Spanish Mackerel
Scombermorus maculatus

ASMFC Management Area:
NY - FL

Interesting Facts:
*** Spanish mackerel have been known to establish permanent resident populations in particularly favorable spots such as drop-offs.**
*** They can leap up to 6 feet in the air when taking rapidly trolled bait.**
*** Fish can grow up to 15 inches in the first year and reach a maximum length of 3 feet.**
*** Fish form large schools which travel great distances over a short period of time.**

Largest Recorded: 13 pounds, Ocracoke Inlet, NC, 1987

Age/Length at Maturity: 2 years/13.8 - 14.8 inches

Age at Recruitment: 0-2 years due to rapid growth in first year

Oldest Recorded: 5 years

Stock Status: Not overfished not experiencing overfishing

Species Profile: Spanish Mackerel
Popular South Atlantic Species Comes Under ACFCMA Management

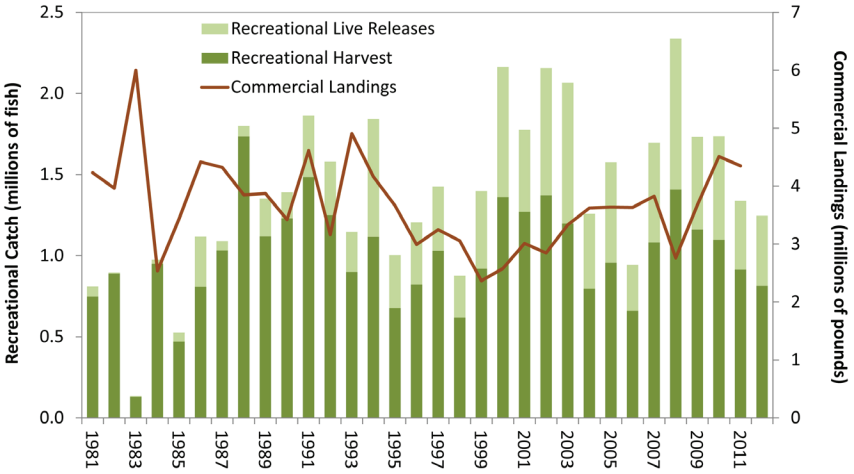
Introduction
Spanish mackerel, *Scombermorus maculatus*, is a popular recreational and commercial fish harvested throughout the South Atlantic and gaining in importance in the Mid-Atlantic. Complementary management by the Commission in state waters (0 – 3 miles from shore) and the South Atlantic Fishery Management Council (Council) in federal waters (3 – 200 miles from shore) has resulted in stock rebuilding with Spanish mackerel not overfished nor experiencing overfishing. In 2011, the Commission adopted the Omnibus Amendment to the Interstate Fishery Management Plans (FMP) for Spanish Mackerel, Spot, and Spotted Seatrout, further aiding complementary management through adaptive management measures to address changes in the fishery or stock condition as well as a process for Board review and action in response to changes in federal regulations.

Life History
A fast swimming fish, known to gather in large schools and travel great distances, Spanish mackerel are found throughout the coastal waters of the eastern US and the Gulf of Mexico. These fish winter off Florida, moving northward to North Carolina in early April and to New York in June. Later in the year, as waters cool, Spanish mackerel return to warm Florida waters.

Their migratory and schooling nature often frustrate anglers, as large congregations of fish can be found in an area one day and gone the next. Spanish mackerel prefer open water but are sometimes found over deep grass beds and reefs, as well as in shallow estuaries. They live for five to eight years. Females spawn by age two, releasing between half a million and 1.5 million eggs. Larvae grow quickly, reaching lengths of 12 to 15 inches in a year. Older fish may weigh several pounds. Both juvenile and adult Spanish mackerel are carnivorous, feeding primarily on other fish such as menhaden, anchovy, herring, shad, pompano, and jacks, as well as shrimp and squid. Sharks are a major predator of Spanish mackerel.

Commercial and Recreational Fisheries
The commercial fishery began about 1850 off Long Island and New Jersey, and was well established in the Mid-Atlantic and Chesapeake Bay by the late 1870s. Soon after, the major areas of production changed to the South Atlantic and Gulf of Mexico, and the waters off Florida became the major commercial fishing area by 1920. Troll lines were used during the fishery's infancy, then pound nets and gillnets too, with gillnets becoming the principal gear in the Florida fishery up to the mid-1990s. In July 1995, Florida instituted a net ban, which shifted gillnet fishing into federal waters and led to an increase in cast net fishing in state waters. Currently, purse seines and drift gillnets south of Cape Lookout, North Carolina are prohibited.

Figure 1. Commercial Landings and Recreational Catch (Harvest + Releases) of Spanish Mackerel on the Atlantic Coast
Source: Personal communication from NMFS Fisheries Statistics Division, Silver Spring, MD, 2013



Timeline of Management Actions: FMP (1990); Omnibus Amendment (2011)

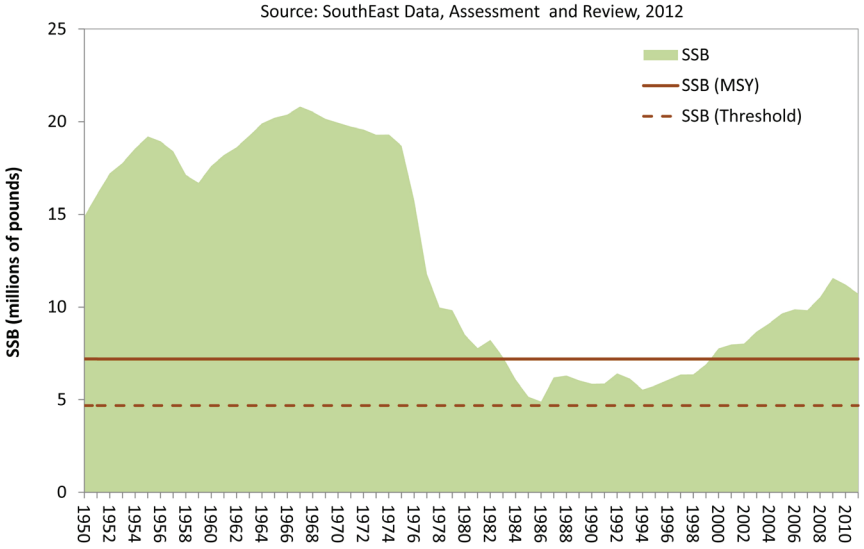
Since 1950, coastwide commercial landings have generally fluctuated between two and six million pounds, with the exception of peak harvests of nine to 11 million pounds in 1976, 1977, and 1980. The Atlantic coast commercial fishery averaged 2.82 million pounds annually over the last ten years, with landings of 4.3 million pounds in 2011.

Spanish mackerel support recreational fisheries in the South and Mid-Atlantic regions, with the most extensive fisheries occurring in Florida and North Carolina. Since 1981, landings in these two states generally contributed 70 to 95% of the coastwide harvest. Anglers target Spanish mackerel for sport and also to use as bait for big game fishing. Over the past ten years, recreational anglers harvested an average of 1.5 million pounds per year. The peak harvest occurred in 1988, when anglers harvested over three million pounds. Part of the recreational fishery is catch and release; in the last ten years, anglers released on average 34% of the number of fish caught due to regulations or by personal choice (see Figure 1).

Stock Status

Stock assessments are conducted by the joint Mackerel Stock Assessment Panel (MSAP) of the Gulf of Mexico and South Atlantic Fishery Management Councils. In 2012, Spanish mackerel was assessed and peer reviewed through the SouthEast Data, Assessment and Review. The results of the assessment indicate that the stock is not overfished (see Figure 2) and it is not undergoing overfishing. The stock biomass remained at a low level from the mid-1980s to the mid-1990s and has been steadily increasing since 1995. Fishing mortality has been decreasing since the early 1990s (see side-bar for more information on the recent assessment).

Figure 2. Spanish Mackerel Spawning Stock Biomass (SSB)
Source: SouthEast Data, Assessment and Review, 2012



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Atlantic Coastal Management

Spanish mackerel is one of several species that the Commission manages co-operatively with the Council. Since adoption of the Interstate FMP in 1990, South and Mid-Atlantic states have responded to the plan's recommendations through implementation of bag limits, size limits, commercial trip limits, and/or provisions for seasonal closures to complement the Council's measures for federal waters. However, all measures contained within the plan were voluntary. State compliance with any management measures in the current or

Stock Assessment Q&A

Spanish mackerel are managed as two stocks -- a Gulf of Mexico stock and an Atlantic stock. The Atlantic Spanish mackerel recently went through the SouthEast Data, Assessment, and Review (SEDAR) process. The assessment for the Gulf of Mexico stock was not ready in time for the review workshop in 2012, so only the results of the Atlantic Spanish mackerel stock assessment are provided below.

What Data Were Used?

The stock assessment used both fishery-dependent and independent data, including information on Atlantic Spanish mackerel biology and life history. Fishery-dependent data came from recreational and commercial fisheries, while fishery-independent data were collected through scientific research and surveys. The Atlantic stock of Spanish mackerel was considered to be all fish caught south of US Highway 1 through the Florida Keys, northward along the east coast of Florida to Maine.

Fishery-dependent data

The assessment used landings from commercial fisheries, including gillnet, pound net, cast net, and handline fisheries), as well as estimates of commercial discards. Records of commercial landings go back to 1889, but data prior to 1950 were not considered reliable enough to use in the assessment. The assessment developed estimates of shrimp trawl bycatch of Spanish mackerel from observer data and data on shrimping effort. Recreational catch came from the Marine Recreational Fishery Statistics Program/ Marine Recreational Information Program (MRFSS/MRIP) from 1981 to the present. The assessment used data from the US Fish and Wildlife Service's National Survey of Fishing, Hunting, and Wildlife-Associated Recreation Survey to estimate recreational landings prior to 1981.

Biological samples from commercial and recreational landings were used to describe the age structure and sex ratio of the catch. The assessment also used two fishery-dependent indices of abundance: an index

future management plan could not be enforced through the Atlantic Coastal Fisheries Cooperative Management Act until the plans were modified to incorporate the standards and procedures described in the Commission's Interstate Fishery Management Program Charter (1995). Additionally, the Spanish Mackerel FMP was intended to achieve compatible management throughout the species range, including both state and federal waters. The management measures in the original FMP were not consistent with management of Spanish mackerel in federal waters.

Photo © Dean Mitchell.

To remedy this, the South Atlantic Board approved the Omnibus Amendment for Spot, Spotted Seatrout, and Spanish Mackerel in 2011. The Amendment updates all three species plans with requirements of the Commission's Interstate Fisheries Management Program Charter. Specific to Spanish mackerel, the Amendment includes commercial and recreational management measures, adaptive management measures, and a process for Board review and action in response to changes in the federal regulations. This will allow for complementary management throughout the range of the species. The Omnibus Amendment includes provisions that are consistent with the Council's recently approved Amendment 18. The Omnibus Amendment was implemented by the states on July 1, 2012.

Spanish Mackerel Stock Assessment Q&A (continued)

of catch-per-unit-effort (CPUE) from the Florida trip ticket handline/trolling data and an index of recreational CPUE from the MRFSS/MRIP data.

Fishery-independent Data

The assessment used indices of age-0 and age-1 Spanish mackerel abundance from the Southeast Area Monitoring and Assessment Program trawl survey, which samples the coastal zone of the South Atlantic Bight between Cape Hatteras, North Carolina, and Cape Canaveral, Florida.

What Models Were Used?

The assessment used the Beaufort Assessment Model (BAM), which is a statistical catch-at-age model. In addition, a surplus production model (ASPIC) was run as a complementary model to verify that the BAM was producing reasonable results.

What is the Status of the Stock?

Atlantic Spanish mackerel are not overfished and overfishing is not occurring. Female spawning stock biomass in 2011 was estimated to be 10.7 million pounds, above the SSB_{MSY} of 7.2 million pounds. The current fishing mortality rate was 0.36, below the F_{MSY} rate of 0.69.

What's Needed to Improve Future Assessments?

The assessment team and review panel made several recommendations to improve future assessments. Increased observer coverage is needed to develop better estimates of commercial discards and shrimp trawl bycatch. A fishery-independent survey is needed to better track trends in abundance of Spanish mackerel and other coastal pelagic species in the South Atlantic. The genetic work used to split the Atlantic and Gulf stocks and estimate mixing rates also should be updated with newer, more sensitive methods.

For more information, consult the Stock Assessment Report:
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

For more information on stock assessments in general, see the ASMFC Guide to Fisheries Science and Stock Assessments, available online at http://www.asmfc.org/publications/GuideToFisheriesScienceAndStockAssessments.pdf.