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## INTRODUCTION

The Fisheries Statistics Program (FSP) of the Marine Resources Division (MRD) is responsible for the collection, compilation, analysis, and distribution of fishery-dependent data for South Carolina's marine fisheries. The principal instrument used to obtain such information for recreational finfish fisheries is the Marine Recreational Fishery Statistics Survey (MRFSS) conducted annually in cooperation with the National Marine Fisheries Service (NMFS). This is a generalized survey with the principal objectives of obtaining participation, effort, and catch data on a regional basis.

In 1995, the MRFSS was conducted during March through December. A telephone poll of coastal households by Burke Marketing Research (BMR) obtained information on participation and effort. An on-site intercept survey or creel census was administered by QuanTech, which contracted the field work to the FSP. Fishermen interviewed included those fishing from shore or manmade shore facilities (docks, piers, bridges), charterboats, and private boats. Headboat fishermen were not included. Fishermen using gear other than hook and line were rarely intercepted and the results of the MRFSS therefore did not pertain to such activities as gill netting, gigging, and spearfishing by divers.

Additional length and catch per unit of effort (CPUE) data for the private boat mode were collected in a State Finfish Survey (SFS). This effort was primarily targeted at fishermen fishing in estuarine areas.

Since July, 1992, private boat anglers have been required to have a marine fishing stamp, but not shore anglers and charterboat passengers. Operators of piers and charterboats obtained permits from the Department of Natural Resources and submitted monthly reports of daily fishing activity to the FSP. Pier operators reported daily attendance, while charterboat captains reported numbers of anglers, hours fished, and catch (numbers by species kept and released) per trip.

## METHODOLOGY

MRFSS procedures for the telephone and intercept surveys were described by Essig et al. (1991) and Van Voorhees et al. (1992). In 1993, the NMFS revised procedures for processing telephone survey data used to estimate effort. These included 1) different guidelines for treatment of proxy data, 2) imputation for missing data, and 3) adjustment of fishing effort data by county for county population. The resulting effort estimates were statistically more reliable than those derived previously and, in South Carolina, were usually higher. The catch estimates derived from the effort data also generally increased when the new procedures were applied.

During 1995, the NMFS issued several revised historical data sets based on the new methodology. The data contained in this report and used for trend analysis are either the 13 March, 1995 (< 1993) or 2 November, 1995 (1993, 1994) versions.

Fundamental field procedures for the intercept survey have remained basically unchanged. Minor modifications have been made to the annual questionnaires. Sampling waves were two-month intervals beginning with March-April. The sampling schedule, provided by QuanTech, was based on historical usage patterns by fishing mode and sampling wave. Site assignments reflected relative usage rates with the most heavily trafficked locations receiving the highest selection priority.

On a scheduled sampling day, the creel clerk proceeded to the assigned site. If the clerk determined that this location would be unproductive, he/she then went to the nearest alternative location for that mode. The clerk usually remained on-site until the day's MRFSS quota was obtained or further effort appeared unwarranted. SFS sampling followed similar procedures. Site selection was left to the discretion of the creel clerk, depending on current conditions. Although these visits were scheduled by the FSP, their distribution was largely determined by MRFSS assignments because of logistical factors.

FSP staff obtained MRFSS interviews at 22 shore sites, 7 charterboat docks, and 25 public boat ramps or landings (Table 1). SFS data were collected at 27 public ramps or landings as listed in Table 2.

MRFSS interviews were conducted in accordance with procedures and guidelines established by the NMFS and QuanTech. An MRFSS interview applied to an individual fisherman. All members of a fishing party were usually interviewed with the exception of charterboat groups. An SFS interview was a trip interview and applied to all anglers making that trip. SFS interviews typically included two fishermen.

Information obtained included the number of anglers in the party, hours spent fishing, area fished, targeted species, and residency of the respondent. Catch data consisted of the numbers of fish caught by species and their disposition (i.e., retained, discarded dead, undersized released alive, legal sized released alive, given away, used for bait, etc.). Up to 20 fish of each species were weighed and/or measured per catch.

FSP staff coded and edited MRFSS interview forms and forwarded them to QuanTech for additional processing. QuanTech provided summaries of intercept survey wave data and BMR furnished compilations of information from the phone surveys. The NMFS provided estimates of participation and effort. The NMFS also supplied estimates of the total numbers of fish caught by species

Table 1. Distribution of 1995 MRFSS interviews by site and wave.

Mode	County	Site	Wave					Total
			2	3	4	5	6	
Shore	BFT	Broad R. pier	17	6	9	-	-	32
		Port Royal dock	-	9	8	-	2	19
		Eddings Point	-	-	5	-	-	5
		Paradise pier	-	-	4	-	-	4
		Station Creek	-	-	3	-	-	3
		E.C. Glenn	-	-	-	2	-	2
		Parris Island	2	-	-	-	-	2
		Sam's Point	-	-	-	2	-	2
	CHS	Folly Bch. pier	-	-	53	37	78	168
		Crosby's pier	20	40	4	-	9	73
		Breach In. bridge	2	33	-	11	-	46
		Church Cr. bridge	16	6	-	-	-	22
		Bowens Is. dock	9	-	-	-	-	9
		Pitt St. bridge	-	8	-	-	-	8
		Steamboat dock	3	1	-	-	-	4
		Palmetto Is. park	2	-	-	-	-	2
	HOR	Surfside pier	11	28	46	8	22	115
		Springmaid pier	10	45	27	6	4	92
		Myrtle Bch. pier	9	25	17	28	12	91
		Garden City pier	2	-	-	32	-	34
		Cherry Grove pier	6	-	-	7	-	13
		2nd Avenue pier	-	6	-	7	-	13
	<b>Charterboat</b>							
	BFT	Shelter Cove	23	54	10	45	16	148
		Palmetto Bay	16	-	-	4	-	20
		Fripp Island	-	-	10	5	-	15
	CHS	Bohicket	15	-	19	-	-	34
Toler's Cove		-	4	-	-	-	4	
GTN	Capt. Dick's	-	11	18	8	4	41	
	Voyger's View	6	-	3	-	-	9	
<b>Private boat</b>								
BFT	Port Royal	18	8	53	20	6	105	
	Eddings Point	-	-	44	-	-	44	
	Broad River	6	24	7	-	5	42	
	Station Creek	-	-	13	10	12	35	
	Russ Point	12	-	-	9	-	21	
	Sam's Point	-	-	-	10	8	18	
	E.C. Glenn	-	-	-	16	-	16	
	Bush Island	-	12	-	-	-	12	
	Lady's Island	-	-	-	2	5	7	

Mode	County	Site	Wave				Total	
			2	3	4	5		6
			4					
		Parris Island	5	-	-	-	-	5
		Brickyard Point	4	-	-	-	-	4
		All Joy	-	-	-	4	-	4
	CHS	Remley Point	36	20	33	33	19	141
		Limehouse	13	11	5	11	18	58
		Wappoo Cut	2	-	29	8	12	51
		Wild Dunes	-	-	9	20	-	29
		Toogoodoo	-	17	-	-	-	17
		Sol Legare	-	-	6	5	6	17
		Cherry Point	-	-	-	17	-	17
		Folly River	2	-	5	-	-	7
		Dawhoo	-	-	-	-	3	3
		Steamboat	2	-	-	-	-	2
	GTN	Murrells Inlet	64	56	43	17	63	243
		South Island	-	16	14	20	16	66
		Boulevard	1	6	15	-	-	22

Table 2. Distribution of 1995 SFS interviews by site and wave.

County	Site	Wave						Total
		1	2	3	4	5	6	
BFT	Sam's Point	11	4	11	-	4	6	36
	Station Creek	9	2	16	-	-	5	32
	Port Royal	7	2	9	4	5	2	29
	Broad River	-	-	20	3	2	1	26
	Eddings Point	2	-	-	4	10	5	21
	Russ Point	1	-	15	-	-	-	16
	E.C. Glenn	2	-	-	-	3	-	5
	Lady's Island	2	-	-	-	2	-	4
	Parris Island	2	-	-	-	-	-	2
	Wimbee	-	-	2	-	-	-	2
	C.C. Haigh	-	-	-	-	1	-	1
COL	Live Oak	-	-	-	-	3	1	4
BER	Bushy Park	-	-	10	-	-	-	10
CHS	Remley Point	14	14	34	10	43	7	122
	Wild Dunes	41	11	17	5	8	-	82
	Wappoo Cut	6	5	4	2	37	13	67
	Sol Legare	3	-	5	4	6	-	18
	Steamboat	-	-	-	5	-	-	5
	R.E. Ashley	2	-	-	-	-	-	2
	Limehouse	2	-	-	-	-	-	2
	Shem Creek	-	-	2	-	-	-	2
	County Farm	-	-	1	-	-	-	1
	Buck Hall	1	-	-	-	-	-	1
	Paradise Island	-	-	1	-	-	-	1
GTN	South Island	1	11	9	6	11	-	38
	Murrells Inlet	4	8	-	-	2	-	14
	Boulevard	5	2	-	-	-	-	7

and wave based on expansions of creel census CPUE data and total numbers of trips.

All data from the SFS were processed by the FSP. The FSP also calculated estimates of CPUE for species of interest, using data from both the MRFSS and SFS. CPUE was calculated by adding the total number of fish caught on targeted trips and dividing this figure by the total number of anglers on those trips. A targeted trip was one in which the species was either identified as the species preference or at least one was caught.

In cases where catches were pooled for a fishing party, e.g. a charterboat group, and anglers couldn't recall how many fish each had caught, the group catch was divided by the number of fishermen to obtain CPUE. It should be emphasized that the numbers and kinds of fish not inspected by the creel clerks (e.g. released or discarded catch) could not be verified.

## RESULTS

Essig et al. (1991) described considerations pertinent to interpretation of results from the MRFSS, e.g. sources of variation and their implications, potential elements of bias, and possible effects of data adjustments. Most of these applied to the South Carolina survey results and are mentioned where appropriate.

### Survey Logistics

The MRFSS telephone survey contacted 7,139 eligible households during March through December and the creel census collected 2,016 interviews. The SFS obtained 554 group interviews during January through December.

Of the MRFSS creel census interviews, 49% were from private boat anglers, 38% from shore fishermen, and 13% from charterboat passengers. All of the SFS interviews were of private boat fishing parties.

The MRFSS private boat sample was divided roughly evenly between Beaufort, Charleston, and Georgetown Counties. About 55% of the SFS interviews were obtained in Charleston County with 31% from Beaufort County. Georgetown County supplied 11% with the fraction remaining attributable to Colleton and Berkeley Counties. About 47% of the MRFSS shore anglers were interviewed in Horry County (all on the Grand Strand piers), 44% in Charleston County, and 9% in Beaufort County. Most of the MRFSS charterboat interviews (68%) were obtained in Beaufort County with 18% in Georgetown County and 14% in Charleston County.

Nearly all of the SFS interviews pertained to fishermen fishing in inland areas. Distribution of the MRFSS interviews by fishing area is shown in Table 3. About 69% of the shore anglers

**Table 3. Distribution of MRFSS creel census interviews by wave, mode, and fishing area. Source: QuanTech.**

Area	Wave	Shore	Charterboat	Private boat	Total
Inland	2	66	7	125	198
	3	105	6	153	264
	4	28	11	222	261
	5	15	11	188	214
	6	11	9	153	173
	All	225	44	841	1,110
Ocean < 3 mi.	2	41	5	21	67
	3	104	16	8	128
	4	148	12	27	187
	5	125	9	12	146
	6	117	7	2	126
	All	535	49	70	654
Ocean > 3 mi.	2	0	48	19	67
	3	0	47	9	56
	4	0	37	27	64
	5	0	42	2	44
	6	0	4	17	21
	All	0	178	74	252
All		760	271	985	2,016

**Table 4. Survey logistics.**

Survey Characteristic	1/2	3	Wave			All
			4	5	6	
MRFSS Interviews	332	448	512	404	320	2016
On-site hrs	206.50	146.50	222.00	176.50	209.75	961.25
Travel hrs	256.50	162.75	200.50	190.25	246.00	1056.00
Miles	5447	3582	4429	3815	5153	22426
SFS Interviews	175	156	43	140	40	554
On-site hrs	266.50	148.25	53.00	123.75	41.00	632.50
Travel hrs	272.00	107.25	33.25	90.50	23.50	526.50
Miles	2784	1686	296	1232	709	6707

had been fishing from ocean piers with most of the remainder using manmade structures such as docks and bridges in inland areas. Most (66%) of the charterboat fishermen had fished offshore (> 3 miles) with 18% utilizing nearshore (< 3 miles) ocean areas and 16% fishing in inland waters. About 85% of the private boat anglers had fished in estuarine areas with the remainder almost equally divided between nearshore and offshore ocean areas.

Allocation of survey effort and costs is summarized in Table 4. MRFSS and SFS interviews were not additive, since the SFS interviews were primarily of more than one angler.

### Participation

Table 5 lists the percentages of positive responses compared to those in past years. At least one member had gone salt water sport fishing during the past year in 16.9% of all eligible households contacted.

Coastal residents comprised the majority (61%) of the anglers interviewed in the MRFSS (Table 6). They were the predominant group in the private boat (82%) and shore (53%) modes. Out of state residents were the largest component (86%) of the charterboat angler population. Noncoastal South Carolina residents represented 10% or less of the population in each mode.

During FY 1995/1996, a total of 90,388 salt water fishing stamps was sold to private boat anglers. In the calendar year, charterboat permits were issued to 182 vessels, excluding headboats. Of these, 153 (84%) reported making at least one for-hire fishing trip. Ten fishing piers obtained permits.

Total participation was estimated at 420,000 fishermen. Out of state residents (281,000) comprised the largest group (67%). Coastal residents (91,000) represented 22% and noncoastal residents (48,000) contributed 11%.

### Effort

Total effort was estimated at 1.502 M trips, distributed by wave, mode, and residential category as indicated in Table 7. Coastal residents contributed 60% of the effort, out of state anglers 31%, and noncoastal residents 9%. Distribution of effort by mode and fishing area is shown in Table 8.

Respondents in the phone survey were asked to specify the number of trips made in each mode. About 63% of the total trips identified by mode had been made in private boats. About 36% were shore trips. Charterboat trips accounted for 1.2% and headboat trips 0.6%.

The average numbers of trips (= days fished) made per angler

**Table 5. Percentage of coastal households contacted during the MRFSS phone survey that contained a member who went salt water sport fishing during the indicated wave. Source: BMR, QuanTech.**

Year	Wave				
	2	3	4	5	6
1987	5.9	9.4	8.8	9.1	8.4
1988	7.0	6.7	10.2	NA	NA
1989	7.5	5.5	7.1	5.7	5.1
1990	5.8	7.6	5.6	6.7	5.7
1991	5.6	8.7	9.2	8.4	7.6
1992	6.9	7.3	8.1	8.7	5.3
1993	6.3	8.8	10.2	9.8	7.4
1994	6.8	9.8	9.1	11.4	7.4
1995	6.5	8.8	7.8	8.8	7.5

**Table 6. MRFSS creel census interviews by residence, in numbers of anglers interviewed. C-coastal, NC-noncoastal, OOS-out of state. Source: QuanTech.**

Wave	Shore			Charterboat			Private boat		
	C	NC	OOS	C	NC	OOS	C	NC	OOS
2	64	8	35	4	0	56	134	21	10
3	115	32	62	4	10	55	108	30	32
4	90	7	79	3	4	53	238	16	22
5	65	5	70	6	3	53	185	10	7
6	68	22	38	4	0	16	144	11	17
<b>All</b>	<b>402</b>	<b>74</b>	<b>284</b>	<b>21</b>	<b>17</b>	<b>233</b>	<b>809</b>	<b>88</b>	<b>88</b>

**Table 7. Estimated recreational fishing trips by wave and residency (finfish only, excluding headboats).**  
Source: NMFS.

Wave	Mode	Residency			Total
		Coastal	Noncoastal	Out of state	
2	Shore	38,238	4,780	20,911	63,929
	Charterboat	2,726	1,578	32,713	37,018
	Private boat	70,080	10,983	5,230	86,293
	<b>All</b>	<b>111,044</b>	<b>17,341</b>	<b>58,854</b>	<b>187,240</b>
3	Shore	74,056	17,425	38,584	130,064
	Charterboat	4,598	4,934	20,745	30,277
	Private boat	153,833	26,073	41,717	221,624
	<b>All</b>	<b>232,487</b>	<b>48,432</b>	<b>101,046</b>	<b>381,965</b>
4	Shore	72,339	5,626	63,498	141,463
	Charterboat	4,598	4,598	21,358	30,553
	Private boat	85,559	5,752	7,909	99,219
	<b>All</b>	<b>162,496</b>	<b>15,976</b>	<b>92,765</b>	<b>271,235</b>
5	Shore	100,738	7,749	108,487	216,974
	Charterboat	3,087	4,851	24,919	32,857
	Private boat	107,100	5,789	4,052	116,941
	<b>All</b>	<b>210,925</b>	<b>18,389</b>	<b>137,458</b>	<b>366,772</b>
6	Shore	48,800	15,788	27,270	91,858
	Charterboat	3,142	7,855	25,136	36,133
	Private boat	139,487	10,655	16,467	166,609
	<b>All</b>	<b>191,429</b>	<b>34,298</b>	<b>68,873</b>	<b>294,600</b>
All	Shore	334,170	51,368	258,750	644,288
	Charterboat	18,151	23,816	124,871	166,838
	Private boat	556,058	59,252	75,376	690,686
	<b>All</b>	<b>908,379</b>	<b>134,436</b>	<b>458,997</b>	<b>1,501,812</b>

**Table 8. Estimated recreational fishing trips by fishing area and mode (finfish only, excluding headboats).** Source: NMFS.

Mode	Fishing area		
	Inland	Ocean < 3 mi.	Ocean > 3 mi.
Shore	158,423	485,865	0
Charterboat	34,642	33,632	98,563
Private boat	601,683	40,003	49,001
<b>Total</b>	<b>794,748</b>	<b>559,500</b>	<b>147,564</b>

in each wave and mode as reported in the phone survey are indicated in Table 9. The annual figures are based on wave 6 responses to the question, "how many days did you fish in the last twelve months?" as a proxy for the year's total effort.

The time of day of fishing as reported in the phone survey is shown in Table 10. The distribution of creel census interviews is shown for comparison. Nearly 98% of the creel census interviews were obtained between noon and 6:00 PM, whereas 56% of the trips reported in the phone survey occurred then.

Respondents to the phone survey were asked whether they had used public access points or private facilities on their private boat trips. Distribution by point of origin is shown in Table 11. About 72% of the trips originated from public access points with launching ramps accounting for 56% of all trips.

### **Species Preferences**

Shore anglers typically expressed no particular species preference. Of those that did, spot was the most popular target, particularly on the ocean piers.

Species preferences of charterboat anglers were determined from mandatory trip reports submitted to the FSP. Table 12 lists the results.

About 27% of the inland charterboat fishermen expressed no species preference. Red drum was the dominant favorite, targeted by 42%. Sharks, spotted seatrout, and tarpon were the other most commonly targeted species.

Over half of the fishermen in nearshore ocean waters targeted sharks. Of those who trolled, Spanish mackerel was the most preferred choice. About 11% of the anglers had no species preference.

Mackerels were the major species sought by offshore charterboat anglers with 41% seeking king mackerel and 8% targeting Spanish mackerel. About 31% of the anglers expressed no species preference and were either surface trolling for anything, seeking a variety of bottomfish, or combining the two activities.

Preferences of private boat anglers interviewed in the MRFSS are listed in Table 13. The most popular species in inland areas were red drum, spotted seatrout, and flounders. Of these three, red drum was the most frequently named species in Beaufort and Charleston Counties, while flounders were the dominant choice of anglers in Georgetown and Horry Counties. In relative terms, spotted seatrout was most often targeted by fishermen in Charleston County. About 28% of the inland anglers indicated no species preference.

**Table 9. Average trips per angler by mode and wave.**  
Source: QuanTech.

Wave	Shore	Charterboat	Private boat
2	1.39	0.27	2.97
3	4.60	0.12	4.18
4	4.69	0	6.07
5	6.29	0.69	7.11
6	5.24	0.85	5.73
Annual	30.99	5.30	36.23

**Table 10. Time of day of fishing.** Sources: BMR and QuanTech.

Wave	Morning				Afternoon		Evening	
	0-3	3-6	6-9	9-12	12-3	3-6	6-9	9-12
<b>Trips from phone survey</b>								
2	0	1	1	13	32	76	95	2
3	21	24	17	18	116	185	134	26
4	7	3	9	19	75	185	186	17
5	21	9	10	36	81	146	122	20
6	12	0	8	23	38	209	53	1
<b>On-site survey interviews</b>								
2	0	0	0	6	172	144	10	0
3	0	0	0	9	216	194	29	0
4	0	0	2	26	250	217	17	0
5	0	0	0	2	217	178	7	0
6	0	0	0	4	213	103	0	0

**Table 11. Number of private boat trips by type of access (from phone survey).** Source: BMR.

Type of access	Wave					Total
	2	3	4	5	6	
<b>Public</b>						
launching ramp	140	158	194	115	139	746
boat slip	6	26	28	55	11	126
mooring dock	8	37	8	1	18	72
other	1	7	0	5	1	14
<b>Private</b>						
personal dock	6	51	35	2	42	136
locked marina	21	40	5	45	11	122
unlocked marina	0	15	11	13	72	111
other	1	1	0	7	3	12

Table 12. Species preferences of charterboat anglers. Source: MRD trip reports.

Fishing area	Species	Number of anglers
Inland	Red drum	1,586
	Sharks	393
	Spotted seatrout	339
	Tarpon	244
	Cobia	55
	Sheepshead	54
	Flounder	49
	Crevalle jack	16
	Black sea bass	5
	Striped bass	4
	Any	1,032
Ocean < 3 miles	Sharks	3,640
	Spanish mackerel	705
	King mackerel	308
	Red drum	292
	Tarpon	219
	Sheepshead	208
	Bluefish	95
	Black sea bass	57
	Cobia	27
	Spadefish	5
	Spotted seatrout	4
	Black drum	3
	Any	684
Ocean > 3 miles	King mackerel	5,811
	Spanish mackerel	1,173
	Sharks	499
	Grouper	387
	Dolphin	295
	Sheepshead	279
	Black sea bass	271
	Marlin	268
	Tuna	212
	Barracuda	96
	Red drum	94
	Spadefish	82
	Amberjack	46
	Cobia	41
	Wahoo	33
	Snapper	20
	Bluefish	19
	Tarpon	13
	Black drum	4
	Red porgy	2
Any	4,365	

**Table 13. Species preferences by fishing area and county of private boat fishermen interviewed in the MRFSS, in numbers of anglers.**

Area	Target species	BFT	CHS	GTN/HOR	All
<b>Inland</b>	Red drum	80	93	37	210
	Spotted seatrout	32	72	29	133
	Flounders	18	8	99	125
	Sharks	35	-	2	37
	Sheepshead	6	20	7	33
	Spot	2	4	20	26
	Cobia	16	-	-	16
	Black sea bass	-	1	7	8
	Black drum	2	-	5	7
	Crevalle jack	-	4	-	4
	Kingfishes	-	2	1	3
	Tarpon	2	-	-	2
	Catfish	-	2	-	2
	Spanish mackerel	-	-	1	1
Any	94	76	64	234	
<b>Ocean &lt;3 miles</b>	King mackerel	6	5	-	11
	Sheepshead	-	11	-	11
	Flounders	-	-	6	6
	Sharks	4	2	-	6
	Spotted seatrout	-	-	4	4
	Kingfishes	4	-	-	4
	Red drum	-	-	3	3
	Black sea bass	-	1	2	3
Any	-	7	15	22	
<b>Ocean &gt;3 miles</b>	King mackerel	2	4	22	28
	Sharks	-	-	6	6
	Dolphin	-	-	4	4
	Grouper	-	4	-	4
	Black sea bass	-	-	4	4
	Spanish mackerel	-	-	3	3
	Spadefish	-	2	-	2
Any	6	11	6	23	

In nearshore (< 3 miles offshore) ocean waters, most private boat anglers were bottomfishing. Fishermen in Charleston County sought sheepshead at the Charleston Harbor jetties, while anglers in Georgetown County targeted flounders in Murrells Inlet. About 31% of the fishermen indicated no species preference.

Most of the offshore anglers were interviewed at the SCDNR public ramp at Murrells Inlet. Of this group, king mackerel was the dominant target species. There was little interest in bottom species. Statewide, 31% of the fishermen interviewed expressed no species preference.

### **Catch**

MRFSS catch estimates are vulnerable to large sampling errors associated with the numbers of fishermen interviewed and catches inspected (sample sizes), the range in numbers of fish in individual catches (variability), and the frequency of occurrence of unusually large or small catches (probability distribution).

Misidentification and confusion over common names can cause substantial errors in the estimated landings of similar species when the creel clerks are unable to inspect the catches. For species having large percentages of the catch unavailable for such inspection, the estimated total landings can be highly inaccurate. For the most frequently caught species, relative ranking and trends in catch appear to be reasonably reliable; however, caution should be exercised in quantitative applications of the absolute numbers.

The estimated total catch was 6.589 M fish of marine species. Disposition is shown in Table 14. Landings by wave are listed in Table 15. Distribution by fishing area is indicated in Table 16. Estimated catches by mode are shown in Table 17: the figures for the charterboat mode are greatly overestimated compared to the data reported by vessel operators under the state's mandatory trip logsheet system.

Nearly all of the landings shown for oceanic pelagic species were attributable to the charterboat mode, since offshore private boat anglers targeting this group were very seldom interviewed. The principal species landed was dolphin. The catch of skipjack reflects a misidentification, since the catch is indicated for the shore mode and the species doesn't occur in coastal waters. The Atlantic bonito is uncommon off South Carolina. Most of the indicated catch of bonito was released, so the identity couldn't be confirmed and is very suspect. The relatively large catch indicated for this species is probably due to confusion with the little tunny, which is a common species.

The reef fish catch was largely estimated from charterboat intercepts and the numbers shown appear to be far too large for most species. Porgy landings consisted entirely of red porgy,

Table 14. Estimated total catch (in thousands of fish) by South Carolina anglers in 1995 (excluding headboat landings). NR - none reported. Source: NMFS.

Category	Retained and discarded dead	Released	Total
<b>Oceanic Pelagics</b>			
Dolphin	7	0	7
Wahoo	<1	0	<1
Skipjack	0	5	5
Bonito	2	11	13
<b>Reef Fish</b>			
Black sea bass	258	359	617
Bank sea bass	34	10	44
Groupers	5	6	11
Porgies	41	12	53
Snappers	14	5	19
White grunt	4	0	4
Tomtate	0	25	25
Triggerfish	3	0	3
Spadefish	5	1	6
Spottail pinfish	9	23	32
Amberjack	0	<1	<1
<b>Coastal Pelagics</b>			
King mackerel	56	3	59
Spanish mackerel	26	13	39
Bluefish	153	218	372
Crevalle jack	2	2	4
Barracuda	1	5	6
Little tunny	8	0	8
Cobia	<1	<1	1
<b>Inshore Sportfish</b>			
Red drum	222	375	598
Spotted seatrout	238	204	442
Weakfish	32	0	32
Seatrout, unclassified	9	44	53
Summer flounder	0	<1	<1
Southern flounder	152	7	159
Flounder, unclassified	3	53	56
Sheepshead	106	20	127
<b>Inshore Bottomfish</b>			
Kingfishes	209	280	489
Spot	872	325	1,197
Croaker	76	107	182
Black drum	29	3	32
Pompano	12	56	67
<b>Sharks</b>			
Sharpnose	33	11	44
Blacktip	3	4	7
Other	28	188	216

Category	Retained and discarded dead	Released	Total
<b>Miscellaneous</b>			
Skates/rays	6	66	72
Catfishes	90	269	359
Toadfish	5	99	105
Searobins	0	137	137
Pigfish	17	23	40
Pinfish	65	620	685
Mullet	5	1	6
Puffers	4	31	35
Eels	<1	12	12
Ladyfish	1	35	36
Silver perch	29	15	44

Table 15. Estimated total catch (in thousands of fish) by wave.  
Source: NMFS.

Category	Wave				
	2	3	4	5	6
<b>Oceanic Pelagics</b>					
Dolphin		7			
Wahoo			<1		
Skipjack				5	
Bonito	1		1		11
<b>Reef Fish</b>					
Black sea bass	185	74	76	26	256
Bank sea bass	34		5	5	
Groupers	<1		4	6	
Porgies	25		22		7
Snappers	4		3		13
White grunt					4
Tomtate			25		
Triggerfish			1		2
Amberjack			<1		
<b>Coastal Pelagics</b>					
King mackerel	4	5	13	12	25
Spanish mackerel	20	14	2	5	
Bluefish	14	29	104	169	55
Crevalle jack		<1	2	1	
Barracuda			6		
Little tunny	<1				7
<b>Inshore Sportfish</b>					
Red drum	17	16	102	275	187
Spotted seatrout	6	8	43	108	278
Weakfish			1	18	13
Summer flounder			<1		
Southern flounder	3	113	14	16	13
Flounder, unclass.	2	33	14	4	5
Sheepshead	73		15	26	13
<b>Inshore Bottomfish</b>					
Kingfishes	7	18	127	260	77
Spot	25	76	102	599	395
Croaker		10	100	39	32
Black drum	1	4	<1	4	22
Pompano			37	29	<1
<b>Sharks</b>					
All	12	158	49	46	
<b>Miscellaneous</b>					
Skates/rays	13	10	9	34	5
Catfishes	7	68	57	227	1
Toadfish	6	25	42	30	1
Searobins	1	2	6	127	1
Pigfish		1	1	35	2
Mullet	1	5	<1		
Puffers	5	1	9	10	10

Table 16. Estimated total catch (in thousands of fish) by fishing area. Source: NMFS.

Category	Inland	Ocean <3 mi.	Ocean >3 mi.
<b>Oceanic Pelagics</b>			
Dolphin			7
Wahoo			<1
Skipjack		5	
Bonito			13
<b>Reef Fish</b>			
Black sea bass	81	87	449
Other sea bass	4	6	37
Groupers			11
Porgies			53
Snappers			19
White grunt		4	
Tomtate			25
Triggerfish		2	1
Amberjack			<1
<b>Coastal Pelagics</b>			
King mackerel		2	57
Spanish mackerel	1	6	32
Bluefish	194	177	
Crevalle jack	3	<1	<1
Barracuda			6
Little tunny			8
<b>Inshore Sportfish</b>			
Red drum	545	53	
Spotted seatrout	402	40	
Weakfish	2	30	
Seatrout, unclass.	53		
Summer flounder	<1		
Southern flounder	149	10	
Flounder, unclass.	49	7	
Sheepshead	66	14	48
<b>Inshore Bottomfish</b>			
Kingfishes	108	377	4
Spot	330	857	10
Croaker	46	126	10
Black drum	9	21	1
Pompano	<1	67	
<b>Sharks</b>			
All	118	131	17
<b>Miscellaneous</b>			
Skates/rays	44	26	2
Catfishes	258	99	2
Toadfish	75	28	<1
Searobins	4	133	
Pigfish	23	15	2
Mullet	1	5	
Puffers	31	4	<1

Table 17. Estimated total catch (in thousands of fish) by mode.  
Source: NMFS.

Category	Shore	Charterboat	Private boat
<b>Oceanic Pelagics</b>			
Dolphin		7	
Wahoo		<1	
Skipjack	5		
Bonito		13	
<b>Reef Fish</b>			
Black sea bass	3	190	424
Bank sea bass		37	7
Groupers		11	
Porgies		46	7
Snappers		15	4
White grunt		4	
Tomtate		25	
Triggerfish		3	
Spadefish	4		2
Spottail pinfish		9	23
Amberjack		<1	
<b>Coastal Pelagics</b>			
King mackerel	<1	56	2
Spanish mackerel	2	27	10
Bluefish	169	74	129
Creville jack		1	3
Barracuda		6	<1
Little tunny		8	
Cobia		<1	
<b>Inshore Sportfish</b>			
Red drum	18	158	421
Spotted seatrout	26	94	322
Weakfish	17	13	2
Seatrout, unclass.			53
Summer flounder			<1
Southern flounder	11	6	142
Flounder, unclass.	7		49
Sheepshead	<1	58	68
<b>Inshore Bottomfish</b>			
Kingfishes	389		100
Spot	928		269
Croaker	133		49
Black drum	9	14	9
Pompano	67		<1
<b>Sharks</b>			
Sharpnose	14	12	18
Blacktip		4	3
Other	122	13	80
<b>Miscellaneous</b>			
Skates/rays	35	4	33
Catfishes	135	5	220

Category	Shore	Charterboat	Private boat
Toadfish	42	1	61
Pigfish	5	2	33
Pinfish	259	15	410
Mullet	5		1
Puffers	13	7	15
Eels	9		3
Ladyfish	1	2	33
Silver perch	<1		44

while those for snapper were entirely vermilion snapper. The white grunt catch occurred in coastal waters, where the species is seldom encountered, and probably resulted from a misidentification of pigfish.

Catches of mackerels were largely attributed to the charterboat mode and appear to be way too high. Bluefish were a major catch of ocean pier fishermen. Most of the South Carolina landings of this species consisted of small (<2 lb) fish.

The dominant inshore sportfish landed in 1995 was the red drum, although the large catch shown for the charterboat mode is completely unrealistic. About 63% of the total red drum catch was reportedly released. The unclassified seatrout catch probably consisted almost entirely of spotted seatrout. If this is included with the spotted seatrout catch, about 50% of the catch of this species was released. Presumably, the unclassified flounders were almost all southern flounder. If these figures are combined with those for southern flounder, then 28% of the catch of this species was released.

Inshore bottomfish comprised a large percentage of the shore mode landings, particularly those of ocean pier fishermen. Spot was the most numerous fish caught by South Carolina anglers, as has been the case in nearly every year. The croaker catch consisted mostly of small fish with 59% of the total released.

Identification of sharks was speculative, since such a large percentage (87% of the unclassified) was released. Small species such as the sharpnose and bonnethead appeared to dominate the overall catch.

### **Shore Mode**

The majority of the anglers interviewed were fishing off the Grand Strand piers or inland bridges and docks. Very few bank or surf fishermen were intercepted. Although most of the piers were in continuous operation during the season, there was no night sampling.

A new large, public, oceanfront pier (the Folly Beach facility) opened in mid-year. Overall reported pier attendance was 203,576 anglers, slightly fewer than in 1994. Attendance at most facilities was comparable in both years, although the two most popular piers in 1994 both reported substantial declines during 1995. Overall participation during the winter (January-March) and spring (April-June) quarters was slightly greater in 1995 than in 1994. Summer participation was up about 5%, due to opening of the Folly Beach site. Fall attendance figures at most locations were lower than in the previous year and overall participation was down about 16%.

The total estimated shore catch (Table 18) largely reflected what was caught on the Grand Strand piers with inshore bottomfish and bluefish being major components. Overall landings were highest in wave 5, when catches of spot, kingfishes, and bluefish peaked.

#### Charterboat Mode

This discussion is based on data submitted by operators under the state's mandatory trip reporting system. The appendix contains a comparison of these results with those from the MRFSS and evaluation of the reliability of the two data sets.

During calendar year 1995, 182 vessels (excluding those designated by the NMFS as headboats) were issued permits. Distribution by length and port location was as follows:

	Length (ft)					Total
	<20	20-26	27-31	32-40	>40	
Beaufort County/GA	4	25	7	15	4	55
Charleston County	14	16	10	11	23	74
Georgetown County	4	4	3	9	5	25
Horry County/NC	1	1	7	12	5	26
<b>Total</b>	<b>23</b>	<b>46</b>	<b>27</b>	<b>47</b>	<b>37</b>	<b>180</b>

Length and/or port location were unknown for two boats.

A total of 153 boats reported making at least one fishing trip during the year, carrying 24,028 anglers. Participation by season and fishing area is shown in Table 19. Operators reported 5,714 boat trips, distributed by length category and port location as follows (C = confidential):

	Length (ft)					Total
	<20	20-26	27-31	32-40	>40	
Beaufort County/GA	291	1112	271	1169	60	2903
Charleston County	447	333	126	231	371	1508
Georgetown County	C	C	110	110	125	398
Horry County/NC	C	C	290	366	220	894
<b>Total</b>	<b>765</b>	<b>1489</b>	<b>797</b>	<b>1876</b>	<b>776</b>	<b>5703</b>

Eleven trips were made by boats for which length and/or location were unknown. Table 20 lists the distribution of trips by fishing area and season.

About 25% of the boat trips were made in inland areas. Trips to nearshore ocean waters (0-3 miles) represented 23% of the total effort, while offshore trips comprised the remaining 52%. Trips to artificial reefs (manmade habitat) accounted for 10% of the total ocean trips.

About 46% of the inland effort (angler hours) was directed at red drum (Table 21) with this species sought year round. Tarpon

Table 18. Estimated total shore catch (in thousands of fish) by wave. Source: NMFS.

Category	Wave				
	2	3	4	5	6
<b>Oceanic Pelagics</b>					
Skipjack				5	
<b>Reef Fish</b>					
Black sea bass		<1	<1	2	
Spadefish		<1		3	
<b>Coastal Pelagics</b>					
King mackerel			<1		
Spanish mackerel		2			
Bluefish	2	22	73	71	
<b>Inshore Sportfish</b>					
Red drum	2			8	9
Spotted seatrout	3	6	<1	10	6
Weakfish			2	15	
Southern flounder		1	<1	9	
Flounder, unclass.	2	1		3	<1
Sheepshead			<1		
<b>Inshore Bottomfish</b>					
Kingfishes	5	11	116	188	69
Spot	24	60	78	553	212
Croaker		10	81	20	21
Black drum					9
<b>Sharks</b>					
All	<1	77	18	40	
<b>Miscellaneous</b>					
Skates/rays	8	9	2	12	4
Catfishes	2	36	10	87	
Toadfish	1	24	8	9	
Searobins	1	2	6	126	
Pigfish				5	
Pinfish		14	77	132	36
Mullet		5			
Puffers	2	1	4	5	<1
Eels	<1	1	3	3	<1
Silver perch					<1

**Table 19. Participation (number of anglers) in the 1995 South Carolina charterboat fishery. Source: MRD trip reports.**

<b>Fishing area</b>	<b>JAN/MAR</b>	<b>APR/JUN</b>	<b>JUL/SEP</b>	<b>OCT/DEC</b>	<b>Total</b>
<b>Inland</b>	301	1164	1532	778	3775
<b>Ocean &lt; 3 miles</b>					
<b>natural bottom</b>	36	1897	3598	327	5858
<b>manmade habitat</b>	63	91	160	75	389
<b>Ocean &gt; 3 miles</b>					
<b>natural bottom</b>	326	6105	5029	1182	12642
<b>manmade habitat</b>	40	613	627	84	1364
<b>Total</b>	<b>766</b>	<b>9870</b>	<b>10946</b>	<b>2446</b>	<b>24028</b>

**Table 20. South Carolina charterboat trips in 1995. Source: MRD trip reports.**

<b>Fishing area</b>	<b>JAN/MAR</b>	<b>APR/JUN</b>	<b>JUL/SEP</b>	<b>OCT/DEC</b>	<b>Total</b>
<b>Inland</b>	145	425	524	337	1431
<b>Ocean &lt; 3 miles</b>					
<b>natural bottom</b>	9	425	713	84	1231
<b>manmade habitat</b>	15	24	41	24	104
<b>Ocean &gt; 3 miles</b>					
<b>natural bottom</b>	76	1229	1079	248	2632
<b>manmade habitat</b>	9	143	142	22	316
<b>Total</b>	<b>254</b>	<b>2246</b>	<b>2499</b>	<b>715</b>	<b>5714</b>

**Table 21. Directed 1995 charterboat effort in South Carolina.**  
Source: MRD trip reports.

Species	Inland angler hrs	Ocean boat hours				Total
		0-3 miles		> 3 miles		
		natural	manmade	natural	manmade	
Red drum	6934	176	84	72	15	347
Tarpon	1537	384	-	13	-	397
Spot. seatrout	1426	14	-	-	-	14
Sharks	1033	2260	3	305	25	2593
Cobia	334	45	15	21	47	128
Sheepshead	205	82	80	151	37	350
Flounder	188	-	-	-	-	-
Crevalle jack	74	-	-	-	-	-
Black sea bass	20	30	16	224	30	300
Striped bass	8	-	-	-	-	-
King mackerel	-	298	18	4715	739	5770
Spanish mackerel	-	425	39	608	138	1210
Grouper	-	-	-	402	22	424
Marlin	-	-	-	400	-	400
Dolphin	-	-	-	397	-	397
Tuna	-	-	-	290	-	290
Bluefish	-	85	-	11	-	96
Spadefish	-	-	2	3	59	64
Wahoo	-	-	-	62	-	62
Barracuda	-	-	-	3	57	60
Amberjack	-	-	-	46	-	46
Snapper	-	-	-	20	-	20
Red porgy	-	-	-	5	-	5
Any	3364	534	71	4748	140	5493
<b>Total</b>	<b>15187</b>	<b>4333</b>	<b>330</b>	<b>12498</b>	<b>1309</b>	<b>18470</b>

was extensively pursued in the summer with sharks often a secondary target. Sharks were the primary target of substantial effort as well. The other species accounting for any appreciable inland effort was the spotted seatrout (mostly in the fall). About 22% of the inland effort was targeted at no particular species.

Nearly all of the effort in nearshore ocean waters occurred over natural bottom with sharks the dominant preference. Red drum and sheepshead were the principal species targeted on coastal artificial reefs.

In the offshore (> 3 miles) zone, about 38% of the boat hours over natural bottom were not targeted at any particular species. Much of the trolling for oceanic pelagic species was included in this category. King mackerel was the dominant designated target species of trollers, while non-troll effort was mainly directed at groupers and a variety of other bottomfish. Mackerels were the main target on the offshore artificial reefs with very little effort directed at bottom species.

Charterboat landings as reported by vessel operators are listed in Table 22.

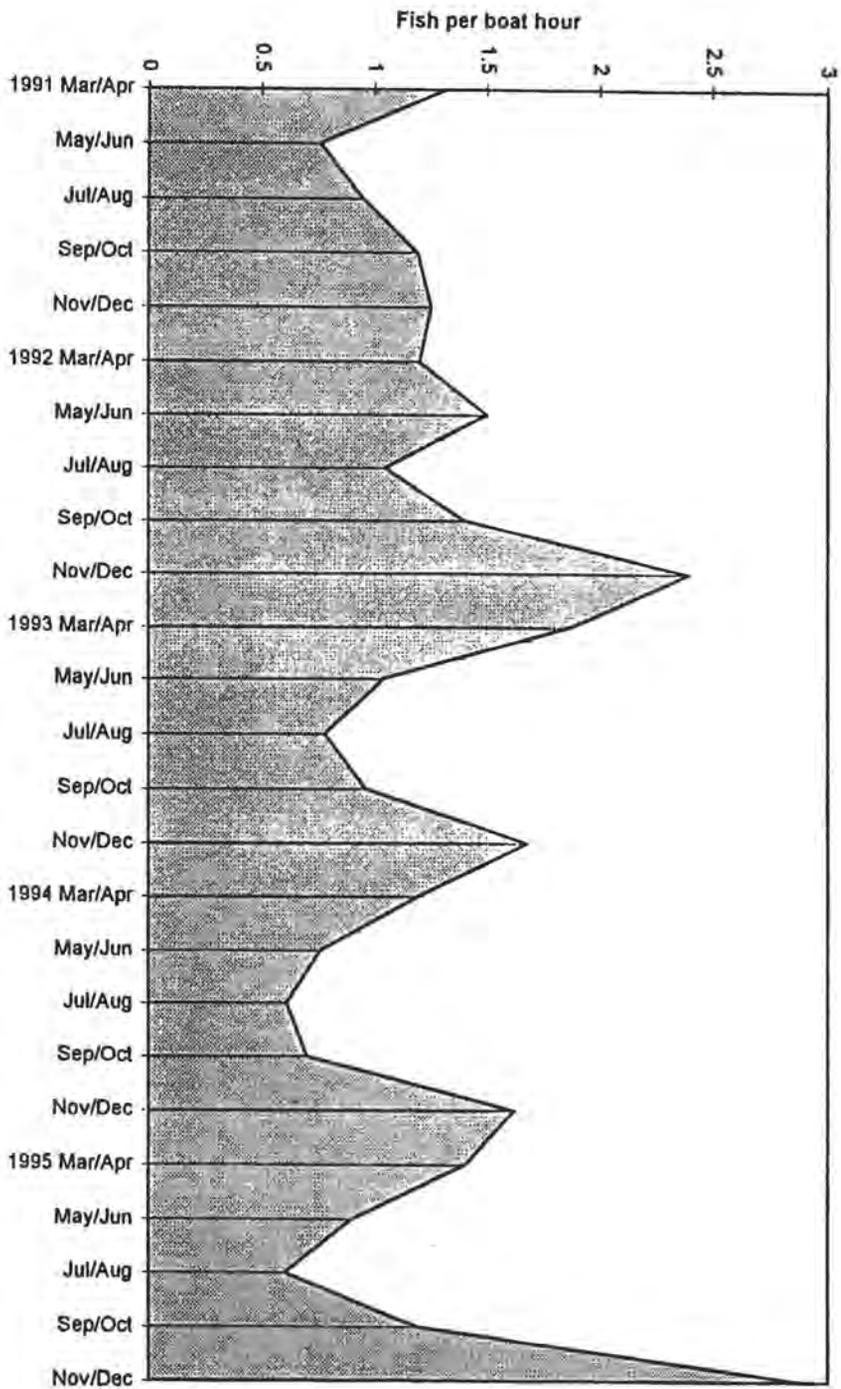
Catches of most oceanic pelagic species were relatively good. Spring landings of dolphin were exceptional with a CPUE (fish/trolling boat hour) of 1.31, compared to 0.88 and 0.95 in 1994 and 1993, respectively. Wahoo landings were up appreciably over those in the previous two years. The number of yellowfin tuna reported declined considerably.

The most numerous reef fish caught was black sea bass. Although the large percentage of released fish made the overall catch figure rather speculative, the total catch appeared to decline from that in previous years. Aggregate landings of groupers showed little change, although the species composition changed markedly with scamp replacing gag as the dominant species.

For the majority of charterboats, mackerels are the most important species. Landings of king mackerel improved slightly. Although there was less directed effort during much of the year, CPUE was somewhat higher than in 1994, particularly during the fall (Fig. 1). The catch of Spanish mackerel declined appreciably, reflecting in part a substantial decrease in directed effort. CPUE was relatively high early in the season, but below average later on (Fig. 2). Barracuda landings dropped sharply, perhaps reflecting the decline in effort at offshore artificial reefs. The spring cobia catch was down significantly in the southern sounds with a relatively low CPUE.

The catch of red drum increased greatly with a large increase in directed effort. Much of the catch consisted of fish above the

Fig. 1. South Carolina charterboat CPUE for king mackerel.



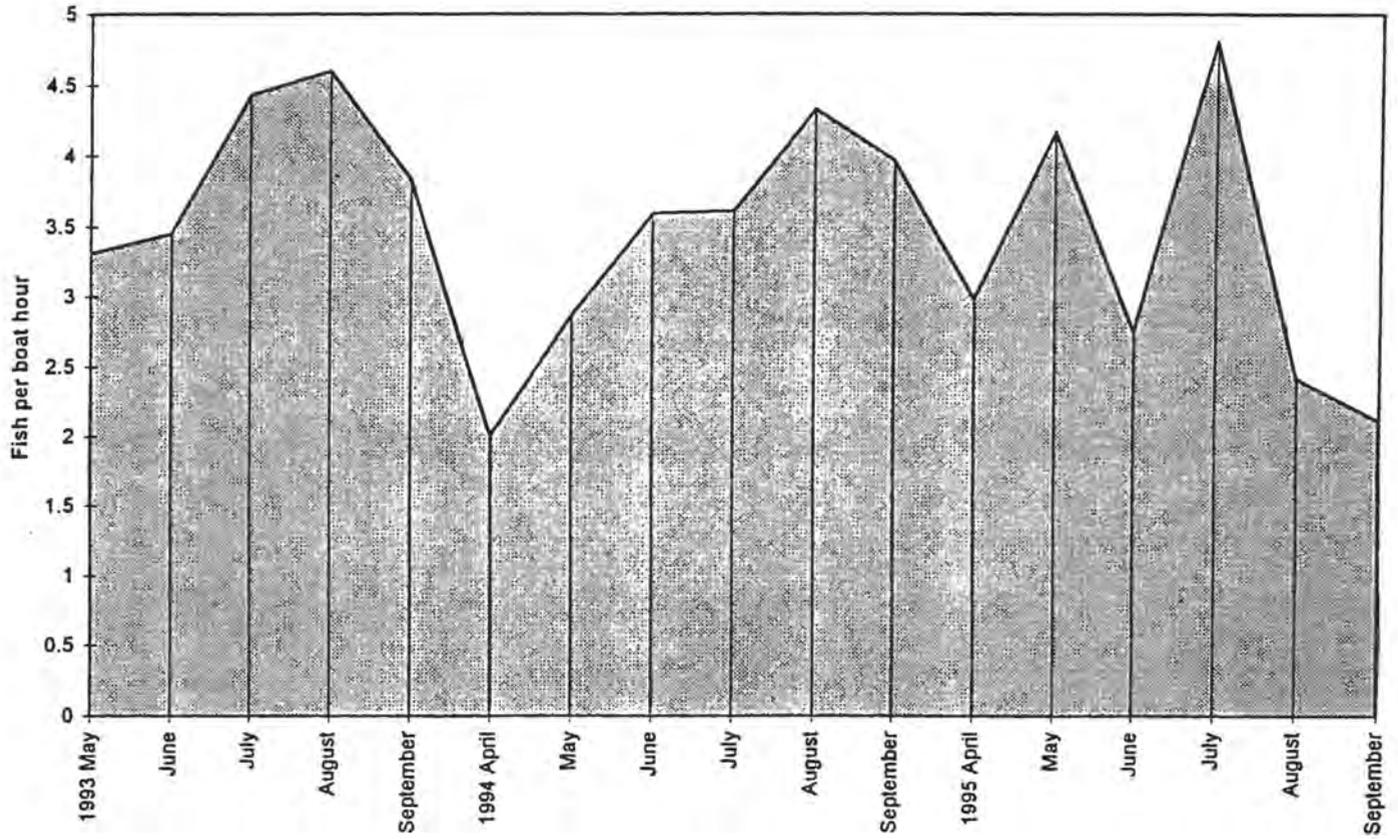


Fig. 2. South Carolina charterboat CPUE for Spanish mackerel.

Table 22. South Carolina charterboat landings by season, in numbers of fish. Source: MRD trip reports.

Group/species	JAN/MAR	APR/JUN	JUL/SEP	OCT-DEC	Total
<b>Oceanic pelagics</b>					
Dolphin	2	4218	633	38	4891
Wahoo	6	380	128	12	526
Yellowfin tuna	4	473	109	6	592
Blackfin tuna	1	23	10	15	49
Skipjack	-	4	15	-	19
Blue marlin	-	22	11	2	35
White marlin	-	3	1	-	4
Sailfish	-	27	28	-	55
<b>Reef fish</b>					
Black sea bass	1572	8050	4667	5331	19740
Bank sea bass	-	16	-	-	16
Gag	7	461	520	250	1238
Scamp	-	920	739	154	1813
Red grouper	-	43	41	5	89
Speckled hind	-	21	41	-	62
Rock hind	-	-	2	-	2
Snowy grouper	-	3	21	6	30
Grouper, uncl.	1	8	5	1	15
Red snapper	7	143	72	25	247
Vermilion snapper	-	5512	2968	900	9380
Cubera snapper	-	-	1	-	1
Red porgy	307	1396	807	730	3240
Whitebone porgy	23	213	218	150	604
Porgy, uncl.	7	68	88	108	271
White grunt	5	1959	1825	512	4301
Grunts, uncl.	-	462	312	277	1051
Triggerfish	3	486	693	206	1388
Spadefish	-	388	301	-	689
Spottail pinfish	34	452	622	205	1313
Hogfish	-	-	1	-	1
Amberjack	33	244	426	173	876
<b>Coastal pelagics</b>					
King mackerel	62	2427	2249	1413	6151
Spanish mackerel	-	2292	4160	141	6593
Bluefish	8	967	1044	687	2706
Crevalle jack	-	157	580	25	762
Blue runner	-	60	271	5	336
Barracuda	13	379	849	50	1291
Little tunny	12	209	181	59	461
Cobia	1	86	37	3	127
<b>Inshore sportfish</b>					
Red drum	475	795	2007	2879	6156
Spotted seatrout	13	371	985	2201	3570

Group/species	JAN/MAR	APR/JUN	JUL/SEP	OCT/DEC	Total
Weakfish	2	102	157	75	336
Flounder	8	259	144	133	544
Sheepshead	519	713	43	42	1311
Tarpon	-	28	162	-	190
<b>Inshore bottomfish</b>					
Kingfishes	-	46	308	73	427
Spot	-	4	10	30	44
Croaker	-	5	14	7	26
Black drum	17	32	29	72	150
Tripletail	-	2	2	-	4
<b>Sharks</b>					
Shark, uncl.	73	1266	2230	70	3639
Blacktip	-	828	1706	24	2558
Sharpnose	10	1223	766	90	2089
<b>Other</b>					
Rays/skates	1	33	114	21	169
Catfish	3	136	651	44	834
Toadfish	-	7	16	-	23
Pinfish	-	2	91	102	195
Pigfish	-	-	2	-	2
Puffers	-	-	-	1	1
Unclassified	3	41	277	127	448

maximum size limit that were released. Although directed effort for tarpon increased slightly, the catch declined from that in 1994 with an appreciably lower CPUE. Catches of spotted seatrout were relatively good, particularly during the fall.

Although they remained a principal species sought in coastal waters, sharks registered a landings drop. There has been a steady decline in the number of sharpnose sharks reported in the last three years. Most of the sharks were released.

#### **Private Boat Mode**

Estimated landings by private boat fishermen are listed in Table 23.

As in previous surveys, estimated catches of offshore anglers are based on very few observations and are highly suspect. In the 1995 survey, no catches of oceanic pelagics were inspected, so this group is not represented. Anecdotal information indicates that the spring fishery (April-June) for dolphin was exceptional with large catches accounted for by the private boat sector.

Other than black sea bass, reef fish were seldom seen in inspected catches and landings of this group presumably were underestimated as well.

King mackerel catches were reported only for wave 4, normally a slow fishing period for this species. The estimated catch was much lower than that in other years, as well as being atypical in seasonal distribution. Again, the estimate is probably much too low.

Inshore sportfish constituted the principal target species and landings of this mode. Species representation, seasonality of the landings, and overall catch levels appeared reasonable when other sources of information were considered. It was an exceptional year for red drum and spotted seatrout abundance seemed relatively high as well. The southern flounder catch probably was overestimated in wave 3.

Data from the MRFSS and SFS were used to calculate CPUE indices for major species of interest. Input data for red drum, spotted seatrout, flounder (primarily southern), and sheepshead are provided in Tables 24, 25, 26, and 27, respectively.

The MRFSS contributed 42% of the observations for red drum. CPUE was highest in Beaufort County. The statewide index was well above the long-term average.

MRFSS data represented 45% of the sample for spotted seatrout. As in past years, the CPUE was highest in the central part of the coastline and markedly lower in the northern area. The statewide

Table 23. Estimated total private boat catch (in thousands of fish) by wave. Source: NMFS.

Category	Wave				
	2	3	4	5	6
<b>Reef Fish</b>					
Black sea bass	101	73	32	25	193
Bank sea bass			1	6	
Porgies			<1		7
Snappers	4				
<b>Coastal Pelagics</b>					
King mackerel			2		
Spanish mackerel		5	<1	4	
Bluefish	2	7	31	40	49
Crevalle jack			1	1	
<b>Inshore Sportfish</b>					
Red drum	16	16	102	225	63
Spotted seatrout	3	3	42	72	202
Weakfish				2	
Seatrout, unclass.					53
Summer flounder			<1		
Southern flounder	3	112	13	6	8
Flounder, unclass.		31	14	<1	4
Sheepshead	25		14	26	2
<b>Inshore Bottomfish</b>					
Kingfishes	2	7	11	73	8
Spot	<1	16	24	46	183
Croaker			19	19	11
Black drum		4	<1	4	1
Pompano			<1		
<b>Sharks</b>					
All	7	66	22	5	
<b>Miscellaneous</b>					
Skates/rays	3	1	8	21	
Catfishes	3	31	47	138	1
Toadfish	5	1	34	20	1
Searobins				1	1
Pigfish		1	1	30	
Puffers	<1		5	6	4
Silver perch					44

**Table 24. Catch and effort data of private boat anglers for red drum.**

	MRFSS	SFS	Combined
<b>Beaufort County</b>			
Number of observations	44	52	96
Number of anglers	119	91	210
Number of angler hours	499.5	312.5	812.0
Total fish caught	404	201	605
Fish per angler	3.39	2.21	2.88
Fish per angler hour	0.81	0.64	0.75
Percent anglers with no fish	29	24	27
<b>Colleton/Charleston Counties</b>			
Number of observations	84	157	241
Number of anglers	149	302	451
Number of angler hours	573.0	1207.5	1780.5
Total fish caught	255	437	692
Fish per angler	1.71	1.45	1.53
Fish per angler hour	0.45	0.36	0.39
Percent anglers with no fish	44	34	37
<b>Georgetown County</b>			
Number of observations	36	22	58
Number of anglers	68	43	111
Number of angler hours	312.0	181.0	493.0
Total fish caught	112	88	200
Fish per angler	1.65	2.05	1.80
Fish per angler hour	0.36	0.49	0.41
Percent anglers with no fish	44	28	38
<b>Statewide</b>			
Number of observations	164	231	395
Number of anglers	336	436	772
Number of angler hours	1384.5	1701.0	3085.5
Total fish caught	771	726	1497
Fish per angler	2.29	1.67	1.94
Fish per angler hour	0.56	0.43	0.49
Percent anglers with no fish	39	32	35

**Table 25. Catch and effort data of private boat anglers for spotted seatrout.**

	MRFSS	SFS	Combined
<b>Beaufort County</b>			
Number of observations	22	56	78
Number of anglers	57	101	158
Number of angler hours	233.5	345.5	579.0
Total fish caught	179	143	322
Fish per angler	3.14	1.42	2.04
Fish per angler hour	0.77	0.41	0.56
Percent anglers with no fish	35	46	42
<b>Colleton/Charleston</b>			
Number of observations	64	79	143
Number of anglers	106	140	246
Number of angler hours	426.5	549.0	975.5
Total fish caught	302	558	863
Fish per angler	2.85	3.99	3.51
Fish per angler hour	0.71	1.02	0.88
Percent anglers with no fish	45	24	33
<b>Georgetown</b>			
Number of observations	25	3	28
Number of anglers	41	6	47
Number of angler hours	172.5	17.0	189.5
Total fish caught	33	0	33
Fish per angler	0.80	0	0.70
Fish per angler hour	0.19	0	0.17
Percent anglers with no fish	61	100	66
<b>Statewide</b>			
Number of observations	111	138	249
Number of anglers	204	247	451
Number of angler hours	832.5	911.5	1744.0
Total fish caught	514	701	1215
Fish per angler	2.52	2.84	2.69
Fish per angler hour	0.62	0.77	0.70
Percent anglers with no fish	46	35	40

**Table 26. Catch and effort data of private boat anglers for flounders.**

	MRFSS	SFS	Combined
<b>Georgetown/Horry Counties</b>			
Number of observations	64	15	79
Number of anglers	129	29	158
Number of angler hours	591.5	117.5	709.0
Total fish caught	155	52	207
Fish per angler	1.20	1.79	1.31
Fish per angler hour	0.26	0.44	0.29
Percent anglers with no fish	57	17	49
<b>Other Counties</b>			
Number of observations	36	36	72
Number of anglers	71	67	138
Number of angler hours	287.5	287.0	574.5
Total fish caught	56	52	108
Fish per angler	0.79	0.78	0.78
Fish per angler hour	0.19	0.18	0.19
Percent anglers with no fish	45	40	43
<b>Statewide</b>			
Number of observations	100	51	151
Number of anglers	200	96	296
Number of angler hours	879.0	404.5	1283.5
Total fish caught	211	104	315
Fish per angler	1.06	1.08	1.06
Fish per angler hour	0.24	0.26	0.25
Percent anglers with no fish	53	33	46

**Table 27. Catch and effort data of private boat anglers for sheepshead.**

	MRFSS	SFS	Combined
<b>Statewide</b>			
Number of observations	22	28	50
Number of anglers	55	61	116
Number of angler hours	295.5	259.5	555.0
Total fish caught	136	173	309
Fish per angler	2.47	2.84	2.66
Fish per angler hour	0.46	0.67	0.56
Percent anglers with no fish	49	20	34

index was relatively high.

Most (66%) of the database for southern flounder was attributable to the MRFSS, largely by virtue of the large number of assignments at Murrells Inlet during waves 3 and 4. CPUE was relatively high in the northern area and much lower elsewhere.

Because of the limited numbers of observations for sheephead, data from all areas were combined. Sheephead fishermen tended to either have nothing or a large number of fish and CPUE compared to that of other species was relatively high.

### **Length Distribution**

A total of 496 red drum was measured with 192 from the MRFSS and 304 from the SFS. Fish measured in the SFS tended to be slightly larger. Length distributions by county are shown in Fig. 3 (a few fish from Colleton and Horry Counties were included in the distributions for Charleston and Georgetown Counties, respectively). Mean lengths in Beaufort, Charleston, and Georgetown Counties were 40.8 cm, 48.9 cm, and 46.1 cm, respectively, with a statewide average of 45.6 cm. Statewide length distribution is shown in Fig. 4.

A total of 457 spotted seatrout lengths was obtained with nearly all of the fish coming from Charleston (58%) and Beaufort (39%) Counties. There was little difference in overall size distribution between areas, although all of the few larger fish (> 46 cm) seen came from Charleston County (Fig. 5). Mean lengths were 35.7 cm in Beaufort County and 36.2 cm in Charleston County. The statewide average in both surveys was 36.1 cm (N = 174 in the MRFSS and 283 in the SFS). Statewide length distribution is shown in Fig. 6.

Most of the southern flounder sample (61%) came from the northern coastal area, where the fish averaged slightly larger. The MRFSS provided 123 fish and the SFS 92. The statewide length distribution is shown in Fig. 7. Mean length was 39.3 cm.

Length distribution of sheephead is illustrated in Fig. 8. Most of the fish came from Charleston County with few measured in the northern coastal area. All of the large fish seen were from Beaufort County, where the sample contained fish from the ocean artificial reefs. The statewide average length was 38.2 cm.

### **DISCUSSION**

Discrepancies between results from the MRFSS charterboat sampling and MRD trip logsheet system are discussed in the Appendix.

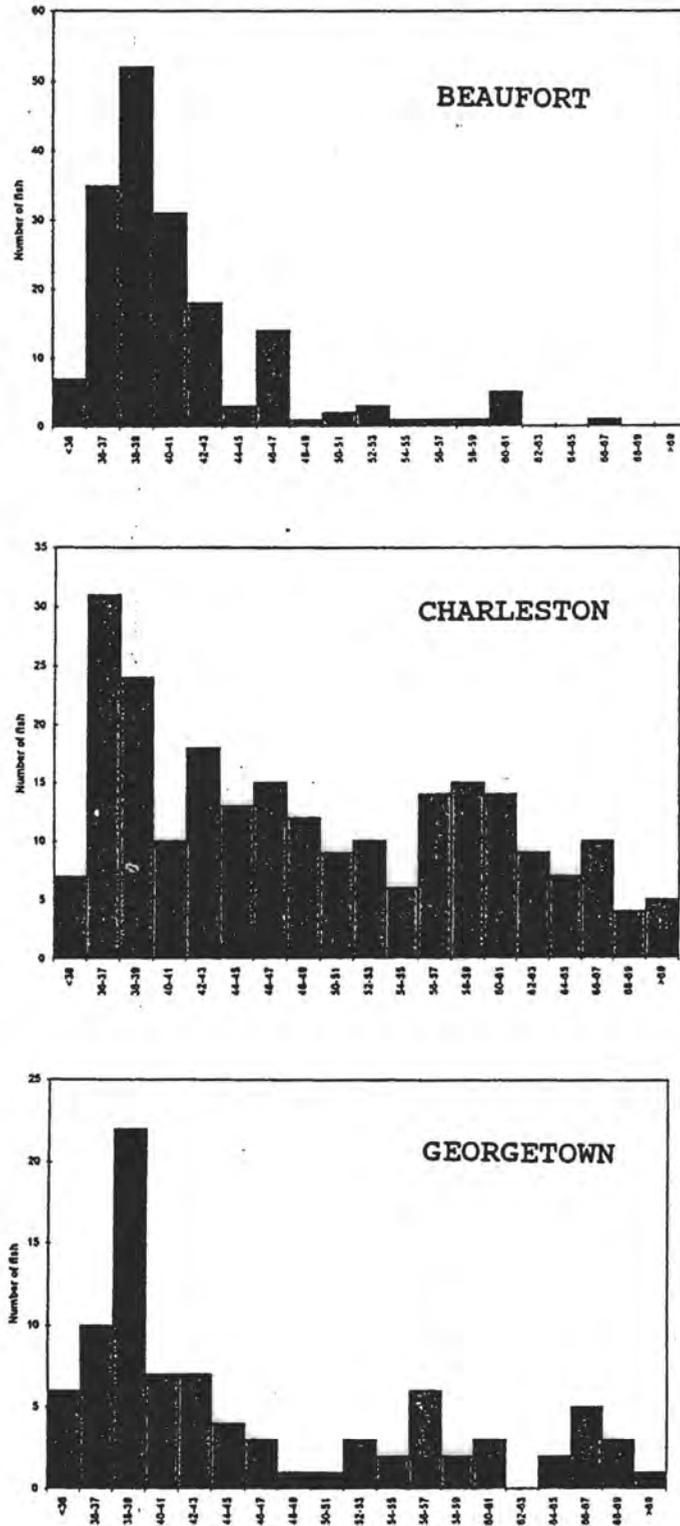


Fig. 3. Length distribution of red drum by county.

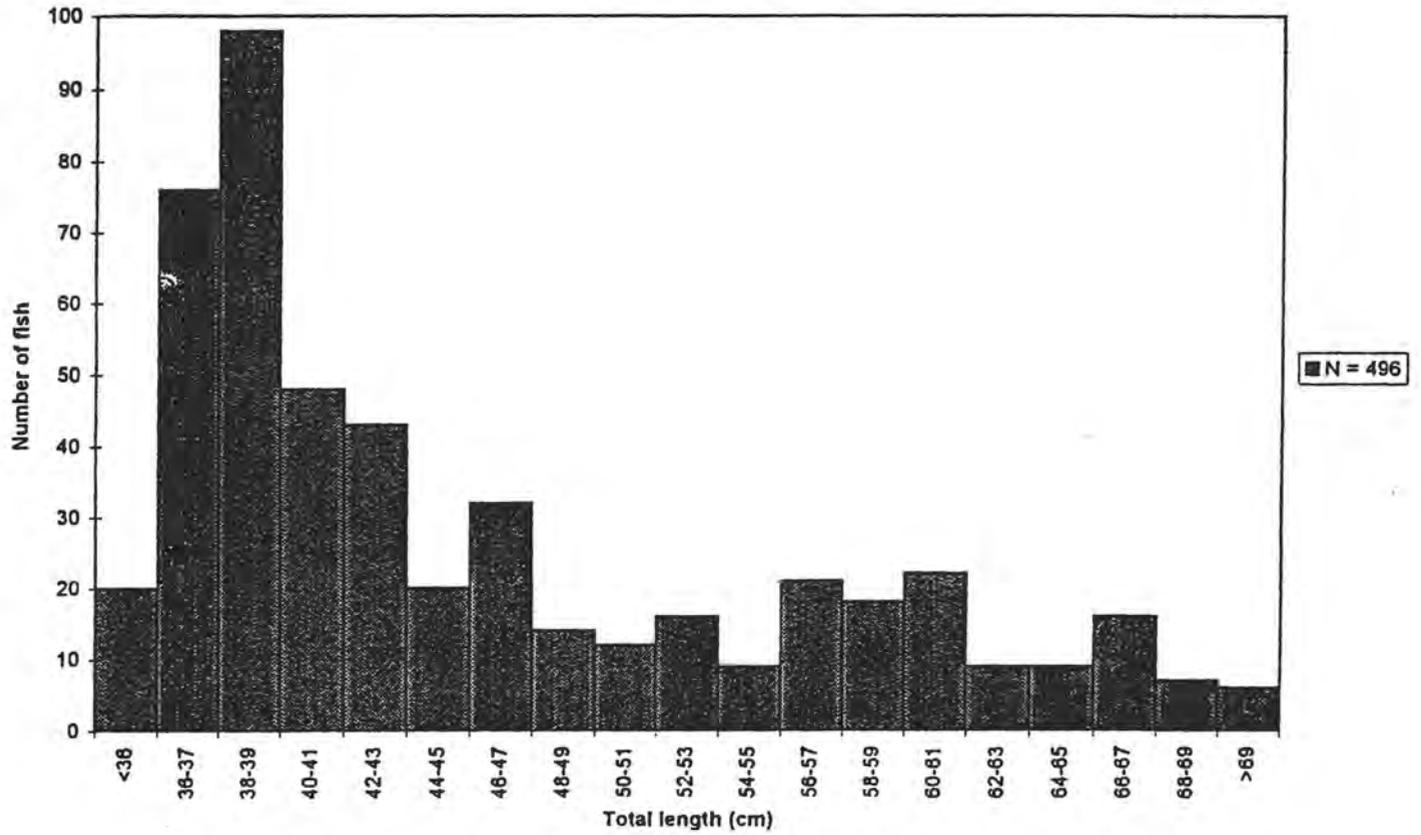


Fig. 4. Length distribution of red drum statewide.

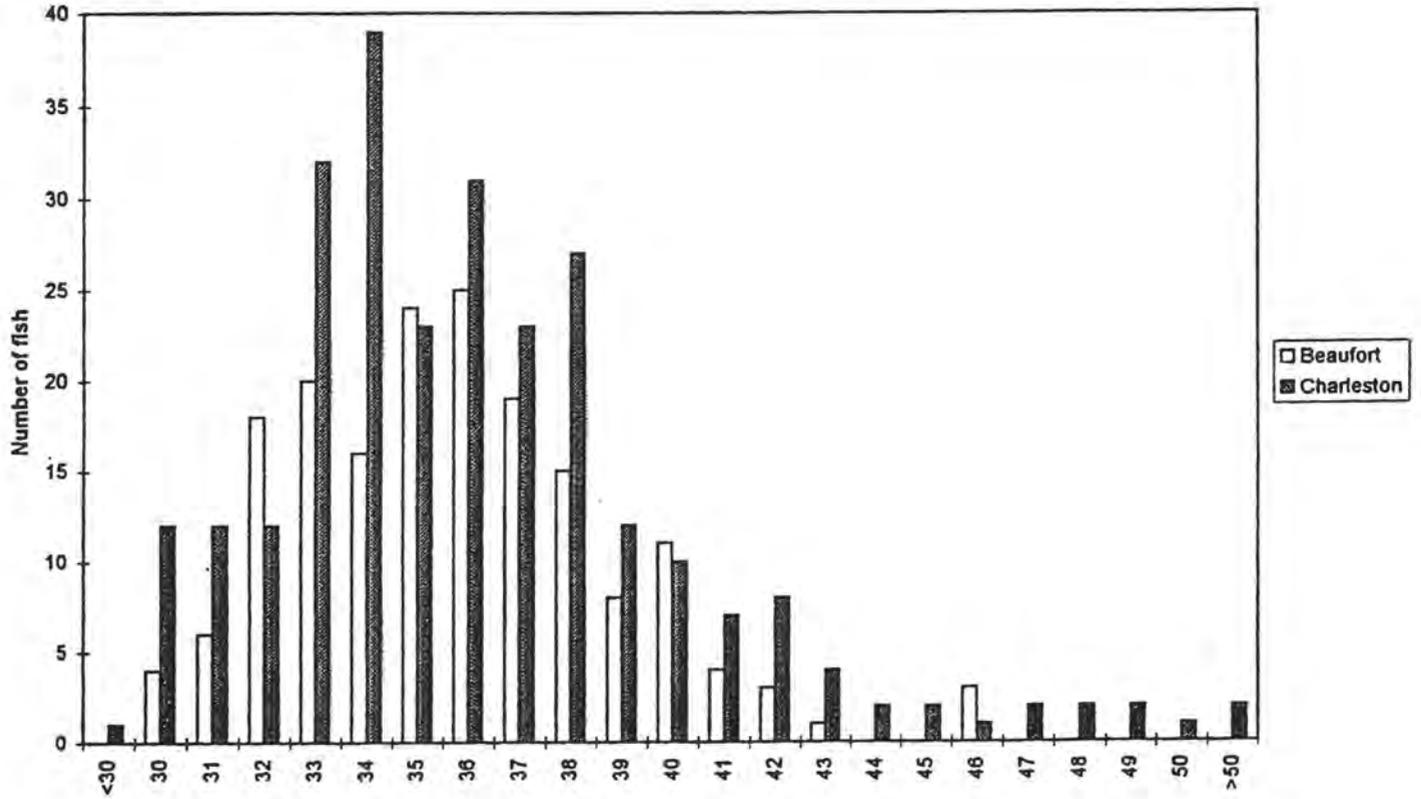


Fig. 5. Length distribution of spotted seatrout by county.

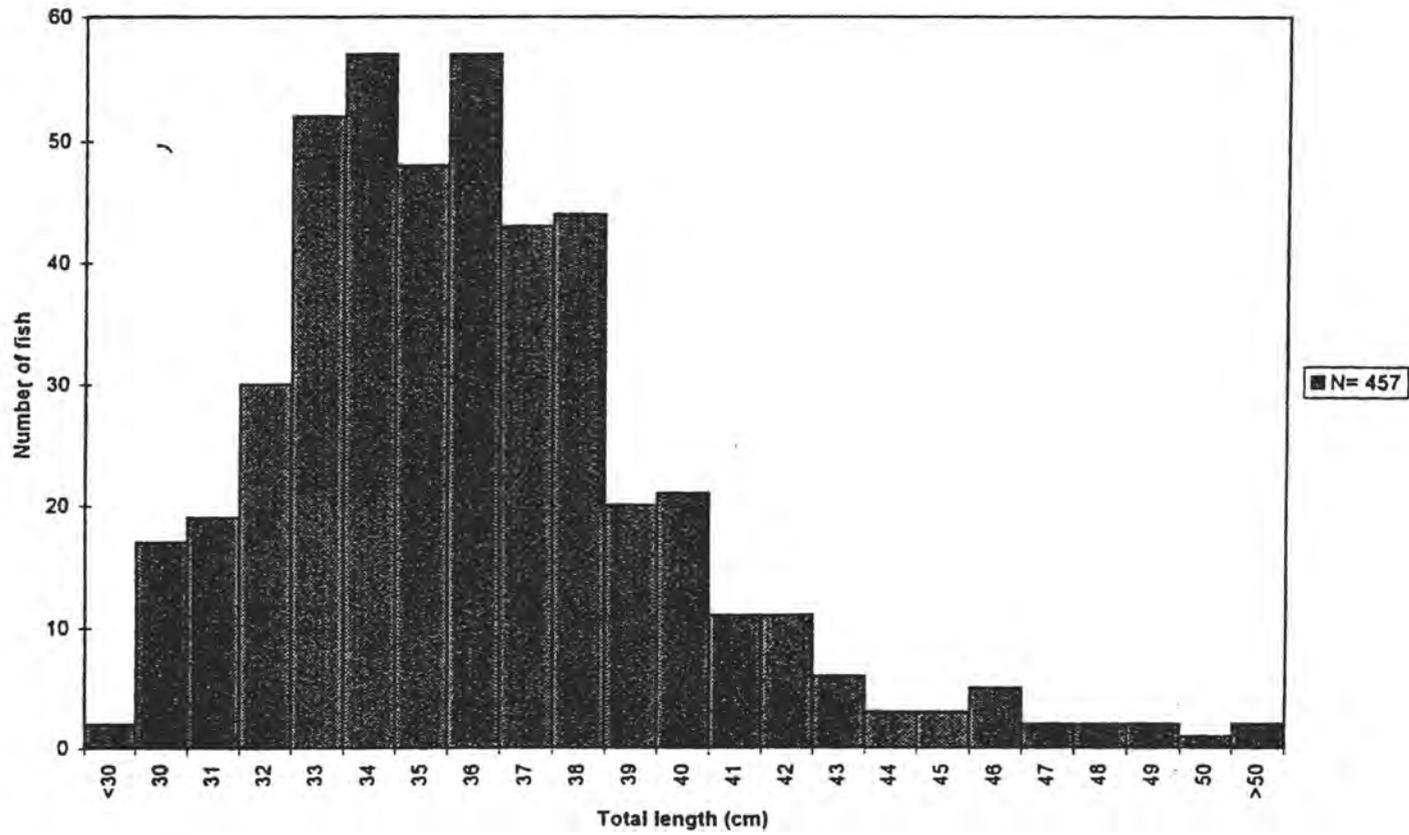


Fig. 6. Length distribution of spotted seatrout statewide.

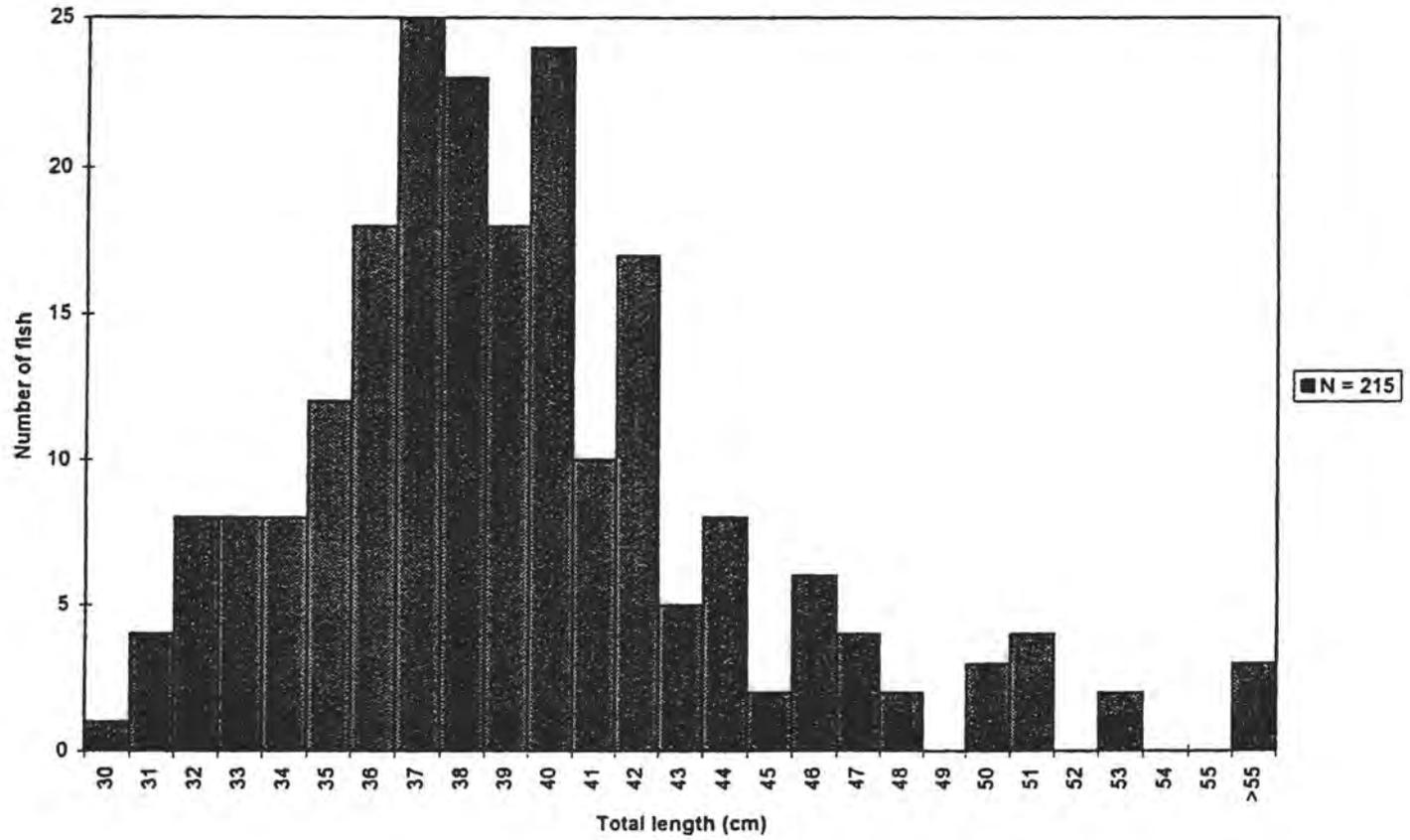


Fig. 7. Length distribution of southern flounder.

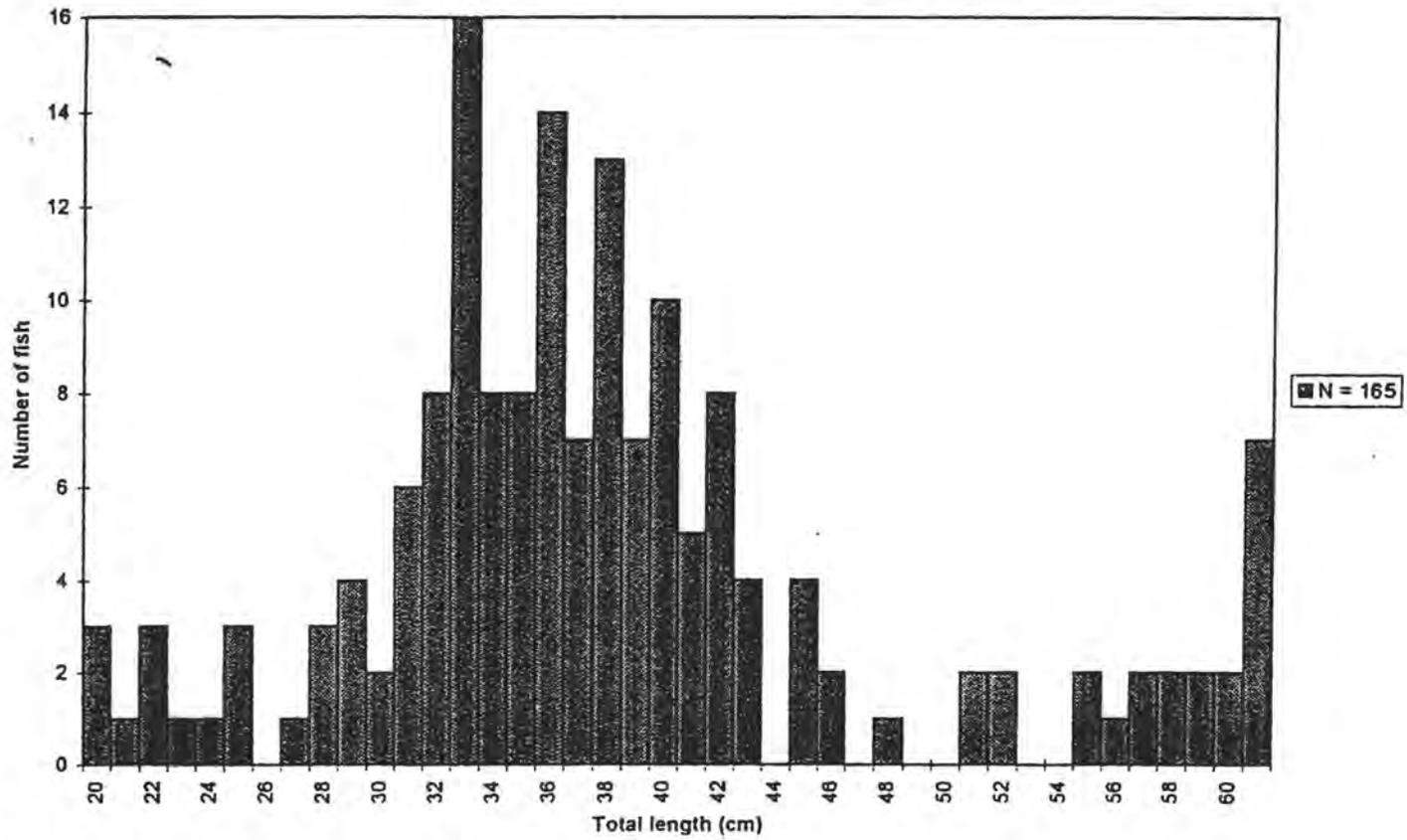


Fig. 8. Length distribution of sheephead.

## Survey Logistics

Geographical distribution of MRFSS interviews within modes has been rather variable from year to year, as indicated in Table 28.

Historically, over half of the annual shore mode sample has come from the Grand Strand piers. Exceptions were in 1993 and 1995. In 1993, several facilities were damaged by a March storm and remained closed for extended periods. In 1995, a large, new pier opened at Folly Beach (Charleston County). The ratio of ocean < 3 mi.:inland interviews has tended to be approximately 2:1, however, in most years.

The distribution of charterboat interviews has been the most variable, both by county and fishing area. In the last three years, the majority of the sampling has been done in Beaufort County, where the largest number of boats is based. Prior to that, one marina in the Murrells Inlet area contributed a disproportionate number of interviews. The inland component of the fishery has been growing the most rapidly, particularly in the central and southern parts of the state, and this has been somewhat reflected in the redistribution of sampling.

The sample distribution has been most stable in the private boat mode with no appreciable changes in recent years other than a slight trend toward more sampling in the southern coastal area.

The impact of sample distribution on estimated landings is difficult to evaluate. It should be most apparent in the shore and charterboat modes, where there has been the most variation. Table 30 indicates the species composition of the estimated shore total catch. There are no obvious differences attributable to county allocation, probably because the fishing area (inland vs ocean) distribution has remained fairly stable. In this fishery, the inland vs ocean factor is the dominant influence in terms of species composition and north vs south orientation appears to have less effect. This is most evident in the catches of coastal pelagic species, e.g. Spanish mackerel and bluefish.

The unreliability of the NMFS estimates of charterboat catches complicates any evaluation for this mode. The northern boats have mainly fished offshore for king mackerel and reef fish with virtually no inland effort. In 1992, when most of the interviews were from the Georgetown area, the effect on estimated catches was quite obvious. Boats in the southern area have expended a much larger part of their effort in inland and coastal ocean waters. The shift in sampling to that area is reflected in the increased estimated catches of sharks and red drum. Southern boats have targeted king mackerel to a much lesser extent, due to lack of good fishing areas, and that is obviously reflected in the estimated overall catches. In this mode, the accuracy of sample representation in terms of both county and fishing area

**Table 28. Distribution of MRFSS interviews by mode and county. Values shown are percentages of mode totals.**

Mode	County	1992	1993	1994	1995
Shore	Beaufort	20	14	25	9
	Charleston	15	34	13	44
	Georgetown	2	3	4	0
	Horry	63	49	58	47
Charterboat	Beaufort	26	54	62	68
	Charleston	16	43	23	14
	Georgetown	58	3	15	18
Private boat	Beaufort	25	12	37	31
	Charleston	37	36	25	35
	Georgetown	37	45	38	34
	Horry	1	6	0	0

**Table 29. Distribution of MRFSS interviews by mode and fishing area. Values shown are percentages of mode totals.**

Mode	Fishing area	1992	1993	1994	1995
Shore	Inland	34	47	39	30
	Ocean < 3 mi.	66	53	61	70
Charterboat	Inland	8	30	28	16
	Ocean < 3 mi.	5	2	17	18
	Ocean > 3 mi.	87	68	55	66
Private boat	Inland	86	77	88	85
	Ocean < 3 mi.	3	6	4	7
	Ocean > 3 mi.	11	17	8	8

**Table 30. Percent species composition of estimated MRFSS catches in the shore and charterboat modes.**

Mode	Species	1992	1993	1994	1995
Shore	Spanish mackerel	2	1	6	<1
	Bluefish	1	4	5	7
	Red drum	2	<1	<1	<1
	Spotted seatrout	<1	2	0	1
	Kingfishes	10	6	6	16
	Spot	69	63	34	38
	Croaker	3	<1	3	5
	Pompano	<1	3	<1	3
Charterboat	Oceanic pelagics	2	10	10	2
	Reef fish	45	34	11	36
	King mackerel	40	10	8	6
	Spanish mackerel	5	4	28	3
	Red drum	<1	17	0	17
	Sharks	<1	1	18	3

distribution does appear to have an important influence on overall estimated catches.

### **Participation and Effort**

Trends in annual participation are shown in Fig. 9. Estimates for 1994 were revised downward substantially by the NMFS from those shown in last year's annual report. The number of coastal resident fishermen was the lowest since the survey began and but 57% of the ten-year average. The estimated number (91,000) appears realistic given the number of marine fishing stamps sold (mostly to coastal resident private boat anglers). The status of noncoastal resident participation was similar. Out of state participation was near the ten-year average (97%). The estimated total number of anglers was the lowest since 1983 and about 79% of the ten-year average.

Estimated total effort was slightly below (4%) the ten-year average and down appreciably from the record level in 1994. Declines were apparent for all residential groups, compared to 1994's figures. Effort by coastal residents was slightly above (2%) the ten-year average, while out of state effort was nearly identical to the long-term mean. The trends shown in Fig. 10 appear realistic given the virtually flat level of pier attendance, slight increase in reported charterboat effort, and nearly constant stamp sales.

### **Catches and Catch Rates**

Landings of oceanic pelagic species showed mixed trends, based on MRD charterboat reports and anecdotal information. Spring landings of dolphin were exceptional with a CPUE (fish/trolling boat hour) of 1.31, compared to 0.88 and 0.95 in 1994 and 1993, respectively. Wahoo and billfish catches appeared to improve moderately, while yellowfin tuna landings continued to decline.

MRFSS estimated reef fish catches showed variable status compared to those in the previous year. The black sea bass catch increased slightly. The estimates for most other species were based on very few observations and so subject to large sampling errors as to make any interpretation speculative.

The MRFSS estimated 1995 catch of king mackerel was based almost entirely on charterboat landings and was moderately lower than the revised figure for 1994. The MRFSS estimate of the 1995 Spanish mackerel catch was an order of magnitude lower than the 1994 figure. MRD charterboat reports suggested that the charterboat king mackerel landings improved slightly in 1995 with a higher CPUE, particularly in the fall. The MRD reports also indicated much lower catches of Spanish mackerel in 1995 with below-average charterboat CPUEs during the latter part of the season. Both the MRFSS and MRD databases indicated a poor season for cobia in 1995 consistent with widespread complaints of poor

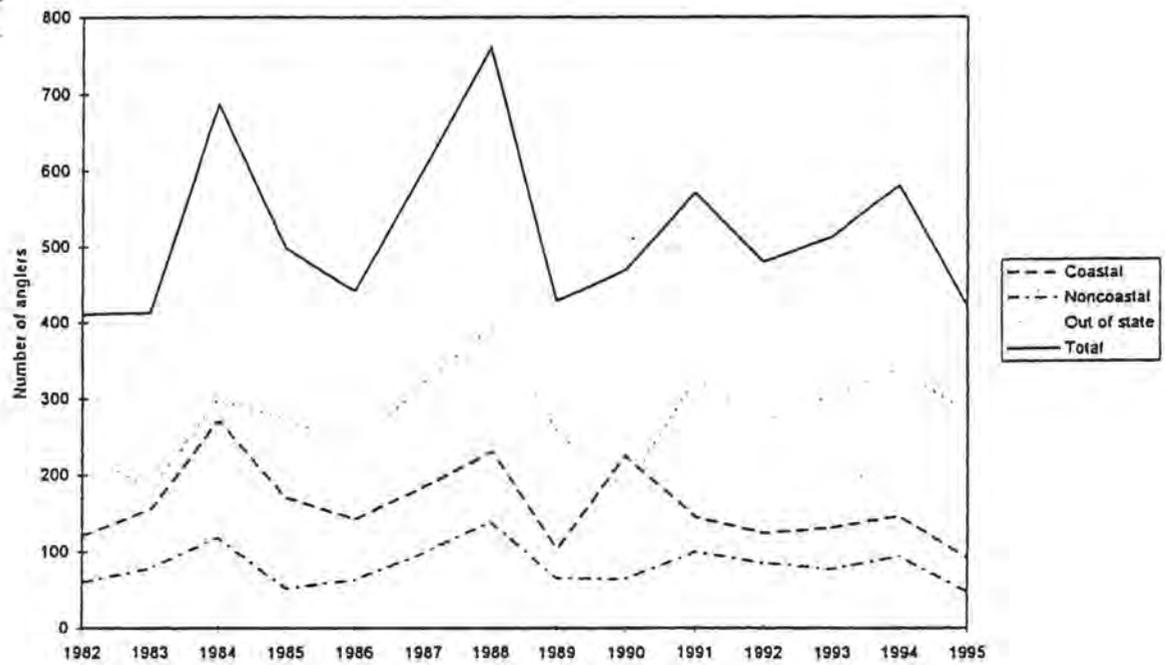


Fig. 9. Estimated participation in the South Carolina recreational hook and line fishery (excluding headboats). Source: NMFS.

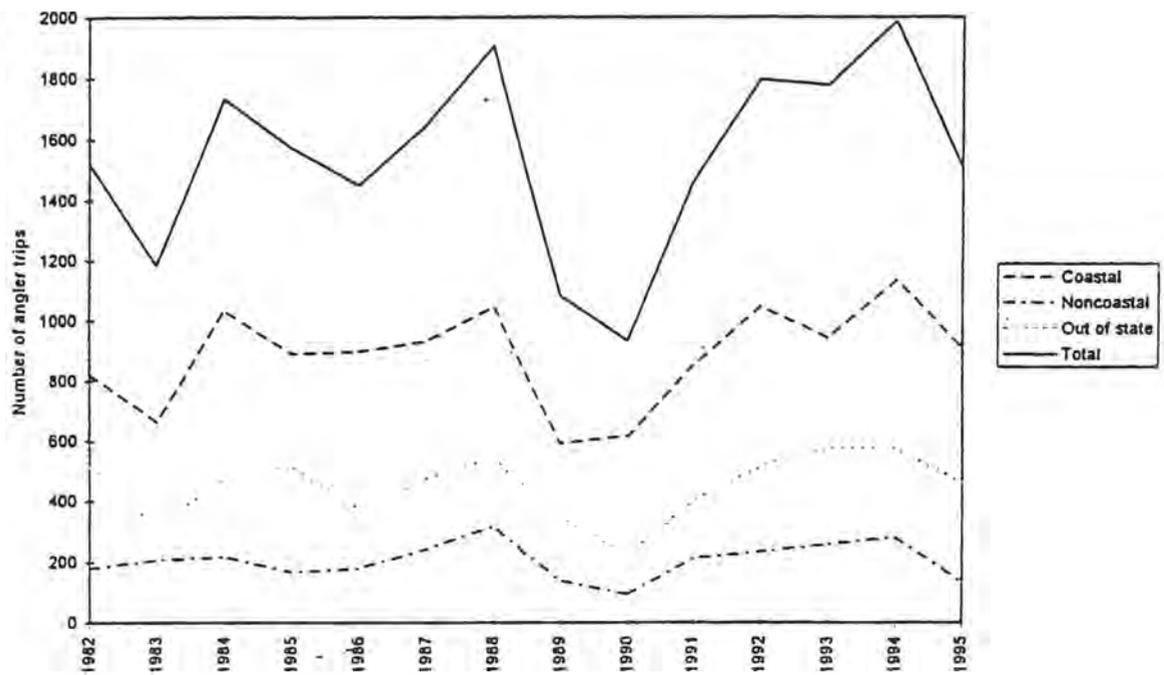


Fig. 10. Estimated effort in the South Carolina recreational hook and line fishery (excluding headboats). Source: NMFS.

fishing from the charterboat sector.

Estimated catches of both red drum and spotted seatrout were appreciably better than in 1994 and relatively high by historical standards. Estimated landings of southern flounder and sheepshead were about the same as in 1994. Statewide CPUEs (in fish/angler trip based on pooled MRFSS and SFS data) were relatively high compared to those in the last five years:

Species	1990	1991	1992	1993	1994	1995
Red drum	1.29	1.10	1.15	0.90	1.67	1.94
Spotted seatrout	1.43	2.30	2.03	1.92	1.90	2.69
Flounder	1.13	NA	1.06	0.74	0.95	1.06
Sheepshead	3.76	NA	NA	2.57	1.43	2.66

### Length Distribution

Mean lengths and size distributions of the principal inshore sportfishes continued to be consistent with those observed in recent years:

Species	1988	1989	1990	1991	1992	1993	1994	1995
Red drum	43.1	46.3	45.7	42.0	43.5	46.3	43.2	45.6
Spotted seatrout	36.5	37.7	37.1	36.6	36.9	36.8	36.9	36.1
Southern flounder	34.6	35.0	35.6	35.4	38.6	36.6	39.5	39.3
Sheepshead	32.6	NA	34.2	32.2	31.9	31.5	36.4	38.2

Anglers reported releasing many red drum over the 27 inch (69 cm) maximum size limit. The average size of spotted seatrout was the smallest in recent years, although the decline from the 1988-1994 average was very minor (2%). Anglers also reported an above-average release rate, suggesting that small fish were abundant in 1995. The average length of southern flounder and sheepshead has tended to increase in recent years. Much of the measured 1995 catch of sheepshead consisted of fish caught over ocean artificial reefs by charterboat anglers, where the average size tends to be larger than in inland areas.

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## APPENDIX

Since July, 1992, state law has required all charterboat operators to obtain a permit and submit monthly reports of daily fishing activity to the MRD. These reports must be completed for each trip and include the number of anglers, hours fished, number of fish caught by species, number released by species, and pounds retained by species. The following discussion refers to calendar years 1993, 1994, and 1995. Data from 1992 were not considered because MRD information was not available for the entire year. It was also assumed that reporting during the initial months would be incomplete, inaccurate, etc. as captains became accustomed to the system.

In 1995, the MRFSS obtained 271 interviews from charterboat anglers aboard 30 boats. Area distribution of the sampled boats is indicated in Table A-1. The distribution of the 153 vessels that reported at least one trip to the MRD is shown for comparison. Distribution of boat trips sampled in the MRFSS is shown in Table A-2, compared with that of trips reported to the MRD. The distributions of angler trips by fishing zone are compared in Table A-3. Table A-4 lists annual effort in angler trips and distribution by sampling interval (two-month waves).

The MRFSS sample has consistently included over-representation of effort from Beaufort County and under-representation from Horry County. The MRFSS has contained a disproportionately high percentage of trips made in estuarine areas. This presumably reflects the exaggerated contribution of Beaufort County vessels, which expend relatively more effort in estuarine areas than do boats in other counties.

The MRFSS annual effort estimates have been roughly 5.5 X the level of effort reported to the MRD. The MRD data indicate a pronounced summer (May-August) peak in effort, whereas the MRFSS data suggest a more uniform seasonal distribution. The former pattern appears to be more consistent with dockside observations and general information regarding fleet operations. Most vessels, especially the larger ones that limit their activities to offshore trolling, are idle (or out of state) during November through March.

Simple arithmetic demonstrates that the NMFS effort estimates cannot be realistic: it would require a massive, sustained level of effort by virtually the entire licensed fleet to attain the indicated figures. This is in marked contrast to the predominantly casual, limited operations acknowledged by vessel owners and/or captains, observed by creel clerks, and reported by marinas and booking agents. Few boats adhere to a regular, advertised sailing schedule. Many operate on an opportunistic basis. In 1995, nearly 60% of the registered boats reported < 25 trips and only 25% of the active vessels reported > 50.

**Table A-1. Distribution of active boats by county.**

Source	Year	Total no.	BFT	Percent		
				CHS	GTN	HOR
MRFSS sample	1993	22	50	50	-	-
	1994	33	52	27	15	6
	1995	30	50	23	17	10
	average		51	33	11	5
MRD total	1993	127	33	36	21	10
	1994	147	31	38	15	16
	1995	153	30	41	16	12
	average		31	38	17	14

**Table A-2. Distribution of boat trips by county.**

Source	Year	BFT	Percent		
			CHS	GTN	HOR
MRFSS sample	1993	55	45	-	-
	1994	61	23	12	4
	1995	68	14	11	8
	average	61	27	8	4
MRD total	1993	53	22	15	10
	1994	54	23	8	15
	1995	51	26	7	16
	average	53	24	10	14

**Table A-3. Distribution of angler trips by fishing zone.**

Source	Year	Inland	Percent	
			Ocean < 3	Ocean > 3
MRFSS total	1993	35	1	64
	1994	28	18	54
	1995	21	20	59
MRD total	1993	12	14	74
	1994	18	19	63
	1995	16	26	58

**Table A-4. Distribution of angler trips by wave (values don't necessarily add to 100 due to rounding).**

Source	Year	Total no.	Percent in wave					
			1	2	3	4	5	6
MRFSS	1993	126,256	-	39	14	28	18	2
	1994	148,669	-	27	18	24	18	14
	1995	166,838	-	22	18	18	20	22
	average							
MRD	1993	22,947	< 1	6	29	45	17	3
	1994	26,175	< 1	9	29	42	16	4
	1995	24,028	< 1	12	31	37	15	4
	average		< 1	9	30	41	16	4

Estimated total catches from both data sources are compared in Table A-5. For most species, the MRFSS catch estimates are far higher than the figures reported to the MRD. This appeared to be mostly attributable to the overestimation of effort in the MRFSS. For several species, e.g. king mackerel and red drum, these grossly exaggerated figures should be of some concern, because the MRFSS data contribute significantly to regional stock assessments. For some others, e.g. bluefish and weakfish, the MRD should also be concerned, because of the impact on compliance requirements with the ASMFC plans.

Of the 66 boat trips included in the 1995 MRFSS for which vessel identity was known, reports were submitted to the MRD for 51 (Table A-6). For nine trips, the vessel operators' monthly reports did not include a trip report for the appropriate date of the MRFSS interview. For five other trips, the boat captains either submitted a "no business" monthly report or did not report. One trip covered by an MRFSS interview was made by a non-permitted vessel (which submitted no reports). Data for the other years are also shown for comparison.

Trip data obtained from MRFSS angler interviews were compared with those reported by boat captains. Categories were the number of anglers on the trip, hours fished, target species, species caught, and number caught by species. Hours fished were considered equivalent if the difference was no more than  $\pm 0.5$  hour. Many anglers identified "anything" as their species preference in MRFSS interviews, as did boat captains for target species (an optional item). "Any" was considered a match for whatever species was named by the other source. Species composition was considered comparable if the species listed made up at least two-thirds of the total catch. The numbers of fish caught were rated equivalent if within  $\pm 10\%$ . These results are summarized in Table A-7.

Table A-8 lists aggregate results of participation, effort, and catch data for major species groups. Many species were represented and identifications from both sources were questionable for the less common fish, so these have either been grouped or were not included.

Based on the direct comparisons of trip data for the 3-year interval, an average of 23% of the boat trips were not reported to the MRD (including missing reports for the date and/or month). It is likely that some of the reports missing for specific dates were incorrectly submitted for other dates, particularly by captains who made numerous trips in that month. Nevertheless, it appears reasonable to conclude that roughly 20% of the boat trips were not reported on logsheets.

The comparisons of individual trip data indicated fair to good agreement on numbers of anglers, target species, and species caught. Anglers almost invariably reported more time spent fishing

Table A-5. Comparison of estimated total 1995 charterboat catches from the MRFSS and MRD trip logsheets, in numbers of fish.

Category	MRFSS	MRD
<b>Oceanic Pelagics</b>		
Dolphin	6,582	4,891
Wahoo	509	526
Tunas	0	660
Billfishes	0	94
<b>Reef Fish</b>		
Black sea bass	190,423	19,740
Bank sea bass	37,427	16
Groupers	10,520	3,249
Snappers	15,193	9,628
Porgies	46,066	5,115
White grunt	3,613	4,301
Other grunts	25,461	1,051
Triggerfish	2,825	1,388
Spadefish	0	689
Spottail pinfish	9,445	1,313
Amberjack	509	876
<b>Coastal Pelagics</b>		
King mackerel	56,064	6,151
Spanish mackerel	27,362	6,593
Bluefish	74,023	2,706
Jacks	948	1,098
Barracuda	5,601	1,291
Little tunny/bonito	20,936	461
Cobia	1,382	127
<b>Inshore Sportfish</b>		
Red drum	157,930	6,156
Spotted seatrout	94,090	3,570
Weakfish	12,646	336
Flounders	5,950	544
Sheepshead	58,346	1,311
<b>Inshore Bottomfish</b>		
Black drum	13,880	150
Other	0	501
<b>Sharks</b>		
Sharpnose	11,840	2,089
Blacktip	4,386	2,558
Other	12,868	3,639
<b>Miscellaneous</b>		
All	39,145	1,863

**Table A-6. Direct comparisons of MRFSS and MRD individual trip data.**

Year	No. compared	No MRD reports submitted		Total
		...for date	...for month	
1993	50	5	8	63
1994	52	9	9	70
1995	51	9	6	66

**Table A-7. Categorical comparisons of individual trip data from MRFSS interviews and MRD reports. Values are for numbers of trips with comparable information from both sources.**

Category	1993	1994	1995
Number of trips compared	50	52	51
All information comparable	0	3	2
Number of anglers identical	25	36	32
Hours fished comparable	7	18	7
Target species comparable	43	51	45
Species caught comparable	29	40	34
Numbers caught comparable	16	18	22

**Table A-8. Comparison of MRFSS interview data and MRD report information for specific trips. ND - no difference.**

Category	1995		% difference from MRD		
	1994 MRFSS	MRD	1993		1995
Number of anglers	211	221	- 12	- 2	- 4
fish hours	225.0	157.0	+ 63	+ 7	+ 43
Number of fish caught:					
<b>Oceanic pelagics</b>					
Dolphin	16	15	- 6	- 16	+ 7
Wahoo	1	1	ND	ND	ND
Yellowfin tuna	0	0	+ 50	+ 33	ND
<b>Reef fish</b>					
Black sea bass	120	114	- 30	+ 10	+ 5
Groupers	20	20	- 7	->100	ND
Snappers	1	36	->100	- 86	->100
Porgies	60	88	- 50	+ 9	- 32
Grunts	2	12	-	+>100	->100
Amberjack	1	3	- 40	+ 233	- 67
<b>Coastal pelagics</b>					
King mackerel	52	60	- 11	- 20	- 13
Spanish mackerel	47	47	- 10	+ 29	ND
Bluefish	14	59	+ 57	+>100	->100
Barracuda	8	12	- 20	- 13	- 33
<b>Inshore sportfish</b>					
Red drum	136	96	+ 82	+>100	+ 42
Spotted seatrout	60	5	+ 38	- 76	+>100
Sheepshead	75	44	- 80	+ 4	+ 70
<b>Inshore bottomfish</b>					
Black drum	8	8	-	- 63	ND
<b>Sharks</b>					
All species	31	30	- 14	- 11	+ 3

than did captains, probably because the anglers included search time, running time, etc. There was very little agreement on the numbers of fish by species (or group) caught, with the exception of the most frequently caught, large fish such as king mackerel, dolphin, and barracuda. For these species, agreement was roughly within  $\pm 15\%$  with the boat captains tending to report slightly higher landings. For most of the other species, the differences in total catches were usually large and lacking clear directional bias.

The reliability of each data source can be questioned. Many of the anglers interviewed in the MRFSS were tired and/or somewhat inebriated. Most were out of state visitors with little local fishing experience or knowledge of fish identity. Anglers often did not recall clearly the species identity or numbers of fish that had been released.

Captains often compiled their trip reports at the end of the month using brief notes or simply from recall. Based on their reporting trends, there appeared to be a wide range in attitude regarding the need for accuracy. Some captains always provided information that agreed closely with that obtained from their customers. The majority of individuals submitted reports that generally agreed fairly well on key elements with the MRFSS information. Some individuals routinely provided information that bore no resemblance to that listed in the interviews. The data element exhibiting the most discrepancy was the numbers of fish caught.

Verification has been cited by the NMFS as a justification for their procedures. The NMFS verification process, however, simply re-establishes that an individual was interviewed. It can't validate what species were caught or how many of each, only confirm the angler's opinion. An analogous procedure would be for the MRD to contact the captain and ask him if he did indeed make a trip on \_\_\_ date (which he of course would say that he did). In this respect, the accuracy of the data obtained in the MRFSS is no better established than that of the information submitted on trip reports.