REVIEW OF THE INTERSTATE FISHERY MANAGEMENT PLAN FOR SPOTTED SEATROUT
(Cynoscion nebulosus)
2005 FISHING YEAR

Prepared by:

The Spotted Seatrout Plan Review Team

Beth Burns, North Carolina Division of Marine Fisheries
Gabe Gaddis, Georgia Coastal Resources Division
Nichola Meserve, Atlantic States Marine Fisheries Commission, Chair
Mike Murphy, Florida Fish & Wildlife Conservation Commission
Charlie Wenner, South Carolina Department of Natural Resources

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I. Status of the Fishery Management Plan

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. Amendment 1 to this FMP was approved by the ISFMP Policy Board in November 1991. This amendment added an objective of maintaining a spawning potential ration (SPR) of at least 20% to minimize the possibility of recruitment failure.

The goal of Amendment 1 to the spotted seatrout FMP 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." The plan's objectives are to: 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.

It has been the opinion of the Commission's original Advisory Committee and Spotted Seatrout Plan Review Team that the goal and objectives of the plan are still valid, but that full implementation of the FMP has not been achieved across the entire management unit.

II. Status of the Stock

Fluctuations in spotted seatrout landings (both commercial and recreational) have varied considerably during the last 20 years. Some states are accumulating catch/effort data, especially in regards to recreational fisheries, which should provide insight on stock status over time.

Florida, South Carolina, and Georgia have run age structured analyses on local stocks of spotted seatrout. Florida's spotted seatrout management plan has a goal of a 35% spawning potential ratio (SPR), while South Carolina and Georgia have adopted the ASMFC plan objective of maintaining an SPR of at least 20% to minimize the possibility of recruitment failure. The most recent estimates of transitional SPR for Florida are 57% in the northeast region north of Volusia County and 33% in the southeast region from Volusia County south, for 2001 (Murphy 2003). Analyses conducted in South Carolina and Georgia indicated that fishing mortality needed to be reduced approximately 20% to meet the plan objective of a 20% SPR (Wenner & Zhao 1995; Zhao *et al*. 1997). As a result, in 1998, South Carolina increased the minimum size from 12 to 13 inches TL and decreasing the bag limit from 15 to 10 fish per person, and Georgia increased the minimum size limit from 12 to 13 inches TL and decreased the daily creel limit from 25 to 15

fish. All the same, a 2002 Georgia DNR assessment report found evidence that spotted seatrout in state waters are both growth and recruitment overfished; however, the report also clearly states that the estimates of SPR (<20%) are unreliable due to data deficiencies and changing methodology (Foster 2002). South Carolina has an assessment under internal review that estimates SPR at between 15 and 18% depending on the model used (de Silva, unpublished). The report also states that the 20% SPR goal, being below F_{msy}, may be insufficient to maintain a sustainable population. Population analyses on other stocks within the region have not been conducted at this time.

III. Status of the Fishery

Both commercial and recreational fishermen regularly catch spotted seatrout from Maryland south 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 inconsistently landed from year-to-year. Total recreational landings have surpassed total commercial landings every year since at least 1981 (Figure 1). The more northern fisheries experienced a winter mortality event in 2000/2001, which likely contributed to the sudden decline in commercial and recreational landings in 2001.

Commercial Fishery -
The 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. The NMFS data were not available for 2005 at the time of this report, thus the 2005 landings rely on preliminary data from the state fishery agencies.

Atlantic coast commercial landings of spotted seatrout (1960-2005) have ranged from 165,000 pounds to 1.4 million pounds (Table 1). During the early 1960's and early 1970's, commercial landings of spotted seatrout were sustained at or above the 1 million pound level. Whether this was related to resource abundance or effort is unknown. Commercial landings have generally declined since 1976 and remain well below 1 million pounds. During the 1980's, the majority of commercial landings (in pounds of fish landed) came from the east coast of Florida, while in the 1990's, the majority of commercial landings have come from North Carolina.

Preliminary estimates indicate commercial landings increased slightly in 2005 to about 187,000 pounds from 181,000 pounds in 2004. This is the third lowest annual total in the time series. The majority (~69%) of landings are reported from North Carolina where gill nets are the predominate gear. The east coast of Florida and Virginia are responsible for approximately 20% and 9% of commercial landings, respectively. The remaining 2% of the 2005 landings are from Maryland, Georgia, Connecticut, and Rhode Island.

Recreational Fishery -
Recreational catch statistics are collected by the NMFS in the Marine Recreational Fisheries Statistics Survey (MRFSS). Effort data is collected through telephone interviews. Catch expansions are based on angler interviews and biological sampling conducted by trained interviewers stationed at fishing access sites.

The recreational harvest of spotted seatrout (1981-2005) has ranged from 691,020 fish in 1996 to 2.4 million fish in 1991, averaging approximately 1.3 million fish per year (Table 2). Coastwide recreational harvest in 2005 was nearly 1.4 million fish (~1.9 million pounds) (Table 3). The estimated number of spotted seatrout released has generally increased since the mid-1980s, with a dramatic rise from 1990 to 1991 (Table 4, Figure 2). North Carolina, Florida (east coast), South Carolina, and Georgia together harvested over 97% of the 2005 total recreational landings by number of fish. The number of fish released has remained well over 1 million per year since that time, reaching an all-time high of 5.5 million in 2005, an increase of nearly 60% from 2004.

Figure 1. Commercial and recreational landings (pounds) of spotted seatrout, 1960-2005

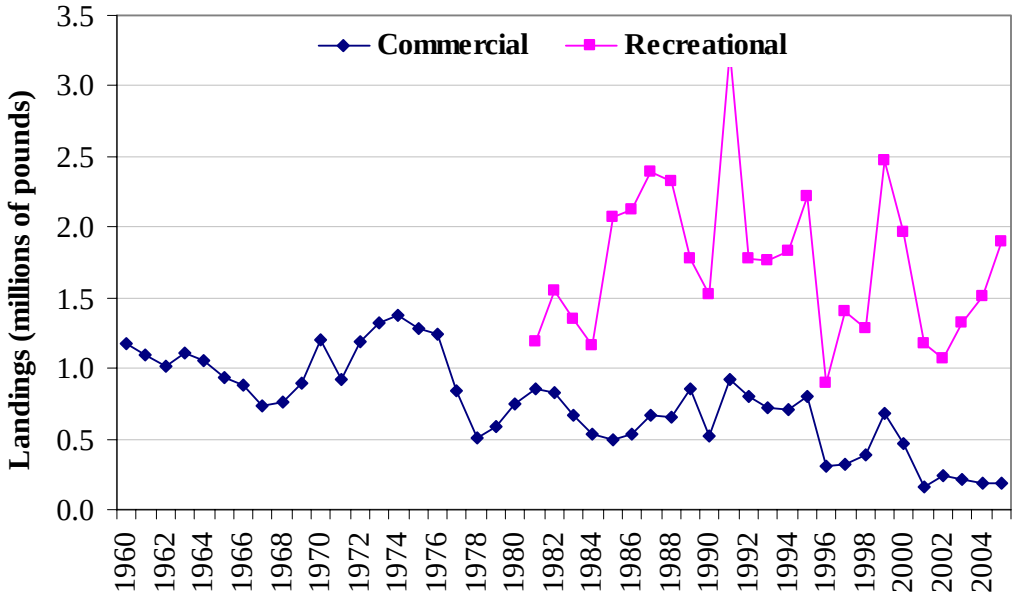
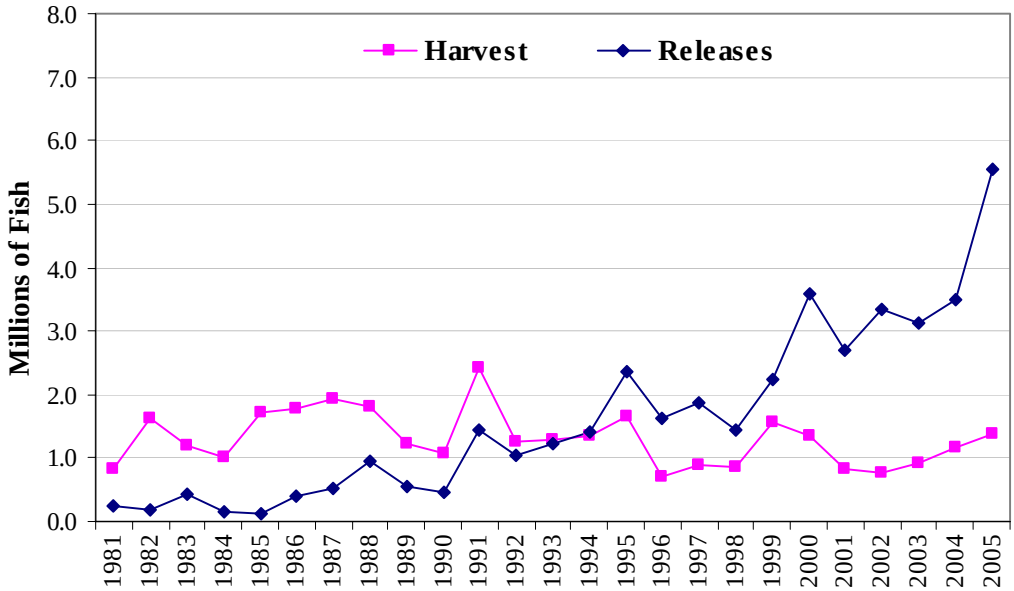


Figure 2. Recreational landings (number A + B1 fish) and releases (number B2 fish), 1981-2005



IV. Status of Assessment Advice

A formal coastwide stock assessment of spotted seatrout has not been conducted and is impractical considering the biology and population dynamics of this species. Florida, South Carolina, and Georgia have performed age structured analyses on local stocks of spotted seatrout. The 2002 Georgia assessment was conducted as scheduled; however, results were highly questionable (Foster 2002). South Carolina has an assessment currently under review (de Silva, unpublished). North Carolina has scheduled a stock assessment on local spotted seatrout stocks to be completed in conjunction with the state's FMP process, scheduled to begin in 2007. Florida conducted assessments for Florida Atlantic spotted seatrout populations in 1993 and 1995, then for separate northern and southern Florida Atlantic coast populations in 1997, 1999, and 2003. The regional extent of recent assessments in Florida is supported by preliminary genetic work from Florida's Atlantic coast (Wilson et al. 2002). However, the northern extent of the spotted seatrout stock in northeast Florida remains unknown and genetics information appear to show a separate stock in extreme southeast Florida (Biscayne Bay). The 1984 FMP recognized the lack of biological and fisheries data necessary for stock assessment and effective management of the resource. Spotted seatrout life history information and fisheries data have generally been localized and conducted at different levels of population abundance. Detailed information on incidental bycatch, release mortality, and the size and age structure of releases has become a more important component of assessments of the condition of spotted seatrout populations.

V. Status of Research and Monitoring

Other than the fishery-dependent data (catch, landings, effort, length, weight, etc.) collected and/or compiled through the NMFS and MRFSS, 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. FWC researches are studying the reproductive biology and ecology of spotted seatrout in Tampa Bay, including maturation schedules, fecundity, spawning season, and spawning location. Florida also investigated post-release mortality rates of spotted seatrout caught by gillnet and hook and line gears (Murphy *et al.* 1995).

Georgia collects additionally fishery-dependent data through a Marine Sportfish Carcass Recovery Program. A fishery-independent survey was implemented in 2003 to provide age and sex specific estimates of relative abundance in two Georgia estuaries to be used for stock assessments. Several years will be required to amass data needed to evaluate the survey and produce accurate estimates of biological reference points from assessments (GA CRD 2003).

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. 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. The reproductive dynamics of female spotted seatrout in South Carolina has been described (Roumillat and Brouwer 2004).

North Carolina has collected age, growth, and maturity data for spotted seatrout caught in fishery dependent and fishery independent sampling programs since 1991 (Burns 1996). 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 and the bays of western Pamlico Sound. Project objectives include calculating annual indices of abundance for target species (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 in Pamlico Sound. 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 (Luczkovich et al. 2000). Hook and-line and estuarine gill net discard mortality studies were conducted in North Carolina in 1998-2001, supported by the Atlantic Coastal Fisheries Cooperative Management Act funds (Gearhart 2002; Price *et al.* 2002).

VI. Status of Management Measures and Issues

All states which declared an interest in spotted seatrout have established a minimum size limit of at least 12 inches total length (TL) as called for in the FMP (Table 5). Collection of improved catch and effort data from the commercial and recreational fisheries has been initiated in all states as recommended in the FMP.

South Carolina has declared spotted seatrout a gamefish, imposed a creel limit of 10 fish per angler per day, a minimum size limit of 13" TL, and fish must be landed with head and fins intact. Florida has a commercial slot limit of 15-24" TL, a June-August open season, and a 75 fish daily possession limit; commercial harvest is limited to hook and line and cast nets. Florida has a recreational slot limit of 15 - 20" TL with one fish over 20" allowed per day. Florida's bag limits and closed seasons for spotted seatrout are regional with a 5-fish bag limit and February closed season north of Volusia county, and a 4-fish bag limit with a November-December closed season from Volusia County south. In 2006, Florida clarified the definition of total length to mean the squeezed-tail measure and not the relaxed-tail measure. Georgia has a daily bag limit of 15 fish, a minimum size of 13" TL, and fish must be landed with head and fins intact. North Carolina has a 12" TL minimum size limit and a 10 fish possession limit for recreational gears and commercial hook and line. Current North Carolina regulations require the attendance of small mesh gill nets (<5" stretched mesh) from May 1 through October 31 in primary and

secondary nursery areas, areas within 200 yards of any shoreline, and the extensive shallow water grass flat areas located behind North Carolina's Outer Banks. Virginia has a 14" TL commercial and recreational minimum size; commercial hook and line and recreational possession limit of 10 fish; and a commercial quota. Maryland has a 14" TL minimum recreational size and 10 fish possession limit; a 12" TL minimum commercial size limit and seasonal closures and mesh restrictions. Although not required to by the FMP, Delaware has a 12" TL commercial and recreational size limit, and New Jersey has a 13" recreational and commercial size limit (with an exception of 12" when taken by trawl between September and December).

VII. Implementation of FMP Compliance Requirements as of October 1, 2006

All states required to implement the minimum size limit of 12 inches total length (TL) have done so.

VIII. Recommendations of FMP Review Team

Management and Regulatory Recommendations

- Develop an amended Spotted Seatrout FMP with objective compliance criteria.
- Efforts should be continued towards achieving full implementation of the FMP.
- Collection of commercial and recreational landings data should be continued, and increased emphasis should be placed on obtaining complimentary effort data.
- Development and implementation of methodologies to monitor stock status such as pre-recruit indices and virtual population analyses should receive more attention as should effort data associated with catches and size composition data on catches.
- The Spotted Seatrout FMP should be reviewed periodically and updated to incorporate new data and research findings and to assess the status of stocks and the fisheries.

Prioritized Research Recommendations

<u>High Priority</u>

- 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%.
- Initiate fishery independent surveys of spotted seatrout.
- Emphasize collection of the biological data necessary to conduct stock assessments and to assist in drafting fishery management plans.
- Utilize age structure analyses by sex in stock assessments.
- 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 MRFSS to assure adequate data collection for catch and effort data and for increased intercepts and state add-ons of social and economic data needs.

<u>Medium Priority</u>

- Identify essential habitat requirements.
- Evaluate effects of environmental factors on stock density.
- Continue collection and expansion of commercial and recreational landings data.

- Initiate collection of social and economic aspects of the spotted seatrout fishery.
- Improve precision of effort reporting through commercial trip ticket programs.

References

Burns, B.L. 1996. Life history and population dynamics of spotted seatrout, (*Cynoscion nebulosus*) in North Carolina. N.C. Dept. Natural Resources and Community Development, Div. Mar. Fish., Compl. Rep. Project F-43, May 1996.

de Silva, J. Unpublished. Stock Assessment of Spotted Seatrout, *Cynoscion nebulosus*, in South Carolina with Recommendations on the Management of the Recreational Fishery. A Report to the South Carolina Department Natural Resources, Marine Research Institute, March 2005 (in review).

Gearhart, J.L. 2002. Hooking Mortality of spotted seatrout (*Cynoscion nebulosus*), weakfish (*Cynoscion regalis*), red drum (*Sciaenops ocellata*), and southern flounder (*Paralichthys lethostigma*) in North Carolina. North Carolina Division of Marine Fisheries, Morehead City, North Carolina.

Georgia Coastal Resources Division (GA CRD). 2003. Management Plan: Spotted Seatrout. Report CN MP 2003. Available at: http://crd.dnr.state.ga.us/assets/documents/SpottedSeatroutFMP04.pdf

Luczkovich, J.J., H.J. Daniel, III and M.W. Sprague. 2000. Characterization of critical spawning habitats of weakfish, spotted seatrout and red drum in Pamlico Sound using hydrophone surveys. Final Rep. and Annual Performance Rep. Grants F-62-1 and F-62-2.

Murphy, M.D., R.F. Heagey, V.H. Neugebauer, M.D. Gordon, and J.L. Hintz. 1995. Mortality of spotted seatrout released from gill-net or hook-and-line gear in Florida. North American Journal of Fisheries Management 15(4): 748-753.

Murphy, M.D. 2003. A stock assessment of spotted seatrout, *Cynoscion nebulosus*, in Florida: status of the stocks through 2001. Florida Fish and Wildlife Conservation Commission Florida Marine. Research. Institute In-House Report Number IHR2003-012.

Price, A. Blake and J.L.Gearhart. 2002. Small Mesh (<4.5-inch) Gillnet Discard Mortality of spotted seatrout (*Cynoscion nebulosus*), weakfish (*Cynoscion regalis*), southern flounder (*Paralichthys lethostigma*), and red drum (*Sciaenops ocellata*) in Roanoke Sound, Core Sound, and the Neuse River, North Carolina. North Carolina Division of Marine Fisheries, Morehead City, North Carolina.

Roumillat, W.A. and M.C. Brouwer. 2004. Reproductive dynamics of female spotted seatrout (*Cynoscion nebulosus*) in South Carolina. Fishery Bulletin 102:473-487.

Wenner, C. A. and B. Zhao. 1995. Stock assessment and fishery management of the spotted seatrout, *Cynoscion nebulosus,* on the South Carolina coast. Marine Resources Research Institute, Marine Resources Division, South Carolina Department of Natural Resources, 217 Ft. Johnson Rd., Charleston, SC 29412.

Wilson, M.M., T.M Bert, and S. Seyoum. 2002. Genetic stock structure of the spotted seatrout, *Cynoscion nebulosus*, in Florida. Florida Fish and Wildlife Conservation Commission Florida Marine Research Institute Report Number IHR2002-005.

Zhao, B., C. Wenner, and N. Nicholson. 1997. Stock Assessment of the Spotted Seatrout *Cynoscion nebulosus* on the Georgia Coast, 1986-1995.

Table 1. Commercial landings (in pounds) of spotted seatrout by state, 1960-2005

(NMFS 2005; State Fisheries Departments, pers. com. 2006)

Year	CT	RI	NY	NJ	DE	MD	VA	NC	SC	GA	FLEC	Total
1960							54,900	171,200	53,000	1,000	889,800	1,169,900
1961							73,800	209,100	56,100	1,700	749,500	1,090,200
1962							28,400	204,700	27,200	1,000	755,700	1,017,000
1963							25,700	232,400	47,800	5,100	801,300	1,112,300
1964							23,400	204,800	59,600	1,900	764,500	1,054,200
1965							40,400	175,100	35,000	8,900	682,100	941,500
1966							11,800	115,900	24,500	3,200	724,000	879,400
1967							3,700	122,500	1,600	6,900	599,200	733,900
1968							5,800	97,200	11,900	1,700	638,200	754,800
1969							19,400	189,100	8,300	2,700	679,600	899,100
1970							65,900	404,600	9,100	10,000	711,200	1,200,800
1971							44,400	337,600	24,200	15,600	494,900	916,700
1972							12,800	502,800	18,100	26,200	634,100	1,194,000
1973							9,500	611,100	5,800	26,800	665,800	1,319,000
1974							26,200	670,200	8,900	16,100	658,500	1,379,900
1975							72,500	632,500	17,100	30,900	535,100	1,288,100
1976							39,000	637,600	5,800	30,000	531,700	1,244,100
1977							3,800	323,500	600	16,000	493,900	837,800
1978							6,100	97,304	119	2,470	402,954	508,947
1979							3,500	105,034	2,977	4,987	475,809	592,307
1980							1,000	171,334	8,137	4,250	558,817	743,538
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				20			21,435	250,634	1,095	5,942	236,453	515,579
1991				171		98	21,200	660,662		7,380	225,812	915,323
1992				165		364	10,395	526,271		11,310	247,189	795,694
1993				87		24	38,033	449,886		8,550	223,841	720,421
1994				142		30	44,636	412,458		5,112	247,666	710,044
1995	106			8		182	28,722	574,404		8,482	184,269	796,067
1996						14,961	4,476	226,668		7,501	48,254	301,860
1997						15,688	11,711	232,579		7,621	57,316	324,915
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	375,159		1,997	45,393	462,737
2001						24,754	3,773	105,797			30,236	164,560
2002						11,771	9,308	175,609		969	44,641	242,298
2003			856			902	5,310	181,529			27,172	215,769
2004		2,002		2	46	342	17,290	131,019		828	29,616	181,145
2005*	473	86				2,339	17,307	129,595		< 500	36,777	187,123
Total	579	2,088	856	595	46	147,884	974,703	13,382,228	462,169	351,208	19,224,034	

* Preliminary landings; total includes the maximum of 500 lbs from Georgia (exact amount is confidential)

Table 2. Recreational harvest (numbers of A + B1 fish) of spotted seatrout by state, 1981-2005
(NMFS 2006)

Year	NJ	DE	MD	VA	NC	SC	GA	FLEC	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		1,094	17,995	69,032	316,895	438,502	1,204,116	385,817	2,433,451
1992		0	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		179	33,511	115,025	457,636	139,551	337,965	255,216	1,339,083
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	3,196	245	19,951	92,725	256,719	111,576	167,287	228,096	879,795
1998		125	13,620	34,623	294,501	125,038	197,293	189,621	854,821
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	168,314	928,324
2004		635		72,728	310,487	249,885	342,182	198,187	1,174,104
2005		380	4,048	31,853	495,925	273,606	232,542	332,211	1,370,565
Total	3,196	2,278	390,171	1,569,768	6,329,129	5,661,692	9,366,712	9,202,563	

Table 3. Recreational harvest (pounds of A + B1 fish) of spotted seatrout by state, 1981-2005
(NMFS 2006)

Year	NY	DE	MD	VA	NC	SC	GA	FLEC	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		979	34,753	121,604	472,397	628,011	1,449,853	534,371	3,241,968
1992		0	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		243	26,764	175,184	679,996	183,343	412,392	357,441	1,835,363
1995			31,464	148,544	478,674	247,987	667,379	642,670	2,216,718
1996		0	0	77,269	197,261	171,727	196,487	249,898	892,642
1997	4,052	584	32,963	261,911	311,891	163,771	242,506	380,276	1,397,954
1998		317	37,189	61,888	444,441	151,718	262,896	329,793	1,288,242
1999			0	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		0	3,494	218,061	145,936	140,276	502,278	313,990	1,324,035
2004		908	0	130,404	377,776	231,928	380,635	388,164	1,509,815
2005		3,770	11,378	77,379	606,803	332,683	264,140	595,817	1,891,970
Total	4,052	6,801	489,056	2,869,091	8,330,124	6,780,029	11,067,683	13,704,437	

Table 4. Recreational releases (number of B2 fish) of spotted seatrout by state, 1981-2005
(NMFS 2006)

Year	NJ	DE	MD	VA	NC	SC	GA	FLEC	Total
1981					0	5,522	36,853	209,059	251,434
1982					0	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			0	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		0	21,811	40,550	169,921	51,415	369,972	789,779	1,443,448
1992		1,321	701	19,855	139,616	97,813	192,261	597,254	1,048,821
1993			0	65,605	149,744	92,101	146,665	780,573	1,234,688
1994		0	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		71	51,594	165,169	153,051	107,691	63,585	1,081,893	1,623,054
1997	0	292	4,826	168,964	98,377	89,147	61,148	1,449,278	1,872,032
1998		1,095	49,460	74,569	73,024	151,935	100,059	1,005,443	1,455,585
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		279	0	207,270	131,619	314,642	737,730	1,732,789	3,124,329
2004		237	9,367	291,176	296,974	337,226	601,017	1,946,373	3,482,370
2005		1,452	4,472	277,023	803,379	403,837	679,040	3,379,968	5,549,171
Total	0	4,747	442,485	2,787,552	3,885,707	3,220,411	5,772,509	24,413,492	

Table 5. Summary of current state regulations for spotted seatrout

State	Recreational	Commercial	Other
New Jersey	13" TL; 8 fish	13" TL; 12" TL when taken by otter trawl 9/1-12/31	Weakfish regulations apply to spotted seatrout
Delaware	12" TL	12" TL	Gill net restrictions
Maryland	14" TL; 10 fish	12" TL; seasonal closures	Minimum mesh size restrictions for trawl (3-3/8" sq. or 3-3/4" diam.) and gill nets (3")
PRFC	14" TL; 10 fish	14" TL	
Virginia	14" TL; 10 fish	14" TL; hook & line: 10 fish limit	Commercial quota of 51,104 pounds. Pound net/haul seine allowed 5% <14" by weight
North Carolina	12" TL; 10 fish	12" TL; hook & line: 10 fish limit	
South Carolina	13" TL; 10 fish	no commercial harvest or sale	gamefish status
Georgia	13" TL; 15 fish	13" TL; 15 fish	BRD requirement for trawl; gear mesh regulations.
Florida	15-20" TL slot, 1 fish >20"; 5 fish in North Regions, 4 fish in South Region; regional seasonal closures	15-24" TL; June 1-Aug. 31 season; 75 fish per day or vessel (the lesser); hook & line or cast net only	