2004 REVIEW OF THE FISHERY MANAGEMENT PLAN FOR SPOTTED SEATROUT
(Cynoscion nebulosus)

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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 virtual population 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 (2001) 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 (Murphy 2003). The analysis 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. This was

achieved in South Carolina by increasing the minimum size from 12 to 13 inches TL, and decreasing the bag limit from fifteen to ten fish per person. Population analyses on other stocks within the region have not been conducted at this time.

III. Status of the Fishery

Spotted seatrout are taken by both commercial and recreational fishermen in the South Atlantic region (North Carolina through the East coast of Florida). Spotted seatrout has been declared a gamefish in South Carolina and can only be taken by recreational means.

Atlantic coast commercial landings of spotted seatrout (1960-2003) 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 decreased slightly in 2003 to about 216,000 pounds from 243,000 pounds in 2002. The majority of landings are reported from North Carolina where gill nets predominate landings by gear. Commercial landings of spotted seatrout in Maryland have been reported with weakfish at times; while South Carolina has no commercial fishery for this species. In 2002, Georgia reported only 969 pounds, which was harvested primarily by hook and line gear in 2003 they did not have any landings.

The recreational harvest of spotted seatrout in the South Atlantic region has ranged from 691,020 in 1996 to 2.4 million fish 1991, averaging close to 1.4 million fish (Table 2). Coastwide recreational harvest in 2003 was approximately 928,000 fish weighing 1.32 million pounds (Table 3). The estimated number of spotted seatrout released has generally increased since the early 1980's, with a dramatic rise from 1990 to 1991 (Table 4). The number of fish released has remained well over 1 million per year since that time, reaching an all-time high of 3.5 million in 2000. Approximately 3.1 million spotted seatrout were caught and released in 2003.

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 virtual population analyses on local stocks of spotted seatrout. The 2002 Georgia assessment was conducted as scheduled. However, results were highly questionable due to substantial data limitations. North Carolina has scheduled a stock assessment on local spotted seatrout stocks to be completed in conjunction with the state's FMP process in 2006. Florida conducted assessments for coastwide 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

Georgia collects fishery-dependent data through the MRFSS and the 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. 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 from sampling fishing tournaments as well as a carcass program, 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 subsamples of the catch on a bi-monthly basis for deriving cohort specific indicies of abundance.

North Carolina completed a five year Wallop-Breaux funded study of spotted seatrout life history (Burns 1996). Commercial landings data are provided through the NCDMF Trip Ticket program and commercial length composition data is collected under the Interjurisdictional Fisheries Act (funded in part by the U.S. DOC, NOAA/NMFS). Recreational landings and length data are provided through the Marine Recreational Fishery Statistics Survey (MRFSS). Hydrophone work was also 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 (Gearhart 2002; Price et al 2002) were conducted in North Carolina in 1998-2001, supported by the Atlantic Coastal Fisheries Cooperative Management Act funds. 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); supplement samples for age, growth and reproductive studies; evaluate catch rates and species distribution for identifying and resolving bycatch problems; and to characterize habitat utilization for Pamlico Sound. Additional areas of the Neuse and Pamlico-Pungo Rivers will contribute to the Pamlico Sound area Independent Gill Net Survey in 2002, with common objectives and sampling design, but funded through disaster relief funds.

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. FWC researches are studying the reproductive biology and ecology of spotted seatrout in Tampa Bay, including maturation schedules, fecundity, spawning season, and spawning location.

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 and one fish over 20" may be kept 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. 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 recreational possession limit. 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; 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.

VII. Implementation of FMP Compliance Requirements as of October 1, 2004

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

High Priority

- State-specific stock assessments should be conducted 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. These surveys are essential in that they provide an index of abundance to augment traditional assessment approaches.
- Emphasis should be placed on collecting the necessary biological data to be able to conduct stock assessments and to assist in drafting fishery management plans.
- Age structure analyses by sex should be utilized 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.
- Work should be continued to examine the stock structure of spotted seatrout on a regional basis, with particular emphasis on advanced tagging techniques.

Medium Priority

- MRFSS should be expanded to assure adequate data collection for catch and effort data and for increased intercepts and state add-ons of social and economic data needs.
- Identify essential habitat requirements.
- Evaluate effects of environmental factors on stock density.
- Collection of commercial and recreational landings data should be continued and expanded.
- Collection of social and economic aspects of the spotted seatrout fishery should be initiated.
- Improve precision of effort reporting through commercial trip ticket programs.

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Table 1. Commercial landings (in pounds) of spotted seatrout, 1960-2002 (source: pers. comm. NMFS, Fish. Stats. & Econ. Div.).

Year	CT	NJ	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	540,444
1987				13,300	315,380	11,941	10,739	317,044	669,830
1988				15,500	296,538	486	9,110	315,947	651,703
1989				18,500	451,909	33	10,565	361,973	859,184
1990		20		21,435	250,634	1,095	5,942	236,453	522,789
1991		171	98	21,200	660,662		7,380	225,812	917,417
1992		165	364	10,395	526,271		11,310	247,189	795,946
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	796,173
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	175,935		969	44,641	242,624
2003			902	5,310	181,529			28,419	216,160
Total	106	593	145,203	940,106	13,121,940	462,169	350,380	19,158,888	34,222,957

Table 2. Recreational harvest (numbers of A + B1 fish) of spotted seatrout, 1981-2003 (source: pers. comm. NMFS, Fish. Stats. & Econ. Div.).

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		0	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		0	2,091	102,484	106,415	123,027	425,993	168,314	928,324
Total	3,196	1,643	386,123	1,465,187	5,522,717	5,138,201	8,791,988	8,672,165	29,981,220

Table 3. Recreational harvest (pounds of A + B1 fish) of spotted seatrout, 1981-2001 (source: pers. comm. NMFS, Fish. Stats. & Econ. Div.).

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
Total	4,052	2,123	477,678	2,661,308	7,345,545	6,215,418	10,422,908	12,720,456	39,849,488

Table 4. Number of recreational releases (B2 fish) of spotted seatrout by state, 1981-2001

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
Total	0	3,058	428,646	2,219,353	2,785,354	2,479,348	4,492,452	19,087,151	31,495,362

Table 5. Summary of current state regulations for spotted seatrout.

State	Recreational	Commercial	Other
New York	none	none	
New Jersey	14" TL; 10 fish	13" TL; 12" TL when taken by otter trawl 9/1-12/31	weakfish regulations apply to spotted seatrout
Delaware	12" TL	none	
Maryland	14" TL; 10 fish	12" TL	minimum mesh size restrictions for trawl (3-3/8" sq. or 3-3/4" diam.) and gill nets (3")
PRFC	14" TL; 10fish	14" TL	
Virginia	14" TL; 10 fish	14" TL	commercial quota of 51,104 pounds
North Carolina	12" TL; 10 fish	12" TL	
South Carolina	13" TL; 10 fish	no commercial harvest or sale	gamefish status
Georgia	13" TL; 15 fish	13" TL; 15 fish	
Florida	15-20" TL slot, 1 fish >20"; 5 fish (except South Region limit of 4); regional seasonal closures	15-24" TL; June 1-Aug. 31 season; 75 fish per day; hook & line or cast net only	