



Black Sea Bass Advisory Panel Information Document¹

August 2013

Management System

The Fishery Management Plan (FMP) for black sea bass became effective in 1997 when it was incorporated into the Summer Flounder and Scup FMP. The FMP established the management unit for black sea bass (*Centropristis striata*) as the U.S. waters in the western Atlantic Ocean from Cape Hatteras, North Carolina to the U.S.-Canadian border. The FMP additionally included measures to ensure effective management of the black sea bass resource. Two management entities work cooperatively to develop fishery regulations for black sea bass: the Atlantic States Marine Fisheries Commission (ASMFC), and the Mid-Atlantic Fishery Management Council (MAFMC). The National Marine Fisheries Service (NMFS) works in conjunction with the MAFMC as the federal implementation and enforcement entity. This cooperative management endeavor was developed because significant portions of black sea bass catch are taken from both state (0-3 miles offshore) and Federal waters (3-200 miles offshore).

The commercial and recreational black sea bass fisheries are managed using catch and landings limits, commercial quotas, recreational harvest limits, minimum fish sizes, gear regulations, permit requirements, and other provisions as prescribed by the FMP. Black sea bass was under a stock rebuilding strategy beginning in 2000 until it was declared rebuilt in 2009. The FMP, including subsequent Amendments and Frameworks, is available on the Council website at: <http://www.mafmc.org/fisheries/fmp/sf-s-bsb>.

Basic Biology

Detailed information on black sea bass life history and habitat requirements can be found in the documents titled "Essential Fish Habitat Source Document: Black Sea Bass, *Centropristis striata*, Life History and Habitat Characteristics" (Steimle et al. 1999) as well as in an update of that document, "Essential Fish Habitat Source Document: Black Sea Bass, *Centropristis striata*, Life History and Habitat Characteristics (2nd Edition)" (Drohan et al. 2007). Electronic versions are available at the following website: <http://www.nefsc.noaa.gov/nefsc/habitat/efh/>. Information contained in these documents is summarized here.

The northern population of black sea bass spawns in the Middle Atlantic Bight over the continental shelf during the spring through fall, primarily between Virginia and Cape Cod, Massachusetts. Spawning begins in the spring in the southern portion of the population range, i.e., off North Carolina and Virginia, and progresses north into southern New England waters in the summer and fall. Collections of ripe fish and egg distributions indicate that the species spawns primarily on the inner continental shelf between Chesapeake Bay and Montauk Pt., Long

¹ Data employed in the preparation of this document are from unpublished National Marine Fisheries Service (NMFS) Dealer, Vessel Trip Reports (VTRs), Permit, and Marine Recreational Statistics (MRFSS/MRIP) databases, as of August 2013, unless otherwise noted.

Island. The duration of the larval stage and habitat-related settlement cues are unknown; therefore, distribution and habitat use of this pelagic stage may only partially overlap with that of the egg stage. Adult black sea bass are also very structure oriented, especially during their summer coastal residency. Unlike juveniles, they tend to enter only larger estuaries and are most abundant along the coast. Larger fish tend to be found in deeper water than smaller fish. A variety of coastal structures are known to be attractive to black sea bass, including shipwrecks, rocky and artificial reefs, mussel beds and any other object or source of shelter on the bottom. In the warmer months, inshore, resident adult black sea bass are usually found associated with structured habitats. During the summer, adult black sea bass share complex coastal habitats with other fishes including tautog, hakes, conger eel, sea robins and other transient species. Essential Fish Habitat for black sea bass consists of pelagic waters, structured habitat (e.g., sponge beds), rough bottom shellfish, and sand and shell, from the Gulf of Maine through Cape Hatteras, North Carolina.

Black sea bass attain a maximum size of around 60 cm (23.6 in) and 4 kg (8.8 lb), with a maximum age for females of 8 and age 12 for males (DPSWG 2009). Maturity data is routinely collected on Northeast Fisheries Science Center (NEFSC) survey cruises and model estimates for length suggest 50 percent maturity occurs at 20.4 cm (8.0 inches) with 95 percent maturity attained by 28 cm (11.0 inches).

Adult black sea bass are generalist carnivores that feed on a variety of infaunal and epibenthic invertebrates, especially crustaceans (including juvenile lobster, crabs, and shrimp), small fish, and squid. The NEFSC food habits database lists the spiny dogfish, Atlantic angel shark, skates, spotted hake, summer flounder, windowpane, and goosefish as predators of black sea bass.

Status of the Stock

The most recent accepted benchmark assessment on black sea bass, which used a statistical catch at length (SCALE) model, was peer-reviewed and accepted in December 2008 by the Data Poor Stock Working Group (DPSWG) Peer Review Panel (DPSWG 2009). Reports on “Stock Status,” including annual assessment and reference point update reports, Stock Assessment Workshop (SAW) reports, Stock Assessment Review Committee (SARC) panelist reports, and DPSWG reports and peer-review panelist reports are available online at the NEFSC website: <http://www.nefsc.noaa.gov/saw/>.

Based on the July 2012 assessment update, the stock was not overfished and overfishing was not occurring in 2011, relative to the DPSWG biological reference points. The 2011 stock was at 102% of the spawning stock biomass at maximum sustainable yield (SSB_{MSY}). Fishing mortality (F_{MULT}) in 2011 was $F = 0.21$, a decrease from $F=0.41$ in 2010 (Figure 1). This point estimate of F in 2011 is below the fishing mortality threshold of $F=0.44$. Estimates for 2011 total biomass were at 28.0 million lb (12,700 mt), above the value for B_{MSY} . Spawning stock biomass (SSB) in 2011 was estimated at 24.6 million lb (11,145 mt). 2011 SSB was 102% of SSB_{MSY} (24.0 million lb, 10,880 mt; Figure 2). Recruitment estimated by the model was relatively constant through the time series with the exception of the 1999 and 2001 year classes. These cohorts appeared to be the driving force behind the increase in biomass and SSB. The estimated average recruitment (age one) in 2011 (2010 cohort) was 21.0 million fish.

The DPSWG Panel noted that despite acceptance of the assessment model there was “*considerable uncertainty with respect to stock status.*” The review Panel also recommended that the SSC “*recognize and allow for the sizeable uncertainty in stock status when establishing catch limits.*”

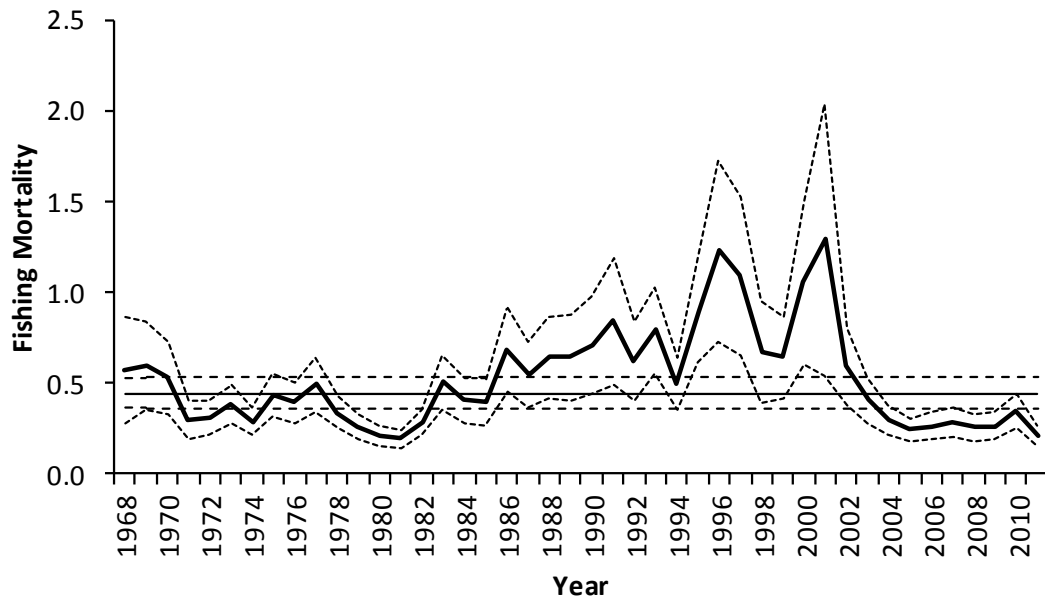


Figure 1: Estimated fishing mortality (+/- 2 standard deviations) of black sea bass from 1968-2011. Horizontal lines are $F_{MSY} \pm 80\%$ confidence interval. Source: Shepherd 2012.

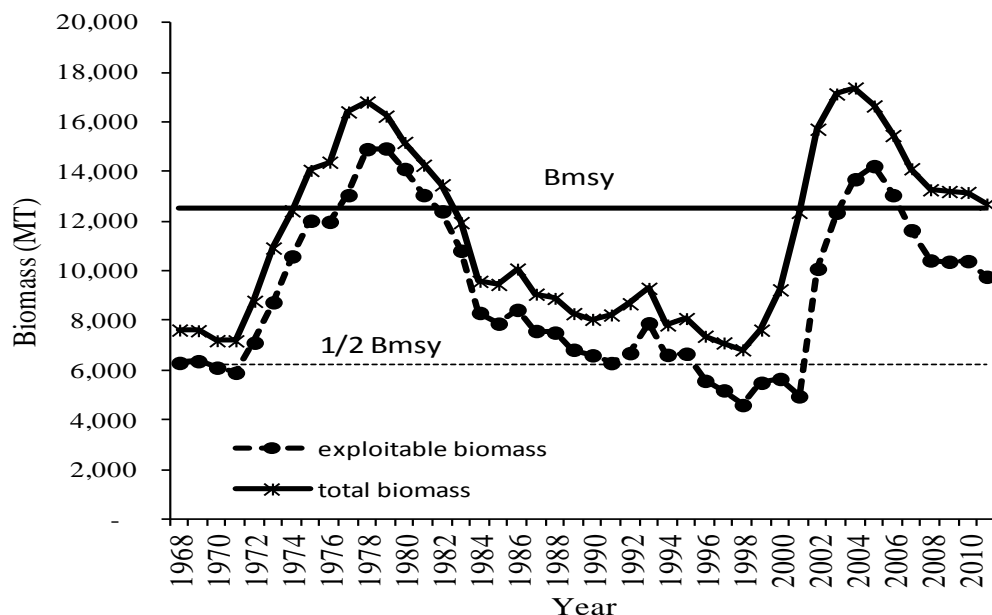


Figure 2: Estimated black sea bass total and exploitable biomass (mt) from SCALE model update, 1968-2011. Also shown are the biological reference points associated with total biomass. Source: Shepherd 2012.

Fishery Performance

There are significant commercial and recreational fisheries for black sea bass. Black sea bass is managed primarily using output controls (catch and landings limits), with 49 percent of the landings being allocated to the commercial fishery as a commercial quota and 51 percent allocated to the recreational fishery as a recreational harvest limit.

Commercial Fishery

In Federal waters, commercial fishermen holding a moratorium permit may fish for black sea bass. Permit data for 2012 indicate that 772 vessels held commercial permits for black sea bass. Total landings (commercial and recreational) peaked in the late 1980's at over 16 million lb, and in 2012 were about 5.0 million lb total (Figure 3).

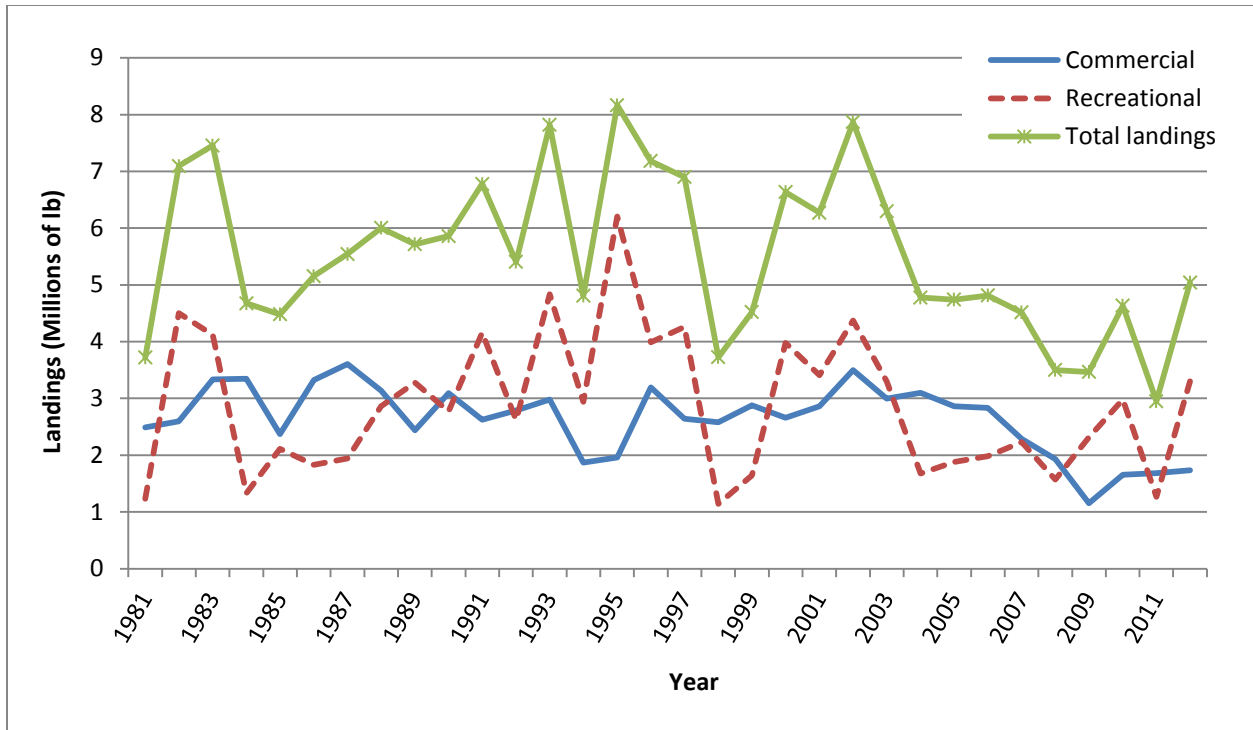


Figure 3: Commercial and Recreational U.S. Black Sea Bass Landings (Pounds) from Maine-North Carolina, 1981-2012.

Table 1 summarizes the black sea bass management measures for the 2003-2014 fishing years. Acceptable biological catch (ABC) levels have been identified for this stock since 2010, and recreational and commercial annual catch limits (ACLs), with a system of overage accountability for each ACL, were first implemented in 2012. It should be noted that catch limits include both projected landings and discards, whereas the commercial quotas and recreational harvest limits are landings based (i.e., harvest).

Table 1: Summary of management measures and landings for 2003 through 2014.

<u>Management measures</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014^c</u>
ABC (m lb)	NA	NA	NA	NA	NA	NA	NA	4.500	4.500	4.500	5.50	5.50
TAC (m lb)	NA	NA	NA	NA	NA	NA	2.300	4.500	4.500	4.500	5.50	5.50
Commercial ACL (m lb)	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.980	2.60	2.60
Com. quota-adjusted (m lb) ^a	3.012	3.768	3.950	3.832	2.377	2.026	1.093	1.759	1.711	1.710	2.17	2.17
Commercial landings (m lb)	3.000	3.082	2.844	2.802	2.240	1.883	1.182	1.676	1.689	1.736	NA	NA
Recreational ACL (m lb)	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.860	2.90	2.90
Rec. harvest limit-adjusted (m lb) ^a	4.434	4.01	4.13	3.989	2.474	2.108	1.138	1.830	1.781	1.320	2.26	2.26
Recreational landings (m lb)	3.304	1.679	1.878	1.979	2.229	1.571	2.313	2.979	1.267	3.30 ^b	NA	NA
Com. fish size (in)	11	11	11	11	11	11	11	11	11	11	11	11
Com. min. mesh size (in, diamond)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Threshold (lb)	500/100	500/100	500/100	500/100	500/100	500/100	500/100	500/100	500/100	500/100	500/100	500/100
Vent size (in)	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8
Recreational measures (minimum fish size (total length), possession limit, and open season)	12-in TL, 25 fish, 1/1-9/1 and 9/16-11/30	12-in TL, 25 fish, 1/1-9/7 and 9/22-11/30	12-in TL, 25 fish, 1/1-12/31	12-in TL, 25 fish, 1/1-12/31	12-in TL, 25 fish, 1/1-12/31	12-in TL, 25 fish, 1/1-12/31	12-in TL, 25 fish, 1/1-10/5	12.5-in TL, 25 fish, 5/22-10/11 and 11/1-12/31	12.5-in TL, 25 fish, 5/22-10/11 and 11/1-12/31	12.5-in TL, 15 fish 1/1-2/28; 25 fish 5/19-10/14 and 11/1-12/31	12.5-in TL, 20 fish, 5/19-10/14 and 11/1-12/31	NA

^aAdjusted for RSA and projected discards. ^bIncludes all of North Carolina. NA=Not applicable or not yet available. ^cThese reflect the regulations currently set for black sea bass in 2014, however, the Council and ASFMC will review these catch limits and management measures in October 2013 and may revise as necessary.

The ASMFC divides the black sea bass commercial quota among the states based on the allocation percentages given in Table 2, and states set measures to achieve their state-specific commercial quotas.

Table 2: The ASFMC black sea bass allocation formula for the commercial fisheries in each state.

State	Allocation (percent)
ME	0.5
NH	0.5
MA	13.0
RI	11.0
CT	1.0
NY	7.0
NJ	20.0
DE	5.0
MD	11.0
VA	20.0
NC	11.0
Totals	100

National Marine Fisheries Service statistical areas are shown in Figure 4. Vessel trip report (VTR) data suggest that statistical area 616, which includes Hudson canyon, and statistical area 621, were responsible for the largest percentage of the catch. Statistical area 537 had the majority of trips that caught black sea bass (Table 3).

Table 3: Statistical areas that accounted for at least 5 percent of the black sea bass catch in 2012, NMFS VTR data.

Statistical Area	Black Sea Bass Catch (percent)	Black Sea Bass Trips (N)
616	16.56	368
621	16.52	369
615	11.05	172
622	9.20	87
537	6.99	657

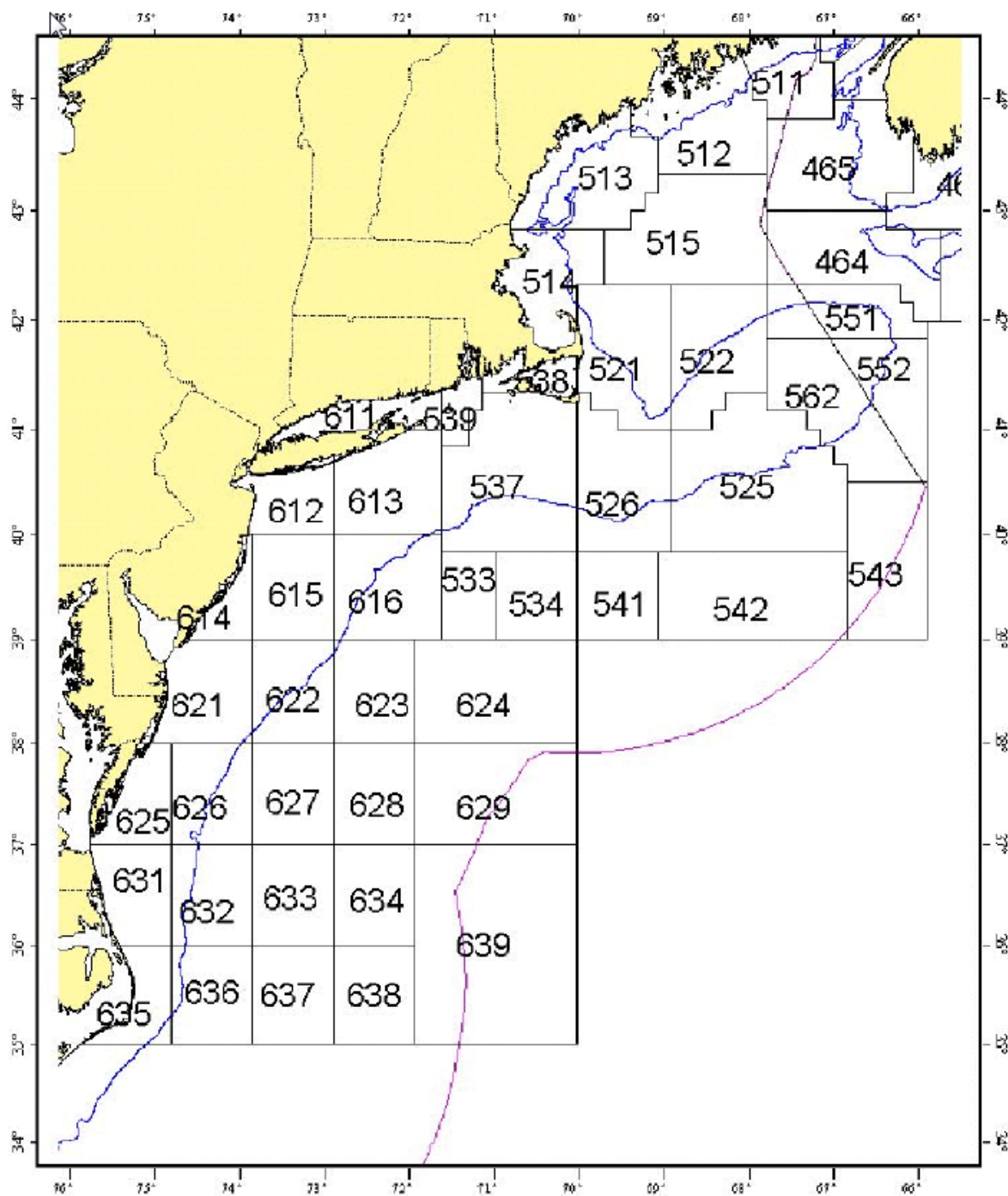


Figure 4: National Marine Fisheries Service Statistical Areas.

Based on VTR data for 2012, the majority of black sea bass landings were taken by bottom otter trawls (51 percent), followed by pots and traps (30 percent), hand lines (10 percent), and offshore lobster pots and traps (6 percent). Other gear types each accounted for less than 1 percent of landings. Current regulations state that large trawl nets are required to possess a minimum of 75 meshes of 4.5 inch diamond mesh in the codend, or

the entire net must have a minimum mesh size of 4.5 inch throughout (Table 1). The threshold level used to trigger the minimum mesh requirement size is 500 lb from January through March and 100 lb from April through December (Table 1). In addition, the minimum vent size requirements for black sea bass pots/traps are 2.5 inches for circle vents, 2 inches for square vents, or 1.375 by 5.75 inches for rectangular vents. Two vents are required in the parlor portion of the pot/trap.

Black sea bass ex-vessel revenues based on dealer data have ranged from \$2.2 to \$7.8 million for the 1994 through 2012 period. The mean price for black sea bass (unadjusted) has ranged from a low of \$1.14/lb in 1996 to a high of \$3.30/lb in 2012 (Figure 5). In 2012, 1.7 million pounds of black sea bass were landed generating \$5.7 million in revenues (\$3.30 lb).

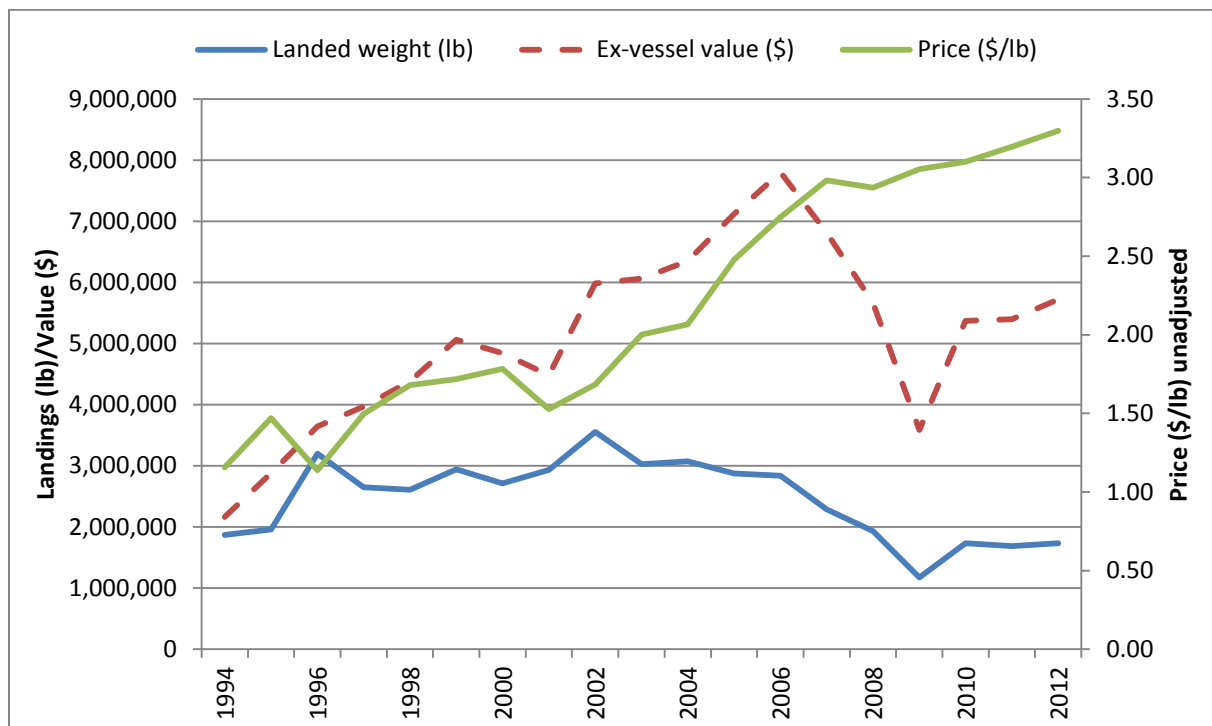


Figure 5: Landings, ex-vessel value, and price (unadjusted) for black sea bass, Maine through North Carolina, 1994-2012.

The ports and communities that are dependent on black sea bass are fully described in Amendment 13 to the FMP. Additional information on "Community Profiles for the Northeast US Fisheries" can be found at:

http://www.nefsc.noaa.gov/read/socialsci/community_profiles/

2012 NMFS dealer data were used to examine recent landings patterns among ports. The top commercial landings ports for black sea bass by pounds landed are shown in Table 4. A "top port" is defined as any port that landed at least 100,000 lb of black sea bass.

Table 4: Top ports of landing (in lb) for black sea bass (BSB), based on NMFS 2012 dealer data. Since this table includes only the “top ports,” it may not include all of the landings for the year.

Port	Landings of BSB (lb)	# BSB Vessels
PT. PLEASANT, NJ	187,731	42
HAMPTON, VA	154,533	26
PT. JUDITH, RI	145,500	121
OCEAN CITY, MD	140,861	17
CHINCOTEAGUE, VA	104,377	16

Among the states from Maine through North Carolina, New York had the highest number of Federally permitted dealers (43) who bought black sea bass in 2012 (Table 5). All dealers bought approximately \$5.7 million of black sea bass in 2012.

Table 5: Dealers reporting buying black sea bass, by state in 2012.

Number of Dealers	MA	RI	CT	NY	NJ	DE	MD	VA	NC	Other
	37	36	10	43	27	3	6	15	18	0

Recreational Fishery

There is a significant recreational fishery for black sea bass in state waters, which occurs seasonally when the fish migrate inshore during the warm summer months. In Federal waters, the recreational black sea bass fishery is managed on a coastwide basis. State waters are also managed on a coastwide basis, with the exception of the last three years (i.e., 2011, 2012, 2013) when an ASMFC Addendum was developed to enable state-specific measures to be implemented. The 2013 recreational fishing measures in Federal waters are given in Table 1, and the 2013 state-specific measures are given in Table 6.

Table 6: Black sea bass recreational fishing measures in 2013, by state.

State	Minimum Size (inches)	Possession Limit	Open Season
Massachusetts (Private and For-hire)	14	4 fish	May 11- October 31
Massachusetts (For-hire with Letter of Authorization from MA DMF)	14	10 fish	May 11- June 14
		20 fish	July 1- August 11 September 1- October 10
Rhode Island	13	3 fish	June 15- August 31
		7 fish	September 1- December 31
Connecticut (Private and Shore)	13	3 fish	June 15- August 31
		8 fish	September 1- October 29
		8 fish	June 15-November 30
New York	13	8 fish	July 10- December 31
New Jersey	12.5	20 fish	May 19- August 8; September 27- October 14; November 1- December 31
Delaware	12.5	15 fish	January 1- February 28
		20 fish	May 19 - October 14 and November 1 - December 31
Maryland	12.5	15 fish	January 1 - February 28
		20 fish	May 19 - October 14 and November 1 - December 31
PRFC	12.5	15 fish	January 1 - February 28
		20 fish	May 19 - October 14 and November 1 - December 31
Virginia	12.5	15 fish	January 1 - February 28
		20 fish	May 19 - October 14 and November 1 - December 31
North Carolina (North of Cape Hatterass 35° 15'N Latitude)	12.5	15 fish	January 1 - February 28
		20 fish	May 19 - October 14 and November 1 - December 31

*Party/Charter Vessels enrolled In Monitoring Program

Recreational data have been available through the Marine Recreational Information Program (MRIP) since 2004, and prior to 2004 were available through the Marine Recreational Fishery Statistics Survey (MRFSS). Recreational catch and landings peaked in 1986 with landings in numbers and weight at the lowest levels in 2011 (Table 7). When anglers are intercepted through the surveys conducted for the recreational statistics

programs, they are asked about where the majority of their fish were caught (i.e., inland, state waters (≤ 3 miles), exclusive economic zone (EEZ; > 3 miles)). While these data are somewhat imprecise, they do provide a general indication of where the majority of black sea bass are landed recreationally, and indicate that a majority of the landings are now occurring in state waters (Table 8).

Table 7: Recreational black sea bass landings and data from the NMFS recreational statistics databases, 1981-2012.

Year	Catch ('000 of fish)	Landings ('000 of fish)	Landings ('000 lb)
1981	5,301	2,734	1,628
1982	11,615	10,249	10,054
1983	8,707	5,631	4,530
1984	4,330	2,491	1,961
1985	7,131	4,216	2,540
1986	29,167	21,904	12,461
1987	5,912	3,467	2,392
1988	9,363	4,060	3,945
1989	7,000	4,649	3,621
1990	9,622	4,269	3,047
1991	11,224	5,458	4,316
1992	8,296	3,869	2,914
1993	9,451	6,197	4,985
1994	7,688	3,571	3,054
1995	14,481	6,887	6,339
1996	8,437	3,764	4,125
1997	11,088	4,868	4,399
1998	5,699	1,259	1,290
1999	7,758	1,412	1,697
2000	17,667	3,755	4,122
2001	14,626	3,006	3,596
2002	15,080	3,421	4,442
2003	12,649	3,392	3,449
2004	8,884	1,925	2,307
2005	8,358	1,489	2,188
2006	8,729	1,392	1,886
2007	9,601	1,630	2,347
2008	11,102	1,342	2,094
2009	9,875	1,909	2,595
2010	11,133	2,335	3,286
2011	5,794	881	1,267
2012	14,553	1,946	3,302

Table 8: Percentage of black sea bass recreational landings (MRIP Type A+B1 in number of fish) by area (state vs. Federal waters), Maine through North Carolina, 2003-2012. Area information is self-reported based on the area where the majority of fishing activity occurred per angler trip.

Year	State <= 3 mi	EEZ > 3 mi
2003	22.1	77.9
2004	25.6	74.4
2005	29.9	70.1
2006	34.9	65.1
2007	34.8	65.2
2008	60.3	39.7
2009	67.5	32.5
2010	72.1	27.9
2011	63.8	36.2
2012	72.6	27.4
Avg. 2003 - 2012	48.4	51.6
Avg. 2010 - 2012	69.5	30.5

Table 9: State contribution (as a percentage) to total recreational landings of black sea bass, (MRIP Type A+B1 in number of fish), from Maine through North Carolina, 2010 and 2011.

State	2011	2012
Maine	0.0	0.0
New Hampshire	0.0	0.2
Massachusetts	22.1	26.7
Rhode Island	5.7	5.3
Connecticut	1.0	5.7
New York	31.2	16.5
New Jersey	16.9	37.8
Delaware	4.9	2.1
Maryland	5.4	1.7
Virginia	2.2	0.2
North Carolina	10.8	3.9
Total	100%	100%

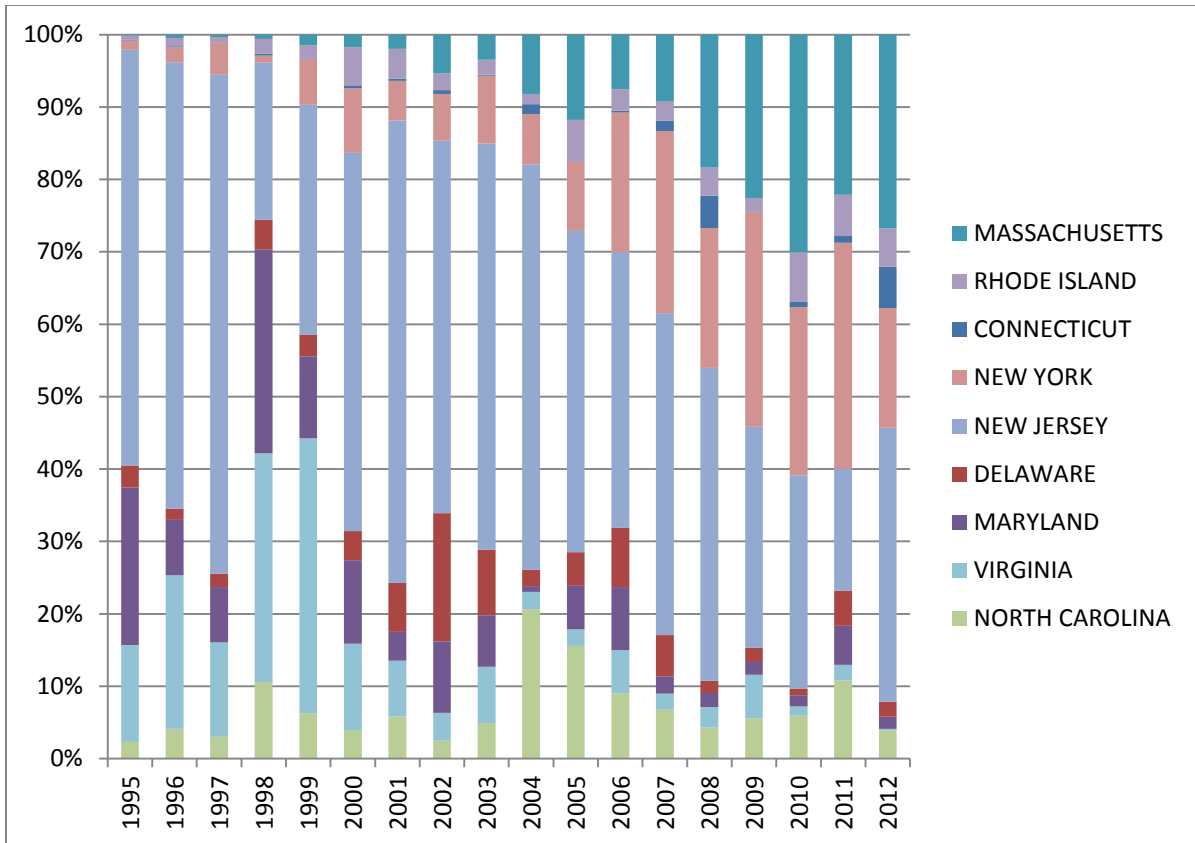


Figure 6: State contribution (as a percentage) of total recreational landings of black sea bass (MRIP Type A + B1 in number of fish), from Massachusetts through North Carolina, 1995-2012.

The states of Massachusetts, New Jersey, and New York land the majority of fish (Table 9; Figure 6). Since the mid-1990s, the state contributions of landings (in numbers of fish) have shifted somewhat, with Massachusetts and New York landing an increasing percentage (Figure 6).

In 2012, there were 808 recreational vessels (i.e., party and charter vessels) that held black sea bass Federal recreational permits. Many of these vessels also hold recreational permits for summer flounder and scup. Landings by mode indicate that although party/charter fishermen have historically been responsible for the majority of black sea bass landings, the private/rental fishery has accounted for the majority of landings in recent years (Table 10).

Table 10: The number of black sea bass landed from Maine through North Carolina by mode, 1981-2012.

Year	Shore	Party/Charter	Private/Rental
1981	452,101	1,440,171	841,480
1982	81,445	8,104,204	2,063,332
1983	222,011	4,005,707	1,403,508
1984	98,228	1,128,294	1,264,894
1985	163,447	2,393,048	1,659,703
1986	1,021,524	16,695,386	4,187,088
1987	71,956	1,157,244	2,238,164
1988	140,754	1,691,300	2,227,901
1989	237,968	1,991,670	2,419,649
1990	289,379	2,268,914	1,710,458
1991	250,675	2,586,149	2,621,274
1992	45,368	2,043,188	1,780,226
1993	54,675	4,579,665	1,562,229
1994	243,347	2,005,887	1,321,627
1995	275,982	5,197,229	1,413,571
1996	70,522	2,631,735	1,062,026
1997	8,337	3,950,335	908,840
1998	7,073	777,874	474,071
1999	19,231	621,355	771,259
2000	177,489	1,797,695	1,780,239
2001	14,034	1,826,851	1,164,977
2002	16,618	2,066,232	1,338,447
2003	10,760	2,073,130	1,308,496
2004	9,462	698,456	1,217,163
2005	13,110	605,934	869,466
2006	49,081	730,749	612,622
2007	9,865	909,873	709,905
2008	9,447	479,680	852,622
2009	23,992	442,106	1,442,842
2010	6,096	519,527	1,809,044
2011	8,177	310,764	561,727
2012	6,443	701,777	1,237,668
% of total, 1981 - 2012	3%	61%	36%
% of total, 2008 - 2012	1%	29%	70%

The NMFS angler expenditure survey summarizes a variety of costs associated with recreational fishing in the Northeast (Table 11). In addition, Steinback et al., 2009 summarized the reasons for fishing, with a majority of anglers (about 85 percent) fishing either mostly or fully for recreational purposes (Table 12).

Table 11: Average daily trip expenditures (\$ unadjusted) by recreational fishermen in the Northeast region by mode, in 2006. Source: Gentner and Steinback (2008)

Expenditures	\$		
	Party/Charter	Private/Rental	Shore
Private transportation	13.88	11.03	12.94
Public transportation	0.26	0.07	0.40
Auto rental	0.27	0.02	0.10
Food from grocery stores	7.40	4.92	7.33
Food from restaurants	8.70	3.42	9.28
Lodging	10.0	2.64	14.90
Boat fuel	0	9.54	0
Boat or equipment rental	0.05	0.19	0.03
Charter fees	57.76	0	0
Charter crew tips	3.0	0	0
Catch processing	0.02	0	0
Access and parking	0.44	1.11	1.32
Bait	0.31	3.42	3.25
Ice	0.39	0.59	0.39
Tackle used on trip	1.87	2.04	3.98
Tournament fees	1.10	0.04	0.02
Gifts and souvenirs	1.67	0.10	1.45
Total	107.13	39.14	55.39

Table 12: Purpose of Marine Recreational Fishing in the Northeast. Source: Steinback et al., 2009.

	Percent	Number of anglers in 2005 (thousands)
All for food or income	2.1	92.4
Mostly for food or income	<1.0	34.3
Both for recreation and for food or income	11.7	514.8
Mostly for recreation	13.2	580.8
All for recreation	72.2	3,176.8

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