Results From the 1984 and 1985 Charterboat Surveys in Southeastern U.S. Waters and the U.S. Caribbean Sea

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Introduction

In 1982, the Panama City Laboratory of the National Marine Fisheries Service's Southeast Fisheries Center initiated a catch and effort survey of charterboat captains (Brusher et al., 1984). Charterboat captains are an easily identifiable component of marine recreational fisheries; their livelihood depends on a high frequency of fishing trips and repeated angling success. The charterboat survey, with some modifications, has been run annually with each year's results finalized by mid-February of the following year (Williams et al., 1984a, b, 1985; Brusher and Palko, 1986). The computerized data were subjected to continuous quality control. The result was a reporting system designed to provide data relatively quickly. The objectives of these surveys were to determine the relative abundance and distribution of coastal pelagic and demersal fishes by collecting daily catch and effort data (CPUE) from a segment of the recreational fishery.

This report describes the 1984 and 1985 surveys and examines the catch and effort data submitted by charterboat captains located along coastal areas of the southeastern United States and the U.S. Caribbean Sea.

Methods

The 1984 survey (Fig. 1) did not cover the 16 areas that were sampled in 1983, but involved captains located in the following coastal areas: North Carolina, east Florida (Daytona Beach through Ft. Pierce), southeast Florida (Stuart through Miami), south Florida (Florida Keys), southwest Florida (Everglades through Bonita Springs), west Florida (Ft. Myers through Crystal River), northwest Florida (Cedar Key through Pensacola), Louisiana, south Texas (Rockport through Port Isabel), and the U.S. Caribbean (Puerto Rico, U.S. Virgin Islands). In 1985, all 16 areas were sampled. The selection of, and the contractual agreements with, these captains have been described by Brusher and Palko (1985).

In both 1984 and 1985, the surveys

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ABSTRACT—In 1984 and 1985, surveys of southeastern U.S. waters, including the Gulf of Mexico and the U.S. Caribbean Sea, were conducted to gather catch and effort records from charterboat captains located along coastal areas. Captains were contracted to supply daily records of fishing activity. During the 2-year period, 10,380 fishing trips, 48,231 hours of fishing effort were expended and 342,258 fishes were caught. Species, catches, and catch-per-boat-fishing-hour (CPH) are presented by year, month, and area. Major species groups caught by trolling included mackerels and tunas (Scombridae), while other-than-trolling methods caught mostly snappers (Lutjanidae), groupers (Serranidae), and croakers (Sciaenidae). Annual response rates for returning log forms for the 1984 and 1985 surveys were 98.8 and 95.7 percent, respectively.

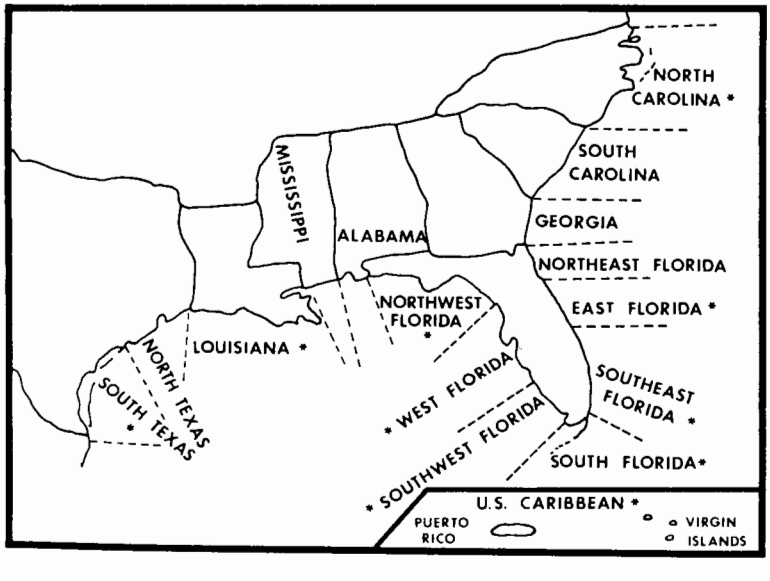
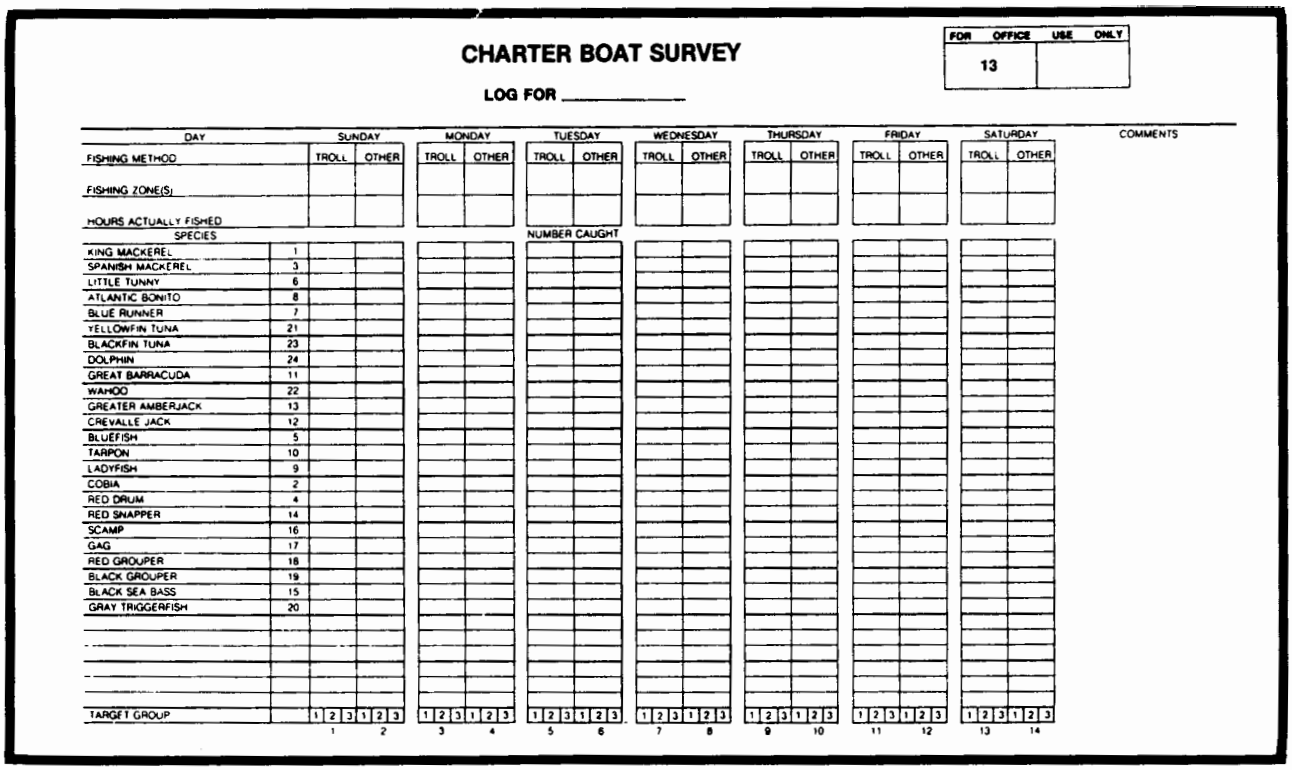


Figure 1.—Coastal areas used in reporting 1984 (*) and 1985 charterboat catch and effort from southeastern U.S. waters, the Gulf of Mexico, and the U.S. Caribbean Sea.



CHARTER BOAT SURVEY

LOG FOR _____

FOR OFFICE USE ONLY	
13	

DAY		SUNDAY		MONDAY		TUESDAY		WEDNESDAY		THURSDAY		FRIDAY		SATURDAY		COMMENTS
FISHING METHOD		TROLL	OTHER	TROLL	OTHER	TROLL	OTHER	TROLL	OTHER	TROLL	OTHER	TROLL	OTHER	TROLL	OTHER	
FISHING ZONE(S)																
HOURS ACTUALLY FISHED																
SPECIES						NUMBER CAUGHT										
KING MACKEREL	1															
SPANISH MACKEREL	3															
LITTLE TUNNY	6															
ATLANTIC BONITO	8															
BLUE RUNNER	7															
YELLOWFIN TUNA	21															
BLACKFIN TUNA	23															
DOLPHIN	24															
GREAT BARRACUDA	11															
WAHOO	22															
GREATER AMBERJACK	13															
CREVALLE JACK	12															
BLUEFISH	5															
TARPON	10															
LADYFISH	9															
COBIA	2															
RED DRUM	4															
RED SNAPPER	14															
SCAMP	16															
GAG	17															
RED GROUPER	18															
BLACK GROUPER	19															
BLACK SEA BASS	15															
GRAY TRIGGERFISH	20															
TARGET GROUP		1 2 3	1 2 3	1 2 3	1 2 3	1 2 3	1 2 3	1 2 3	1 2 3	1 2 3	1 2 3	1 2 3	1 2 3	1 2 3	1 2 3	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	

Figure 2.—Logform used in both 1984 and 1985 charterboat surveys.

operated in three phases. The first, from 1 January through 31 March, excluded North and South Carolina, Georgia, northeast and northwest Florida, Mississippi, Alabama, and Texas where virtually no charter fishing occurs during winter months. Phase 2, from 1 April through 30 November, included all areas shown in Figure 1. Phase 3 was the month of December which actually began the "winter" 1984-85 fishing season, and included the same seven areas as in Phase 1.

Each captain was provided with a logbook which included up to 52 weekly logforms (Fig. 2). All captains were to mail results of a fishing week (Sunday through Saturday) within 7 days after that particular fishing week. If captains failed to respond in a timely manner, they were replaced by random selection from a list of cooperative captains in their area.

Collected data for each fishing day included zones, method (either trolling or other fishing), hours fished (running times to and from fishing grounds not included), and the species and number of each species caught. Fishing zones were recorded numerically where "1" represented estuarine or bay waters, "2" represented oceanic waters ≤10 fathoms, and "3" represented oceanic waters >10 fathoms. If captains fished in more than one zone, the appropriate numbers were recorded and recoded depending on the zone combinations (Brusher et al., 1984).

Other methods concerning the maintenance of the charterboat survey are similar to those reported for the 1982 (Brusher et al, 1984) and 1983 (Brusher and Palko, 1985) surveys. Briefly, the incoming data were coded, put on computer, proofed, and archived for future analysis.

During the 1984-85 charterboat surveys, a monthly newsletter, "Channel 68", was produced by project personnel and sent to all participating captains as well as other interested correspondents. This newsletter summarized the previous month's catch-per-boat-hour (CPH) data and reported CPH by fishing method per survey area for the top five species. CPH data were computed from total hours fished and total species caught during a specific period in a particular area (e.g., total caught divided by total fishing hours). "Channel 68" was also a medium that project personnel used to discuss problems in identification and the recording of catches.

Charterboat Characteristics

In both surveys, our definition of a charterboat was a vessel at least 25 feet in length that was available for hire and included the services of a licensed captain. Surveyed charterboats generally carried

Table 1.—Total fishing hours by area, zone, and method of fishing during the 1984 charterboat survey off the southeastern United States and in the U.S. Caribbean Sea.

	Hours trolling and other fishing[1] by fishing zones							
Area	1 Estuarine	2 Oceanic (<10 fm)	3 Oceanic (>10 fm)	4 Estuarine and oceanic (<10 fm)	5 Estuarine and oceanic (>10 fm)	6 Oceanic (all depths)	7 Estuarine and oceanic (all depths)	Totals
North Carolina	23.0 (–)[2]	811.0 (8.5)	904.5 (88.0)	– (–)	3.0 (–)	36.0 (–)	– (–)	1,777.5 (96.5)
Florida (E)	2.0 (–)	24.0 (6.0)	764.5 (353.5)	– (1.5)	– (–)	1,477.5 (15.0)	– (–)	2,268.0 (376.0)
Florida (SE)	– (–)	6.0 (–)	646.5 (173.0)	– (–)	– (–)	94.0 (4.0)	– (–)	746.5 (177.0)
Florida (S)	– (19.5)	271.5 (54.0)	2,064.0 (231.0)	– (–)	– (–)	441.5 (5.5)	7.0 (–)	2,784.0 (310.0)
Florida (SW)	– (786.0)	38.5 (296.5)	– (203.5)	– (109.5)	– (–)	– (–)	– (–)	38.5 (1,395.5)
Florida (W)	13.5 (407.5)	1,156.5 (543.0)	73.0 (110.5)	29.0 (17.5)	– (–)	292.0 (9.0)	– (–)	1,564.0 (1,087.5)
Florida (NW)	65.0 (7.0)	245.5 (111.5)	156.0 (926.0)	4.0 (–)	– (–)	– (9.5)	– (–)	470.5 (1,054.0)
Louisiana	– (9.0)	75.5 (25.0)	184.0 (2,231.5)	– (–)	– (4.0)	11.0 (90.5)	– (–)	270.5 (2,360.0)
Texas (S)	– (22.0)	24.0 (61.0)	810.0 (1,225.5)	– (–)	– (–)	24.0 (–)	– (–)	858.0 (1,308.5)
U.S. Caribbean	2.0 (–)	– (–)	3,347.0 (–)	– (–)	– (–)	– (–)	– (–)	3,349.0 (–)
Totals	105.5 (1,251.0)	2,652.5 (1,105.5)	8,949.5 (5,542.5)	33.0 (128.5)	3.0 (4.0)	2,376.0 (133.5)	7.0 (–)	14,126.5 (8,165.0)

[1]Other fishing data is given in parentheses.
[2]Dashes indicate no effort within this fishing zone for this area.

Table 2.—Total fishing hours by area, zone, and method of fishing during the 1985 charterboat survey off the southeastern United States and in the U.S. Caribbean Sea.

	Hours trolling and other fishing[1] by fishing zones						
Area	1 Estuarine	2 Oceanic (<10 fm)	3 Oceanic (>10 fm)	4 Estuarine and oceanic (<10 fm)	5 Estuarine and oceanic (>10 fm)	6 Oceanic (all depths)	Totals
North Carolina	7.5 (–)[2]	134.5 (47.0)	1,491.0 (37.5)	– (–)	– (–)	4.5 (–)	1,637.5 (84.5)
South Carolina	14.5 (8.0)	172.5 (31.0)	339.5 (1.0)	– (–)	– (–)	31.0 (–)	557.5 (40.0)
Georgia	16.0 (84.0)	114.5 (155.0)	58.0 (71.5)	– (–)	– (–)	– (–)	188.5 (310.5)
Florida (NE)	9.0 (182.0)	152.5 (99.5)	186.0 (52.5)	21.0 (–)	– (–)	167.5 (–)	536.0 (334.0)
Florida (E)	– (5.0)	13.0 (35.5)	663.5 (367.5)	– (–)	– (–)	951.0 (103.0)	1,627.5 (511.0)
Florida (SE)	– (3.0)	18.0 (14.0)	1,261.0 (484.0)	– (4.0)	– (–)	41.0 (9.0)	1,320.0 (514.0)
Florida (S)	– (38.5)	283.5 (142.0)	1,457.5 (354.5)	– (–)	3.0 (–)	413.0 (128.5)	2,157.0 (663.5)
Florida (SW)	– (861.0)	36.0 (319.5)	– (363.0)	– (86.0)	– (–)	– (–)	36.0 (1,629.5)
Florida (W)	– (–)	912.0 (667.0)	143.5 (375.5)	– (–)	– (–)	17.0 (40.0)	1,072.5 (1,082.5)
Florida (NW)	125.5 (–)	56.5 (66.5)	167.0 (1,396.0)	4.0 (3.0)	6.0 (–)	– (9.5)	359.0 (1,475.0)
Alabama	2.0 (2.0)	148.0 (24.5)	75.0 (398.5)	16.0 (3.0)	222.0 (8.0)	121.0 (20.5)	584.0 (456.5)
Mississippi	5.0 (3.5)	678.0 (261.0)	26.5 (47.5)	– (–)	– (–)	– (–)	709.5 (312.0)
Louisiana	11.0 (–)	222.5 (–)	199.5 (805.5)	– (–)	– (–)	34.5 (17.0)	467.5 (822.5)
Texas (N)	– (22.0)	118.0 (99.0)	328.5 (168.5)	12.0 (3.0)	– (–)	324.0 (13.5)	782.5 (306.0)
Texas (S)	19.0 (190.5)	600.0 (66.5)	688.0 (21.0)	12.5 (–)	– (–)	79.5 (8.5)	1,399.0 (286.5)
U.S. Caribbean	– (–)	7.5 (–)	3,670.0 (–)	– (–)	– (–)	– (–)	3,677.5 (–)
Totals	209.5 (1,399.5)	3,667.0 (2,028.0)	10,754.5 (4,944.0)	65.5 (99.0)	231.0 (8.0)	2,184.0 (349.5)	17,111.5 (8,828.0)

[1]Other fishing data is given in parentheses.
[2]Dashes indicate no effort within this fishing zone for this area.

up to six fishermen, trolled no more than four lines, and bottom fished using from six to eight lines. This definition described vessel characteristics for most surveyed areas, especially where running times to offshore fishing grounds (>10 fathoms) were short. However, in areas such as Louisiana, where running times to deeper depth zones were often 2-3 hours, some charterboats carried 10-20 passengers, especially when using "other fishing" methods. These "other fishing" methods included bottom fishing, flylining, or drift fishing whereby unweighted live or dead bait were fished from anchored or drifting vessels. Bottom fishing, where weighted live or dead baits were fished, was the most frequent other-fishing method used.

Results

The 1984 data, published by Williams et al. (1985), and the 1985 data, published by Brusher and Palko (1986), included catch and effort records from both contracted and volunteer captains. For this paper, we used only data from contracted captains to indicate species composition and species abundances between fishing areas.

In 1984, 51 charterboat captains reported their catches and effort from 4,676 trips. They submitted 1,241 weekly logs of the 1,255 total possible logs (98.9 percent response rate). A trip was defined as an absence from a dock during which at least one of two fishing methods was used in a 24-hour day. Captains reported fishing a total of 22,291.5 hours, of which 14,126.5 hours (63.4 percent) were spent trolling and 8,165.0 hours (36.6 percent) were spent other fishing (Table 1).

In 1985, 57 captains submitted 1,639 weekly logs, and reported 5,704 trips (94.3 percent response rate). They fished a total of 25,939.5 hours, of which 17,111.5 hours (66.0 percent) were spent trolling and 8,828.0 hours (34.0 percent) were spent other fishing (Table 2).

The 1984 data showed that 6.1 percent

Table 3.—Number of each species making up at least 0.5% of the total caught by trolling during the 1984 charterboat survey off the southeastern United States and the U.S. Caribbean.

Common name	Scientific name	Catch	Percent of total catch	Common name	Scientific name	Catch	Percent of total catch
Dolphin	*Coryphaena hippurus*	8,578	21.0	Yellowtail snapper	*Ocyurus chrysurus*	400	1.0
Spanish mackerel	*Scomberomorus maculatus*	5,698	14.0	Wahoo	*Acanthocybium solanderi*	364	0.9
King mackerel	*Scomberomorus cavalla*	5,380	13.2	Greater amberjack	*Seriola dumerili*	333	0.8
Little tunny	*Euthynnus alletteratus*	4,784	11.7	Crevalle jack	*Caranx hippos*	318	0.8
Bluefish	*Pomatomus saltatrix*	3,064	7.5	Black sea bass	*Centropristis striata*	288	0.7
Great barracuda	*Sphyraena barracuda*	2,820	6.9	Skipjack tuna	*Euthynnus pelamis*	269	0.7
Blue runner	*Caranx crysos*	2,598	6.4	Cero	*Scomberomorus regalis*	215	0.5
Atlantic bonito	*Sarda sarda*	1,984	4.9	Black grouper	*Mycteroperca bonaci*	209	0.5
Blackfin tuna	*Thunnus atlanticus*	1,098	2.7	Sailfish	*Istiophorus platypterus*	207	0.5
Yellowfin tuna	*Thunnus albacares*	793	1.9	Total		39,399	96.6

Table 4.—Number of each species or species group making up at least 0.5 percent of the total caught by other fishing during the 1984 charterboat survey off the southeastern United States.

Common name	Scientific name	Catch	Percent of total catch	Common name	Scientific name	Catch	Percent of total catch
Sand seatrout	*Cynoscion arenarius*	55,574	34.9	Spotted seatrout	*Cynoscion nebulosus*	2,071	1.3
Atlantic croaker	*Micropogonias undulatus*	29,232	18.4	Dolphin	*Coryphaena hippurus*	1,795	1.1
Red snapper	*Lutjanus campechanus*	14,468	9.1	Gray snapper	*Lutjanus griseus*	1,435	0.9
Black sea bass	*Centropristis striata*	8,516	5.4	Grunts	Haemulidae	1,429	0.9
Seatrouts	*Cynoscion* spp.	8,417	5.3	Blue runner	*Caranx crysos*	1,275	0.8
King mackerel	*Scomberomorus cavalla*	3,474	2.2	Silver seatrout	*Cynoscion nothus*	1,232	0.8
Gray triggerfish	*Balistes capriscus*	3,337	2.1	Sheepshead	*Archosargus probatocephalus*	1,207	0.8
Greater amberjack	*Seriola dumerili*	3,264	2.1	Crevalle jack	*Caranx hippos*	1,202	0.8
Red drum	*Sciaenops ocellatus*	3,043	1.9	Red grouper	*Epinephelus morio*	1,123	0.7
Gag	*Mycteroperca microlepis*	2,546	1.6	Ladyfish	*Elops saurus*	1,083	0.7
Bluefish	*Pomatomus saltatrix*	2,378	1.5	Vermilion snapper	*Rhomboplites aurorubens*	1,047	0.7
Porgies	Sparidae	2,257	1.4	Total		146,405	95.4

Table 5.—Number of each species or species group making up at least 0.5 percent of the total caught by trolling during the 1985 charterboat survey off the southeastern United States and the U.S. Caribbean.

Common name	Scientific name	Catch	Percent of total catch	Common name	Scientific name	Catch	Percent of total catch
Spanish mackerel	*Scomberomorus maculatus*	11,864	21.9	Crevalle jack	*Caranx hippos*	843	1.6
Dolphin	*Coryphaena hippurus*	9,990	18.5	Red snapper	*Lutjanus campechanus*	774	1.4
King mackerel	*Scomberomorus cavalla*	9,183	17.0	Blackfin tuna	*Thunnus atlanticus*	593	1.1
Little tunny	*Euthynnus alletteratus*	4,943	9.1	Red drum	*Sciaenops ocellatus*	474	0.9
Blue runner	*Caranx crysos*	2,735	5.1	Cero	*Scomberomorus regalis*	429	0.8
Great barracuda	*Sphyraena barracuda*	2,658	4.9	Wahoo	*Acanthocybium solanderi*	397	0.7
Atlantic bonito	*Sarda sarda*	2,427	4.5	Black grouper	*Mycteroperca bonaci*	358	0.7
Yellowfin tuna	*Thunnus albacares*	2,014	3.7	Sharks	Squaliformes	290	0.5
Greater amberjack	*Seriola dumerili*	935	1.7	Total		51,752	95.7
Bluefish	*Pomatomus saltatrix*	845	1.6				

of the total fishing effort in all areas occurred in estuarine areas, 16.8 percent in oceanic waters ≤10 fathoms, 64.6 percent in oceanic waters >10 fathoms, and 12.5 percent in combinations of the above. The 1985 data showed that for all areas 6.2 percent of the total fishing occurred in estuarine waters, 22.0 percent in waters ≤10 fathoms, 60.5 percent in >10 fathoms, and 11.3 percent in combinations.

In 1984, trolling was the dominant fishing method used by charterboat captains off North Carolina (94.9 percent); east (85.8 percent), southeast (80.8 percent), west (59.0 percent), and south (90.0 percent) Florida; and the U.S. Caribbean (100 percent). Other fishing methods were used most frequently off southwest (97.3 percent) and northwest (69.1 percent) Florida, Louisiana (89.7 percent), and south Texas (60.4 percent).

Trolling was the prevalent fishing method in 1985 in North Carolina (95.1 percent), South Carolina (93.3 percent); northeast (61.6 percent), east (76.1 percent), southeast (72.0 percent), and south (76.5 percent) Florida; Alabama (56.1 percent), Mississippi (69.5 percent); north (71.9 percent) and south (83.0 percent) Texas; and the U.S. Caribbean (100.0 percent). Other fishing was the prevalent method in Georgia (62.2 percent); southwest (97.8 percent) and northwest (80.4 percent) Florida; and Louisiana (63.8 percent). West Florida fishing effort was almost equally divided between trolling (49.8 percent) and other fishing (50.2 percent).

Table 6.—Number of each species or species group making up st least 0.5 percent of the total caught by other fishing during the 1985 charterboat survey off the southeastern United States.

Common name	Scientific name	Catch	Percent of total catch	Common name	Scientific name	Catch	Percent of total catch
Sand seatrout	*Cynoscion arenarius*	14,817	16.8	Red drum	*Sciaenops ocellatus*	1,367	1.5
Red snapper	*Lutjanus campechanus*	7,693	8.7	Blue runner	*Caranx crysos*	1,310	1.5
Black sea bass	*Centropristis striata*	7,567	8.6	Ladyfish	*Elops saurus*	1,179	1.3
Gag	*Mycteroperca microlepis*	6,018	6.8	Sheepshead	*Archosargus probatocephalus*	1,151	1.3
Atlantic croaker	*Micropogonias undulatus*	5,634	6.4	Bluefish	*Pomatomus saltatrix*	1,030	1.2
Gray triggerfish	*Balistes capriscus*	4,873	5.5	Little tunny	*Euthynnus alletteratus*	973	1.1
Yellowtail snapper	*Ocyurus chrysurus*	3,542	4.0	King mackerel	*Scomberomorus cavalla*	908	1.0
Greater amberjack	*Seriola dumerili*	3,495	4.0	Atlantic bonito	*Sarda sarda*	899	1.0
Red grouper	*Epinephelus morio*	3,364	3.8	Sharks	Squaliformes	614	0.7
Porgies	Sparidae	3,022	3.4	Pinfish	*Lagodon rhomboides*	575	0.7
Gray snapper	*Lutjanus griseus*	3,019	3.4	Crevalle jack	*Caranx hippos*	565	0.6
Seatrouts	*Cynoscion* spp.	3,013	3.4	Lane snapper	*Lutjanus synagris*	509	0.6
Vermilion snapper	*Rhomboplites aurorubens*	2,894	3.3	Kingfishes	*Menticirrhus* spp.	456	0.5
Grunts	*Haemulidae*	1,959	2.2	Total		84,087	95.2
Spotted seatrout	*Cynoscion nebulosus*	1,641	1.9				

Table 7.—Ten most abundant species caught by trolling in each area off the southeastern United States and in the U.S. Caribbean during the 1984 charterboat survey.

Area, rank, and species	Number caught	CPH	Percent of total catch w/i area
North Carolina			
1 Bluefish	2,831	1.59	26.4
2 Spanish mackerel	2,465	1.39	23.0
3 King mackerel	1,825	1.03	17.0
4 Dolphin	1,717	0.97	16.0
5 Yellowfin tuna	618	0.35	5.8
6 Blue runner	459	0.26	4.3
7 Black sea bass	285	0.16	2.7
8 Little tunny	152	0.09	1.4
9 Albacore	106	0.06	1.0
10 Wahoo	48	0.03	0.4
	10,506		98.0
East Florida			
1 King mackerel	1,168	0.52	17.6
2 Little tunny	1,098	0.48	16.6
3 Dolphin	1,069	0.47	16.1
4 Blue runner	1,007	0.44	15.2
5 Great barracuda	806	0.36	12.2
6 Atlantic bonito	749	0.33	11.3
7 Spanish mackerel	135	0.06	2.0
8 Gag	122	0.05	1.8
East Florida cont.			
9 Bluefish	110	0.05	1.7
10 Greater amberjack	107	0.05	1.6
	6,371		96.1
Southeast Florida			
1 Dolphin	326	0.44	23.3
2 Atlantic bonito	191	0.26	13.6
3 Great barracuda	150	0.20	10.7
4 Spanish mackerel	140	0.19	10.0
5 Little tunny	136	0.18	9.7
6 Blue runner	102	0.14	7.3
7 King mackerel	89	0.12	6.4
8 Skipjack tuna	71	0.10	5.1
9 Sailfish	54	0.07	3.9
10 Bluefish	33	0.04	2.4
	1,292		92.4
South Florida			
1 Dolphin	4,211	1.51	46.2
2 Great barracuda	1,195	0.43	13.1
3 Blackfin tuna	829	0.30	9.1
South Florida cont.			
4 Atlantic bonito	668	0.24	7.3
5 King mackerel	523	0.19	5.7
6 Yellowtail snapper	397	0.14	4.4
7 Black grouper	184	0.07	2.0
8 Cero	141	0.05	1.5
9 Little tunny	138	0.05	1.5
10 Mutton snapper	110	0.04	1.2
	8,396		92.0
U.S. Caribbean			
1 Little tunny	528	0.16	28.5
2 King mackerel	351	0.10	19.0
3 Great barracuda	223	0.07	12.0
4 Dolphin	213	0.06	11.5
5 Blue marlin	140	0.04	7.6
6 Wahoo	85	0.03	4.6
7 Yellowfin tuna	65	0.02	3.5
8 Blackfin tuna	60	0.02	3.2
9 Cero	53	0.02	2.9
10 Skipjack tuna	48	0.01	2.6
	1,766		95.4

Table 8.—Ten most abundant species caught by trolling in each area of the Gulf of Mexico during the 1984 charterboat survey.

Area, rank, and species	Number caught	CPH	Percent of total catch w/i area
Southwest Florida			
1 Spanish mackerel	130	3.38	63.1
2 Bluefish	68	1.77	33.0
3 Unidentified seatrouts	8	0.21	3.9
	206		100.0
West Florida			
1 Spanish mackerel	2,098	1.34	46.0
2 Little tunny	729	0.47	16.0
3 King mackerel	677	0.43	14.9
4 Great barracuda	390	0.25	8.6
5 Atlantic bonito	168	0.11	3.7
6 Blue runner	161	0.10	3.5
7 Crevalle jack	115	0.07	2.5
8 Dolphin	42	0.03	0.9
9 Greater amberjack	34	0.02	0.7
10 Gag	33	0.02	0.7
	4,447		97.5
Northwest Florida			
1 Blue runner	638	1.36	28.3
2 Little tunny	636	1.35	28.2
3 King mackerel	334	0.71	14.8
4 Dolphin	177	0.38	7.9
5 Atlantic bonito	164	0.35	7.3
6 Spanish mackerel	106	0.23	4.7
7 Unidentified porgies	31	0.07	1.4
8 Gray triggerfish	30	0.06	1.3
9.5 Greater amberjack	29	0.06	1.3
9.5 Wahoo	29	0.06	1.3
	2,174		96.5
Louisiana			
1 Dolphin	747	2.76	33.4
2 Spanish mackerel	572	2.11	25.6
3 Little tunny	346	1.28	15.5
4 King mackerel	248	0.92	11.1
5 Red drum	193	0.71	8.6
6 Blue runner	79	0.29	3.5
Louisiana cont.			
7 Yellowfin tuna	24	0.09	1.1
8 Wahoo	12	0.04	0.5
9.5 Blackfin tuna	4	0.01	0.2
9.5 Cobia	4	0.01	0.2
	2,229		99.7
South Texas			
1 Little tunny	1,005	1.17	60.8
2 King mackerel	155	0.18	9.4
3 Blackfin tuna	136	0.16	8.2
4 Dolphin	76	0.09	4.6
5 Blue runner	68	0.08	4.1
6 Yellowfin tuna	64	0.07	3.9
7 Atlantic bonito	29	0.03	1.8
8 Wahoo	26	0.03	1.6
9 Great barracuda	23	0.03	1.4
10 Skipjack tuna	22	0.03	1.3
	1,604		97.1

Table 9.—Ten most abundant species caught by trolling in each area off the southeastern United States and U.S. Caribbean during the 1985 charterboat survey.

Area, rank, and species	Number caught	CPH	Percent of total catch w/i area
North Carolina			
1 Dolphin	3,102	1.89	41.3
2 Yellowfin tuna	1,778	1.09	23.7
3 King mackerel	1,739	1.06	23.1
4 Spanish mackerel	294	0.18	3.9
5 Bluefish	178	0.11	2.4
6 Atlantic bonito	119	0.07	1.6
7 Wahoo	78	0.05	1.0
8 Greater amberjack	60	0.04	0.8
9 Great barracuda	43	0.03	0.6
10 Little tunny	40	0.02	0.5
	7,431		98.9
South Carolina			
1 King mackerel	619	1.11	48.5
2 Spanish mackerel	166	0.30	13.0
3 Great barracuda	99	0.18	7.8
4 Little tunny	98	0.18	7.7
5 Dolphin	83	0.15	6.5
6 Yellowfin tuna	64	0.11	5.0
7 Atlantic bonito	49	0.09	3.8
8 Greater amberjack	40	0.07	3.1
9 Wahoo	31	0.06	2.4
10 Gray triggerfish	10	0.02	0.8
	1,259		98.6
Georgia			
1 Spanish mackerel	184	0.98	25.4
2 King mackerel	179	0.95	24.7
3 Great barracuda	167	0.89	23.1
4 Little tunny	66	0.35	9.1
5 Crevalle jack	45	0.24	6.2
6 Black sea bass	18	0.10	2.5
7.5 Dolphin	17	0.09	2.3
7.5 Ladyfish	17	0.09	2.3
Georgia cont.			
9 Greater amberjack	15	0.08	2.1
10 Bluefish	12	0.06	1.7
	720		99.4
Northeast Florida			
1 King mackerel	301	0.56	22.7
2 Greater amberjack	248	0.46	18.7
3 Great barracuda	211	0.39	15.9
4 Spanish mackerel	173	0.32	13.1
5 Bluefish	126	0.24	9.5
6 Silver seatrout	60	0.11	4.5
7 Kingfishes	40	0.07	3.0
8 Dolphin	38	0.07	2.9
9 Leatherjacket	26	0.05	2.0
10 Wahoo	23	0.04	1.7
	1,246		94.0
East Florida			
1 Blue runner	1,166	0.72	23.0
2 Little tunny	1,054	0.65	20.8
3 King mackerel	956	0.59	18.9
4 Dolphin	704	0.43	13.9
5 Great barracuda	551	0.34	10.9
6 Atlantic bonito	236	0.14	4.7
7 Spanish mackerel	88	0.05	1.7
8 Sailfish	87	0.05	1.7
9 Bluefish	84	0.05	1.7
10 Wahoo	42	0.03	0.8
	4,968		98.1
Southeast Florida			
1 Atlantic bonito	278	0.21	22.2
2 King mackerel	229	0.17	18.3
3 Dolphin	213	0.16	17.0
Southeast Florida cont.			
4 Great barracuda	155	0.12	12.4
5 Blue runner	88	0.07	7.0
6 Sailfish	45	0.03	3.6
7 Bluefish	33	0.02	2.6
8 Greater amberjack	32	0.02	2.6
9 Little tunny	30	0.02	2.4
10 Hammerhead shark	25	0.02	2.0
	1,128		90.1
South Florida			
1 Dolphin	3,033	1.41	43.7
2 Great barracuda	781	0.36	11.2
3 King mackerel	632	0.29	9.1
4 Blackfin tuna	403	0.19	5.8
5 Black grouper	358	0.17	5.2
6 Cero	311	0.14	4.5
7 Atlantic bonito	251	0.12	3.6
8 Yellowtail snapper	211	0.10	3.0
9 Blue runner	153	0.07	2.2
10 Little tunny	115	0.05	1.7
	6,248		90.0
U.S. Caribbean			
1 Little tunny	492	0.13	25.6
2 King mackerel	359	0.10	18.6
3 Great barracuda	280	0.08	14.5
4 Dolphin	266	0.07	13.8
5 Yellowfin tuna	124	0.03	6.4
6 Cero	107	0.03	5.6
7 Wahoo	104	0.03	5.4
8 Blue marlin	61	0.02	3.2
9 Blackfin tuna	39	0.01	2.0
10 Sailfish	17	0.00	0.9
	1,849		96.0

Table 10.—Ten most abundant species caught by trolling in each area of the Gulf of Mexico during the 1985 charterboat survey.

Area, rank, and species	Number caught	CPH	Percent of total catch w/i area
Southwest Florida			
1 Spanish mackerel	63	1.75	36.6
2 Ladyfish	54	1.50	31.4
3 Bluefish	50	1.39	29.1
4 Crevalle jack	5	0.14	2.9
	172		100.0
West Florida			
1 Spanish mackerel	1,234	1.15	36.3
2 Little tunny	564	0.53	16.6
3 King mackerel	408	0.38	12.0
4 Great barracuda	336	0.31	9.9
5 Atlantic bonito	165	0.15	4.9
6 Blue runner	156	0.15	4.6
7 Dolphin	127	0.12	3.7
8 Crevalle jack	99	0.09	2.9
9 Unidentified lizard fishes	80	0.07	2.4
10 Greater amberjack	71	0.07	2.1
	3,240		95.4
Northwest Florida			
1 Spanish mackerel	546	1.52	33.1
2 Blue runner	443	1.23	26.9
3 King mackerel	159	0.44	9.6
4 Greater amberjack	154	0.43	9.3
5 Dolphin	100	0.28	6.1
6 Atlantic bonito	75	0.21	4.6
7 Bluefish	45	0.13	2.7
8 Skipjack tuna	32	0.09	1.9
9 Gag	24	0.07	1.5
10 Ladyfish	23	0.06	1.4
	1,601		97.1
Alabama			
1 Spanish mackerel	430	0.74	31.0
2 Little tunny	374	0.64	26.9
3 King mackerel	329	0.56	23.7
4 Atlantic bonito	69	0.12	5.0
5 Blue runner	61	0.10	4.4
6 Dolphin	39	0.07	2.8
7 Ladyfish	18	0.03	1.3
8 Crevalle jack	16	0.03	1.2
9 Cobia	11	0.02	0.8
11 Bluefish	10	0.02	0.7
11 Greater amberjack	10	0.02	0.7
11 Yellowfin tuna	10	0.02	0.7
	1,377		99.2
Mississippi			
1 Spanish mackerel	4,217	5.94	73.1
2 Atlantic bonito	434	0.61	7.5
3 King mackerel	249	0.35	4.3
4 Red drum	224	0.32	3.9
5 Blue runner	210	0.30	3.6
6 Crevalle jack	203	0.29	3.5
7 Ladyfish	70	0.10	1.2
8 Bluefish	57	0.08	1.0
9 Little tunny	43	0.06	0.7
10 Blacktip shark	28	0.04	0.5
	5,735		99.3
Louisiana			
1 Spanish mackerel	4,224	9.04	70.4
2 Little tunny	734	1.57	12.2
3 King mackerel	391	0.84	6.5
4 Red drum	246	0.53	4.1
5 Blue runner	183	0.39	3.0
Louisiana cont.			
6 Crevalle jack	132	0.28	2.2
7 Dolphin	26	0.06	0.4
8 Blackfin tuna	21	0.04	0.3
9 Wahoo	18	0.04	0.3
10 Yellowfin tuna	14	0.03	0.2
	5,989		99.6
North Texas			
1 Dolphin	1,969	2.52	36.9
2 King mackerel	1,135	1.45	21.3
3 Red snapper	732	0.94	13.7
4 Atlantic bonito	556	0.71	10.4
5 Bluefish	208	0.27	3.9
6 Spanish mackerel	175	0.22	3.3
7 Unidentified sharks	136	0.17	2.5
8 Blue runner	84	0.11	1.6
9 Crevalle jack	67	0.09	1.3
10 Greater amberjack	49	0.06	0.9
	5,111		95.8
South Texas			
1 King mackerel	1,498	1.07	40.5
2 Little tunny	801	0.57	21.6
3 Dolphin	249	0.18	6.7
4 Crevalle jack	183	0.13	4.9
5 Blue runner	173	0.12	4.7
6 Atlantic bonito	168	0.12	4.5
7 Atlantic sharpnose shark	142	0.10	3.8
8 Unidentified sharks	129	0.09	3.5
9 Greater amberjack	112	0.08	3.0
10 Blackfin tuna	43	0.03	1.2
	3,498		94.4

Table 11.—Ten most abundant species caught by other fishing in each area off the southeastern United States during the 1984 charterboat survey.

Area, rank, and species	Number caught	CPH	Percent of total catch w/i area
North Carolina			
1 Black sea bass	6,344	65.74	91.5
2 Unidentified porgies	417	4.32	6.0
3 Unidentified sand perches	56	0.58	0.8
4 Unidentified grunts	27	0.28	0.4
5 Red snapper	19	0.20	0.3
6 King mackerel	16	0.17	0.2
7 Spottail pinfish	11	0.11	0.2
8.5 Albacore	8	0.08	0.1
8.5 Gag	8	0.08	0.1
10 Gray triggerfish	7	0.07	0.1
	6,913		99.7
East Florida			
1 Black sea bass	942	2.51	29.8
2 Vermillion snapper	525	1.40	16.6
3 Red snapper	299	0.80	9.4
4 Unidentified grunts	285	0.76	9.0
East Florida cont.			
5 Greater amberjack	229	0.61	7.2
6 Snowy grouper	125	0.33	3.9
7 Gray triggerfish	89	0.24	2.8
8.5 Scamp	76	0.20	2.4
8.5 Spotted seatrout	76	0.20	2.4
10 Unidentified tilefishes	75	0.20	2.4
	2,721		85.9
Southeast Florida			
1 Unidentified snappers	108	0.61	29.9
2 Vermillion snapper	41	0.23	11.4
3 Unidentified tilefishes	39	0.22	10.8
4.5 Almaco jack	32	0.18	8.9
4.5 Greater amberjack	32	0.18	8.9
6 Snowy grouper	29	0.16	8.0
7 Hammerhead shark	12	0.07	3.3
8 Gray triggerfish	11	0.06	3.0
Southeast Florida cont.			
9 Dusky shark	9	0.05	2.5
10 Blue runner	8	0.05	2.2
	321		88.9
South Florida			
1 King mackerel	590	1.90	57.7
2 Yellowtail snapper	133	0.43	13.0
3 Unidentified grunts	52	0.17	5.1
4 Unidentified porgies	29	0.09	2.8
5 Red grouper	26	0.08	2.5
6 Gray snapper	24	0.08	2.3
7 Mutton snapper	22	0.07	2.2
8.5 Black grouper	19	0.06	1.9
8.5 Blue runner	19	0.06	1.9
10 Cero	18	0.06	1.8
	932		91.2

Table 12.—Ten most abundant species caught by other fishing in each area of the Gulf of Mexico during the 1984 charterboat survey.

Area, rank, and species	Number caught	CPH	Percent of total catch w/i area
Southwest Florida			
1 Gag	1,100	0.79	10.7
2 Spotted seatrout	1,064	0.76	10.3
3 Unidentified seatrouts	916	0.66	8.9
4 Ladyfish	850	0.61	8.3
5 Sheepshead	818	0.59	8.0
6 Red grouper	810	0.58	7.9
7 Gray snapper	774	0.55	7.5
8 Unidentified grunts	612	0.44	6.0
9 Silver perch	528	0.38	5.1
10 Greater amberjack	510	0.37	5.0
	7,982		77.7
West Florida			
1 Black sea bass	1,137	1.05	20.7
2 Spotted seatrout	902	0.83	16.4
3 Gray snapper	583	0.54	10.6
4 Gag	524	0.48	9.5
5 Unidentified grunts	447	0.41	8.1
6 Sheepshead	389	0.36	7.1
7 Silver seatrout	362	0.33	6.6
8 Red drum	274	0.25	5.0
West Florida cont.			
9 Ladyfish	210	0.19	3.8
10 Red grouper	190	0.17	3.5
	5,018		91.3
Northwest Florida			
1 Gray triggerfish	1,621	1.54	18.0
2 Red snapper	1,559	1.48	17.3
3 Unidentified porgies	1,379	1.31	15.3
4 Greater amberjack	1,262	1.20	14.0
5 Gag	778	0.74	8.6
6 Little tunny	546	0.52	6.1
7 Blue runner	506	0.48	5.6
8 Dolphin	252	0.24	2.8
9 Scamp	198	0.19	2.2
10 King mackerel	185	0.18	2.1
	8,286		92.0
Louisiana			
1 Sand seatrout	55,334	23.45	48.8
2 Atlantic croaker	29,220	12.38	25.8
3 Red snapper	10,836	4.59	9.6
Louisiana cont.			
4 Unidentified seatrouts	7,475	3.17	6.6
5 Red drum	2,258	0.96	2.0
6 Blue fish	2,200	0.93	1.9
7 Dolphin	1,465	0.62	1.3
8 Gray triggerfish	1,330	0.56	1.2
9 King mackerel	993	0.42	0.9
10 Greater amberjack	948	0.40	0.8
	112,059		98.9
South Texas			
1 Red snapper	1,706	1.30	25.4
2 King mackerel	1,675	1.28	24.9
3 Silver seatrout	870	0.66	12.9
4 Crevalle jack	729	0.56	10.8
5 Atlantic spadefish	482	0.37	7.2
6 Atlantic bonito	277	0.21	4.1
7 Atlantic sharpnose shark	268	0.20	4.0
8 Gray triggerfish	114	0.09	1.7
9 Red drum	92	0.07	1.4
10 Blacktip shark	87	0.07	1.3
	6,300		93.7

During the 1984 survey, 199,836 fishes were caught. The trolling catch of 40,776 fishes, which represented 66 species or species groups, was made up mostly of coastal (88.8 percent) and oceanic (7.6 percent) pelagics (Table 3). Other fishing techniques produced 159,060 fishes, representing 108 species or species groups, of which 89.3 percent were demersal (Table 4).

In 1985, 142,419 fishes were caught. Troll-caught fishes numbered 54,090, which represented 82 species or species groups, of which 89.4 percent were coastal pelagic and 7.1 percent were oceanic pelagic (Table 5). Other fishing techniques caught 88,329 fishes, representing 102 species or species groups, of which 81.8 percent were demersal (Table 6).

The CPH of the top ten species varied by method and by area in both 1984 and 1985 (Tables 7-14). For both years, and in all areas, the importance of scombrids (tunas and mackerels) in trolling catches was apparent (Tables 7-10), while catches using other fishing techniques showed the importance of snappers (lutjanids), groupers (serranids), and croakers (sciaenids), (Tables 11-14).

Discussion and Summary

Aside from providing fishing information on what can be caught by recreational user groups in given locations, the data from charterboat surveys can be used to investigate variations and trends in seasonality and abundance of coastal pelagic and demersal fishes. For example, CPUE data are now available for five areas (North Carolina, south and northwest Florida, Louisiana, and south Texas) of the southeastern United States from 1982 through 1985. All 16 coastal areas now have at least two years of

Table 13.—Ten most abundant species caught by other fishing in each area off the southeastern United States during the 1985 charterboat survey.

Area, rank, and species	Number caught	CPH	Percent of total catch w/i area
North Carolina			
1 Black sea bass	3,473	41.10	97.6
2 Unidentified porgies	60	0.71	1.7
3 Gag	15	0.18	0.4
4 King mackerel	6	0.07	0.2
5 Crevalle jack	2	0.02	0.1
6 Cobia	1	0.01	0.0
	3,557		100.0
South Carolina			
1 Black sea bass	40	1.00	47.1
2 Greater amberjack	21	0.53	24.7
3 Blacktip shark	6	0.15	7.1
4.5 Great barracuda	4	0.10	4.7
4.5 Unidentified sharks	4	0.10	4.7
6.5 Atlantic spadefish	3	0.08	3.5
6.5 Bluefish	3	0.08	3.5
8 Hammerhead shark	2	0.05	2.4
9.5 King mackerel	1	0.03	1.2
9.5 Spanish mackerel	1	0.03	1.2
	85		100.1
Georgia			
1 Black sea bass	805	2.59	33.9
2 Vermillion snapper	570	1.84	24.0
3 Bluefish	215	0.69	9.1
4 Red snapper	159	0.51	6.7
5 Great barracuda	111	0.36	4.7
6 King mackerel	104	0.33	4.4
Georgia cont.			
7 Greater amberjack	85	0.27	3.6
8 Unidentified sharks	82	0.26	3.5
9 Ladyfish	43	0.14	1.8
10 Blacktip shark	36	0.12	1.5
	2,210		93.2
Northeast Florida			
1 Black sea bass	504	1.51	24.9
2 Unidentified seatrouts	366	1.10	18.1
3 Kingfish	353	1.06	17.4
4 Sheepshead	289	0.87	14.3
5 Bluefish	169	0.51	8.3
6 Red drum	89	0.27	4.4
7 Unidentified sharks	61	0.18	3.0
8 Unidentified flounders	34	0.10	1.7
9 Gray triggerfish	32	0.10	1.6
10 Red snapper	24	0.07	1.2
	1,921		94.9
East Florida			
1 Yellowtail snapper	788	1.53	16.7
2 Black sea bass	695	1.35	14.7
3 Unidentified grunts	630	1.22	13.3
4 Vermillion snapper	543	1.05	11.5
5 Blue runner	354	0.69	7.5
6 Red snapper	325	0.63	6.9
7 Gray triggerfish	298	0.58	6.3
8 Greater amberjack	242	0.47	5.1
East Florida cont.			
9 Atlantic sharpnose shark	86	0.17	1.8
10 Snowy grouper	72	0.14	1.5
	4,033		85.3
Southeast Florida			
1 Little tunny	104	0.20	24.9
2 Hammerhead shark	43	0.08	10.3
3 Spanish mackerel	41	0.08	9.8
4 Greater amberjack	39	0.08	9.3
5 Sailfish	34	0.07	8.1
6 Blue runner	28	0.05	6.7
7 Great barracuda	25	0.05	6.0
8 Dolphin	19	0.04	4.5
9 Unidentified snappers	16	0.03	3.8
10 Atlantic bonito	13	0.03	3.1
	362		86.5
South Florida			
1 Yellowtail snapper	1,190	1.79	30.0
2 Gray snapper	517	0.78	13.0
3 Mutton snapper	268	0.40	6.8
4 Blue runner	234	0.35	5.9
5 Greater amberjack	181	0.27	4.6
6 Little tunny	163	0.25	4.1
7.5 Crevalle jack	144	0.22	3.6
7.5 King mackerel	144	0.22	3.6
9 Vermillion snapper	81	0.12	2.0
10 Ladyfish	78	0.12	2.0
	3,000		75.6

Table 14.—Ten most abundant species caught by other fishing in each area of the Gulf of Mexico during the 1985 charterboat survey.

Area, rank, and species	Number caught	CPH	Percent of total catch w/i area
Southwest Florida			
1 Red grouper	2,382	1.46	19.0
2 Gray snapper	1,648	1.01	13.2
3 Spotted seatrout	1,159	0.71	9.3
4 Ladyfish	1,008	0.62	8.1
5 Gag	807	0.50	6.5
6 Sheepshead	805	0.49	6.4
7 Yellowtail snapper	760	0.47	6.1
8 Unidentified seatrouts	623	0.38	5.0
9 Greater amberjack	593	0.36	4.7
10 Lane snapper	350	0.21	2.8
	10,135		81.1
West Florida			
1 Gag	2,182	2.02	29.1
2 Black sea bass	1,983	1.83	26.4
3 Gray snapper	815	0.75	10.9
4 Red grouper	723	0.67	9.6
5 Unidentified grunts	573	0.53	7.6
6 Gray triggerfish	234	0.22	3.1
7 Unidentified porgies	148	0.14	2.0
8 Unidentified squirrelfishes	112	0.10	1.5
9 Greater amberjack	108	0.10	1.4
10 Yellowtail snapper	104	0.10	1.4
	6,982		93.0
Northwest Florida			
1 Gray triggerfish	3,076	2.09	21.4
2 Unidentified porgies	2,441	1.65	17.0
3 Gag	2,303	1.56	16.1
4 Greater amberjack	1,991	1.35	13.9
5 Red snapper	1,759	1.19	12.3
6 Vermillion snapper	1,364	0.92	9.5
7 Little tunny	334	0.23	2.3
8 Blue runner	271	0.18	1.9
Northwest Florida cont.			
9 Scamp	208	0.14	1.4
10 Dolphin	172	0.12	1.2
	13,919		97.0
Alabama			
1 Red snapper	1,623	3.56	46.1
2 Gray triggerfish	747	1.64	21.2
3 Gag	473	1.04	13.4
4 Vermillion snapper	324	0.71	9.2
5 Greater amberjack	95	0.21	2.7
6 Unidentified porgies	92	0.20	2.6
7 Unidentified grunts	44	0.10	1.2
8 Cobia	24	0.05	0.7
9 Red grouper	16	0.04	0.5
10 Scamp	13	0.03	0.4
	3,451		98.0
Mississippi			
1 Sand seatrout	887	2.84	31.2
2 Atlantic bonito	513	1.64	18.0
3 Red snapper	470	1.51	16.5
4 Spotted seatrout	296	0.95	10.4
5 Blacktip shark	196	0.63	6.9
6 Unidentified sharks	88	0.28	3.1
7 Crevalle jack	75	0.24	2.6
8 Red drum	62	0.20	2.2
9 Gray triggerfish	52	0.17	1.8
10 Bluefish	36	0.12	1.3
	2,675		94.0
Louisiana			
1 Sand seatrout	13,864	16.76	51.9
2 Atlantic croaker	5,608	6.78	21.0
3 Unidentified seatrouts	1,963	2.37	7.3
Louisiana cont.			
4 Red snapper	1,644	1.99	6.1
5 Yellowtail snapper	700	0.85	2.6
6 Red drum	547	0.66	2.0
7 Bluefish	528	0.64	2.0
8 Pinfish	474	0.57	1.8
9 Unidentified sharks	299	0.36	1.1
10 King mackerel	244	0.30	0.9
	25,871		96.7
North Texas			
1 Red snapper	1,551	5.07	58.1
2 Little tunny	212	0.69	7.9
3 King mackerel	153	0.50	5.7
4 Atlantic bonito	140	0.46	5.2
5 Greater amberjack	116	0.38	4.3
6 Gray triggerfish	112	0.37	4.2
7 Sand seatrout	96	0.31	3.6
8 Black sea bass	48	0.16	1.8
9 Bluefish	43	0.14	1.6
10 Atlantic sharpnose shark	37	0.12	1.4
	2,508		93.8
South Texas			
1 Red drum	344	1.20	45.6
2 Spotted seatrout	149	0.52	19.8
3 Red snapper	62	0.22	8.2
4 Ladyfish	33	0.12	4.4
5 Blacktip shark	29	0.10	3.8
6 Hardhead catfish	23	0.08	3.1
7 Pinfish	19	0.07	2.5
8 Unidentified flounders	17	0.06	2.3
9 Atlantic spadefish	14	0.05	1.9
10 Unidentified seatrouts	10	0.03	1.3
	700		92.9

CPUE information (Fig. 1). Similarly, annual variations in relative abundance of several species may be examined, such as king mackerel (Trent et al., 1987) and Spanish mackerel (Palko et al., 1987). However, geographic comparisons are not always possible for demersal species due to differences in distribution or occurrence (e.g., yellowtail snapper in south Florida, black sea bass on the Atlantic coast, red grouper in south and southwest Florida, and Atlantic croaker or sand seatrout in Louisiana). The latter, however, may be a function of target species, and may reflect fishermen preference within areas. Other limitations of survey data have been previously discussed by Brusher et al. (1984) and Brusher and Palko (1985).

In summary, the data from the 1982 through 1985 charterboat surveys provided information on catches and effort, which in turn permits examination of seasonal and geographic abundance of fishes caught by trolling and by other fishing methods.

Literature Cited

Brusher, H. A., and B. J. Palko. 1985. 1983 charterboat catch and effort from southeastern U.S. waters. Mar. Fish. Rev. 47(3):54-66.

_____ and _____. 1986. Catch and effort data from a sample survey of charterboat captains in the southeastern United States, 1985. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-SEFC-170, 138 p.

_____, M. L. Williams, L. Trent, and B. J. Palko. 1984. Use of charterboat catch records for fisheries management. Mar. Fish. Rev. 46(3):48-55.

Palko, B. J., L. Trent, and H. A. Brusher. 1987. Abundance of Spanish mackerel, *Scomberomorus maculatus*, in the southeastern United States based on CPUE data from charterboats, 1982-85. Mar. Fish. Rev. 49(2):67-77.

Trent, L., B. J. Palko, M. L. Williams, and H. A. Brusher. 1987. Abundance of king mackerel, *Scomberomorus cavalla*, in the southeastern United States based on CPUE data from charterboats, 1982-85. Mar. Fish. Rev. 49(2):78-90.

Williams, M. L., H. A. Brusher, B. J. Palko, and L. Trent. 1985. Catch and effort data from a sample survey of charterboat captains in the southeastern United States, 1984. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-SEFC-157, 119 p.

_____, _____, and L. Trent. 1984a. Catch and effort data from a pilot survey of charterboat captains in the southeastern United States, 1982. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-SEFC-129, 25 p.

_____, _____, _____, and B. J. Palko. 1984b. Catch and effort data from a sample survey of charterboat captains in the southeastern United States, 1983. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-SEFC-139, 170 p.