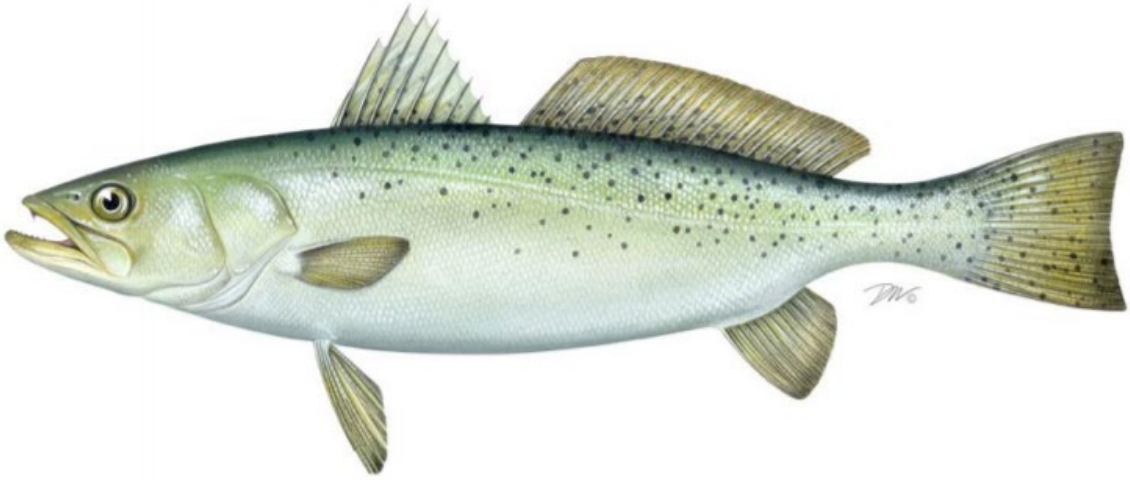
ATLANTIC STATES MARINE FISHERIES COMMISSION

REVIEW OF THE INTERSTATE FISHERY MANAGEMENT PLAN

FOR SPOTTED SEATROUT
(Cynoscion nebulosus)

2009 FISHING YEAR



Prepared by the Plan Review Team

Approved by the South Atlantic State/Federal Fisheries Management Board
March 2011

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I. Status of the Fishery Management Plan

Date of FMP Approval:	Original FMP – October 1984
Amendments:	Amendment 1 – November 1991
Management Area:	The Atlantic coast distribution of the resource from Maryland through the east coast of Florida
Active Boards/Committees:	South Atlantic State/Federal Fisheries Management Board; Spotted Seatrout Plan Review Team, Omnibus Amendment Plan Development Team

The Atlantic States Marine Fisheries Commission (ASMFC) adopted the Fishery Management Plan (FMP) for spotted seatrout in 1984. The states of Florida through Maryland have a declared interest in the Commission's FMP for spotted seatrout. The ISFMP Policy Board approved Amendment 1 to this FMP in November 1991. The FMP does not require state compliance through the Atlantic Coastal Fisheries Cooperative Management Act.

The goal of the management plan is "to perpetuate the spotted seatrout resource in fishable abundance throughout its range and generate the greatest possible economic and social benefits from its harvest and utilization over time." Plan objectives include: 1) attain over time optimum yield; 2) maintain a spawning potential ratio of at least 20% to minimize the possibility of recruitment failure; 3) promote conservation of the stocks in order to reduce the inter-annual variation in availability and increase yield per recruit; 4) promote the collection of economic, social, and biological data required to effectively monitor and assess management efforts relative to the overall goal; 5) promote research that improves understanding of the biology and fisheries of spotted seatrout; 6) promote harmonious use of the resource among various components of the fishery through coordination of management efforts among the various political entities having jurisdiction over the spotted seatrout resource; and 7) promote determination and adoption of standards of environmental quality and provide habitat protection necessary for the maximum natural protection of spotted seatrout.

Recommended management measures include a minimum size limit of 12 inches total length (TL) with comparable mesh size regulations in directed fisheries, and data collection for stock assessment and monitoring the status of the fisheries. All states with a declared interest in spotted seatrout have implemented at least the recommended minimum size limit. In addition, each state has either initiated spotted seatrout data collection programs or modified other programs to collect improved catch and effort data. Table 1 provides the states' recreational and commercial regulations for spotted seatrout through 2011.

II. Status of the Stock

A coastwide stock assessment of spotted seatrout has not been conducted given the largely non-migratory nature of the species and the lack of data on migration where it does occur. Instead, state-specific age-structured analyses of local stocks have been performed by several states. These stock assessments provide estimates of spawning potential ratio (SPR), which is a measure of the effect of fishing pressure on the relative abundance of the mature female segment of the

population. The FMP recommends a goal of 20% SPR; North Carolina, South Carolina, and Georgia have adopted this goal, and Florida has established a 35% SPR goal.

Florida's stock assessments in 1997, 1999, 2003, and 2006 are for separate northern and southern populations. Transitional SPR estimates for Florida's spotted seatrout in 2005 are 62% in the northeast region of the state's Atlantic coast and 51% in the southeast region (Murphy *et al.* 2006). These assessments have provided the basis for managing spotted seatrout in Florida. The next state assessment of spotted seatrout was planned for September 2010.

The South Carolina Department of Natural Resources packaged three state-specific assessments into a report in 2001; however, these assessments were not peer reviewed. This initial assessment of South Carolina spotted seatrout covered 1986-1992 and indicated that female SPR was just above the 20% goal in the terminal year (Zhao and Wenner 2001). This assessment led to an increase in the minimum size limit and decrease in the creel limit for spotted seatrout in South Carolina. A more recent assessment of the population of South Carolina spotted seatrout was conducted for the period 1981-2004, but not peer reviewed (de Silva, Draft 2005). Two modeling approaches were used, and both models indicated that the current spawning stock biomass is below what would be required to maintain 20% SPR.

Assessments in North Carolina and Georgia spotted seatrout covered 1981-1997 and 1986-1995, respectively, and both indicated that female SPR was below the 20% goal in the terminal year (Zhao and Burns 2001, Zhao *et al.* 2001). A more recent assessment of spotted seatrout in Georgia has been performed; however, it remains unpublished. This 2002 Georgia assessment is unpublished because the results were highly questionable due to data deficiencies and changing methodologies.

North Carolina recently completed a peer reviewed stock assessment of spotted seatrout covering 1991-2008, which included all spotted seatrout caught in North Carolina and Virginia (Jensen 2009). The assessment indicated that SPR has been below 20% SPR in recent years. Jensen (2009) recommended the implementation of management measures to account for recent increases of recreational fishing and discard mortality and maintain a sufficiently large spotted seatrout population to act as a buffer against the effects of future cold stun events. Based on the assessment, North Carolina developed a draft state FMP for spotted seatrout, with the most recent version released in December 2010. The draft FMP is in the final stages of development and is scheduled to be adopted once the draft rules are approved (April 2012).

III. Status of the Fishery

Both commercial and recreational fishermen regularly catch spotted seatrout from Maryland through the east coast of Florida (except in South Carolina where spotted seatrout has been declared a gamefish and can only be taken by recreational means). Landings from states north of Maryland are minimal and/or inconsistent from year to year. All catch estimates in this section include those in the management area only (MD-FL). Total recreational landings have surpassed total commercial landings every year since recreational landings have been recorded in 1981 (Figure 1). In 2009, recreational landings were more than five times the commercial landings. A coastwide (VA, NC, SC) winter mortality event in 2000/2001 likely contributed to the sudden

decline in commercial and recreational landings in 2001 and 2002. Both fisheries' landings have increased since then.

Commercial Fishery

The National Marine Fisheries Service (NMFS) compiles commercial spotted seatrout landings. The data are cooperatively collected by the NMFS and state fishery agencies from state mandated trip-tickets, landing weigh-out reports from seafood dealers, federal logbooks, shipboard and portside interviews, and biological sampling of catches. See Table 2.

Atlantic coast commercial landings of spotted seatrout (1960-2009) have ranged from 165,000 pounds to 1.38 million pounds (Figure 1). Commercial landings historically came primarily from Florida and North Carolina, with Virginia, South Carolina, and Georgia accounting for a small portion of the total. From 1960 to 1976, annual commercial landings of spotted seatrout averaged 1.07 million pounds, but have declined since then due to increased regulation and possible declines in abundance. Significant changes to regulations include the 1987 designation of spotted seatrout as a gamefish in South Carolina, and the 1995 prohibition on the use of entangling nets in Florida's coastal waters. From 1977 to 2009, commercial landings have averaged approximately 669,000 pounds. North of Florida, variability in annual harvest is typical and seems to parallel the climatic conditions of the preceding winter and spring. In 2009 the commercial landings are estimated to be 394,639 pounds, representing a 7% increase from the previous year's harvest and a 17.7% increase from the previous ten-year average. Gill nets took 72% of the 2009 catch, with North Carolina taking approximately 81% of the total coastwide catch. Similar to 2008, Virginia and Florida were responsible for approximately 12% and 7% of the 2009 commercial landings, respectively.

Recreational Fishery

Recreational catch statistics are collected by the NMFS recreational fisheries survey. Effort data are collected through telephone interviews. Catch data are collected through access-point angler intercept surveys. Catch per trip estimates are produced for each type of fish encountered, either observed or reported, and these estimates are combined with the effort estimates by sampling stratum to produce the catch and harvest estimates. See Tables 3, 4, and 5.

Over the last 28 years, the recreational catch of spotted seatrout has shown a strong upward trend, increasing from 1.1 million fish in 1981 to 5.5 million fish in 2009, with a peak of 8.1 million fish in 2007 (Figure 2). The recreational harvest of spotted seatrout, however, has remained relatively stable around the time series average of 1.3 million fish. The recreational harvest decreased from 1.6 million fish in 2008 to 1.37 million in 2009. Due in part to recreational size and creel limits and closed seasons, as well as the encouragement of catch and release practices, the percentage of caught fish being released has increased to 75-80 percent of the catch since 2000. In 2009, the release percentage (75.1%) fell just below the 10-year average (76.9%). In 2009, North Carolina anglers took the largest proportion of harvested fish with 37%, followed closely by Georgia anglers at 35%. Recreational catches are generally made with rod and reel, but some are taken by recreational nets and by gigging, where these methods are permitted. Most recreational fishing is conducted from private boats and the majority of the catch is taken from nearshore waters.

IV. Status of Assessment Advice

A coastwide stock assessment of spotted seatrout has not been conducted and the Plan Review Team (PRT) does not recommend that one be completed due to the life history of the fish and the available data. Several states have performed age-structured analyses on local stocks of spotted seatrout. Recent Florida and North Carolina stock assessments for spotted seatrout provide divergent trends on the status of the species. The 2005 stock assessment in South Carolina indicates an increasing population trend but a status level that is still below target spawning stock biomass levels (de Silva 2005). The PRT supports the continuation of state-specific assessments, yet recognizes the difficulty most states face to attain sufficient data of a quality that can be used in the assessment process and personnel who can perform the necessary modeling exercises.

The lack of biological and fisheries data for stock assessment and effective management of the resource was recognized in the 1984 FMP and continues to be a hindrance. Some states are increasing their collection of biological and fisheries data, which should provide insight on stock status over time.

V. Status of Research and Monitoring

Other than the commercial and recreational fishery-dependent data collected and/or compiled through the National Marine Fisheries Service, Fisheries Statistics Division, some states have implemented fishery-independent or additional fishery-dependent monitoring programs.

The Florida Fish and Wildlife Conservation Commission (FWC) implemented a juvenile finfish monitoring program in the northern Indian River Lagoon in the spring of 1990 and in the estuarine reaches of the St. Johns, St. Marys, and Nassau Rivers in northeast Florida in the spring of 2001. Florida also initiated a stratified random sampling program in 1997 on the Atlantic coast that utilizes a 183-m haul seine to catch exploitable-sized fishes. This has been conducted in the northern Indian River and southern Indian River since initiation and in northeast Florida since 2001. Florida's fishery-dependent sampling includes commercial trip-ticket information and biostatistical sampling of the commercial and recreational catch. A voluntary angler logbook program is utilized to collect information on the lengths of spotted seatrout released alive by anglers. This is used in a quarterly random survey of Florida's licensed anglers. Researchers at FWC are studying the reproductive biology and ecology of spotted seatrout in Tampa Bay, including maturation schedules, fecundity, spawning season, and spawning location (e.g., Lowerre-Barbieri *et al.* 2009). Florida also investigated post-release mortality rates of spotted seatrout caught by gillnet and hook and line gears. Spotted seatrout have also been routinely sampled since 1989 to monitor the mercury level in their tissues (Adams *et al*. 2003). An ecological study of spotted seatrout was initiated in 2007 to collect stable isotope date from tissue to characterize the energy transfer from salt marshes and mangroves to estuarine fish communities.

Georgia collects fishery-dependent data through a Marine Sportfish Carcass Recovery Program. Data collected through this survey are used to examine trends in the size and age composition of the recreationally harvested population, valuable information for future stock assessments. A fishery-independent trammel net survey, the Marine Sportfish Population Health Study, was implemented in 2003 to provide age and sex specific estimates of relative abundance in two Georgia estuaries, Wassaw Sound and the Altamaha Sound region. The survey is conducted

monthly, September through November, and utilizes a hybrid random-stratified and fixed station design in which each station is sampled once in a given month. In time, these surveys will improve the ability to evaluate the spotted seatrout population in Georgia.

South Carolina has an extensive directed research program on this species. Current project objectives include determining the size and age composition of the recreational catch by sampling independent angler and fishing tournament catches as well as a carcass program, and producing fisheries independent relative abundance estimates from trammel net surveys along the South Carolina coast. The latter is a stratified random sampling design and has been conducted monthly since 1991. South Carolina also has an electrofishing survey of upper estuarine waters. It uses a stratified random design and has been operating monthly since 2001. In contrast to the trammel net survey, it catches YOY as well as older seatrout (S. Arnott, Personal Communication, 2011). Additionally, South Carolina also has ongoing seatrout parasite studies (Moravec et al. 2006). Catch rates, size composition, and sub-samples of the catch on a bi-monthly basis are used for generating age-length keys for cohort specific indices of abundance. Roumillat and Brouwer (2004) have described the reproductive dynamics of female spotted seatrout in South Carolina.

North Carolina has collected age, growth, and maturity data for spotted seatrout caught in fishery-dependent and fishery-independent sampling programs since 1991. A fishery-independent monitoring program was initiated in May 2001, supported by USFWS Sports Fish Restoration funds. The program utilizes a stratified random, multi-mesh size gill net survey along North Carolina's Outer Banks, the bays of western Pamlico Sound, the Neuse, the Pamlico, Pungo, New and Cape Fear Rivers, and the Atlantic Ocean. Project objectives include calculating annual indices of abundance for important recreational fish (spotted seatrout included); supplementing samples for age, growth, and reproductive studies; evaluating catch rates and species distribution for identifying and resolving bycatch problems; and characterizing habitat utilization. Additional areas of the Neuse and Pamlico-Pungo Rivers contribute to the Pamlico Sound Area Independent Gill Net Survey, with common objectives and sampling design. Hydrophone work was conducted in North Carolina to characterize critical spawning habitats for spotted seatrout in Pamlico Sound. Hook and-line and estuarine gill net discard mortality studies were conducted in North Carolina in 1998-2001, supported by Atlantic Coastal Fisheries Cooperative Management Act funds.

A spotted seatrout tagging study was initiated in September 2008 and is scheduled to conclude in August 2012. Funding for one year was to collect preliminary data necessary to design and conduct an effective long-term tagging study on spotted seatrout in North Carolina, 2008-2009 (funded by NC Sea Grant Fishery Resource Grant). This was followed by an advanced tagging study by NC State University researchers who are using a combined conventional tag and telemetry approach to study the movement and mortality of spotted seatrout in North Carolina, 2009-2012 (funded by NC Marine Resources Fund, which consists of proceeds from the sale of the Coastal Recreational Fishing License).

VI. Status of Management Measures and Issues

Changes to State Regulations

North Carolina:
Effective October 5, 2009, the size limit for spotted seatrout was increased to 14" total length. This change was adopted as an interim management measure to ensure the viability of spotted seatrout while the North Carolina Spotted Seatrout FMP was being developed, and later adopted as a recommended management measure of the draft FMP (November 30, 2010). Other management measures adopted as a result of the draft FMP, and effective November 30, 2010, include:

- the recreational bag limit was reduced from 10 fish to 6 fish, no more than 2 of those 6 shall be greater than 24 inches total length. (See: http://www.ncdmf.net/procs/procs2k10/FF-81-2010.html);
- there is a weekend closure, i.e., no possession on the weekends, for commercial gears, year-round (See: http://www.ncdmf.net/procs/procs2k10/FF-82-2010.html).

Due to the consecutive cold stun events of the 2010 & 2011 winter seasons, there is a temporary closure for commercial and recreational harvest of spotted seatrout from January 14, 2011 through June 15, 2011. The intent is to protect the surviving fish through the peak spawn (May 30). (See: http://www.ncdmf.net/procs/procs2011/FF-007-2011.html). An exception is that a commercial fishing operation is allowed a bycatch allowance of 10% of the commercial catch other than spotted seatrout, not to exceed 50 pounds of spotted seatrout. (See: http://www.ncdmf.net/procs/procs2011/FF-030-2011.html).

Omnibus Amendment
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), alignment with Commission standards (because the current plan does not include *de minimis* criteria and other standard elements), and consistency with federal management in the exclusive economic zone (because the plan is intended to track federal Spanish mackerel measures).

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 ACFCMA 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.

VII. Implementation of FMP Compliance Requirements for 2009

There are no compliance requirements in this FMP.

VIII. Recommendations of 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.

Prioritized Research Recommendations

High Priority

- Conduct state-specific stock assessments to determine the status of stocks relative to the plan objective of maintaining a spawning potential of at least 20%.
- Collect data on the size or age of spotted seatrout released alive by anglers and the size and age of commercial discards.
- Continue work to examine the stock structure of spotted seatrout on a regional basis, with particular emphasis on advanced tagging techniques.
- Expand the NMFS recreational fishery survey to assure adequate data collection for catch and effort data, increased intercepts, and state add-ons of social and economic data needs.
- Conduct telemetry tagging surveys to provide precise estimates of mortality attributed to winter kills.
- Provide state-specific batch fecundity estimates for use in stock assessments.
- Develop state-specific juvenile abundance indices.
- Increase observer coverage in states that have a commercial fishery for spotted seatrout.

Medium Priority

- Identify essential habitat requirements.
- Evaluate effects of environmental factors on spawning frequency and stock density.
- Initiate collection of social and economic aspects of the spotted seatrout fishery.

IX. References

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X. Figures

Figure 1. Commercial landings (1960-2009) and recreational landings (1981-2009), in pounds, from Maryland to Florida (See Tables 2 and 4 for values and sources)

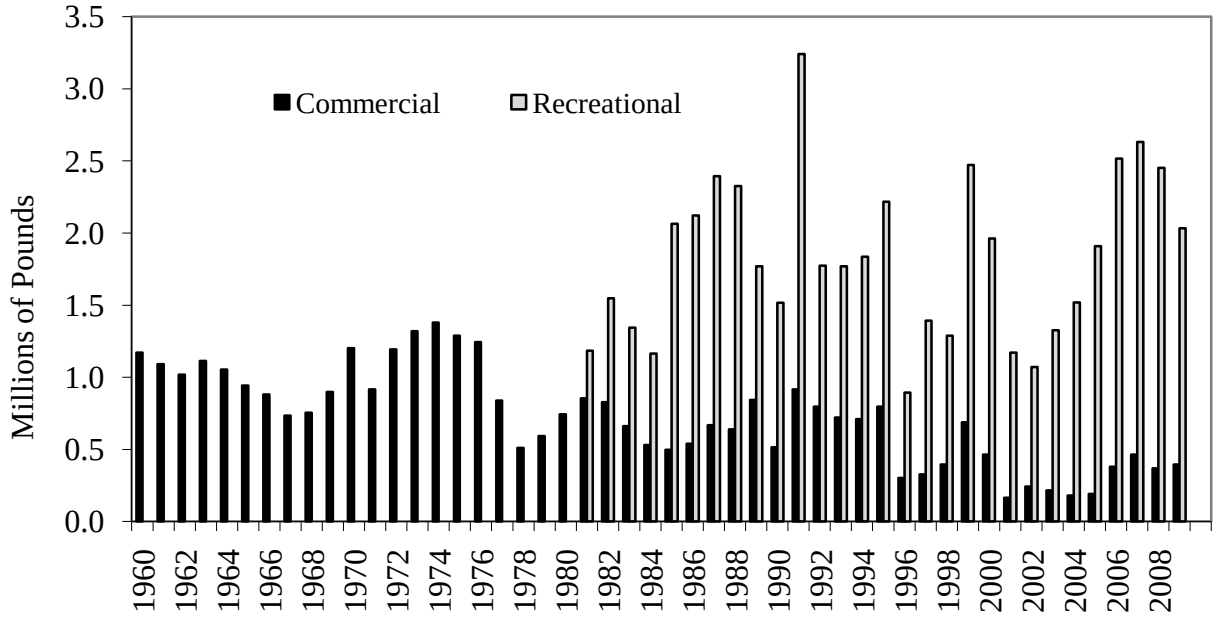
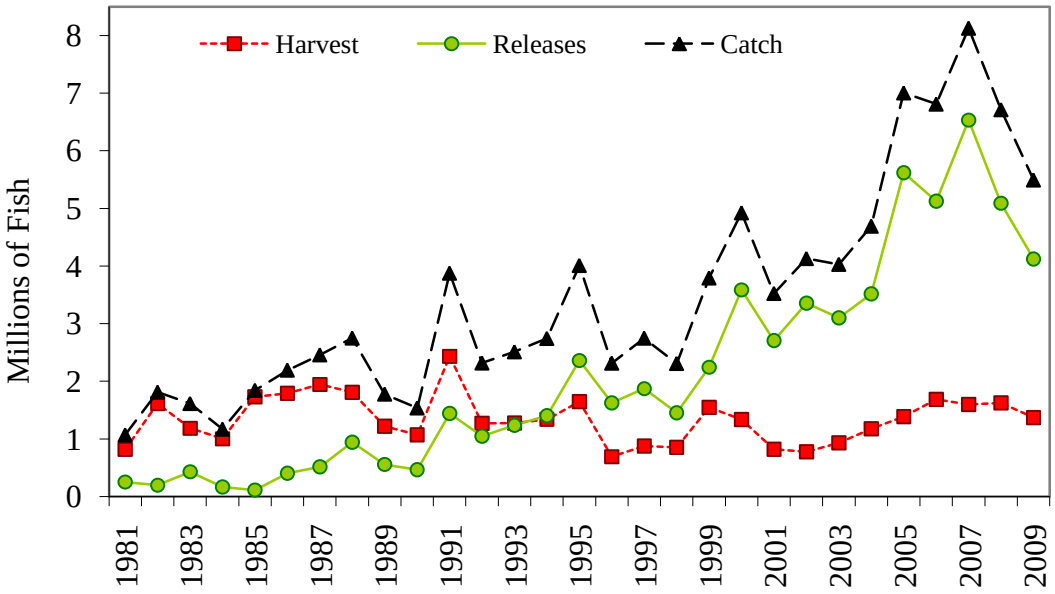


Figure 2. Recreational catch (numbers), 1981-2009, from Maryland to Florida
(See Tables 3 and 5 for values and sources)



XI. Tables

Table 1. Summary of state regulations for spotted seatrout in 2011

State	Recreational	Commercial
New Jersey	13" TL; 6 fish	Gill net: 13"; open 1/1-5/20 & 9/3-10/19 & 10/27-12/31; 150 lb bycatch limit; mesh ≥ 3.25" stretched except 2.75 - 3.25" stretched allowed within 2nm for permitted fishermen doing monthly reporting. Trawl: open 1/1-7/31 @ 13" & 10/13-12/31 @ 12"; mesh ≥ 3.75" diamond or 3.375 square; 150 lb bycatch limit. Pound net: 13"; open 1/1/-6/6 & 7/1-12/31; 150 lb bycatch limit. Hook & line: open 1/1-12/31, 13", 6 fish.
Delaware	12" TL	12" TL. Gill net restrictions.
Maryland	14" TL; 10 fish	12" TL. Minimum mesh size restrictions for trawl (3-3/8" sq. or 3-3/4" diag.) and gill nets (3").
PRFC	14" TL; 10 fish	14" TL
Virginia	14" TL; 10 fish	14" TL except pound nets and haul seines allowed 5% by weight less than 14". Hook & line - 10 fish limit. Quota: 51,104 lbs (Sept. 1-Aug. 31).
North Carolina	14" TL; 6 fish, maximum of 2 fish > 24" TL	14" TL; hook & line: 6 fish limit; no possession on weekends
South Carolina	14" TL; 10 fish. May be taken by rod & reel year-round or gigging March-November.	Gamefish status: native caught fish may not be sold.
Georgia	13" TL; 15 fish	13" TL; 15 fish. BRD requirement for trawl; gear mesh regulations.
Florida	15-20" TL slot with 1 fish >20" allowed; north region: 5 fish limit and Feb. closure; south region: 4 fish limit and Nov.-Dec. closure	15-24" TL; June 1-Aug. 31 season; 75 fish per day or vessel (the lesser); hook & line or cast net only

Note: A commercial fishing license is required to possess spotted seatrout in all states with a fishery.

Table 2. Commercial landings (pounds) of spotted seatrout by state, 1981-2009
(Source: NMFS Fisheries Statistics Division, 01/17/11)

Year	MD	VA	NC	SC	GA	FL	Total
1981		4,000	113,304		629	736,026	853,959
1982		3,400	83,847	1,944	4,994	732,278	826,463
1983		4,400	165,360	4,479	5,795	481,535	661,569
1984		3,000	152,934	2,374	4,348	367,541	530,197
1985		8,302	109,048	1,770	7,149	369,756	496,025
1986		18,500	191,514	12,214	8,691	307,261	538,180
1987		13,300	315,380	11,941	10,739	317,044	668,404
1988		15,500	296,538	486	9,110	315,947	637,581
1989		18,500	451,909	33	10,565	361,973	842,980
1990		21,435	250,634	1,095	5,942	236,453	515,559
1991	98	21,200	660,662		7,380	225,812	915,152
1992	364	10,395	526,271		11,310	247,189	795,529
1993	24	38,033	449,886		8,550	223,931	720,424
1994	30	44,636	412,458		5,112	247,666	709,902
1995	182	28,722	574,410		8,482	184,269	796,065
1996	14,961	4,476	226,668		7,501	48,254	301,860
1997	15,688	11,711	232,583		7,621	57,316	324,919
1998	19,794	21,774	307,777		2,845	41,556	393,746
1999	36,365	38,513	546,775		3,244	61,802	686,699
2000	20,270	19,918	376,657		1,997	45,392	464,234
2001	24,754	3,773	105,797			30,236	164,560
2002	11,771	9,308	175,643		969	44,641	242,332
2003	902	5,310	181,529			27,172	214,913
2004	342	17,290	131,019		815	29,616	179,082
2005	2,410	21,448	129,645			36,763	190,266
2006	245	28,529	312,714			36,689	378,177
2007	32	41,003	374,817			46,840	462,692
2008		43,601	304,504			20,889	368,994
2009	243	27,762	320,336			46,298	394,639

Table 3. Recreational harvest (numbers of fish) of spotted seatrout by state, 1981-2009
(Source: NMFS Fisheries Statistics Division, 01/17/11)

Year	MD	VA	NC	SC	GA	FL	Total
1981			30,037	20,934	189,080	576,847	816,898
1982			112,023	849,634	226,758	426,378	1,614,793
1983			91,956	121,940	325,655	645,120	1,184,671
1984			90,262	95,281	114,403	700,876	1,000,822
1985			263,878	347,851	251,764	866,162	1,729,655
1986	7,507	82,671	270,867	477,136	401,490	550,591	1,790,262
1987	29,295	17,415	320,977	392,329	439,782	744,330	1,944,128
1988	20,769	288,705	420,115	355,547	389,276	331,709	1,806,121
1989	151,986	66,033	181,149	174,011	448,767	198,617	1,220,563
1990	20,416	67,939	251,088	113,160	368,787	249,824	1,071,214
1991	17,995	69,032	316,895	438,502	1,204,116	385,817	2,432,357
1992	3,235	30,091	333,990	200,030	338,175	363,238	1,268,759
1993	7,038	103,131	206,523	222,144	463,702	274,118	1,276,656
1994	33,511	115,025	457,636	139,551	337,965	255,216	1,338,904
1995	19,198	90,838	325,927	223,751	607,095	381,884	1,648,693
1996	35,765	46,098	151,380	137,530	171,676	148,571	691,020
1997	19,951	92,725	256,719	111,576	167,287	228,096	876,354
1998	13,620	34,623	294,501	125,038	197,293	189,621	854,696
1999	2,112	138,492	410,321	101,260	655,407	241,096	1,548,688
2000	1,634	90,135	250,450	219,740	486,673	288,443	1,337,075
2001		13,447	182,124	63,452	309,487	250,987	819,497
2002		16,303	197,484	84,777	271,357	206,310	776,231
2003	2,091	102,484	106,415	123,027	425,993	169,587	929,597
2004		74,747	316,894	247,156	336,254	199,523	1,174,574
2005	3,828	31,416	512,262	268,467	231,429	337,744	1,385,146
2006	5,136	56,475	577,537	294,096	453,394	299,337	1,685,975
2007		145,736	525,156	122,419	499,709	302,625	1,595,645
2008		79,545	584,024	175,975	623,619	160,455	1,623,618
2009	11,680	40,109	509,416	147,266	478,895	182,752	1,370,118

Table 4. Recreational harvest (pounds of fish) of spotted seatrout by state, 1981-2009
(Source: NMFS Fisheries Statistics Division, 01/17/11)

Year	MD	VA	NC	SC	GA	FL	Total
1981			63,036	14,808	138,720	967,921	1,184,485
1982			120,045	588,999	177,847	660,295	1,547,186
1983			96,359	138,442	323,889	784,531	1,343,221
1984			39,861	116,118	141,306	866,077	1,163,362
1985			288,088	509,551	234,704	1,032,344	2,064,687
1986	4,960	64,394	328,439	587,570	440,774	695,168	2,121,305
1987	22,511	38,495	366,442	592,612	491,317	883,707	2,395,084
1988	36,629	460,378	390,836	448,473	536,959	453,063	2,326,338
1989	184,318	112,344	259,726	277,489	608,009	328,338	1,770,224
1990	39,059	121,136	282,872	174,845	423,815	475,045	1,516,772
1991	34,753	121,604	472,397	628,011	1,449,853	534,371	3,240,989
1992	7,802	56,685	508,760	227,210	430,946	543,491	1,774,894
1993	12,800	201,562	307,151	268,055	586,426	392,827	1,768,821
1994	26,764	175,184	679,996	183,343	412,392	357,441	1,835,120
1995	31,464	148,544	478,674	247,987	667,379	642,670	2,216,718
1996		77,269	197,261	171,727	196,487	249,898	892,642
1997	32,963	261,911	311,891	163,771	242,506	380,276	1,393,318
1998	37,189	61,888	444,441	151,718	262,896	329,793	1,287,925
1999		290,694	690,606	146,277	916,860	428,061	2,472,498
2000	2,972	195,544	385,190	267,297	565,903	545,202	1,962,108
2001		26,733	213,438	58,885	369,083	502,254	1,170,393
2002		28,882	274,100	111,954	302,559	353,693	1,071,188
2003	3,494	218,061	145,936	140,276	502,278	316,279	1,326,324
2004		134,602	385,624	229,541	377,370	390,880	1,518,017
2005	10,761	76,325	628,739	326,501	263,209	603,891	1,909,426
2006	9,993	132,629	941,161	369,165	531,441	533,121	2,517,510
2007		305,599	988,527	211,225	531,637	594,506	2,631,494
2008		195,987	922,733	302,019	733,307	298,679	2,452,725
2009	13,261	85,358	833,568	199,554	579,270	322,941	2,033,952

Table 5. Recreational releases (number of fish) of spotted seatrout by state, 1981-2009
(Source: NMFS Fisheries Statistics Division, 01/17/11)

Year	MD	VA	NC	SC	GA	FL	Total
1981				5,522	36,853	209,059	251,434
1982				8,007	17,645	171,093	196,745
1983			16,579	32,860	12,038	367,881	429,358
1984			30,173	44,436	16,174	76,346	167,129
1985			16,578	6,409	22,917	66,960	112,864
1986	13,639	28,606	19,792	115,315	189,798	35,646	402,796
1987		30,070	136,104	130,253	176,415	41,391	514,233
1988	26,999	148,934	74,818	78,568	182,628	431,665	943,612
1989	52,859	11,977	82,909	54,279	167,025	187,406	556,455
1990	4,874	23,435	84,235	35,223	114,624	203,439	465,830
1991	21,811	40,550	169,921	51,415	369,972	789,779	1,443,448
1992	701	19,855	139,616	97,813	192,261	597,254	1,047,500
1993		65,605	149,744	92,101	146,665	780,573	1,234,688
1994	32,466	243,463	207,262	220,941	125,421	574,629	1,404,182
1995	157,530	327,643	277,896	194,996	327,835	1,074,703	2,360,603
1996	51,594	165,169	153,051	107,691	63,585	1,081,893	1,622,983
1997	4,826	168,964	98,377	89,147	61,148	1,449,278	1,871,740
1998	49,460	74,569	73,024	151,935	100,059	1,005,443	1,454,490
1999	7,082	152,120	253,442	92,792	160,801	1,577,378	2,243,615
2000	4,805	264,550	90,070	368,332	547,765	2,310,491	3,586,013
2001		110,308	194,982	38,709	365,140	1,995,635	2,704,774
2002		136,265	385,162	147,962	357,953	2,326,420	3,353,762
2003		207,270	131,619	314,642	737,730	1,707,957	3,099,218
2004	9,430	295,518	300,025	333,537	608,193	1,969,884	3,516,587
2005	4,612	277,307	817,036	395,483	678,057	3,446,336	5,618,831
2006	9,721	125,135	559,786	666,865	872,395	2,889,495	5,123,397
2007	2,231	414,709	973,516	560,272	957,682	3,623,247	6,531,657
2008		373,146	1,005,298	850,006	719,622	2,140,752	5,088,824
2009	6,969	332,861	933,342	459,939	831,263	1,558,150	4,122,524