

Bluefish AP Information Document - August 2013

Management System

The Bluefish Fishery Management Plan was implemented in 1990 establishing 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 make management measure recommendations to the Council. Amendment 3 (effective 1/1/2012) incorporated the development of annual catch limits (ACLs) and accountability measures (AMs) into the specification process. Specifying bluefish management measures is a joint process conducted by the Council and the Atlantic States Marine Fisheries Commission's Bluefish Management Board. The Council's Scientific and Statistical Committee (SSC) reviews assessment results, and the Advisory Panel's fishery performance report, and determines the acceptable 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 National Marine Fisheries Service. Table 1 below illustrates how the management measures for 2013 and 2014 were calculated.

Table 1. Bluefish management measures for 2013.

2013 Management Measure	Lbs	Basis
OFL	38,627,193	per SSC
ABC	27,471,802	Constant F (0.132)
ACL	27,471,802	= ABC
Mgmt Uncertainty	0	per MC
Comm Discards	0	from assessment
Rec Discards	3,611,172	2009-2011 MRFSS avg.
Comm ACT	4,670,206	(ACL - Mgmt Uncert) * 17%
Rec ACT	22,801,596	(ACL - Mgmt Uncert) * 83%
Comm TAL	4,670,206	Comm ACT - Disc
Rec TAL	19,190,424	Rec ACT - Disc
TAL (combined)	23,860,631	Comm + Rec TAL
Expected Recreational Landings	14,068,836	2009-2011 average
Maximum Transfer	4,686,470	Calculated
pre-RSA Comm Quota	9,356,676	Comm TAL + transfer
pre-RSA RHL	14,503,955	Rec TAL - transfer
Comm RSA Deduction (3%)	280,700	3% of Comm Quota
Rec RSA Deduction (3%)	435,119	3% of RHL
Adjusted Comm Quota	9,075,976	Comm Quota - RSA
Adjusted RHL	14,068,836	RHL - RSA

Table 1. (cont'd). Recommended bluefish management measures for 2014.

2014 Management Measure	Lbs	Basis
OFL		
ABC	27,057,333	Constant F (0.132)
ACL	27,057,333	= ABC
Mgmt Uncertainty	0	per MC
Comm Discards	0	from assessment
Rec Discards	3,611,172	2009-2011 MRFSS avg.
Comm ACT	4,599,747	(ACL - Mgmt Uncert) * 17%
Rec ACT	22,457,587	(ACL - Mgmt Uncert) * 83%
Comm TAL	4,599,747	Comm ACT - Disc
Rec TAL	18,846,415	Rec ACT - Disc
TAL (combined)	23,446,162	Comm + Rec TAL
Expected Recreational Landings	14,068,836	2009-2011 average
Maximum Transfer	4,342,460	Calculated
pre-RSA Comm Quota	8,942,207	Comm TAL + transfer
pre-RSA RHL	14,503,955	Rec TAL - transfer
Comm RSA Deduction (3%)	268,266	3% of Comm Quota
Rec RSA Deduction (3%)	435,119	3% of RHL
Adjusted Comm Quota	8,673,941	Comm Quota - RSA
Adjusted RHL	14,068,836	RHL - RSA

Bluefish Biology

The bluefish, *Pomatomus saltatrix*, is distributed worldwide, but in the western North Atlantic ranges 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 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). Growth rates are fast and they may reach a length of 3.5 ft and a weight of 27 lbs (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. More recent studies suggest that spawning is a single, continuous event, but that young are lost from the middle portion resulting in the appearance of a split season. As a result of the bimodal size structure of juveniles, young are referred to as the spring-spawned cohort or summer-spawned cohort. In the

MAB, the spring cohort appears to be the primary source of fish that recruit into the adult population.

Status of the Stock

Bluefish stock status and biological reference points are based on output from a forward projecting statistical catch-at-age model called ASAP that was accepted by peer-reviewers in 2005. Overfishing is defined as occurring when the fishing mortality rate (F) is above its threshold level, i.e., F_{MSY} (0.19). The target stock size in weight (biomass), i.e., B_{MSY} is currently estimated to be 324 M lb, and the level below which the stock is defined as being overfished ($\frac{1}{2} B_{MSY}$) is 162 M lb.

The bluefish stock assessment has been updated recently (July 2013), however, as of this writing detailed results are still preliminary, and so only general conclusions of the updated assessment are presented here. The figures below are taken from the assessment update that was done in 2012. In the most recent model update, the estimate of fishing mortality for 2012 is below F_{MSY} . This supports the statement that for 2012 overfishing was not occurring. Model estimates of fishing mortality have been below the F_{MSY} threshold since 1997 (dashed line in Figure 1), consistent with catches that support growth in population biomass. Declines in abundance since around 2006 appear to be driven by poor recruitment. A retrospective pattern is evident for model estimates of recruitment, meaning that the model has a tendency to underestimate the number of fish born in the most recent year.

The time series of estimated stock biomass and spawning stock biomass have both generally increased since a low in 1996 (Figure 2). The estimate of total biomass for 2012 is below B_{MSY} but above the $\frac{1}{2} B_{MSY}$ threshold. This supports the statement that for 2012 the stock was not overfished.

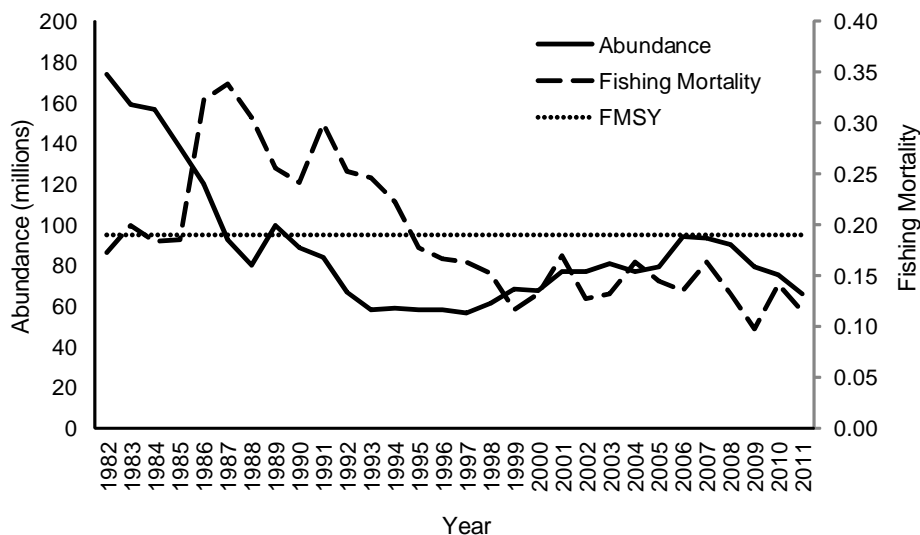


Figure 1. Total bluefish abundance and fishing mortality as estimated in ASAP model in 2012. F_{MSY} is indicated by the solid horizontal line. (Source: 2012 Assessment Update)

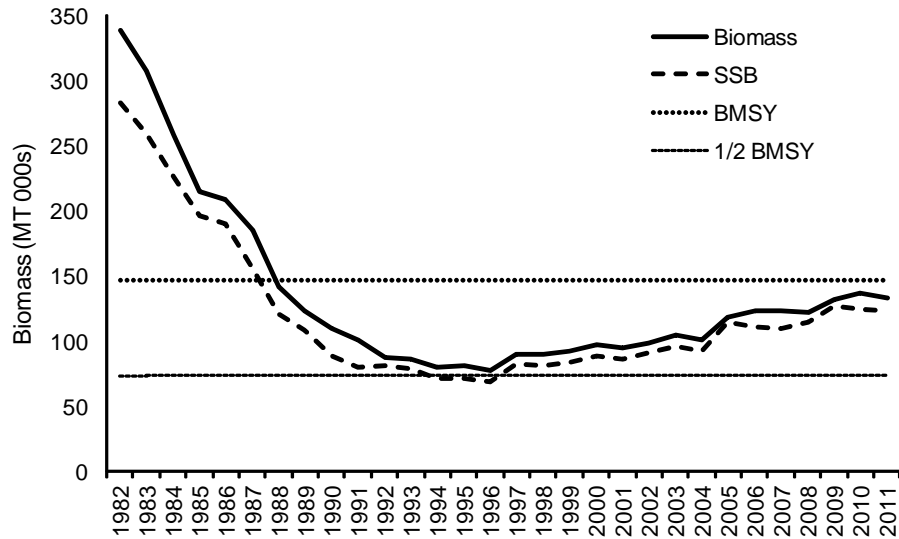


Figure 2. Time series of bluefish total mean biomass (000s mt) and spawning stock biomass (000s mt) relative to Bmsy target and threshold. (Source: 2012 Assessment Update)

Fishery Performance

The performance of the fishery relative to specified management measures is provided in Table 2. Except for 2007, the bluefish fishery has never exceeded the Council-recommended harvest limits. In 2007, the recreational fishery exceeded the recreational harvest limit by about 2 million lbs. In 2012, the commercial and recreational fisheries greatly under-harvested bluefish. The recreational fishery landed 10.684 M lb compared to the 17.457 M lb RHL, and the commercial fishery landed 4.930 M lb compared to a quota of 10.317 M lb. The rate at which the commercial fishery is landings bluefish is on the same track in 2013 as in 2012 (Figure 3).

Table 2. Summary of bluefish management measures, 2000 - 2011.

Management Measures	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
TAL (M lb)*	35.328	37.841	26.866	37.293	31.85	30.853	24.797	27.762	28.156	29.356	29.264	27.293	28.267
Comm. Quota (M lb)†	9.583	9.583	10.500	10.500	10.500	10.500	8.081	8.689	7.705	9.828	10.213	9.375	10.317
Comm. Landings (M lb)	8.041	8.688	6.863	7.401	7.994	7.045	6.955	7.499	5.968	6.990	7.069	5.082	4.930
Rec. Target†	25.745	28.258	16.365	26.793	21.35	20.353	16.718	19.073	20.451	19.528	18.631	17.813	17.457
Rec. Landings (M lb)	10.606	13.23	11.371	13.136	15.203	16.162	16.894	21.163	18.900	13.583	18.042	11.499	10.684
Rec. Possession Limit	10	15	15	15	15	15	15	15	15	15	15	15	15
Total Landings	18.647	21.918	18.234	20.537	23.197	23.207	23.849	28.662	24.868	20.573	25.111	16.581	15.614
Overage/Underage (M lb)	-16.681	-15.923	-8.632	-16.756	-8.653	-7.646	-0.948	+0.900	-3.288	-8.826	-4.153	-10.712	-12.653
Target F	N/A	N/A	N/A	N/A	N/A	0.15	0.15	0.15	0.15	0.15	0.15	0.15	N/A
ASAP F estimate	0.13	0.15	0.13	0.14	0.15	0.15	0.14	0.16	0.12	0.10	0.14	0.11	-

* Includes RSA

† RSA deducted

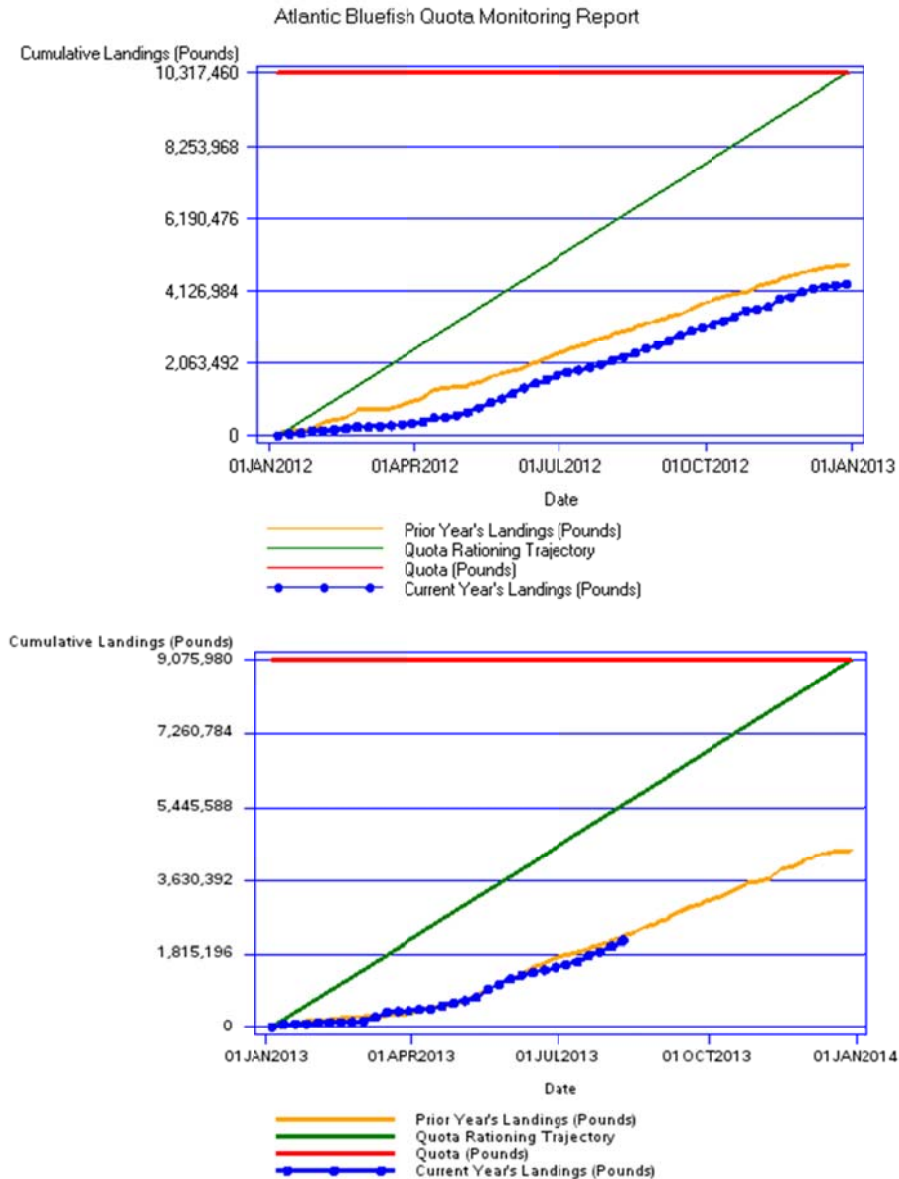


Figure 3. Comparison of 2012(top) and 2013 (bottom) commercial landings from the NMFS quota monitoring website: http://www.nero.noaa.gov/ro/fso/reports/reports_frame.htm

Landings History

Given the importance of the recreational component of the bluefish fishery, the history of bluefish catches begins with the implementation of data collection via MRFSS in 1981 (Figure 4). From the early 1980s to the early 1990s, recreational landings declined by factor of about 70% (avg. 1981-1983 = 89.140 M lb; avg. 1991-1993 = 25.824 M lb). Recreational landings continued to decline at a somewhat slower rate until reaching their lowest level at 8.254 M lb in 1999. A rebuilding plan was implemented in 2000. Since then, population size has increased

(Figure 2) and recreational landings have grown to a peak of 21 M lb in 2007. There has been an overall decline of about 10 M lb in recreational landings since 2007 to roughly 11 M lb in 2012. Recreational discards have increased from less than 10% of the catch in the 1980s to more than 20% of the catch in the early 2000s.

Commercial landings have been relatively stable throughout the landings history. Commercial discards are treated as insignificant and are not estimated in the current assessment.

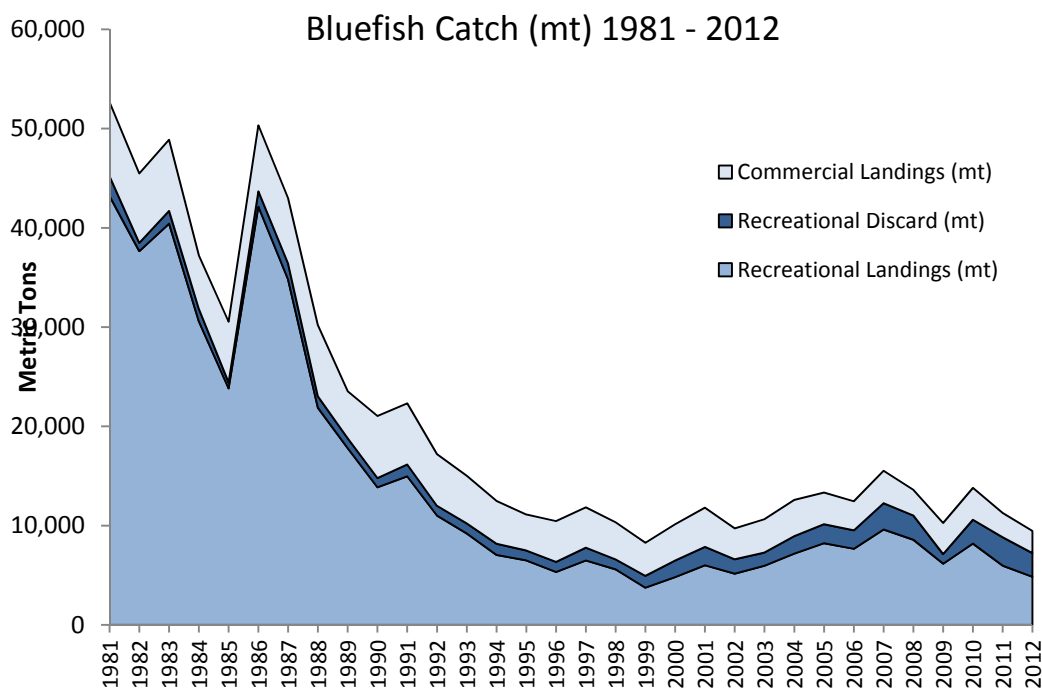


Figure 4. Time series of bluefish recreational and commercial landings and discards (Source: 2011 Assessment Update).

Recreational Fishery

Trends in directed recreational fishing for bluefish from 1991 to 2012 are provided in Table 3. The lowest annual estimate of directed trips was 1.3 million in 1999 and the highest annual estimate of directed trips was 5.8 million trips in 1991. In 2011, anglers targeted bluefish on 1.6 million trips (the estimate of directed trips has not yet been conducted for 2012). Relative to total angler effort in 2011, bluefish were the primary target of recreational trips about 4% of the time (Table 4).

Table 31. Number of bluefish recreational fishing trips, recreational harvest limit, and recreational landings from 1991 to 2012.

Year	Number of Bluefish Trips^a	Recreational Catch (000s)	Recreational Catch per Directed Trip
1991	5,811,446	18,291,823	3.1
1992	4,261,811	11,400,060	2.7
1993	3,999,487	9,925,254	2.5
1994	3,414,337	11,920,226	3.5
1995	3,409,966	10,493,882	3.1
1996	2,523,984	9,520,909	3.8
1997	2,021,713	12,573,548	6.2
1998	1,838,525	9,204,267	5.0
1999	1,316,939	11,487,687	8.7
2000	1,526,554	16,260,385	10.7
2001	2,156,043	20,412,006	9.5
2002	1,893,640	15,217,195	8.0
2003	2,100,057	15,049,303	7.2
2004	2,178,373	19,344,309	8.9
2005	2,511,295	20,353,080	8.1
2006	2,050,409	19,571,624	9.5
2007	2,636,900	23,380,319	8.9
2008	2,210,230	19,954,717	9.0
2009	1,532,445	13,644,474	8.9
2010	1,745,312	16,142,140	9.2
2011	1,602,659	14,691,648	9.2
2012	-	14,110,594	-

^aEstimated number of recreational fishing trips (expanded) where the primary species targeted was bluefish, Maine – Florida's East Coast. Source: Scott Steinback, NMFS/NEFSC, ^bAtlantic coast from Maine through Florida's east coast, NA = Data not available.

Table 4. Angler effort (number of trips) that targeted bluefish in 2011, Maine through Florida.

Mode	Total Angler Effort	Angler Effort Targeting Bluefish ^a	Percent Angler Effort Targeting Bluefish
Party/Charter	1,789,523	87,915	4.91%
Private/Rental	20,336,334	445,198	2.19%
Shore	17,582,272	1,069,546	6.08%
Total	39,708,129	1,602,659	4.03%

^aTotal effort targeting bluefish as primary species.

Source: Scott Steinback NMFS/NEFSC.

Recreational Landings by State

Recreational catch and landings by state for 2012 are provided in Table 5. The greatest overall catches (includes discards) were in New Jersey and New York, both with about 3 million fish. The greatest harvest (retained catch) of bluefish occurred in Connecticut, New Jersey and New York with 2.5 - 3 million pounds. The lowest catches occurred in New Hampshire and Georgia. Average weights, based on dividing landings weight by number for each state, suggest that bluefish size tends to increase toward the north along the Atlantic coast.

Table 5. MRIP estimates of 2012 recreational harvest and total catch for bluefish.

State	Harvest			Catch
	Pounds of Fish	Number of Fish	Average wt of fish (lbs)	Number of Fish
ME	16,974	4,341	3.9	130,437
NH	32,055	9,446	3.4	14,416
MA	1,298,116	336,552	3.9	1,050,305
RI	235,507	672,541	0.4	1,099,990
CT	2,469,341	480,079	5.1	1,158,811
NY	3,287,619	1,149,529	2.9	2,958,539
NJ	2,684,049	1,190,391	2.3	3,186,203
DE	40,827	35,596	1.1	153,547
MD	122,293	113,698	1.1	252,193
VA	121,029	151,233	0.8	359,031
NC	1,007,992	888,888	1.1	1,925,185
SC	145,850	206,361	0.7	375,011
GA	2,568	6,312	0.4	57,959
FL (East Coast)	378,444	278,318	1.4	1,388,968
Total	11,842,664	5,523,285	2.1	14,110,595

Figure 5 reflects MRFSS/MRIP-based estimates of catch and landings by mode (1991 through 2012) and indicates that the primary catch modes for bluefish are private boats and shore-based fishing. Less than 10 % of the catch came from for hire boats over the same time period.

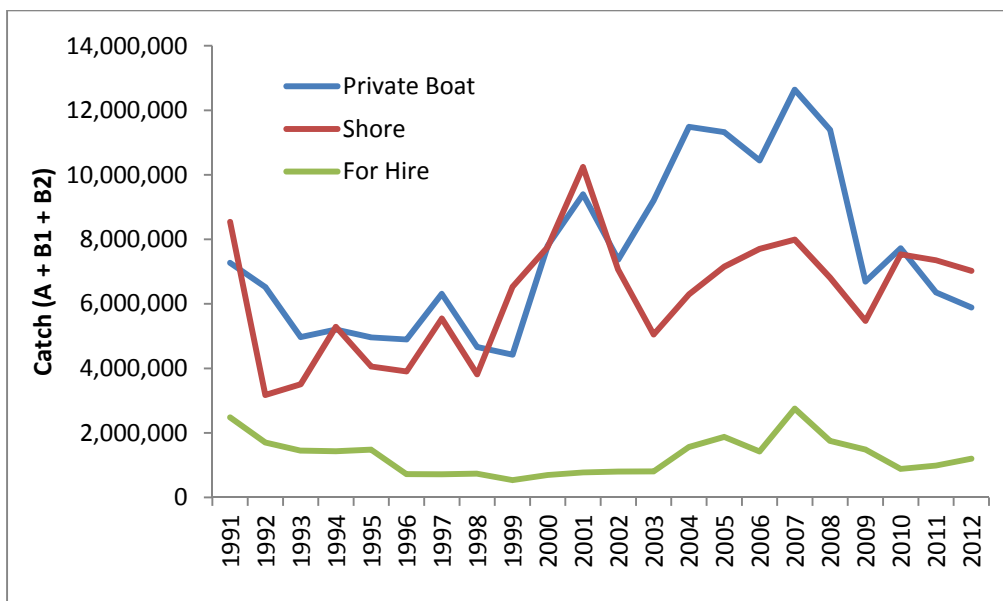


Figure 5. The bluefish catch (A + B1 + B2 in numbers of fish) by recreational fishermen by mode, Atlantic Coast, 1991-2012.

Recreational Catches by Area

MRIP classifies catch into three fishing areas, inland, nearshore ocean (< 3 mi), and offshore ocean (> 3 mi). About 54% of the catch of bluefish on a coastwide basis came from inland waters, followed by nearshore ocean (39%) (Figure 4). Offshore ocean is only about 7% of the total catch.

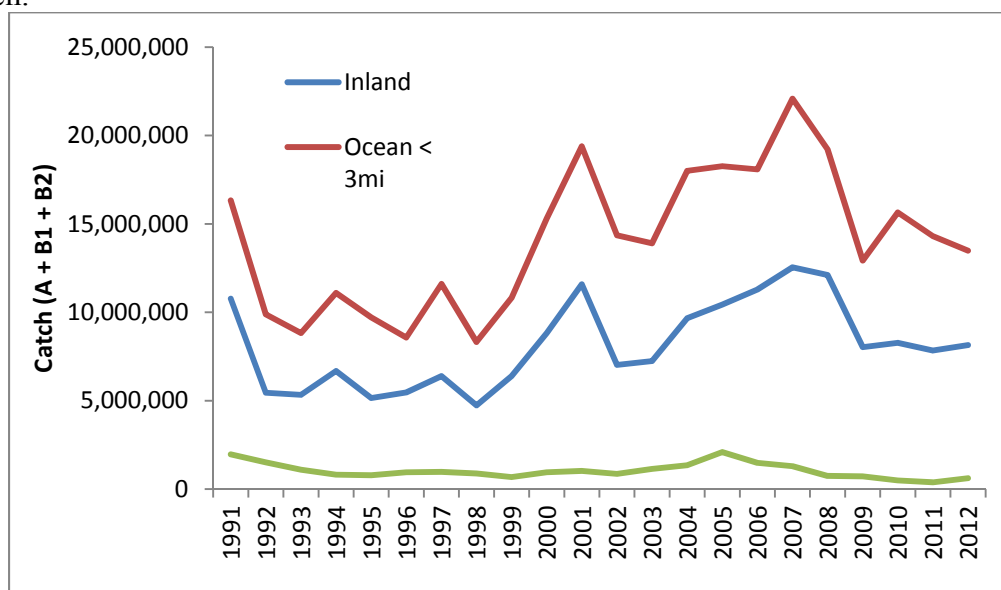


Figure 4. Bluefish recreational catch by area, Atlantic Coast, 1991-2012.

Commercial Fishery

Vessel and Dealer Activity

Federal permit data indicate that 2,667 commercial bluefish permits were issued in 2012 (Table 6). A subset of federally-permitted vessels was active in 2012 with dealer reports identifying 573 vessels with commercial bluefish permits that actually landed bluefish.

Of the 391 federally permitted bluefish dealers, there were 175 dealers who actually bought bluefish in 2012 (Table 6).

Table 6. Permitted and active bluefish vessels and dealers by state for 2012.

STATE	PERM VESSELS	ACTIVE VESSELS	PERM DEALERS	ACTIVE DEALERS
MA	1007	136	115	49
NJ	386	88	57	9
NY	271	128	84	43
ME	258	6	11	3
RI	183	88	45	28
NC	153	53	24	20
VA	120	21	19	11
NH	111	16	8	1
FL	54	1	6	6
CT	48	14	3	2
MD	37	17	9	3
OTHER	39	5	10	0
TOTAL	2667	573	391	175

Source: NMFS Permit Database and Dealer Weighout Data.

Effort/Landings by Gear

NMFS VTR data indicate that a total of 1,396 commercial trips targeted bluefish (bluefish \geq 50 % of total catch) in 2012 (Table 7). Landings from directed trips (1.602 M lb) are approximately 32.5 % of coastwide commercial bluefish landings for 2012 (4.930 M lb). Gillnets accounted for 93 % of the directed catch while hook gear accounted for 5 %.

Table 7. Commercial gear types associated with bluefish harvest in 2012.

Commercial Gear Type	Trips	Landings (lbs)	Pct Total
GILL NET	821	1,493,402	93%
HOOK AND LINE	554	73,634	5%
OTHER	21	35,246	2%
TOTAL	1,396	1,602,282	100%

Effort/Landings by Area

The Northeast Region is divided into 46 statistical areas for Federal fisheries management. According to VTR data, bluefish were commercially harvest in 40 statistical areas in 2011 (Figure 5). Seven statistical areas, however, collectively accounted for 75.1 % of VTR-reported landings in 2011, with individual areas contributing 7% to 14% of the total. These areas also represented 69.6% of the trips that landed bluefish suggesting that resource availability as expressed by catch per trip is fairly consistent through the range where harvest occurs.

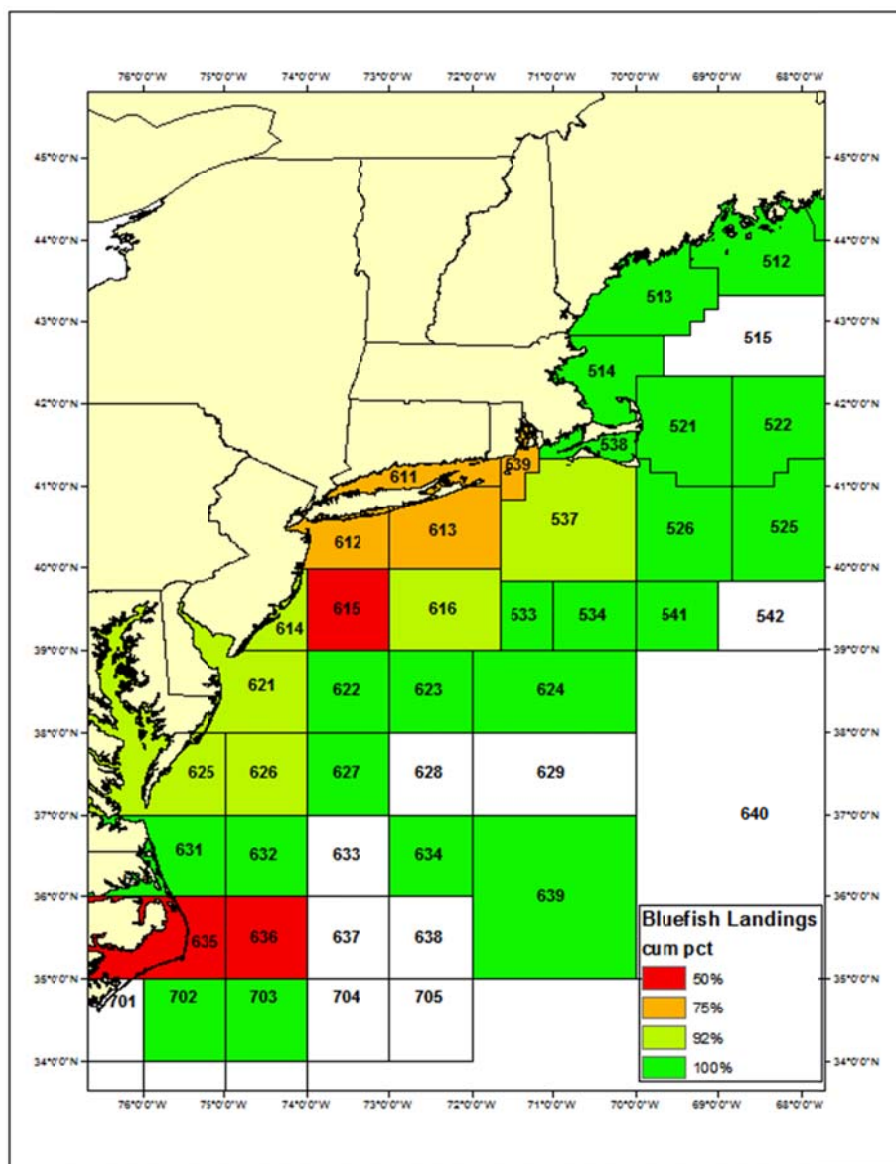


Figure 5. NMFS Statistical Areas. Shading reflects the cumulative percentage of landings with red and orange being the primary areas where the commercial landings are taken.

The top commercial landings ports for bluefish in 2012 are shown in Table 8. Twelve ports qualified as "top bluefish ports", i.e., those ports where 100,000 pounds or more of bluefish were landed. Wanchese, NC was the most important commercial bluefish port with over 2.170 M lb landed.

Table 8. Top ports of bluefish landings (in pounds), based on NMFS 2012 dealer data. Since this table includes only the “top ports” (ports where landings of bluefish were > 100,000 lb), it does not include all of the landings for the year.

Port^a	Pounds	# Vessels
POINT JUDITH, RHODE ISLAND	452,544	75
MONTAUK, NEW YORK	426,525	91
WANCHESE, NORTH CAROLINA	264,257	4
BARNEGAT LIGHT/LONG BEACH, NEW JERSEY	264,003	24
HAMPTON BAYS, NEW YORK	219,351	33
POINT PLEASANT, NEW JERSEY	219,043	26
PROVINCETOWN, MASSACHUSETTS	184,358	8
HATTERAS, NORTH CAROLINA	157,583	-
CHATHAM, MASSACHUSETTS	155,733	65
OCEAN CITY, MARYLAND	146,176	18
CHINCOTEAGUE, VIRGINIA	141,859	29
AMAGANSETT, NEW YORK	124,257	-
BELFORD, NEW JERSEY	123,364	18
HAMPTON, VIRGINIA	122,723	18
LITTLE COMPTON, RHODE ISLAND	102,067	18

^aPorts with less than 3 vessels not reported for confidentiality issues.

Source: Dealer Weighout Data, as of June 24, 2013.

Revenue

In 2012, commercial vessels landed about 4.723 M lb of bluefish valued at approximately \$3.14 million. Average coastwide ex-vessel price of bluefish was \$0.67/lb in 2012, a 14 % increase from the previous year (2011 price = \$0.58/lb). The relative value of bluefish is very low among commercially landed species, approximately 0.31 % and 0.17 % of the total weight and value, respectively of all finfish and shellfish landed along the U.S. Atlantic coast in 2012. For states where bluefish were commercially landed, the contribution of bluefish to the total value of all finfish and shellfish varied by state in 2012 (Table 9). Bluefish ranged from less than 0.01 % of total commercial landings in Maine to 2.39 % in North Carolina. Relative to total landings value, bluefish were most important in New York and North Carolina, contributing the largest percentage of ex-vessel value of all commercial landings in those states. This contribution did not change considerably from the previous complete fishing year (i.e., 2011).

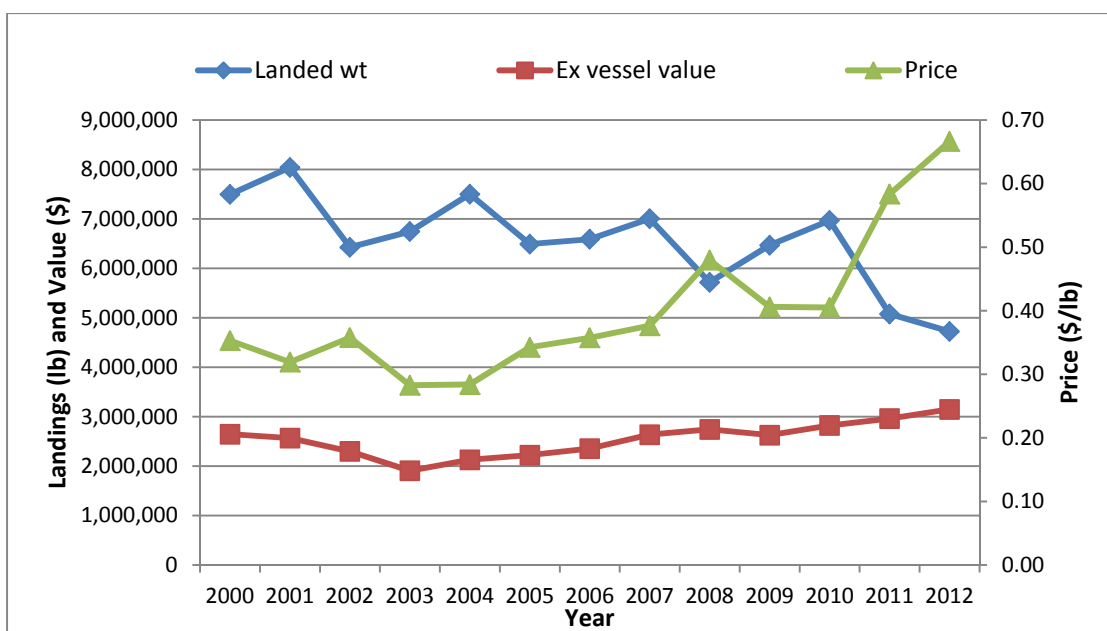


Figure 5. Landings, ex-vessel value, and price for bluefish, 2000-2012. Source: NMFS unpublished dealer data. Prices are unadjusted.

Table 9. Percent contribution of bluefish to the commercial landings and value of all species combined from Maine through North Carolina, 2012.

State	Pounds of Bluefish as a Percentage of all Species	Value of Bluefish as a Percentage of all Species
ME	0.00%	0.00%
NH	0.25%	0.07%
MA	0.09%	0.09%
RI	0.64%	0.49%
CT	0.64%	0.41%
NY	3.03%	1.87%
NJ	0.13%	0.22%
DE	0.30%	0.12%
MD	0.20%	0.11%
VA	0.10%	0.24%
NC	2.39%	0.90%
Total	0.19%	0.17%

Source: Dealer Weighout Data, as of June 24, 2013.

Bycatch

The commercial fishery for bluefish is primarily prosecuted with gillnets, otter trawls, and handlines. This fishery often harvests mixed species, including bonito, Atlantic croaker, weakfish, spiny dogfish, and other species. Among these species, weakfish are considered to be depleted; however, natural mortality rather than fishing mortality is implicated as constraining stock size. Atlantic croaker and spiny dogfish are not overfished, nor is overfishing occurring. Bonito are unregulated and stock status is unknown. Given the mixed-species nature of the bluefish fishery, incidental catch of non-target species is not directly attributable to the bluefish fishery.

References

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