

REVIEW OF THE
INTERSTATE FISHERY MANAGEMENT PLAN FOR

SPANISH MACKEREL
(*Scomberomorus maculatus*)

2008 FISHING YEAR



Prepared by the
Spanish Mackerel Plan Review Team
Randy Gregory, North Carolina Division of Marine Fisheries
Nichola Meserve, Atlantic States Marine Fisheries Commission, Chair
Gregg Waugh, South Atlantic Fishery Management Council

Board Approved February 3, 2010

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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.

Under the federal FMP, the 2008-2009 fishing year ran from March 1, 2008 to February 28, 2009. The total allowable catch (TAC) was 7.04 million pounds, allocated on a 55:45 basis between the commercial fishery (3.87 million lbs) and the recreational fishery (3.17 million lbs). 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.

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. The FMP's objectives are to: (1) allow recovery of overfished populations and stabilize the stock at a level to produce maximum sustainable yield (MSY); (2) achieve compatible management throughout the range of the stock; (3) provide a flexible management system responsive to changes in the fishery and/or information; (4) promote cooperative interstate research and comprehensive monitoring activities and establish mandatory, timely reporting for quota monitoring; (5) minimize disruption of traditional fisheries and markets; and (6) minimize waste in the fishery. See Table 1 for state Spanish mackerel regulations in 2008.

II. Status of the Stocks

The Atlantic coast Spanish mackerel resource is not experiencing overfishing, but whether the stock is overfished or not is unknown (SAFMC 2008). Additionally, annual estimates of fishing mortality (F) and biomass (B) are unavailable. However, the time series of F and B estimates relative to their maximum sustainable yield (MSY) benchmarks does provide general information about stock trends. The overfishing ratio (F/F_{msy}) shows that fishing mortality increased from the late 1970s through 1991 but then declined (Figure 1). 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 (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 2008 are estimated at 4.83 million pounds (compared to the 7.04 million pound limit). The commercial fishery harvested approximately 71% of the total, and the recreational fishery about 29%. These values match the average contribution of each sector from 1981-2007.

From 1960 to 2008, 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 3.63 million pounds (Figure 3). Coastwide commercial landings have been below 4 million pounds since 1995; this coincided with the entanglement net ban in Florida. Gill nets were the dominant commercial gear in Florida before this ban, since which the use of cast nets has increased. Coastwide, cast nets were used to take 25% of the commercial harvest in 2008, as compared to the 40% taken with gillnets and 25% taken with line gears (Table 3). The 2008 commercial landings were 2.84 million pounds, of which 2.26 million pounds were landed in Florida (80% of the harvest). North Carolina harvested nearly 15% of the total 2008 landings and Virginia about 5% (Table 2).

Recreational anglers harvested an estimated 1.43 million Spanish mackerel (1.99 million pounds) in 2008, about 5% more fish than in 2007 (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 (86% by number since 1981). In 2008, Florida harvested 39% of the total number of fish and North Carolina 47%. 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 2008 through the SouthEast Data, Assessment, and Review (SEDAR) process (SAFMC 2008). The input data (through 2007) were applied to four models, with a statistical catch at age model being the primary model. The Review Panel concluded that the statistical catch at age model could be used to determine if overfishing is occurring, but that it could not provide annual estimates of fishing mortality or biomass or be used to determine if the stock is overfished. This conclusion was based on the degree of uncertainty in the input data (i.e., historical recreational catch and bycatch in shrimp fisheries), sensitivity to model assumptions (e.g., uncertainty about how much importance to place on different sources of information), and lack of fishery-independent indices of adult population size. None of the other three models was deemed adequate or appropriate as a standalone stock assessment model.

The Council's Scientific and Statistical Committee (SSC) reviewed the assessment during its December 2008 meeting and accepted the SEDAR 17 Spanish Mackerel stock assessment as best available science. The SSC concurred with the Review Panel's conclusion that the stock is not experiencing overfishing, but the model and underlying data are insufficient to make biomass-based determinations.

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

Omnibus Amendment (Interstate)

In October 2008, the Management Board initiated the development of an amendment to the Spanish Mackerel FMP to address three issues: compliance measures (because the current plan's measures are recommended), consistency with federal management in the exclusive economic zone (because the plan is intended to track federal Spanish mackerel measures), and alignment with Commission standards (because the current plan does not include *de minimis* criteria and other standard elements).

As the amendment process was getting underway, the fact was raised that the FMPs for two other species under the Management Board's purview do not include monitoring, management, or reporting requirements. Like the Spanish Mackerel FMP, both the Spot and the Spotted Seatrout FMPs were adopted prior to the enactment of the Atlantic Coastal Fisheries Cooperative Management Act and thus include only recommended measures. The three FMPs were also prepared prior to the adoption of the Commission's Interstate Fishery Management Program Charter, which provides standards and procedures for the development of interstate FMPs. The decision was thus made in August 2009 to expand the previously initiated amendment for Spanish mackerel to also address revisions to the spot and spotted seatrout management plans. The potential completion date for the omnibus amendment is in 2011.

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 to the beginning of the fishing year (as changed in Amendment 15).

Amendment 18 (Federal)

The Gulf of Mexico, South Atlantic, and Mid-Atlantic Fishery Management Councils are preparing Amendment 18 to the Coastal Migratory Pelagics FMP. The primary action under consideration would establish Annual Catch Limits (ACLs) and Accountability Measures (AMs) for the cobia, king mackerel, and Spanish mackerel. This action is being taken in response to the 2006 revisions to the Magnuson-Stevens Fishery Conservation and Management Act. The Reauthorized Act requires the establishment of a mechanism for specifying ACLs at a level that prevents overfishing and does not exceed the recommendations of the respective Council's Scientific and Statistical Committee (or other established peer review processes for managed species), and the establishment of AMs that ensure the ACLs are not exceeded or that corrective action to prevent overfishing is taken if they are exceeded. For Spanish mackerel, results of the SEDAR 17 stock assessment provide the basis for specifying the required metrics. Since none of the managed species under the Coastal Migratory Pelagics FMP are considered to be undergoing overfishing or are designated as overfished, the Councils have until sometime within the 2011 fishing year to implement ACLs and AMs.

VII. Implementation of FMP Compliance Requirements for 2008

There are no compliance measures in the FMP. However, in February 1994, the South Atlantic State/Federal Fisheries Management Board determined that the following recommendations in the FMP would be compliance measures if the FMP were mandatory: quota closures, 10 fish bag limit (later revised to 15 fish), 12-inch fork length minimum size, 3.5-inch minimum stretch mesh size for the directed gill net fishery, and commercial trip limits or landing restrictions. All states in the management unit have implemented a minimum size limit and recreational bag limit consistent with the recommendations. States with significant commercial landings have also implemented trip limits and/or close the commercial fishery when the annual allowable catch is taken.

VIII. Recommendations of the Plan Review Team

Management and Regulatory Recommendations

The Plan Review Team will provide input on management issues and options to consider in the Omnibus Amendment during the development of the draft amendment.

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).

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- 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).
- South Atlantic Fishery Management Council (SAFMC). 2008. Southeast Data, Assessment, and Review 17, Stock Assessment Report, South Atlantic Spanish Mackerel. Charleston (SC): SAFMC. 508 p.

X. Figures

Figure 1. Estimated time series of Atlantic coast Spanish mackerel fishing mortality relative to maximum sustainable yield (MSY) benchmark: overfishing ratio (F/F_{MSY}). Note that the SEDAR 17 Review Panel did not accept the annual estimates of F (SAFMC 2008).

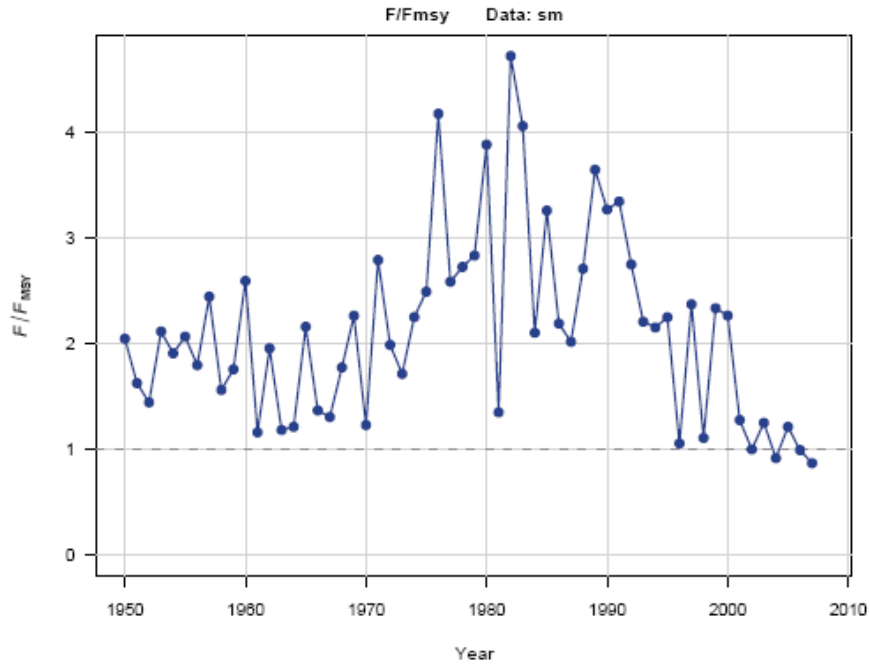


Figure 2. Estimated time series of Atlantic coast Spanish mackerel biomass relative to MSY benchmark: overfished ratio (B/B_{MSY}). Note that the SEDAR 17 Review Panel did not accept the annual estimates of B or a biomass-based stock determination (SAFMC 2008).

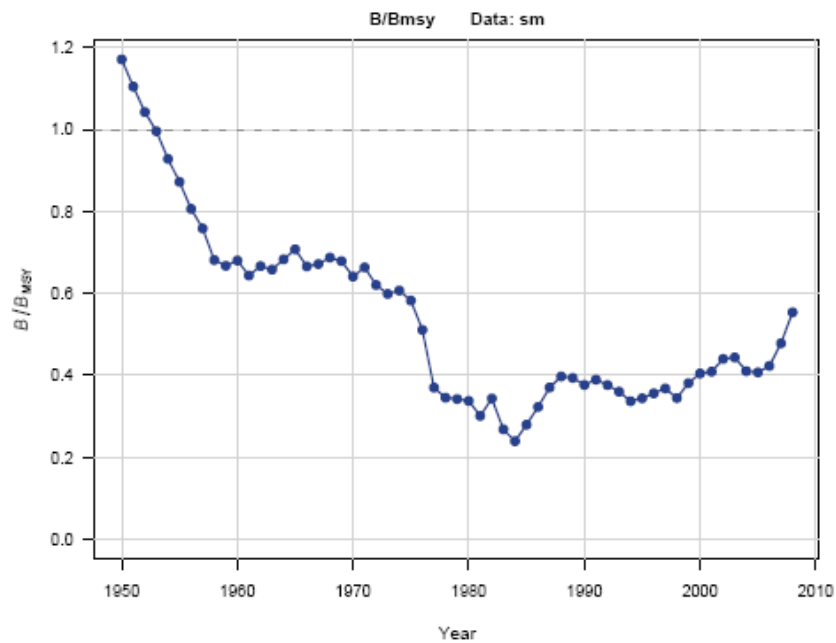


Figure 3. Commercial and recreational harvest (pounds) of Spanish mackerel, 1960-2008
 (Recreational data available from 1981-present only; see Tables 2 and 5 for values and sources)

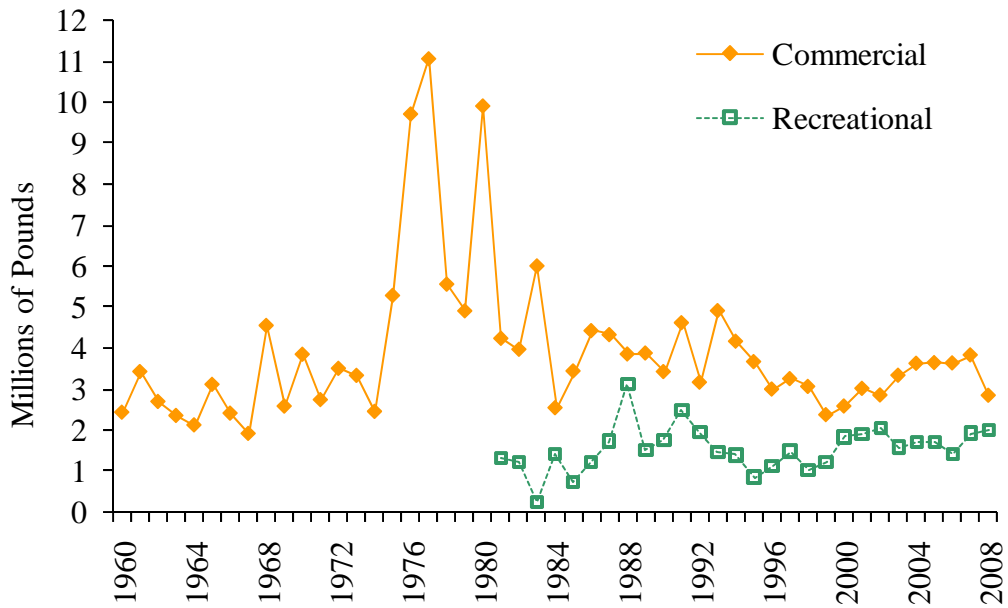
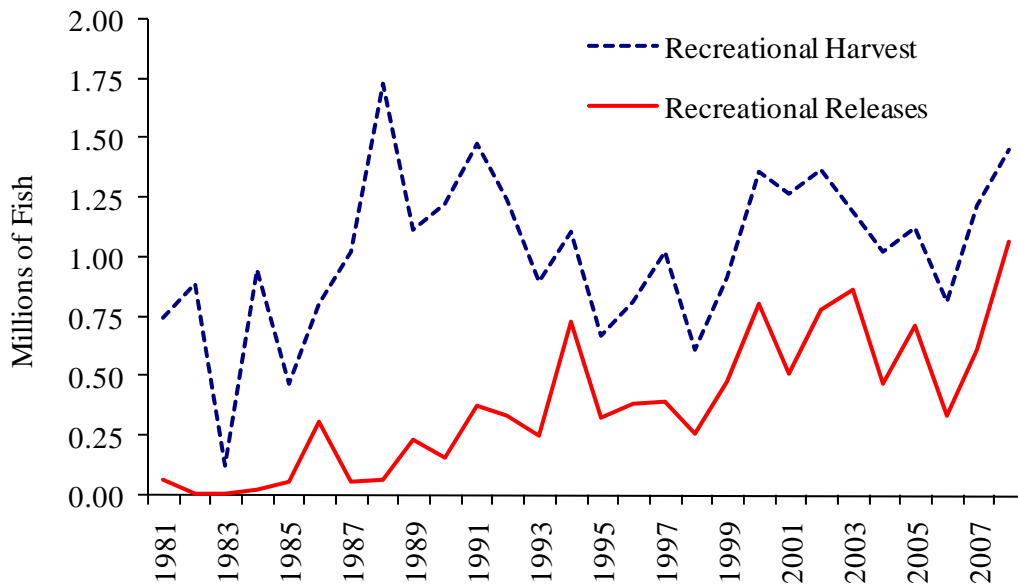


Figure 4. Recreational harvest and releases (numbers of fish) of Spanish mackerel, 1981-2008
 (See Tables 4 and 6 for values and sources)



XI. Tables

Table 1. Summary of state regulations for Spanish mackerel in 2008

Notes: commercial license 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, 10 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.	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.

Table 2. Commercial landings (pounds, calendar year) of Spanish mackerel by state, 1981-2008
(Personal communication with NMFS Fisheries Statistics Division, 11/18/09)

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	178,610	653,491			2,115,782	3,010,086
2002		65	18,741	11,196	20,725	102,417	698,463			1,995,212	2,846,819
2003	514	366	18,339	5,432	5,239	103,401	456,794			2,740,632	3,330,717
2004	198	5,971	16,921	3,060	4,881	66,979	456,243			3,066,356	3,620,609
2005		294	5,197	2,074	7,750	43,579	446,013			3,133,793	3,638,700
2006		1,486	5,720	1,456	290	8,841	470,669			3,142,737	3,631,199
2007		2,143	7,244	2,075	3,734	58,060	487,891			3,264,471	3,825,618
2008			2,513		6,192	153,654	415,416			2,262,673	2,840,448

Table 3. Coastwide commercial landings of Spanish mackerel by gear, 2008
(Personal communication with NMFS Fisheries Statistics Division, 11/18/09)

Gear	Pounds	% of total
Gillnets	1,076,710	40.0%
Cast Nets	678,879	25.2%
Line Gears	673,450	25.0%
Pound Nets	197,169	7.3%
Other	62,454	2.3%
Total	2,688,662	

(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, 1981-2008

(Personal communication with NMFS Fisheries Statistics Division, 11/18/09)

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

Table 5. Recreational harvest (pounds) of Spanish mackerel by state, 1981-2008

(Personal communication with NMFS Fisheries Statistics Division, 11/18/09)

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

Table 6. Recreational releases (numbers) of Spanish mackerel by state, 1981-2008

(Personal communication with NMFS Fisheries Statistics Division, 11/18/09)

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