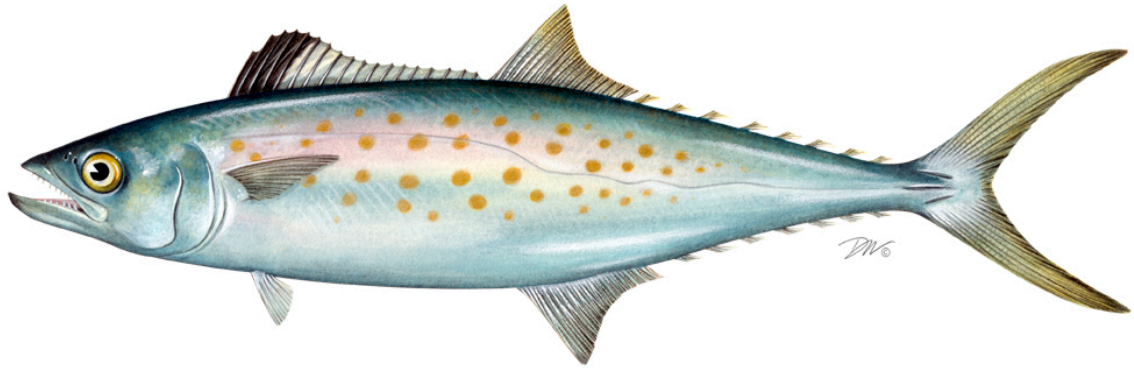
2013 REVIEW OF THE ATLANTIC STATES MARINE FISHERIES COMMISSION FISHERY MANAGEMENT PLAN FOR

SPANISH MACKEREL
(*Scomberomorus maculatus*)

2012 FISHING YEAR



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I. Status of the Plan

The Fishery Management Plan (FMP) for the Coastal Migratory Pelagic Resources (1983 and subsequent amendments) and the Interstate Fishery Management Plan for Spanish Mackerel (1990) manage Atlantic group Spanish mackerel in federal and state Atlantic waters from New York through the east coast of Florida. All states in that range, excluding Pennsylvania, have a declared interest in the Interstate FMP for Spanish Mackerel. The South Atlantic State/Federal Fisheries Management Board serves as the Commission's Spanish Mackerel Management Board. The Interstate FMP for Spanish Mackerel is a flexible document intended to track the federal FMP; thus, the South Atlantic Fishery Management Council (SAFMC) has the lead on Atlantic group Spanish mackerel management.

The SAFMC manages Atlantic group Spanish mackerel based on guidance from its Scientific and Statistical Committee (SSC). The SAFMC determines needed adjustments to regulatory measures, including allowable catch, bag limits, size limits, and trip limits. The SAFMC deliberations are assisted by a Mackerel Committee that includes representatives from the Mid-Atlantic Fishery Management Council, and an Advisory Panel with South Atlantic and Mid-Atlantic industry representation.

The SAFMC approved Amendment 18 to the Coastal Migratory Pelagic Resources FMP in December 2011 which established a new ABC based on the SSC recommendation of using median landings of the last 10 years (2001-2011). With this change, the Allowable Biological Catch (ABC) is set equal to the Annual Catch Limit (ACL) and Optimum Yield (OY) [ABC=ACL=OY] at approximately 5.29 million lbs. With this the commercial ACL= 3.13 million lbs and the recreational ACL=2.56 million lbs.

Under the federal FMP, the 2012-2013 fishing year ran from March 1, 2012 to February 29, 2013. The federal FMP divides the commercial fishery into a quota system between the Atlantic and Gulf migratory groups. Within the Atlantic migratory group, there are two zones- the Northern (consisting of the states from New York through Georgia) and the Southern (Florida). For the Atlantic migratory group, the 2012/2013 year, the full quota was 3.13 million pounds and the adjusted quota was 2.88 million pounds. The adjusted quota is used to determine trip limit reductions. The federal commercial trip limit was a year-round 3,500 pound daily possession/landings limit for the states from New York through Georgia. Florida's commercial trip limit varies depending on the season and percent of quota remaining. The recreational bag limit was set at 15 fish. The minimum size limit for both fisheries was 12" fork length or 14" total length.

The goals of the interstate FMP are to complement federal management in state waters, to conserve the Atlantic group Spanish mackerel resource throughout its range, and to achieve compatible management among the states that harvest Spanish mackerel. In accordance with the 2011 Omnibus Amendment, the updated FMP's objectives are to: (1.) Manage the Spanish mackerel fishery by restricting fishing mortality to rates below the threshold fishing mortality rates to provide adequate spawning potential to sustain long-term abundance of the Spanish mackerel populations. (2.) Manage the Spanish mackerel stock to maintain the spawning stock biomass above the target biomass levels. (3.) Minimize endangered species bycatch in the Spanish mackerel fishery. (4.) Provide a flexible management system that coordinates management activities between state and federal waters to promote complementary regulations throughout Spanish mackerel's range which minimizes regulatory delay while retaining substantial ASMFC, Council, and public input into management decisions; and which can adapt

to changes in resource abundance, new scientific information and changes in fishing patterns among user groups or by area. (5.) Develop research priorities that will further refine the Spanish mackerel management program to maximize the biological, social, and economic benefits derived from the Spanish mackerel population. See Table 1 for state Spanish mackerel regulations in 2012.

II. Status of the Stocks

The Atlantic coast Spanish mackerel resource is not experiencing overfishing and the stock is overfished (SEDAR. 2012). As updated the SEDAR 28 Stock Assessment Report, using the Beaufort Assessment Model (BAM) the current stock biomass is estimated to be $SSB_{2011}/MSST=2.29$. The current level of fishing (exploitation rate) was $F_{2009\text{-}2011}/F_{MSY}=0.526$, with $F_{2011}/F_{MSY}=0.521$. The overfished ratio (B/ B_{MSY}) shows that the biomass declined as a result of the high fishing mortality but has increased in recent years and remains above B_{MSY} (Figure 1). The overfishing ratio (F/Fmsy) shows that fishing mortality increased from the late 1970s through 1994 but has since declined (Figure 2). Fishery-dependent data also indicate an increasing biomass trend (except during the last four years which show a decline). The current fishing mortality rate does not seem to be inhibiting stock growth.

III. Status of the Fishery

Spanish mackerel are an important recreational and commercial fishery in South Atlantic waters, and are taken as far north as Massachusetts, although recreational landings north of Maryland are limited and sporadic (Tables 2 and 5). Trip limits implemented in state and federal waters continue to prevent premature closure of the commercial fishery. Total landings of Spanish mackerel in 2012 are estimated at 4.73 million pounds (compared to the 5,29 million pound limit). The commercial fishery harvested approximately 69.5% of the total, and the recreational fishery about 30.5%.

From 1960 to 2012, commercial landings of Atlantic coast Spanish mackerel have ranged between 1.9 and 11.1 million pounds, although that range is limited to between 1.9 and 6.0 million pounds if the unusually large harvests in 1976-77 and 1980 are excluded. Since 1981, landings have averaged 3.65 million pounds (Figure 3). Coastwide commercial landings have generally been below 4 million pounds since 1995 (exception of 2010; landings of 4.53 million pounds); this coincided with the entanglement net ban in Florida. Gill nets were the dominant commercial gear in Florida prior to the ban. After the ban was instituted, the use of cast nets has increased. Coastwide, cast nets took 28% of the commercial harvest in 2012, as compared to the 40% taken with gillnets and 30% taken with line gears (Table 3). The 2012 commercial landings were 3.54 million pounds, of which 2.58 million pounds were landed in Florida (73% of the harvest). North Carolina harvested approximately 26% of the total 2012 landings (Table 2).

Recreational anglers harvested an estimated 835,263 Spanish mackerel (1.2 million pounds) in 2012, about 41% fewer fish than in 2008 (Tables 4 and 5). The number of recreationally harvested fish appears to show a cyclical trend, with low harvests in the early to mid 80s and mid to late 90s, interspersed with higher harvests (Figure 4). Florida and North Carolina continue to account for the majority of recreational landings in both number and weight, averaging 86.5% of total landings since the time series began in 1981. In 2012, Florida harvested 30% of the total number of fish and North Carolina 59%. The number of recreational releases of Spanish mackerel has generally increased over time, reaching a peak of over one million fish in 2008 (Table 6, Figure 4).

IV. Status of Assessment Advice

The most recent stock assessment was completed in 2012 through the SouthEast Data, Assessment, and Review (SEDAR) process (SEADR 2012). The input data (through 2011) were applied to two assessment models, with the primary model a statistical catch at age model, the Beaufort Assessment Model (BAM); while the a secondary surplus-production model (ASPIC) provided a comparison of model results. The Review Panel concluded that the statistical catch at age model was the most appropriate model to characterize the stock status for management purposes.

The Council's Scientific and Statistical Committee (SSC) reviewed the assessment during its December 2012 meeting and accepted the SEDAR 28 Spanish Mackerel stock assessment as best available science. The SSC concurred with the Review Panel's conclusion that the stock is not experiencing overfishing and the stock is not overfished.

V. Status of Research and Monitoring

The National Marine Fisheries Service (NMFS) Southeast Fisheries Science Center (SEFSC) continues to monitor length and weight at age and size frequencies, fishing mortality, and migration; collect age data and catch per unit effort by area, season, fishery, and gear; monitor shrimp trawl bycatch; investigate methods to predict year class strength; calculate estimates of recruitment, and develop conservation gear to reduce bycatch. The NMFS is also collecting discard data through a bycatch logbook in the mackerel and snapper-grouper fisheries. The Gulf and South Atlantic Fisheries Development Foundation and several states (North Carolina, South Carolina, Georgia, and Florida) have evaluated finfish bycatch in the southeastern shrimp trawl fishery, including bycatch of Spanish mackerel. The South Atlantic component of the Southeast Area Monitoring and Assessment Program (SEAMAP) collects Spanish mackerel data in its coastal trawl survey from Cape Hatteras to Cape Canaveral. Additionally, the Northeast Area Monitoring and Assessment Program (NEAMAP) began regular spring and fall surveys between Martha's Vineyard and Cape Hatteras in the fall of 2007.

Abundance trends continue to be monitored primarily through fishery-dependent sources. The states and the SEFSC monitor catch data through the cooperative commercial statistics collection program and the recreational fisheries survey. Commercial trip reports are tallied more frequently in the winter and early spring by the state of Florida and the NMFS as the commercial quota is approached.

VI. Status of Management Measures

2008 Framework Adjustment (Federal)
In February 2008, NOAA Fisheries finalized a framework adjustment to change the beginning date for trip limits in the Atlantic Spanish mackerel fishery off the east coast of Florida. The 3,500 pound trip limit begins March 1 each year to correspond with the beginning of the fishing year (as changed in Amendment 15).

Omnibus Amendment (Interstate)
In August 2011, the Management Board approved an amendment to the Spanish Mackerel FMP to address three issues: compliance measures, consistency with federal management in the exclusive economic zone, and alignment with Commission standards. Through the Omnibus

Amendment, the following fisheries management measures are required for states within the management unit range;

Recreational Fishery

- 12" Fork Length (FL) or 14" Total Length (TL) minimum size limit
- 15 fish creel limit
- Must be landed with head and fins intact
- Calendar year season
- Prohibited gear: Drift gill nets prohibited south of Cape Lookout, NC
- Decrease in the recreational quota the following year via reduced bag limits if the Total Annual Catch Limit (ACL) is exceeded and stock is overfished.

Commercial Fishery

- Prohibited: purse seines; drift gill nets south of Cape Lookout, NC
- 12" FL or 14" TL minimum size limit
- March 1 – end of February season
- Trip limits (per vessel, per day)
  NY-GA: 3500 lbs
  FL: 3500 lbs, 3/1-11/30;
  3500 lbs Mon-Fri & 1500 lbs Sat-Sun, 12/1 until 75% adjusted quota taken;
  1500 lbs, when 75% adjusted quota taken until 100% adjusted quotas taken;
  500 lbs after 100% of adjusted quotas taken (the adjusted quota compensates for estimated catches of 500 lbs per vessel per day to the end of the season)
- Commercial quotas decreased the following year if Total ACL is exceeded and stock is overfished

Amendment 18 (Federal)

In August 2011, The Gulf of Mexico, South Atlantic, and Mid-Atlantic Fishery Management Councils approved Amendment 18 to the Coastal Migratory Pelagics FMP. The primary action under consideration established Annual Catch Limits (ACLs) and Accountability Measures (AMs) for the cobia, king mackerel, and Spanish mackerel. The amendment designates ACLs and ACTs for each of the two migratory groups of Spanish mackerel (Atlantic and Gulf). For the Atlantic migratory group, the commercial sector ACL is set equivalent to the commercial sector quota of 3.13 million pounds. The AM for the commercial sector is that the commercial sector will close when the commercial quota is reached or projected to be reached. In addition, current trip limit adjustments will remain in place. When the commercial sector closes, harvest and possession of Spanish mackerel would be prohibited for persons aboard a vessel for which a commercial permit for Spanish mackerel has been issued.

For the recreational sector, the ACT is set to 2.32 million pounds, while the ACL is set at 2.56 million pounds. Regarding the AM, if the stock ACL is exceeded in any year, the bag limit will be reduced the next fishing year by the amount necessary to ensure recreational landings achieve the recreational ACT, but do not exceed the recreational ACL in the following fishing year. A payback will be assessed if the Atlantic migratory group Spanish mackerel is determined to be overfished and the stock ACL is exceeded. The payback will include a reduction in the sector ACL for the following year by the amount of the overage by that sector in the prior fishing year.

VII. Implementation of FMP Compliance Requirements for 2012

All states must implement the requirements specified in section 5 (5.1 Mandatory Compliance Elements for States; 5.1.1 Mandatory Elements of State Programs; 5.1.1.1 Regulatory Requirements). The PRT finds all states in compliance.

De minimis Guidelines

A state qualifies for *de minimis* status if its past 3-years' average of the combined commercial and recreational catch is less than 1% of the past 3-years' average of the coastwide combined commercial and recreational catch. Those states that qualify for *de minimis* are not required to implement any monitoring requirements, none of which are included in the plan.

De Minimis Requests

The states of New York, New Jersey, Delaware, Georgia request *de minimis* status. The PRT notes these states meet the requirements of *de minimis*.

VIII. Recommendations of the Plan Review Team

Research and Monitoring Recommendations

High Priority

- Length, sex, age, and CPUE data are needed for improved stock assessment accuracy. Simulations on CPUE trends should be explored and impacts on VPA and assessment results determined. Data collection is needed for all states, particularly those north of North Carolina.
- Evaluation of weight and especially length at age of Spanish mackerel.
- Development of fishery-independent methods to monitor stock size of Atlantic Spanish mackerel (consider aerial surveys used in south Florida waters).
- More timely reporting of mid-Atlantic catches for quota monitoring.
- Provide better estimates of recruitment, natural mortality rates, fishing mortality rates, and standing stock. Specific information should include an estimate of total amount caught and distribution of catch by area, season, and type of gear.
- Develop methodology for predicting year class strength and determination of the relationship between larval abundance and subsequent year class strength.
- Commission and member states should support and provide the identified data & input needed to improve the SAFMC's SEDAR process.
- The full implementation of ecosystem-based management and the implementation of monitoring /research efforts needed to support ecosystem-based management needs should be conducted.

Medium Priority

- Yield per recruit analyses should be conducted relative to alternative selective fishing patterns.
- Determine the bycatch of Spanish mackerel in the directed shrimp fishery in Atlantic Coastal waters (partially met: Branstetter, 1997; Ottley et al., 1998; Gaddis et al., 2001;Page et al., 2004).
- Evaluate potential bias of the lack of appropriate stratification of the data used to generate age-length keys for Atlantic and Gulf Spanish mackerel.
- Evaluate CPUE indices related to standardization methods and management history, with emphasis on greater temporal and spatial resolution in estimates of CPUE.

- Consideration of MRFSS add-ons or other mechanisms for collection of socioeconomic data for recreational and commercial fisheries.
- Determine normal Spanish mackerel migration routes and changes therein, as well as the climatic or other factors responsible for changes in the environmental and habitat conditions which may affect the habitat and availability of stocks.
- Determine the relationship, if any, between migration of prey species (i.e., engraulids, clupeids, carangids), and migration patterns of the Spanish mackerel stock.

Low Priority

- Final identification of Spanish mackerel stocks through multiple research techniques.
- Complete research on the application of assessment and management models relative to dynamic species such as Spanish mackerel.
- Delineation of spawning areas and areas of larval abundance through temporal and spatial sampling.

IX. References

Branstetter, S. 1997. Final implementation of high-priority objectives of a bycatch reduction research program for the Gulf of Mexico and South Atlantic shrimp fishery. NMFS 93-SER-059.

Gaddis, G., D. Haymans, J.L. Music, Jr., and J. Page. 2001. Interstate fisheries management planning and implementation. Final Report. Award No. NA86FG0116. USDOC/NOAA/NMFS. Atlantic Coastal Fisheries Management Act (P.L. 103-206).

Mackerel Stock Assessment Panel (MSAP). 2003. 2003 Report of the Mackerel Stock Assessment Panel. Award No. NA17FC2203 and NA17FC1053. Gulf of Mexico Fishery Management Council, Tampa, Florida & South Atlantic Fishery Management Council, Charleston, South Carolina. 31 pp.

Ottley, A., C.N. Belcher, B. Good, J.L. Music, Jr., and C. Evans. 1998. Interstate fisheries management planning and implementation. Final Report. Award No. NA57FG0170. USDOC/NOAA/NMFS. Atlantic Coastal Fisheries Management Act (P.L. 103-206).

Page, J., D. Haymans, and P. Geer. 2004. Interstate fisheries management planning and implementation. Final Report. Award No. NA16FG1219. USDOC/NOAA/NMFS. Atlantic Coastal Fisheries Management Act (P.L. 103-206).

SEDAR. 2012. SEDAR 28- South Atlantic Spanish mackerel Stock Assessment Report. SEDAR, North Charleston SC. 438 pp. available online at: http://www.sefsc.noaa.gov/sedar/Sedar_Workshops.jsp?WorkshopNum=28

X. Figures

Figure 1. Estimated total biomass (metric tons) at start of year. Horizontal dashed line indicates B_{MSY}. (SEDAR 2012).

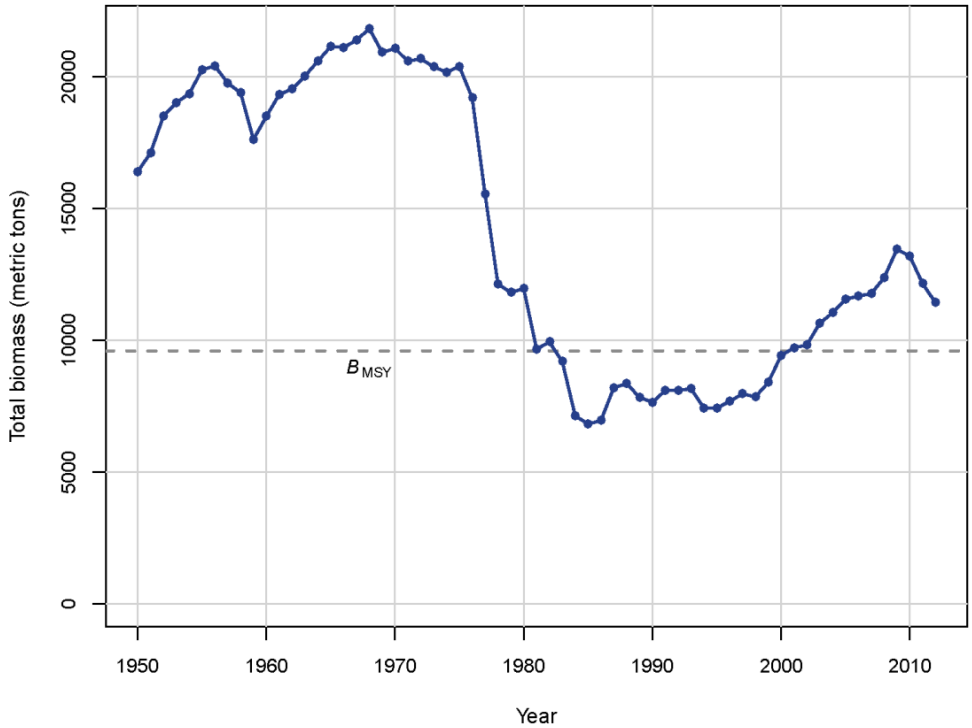


Figure 2. Estimated time series of Atlantic group Spanish mackerel fishing mortality rate (F) relative to F_{MSY} benchmark. Solid line indicates estimates from base run of the Beaufort Assessment Model; gray error bands indicate 5th and 95th percentiles of the Monte Carlo Bootstrap analysis trials (SEDAR 2012).

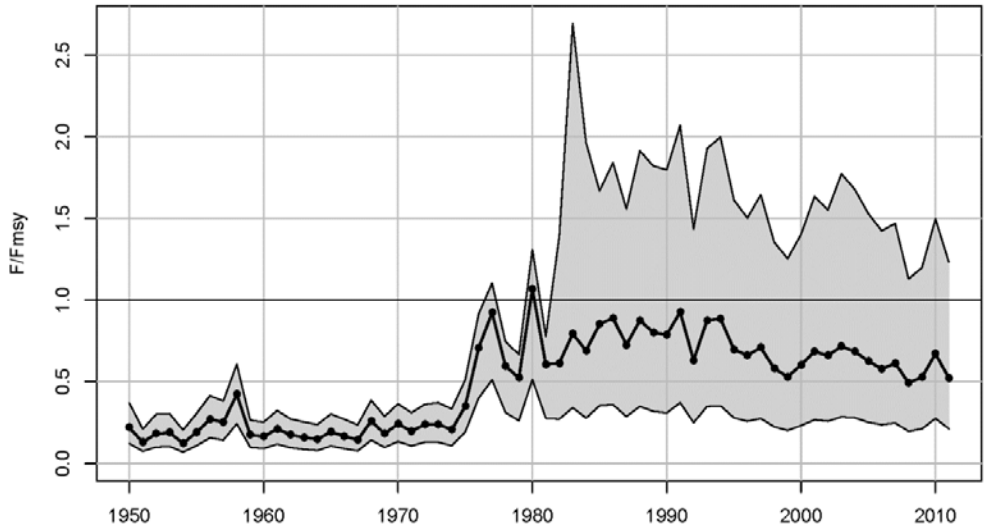


Figure 3. Commercial and recreational harvest (pounds) of Spanish mackerel, 1960-2012
(Recreational data available from 1981-present only; see Tables 2 and 5 for values and sources)

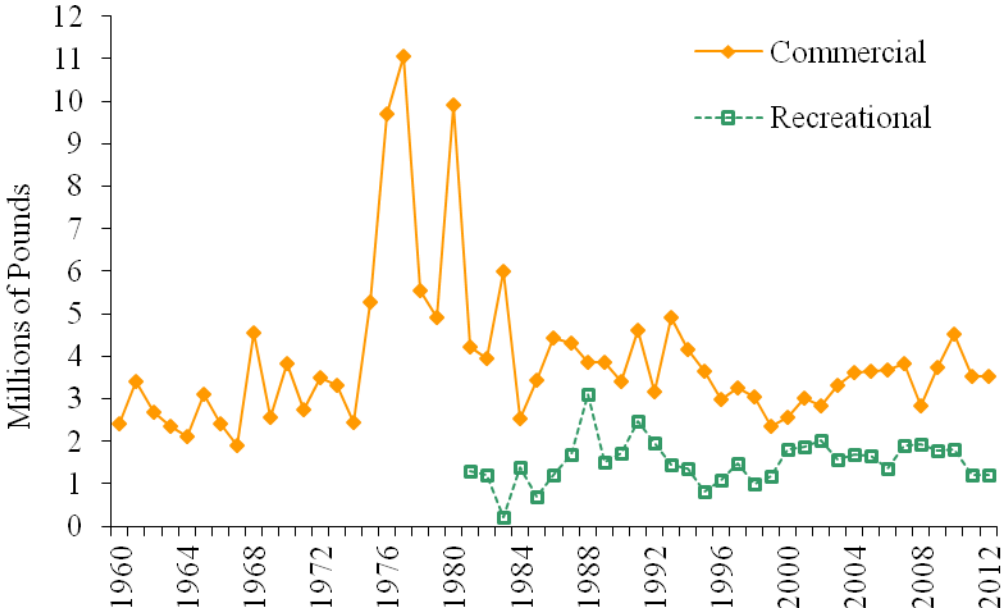
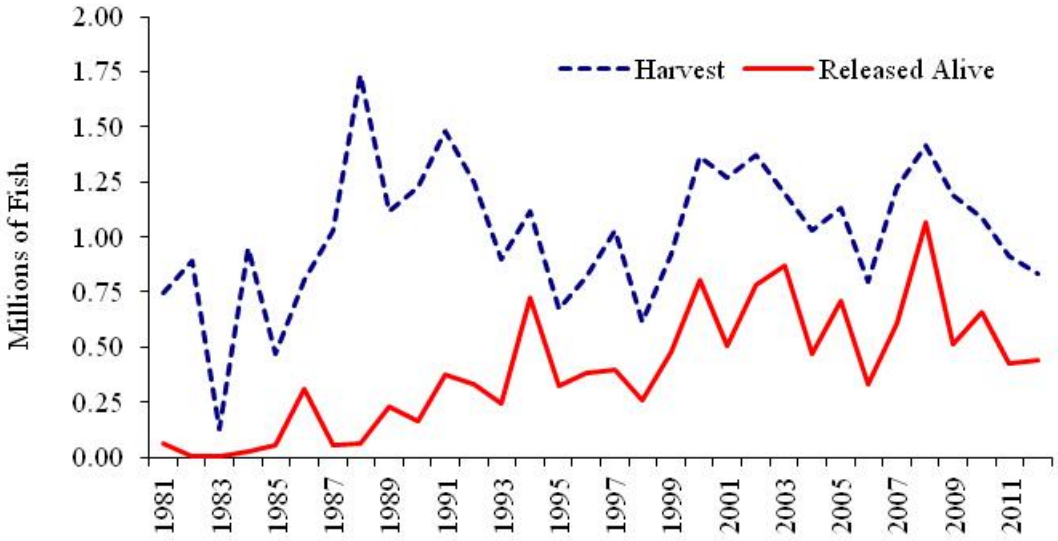


Figure 4. Recreational harvest and releases (numbers of fish) of Spanish mackerel, 1981-2012
(See Tables 4 and 6 for values and sources)



XI. Tables

Table 1. Summary of state regulations for Spanish mackerel in 2012
Notes: A commercial license is required to sell Spanish mackerel in all states; other general gear restrictions apply to the harvest of Spanish mackerel.

State	Recreational	Commercial
NY	14" TL, 15 fish	14" TL. 3,500 lb trip limit
NJ	14" TL, 10 fish	14" TL.
DE	14"TL, 15 fish	14" TL.
MD	14" TL, 15 fish	14" TL.
PRFC	14" TL, 15 fish	14" TL. Closure if/when federal waters close.
VA	14" TL, 15 fish	14" TL. 3,500 lb trip limit. Closure if/when federal waters close.
NC	12" FL, 15 fish	12" FL. 3,500 lb trip limit (Spanish and king mackerel combined). Purse gill nets prohibited.
SC	12" FL, 15 fish	12" FL. 15 fish. Closure if/when federal waters close.
GA	12" FL, 15 fish	12" FL. 15 fish. Closure from December 1 - March 15.
FL	12" FL, 15 fish. Transfer to other vessels at sea is prohibited. Cast nets less than 14' and beach or haul seines with no greater than 2" stretched mesh allowed	12" FL. Trip limits: April 1 until Nov. 30 - 3500 lb; Dec. 1 until 75% of adjusted quota reached – 3500 lb Mon-Fri. & 1500 lb Sat-Sun; >75% adjusted quota until quota filled -1500 lb; > 100% of adjusted quota - 500 lb. Restricted Species Endorsement Required Transfer of fish between vessels prohibited Allowed gear: beach or haul seine, cast net, hook and line, or spearing

Table 2. Commercial landings (pounds, calendar year) of Spanish mackerel by state, 1981-2012
(Source: NMFS Fisheries Statistics Division, 10/25/2013)

Year	MA	RI	NY	NJ	MD	VA	NC	SC	GA	FL	Total
1981			500	500		3,500	51,639		518	4,174,432	4,231,089
1982			1,000	200		12,700	189,217	1,081	745	3,758,603	3,963,546
1983	2,600	2,600	600	100		3,500	41,336	706		5,947,102	5,998,544
1984			300	100		10,000	127,467	1,321		2,397,373	2,536,561
1985			100			15,300	173,186	847		3,244,980	3,434,413
1986	600		3,200	1,500		168,400	232,197	6,375	1,335	4,003,738	4,417,345
1987	16,000	4,900	16,600	24,000	4,800	251,200	504,063	961	255	3,497,135	4,319,914
1988		3,400	19,200	16,900	4,300	291,600	438,222	1,029	726	3,071,687	3,847,064
1989	12,400	8,900	17,700	24,100	10,400	354,400	589,383	1,605		2,853,177	3,872,065
1990	6,585	5,530	24,329	28,336	43,411	491,651	838,914	384	491	1,979,081	3,418,712
1991	19,698	9,530	149,321	77,151	62,688	447,127	858,808	444	197	2,986,871	4,611,835
1992	608	2,277	31,873	51,751	37,930	271,313	738,362	1,952	71	2,022,961	3,159,098
1993	5	2,843	42,063	23,036	9,445	335,688	589,868	480	95	3,902,240	4,905,763
1994	3,273	893	124,733	19,915	3,363	376,818	531,355	362		3,099,780	4,160,492
1995		12,419	9,136	2,153	3,089	168,732	402,305			3,064,926	3,662,760
1996		2,523	17,980	40,821		283,750	401,546			2,244,667	2,991,287
1997	15	86	31,107	12,122	3,033	164,639	766,901			2,269,289	3,247,192
1998	71	109	37,238	13,242	13,204	121,109	372,440			2,498,461	3,055,874
1999	2,407	276	47,831	17,144	21,604	251,626	459,120			1,566,706	2,366,714
2000		188	35,825	11,757	26,607	168,679	659,431			1,675,473	2,577,960
2001		20,052	13,851	9,401	18,899	178,849	653,491			2,115,782	3,010,325
2002		65	18,741	11,196	20,725	102,454	698,463			1,995,212	2,846,856
2003	514	366	18,339	5,432	5,239	103,409	456,794			2,740,632	3,330,725
2004	198	5,971	16,921	3,060	4,881	66,482	456,243			3,066,186	3,619,942
2005		294	5,197	2,074	7,750	43,126	446,013			3,133,772	3,638,226
2006		1,486	5,720	1,456	290	43,192	470,669			3,142,721	3,665,534
2007		2,143	7,244	2,075	3,734	58,064	487,891			3,264,452	3,825,603
2008			2,513		6,192	156,011	415,416			2,262,661	2,844,947
2009		218	3,462	3,324	11,570	138,292	961,836			2,629,343	3,748,048
2010	0	522	3,713	829	4,939	47,562	911,878	0	0	3,553,155	4,522,605
2011			1,149	305	5,054	36,314	45,222			3,432,932	3,521,009
2012		2,135	2,294	2,806	3,630	18,317	916,439			2,596,981	3,542,602

Table 3. Coastwide commercial landings of Spanish mackerel by gear, 2012
(Personal communication with NMFS Fisheries Statistics Division, 11/13/2013)

Gear	Pounds	% of total
Gillnets	1,407,993	40.1%
Cast Nets	965,327	27.5%
Line Gears	1,056,938	30.1%
Pound Nets	54,035	1.5%
Other	25,306	0.7%
Total	3,509,599	

(Line gears include rod and reel, electric or hydraulic reel, troll lines and hand lines.)

Table 4. Recreational harvest (numbers) of Spanish mackerel by state, 1981-2012
(NMFS Fisheries Statistics Division, 10/24/2013)

Year	MA	RI	CT	NY	NJ	DE	MD	VA	NC	SC	GA	FL	Total
1981	4,277								231,744	25,058	1,786	485,395	748,260
1982									694,420	21,092	408	173,649	889,569
1983									6,156	3,279	2,109	117,532	129,076
1984									618,313	79,855	3,718	248,048	949,934
1985									344,965	36,606	4,809	84,226	470,606
1986					1,479		457	6,942	431,021	147,358	25,257	195,385	807,899
1987				1,417			8,036	1,520	815,920	65,846	20,925	118,184	1,031,848
1988								101,691	1,312,070	82,136	4,403	233,582	1,733,882
1989		320		1,010	22,067			73,236	679,360	121,115	7,444	213,665	1,118,217
1990		403		1,726	2,495	319	1,355	63,821	821,334	81,375	31,567	225,263	1,229,658
1991	7,071	78	4,173	7,608	25,071	2,054	41,250	68,102	676,717	132,198	2,391	517,290	1,484,003
1992				1,325	10,549	210	4,847	71,265	701,974	62,546	25,736	370,809	1,249,261
1993	188			2,681	3,457		43,050	73,832	451,523	92,621	12,979	219,458	899,789
1994					7,910		43,710	145,872	535,949	113,991	15,235	252,668	1,115,335
1995							26,216	86,899	285,882	34,355	16,726	226,334	676,412
1996					1,172			69,399	355,036	134,282	16,948	245,085	821,922
1997								68,517	585,765	101,067	28,396	246,885	1,030,630
1998					4,046	186	3,633	33,140	239,052	65,584	28,002	244,235	617,878
1999		438			1,335	226	1,220	75,972	476,019	27,477	9,007	327,621	919,315
2000	1,528			4,453	923		15,219	71,249	671,353	28,283	20,545	547,315	1,360,868
2001	2,561			802			8,025	29,590	400,706	43,501	11,013	774,065	1,270,263
2002								17,433	401,982	24,235	1,927	926,600	1,372,177
2003	3,373						6,975	17,063	349,170	24,879	11,235	784,385	1,197,080
2004	1,338				1,531		8,800	21,012	308,996	144,394	7,906	532,956	1,026,933
2005							20,792	20,525	331,601	70,273	12,140	676,973	1,132,304
2006					465		3,118	21,303	305,343	42,867	2,441	439,324	814,861
2007							12,360	821	491,357	104,741	13,795	601,335	1,224,409
2008					470		5,777	121,773	686,501	58,465	14,519	566,397	1,453,902
2009					655		24,725	16,560	703,393	60,925	6,306	375,512	1,188,076,
2010							7,526	20,524	470,212	93,574	4,723	494,586	1,091,145
2011							10,554	35,054	367,086	87,109	7,486	406,068	913,357
2012							2,962	11,874	491,238	80,204	2,119	246,866	835,263

Table 5. Recreational harvest (pounds) of Spanish mackerel by state, 1981-2012
(NMFS Fisheries Statistics Division, 10/8/2013)

Year	MA	RI	CT	NY	NJ	DE	MD	VA	NC	SC	GA	FL	Total
1981									423,801	53,292	4,306	808,808	1,290,207
1982									928,201	29,546	483	251,115	1,209,345
1983									14,725	8,274	4,198	199,331	226,528
1984									848,537	116,083	5,540	427,501	1,397,661
1985									507,545	34,445	3,547	152,113	697,650
1986					2,500		1,008	9,709	639,105	256,157	47,941	251,673	1,208,093
1987				2,890			14,345	2,011	1,296,732	117,053	40,681	230,725	1,704,437
1988								160,407	2,136,806	140,896	5,141	656,047	3,099,297
1989		847		3,560	35,415			81,107	877,911	197,982	6,162	303,485	1,506,469
1990				2,332	3,320	470	1,790	86,932	1,084,167	153,932	45,748	346,585	1,725,276
1991	26,327	251	16,958	19,612	36,096	3,062	57,249	72,708	1,056,524	291,717	3,717	887,777	2,471,998
1992				3,880	16,526	302	9,634	76,411	947,065	145,451	79,818	669,160	1,948,247
1993	580			7,590	5,280		68,757	93,272	664,815	135,287	22,209	439,555	1,437,345
1994					8,613		44,969	160,610	588,035	152,836	66,949	350,679	1,372,691
1995							34,705	110,433	329,466	40,995	12,072	302,632	830,303
1996								80,505	385,922	184,655	31,856	413,687	1,096,625
1997								22,233	862,497	143,297	37,877	400,148	1,466,052
1998					9,189	379	5,725	57,467	305,630	106,209	112,562	408,872	1,006,033
1999		1,303			2,207	240	1,715	79,601	469,258	44,917	10,031	578,123	1,187,395
2000	5,053			10,798	1,118		20,642	83,296	671,616	30,543	47,137	946,395	1,816,598
2001	10,351			1,168			14,526	42,046	499,829	46,945	23,056	1,232,506	1,870,427
2002								12,163	475,742	47,057	4,795	1,475,232	2,014,989
2003							9,762	22,031	446,052	29,107	34,855	1,021,204	1,563,011
2004					3,078		14,434	29,244	558,968	147,609	11,799	915,099	1,680,231
2005							38,946	28,192	359,927	138,517	16,296	1,088,720	1,670,598
2006							6,400	46,832	454,749	83,069	2,487	807,327	1,400,864
2007							25,276	957	729,687	119,207	26,513	1,003,340	1,904,980
2008					741		11,550	160,250	783,330	75,583	31,041	930,923	1,993,418
2009					913		42,300	26,471	892,632	101,614	13,272	708,270	1,785,472
2010					0		13,995	26,338	582,550	136,648	5,168	1,034,480	1,799,179
2011					0		22,630	41,325	194,521	72,631	9,439	873,604	1,214,150
2012					0		5,223	17,806	665,168	98,316	4,536	412,001	1,203,050

Table 6. Recreational releases (numbers) of Spanish mackerel by state, 1981-2012
(NMFS Fisheries Statistics Division, 10/24/2013)

Year	MA	RI	CT	NY	NJ	DE	MD	VA	NC	SC	GA	FL	Total
1981									5,616			56,374	61,990
1982												6,613	6,613
1983											515	4,929	5,444
1984									2,931	1,300		21,797	26,028
1985									27,753	3,862		23,316	54,931
1986								74	280,252	7,879	605	20,469	309,279
1987								13,947	28,136	5,506	2,916	7,197	57,702
1988									17,413	27,019	2,456	18,334	65,222
1989								10,286	64,749	73,983	391	83,682	233,091
1990				257				21,094	76,940	26,929		35,520	160,740
1991	859				2,674	1,092	1,747	28,777	133,601	19,331	57	190,602	378,740
1992	586							18,072	180,235	15,515	3,859	113,062	331,329
1993	584				1,160		2,684	70,081	81,927	15,966		74,052	246,454
1994				1,059	50,743			91,832	241,082	207,055		136,041	727,812
1995				7,297	1,269		1,562	24,467	145,845	14,159	2,594	129,469	326,662
1996								28,951	103,067	83,543	139	167,411	383,111
1997						338		22,658	140,704	62,356		168,815	394,871
1998							1,075	49,429	80,700	32,087	7,351	87,804	258,446
1999				1,415	2,670			36,276	205,870	46,400	495	185,106	478,232
2000	667					608	1,656	82,227	300,384	47,273	16,479	353,042	802,336
2001	2,271			1,657	4,907	825	7,265	30,158	160,591	9,711	3,188	285,738	506,311
2002							4,449	9,923	196,967	9,206	8,641	554,743	783,929
2003							6,994	20,539	164,787	223,116	6,501	445,965	867,902
2004	2,853						753	13,738	121,531	114,157	3,527	213,577	470,136
2005							4,937		174,140	153,584	8,983	367,862	709,506
2006							1,620	8,973	89,912	33,328	6,609	192,010	332,452
2007							13,657	7,837	277,710	83,513	27,643	197,856	608,216
2008							4,672	66,593	541,764	93,009	6,823	353,098	1,065,959
2009					13,363		6,906	24,848	241,540	49,472	627	175,042	511,798
2010							0	29,586	268,356	54,297	128	303,829	656,196
2011							0	28,526	170,926	67,144	10,131	147,399	424,126
2012							0	17,150	234,905	98,371	1,724	88,592	440,742