Mid-Atlantic Fishery Management Council

Black Sea Bass AP Information Document[1] - June 2012

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 northward to the U.S.-Canadian border as well as measures to ensure effective management of the black sea bass resource. There are two management entities that 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), in conjunction with the National Marine Fisheries Service (NMFS) as the federal implementation and enforcement entity. The cooperative management endeavor was developed because a significant portion of the catch is taken from both state (0-3 miles offshore) and Federal waters (3-200 miles offshore). The commercial and recreational 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 and was declared rebuilt in 2009. The FMP, including subsequent Amendments and Frameworks, is available on the Council website at: http://www.mafmc.org/fmp/fmp.htm

Basic Biology

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) and an update of that document, "Essential Fish Habitat Source Document: Black Sea Bass, *Centropristis striata*, Life History and Habitat Characteristics" (Drohan et al. 2007), and is summarized here. Electronic versions are available at the following website: http://www.nefsc.noaa.gov/nefsc/habitat/efh/

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-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 Island. The duration of the larval stage and

[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 June 2012, unless otherwise noted.

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. EFH for black sea bass is 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 (NEFSC 2009). Maturity data is routinely collected on Northeast Fisheries Science Center 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 Northeast Fisheries Science Center (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

A statistical catch at length (SCALE) model was used in the most recent peer-reviewed and accepted black sea bass stock assessment (NEFSC 2009; Data Poor Stock Working Group (DPSWG) Peer Review Panel). 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

Based on the June 2011 update, the stock is not overfished and overfishing is not occurring, relative to the DPSWG biological reference points. Fishing mortality (F_{MULT}) in 2010 was F = 0.41, an increase from F=0.32 in 2009 (Figure 1). This point estimate of F in 2010 is very close to the fishing mortality threshold of F=0.42. Estimates for 2010 total biomass remain above B_{MSY}. SSB in 2010 was 30.7 million lb (13,926 mt), which is 111% of SSB_{MSY} (27.6 million lb, 12,537 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 2010 (2009 cohort) was 26.8 million fish.

The DPSWG Panel noted that despite acceptance of the assessment model there was "*considerable uncertainty with respect to stock status*." In addition, the Panel recommended that, *"management should proceed with caution until the implications of recent rapid changes from high to low index values observed in the survey, but not in model estimates of time series, are more adequately understood."* The review Panel also, *"recommends the SSC recognize and allow for the sizeable uncertainty in stock status when establishing catch limits."*

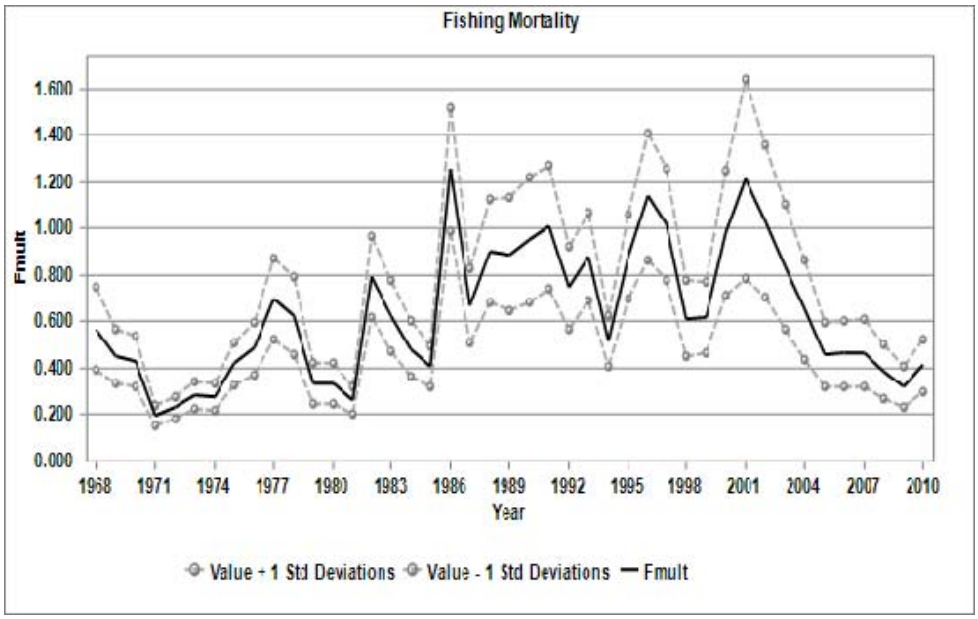

Figure 1. Estimated fishing mortality of black sea bass from SCALE model update, 1968-2010.

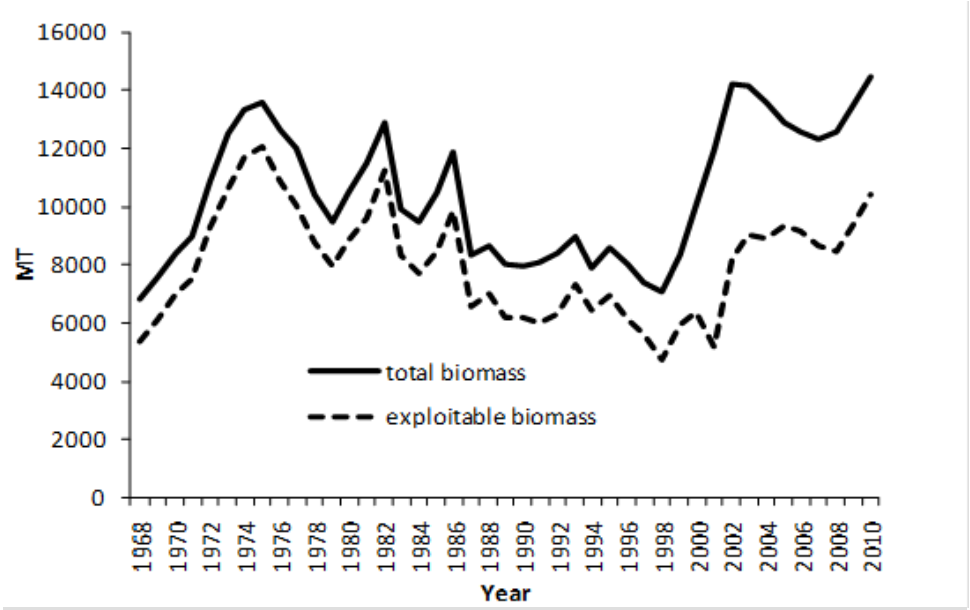

Figure 2. Estimated black sea bass total and exploitable biomass (mt) from SCALE model update, 1968-2010.

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 2011 indicate that 799 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 2011 were about 3.0 million lb total (Figure 3).

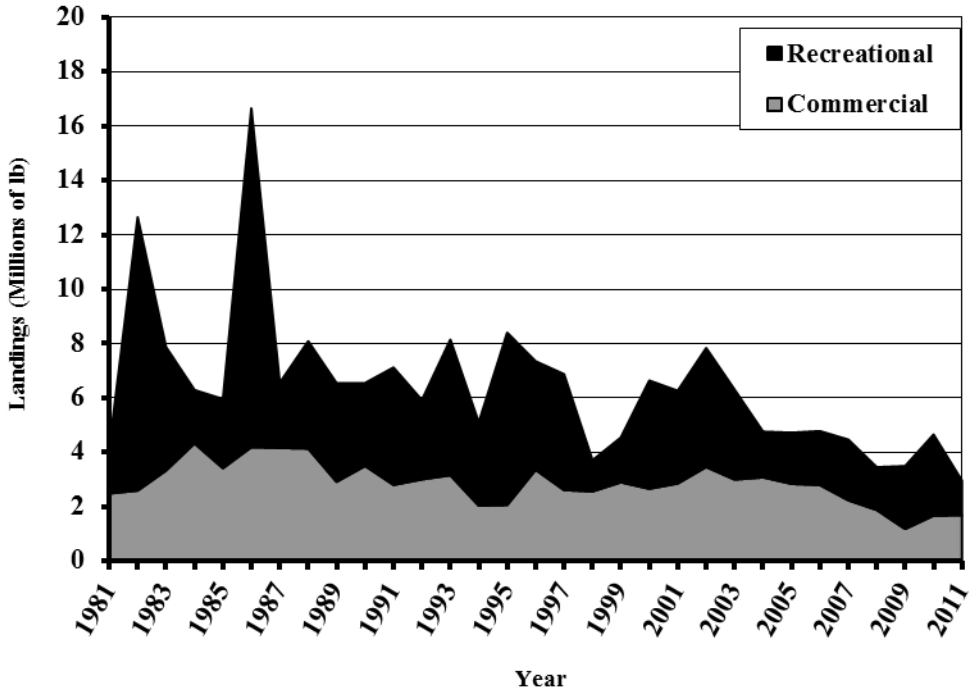

Figure 3. Commercial and Recreational U.S. Black Sea Bass Landings (Pounds) from Maine-North Carolina, 1981-2011.

Table 1 summarizes the black sea bass management measures for the 2003-2012 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 2012.

Management measures	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
ABC (m lb)	NA	NA	NA	NA	NA	NA	NA	4.500	4.500	4.500
TAC (m lb)	NA	NA	NA	NA	NA	NA	2.300	4.500	4.500	4.500
Commercial ACL	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.980
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
Commercial landings	3.000	3.082	2.844	2.802	2.240	1.883	1.182	1.676	1.689	NA
Recreational ACL	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.860
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
Recreational landings	3.304	1.679	1.878	1.979	2.229	1.571	2.313	2.979	1.267	NA
Com. fish size (in)	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
Threshold (lb)	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
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	12.5-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, 25 fish, 5/19-10/14 and 11/1-12/31

[a]Adjusted for RSA and projected discards. NA=Not applicable or not yet available.

The ASMFC divides the 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 ASMFC 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

NMFS statistical areas are shown in Figure 4. VTR data suggest that statistical area 622 was responsible for the majority of the catch, with statistical area 616, which includes Hudson canyon, having 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 2011, NMFS VTR data.

Statistical Area	Black Sea Bass Catch (percent)	Black Sea Bass Trips (N)
622	19.74	222
621	17.66	330
616	13.60	486
615	7.15	188

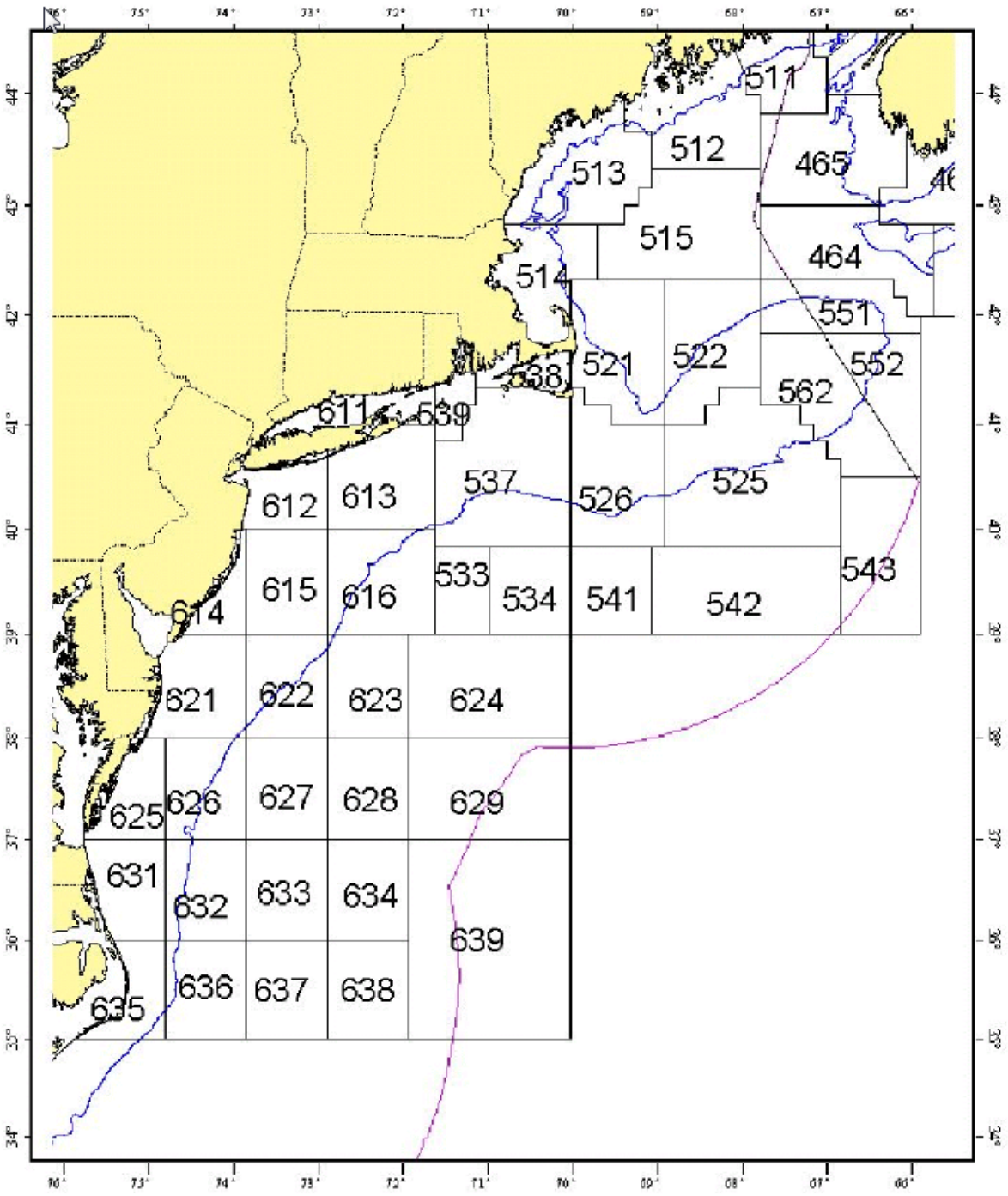

Figure 4. NMFS Statistical Areas.

Based on VTR data for 2011, the majority of black sea bass landings were taken by bottom otter trawls (55 percent), followed by pots and traps (35 percent), hand lines (6 percent), and offshore lobster pots and traps (< 3 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 circle vent size requirements for black sea bass pots/traps are 2 1/2 inch, 1 3/8 inch x 5 3/4 inch for rectangular vents, and 2 inch for square 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 2011 period. The mean price for black sea bass (unadjusted) has ranged from a low of $1.14/lb in 1996 to a high of $3.20/lb in 2011 (Figure 5). In 2011, 1.7 million pounds of black sea bass were landed generating $5.4 million in revenues ($3.20/lb).

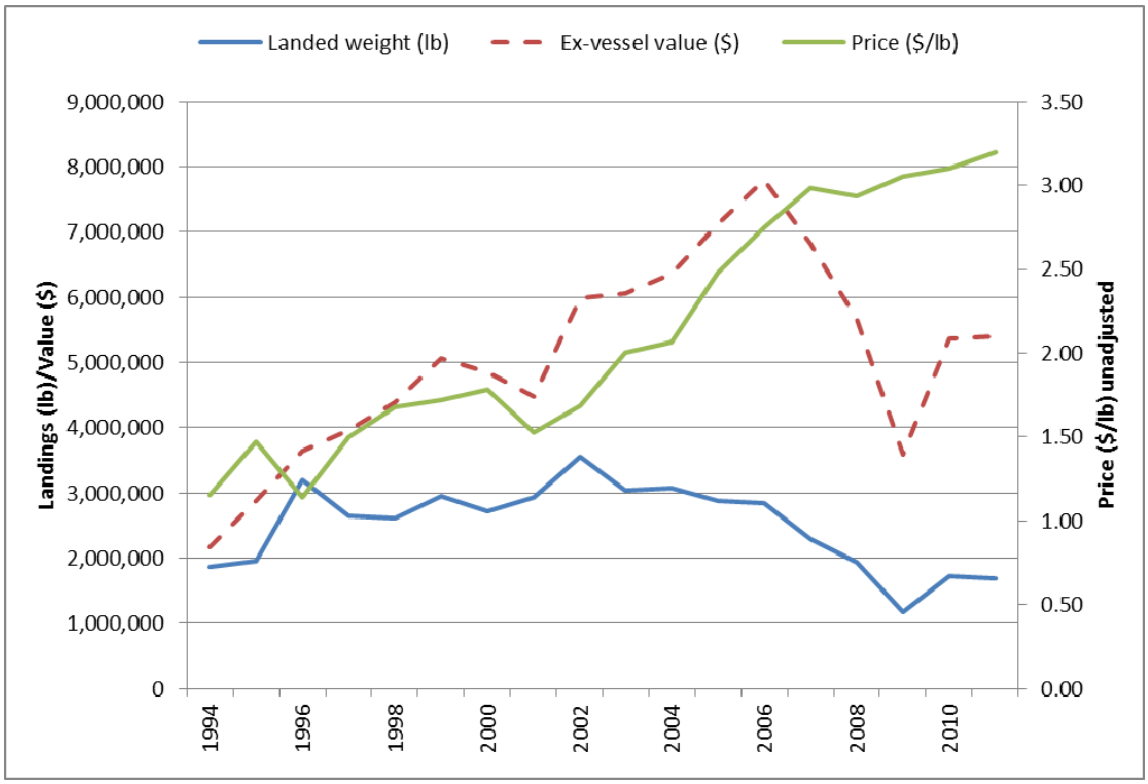

Figure 5. Landings, ex-vessel value, and price (unadjusted) for black sea bass, Maine through North Carolina, 1994-2011.

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/

To examine recent landings patterns among ports, 2011 NMFS dealer data are used. 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.

Related data for the recreational fisheries are shown in subsequent sections. However, due to the nature of the recreational database, it is inappropriate to desegregate to less than state levels.

Table 4. Top ports of landing (in lb) for black sea bass (BSB), based on NMFS 2011 dealer data. Since this table includes only the "top ports," it may not include all of the landings for the year. Note: C = Confidential

Port	Landings of BSB (lb)	# BSB Vessels
OCEAN CITY, MD	166,959	14
PT. JUDITH, RI	157,016	124
PT. PLEASANT, NJ	138,062	33
CAPE MAY, NJ	115,896	40
HAMPTON, VA	109,348	30

Among the states from Maine through North Carolina, New York had the highest number of Federally permitted dealers (45) who bought black sea bass in 2011 (Table 5). All dealers bought approximately $5.4 million of black sea bass in 2011.

Table 5. Dealers reporting buying black sea bass, by state in 2011.

Number of Dealers	MA	RI	CT	NY	NJ	DE	MD	VA	NC	Other
	30	32	11	45	25	3	5	15	20	2

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 two years (i.e., 2011, 2012) when an ASMFC Addendum was developed to enable state-specific measures to be implemented. The 2012 recreational fishing measures in Federal waters are given in Table 1, and the 2012 state-specific measures are given in Table 6.

Table 6. Black sea bass recreational fishing measures in 2012, by state.

State	Minimum Size (inches)	Possession Limit	Open Season
Massachusetts	14	10 fish	May11-June 24
		20 fish	June 25-October 31
Rhode Island	13	15 fish	June 15-December 31
Connecticut	13	15 fish	June 15-December 31
New York	13	15 fish	June 15-December 31
New Jersey	12.5	25 fish	May 19- September 3, September 23-October 14, and November 1-December 31
Delaware	12.5	25 fish	May 22 to October 14 and November 1 to December 31
Maryland	12.5	25 fish	May 22 to October 14 and November 1 to December 31
PRFC	12.5	25 fish	May 19 to October 14 and November 1 to December 31
Virginia	12.5	25 fish	May 19 to October 14 and November 1 to December 31
North Carolina (North of Cape Hatteras 35° 15'N Latitude)	12.5	25 fish	May 19 to October 14 and November 1 to December 31

Recreational data are available through the Marine Recreational Fishery Statistics Survey (MRFSS, 1981-2003), with recent years' estimates revised under the Marine Recreational Information Program (MRIP, 2004-2011). 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). The states of Massachusetts, New Jersey, and New York land the majority of fish (Table 9).

Table 7. Recreational black sea bass landings data from the NMFS recreational statistics databases, 1981-2011.

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

Table 8. Percentage of black sea bass recreational landings (MRIP Type A+B1 in number of fish) by year and area, Maine through North Carolina, 2002-2011. Area information is self-reported based on the area where the majority of fishing activity occurred per angler trip.

	Black sea bass	
Year	**State <= 3 mi**	**EEZ > 3 mi**
2002	21.5	78.5
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
Avg. 2002-2011	39.7	60.3
Avg. 2009- 2011	67.8	32.2

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	2010	2011
Maine	0.0	0.0
New Hampshire	0.0	0.0
Massachusetts	30.1	22.1
Rhode Island	6.9	5.7
Connecticut	0.7	1.0
New York	23.3	31.2
New Jersey	29.4	16.9
Delaware	0.9	4.9
Maryland	1.5	5.4
Virginia	1.3	2.2
North Carolina	6.0	10.8
Total	**100%**	**100%**

In 2011, there were 819 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 party/charter fishermen are responsible for the majority of black sea bass landings (Table 10).

Table 10. The number of black sea bass landed from Maine through North Carolina by mode, 1981-2011.

	Mode		
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
% of total, 1981 - 2011	3%	61%	36%
% of total, 2007 - 2011	1%	33%	66%

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.

	Percent	Number of anglers in 2005 (thousands)
Purpose of recreational fishing trips		
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

Source: Steinback et al., 2009.

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