FISHERY MANAGEMENT PLAN UPDATE
SPANISH MACKEREL
AUGUST 2024

STATUS OF THE FISHERY MANAGEMENT PLAN

Fishery Management Plan History

FMP Documentation:	February 1983	
	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	August 2013

Comprehensive Review: 2022

Spanish mackerel is managed under the Atlantic States Marine Fisheries Commission (ASMFC) Fishery Management Plan (FMP) for Spanish Mackerel and the South Atlantic Fishery Management Council (SAFMC) Coastal Migratory Pelagics FMP (SAFMC 1982; ASMFC 2011). 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 establishing fishing zones and local quotas for 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 (FL) 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 1998a).

Amendment 14 established a three-year moratorium on the issuance of for-hire (charter vessel and headboat) 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 2002). 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 (ACL), annual catch targets (ACT) and accountability measures (AM) 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 2010).

Amendment 20A prohibits the sale of Spanish mackerel caught under the recreational 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 2014a).

Amendment 22 2013 included in the Generic Headboat Reporting Amendment: Requires weekly electronic reporting for headboats in the South Atlantic (SAFMC 2013a).

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 2014c) updated the ACL and ACT for Gulf and Atlantic migratory groups of Spanish mackerel based on the results of the 2012 stock assessment.

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

Amendment 23 (SAFMC 2014b) 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 2017) 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 FMP 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 FL 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 FMPs, 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 2022).

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:

- 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.
- 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.
- To provide necessary information for effective management and establish a mandatory reporting system.
- To minimize gear and user group conflicts.
- 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.
- To minimize waste and bycatch in the fishery.
- To provide appropriate management to address specific migratory groups of king mackerel.
- 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:

- 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.
- Manage the Spanish mackerel stock to maintain the spawning stock biomass above the target biomass levels.

- Minimize endangered species bycatch in the Spanish mackerel fishery.
- 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.
- 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.

DESCRIPTION OF THE STOCK

Biological Profile

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 eight years old. Spanish mackerel in North Carolina grow as large as 30 inches FL, but most recreational catches are between 12- and 15-inches FL. 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 2022, the Atlantic Spanish mackerel stock was assessed and peer reviewed through the Southeast Data, Assessment and Review (SEDAR 2022). The results of the assessment indicate Atlantic Spanish mackerel are not overfished and overfishing is not occurring (SEDAR 78).

Stock Assessment

The SEDAR 78 South Atlantic Spanish Mackerel assessment took place over a series of webinars held from May 2021 to March 2022 (SEDAR 2022). This SEDAR was an operational assessment using data from 1986-2020. The assessment estimated that spawning stock has fluctuated near or above the minimum stock size threshold (MSST) level. The base-run estimate of terminal (2020) spawning stock was above the MSST (SSB_{2020}/MSST =1.40). The estimated fishing rate has been at or below the maximum fishing mortality threshold (MFMT), represented by F_{MSY} with the exception of the terminal year (2020). The terminal estimate, which is based on a three-year geometric mean, was below F_{MSY} in the base run ($F_{2018–2020}$/ F_{MSY} = 0.77) and in the median of the Monte Carlo/Bootstrap Ensemble ($F_{2018–2020}/F_{MSY}$ = 0.74), indicating that the stock is not experiencing overfishing. However, if the overfishing rate of 2020 continued in 2021, the geometric mean would indicate overfishing.

DESCRIPTION OF THE FISHERY

Current Regulations

The North Carolina Division of Marine Fisheries (DMF) currently complements the management measures of the Coastal Migratory Pelagic FMP through rules MFC Rule 15A NCAC 03M .0512 and proclamation authority (NCMFC Rule 15A NCAC 03M .0512). Current regulations include a

recreational bag limit of 15 Spanish mackerel per person per day and 12-inch FL minimum size. Commercial regulations also include a 12-inch FL minimum size and a trip limit of 3,500 pounds. Federal vessel permits are required for commercial, charter and headboats fishing in the exclusive economic zone (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 Fishery

In 2023, commercial landings were 804,827 pounds (Table 1; Figure 1) and 98% of the Spanish mackerel harvest were taken in estuarine and ocean gill nets (Figure 2). Landings for 2023 are slightly lower than the 10-year average of 809,236 pounds, with most landings occurring between May and October. Predominant commercial fisheries for Spanish mackerel include gill nets and estuarine pound nets (Table 2). The North Carolina commercial fishery is responsible for landing approximately 20% 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). On September 25, 2023, the harvest of Spanish mackerel in federal waters was closed when NOAA Fisheries estimated the Northern zone quota had been reached. On September 25, 2023, 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 10, 2023 (Proclamation FF-38-2023).

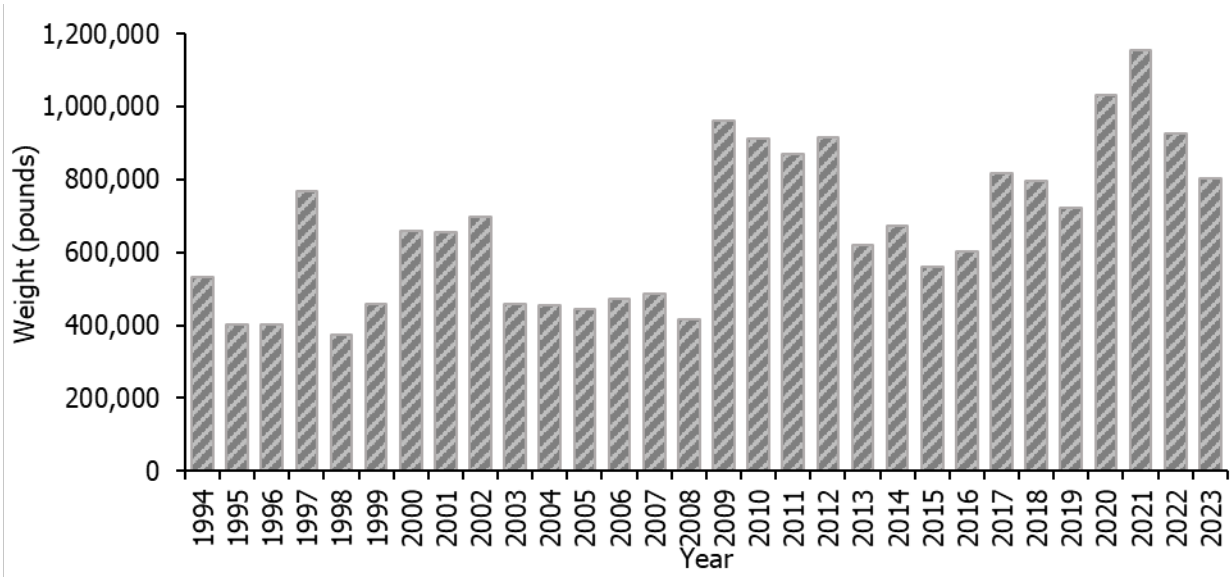

Figure 1. Annual commercial landings in pounds for Spanish mackerel in North Carolina, 1994–2023.

Table 1. Recreational harvest (number of fish landed and weight in pounds) and releases (number of fish) and commercial harvest (weight in pounds) of Spanish mackerel from North Carolina, 1994–2023.

	Recreational			Commercial	
Year	Number Landed	Number Released	Weight Landed (lb)	Weight Landed (lb)	Total Weight Landed (lb)
1994	641,980	292,919	724,589	531,371	1,255,960
1995	397,190	239,972	492,096	402,392	894,488
1996	533,333	184,518	709,589	401,830	1,111,419
1997	956,589	304,629	1,444,907	766,958	2,211,865
1998	374,804	145,746	488,951	372,415	861,366
1999	891,001	253,317	1,035,943	459,100	1,495,043
2000	1,102,777	451,910	1,175,351	659,426	1,834,777
2001	942,500	338,918	1,155,788	653,673	1,809,461
2002	787,125	309,546	987,238	698,448	1,685,686
2003	540,399	266,887	641,024	456,784	1,097,808
2004	534,720	317,189	819,978	456,242	1,276,220
2005	561,073	303,641	526,054	446,001	972,055
2006	439,736	165,098	624,488	470,662	1,095,150
2007	604,518	340,027	799,263	487,879	1,287,142
2008	1,013,980	806,280	1,234,030	415,405	1,649,435
2009	1,480,931	752,806	2,155,692	961,811	3,117,503
2010	927,116	701,634	1,116,099	911,866	2,027,965
2011	854,554	479,586	1,100,110	871,217	1,971,327
2012	995,852	591,792	1,327,350	916,439	2,243,789
2013	994,599	685,692	1,242,029	620,752	1,862,781
2014	1,028,925	814,064	1,193,442	673,974	1,867,416
2015	835,011	514,714	981,867	561,714	1,543,581
2016	918,352	546,950	907,400	601,623	1,509,023
2017	995,706	688,062	1,094,778	816,089	1,910,867
2018	1,012,889	1,019,418	1,156,702	796,890	1,953,592
2019	1,478,890	1,340,366	1,694,247	722,398	2,416,645
2020	1,286,131	1,267,210	1,843,314	1,033,526	2,876,840
2021	1,312,929	1,294,525	1,894,535	1,155,289	3,049,824
2022	1,898,755	2,268,283	1,841,527	926,026	2,767,553
2023	1,204,175	1,293,628	1,216,236	804,827	2,021,063
Mean	908,357	609,852	1,117,530	663,731	1,781,261

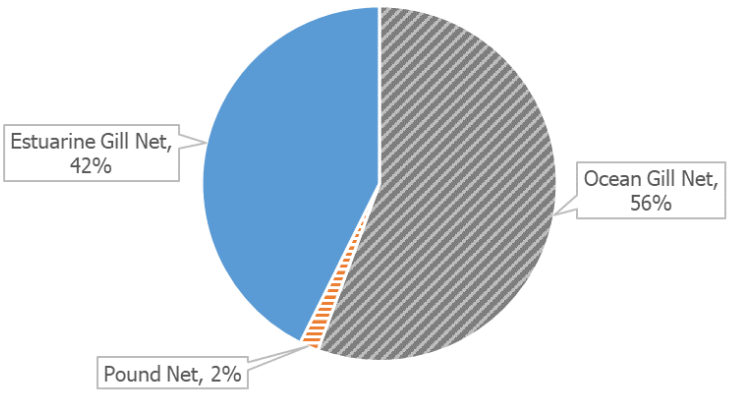

Figure 2. Commercial harvest of Spanish mackerel by gear, 2023.

Table 2. North Carolina commercial harvest of Spanish mackerel with landings in pounds by gear type, 1994–2023.

Year	Gear				Total
	Ocean Gill Net	Estuarine Gill Net	Pound Net	Other	
1994	327,155	138,452	29,708	36,057	531,371
1995	233,296	104,827	49,077	15,192	402,392
1996	215,536	124,013	45,221	17,060	401,830
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	221,799	25,772	3,875	673,974
2015	289,489	229,114	40,032	3,080	561,714
2016	328,635	242,291	27,806	2,891	601,623
2017	507,905	287,434	17,314	3,436	816,089
2018	486,707	280,689	19,931	9,563	796,890
2019	354,891	322,101	39,118	6,288	722,398
2020	601,095	369,436	53,384	9,611	1,033,526
2021	711,685	404,168	31,767	7,669	1,155,289
2022	457,503	432,678	29,953	5,893	926,026
2023	446,356	341,957	13,827	2,687	804,827

Recreational Fishery

Recreational landings of Spanish mackerel are estimated from the Marine Recreational Information Program (MRIP). 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 degrees Fahrenheit. Recreational anglers harvested 1,216,236 pounds of Spanish mackerel in 2023 (Table 1; Figure 3).

The DMF offers award citations for exceptional catches of Spanish mackerel. Spanish mackerel greater than six pounds are eligible for an award citation. In 2023, 52 citations were awarded (Figure 4).

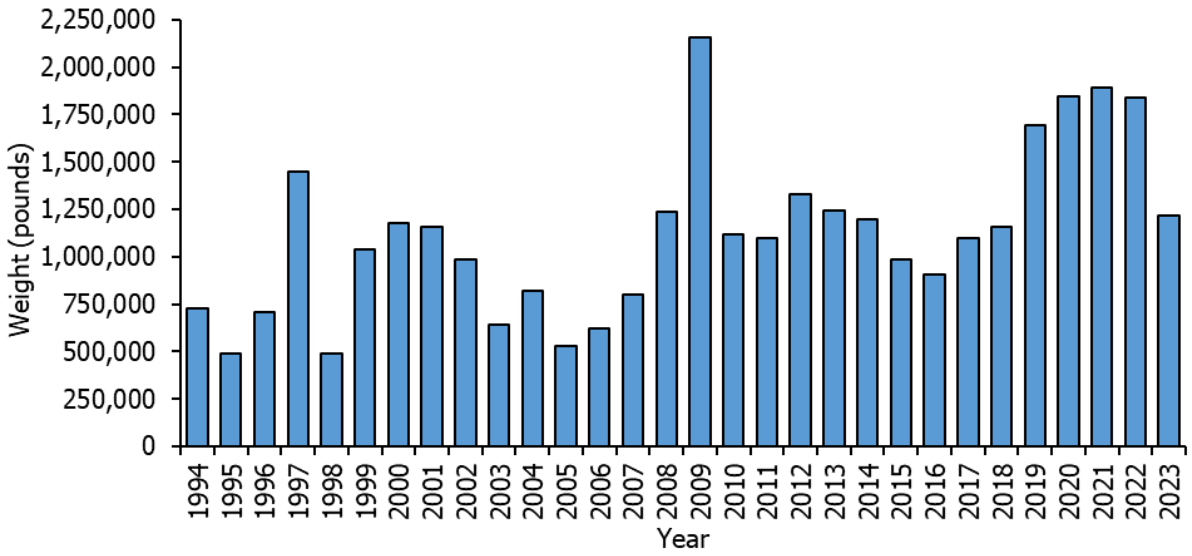

Figure 3. Annual recreational landings in pounds for Spanish mackerel in North Carolina, 1994–2023.

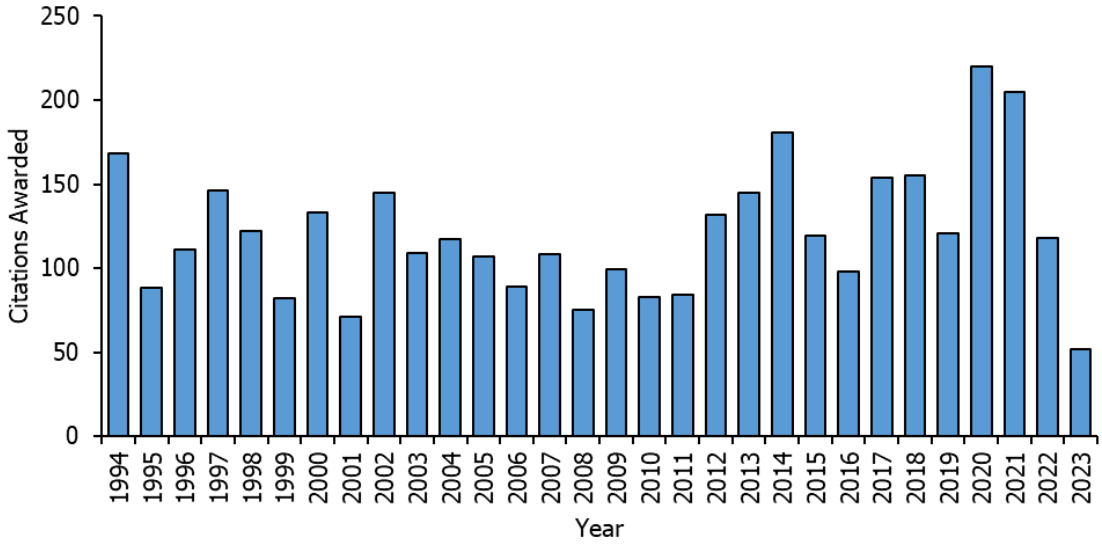

Figure 4. North Carolina Saltwater Fishing Tournament citations awarded for Spanish mackerel from 1994–2023. Citations are awarded for Spanish mackerel greater than six pounds.

MONITORING PROGRAM DATA

Fishery-Dependent Monitoring

Length-frequency information for the commercial Spanish mackerel fishery in North Carolina is collected through DMF's Program 431 (sciaenid pound net), Program 434 (ocean gill net), Program 461 (estuarine gill net), Program 439 (coastal pelagic) and Program 466 (onboard observer program). Through these programs, 3,339 Spanish mackerel were measured in 2023 with a mean length of 16.6 inches FL (Table 3; Figures 5 and 6). 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 4). Length and weight information for the recreational fishery are collected through the MRIP dockside sampling which measured 1,100 Spanish mackerel with a mean length of 14.4 inches FL (Table 5; Figure 7).

Table 3. Spanish mackerel length (fork length, inches) data from commercial fish house samples, 1997–2023.

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
2020	16.1	8.6	27.9	4,947
2021	16.6	9.9	28.8	5,077
2022	16.7	10.4	26.8	2,778
2023	16.6	9.7	30.6	3,339

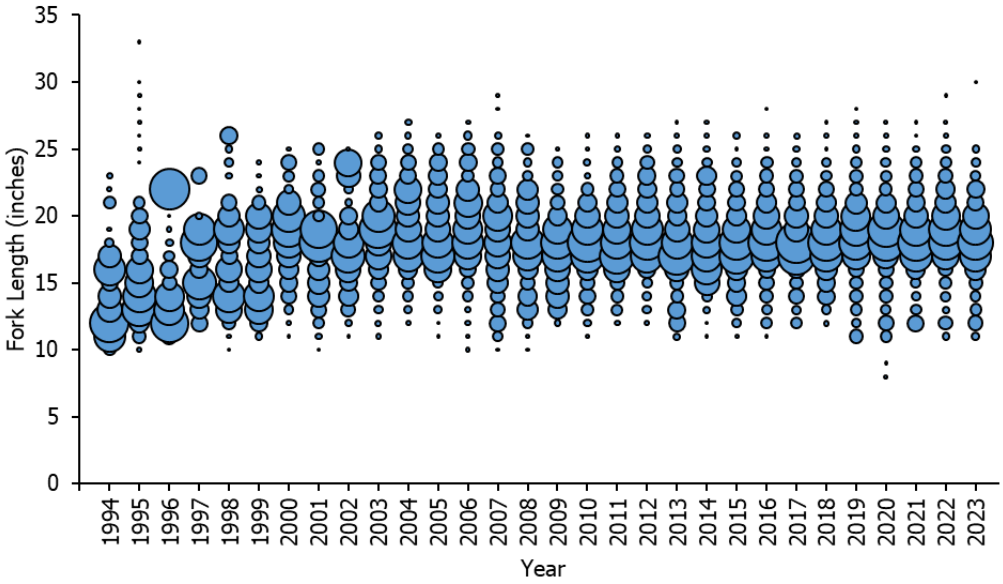

Figure 5. Commercial length frequency (fork length, inches) for Spanish mackerel harvested, 1994–2023. Bubbles represent fish at length and the bubble size is proportional to the number of fish at that length.

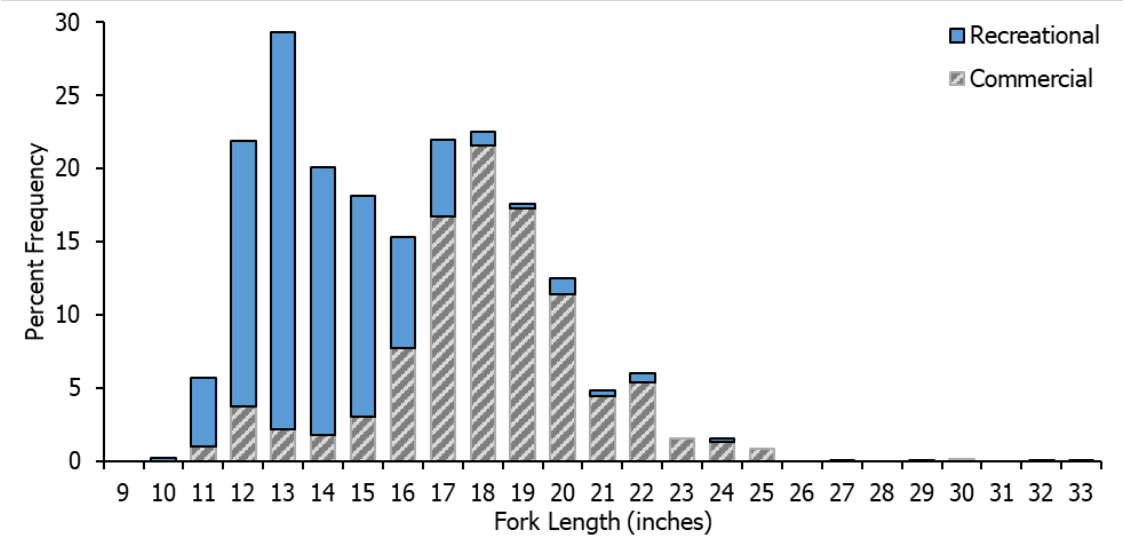

Figure 6. Commercial and recreational length frequency distribution from Spanish mackerel harvested in 2023.

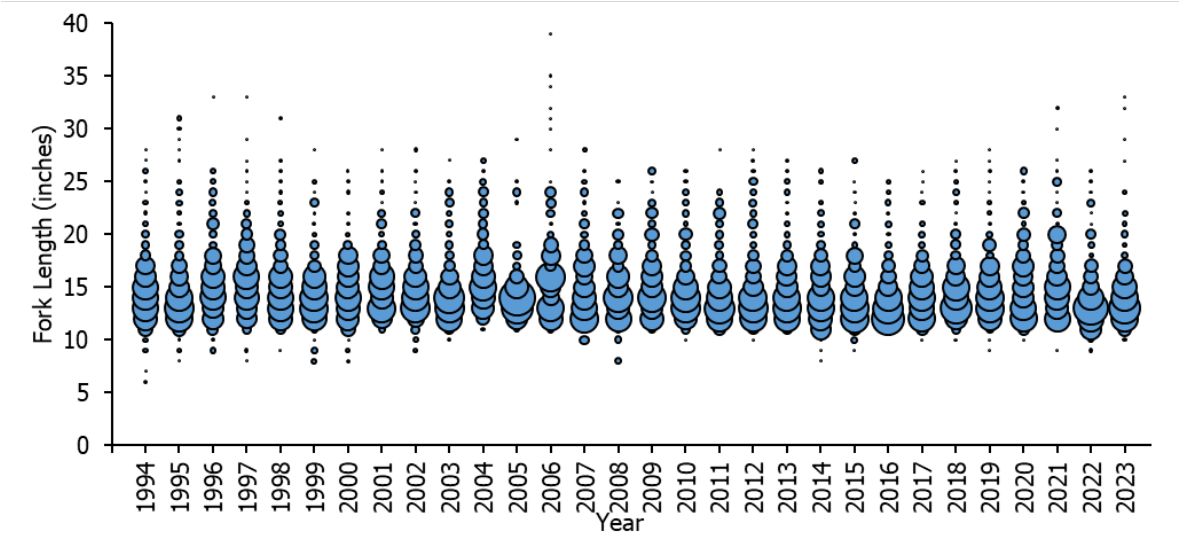

Figure 7. Recreational length frequency (fork length, inches) for Spanish mackerel harvested, 1994–2023. Bubbles represent fish at length and the bubble size is proportional to the number of fish at that length.

Table 4. Mean, minimum and maximum fork lengths (inches) and total number sampled of Spanish mackerel collected by DMF from both dependent (commercial and recreational) and independent (survey) sources for ageing by the NOAA Southeast Fisheries Science Center, 1997–2023.

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
2020	16.4	4.8	27.3	337
2021	15.0	5.8	25.7	778
2022	15.4	8.7	24.4	664
2023	14.6	6.3	26.6	672

Table 5. Spanish mackerel length (fork length, inches) data from Marine Recreational Information Program samples, 1981–2023.

Year	Mean Length	Minimum Length	Maximum Length	Total Number Measured
1986	15.4	8.1	27.2	110
1987	15.5	9.1	34.1	950
1988	5.0	7.9	32.9	1,118
1989	15.3	7.9	33.5	1,799
1990	15.9	8.3	35.5	2,160
1991	15.2	6.3	37.0	2,135
1992	15.4	7.5	33.1	1,354
1993	16.1	9.0	28.5	1,056
1994	15.2	6.4	29.4	2,255
1995	15.1	8.2	31.9	799
1996	16.0	9.8	70.2	1,107
1997	16.2	8.9	33.3	1,846
1998	15.5	9.2	31.1	895
1999	15.3	8.5	28.9	1,286
2000	15.7	9.0	27.2	1,242
2001	16.1	11.4	28.7	858
2002	16.3	9.5	28.0	827
2003	15.9	10.8	28.0	476
2004	16.7	11.1	27.5	298
2005	14.6	11.9	29.2	289
2006	16.0	11.1	39.4	236
2007	15.4	10.6	28.6	240
2008	15.2	8.9	26.2	596
2009	15.8	11.4	26.9	788
2010	15.2	10.7	26.5	763
2011	15.0	11.1	28.1	543
2012	15.1	10.6	28.0	776
2013	15.1	10.1	27.1	454
2014	14.8	9.0	29.9	754
2015	14.8	9.2	27.4	644
2016	14.3	11.0	26.3	1,030
2017	14.8	10.3	26.4	1,023
2018	15.0	9.9	27.2	1,691
2019	15.0	9.3	28.2	1,486
2020	15.6	9.0	27.5	1,914
2021	15.8	9.6	32.3	1,313
2022	14.1	9.7	26.6	1,070
2023	14.4	9.9	35.5	1,100

Fishery-Independent Monitoring

Length-frequency information for Spanish mackerel is collected in the division's statewide Independent Gill Net Survey (Program 915) and the Pamlico Sound Trawl Survey (Program 195) (Table 6). Ageing structures, otoliths, are collected from both fishery-independent sampling programs and sent to the Southeast Fisheries Science Center in Panama City, Florida for processing and ageing (Table 4).

Table 6. Mean, minimum and maximum fork lengths (inches) and total number sampled of Spanish mackerel from fishery-independent sampling programs, 1997–2023.

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
2020	6.2	2.1	13.4	336
2021	14.1	5.0	22.8	360
2022	15.5	4.8	25.3	612
2023	14.7	4.4	22.2	403

RESEARCH NEEDS

From Omnibus Amendment (ASMFC 2011):

- Increase collection of fishery-dependent length, sex, age, and Catch Per Unit Effort (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 theoretical age when size is zero (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).

MANAGEMENT

In North Carolina, Spanish mackerel are included in the North Carolina IJ FMP (NCDMF 2022), which defers, to the SAFMC's Coastal Migratory Pelagics FMP (SAFMC 2015) and the ASMFC's Spanish Mackerel FMP (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 FMP. Amendment 20A prohibits the sale of all recreational 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 NC-SC state line) and Southern Zone (south of NC-SC 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 FL 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 2015-2018 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 FL 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.

Table 7. Summary of N.C. Marine Fisheries Commission management strategies for Spanish mackerel.

Management Strategy	Implementation Status
Prohibits Purse Gill Nets when taking king or Spanish mackerel	Rule 15A NCAC 03M .0512
12-inch fork length minimum size limit. Fifteen fish recreational creel limit. Commercial Vessel Permit requirements. Commercial trip limit of 3,500 pounds of king, Spanish, or aggregate. Charter vessels or head boats with Commercial Vessel Permit must comply with possession limits when fishing with more than three persons.	Proclamation FF-15-2023
Established a harvest period for the commercial Spanish mackerel fishery in North Carolina Coastal Fishing Waters and implemented a 500-pound daily trip limit. The fishery closed November 10, 2023.	Proclamation FF-38-2023

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