

2010 REVIEW OF THE
ATLANTIC STATES MARINE FISHERIES COMMISSION
FISHERY MANAGEMENT PLAN FOR

SPANISH MACKEREL
(Scomberomorus maculatus)

2009 FISHING YEAR



Prepared by the
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Table of Contents

I. Status of the Plan 3

II. Status of the Stocks..... 3

III. Status of the Fishery..... 4

IV. Status of Assessment Advice 4

V. Status of Research and Monitoring..... 5

VI. Status of Management Measures 5

VII. Implementation of FMP Compliance Requirements for 2008..... 6

VIII. Recommendations of the Plan Review Team 6

IX. References..... 7

X. Figures..... 9

XI. Tables 11

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 2009-2010 fishing year ran from March 1, 2009 to February 29, 2010. 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 (3.16 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 2009 and 2010.

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 2009 are estimated at 5.53 million pounds (compared to the 7.04 million pound limit). The commercial fishery harvested approximately 70.5% of the total, and the recreational fishery about 29.5%.

From 1960 to 2009, 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 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 2009, as compared to the 40% taken with gillnets and 21% taken with line gears (Table 3). The 2009 commercial landings were 3.75 million pounds, of which 2.63 million pounds were landed in Florida (70% of the harvest). North Carolina harvested approximately 25% of the total 2009 landings and Virginia about 4% (Table 2).

Recreational anglers harvested an estimated 1.19 million Spanish mackerel (1.79 million pounds) in 2009, about 18% 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% of total landings since the time series began in 1981. In 2009, Florida harvested 32% 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 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 with 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 2009

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.

2010 REVIEW OF THE ASMFC SPANISH MACKEREL FMP

- 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.

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2010 REVIEW OF THE ASMFC SPANISH MACKEREL FMP

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- 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).
- 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).

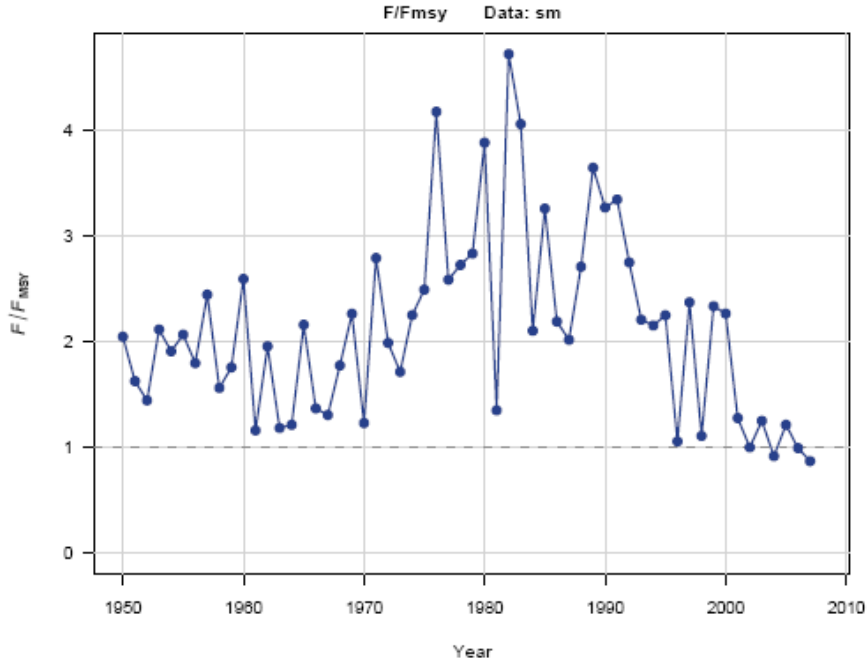


Figure 2. Estimated time series of Atlantic coast Spanish mackerel biomass relative to MSY benchmark: overfished ratio (B/B_{MSY}). Note that the SEDAR 17 Review Panel did not accept the annual estimates of B or a biomass-based stock determination (SAFMC 2008).

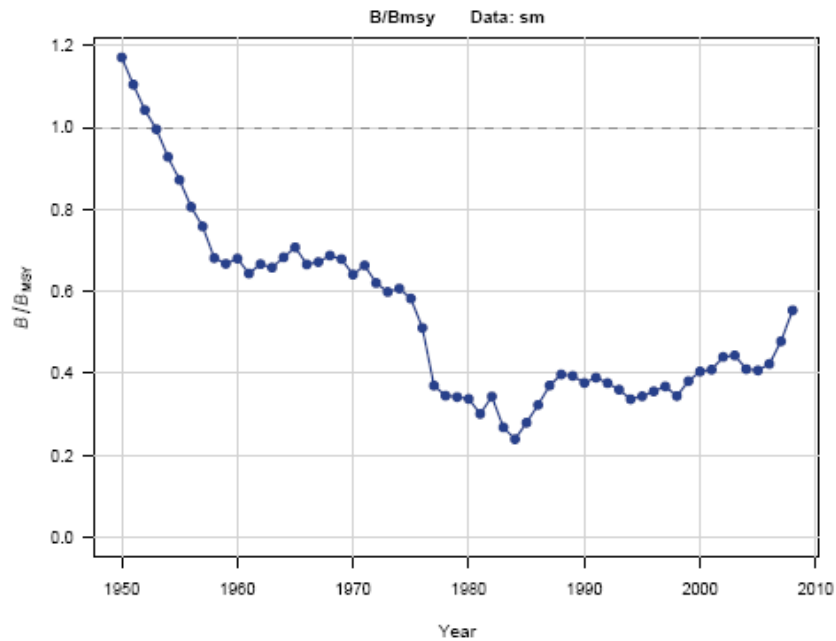


Figure 3. Commercial and recreational harvest (pounds) of Spanish mackerel, 1960-2009
 (Recreational data available from 1981-present only; see Tables 2 and 5 for values and sources)

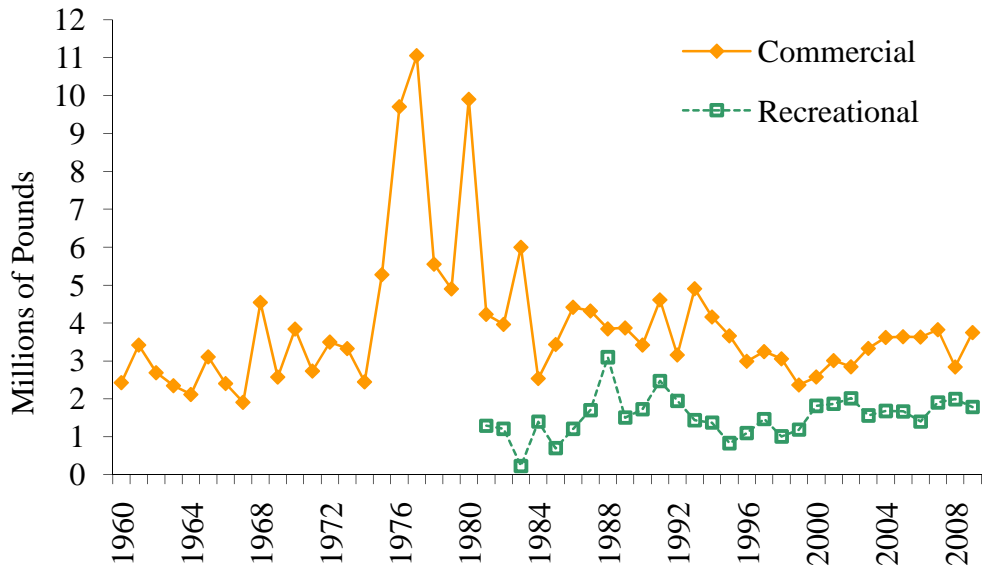
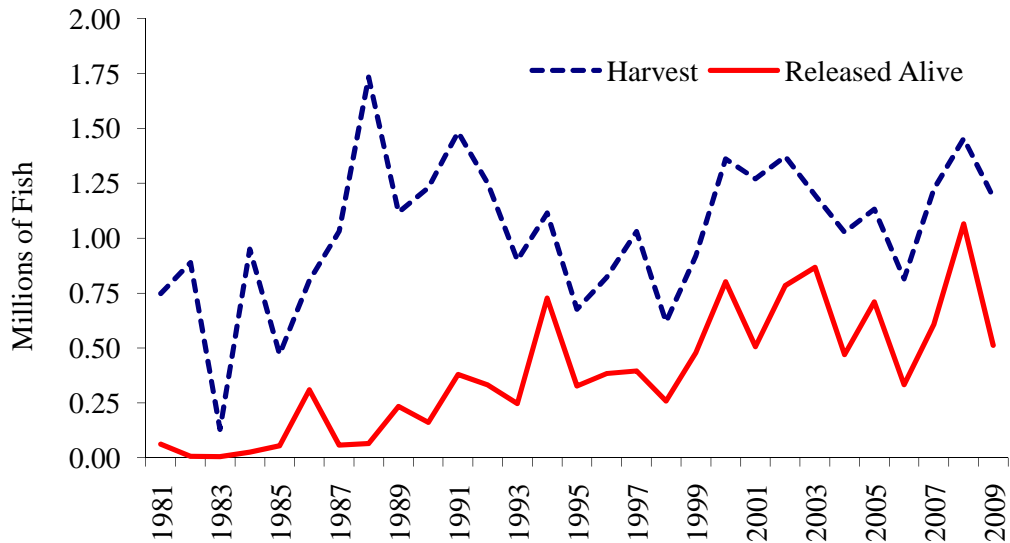


Figure 4. Recreational harvest and releases (numbers of fish) of Spanish mackerel, 1981-2009
 (See Tables 4 and 6 for values and sources)



XI. Tables

Table 1. Summary of state regulations for Spanish mackerel in 2009

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, 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. 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 |

2010 REVIEW OF THE ASMFC SPANISH MACKEREL FMP

Table 2. Commercial landings (pounds, calendar year) of Spanish mackerel by state, 1981-2009
 (Personal communication with NMFS Fisheries Statistics Division, 01/18/11)

| 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 |
| 2009 | | 218 | 3,462 | 3,324 | 11,570 | 138,147 | 961,836 | | | 2,629,351 | 3,747,911 |

Table 3. Coastwide commercial landings of Spanish mackerel by gear, 2009
 (Personal communication with NMFS Fisheries Statistics Division, 01/18/11)

| Gear | Pounds | % of total |
|--------------|------------------|-------------------|
| Gillnets | 1,373,036 | 40.2% |
| Cast Nets | 947,004 | 27.8% |
| Line Gears | 705,613 | 20.7% |
| Pound Nets | 367,273 | 10.8% |
| Other | 19,536 | 0.6% |
| Total | 3,412,462 | |

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

2010 REVIEW OF THE ASMFC SPANISH MACKEREL FMP

Table 4. Recreational harvest (numbers) of Spanish mackerel by state, 1981-2009

(Personal communication with NMFS Fisheries Statistics Division, 01/18/11)

| 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 REVIEW OF THE ASMFC SPANISH MACKEREL FMP

Table 5. Recreational harvest (pounds) of Spanish mackerel by state, 1981-2009

(Personal communication with NMFS Fisheries Statistics Division, 01/18/11)

| 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 REVIEW OF THE ASMFC SPANISH MACKEREL FMP

Table 6. Recreational releases (numbers) of Spanish mackerel by state, 1981-2009

(Personal communication with NMFS Fisheries Statistics Division, 01/18/11)

| 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 |

