

**FISHERY MANAGEMENT PLAN UPDATE
SPANISH MACKEREL
AUGUST 2020**

STATUS OF THE FISHERY MANAGEMENT PLAN

Fishery Management Plan History

Original FMP Adoption:	February 1983
Amendments:	Amendment 2 – July 1987 Amendment 3 – August 1989 Amendment 4 – October 1989 Amendment 5 – August 1990 Amendment 6 – December 1992 Amendment 8 – March 1998 Amendment 9 – April 2000 Amendment 10 – July 2000 Amendment 11 – December 1999 Amendment 14 – August 2005 Amendment 15 – February 2004 Amendment 18 – January 2012 Amendment 19 – July 2010 Amendment 20A – August 2014 Framework Action 2013 – December 2014 Amendment 20B – March 2015 Framework Amendment 1 – December 2014 Amendment 22 – January 2014 Amendment 23 – January 2014 Framework Amendment 5 – August 2017 Omnibus Amendment – August 2011 Addendum I to Omnibus Amendment – August 2013
Revisions:	None
Supplements:	None
Information Updates:	None
Schedule Changes:	None
Next Benchmark Review:	The next assessment has been scheduled for 2021.

Spanish mackerel is managed under the Atlantic States Marine Fisheries Commission’s (ASMFC) Fishery Management Plan (FMP) for Spanish Mackerel and the South Atlantic

Fishery Management Council's (SAFMC) Coastal Migratory Pelagics FMP (ASMFC 2011; SAFMC 1982). The original Gulf and South Atlantic fishery management councils' fishery management plan (FMP) for Coastal Migratory Pelagic Resources (mackerels) was approved in 1982 (SAMFC 1982) and went into effect in 1983. This plan treated Spanish mackerel as one U.S. stock. Allocations were established for recreational and commercial fisheries, and the commercial allocation was divided between net and hook and line fishermen. The plan also established procedures for the Secretary of Commerce to act by regulatory amendment to resolve possible future conflicts in the fishery, such as establish fishing zones and local quotas to each gear or user group. Numerous amendments have been implemented since the first FMP.

Amendment 2 revised Spanish mackerel maximum sustainable yield (MSY) downward, recognized two migratory groups, and set commercial quotas and bag limits (SAFMC 1987). Charter boat permits were required, and it was clarified that total allowable catch (TAC) for overfished stocks must be set below the upper range of acceptable biological catch (ABC). The use of purse seines on overfished stocks was prohibited.

Amendment 3 prohibited drift gill nets for coastal pelagics and purse seines and run-around gill nets for the overfished groups of mackerels (SAMFC 1989a). The habitat section of the FMP was updated and vessel safety considerations were included in the plan. A new objective to minimize waste and bycatch in the fishery was added to the plan.

Amendment 4 reallocated Spanish mackerel equally between recreational and commercial fishermen on the Atlantic group with an increase in TAC (SAFMC 1989b).

Amendment 5 extended the management area for the Atlantic groups of mackerels through Mid-Atlantic Fishery Management Council (MAFMC) jurisdiction (SAMFC 1990). It revised problems in the fishery and plan objectives, revised the definition of "overfishing", provided that the SAFMC will be responsible for pre-season adjustments of TACs and bag limits for the Atlantic migratory groups of mackerels, redefined recreational bag limits as daily limits, created a provision specifying that the bag limit catch of mackerel may be sold, provided guidelines for corporate commercial vessel permits, and included a definition of "conflict" to provide guidance to the Secretary.

Amendment 6 identified additional problems and an objective in the fishery, provided for rebuilding overfished stocks of mackerels within specific periods, provided for biennial assessments and adjustments, provided for more seasonal adjustment actions, including size limits, vessel trip limits, closed seasons or areas, and gear restrictions, provided for commercial Atlantic Spanish mackerel possession limits, changed commercial permit requirements to allow qualification in one of three preceding years, discontinued the reversion of the bag limit to zero when the recreational quota is filled, modified the recreational fishing year to the calendar year, and changed all size limit measures to fork length only (SAMFC 1992).

Amendment 8 identified additional problems in the fishery, specified allowable gear, revised qualifications for a commercial permit, revised the seasonal framework procedures to: provide for consideration of public comment, redefine overfishing and allow for adjustment by

framework procedure, allow changes in allocation ratio of Atlantic Spanish mackerel, allow setting zero bag limits, and allow gear regulation including prohibition (SAMFC 1996).

Amendment 9 allowed possession of cut-off (damaged) Spanish mackerel that comply with the minimum size limits and the trip limits in the Gulf, Mid-Atlantic, or South Atlantic exclusive economic zone (EEZ) (sale of such cut-off fish is allowed as long as such fish are within the existing allowance for possession) (SAFMC 2000).

Amendment 10 designated Essential Fish Habitat (EFH) and EFH-Habitat Areas of Particular Concern (HAPC) for coastal migratory pelagics (SAFMC 1998a).

Amendment 11 amended the FMP as required to make definitions of MSY, optimal yield (OY), overfishing and overfished consistent with National Standard Guidelines; identified and defined fishing communities and addressed bycatch management measures (SAFMC 1998).

Amendment 14 established a three-year moratorium on the issuance of for-hire (charter vessel and head boat) permits for coastal migratory pelagic species in the Gulf of Mexico unless sooner replaced by a comprehensive effort limitation system. This resulted in separate for-hire permits for the Gulf and South Atlantic. The control date for eligibility was established as March 29, 2001 (SAFMC 2002b). The amendment also includes other provisions for eligibility, application, appeals, and transferability of permits.

Amendment 15 changed the fishing year to March 1 through February 28/29 for Atlantic group king and Spanish mackerels (SAFMC 2004).

Amendment 17 (SAFMC 2006) established a permanent limited entry system for Gulf of Mexico coastal migratory pelagics for-hire (charter and headboat) permits, building on the moratorium established under Amendment 14.

Amendment 18 established Annual Catch Limits (ACLs), Annual Catch Targets (ACTs) and accountability measures (AMs) for Spanish mackerel (SAFMC 2011) as required under the 2006 Magnuson Stevens Reauthorization Act.

Amendment 19 updated existing EFH and HAPC designations for South Atlantic species and prohibited the use of certain gear types within Deepwater Coral Habitat Areas of Particular Concern (SAFMC 2009).

Amendment 20A prohibits the sale of Spanish mackerel caught under the bag limit unless the fish are caught as part of a state-permitted tournament and the proceeds from the sale are donated to charity (SAFMC 2014).

Framework Action 2013 established provisions to allow for the transfer at sea of Spanish mackerel caught in gill nets when one set exceeds the trip limit and modified the trip limit for the Florida East Coast subzone by moving the potential step-up to 75 fish/day in the last month of the season and if less than 70 percent of the subzone's ACL has been met.

Amendment 20B creates Northern and Southern Zones for Atlantic migratory group Spanish mackerel. National Oceanic and Atmospheric Administration Fisheries will close each zone when the respective quota is met or expected to be met (SAMFC 2015). The dividing line between the zones is at the North Carolina/South Carolina state line.

Framework Amendment 1 (SAFMC 2014) updated the ACLs and ACTs for Gulf and Atlantic migratory groups of Spanish mackerel based on the results of the 2012 stock assessment.

Amendment 22b. modified headboat reporting regulations to require weekly electronic reporting of all SAFMC managed species (SAFMC 2013).

Amendment 23 (SAFMC 2013) required dealers to possess a federal Gulf and South Atlantic universal dealer permit to purchase king and Spanish mackerel and required weekly electronic dealer reporting. It also required federally-permitted king and Spanish mackerel fishermen to sell only to a federally-permitted dealer.

Framework Amendment 5 (SAFMC 2016) modifies the regulations that prohibit fishing for and retaining the bag limit of king and Spanish mackerel on recreational trips on vessels with federal commercial king mackerel and Spanish mackerel permits, when there is a commercial quota closure.

The ASMFC approved the Omnibus Amendment in 2011 (ASMFC 2011). The management goal for the Omnibus Amendment is to bring the Fishery Management Plan for Spanish Mackerel under authority of the Atlantic Coastal Fisheries Cooperative Management Act, providing for more efficient and effective management and changes to management in the future.

Addendum I to the Omnibus Amendment (ASMFC 2013) established a pilot program that would allow states to reduce the Spanish mackerel minimum size limit for the commercial pound net fishery to 11.5 inches during the summer months of July through September for the 2013 and 2014 fishing years only. In August 2015, the South Atlantic Board formally extended the provisions of Addendum I for the 2015, 2016 and 2017 fishing seasons. Reports by North Carolina, the only state to reduce their minimum size, are reviewed annually.

To ensure compliance with interstate requirements, North Carolina also manages this species under the North Carolina Fishery Management Plan for Interjurisdictional Fisheries (IJ FMP). The goal of the IJ FMP is to adopt fishery management plans, consistent with N.C. law, approved by the MAFMC, SAFMC, or the ASMFC by reference and implement corresponding fishery regulations in North Carolina to provide compliance or compatibility with approved fishery management plans and amendments, now and in the future. The goal of these plans, established under the Magnuson-Stevens Fishery Conservation and Management Act (federal council plans) and the Atlantic Coastal Fisheries Cooperative Management Act (ASMFC plans) are like the goals of the Fisheries Reform Act of 1997 to “ensure long-term viability” of these fisheries (NCDMF 2015).

Management Unit

The management unit is defined for South Atlantic Spanish mackerel within U.S. waters north of Miami-Dade/Monroe County line, Florida in the Atlantic Ocean.

Goal and Objectives

The goal of the FMP for Coastal Migratory Pelagics resources was to institute management measures necessary to prevent exceeding maximum sustainable yield (MSY), establish a mandatory statistical reporting system for monitoring catch, and to minimize gear and user conflicts (SAMFC 1982). Amendment 12 to the Gulf and South Atlantic fishery management councils' FMP for Coastal Migratory Pelagics lists eight plan objectives:

1. The primary objective of the FMP is to stabilize yield at MSY, allow recovery of overfished populations, and maintain population levels sufficient to ensure adequate recruitment.
2. To provide a flexible management system for the resource which minimizes regulatory delay while retaining substantial Council and public input in management decisions and which can rapidly adapt to changes in resource abundance, new scientific information, and changes in fishing patterns among user groups or by areas.
3. To provide necessary information for effective management and establish a mandatory reporting system.
4. To minimize gear and user group conflicts.
5. To distribute the TAC of Atlantic migratory group Spanish mackerel between recreational and commercial user groups based on the catches that occurred during the early to mid-1970s, which is prior to the development of the deep water run-around gill net fishery and when the resource was not overfished.
6. To minimize waste and bycatch in the fishery.
7. To provide appropriate management to address specific migratory groups of king mackerel.
8. To optimize the social and economic benefits of the coastal migratory pelagic fisheries.

The primary goal of the ASMFC Omnibus Amendment is to bring the FMPs for Spanish mackerel, spot, and spotted seatrout under the authority of the Act, providing for more efficient and effective management and changes to management for the future (ASMFC 2011). Omnibus amendment 1 objectives include:

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.

STATUS OF THE STOCK

Life History

Spanish mackerel are considered coastal pelagic, meaning they live in the open waters near the coast. They make northern and southern migrations depending on water temperature and seldom enter waters below 68 degrees Fahrenheit. In North Carolina's waters, Spanish mackerel can be found from April to November. They migrate south to the Florida coast in the late fall. In the summer months, they may be found as far inland as the sounds and coastal river mouths. Spanish mackerel spawn from May to September, are fast growing, and may live to be 8 years old. Spanish mackerel in North Carolina grow as large as 30 inches, but most recreational catches are between 12 and 15 inches. Both sexes are capable of reproduction by age 2. Spanish mackerel feed primarily on small, schooling pelagic fish such as anchovies and herring (Manooch 1984).

Stock Status

In 2012, the Atlantic Spanish mackerel stock was assessed and peer reviewed through the Southeast Data, Assessment and Review (SEDAR 2014). The results of the assessment (SEDAR 28) indicate Atlantic Spanish mackerel are not overfished and overfishing is not occurring. The next assessment is scheduled to begin in 2021.

Stock Assessment

There is a lack of available fishery independent indices of abundance for this species. Many of the indices of abundance that were made available were rejected due to concerns about the way the fishers targeted Spanish mackerel. The schooling behavior of Spanish mackerel makes a random survey of their population particularly difficult. The one fishery independent index used (Southeast Area Monitoring and Assessment Program Trawl Survey young of the year) was highly variable, as would be expected for a recruitment index. The base run of the age-structured assessment model indicated the stock is not overfished and overfishing is not occurring. The sensitivity analyses yielded similar results and there was no retrospective pattern of concern. Conclusions about stock status during the analysis were most sensitive to different combinations of input data and variance around fixed parameters (steepness, recreational discard mortality, historical recreational landings, and natural mortality).

STATUS OF THE FISHERY

Current Regulations

The North Carolina Division of Marine Fisheries currently complements the management measures of the Coastal Migratory Pelagic FMP through rules (NCMFC Rule 15A NCAC 03M .0301 and proclamation authority (15A NCAC 03M .0512). Current regulations include a recreational bag limit of 15 Spanish mackerel per person per day and 12-inch fork length minimum size. Commercial regulations also include a 12-inch fork length minimum size and a trip limit of 3,500 pounds. Federal vessel permits are required for commercial, charter and head boats fishing in the EEZ. Sale of Spanish mackerel caught under the bag limit are prohibited unless the fish are caught as part of a state-permitted tournament and the proceeds from the sale are donated to charity.

Commercial Landings

Predominant commercial fisheries for Spanish mackerel include gill nets and estuarine pound nets. In 2019, commercial landings were 722,396 pounds (Table 1, Figure 1) and 94 percent of the Spanish mackerel harvest was taken in gill nets (Figure 2). Landings for 2019 are slightly lower than the 10-year average of 768,579 pounds, with most landings occurring between May and October. The NC commercial fishery is responsible for landing approximately 20 percent of the South Atlantic landings annually. Atlantic Spanish mackerel catches are divided into a Northern zone (NC through the Mid-Atlantic) and a Southern zone (SC, GA, and FL east coast to Dade-Monroe county line). The NC commercial fishery closed August 24, 2019 when NOAA Fisheries estimated the Northern zone quota had been reached. On September 27, 2019, a harvest period for the commercial Spanish mackerel fishery in North Carolina Coastal Fishing Waters was opened with a 500 pound daily trip limit. The fishery remained closed in federal waters. The state water harvest period closed on November 15, 2019.

Recreational Landings

Recreational landings of Spanish mackerel are estimated from the Marine Recreational Information Program (MRIP). Recreational estimates across all years have been updated and are now based on the MRIP new Fishing Effort Survey-based calibrated estimates. For more information on MRIP see <https://www.fisheries.noaa.gov/topic/recreational-fishing-data>. Spanish mackerel are a favorite of many anglers due to their exciting behavior when hooked and their delicious taste when cooked. Recreational anglers target Spanish mackerel by trolling spoons and plugs inshore. Anglers catch most Spanish mackerel between May and September, once the water temperature has warmed up to 70°F. Recreational anglers harvested 1,694,247 pounds of Spanish mackerel in 2019 (Table 2, Figure 1).

MONITORING PROGRAM DATA

Fishery-Dependent Monitoring

Length-frequency information for the commercial Spanish mackerel fishery in North Carolina is collected through NCDMF sampling programs (programs 431 (sciaenid pound net), 434 (ocean gill net), 461 (estuarine gill net), and 466 (sea turtle by-catch programs)) (Table 4 and Figure 3). Ageing structures, otoliths, are collected from fishery-dependent sampling programs and are sent to the Southeast Fisheries Science Center in Panama City, Florida for processing and ageing (Table 5). Length and weight information for the recreational fishery are collected through the MRIP dockside sampling (Figure 4).

Fishery-Independent Monitoring

Length-frequency information for Spanish mackerel is collected in the division's statewide Independent Gill Net Survey (program 915) and Pamlico Sound Trawl Survey (Program 195) (Table 6). Ageing structures, otoliths, are collected from both independent sampling programs and sent to the Southeast Fisheries Science Center in Panama City, Florida for processing and ageing (Table 5).

MANAGEMENT STRATEGY

In North Carolina, Spanish mackerel are included in the North Carolina Fishery Management Plan for Interjurisdictional Fisheries, which defers, to the SAFMC's Coastal Migratory Pelagics FMP and the ASMFC's FMP for Spanish Mackerel (NCDMF 2015; SAFMC 2015; ASMFC 2013).

Spanish mackerel is currently managed under recent Amendment 20A (SAFMC 2014a), Amendment 20B (SAFMC 2015) and Framework Amendment 1 (SAMFC 2014b) to the Coastal Migratory Pelagics Fishery Management Plan. Amendment 20A prohibits the sale of all bag-limit-caught Spanish mackerel, except those harvested during a state-permitted tournament. Amendment 20B establishes separate commercial quotas of Atlantic Spanish mackerel for a Northern Zone (north of North Carolina and South Carolina state line) and Southern Zone (south of North Carolina and South Carolina state line). Framework Amendment 1 modifies the annual catch limits for Spanish mackerel in the U.S. Atlantic and modifies the recreational annual catch target, based on the results of the most recent stock assessments for these stocks. North Carolina currently has a 12-inch fork length minimum size limit, a 15 fish per day bag limit for recreational anglers and a 3,500-pound commercial trip limit. The harvest season is open year-round and is based on a fishing year of March 1 to the last day in February with commercial and recreational fisheries closing when the quota is reached.

The ASMFC's South Atlantic State-Federal Fisheries Management Board approved the Omnibus Amendment for Spot, Spotted Seatrout, and Spanish Mackerel in 2011 (ASMFC 2011). For 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 allows for complementary management throughout the range of the species.

The Board approved Addendum I (ASMFC 2013) to establish a pilot program to allow states to reduce the Spanish mackerel minimum size limit for the commercial pound net fishery to 11.5 inches from July through September for the 2013 and 2014 fishing years. In August 2015, the Board evaluated the success of the pilot program and extended the provisions of Addendum I for the 2015, 2016, 2017 and 2018 fishing years. The program was created to reduce waste of these shorter fish, which are discarded dead in the summer months, by converting them to landed fish that will be counted against the quota. The addendum responded to reports about the increased incidence of Spanish mackerel one-quarter to one-half inch short of the 12-inch fork length minimum size limit in pound nets during the summer months which die prior to being released, possibly due to a combination of temperature, stress, and crowding. While work has been done to experiment with wall or panel mesh sizes and escape panels, little success has been made in releasing undersized fish quickly enough to prevent dead discards during this time of year. North Carolina did not implement the Addendum in 2019. Current management strategies for Spanish mackerel in South Atlantic waters are summarized in Table 7.

RESEARCH NEEDS

From Omnibus Amendment (ASMFC 2011):

- Increase collection of fishery-dependent length, sex, age, and CPUE data to improve stock assessment accuracy. Simulations on CPUE trends should be explored and impacts on assessment results determined. Data collection is needed for all states, particularly those north of North Carolina.
- Develop fishery independent methods to monitor stock size.
- Develop methodology for predicting year class strength and determination of the relationship between juvenile abundance and subsequent year class strength.
- To ensure more accurate estimates of t^0 , increase efforts to collect age-0 specimens for use in estimating von Bertalanffy growth parameters.
- 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.
- Commission and member states should support and provide the identified data and input needed to improve the SEDAR process.
- Conduct yield per recruit analyses relative to alternative selective fishing patterns.
- Investigate the discard mortality of Spanish mackerel in the commercial and recreational trolling fisheries and commercial gill net fishery.
- Need observer coverage for Spanish mackerel fisheries: gill nets, cast nets, handlines, pound nets, and shrimp trawl bycatch.
- Evaluate potential bias of the lack of appropriate stratification of the data used to generate age-length keys.
- Evaluate CPUE indices related to standardization methods and management history, with emphasis on greater temporal and spatial resolution in estimates of CPUE.
- Expand Trip Interview Program (TIP) sampling to better cover all statistical areas.

- Complete research on the application of assessment and management models relative to dynamic species such as Spanish mackerel.
- Establish a monitoring program to characterize the bycatch and discards of Spanish mackerel in the directed shrimp fishery in Atlantic Coastal waters.
- Obtain adequate data to determine gutted to whole weight relationships.
- Conduct inter-lab comparisons of age readings from test sets of otoliths in preparation for any future stock assessment.
- Address issue of fish retained for bait (undersized) or used for food by crew (how to capture these as landings).
- Investigate whether catchability varies as a function of fish density and/or environmental conditions.
- Investigate how temporal changes in migratory patterns may influence indices of abundance.
- Investigate the possibility of using models that allow catchability to follow a random walk, which can be useful in tracking longer-term trends in time-varying catchability and thus detect changes over time in CPUE (from SEDAR 2008).

LITERATURE CITED

ASMFC (Atlantic States Marine Fisheries Commission). 2011. Omnibus Amendment to the Interstate Fishery Management Plans for Spanish Mackerel, Spot, and Spotted Seatrout.

ASMFC (Atlantic States Marine Fisheries Commission). 2013. Addendum I to the Omnibus Amendment to the Interstate Fishery Management Plans for Spanish Mackerel, Spot, and Spotted Seatrout.

Manooch, C. S. 1984. Fisherman's guide to fishes of the Southeastern United States. North Carolina Museum of Natural History. Raleigh, North Carolina. 362 pp.

NCDMF (North Carolina Division of Marine Fisheries). 2015. Fishery Management Plan for Interjurisdictional Fisheries: Information Update. North Carolina Department of Environmental Quality. North Carolina Division of Marine Fisheries. Morehead City, North Carolina. 85 pp.

NCDMF (North Carolina Division of Marine Fisheries). Proclamation FF-21-2017. Spanish and king mackerel- commercial incidental retention limits of king mackerel in the directed shark gill net fishery south of cape lookout. 18 May 2017.

NCDMF (North Carolina Division of Marine Fisheries). Proclamation FF-25-2017. Spanish mackerel- commercial/ recreational size limits. 1 July 2017.

SAFMC (South Atlantic Fishery Management Council). 1982. Fishery management plan for the coastal migratory pelagic resources of the Gulf of Mexico and the South Atlantic. South Atlantic Fishery Management Council. Charleston, South Carolina.

SAFMC (South Atlantic Fishery Management Council). 1987. Amendment 2 to the fishery management plan for the coastal migratory pelagic resources of the Gulf of Mexico and the South Atlantic. South Atlantic Fishery Management Council. Charleston, South Carolina.

SAFMC (South Atlantic Fishery Management Council). 1989a. Amendment 3 to the fishery management plan for the coastal migratory pelagic resources of the Gulf of Mexico and the South Atlantic. South Atlantic Fishery Management Council. Charleston, South Carolina.

SAFMC (South Atlantic Fishery Management Council). 1989b. Amendment 4 to the fishery management plan for the coastal migratory pelagic resources of the Gulf of Mexico and the South Atlantic. South Atlantic Fishery Management Council. Charleston, South Carolina.

SAFMC (South Atlantic Fishery Management Council). 1990. Amendment 5 to the fishery management plan for the coastal migratory pelagic resources of the Gulf of Mexico and the South Atlantic. South Atlantic Fishery Management Council. Charleston, South Carolina.

SAFMC (South Atlantic Fishery Management Council). 1992. Amendment 6 to the fishery management plan for the coastal migratory pelagic resources of the Gulf of Mexico and the South Atlantic. South Atlantic Fishery Management Council. Charleston, South Carolina.

SAFMC (South Atlantic Fishery Management Council). 1996. Amendment 8 to the fishery management plan for the coastal migratory pelagic resources of the Gulf of Mexico and the South Atlantic. South Atlantic Fishery Management Council. Charleston, South Carolina.

SAFMC (South Atlantic Fishery Management Council). 1998a. Amendment 10 to the fishery management plan for the coastal migratory pelagic resources of the Gulf of Mexico and the South Atlantic. South Atlantic Fishery Management Council. Charleston, South Carolina.

SAFMC (South Atlantic Fishery Management Council). 1998. Amendment 11 to the fishery management plan for the coastal migratory pelagic resources of the Gulf of Mexico and the South Atlantic. South Atlantic Fishery Management Council. Charleston, South Carolina.

SAFMC (South Atlantic Fishery Management Council). 2000. Amendment 9 to the fishery management plan for the coastal migratory pelagic resources of the Gulf of Mexico and the South Atlantic. South Atlantic Fishery Management Council. Charleston, South Carolina.

SAFMC (South Atlantic Fishery Management Council). 2002. Amendment 13 to the fishery management plan for the coastal migratory pelagic resources of the Gulf of Mexico and the South Atlantic. South Atlantic Fishery Management Council. Charleston, South Carolina.

SAFMC (South Atlantic Fishery Management Council). 2002b. Amendment 14 to the fishery management plan for the coastal migratory pelagic resources of the Gulf of Mexico and the South Atlantic. South Atlantic Fishery Management Council. Charleston, South Carolina.

SAFMC (South Atlantic Fishery Management Council). 2004. Amendment 15 to the fishery management plan for the coastal migratory pelagic resources of the Gulf of Mexico and the South Atlantic. South Atlantic Fishery Management Council. Charleston, South Carolina.

SAFMC (South Atlantic Fishery Management Council). 2006. Amendment 17 to the fishery management plan for the coastal migratory pelagic resources of the Gulf of Mexico and the South Atlantic. South Atlantic Fishery Management Council. Charleston, South Carolina.

SAFMC (South Atlantic Fishery Management Council). 2011. Amendment 18 to the fishery management plan for the coastal migratory pelagic resources of the Gulf of Mexico and the South Atlantic. South Atlantic Fishery Management Council. Charleston, South Carolina.

SAFMC (South Atlantic Fishery Management Council). 2010. Amendment 19 to the fishery management plan for the coastal migratory pelagic resources of the Gulf of Mexico and the South Atlantic. South Atlantic Fishery Management Council. Charleston, South Carolina.

SAFMC (South Atlantic Fishery Management Council). 2013a. Amendment 20A to the fishery management plan for the coastal migratory pelagic resources of the Gulf of Mexico and the South Atlantic. South Atlantic Fishery Management Council. Charleston, South Carolina.

SAFMC (South Atlantic Fishery Management Council). 2013b. Amendment 22 to the fishery management plan for the coastal migratory pelagic resources of the Gulf of Mexico and the South Atlantic. South Atlantic Fishery Management Council. Charleston, South Carolina.

SAFMC (South Atlantic Fishery Management Council). 2014a. Amendment 20B to the fishery management plan for the coastal migratory pelagic resources of the Gulf of Mexico and the South Atlantic. South Atlantic Fishery Management Council. Charleston, South Carolina.

SAFMC (South Atlantic Fishery Management Council). 2014b. Amendment 23 to the fishery management plan for the coastal migratory pelagic resources of the Gulf of Mexico and the South Atlantic. South Atlantic Fishery Management Council. Charleston, South Carolina.

SAFMC (South Atlantic Fishery Management Council). 2014c. South Atlantic Coastal Migratory Pelagics Framework Action 2013. South Atlantic Fishery Management Council. Charleston, South Carolina.

SAFMC (South Atlantic Fishery Management Council). 2014d. Framework Amendment 1 to the Fishery Management Plan for Coastal Migratory Pelagic Resources in the Gulf of Mexico and South Atlantic Region. South Atlantic Fishery Management Council. Charleston, South Carolina.

SEDAR (Southeast Data, Assessment and Review) 17. 2009. Stock assessment report for South Atlantic Spanish mackerel. Southeast Data, Assessment and Review. North Charleston, South Carolina.

SEDAR (Southeast Data, Assessment and Review) 38. 2014. Stock assessment report for Gulf of Mexico king mackerel. Southeast Data, Assessment and Review. North Charleston, South Carolina. SEDAR (Southeast Data, Assessment and Review). 28. Stock Assessment report for South Atlantic Spanish mackerel. SEDAR Charleston, SC.

TABLES

Table 1. North Carolina commercial harvest of Spanish mackerel with landings in pounds by gear type, 1994-2019.

Year	Gear				Total
	Ocean Gill Net	Estuarine Gill Net	Pound Net	Other	
1994	327,155	138,448	29,708	36,061	531,371
1995	233,296	104,777	49,077	15,242	402,392
1996	215,536	124,013	45,221	17,069	401,839
1997	502,463	174,141	60,898	29,457	766,958
1998	234,547	97,472	26,962	13,435	372,415
1999	297,435	98,855	49,485	13,326	459,100
2000	462,459	162,291	21,792	12,884	659,426
2001	411,974	186,628	33,163	21,909	653,673
2002	463,430	205,865	24,118	5,035	698,448
2003	368,171	80,219	5,218	3,176	456,784
2004	359,467	90,317	3,524	2,934	456,242
2005	257,074	180,874	2,184	5,869	446,001
2006	358,614	100,114	2,783	9,152	470,662
2007	420,680	57,144	3,440	6,615	487,879
2008	268,435	93,579	49,534	3,857	415,405
2009	454,081	266,621	228,201	12,908	961,811
2010	177,091	631,218	96,490	7,068	911,866
2011	287,908	524,967	53,704	4,638	871,217
2012	501,369	372,759	38,644	3,667	916,439
2013	346,810	250,524	18,764	4,654	620,752
2014	422,528	221,798	25,772	3,876	673,974
2015	289,497	228,801	40,032	3,080	561,409
2016	328,635	242,133	27,806	3,054	601,628
2017	507,847	287,422	17,312	3,436	816,017
2018	486,672	280,689	19,931	9,563	796,855
2019	354,891	322,138	39,118	6,249	722,396

ASMFC AND FEDERALLY-MANAGED SPECIES WITHOUT N.C. INDICES – SPANISH MACKEREL

Table 2. North Carolina recreational harvest of Spanish mackerel with landings in number of fish, pounds, and number released, 1981-2019. Percent Standard Error (PSE) is given for each.

Year	Harvest Number (A+B1, MRIP)	PSE (Num)	Weight (lb), (A+B1, MRIP)	PSE (lb)	Number Released (MRIP)	PSE
1981	344,209	70.8	853,597	74.0	2,967	95.8
1982	889,793	55.5	1,411,461	53.6	-	-
1983	10,275	47.0	25,641	47.3	-	-
1984	559,885	48.9	807,486	49.1	4,374	100.6
1985	441,051	38.9	819,680	40.7	36,482	95.4
1986	872,052	39.2	1,055,730	37.8	442,501	85.7
1987	974,840	22.2	1,323,352	18.1	35,412	39.9
1988	1,375,328	14.2	580,007	25.2	15,891	33.9
1989	1,374,008	33.5	1,594,616	26.0	140,141	44.2
1990	1,011,861	13.6	1,462,072	14.1	111,977	22.8
1991	1,119,245	15.9	1,695,569	11.6	238,694	20.8
1992	879,444	10.7	1,171,718	10.7	250,614	16.3
1993	720,907	14.8	1,107,430	16.6	104,879	21.2
1994	641,980	11.0	724,589	11.2	292,919	13.4
1995	397,190	12.9	492,096	14.3	239,972	17.6
1996	533,333	14.9	709,589	17.4	184,518	16.8
1997	956,589	12.5	1,444,907	13.1	304,629	38.7
1998	374,804	13.8	488,951	13.4	145,746	20.9
1999	891,001	14.7	1,035,943	16.6	253,317	17.0
2000	1,102,777	17.7	1,175,351	19.3	451,910	19.2
2001	942,500	25.0	1,155,788	24.7	338,918	37.0
2002	787,125	17.1	987,238	16.1	309,546	16.9
2003	540,399	15.3	641,024	14.5	266,887	17.1
2004	534,720	18.7	819,978	20.0	317,189	26.9
2005	561,073	16.1	526,054	16.6	303,641	19.9
2006	439,736	15.7	624,488	20.5	165,098	22.5
2007	604,518	15.2	799,263	16.5	340,027	16.5
2008	1,013,980	13.1	1,234,030	15.2	806,280	18.5
2009	1,480,931	13.5	2,155,692	19.4	752,806	20.7
2010	927,116	22.0	1,116,099	17.5	701,634	33.0
2011	854,554	15.0	1,100,110	20.0	479,586	15.5
2012	995,852	9.6	1,327,350	10.4	591,792	16.4
2013	994,599	15.2	1,242,029	16.5	685,692	26.1
2014	1,028,925	15.2	1,193,442	14.7	814,064	21.2
2015	835,011	14.3	981,867	15.6	514,714	17.7
2016	918,352	16.4	907,400	16.3	546,950	19.5
2017	995,706	18	1,094,778	18.3	688,062	21.4
2018	1,012,889	13.9	1,156,702	14.5	1,019,418	30.4
2019	1,478,890	19.6	1,694,247	22.4	1,340,366	21.8
Average	831,217		1,044,548		365,118	

Table 3. Total number measured, mean, minimum, and maximum length (inches) of Spanish mackerel measured by MRIP sampling in North Carolina, 1981-2019.

Year	Number Measured	Minimum Length	Maximum Length	Mean Length
1981	62	8.9	27.0	21.2
1982	69	8.0	31.9	18.0
1983	4	16.9	20.1	20.3
1984	28	13.0	23.8	14.7
1985	45	9.8	27.4	19.7
1986	110	8.1	27.2	15.4
1987	950	9.1	34.1	15.5
1988	1,118	7.9	32.9	5.0
1989	1,799	7.9	33.5	15.3
1990	2,160	8.3	35.5	15.9
1991	2,135	6.3	37.0	15.2
1992	1,354	7.5	33.1	15.4
1993	1,056	9.0	28.5	16.1
1994	2,255	6.4	29.4	15.2
1995	799	8.2	31.9	15.1
1996	1,107	9.8	70.2	16.0
1997	1,846	8.9	33.3	16.2
1998	895	9.2	31.1	15.5
1999	1,286	8.5	28.9	15.3
2000	1,242	9.0	27.2	15.7
2001	858	11.4	28.7	16.1
2002	827	9.5	28.0	16.3
2003	476	10.8	28.0	15.9
2004	298	11.1	27.5	16.7
2005	289	11.9	29.2	14.6
2006	236	11.1	39.4	16.0
2007	240	10.6	28.6	15.4
2008	596	8.9	26.2	15.2
2009	788	11.4	26.9	15.8
2010	763	10.7	26.5	15.2
2011	543	11.1	28.1	15.0
2012	776	10.6	28.0	15.1
2013	454	10.1	27.1	15.1
2014	754	9.0	29.9	14.8
2015	644	9.2	27.4	14.8
2016	1,030	11.0	26.3	14.3
2017	1,023	10.3	26.4	14.8
2018	1,691	9.9	27.2	15.0
2019	1,486	9.3	28.2	15.0

Table 4. Mean, minimum and maximum fork lengths (inches) and total number sampled of Spanish mackerel from fishery dependent sampling programs, 1997-2019.

Year	Mean Length	Minimum Length	Maximum Length	Total Number Measured
1997	14.5	7.8	23.7	769
1998	15.0	8.2	26.0	778
1999	14.6	6.8	25.0	968
2000	16.4	8.3	25.4	1,616
2001	15.6	9.6	26.0	861
2002	15.6	11.0	25.4	880
2003	16.3	9.8	26.5	473
2004	17.1	8.6	27.0	989
2005	16.2	9.3	27.4	1,841
2006	16.9	7.0	27.7	2,187
2007	15.8	7.1	31.9	2,072
2008	16.0	7.3	26.3	2,127
2009	15.6	7.5	38.2	3,509
2010	16.2	6.8	26.7	4,759
2011	16.6	10.1	42.5	5,507
2012	16.5	8.2	27.7	5,409
2013	16.6	7.9	28.5	3,902
2014	16.3	8.6	27.7	4,462
2015	16.1	10.0	26.8	5,402
2016	16.3	5.8	28.8	6,888
2017	16.4	10.7	28.0	4,522
2018	16.5	10.8	28.0	3,772
2019	16.5	9.6	28.4	4,427

Table 5. Mean, minimum and maximum fork lengths (inches) and total number sampled of Spanish mackerel collected by NCDMF for ageing by the NOAA Southeast Fisheries Science Center, 1997-2019.

Year	Mean Length	Minimum Length	Maximum Length	Total Number Measured
1997	14.0	5.6	24.3	403
1998	15.5	7.9	28.3	430
1999	14.7	7.4	30.5	294
2000	17.4	8.9	27.2	466
2001	16.3	8.0	26.2	488
2002	16.2	5.7	28.0	337
2003	14.5	9.8	26.0	330
2004	14.9	10.0	26.4	282
2005	14.7	8.7	25.4	303
2006	14.9	10.0	26.9	291
2007	14.9	10.4	31.7	297
2008	14.3	7.7	26.9	328
2009	15.3	9.3	25.1	317
2010	14.9	6.9	25.4	411
2011	15.1	6.1	28.0	430
2012	14.5	6.3	26.4	557
2013	15.2	7.4	27.5	370
2014	14.7	7.6	25.8	515
2015	14.8	7.2	27.6	412
2016	15.1	8.5	29.1	579
2017	18.6	7.0	28.1	451
2018	16.0	7.8	29.0	463
2019	14.3	5.0	28.0	640

Table 6. Mean, minimum and maximum fork lengths (inches) and total number sampled of Spanish mackerel from fishery independent sampling programs, 1997-2019.

Year	Mean Length	Minimum Length	Maximum Length	Total Number Measured
1997	8.1	2.8	13.9	52
1998	8.1	5.6	19.9	77
1999	9.1	3.1	19.3	31
2000	15.8	2.8	23.9	155
2001	15.6	4.1	24.4	158
2002	16.5	8.1	23.4	45
2003	16.6	9.7	22.4	35
2004	14.0	4.8	22.5	17
2005	15.0	3.8	24.1	61
2006	14.1	6.9	21.3	47
2007	11.4	2.2	21.8	163
2008	12.8	5.4	26.8	335
2009	13.9	4.3	22.4	474
2010	13.5	3.0	21.7	361
2011	14.2	2.8	20.5	103
2012	11.5	4.9	22.8	47
2013	10.3	4.6	17.9	46
2014	8.9	2.9	19.0	29
2015	12.3	3.9	21.7	49
2016	15.0	6.9	22.4	47
2017	19.8	2.8	24.6	130
2018	13.6	3.8	21.5	76
2019	12.7	1.9	22.6	517

Table 7. Summary of management strategies by North Carolina for Spanish Mackerel

Management Strategy	Implementation Status
12 inch minimum size limit	Rule 15A NCAC 03M .0301(a)(1)
15 fish creel limit	Rule 15A NCAC 03M .0301(a)(2)
15 fish creel limit outside three miles only with a NMFS Commercial Vessel Permit	Rule 15A NCAC 03M .0301(a)(3)
Charter vessels or head boats with NMFS Commercial Vessel Permit must comply with possession limits when fishing with more than three persons	Rule 15A NCAC 03M .0301(c)
Commercial trip limit of 3,500 pounds of Spanish mackerel, king mackerel or in aggregate	Rule 15A NCAC 03M .0301(d)
Prohibits purse gill nets when taking king or Spanish mackerel	Rule 15A NCAC 03M .0512
Prohibits sale of Spanish Mackerel harvested from the EEZ in a commercial fishing operation without a valid Federal Commercial Spanish Mackerel Permit; Prohibits charter vessels or headboats with both a valid Federal Atlantic Charter/Headboat Coastal Migratory Pelagics Permit and a valid Federal Commercial Spanish Mackerel Permit to sell Spanish Mackerel from the EEZ when fishing with more than three persons; Prohibits purchase of Spanish Mackerel harvested from the Atlantic Ocean without a valid Federal Gulf and South Atlantic Dealer Permit; Prohibits purchase of Spanish Mackerel from the EEZ from a vessel that does not have a valid Federal Commercial Spanish Mackerel Permit.	Proclamation FF-21-2017

FIGURES

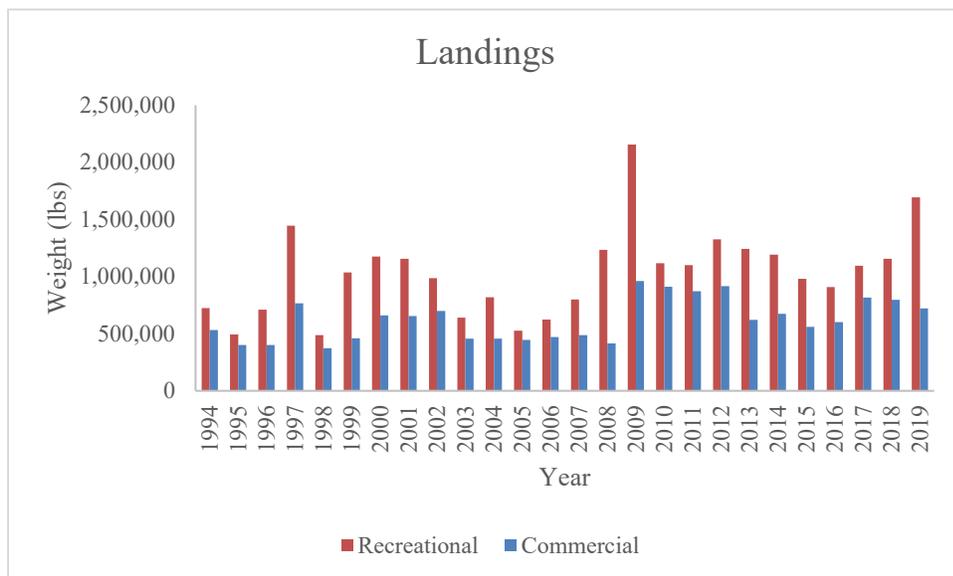


Figure 1. Weight (lbs) of landings of Spanish mackerel in North Carolina from 1994-2019.

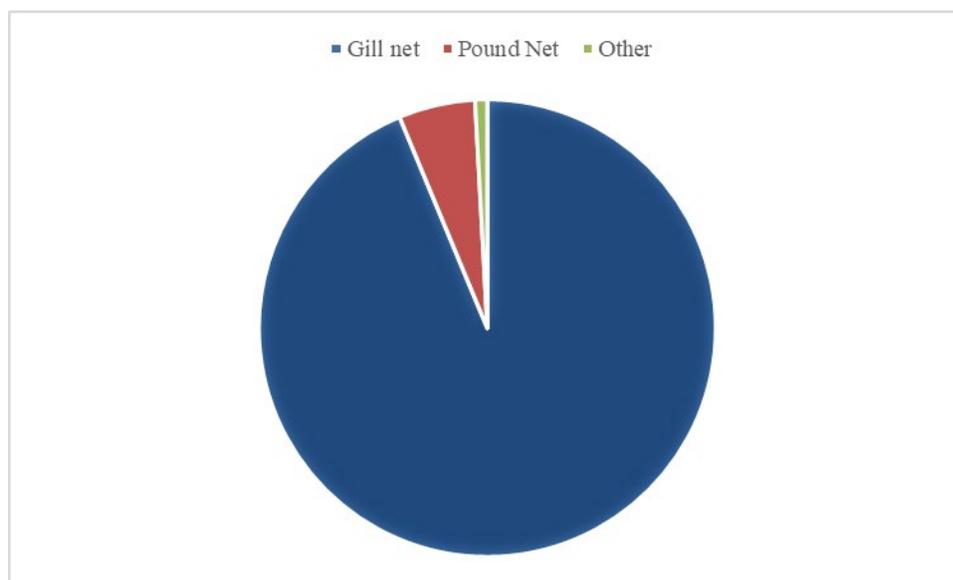


Figure 2. Commercial harvest of Spanish mackerel by gear, 2019.

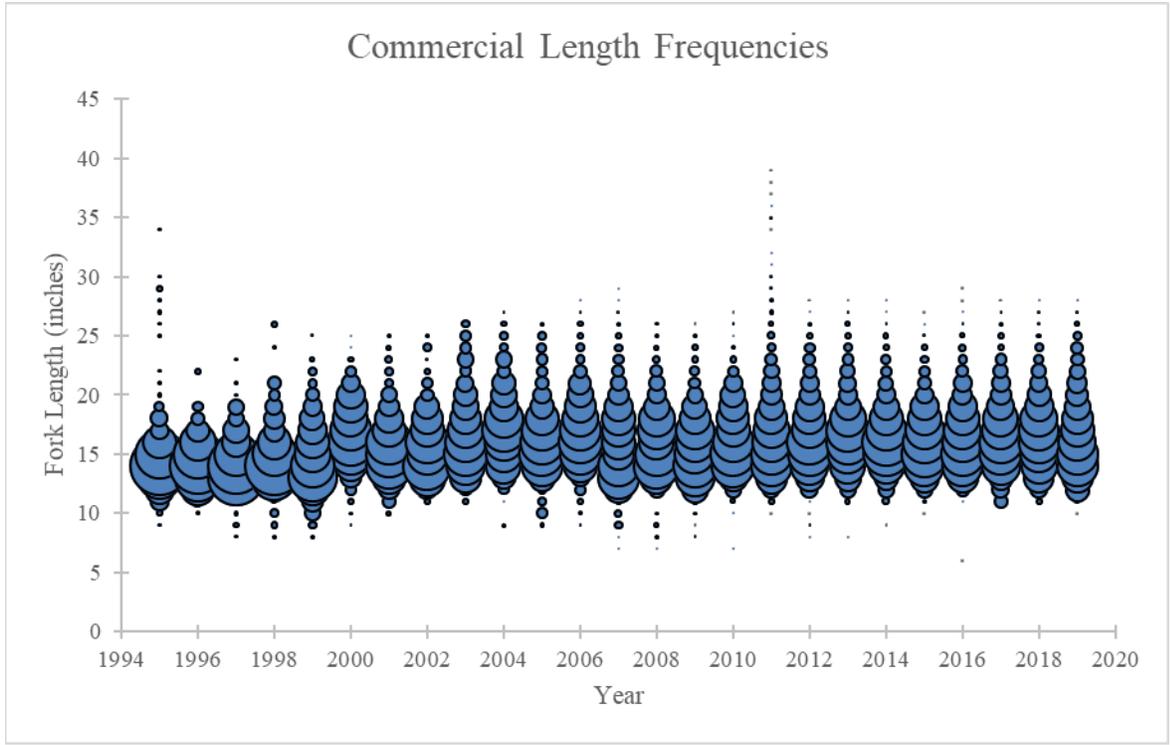


Figure 3. Commercial length frequency (fork length, inches) for Spanish mackerel harvested from 1995 to 2019. Bubbles represent fish harvested at length and the size of the bubble represents the proportion of fish at that length in that year.

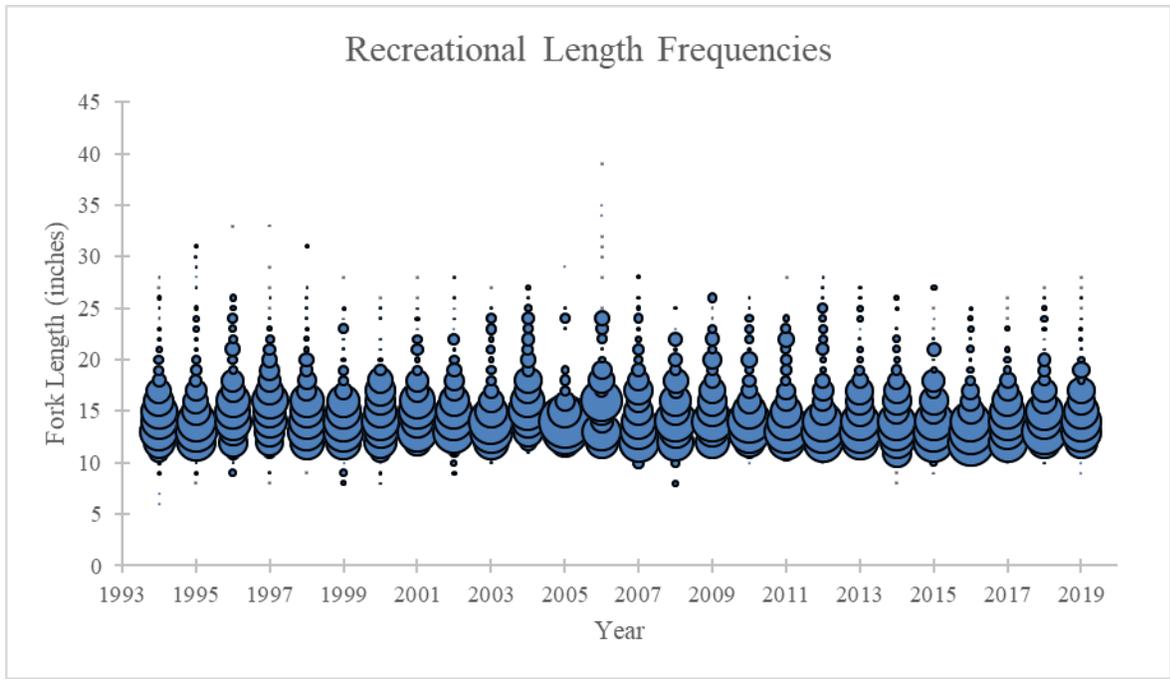


Figure 4. Recreational length frequency (fork length, inches) for Spanish mackerel harvested from 1994 to 2019. Bubbles represent fish harvested at length and the size of the bubble represents the proportion of fish at that length in that year.