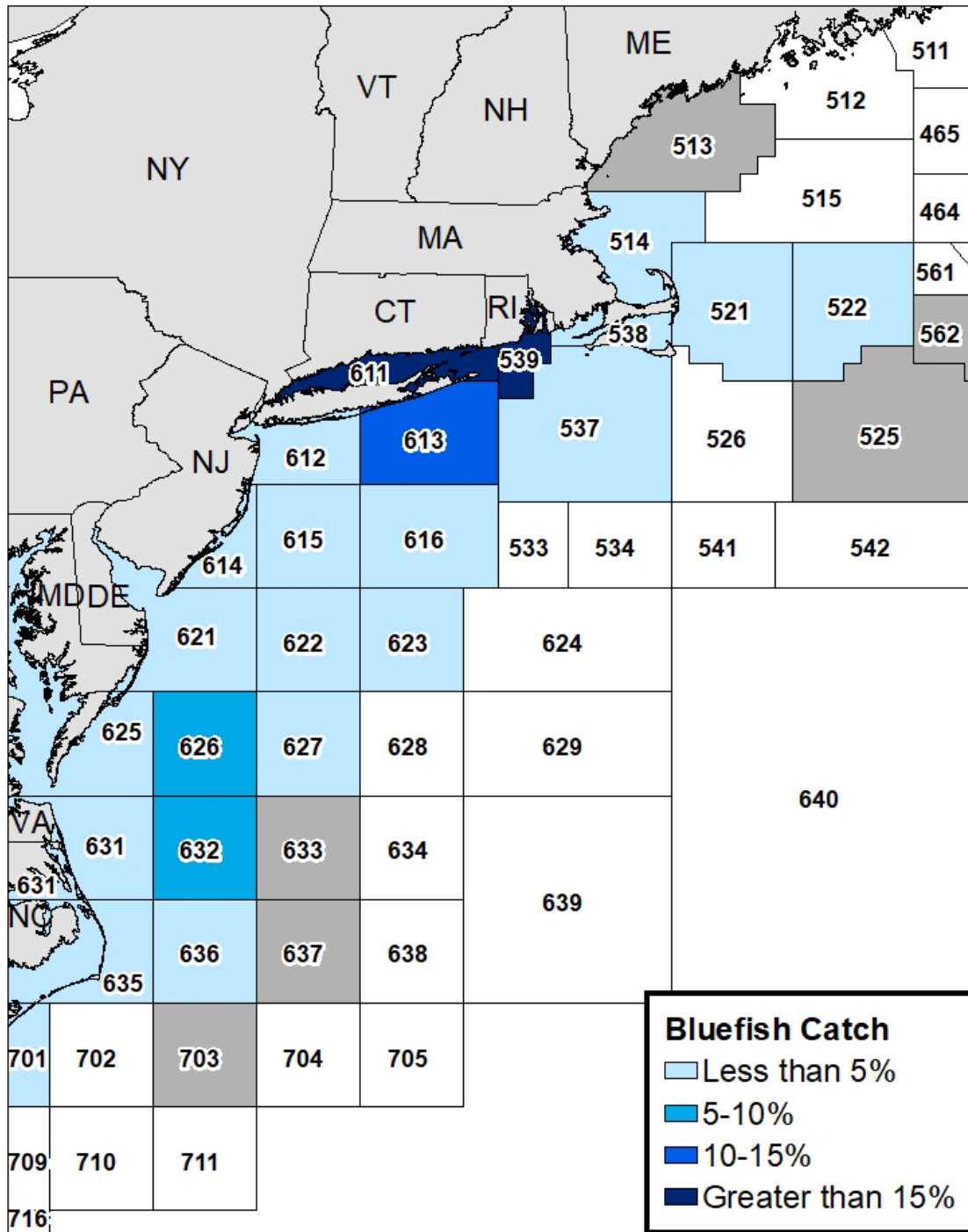


Figure 6. NMFS Statistical Areas that accounted for a percentage of the commercial bluefish catch in 2019. Source: VTR data.

The top commercial landings ports for bluefish in 2019 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.

Hatteras, NC was the most active commercial bluefish port with almost 400,000 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/.

Table 6. Bluefish landings in pounds by port based on NMFS 2019 dealer data (cfders).

Port^a	Pounds	% of total commercial bluefish landings	# vessels
Hatteras, NC	393,056	14%	8
Point Judith, RI	283,941	10%	99
Wanchese, NC	273,277	10%	25
Montauk, NY	269,418	10%	78
Hampton Bays, NY	147,959	5%	30
Little Compton, RI	111,107	4%	14

^a Since this table includes only the “top ports” (ports where landings of bluefish were > 100,000 pounds), it does not include all landings for the year.

Revenue

According to dealer data, commercial vessels landed about 2.78 million pounds of bluefish valued at approximately \$2.37 million in 2019. Average coastwide ex-vessel price of bluefish was \$0.85 per pound in 2019, a ~10% decrease from the previous year (2018 price = \$0.94 per pound). The relative value of bluefish is very low among commercially landed species, less than 1% of the total value, respectively of all finfish and shellfish landed along the U.S. Atlantic coast in 2019. A time series of bluefish revenue and price is provided in Figure 7.

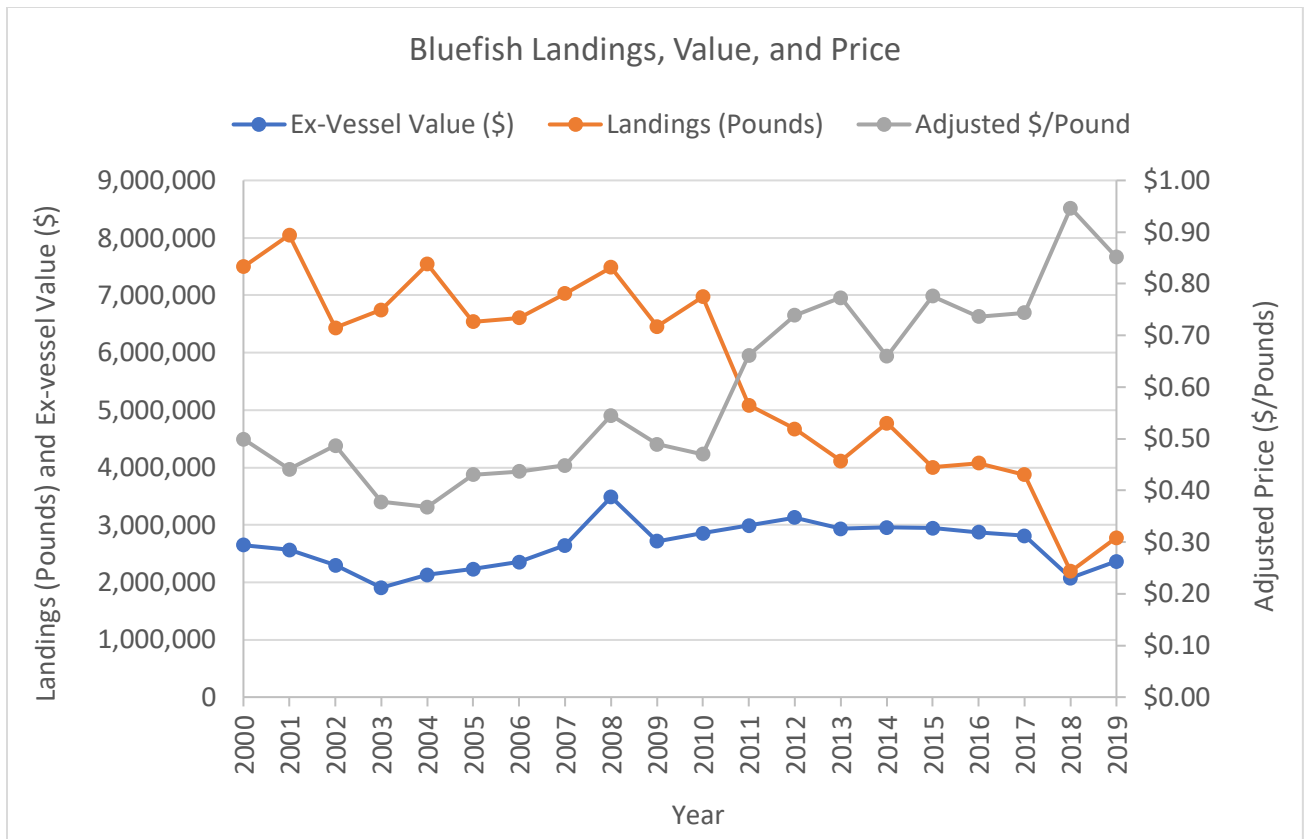


Figure 7. Landings, ex-vessel value, and price (adjusted to 2018 real dollars, 2019 unadjusted) for bluefish, 2000-2019.

Bycatch

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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