

**2001 REVIEW OF THE FISHERY MANAGEMENT PLAN
FOR SPOT
(*Leiostomus xanthurus*)**

Prepared by:

The Spot Plan Review Team

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I. Status of the Fishery Management Plan

The *Fishery Management Plan (FMP) for Spot* was adopted in 1987 and includes the states from Delaware through Florida. In reviewing the early plans created under the Interstate Fisheries Management Plan process, the Spot FMP was seen by ASMFC as in need of review and possible revision. A Wallop-Breaux grant from the U.S. Fish and Wildlife Service was provided to conduct a comprehensive data collection workshop for spot. The workshop would lay the groundwork for a major amendment to the 1987 FMP. The October 1993 workshop at the Virginia Institute of Marine Science was attended by university and state agency representatives from six states. Presentations on fishery-dependent and fishery-independent data, population dynamics and bycatch reduction devices were made and discussed. All state reports and a set of recommendations were included in the workshop report (ASMFC Special Report #25).

Subsequent to the workshop and independent of it, the South Atlantic State/Federal Fisheries Management Board of ASMFC reviewed the status of several plans in order to define the compliance issues to be enforced under the Atlantic Coastal Fisheries Cooperative Management Act (ACFCMA). The Board found recommendations in the plan to be too vague and perhaps no longer valid. The Board recommended that an amendment be prepared to the Spot FMP to define the management measures necessary to achieve the goals of the FMP. In their final schedule for compliance under the ACFCMA, the ISFMP Policy Board adopted the finding that the FMP does not contain any management measures that states are required to implement.

In order for a plan amendment to proceed, a plan development team needs to be appointed by the Management Board. The 1993 workshop proceedings should provide a starting place for plan revision.

II. Status of the Stock

The area of greatest abundance on the Atlantic Coast extends from Chesapeake Bay to South Carolina. Except for Virginia, there is no specific spot stock status survey, but the species is a major component of samples in generalized trawl and seine surveys in several states. An analysis of spot catches in Maryland's juvenile seine survey showed a trend of increasing abundance from 1957 to 1976, and then, through 1992, more moderate numbers punctuated by occasional years of high abundance. Spot young-of-year abundance in the Virginia Chesapeake Bay trawl survey conducted by VIMS, was relatively high from 1981 through 1990. Since 1992, spot young-of-the-year abundance has remained low except for a fair to moderate-sized 1997 yearclass. The abundance of juvenile spot in the North Carolina Pamlico Sound Survey has fluctuated without trend since 1979.

III. Status of the Fishery

Commercial landings of spot have fluctuated without trend from 5.6 to 10.4 million pounds over the last twenty years (Table 1). Spot landings were at their highest over two decades ago, averaging over 10 million pounds from 1972-75. Commercial landings in 2000 were 6.9 million pounds. Small spot are a major component of the bycatch in seine, fish trawl and pound net fisheries in the Chesapeake and in North Carolina, as well as a part of the bycatch of the South Atlantic shrimp trawl fishery.

The recreational harvest (A + B1 fish) of spot from along the Atlantic coast has varied from 3.6 to 20.1 million fish from 1981 to 2000 (Table 2). The recreational harvest in 2000 was 4.8 million fish or 2.0 million pounds (Table 3). The number of spot harvested by the recreational fishery has declined steadily from the early 1980's, reaching their lowest point in 1999 at 3.6 million fish. The estimated number of spot released annually by recreational anglers from 1981 has remained relatively constant, ranging from 2.0 to 6.3 million fish with the exception of 1981 (11.1 million fish), 1990 (7.3 million fish) and 1991 (10.6 million fish) (Table 5).

IV. Status of Assessment Advice

A formal stock assessment of spot has not been conducted. The 1987 FMP recognized the lack of biological and fisheries data necessary for stock assessment and effective management of the resource. Spot life history information and fisheries data have generally been localized and conducted at different levels of population abundance. Commercial and recreational catch and effort data have been insufficient to determine the relationship between landings and abundance. An additional problem is incidental bycatch and discard mortality of small spot in non-directed fisheries.

V. Status of Research and Monitoring

Catch and effort data are collected by the commercial and recreational statistics programs conducted by the states. Fishery-independent data for spot are collected in the SEAMAP program from Cape Hatteras to Cape Canaveral. Recruitment indices are available from ongoing juvenile surveys in Delaware, Maryland, Virginia, North Carolina and Florida. Efforts are now underway to develop a comprehensive juvenile index utilizing data from many states. Research on the life history and population dynamics of spot in Chesapeake Bay is presently being conducted jointly by Old Dominion University and VIMS. The Virginia Marine Resources Commission and North Carolina Division of Marine Fisheries investigated the use of culling panels in pound nets to release small croaker, spot, and weakfish. North Carolina has conducted gear research on the four main gear types (shrimp trawl, flynet, long haul seine, and pound net) responsible for the bulk of the scrap fish landings in North Carolina in order to reduce the catch of small fish.

Table 1. Commercial landings (in pounds) of spot, 1960-2000 (source: NMFS commercial landings data).

YEAR	MA	NY	NJ	DE	MD	VA	NC	SC	GA	FLEC	TOTAL
1960			300	18200	498400	3906400	2610500	2720600	400	1032800	10787600
1961					9600	1183900	2055700	3468500	100	928600	7646400
1962			200		26900	2349700	1218300	3135000	3700	704400	7438200
1963				500	15200	1474800	915500	2719200	4100	1127000	6256300
1964			100		33900	3197800	1251200	3166000	2500	951900	8603400
1965					600	1750500	912600	1174000	11000	938100	4786800
1966					4100	1152800	1091300	2125500	5300	1204600	5583600
1967			100		248300	4253300	3047900	2219100	10500	898500	10677700
1968					45600	1116000	1575100	2052500	200	1104600	5895800
1969			6400		20700	1048500	1487800	4535500	2400	874600	3893900
1970			200		572600	5872800	1528900	367500	9300	1397800	9749100
1971			3100		20300	503600	1190100	1285500	5800	2891100	5899500
1972			1200		73700	2950500	3902400	2269200	32600	1939900	11169500
1973			9500		27100	2576000	5397400	1455300	33900	920700	10419900
1974			10500		3700	2251100	5606800	358400	16400	1747800	9994700
1975			58500	17000	102900	1918400	8299800	1490800	8900	841100	12737400
1976		3100	2400	8000	16400	1192400	2674300	1013600	17500	534000	5461700
1977		5600	20400	11400	16400	1866600	3805200	294600	7100	1029000	7056300
1978		1200	10900	19500	31300	3205500	4878437	400928	300	993860	9541925
1979		300	1800	18100	10600	2541000	7303405	418480	250	871375	11165310
1980		1100	2400	5300	6300	1795100	7100053	411020	1579	893121	10215973
1981			6000	11100	14200	1025800	3511574	127384	7721	2798881	7502660
1982			1800	2500	6200	1017100	4918763	62562	292	4431239	10440456
1983			800		129400	1567900	2952295	240096		2266296	7156787
1984			100		43200	735200	3481920	130265		1508552	5899237
1985			2400	17200	7700	1561739	4043843	142755		1399819	7175456
1986			6600	86400	104400	1839500	3354191	655378	124	918875	6965468
1987			15900	140100	251800	3721100	2806041	220553	1528	943713	8100735
1988			1600	38700	58000	1985500	3080258	376221	644	1344276	6885199
1989			8200	29000	115800	2468100	3254473	31472	361	1144639	7052045
1990			9039	24900	127882	1630735	3455460	39957	43	1275729	6563745
1991			54433	236200	216035	2539340	3047305	31787	305	1051532	7176937
1992			102213	95000	331837	2497622	2826138	171959	261	740048	6765078
1993	30	63	10900	22000	182198	3349399	2672164	251225	1276	826312	7315567
1994			31408	100400	166246	4269402	2937355	288241		1002887	8795939
1995		22	30151	62000		3622954	3006885	209132	247	558087	7489478
1996		318	1149		256711	2982083	2290040	60574		56423	5647298
1997		189	6775	35686	120331	3465507	2627980	87170		227097	6570735
1998	60	579	27582	140363	225937	4277256	2397025	63912		161205	7293919
1999			7822	51534	223463	2961890	2256934	9393		72898	5583934
2000		869	13852	32250	176946	3764679	2821678	8519		53329	6872122

Table 2. Recreational harvest (numbers of A + B1 fish) of spot by state, 1981-2000 (source: pers. comm. NMFS Fish. Stats. & Econ. Div.).

YEAR	NY	NJ	DE	MD	VA	NC	SC	GA	FLEC	TOTAL
1981	44278	28006	17508	948931	11662684	4023934	562750	124057	799226	18211374
1982		387582	82094	2864603	4526847	4124465	1230253	84153	735398	14035395
1983			14464	1600362	12059247	4880268	970747	112123	488029	20125240
1984		8501	15553	904793	1489795	2758366	724925	363841	396402	6662176
1985	15494	12692		1028391	5491918	8789391	2355044	62338	861700	18616968
1986	3824	9587	12178	3789796	4229191	2646049	2007386	137782	96803	12932596
1987				3180704	3864151	2129146	599807	79487	73833	9927128
1988		348593	2360	277964	2028768	2558322	1951157	57786	663681	7888631
1989	602	1128	45853	1154314	3714855	2924299	1078570	34977	67506	9022104
1990		25927	44362	2120655	5354294	1986601	142271	17730	7252	9699092
1991		88393	138113	1841555	8820075	2317095	598290	10281	269628	14083430
1992		20443	90053	1671897	6317539	1271416	1190757	25788	357678	10945571
1993	1168	7788	3263	1880043	2836534	2057440	1437809	228606	946757	9399408
1994	19275	144589	92352	1761701	3395503	5929269	1329997	9587	137067	12819340
1995		2949	51695	1099658	2731242	3329981	875189	27842	140231	8258787
1996		23954	955	591300	1109237	2007071	1423352	14131	64337	5234337
1997		20148	126089	713657	3328144	1440661	680842	5471	31987	6346999
1998			96389	1327259	2023756	2865190	489068	6788	120389	6928839
1999			19911	655289	569250	1308167	801785	5578	264233	3624213
2000	474232	272767	61309	1346373	510708	1811543	235961	2841	39765	4755499

VI. Status of Management Measures and Issues

The Fishery Management Plan for Spot identified the following management measures (recommendation 1 as amended) for implementation:

1. Promote the development and use of bycatch reduction devices through demonstration and application in trawl fisheries.
2. Promote increases in yield per recruit through delaying entry to spot fisheries to age one and older.

Although the ISFMP Policy Board judged that FMP management recommendations were too vague and did not furnish objective compliance criteria, progress has been made on developing bycatch reduction devices (BRDs). The October 1993 spot and croaker workshop proceedings summarized much of the recent experimental work on bycatch reduction and examined the population implications of bycatch reduction. It is becoming clear that there are economically viable shrimp gears that reduce finfish bycatch. At the state level, North Carolina has been testing bycatch reduction devices in the shrimp trawl fishery and has achieved finfish reductions

of 50-70% with little loss of shrimp. North Carolina and South Carolina require fish excluder devices in every trawl (except try nets) in the shrimp fishery. In the North Carolina flynet fishery, where a large portion of the spot catch occurs, there is a new requirement for a minimum tailbag mesh of 3 1/2 inch diamond or 3 inch square. Furthermore, the state of North Carolina has banned flynet fishing in waters south of Cape Hatteras. This requirement should reduce the catch of small spot. The states of Florida through North Carolina have promoted and require the use of TEDS in state waters. None of the states have minimum trawl mesh sizes or culling panels in directed gears. The Potomac River Fisheries Commission requires large mesh bycatch reduction panels in all pound nets. It is estimated that the panels allow the release of 25% of captured spot less than six (6) inches in length. Evaluation of the beneficial effects of these BRDs to spot stocks, which are a component of a mixed species fishery and a mixed species bycatch, continues to need further study. A target reduction in bycatch of spot may be a suitable objective criteria in an amended plan. Only Georgia has a minimum size limit (Table 4).

Table 3. Recreational harvest (pounds of A + B1 fish) of spot by state, 1981-2000 (source: pers. comm. NMFS Fish. Stats. & Econ. Div.).

YEAR	NY	NJ	DE	MD	VA	NC	SC	GA	FLEC	TOTAL
1981	20348	6175	8047	554986	4625985	1193537	144600	50734	311406	6915818
1982		85446	19281	656245	1563396	1093047	313177	20199	236027	3986818
1983			4017	354788	2520125	1630882	293161	28023	167294	4998290
1984		3768	5714	361850	404533	650386	169346	81758	122585	1799940
1985	3415	4255		193266	1955039	3120532	441808	13071	213042	5944428
1986	1327	2114	3836	1139871	1205158	536443	455836	23369	25360	3393314
1987				1545691	1336387	690653	226701	14601	32835	3846868
1988		84941	1876	80547	720609	802320	632868	14645	184602	2522408
1989	132	606	10368	633150	1400728	929188	288591	7798	23254	3293815
1990		5644	11821	791264	2103751	613904	50525	6259	1737	3584905
1991		19528	48100	634894	2729698	727463	245661	1786	107256	4514386
1992		8788	36799	724279	2278309	403775	397677	6978	167845	4024450
1993	315	2264	844	636032	951766	812810	461447	109317	396632	3371427
1994	7198	20364	34795	676687	1217036	1842360	469518	2687	57234	4327879
1995		1186	22919	485682	1067637	1247995	242973	7701	42851	3118944
1996		10996	789	294404	492982	710086	494448	5445	26953	2036103
1997		8609	50781	401275	1263447	722868	254794	2072	13962	2717808
1998			36658	631422	866619	1249543	228502	2088	47196	3062028
1999			10886	272292	244499	646662	391402	2275	84511	1652527
2000	124295	44808	30611	581626	245070	841542	123583	1351	13737	2006623

VII. Implementation of FMP Compliance Requirements as of October 1, 2001

There are no compliance requirements for this FMP.

Table 4. Summary of current state regulations for spot.

State	Recreational	Commercial
New York	none	none
New Jersey	none	none
Delaware	none	none
Maryland	none	none
PRFC	none	none
Virginia	none	none
North Carolina		
South Carolina	none	none; state license required to land/sell
Georgia	8" TL; 25 fish limit	8" TL; 25 fish limit
Florida	none	none

VIII. Recommendations of FMP Review Team

Management and Regulatory Recommendations

- Develop an amended Spot FMP with objective compliance criteria.

Research and Monitoring Recommendations

High Priority

- In trawl fisheries or other fisheries that take significant numbers of spot, states should monitor and report on the extent of unutilized bycatch and fishing mortality on fish less than age-1.
- The effects of mandated bycatch reduction devices (BRD's) on spot catch should be evaluated in those states with significant commercial harvests.
- Fishery-dependent and fishery-independent size and sex specific relative abundance estimates should be developed.
- Cooperative coastwide spot juvenile indices should be developed to clarify stock status.
- Monitor long term changes in spot abundance, growth rates, and age structure.
- Continue monitoring of juvenile spot populations in major nursery areas.
- Improve spot catch and effort statistics from the commercial and recreational fisheries, along with size and age structure of the catch, in order to develop production models.

Medium Priority

- Develop stock assessment analyses appropriate to current data.
- A yield per recruit analysis should be cooperatively developed.
- Develop stock identification methods.
- Determine migratory patterns through tagging studies.
- Determine the onshore vs. offshore components of the spot fishery.

Low Priority

- Criteria should be cooperatively developed for aging spot otoliths and scales.

Table 5. Recreational releases (B2 fish) of spot by state, 1981-2000 (source: pers. comm. NMFS, Fish. Stats. and Econ. Div.)

YEAR	NY	NJ	DE	MD	VA	NC	SC	GA	FLEC	TOTAL
1981		25740	1502	1331316	8905412	735408	82035	5975	64344	11151732
1982		974847	5061	1677415	1618065	806851	366650	44091	205387	5698367
1983		57556		1114795	2715522	634107	192240	39798	186615	4940633
1984			13260	1150599	2607693	952816	346003	17897	130493	5218761
1985	22220	2979		735873	2051793	429914	515106	17316	170060	3945261
1986		79712		2720343	2250794	816204	331290	20863	10351	6229557
1987			1104	248973	1736228	593937	304127	28434	57437	2970240
1988		110698	4501	716258	762504	995806	110498	16951	110003	2827219
1989		4503	40193	730580	2519034	524897	138834	1630	22425	3982096
1990		14504	10120	1811434	4441195	921849	13709	4079	30937	7247827
1991		91991	59770	2123582	7041156	946564	100666	14629	168284	10546642
1992		1324	12553	493597	2091001	841163	279044	16791	64738	3800211
1993			35987	1573486	1374950	528449	130055	47667	185226	3875820
1994	8140	160380	53078	1037498	2142198	1363884	320921	22434	335647	5444180
1995	7178	22162	14195	253827	1166428	1035361	331781	9799	268765	3109496
1996		39448	1128	208897	577847	924204	212920	5329	65083	2034856
1997		21512	88751	1316341	1365809	450663	245349	990	18102	3507517
1998		12542	75985	633914	900352	650157	307480	12286	58264	2650980
1999			15789	618742	339988	633112	86894	10675	530849	2236049
2000	150350	16118	28631	1046320	487461	454385	110913	16769	52896	2363843