

Paying-Passenger Recreational Fisheries of the Florida Gulf Coast and Keys

JOAN A. BROWDER, J. CONNOR DAVIS, and EULALIE SULLIVAN

Introduction

The paying-passenger recreational fisheries are major Florida fisheries in terms of total direct income and contribute significantly to Florida's tourist-based economy. The economic importance of these fisheries has been difficult to evaluate because of a lack of information on the total number of participants and level of activities. This information is not readily available due to the dispersed nature of the fisheries, lack of organizations representing them (except in a few locations), and poor state records.

This report provides an overview of the paying-passenger fisheries on the Florida Gulf coast and Keys (Fig. 1) based on a survey conducted in 1977 and 1978. The report discusses types of fisheries, centers of activity, numbers of participants, species dependence, and

ABSTRACT—Four types of paying-passenger recreational fisheries operate on the Florida Gulf coast and in the Florida Keys: Offshore charter boat, inshore-offshore charter boat, guide boat, and head boat. An estimated 604 captains were active in the fisheries in 1977. Target species differ with fishery type and region of operation. Declining catches (catch-per-unit-effort) and increased operating costs, particularly for fuel, are major problems of these fisheries, according to the captains. In those fisheries where information is available, the number of operations has increased in the past 15 years in the Florida Keys, whereas the number has decreased greatly on the west Florida coast and decreased slightly on the northwest Florida coast.

major problems or concerns. Estimates of the number of participants and species dependence of the fisheries from our survey are compared with Moe's (1963) figures for the early 1960's.

Methods

List Compilation

A list of names and addresses of potentially active operations was developed from: 1) The computerized list of commercial licenses (charter-boat category)

Joan A. Browder is with the Southeast Fisheries Center, National Marine Fisheries Service, NOAA, 75 Virginia Beach Drive, Miami, FL 33149. J. Connor Davis is with the Gulf of Mexico Fishery Management Council, Suite 881, 5401 W. Kennedy Blvd., Tampa, FL 33609. Eulalie Sullivan is with the University of Washington, Seattle, WA 98105. This paper is Contribution 81-18m from the Southeast Fisheries Center.

issued in west coast counties by the Florida Department of Natural Resources in 1975-76; 2) local occupational license lists and/or fishing permit lists, where available; 3) the yellow pages of the telephone directories of coastal communities, under the headings "fishing information," "fishing parties," and "boats-rental and charter," and 4) visits to all major established commercial docks.

Use of several sources was necessary because none would have been sufficient if used alone. Active operators were difficult to determine from state boat registrations because the most recent state list available was 3 years old and included operators that were no longer

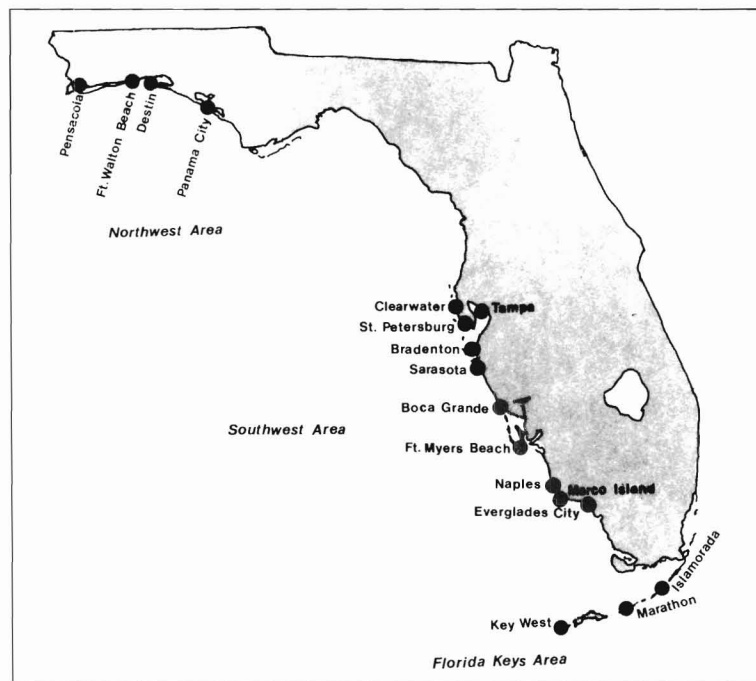


Figure 1.— Areas and activity centers of the Florida Gulf of Mexico paying-passenger recreational fisheries.

active. Furthermore, a number of persons who are not in the business habitually register their boats as commercial charter in Florida. The dock visit was the most important source of information in compiling the list of active operators and served as an advance contact to increase the response rate on the mailing questionnaire. During dock visits the survey team introduced themselves to the operators and explained the purposes of the study. The telephone directory listing was a complementary source of information, because operators at major docks often were not listed in the telephone directory, whereas operators not connected with a major dock usually were listed.

Names on the state boat registration list (owners) and names obtained from telephone directories or dock signs (captains) could not be connected when operators were not owners; therefore, some operations may have been listed more than once. The hired captains of additional boats owned by an active captain usually were not advertised and may have been left off the list. These problems could have been totally resolved

only by visiting all the active boats in an area or by talking with a local person who knew all the active operators in an area, which was not possible for all locations.

Owner-operators receiving the questionnaire were asked to identify their type of operation, their main port, the species for which they fished each season, the percent of total effort each season directed at each species, and their major problems or concerns.

Questionnaire Distribution

Distribution of the questionnaires in different regions was determined by the nature of the fishery, different receptivity to the study, and special opportunities arising in each area. Most of the questionnaires were mailed, but survey personnel or local representatives of the industry made hand-deliveries in some locations. All mailed questionnaires not returned by respondents were followed by a second mailing of the same questionnaire within a few weeks. A special short form of the questionnaire from which economic questions were deleted

was distributed by the Islamorada Guide Boat Association in lieu of mailing the full questionnaire to Islamorada guides.

Results

Types of Operators

Four distinct types of operators were found in the study area: 1) The offshore charter boat; 2) the inshore-offshore charter boat, which fishes bays and backcountry as well as offshore; 3) the guide boat, which specializes in backcountry fishing; and 4) the head boat, distinguished by the larger number of passengers and the custom of charging on a per-customer (or head) rather than per-boat basis. Most head boats fish offshore, but a few of the smaller ones fish inshore.

Activity Centers

Activity for offshore charter boats and head boats in northwest Florida was centered at Destin and Panama City. In west Florida the main offshore charter-boat centers were Clearwater, Ft. Myers Beach, Naples, and Marco Island. Inshore-offshore boats operated from Boca Grande and Tampa. Guide-boat centers were Sanibel-Captiva, Marco Island, and Everglades City. Most ports had at least one head boat.

The major ports for offshore charter-boat activity in the Florida Keys were Islamorada, Marathon, and Key West. Guide boats worked out of Key Largo, Islamorada, Marathon, and Big Pine Key. Inshore-offshore charter boats were located primarily in Key West. Head boats were found in Key Largo, Islamorada, Marathon, and Key West.

Boat Distribution

Regional differences were found in the distribution of boats between major public or commercial docks, small commercial docks, and private docking facilities. Boats were concentrated at a few major facilities in northwest Florida. Along the west coast, boats were located at a number of relatively small commercial docks, but the sizeable portion of listed names that could not be found at the commercial docks suggests that small private docks may also have



Offshore charter-boat action at Whale Harbor, Islamorada, Fla.

been important. There were no public or commercial docking facilities in Boca Grande, despite the relatively large number of boats in operation there. Guide boats on Sanibel-Captiva and Marco Islands usually were associated with a commercial or hotel dock. Most of the charter boats in the Florida Keys were concentrated at large public or commercial docking facilities. A number of guide boats also were found at these docks; but, in southwest Florida and in the Keys, many guide boats small enough to be trailered were not associated with any dock.

Percent Returns and Estimates of Total Activity

Questionnaires were sent to 770 captains. Addresses were inadequate for delivery of 59 (7.3 percent) questionnaires, which were returned by the post office, leaving a total of 711 presumably delivered. Of these, 16.15 percent responded to the first mailing. The second mailing increased the response rate to 31.32 percent. Of the respondents, 21.52 percent informed us that they were not now (14.34 percent) or never had been (5.83 percent) charter-boat captains or that the addressees were deceased (1.35 percent). The 175 "actual" returns came from 91 offshore charter-boat captains, 5 inshore-offshore charter-boat captains, 60 guide-boat captains, and 19 head-boat captains (Table 1). A breakdown by area of inadequate addresses on the original mailing list and inactive persons in responses is given in Table 2.

Assuming that the percent of inactives in the nonrespondents was estimated to be the same as that in the respondents, the estimated total active operators in the study area was 604 (770×0.2152).

The corrected list and other information obtained by dock visits were used to estimate the number of operators in each category and their distributions by area. These estimates (Table 3) had a higher proportion of offshore charter-boat operators relative to guides than the returns (Table 4). This difference probably was due to an inability to distinguish guides from offshore charter-boat captains on the list for west Florida. All the names on the list were assumed

Table 1.—Tally of responses to the mailing questionnaire by segments of the industry.

Type of operator	Total sent	Total non-deliverable	Response to first mailing	Response to second mailing	Total response	Never were charter captains	Not now charter captains	Deceased	Total "good" returns
Head boat	55	2	15	6	21	0	2	0	19
Guide boat	114	6	31	32	63	0	3	0	60
Offshore charter	585	50	66	68	134	13	27	3	91
Inshore/offshore charter	16	0	3	2	5	0	0	0	5
Total	770	58	115	108	223	13	32	3	175

Table 2.—Percent inadequate addresses on original mailing list and percent inactive persons in responses.

Area	Total orig mailing list	Inadequate addresses		Total responses		Inactive operators	
		No.	%	No.	%	No.	%
N.W. coast	122	17	13.93	29	1	3.45	
W. coast	280	22	7.86	77	21	27.27	
Keys	368	19	5.16	117	26	22.22	

Table 3.—Estimated distribution of types of operators among regions.

Type of operator	N.W. Florida	W. Florida	Florida Keys	Total
Offshore charter	138	99	154	391
Inshore/offshore charter	0	9	8	17
Guide boat	0	46	83	129
Head boat	23	22	22	67
Total	161	176	267	604

Table 4.—Percent operators in each category in returns and as estimated.

Type of operator	Percent in returns	Estimated percent active operators
Offshore charter	52.00	64.73
Inshore/offshore charter	2.86	2.81
Guide boat	34.29	21.36
Head boat	10.86	11.09
Total	100.00	100.00

to be offshore charter-boat captains unless known to be otherwise.

Return rate (percent) was calculated as the number of actual returns divided by the estimated total number of operating captains that, to the best of our knowledge, received the questionnaire. Estimated return rate was 31.25 percent ($100 \times 175/560$). Active recipients (504) were estimated by subtracting the number of insufficient addresses on the original list from the number of estimated actives.

Estimated return rates by locality and type of operation are given in Table 5.

Table 5.—Estimated percent returns by locality and type of operation.

Type of operation	N.W. coast	W. coast	Fla. Keys	Total area
Offshore charter				
Total returns	22	32	37	91
Estimated population receiving	138	99	154	391
Estimated percent return	15.94	32.32	24.02	23.27
On-/Offshore charter				
Total returns		3	2	5
Estimated population receiving	0	9	8	17
Estimated percent returns		33.33	25.00	29.41
Guide				
Total returns		15	46	61
Estimated population receiving	0	46	83	129
Percent returns		32.61	36.21	34.62
Head				
Total returns	6	7	6	19
Estimated population receiving	23	22	22	67
Percent returns	26.09	31.82	27.27	28.36

¹Includes return of 25 short versions of the questionnaire.
²The 25 persons who sent in short versions of the questionnaire were subtracted from both the population and the returns before calculating percent to correct for the different situations.

The high return rate from guide boats in the Upper Keys probably is due to the fact that the most of the operators in that area received short forms distributed by the guide-boat association.

Species Dependence and Percent Fishing Effort

Captains were asked to list the species for which they fished during each season and the percent of their fishing effort expended on each species. Based on responses to the questionnaire, a seasonal mean percent fishing effort was computed for target species and species-groups

Table 6.—Percent effort for fish species in the offshore charter-boat fisheries, by season and coastal area.

Species	Northwest Florida				West Florida				Florida Keys			
	Spr. n=19	Sum. n=20	Fall n=15	Win. n=7	Spr. n=10	Sum. n=11	Fall n=10	Win. n=10	Spr. n=18	Sum. n=15	Fall n=15	Win. n=19
Bluewater species												
Billfish	2.0	6.0	5.6						15.5	9.5	39.3	41.8
Dolphin	2.6	1.9	1.0						39.2	49.3	1.7	
Sharks									3.1	2.7	4.7	4.0
Tuna									4.2	6.8	6.7	2.4
Wahoo											1.7	0.8
Combined bluewater ¹		8.4							68.9	86.4	62.0	49.5
Reef species												
Grouper	31.3	25.2	24.0	62.9	22.2	54.6	68.5	73.5	1.7	3.3	6.9	3.3
Snapper					8.5	7.3	2.5	3.5	11.4	1.5	2.4	1.5
Grunts								2.5				
Seabass				2.9		2.3	1.0	2.5				
Tilefish									0.9	4.0		
Combined reef ¹	38.7	34.0	36.0	78.6	31.2	66.4	72.0	77.0	13.1	6.7	16.3	5.9
Coastal pelagic												
King mackerel	31.4	49.5	50.7	7.9	49.0		19.0	13.0	3.9		9.3	34.3
Spanish mackerel	5.0				4.0	10.0	2.0	2.0				2.1
Amberjack	7.6	6.3	6.7		7.0	8.6	5.0		3.3		5.5	
Other												
Barracuda									2.5	2.7	5.6	2.1
Cobia	10.5											
Tarpon					4.0				2.2			
Misc. (redfish, flounder, etc.)	2.2	0.8		13.6	4.8	15.0	2.0	3.0	6.1	4.2	1.3	4.0

¹ Combined values are not necessarily totals for column categories but are given as reported.

of each area and type of operation (Tables 6-9).

Offshore Charter

Percent dependence of the charter-boat industry on fish species and species groups during each season varied among the regions and, therefore, is presented separately for each region (Table 6).

Northwest Florida Spring, summer, and fall were the principal fishing seasons in northwest Florida. The species of greatest importance to offshore charter-boat operations during all of these seasons was king mackerel, *Scomberomorus cavalla*. Reef fishes, particularly grouper (Serranidae), were second in importance. Cobia, *Rachycentron canadum*, was next in importance during the spring. Amberjack, *Seriola dumerili*, and bluewater fish, particularly billfish

Table 7.—Recent effort for fish species in the inshore-offshore charter-boat fisheries, by season and coastal area.

Fishery and species	West Florida				Florida Keys				Fishery and species	West Florida				Florida Keys												
	Spr. n=11	Sum. n=9	Fall n=7	Win. n=7	Spr. n=6	Sum. n=6	Fall n=6	Win. n=6		Spr. n=11	Sum. n=9	Fall n=7	Win. n=7	Spr. n=6	Sum. n=6	Fall n=6	Win. n=6									
Offshore																										
Bluewater species																										
Dolphin					8.3	29.2	8.3	0.8		<i>Coastal pelagics cont.</i>																
Billfish					2.5	2.5	18.3	30.8		Barracuda								15.8	12.5	17.5	7.5					
Combined bluewater ¹	4.4				10.8	31.7	26.6	31.6		Shark	3.6	6.7	7.1	5.7												
Reef species																										
Snapper	9.1	8.9	10.0	12.9	13.3	15.0	13.3	13.3		Total offshore	47.7	52.2	50.6	63.6			55.7	69.3	74.9	84.1						
Grouper	25.9	32.2	27.1	39.3	3.3	3.3	9.2	12.5		Inshore																
Combined reef ¹	35.0	41.1	37.1	52.2	16.6	20.8	22.5	25.8		Tarpon	32.6	21.4	5.7				31.7	12.5		4.2						
Coastal pelagics																										
King mackerel	5.5		5.0				1.7	7.5		Snook	4.3	10.6	16.4													
Spanish mackerel	3.6		1.4		5.0		3.3	5.0		Redfish	2.3	2.2	10.0	7.9												
Combined mackerel ¹	9.1		6.4	5.7						Seatrout	5.0	5.8	2.9													
Amberjack					3.3	3.3	3.3	1.7		Sheepshead				21.4												
Cobia					4.2	1.0		5.0		Permit							8.3	9.2	11.7	5.8						
Other																										
										Bonefish							3.3	4.2	12.5							
										Total Inshore	52.3	47.8	49.4	36.4			1.0	4.7	0.9	5.9						

¹ Combined values are not necessarily totals for column categories but are given as reported.

Table 9.—Percent effort for fish species in the head-boat fisheries, by season and coastal area.

Species	Northwest Florida				West Florida				Florida Keys			
	Spr. n=5	Sum. n=5	Fall n=5	Win. n=5	Spr. n=4	Sum. n=4	Fall n=4	Win. n=4	Spr. n=1	Sum. n=1	Fall n=1	Win. n=1
Bluewater species												
Dolphin											5.0	
Reef species												
Snapper	20.0	20.0	20.0	20.0	20.0	20.0	22.5	22.5	50.0		70.0	25.0
Grouper	45.0	40.0	40.0	45.0					40.0		25.0	20.0
Comb. snapper/grouper ¹					65.0	65.0	70.0	70.0	90.0	95.0	95.0	88.8
Grunts					12.5	12.5	12.5	12.5				
Seabass					12.5	12.5	12.5	12.5				
Triggerfish and others	20.0	20.0	20.0	20.0								
Combined reef ¹	85.0	80.0	80.0	85.0	90.0	90.0	95.0	95.0	90.0	95.0	95.0	88.8
Coastal pelagic												
King mackerel					10.0	10.0	5.0	5.0	10.0			11.3
Amberjack	15.0	20.0	20.0	15.0								
Other												
Sharks												5.0

¹ Combined values are not necessarily totals for column categories but are given as reported.

(Istiophoridae and Xiphiuridae) were important during the summer and fall. Winter fishing was heavily dependent on grouper. Redfish, *Sciaenops ocellata*; flounder, *Paralichthys* spp; and other species were relatively important during the winter. Some king mackerel also were taken in winter.

West Florida The most important species to the offshore charter-boat industry on the Florida west coast were reef fishes, principally grouper. From 66 to 77 percent of total effort was expended on reef fish during the summer, fall, and winter. Almost 50 percent of effort during the spring was directed at king mackerel. Reef fishes also were important during the spring. Some fishing effort was expended on amberjack during the spring, summer, and fall and on tarpon, *Megalops atlantica*, during the spring. (Dependence on tarpon may be artificially low due to the low response rate from Boca Raton captains, who fish extensively for tarpon.)

Florida Keys The offshore charter-boat fishery in the Florida Keys expended the greatest percent of its effort on bluewater species such as dolphin, *Coryphaena hippurus*, and billfish. Bluewater species accounted for 49.5-86.4 percent of fishing effort, depending on the season. Emphasis was on dolphin during the fall (39.2 percent) and summer (49.3 percent) and on billfish during the fall (39.3 percent) and winter (41.8 percent). King mackerel were important to the fishery during the winter (34.3 percent). Reef fish, particularly snapper and grouper, had some importance, particularly during the spring and fall. Although major dependence was on a few species, the offshore charter-boat fishery had more target species in the Keys than in any other part of the study area. Other targets were sharks (Squaliformes); barracuda, *Sphyraena* spp.; bluefin tuna, *Thunnus thynnus*; amberjack; tilefish, *Lopholatilus* spp. and wahoo, *Acanthocybium solanderi*.

Inshore-Offshore Charter Boats

Target species of the inshore-offshore fishery overlapped those of the other three fisheries and included bluewater, reef, and shallow-flats species (Table 7).



Offshore charter boats at Whale Harbor, Islamorada, Fla.

West Florida Reef fishes and tarpon were the species of major importance to the inshore-offshore charter operations of west Florida. The greatest tarpon fishing activity occurred at Boca Grande and Tampa. Inshore and offshore activities were approximately evenly divided. Tarpon fishing was concentrated in the spring and summer and accounted for almost one-third of fishing effort during those seasons. Percent effort on reef fish ranged from 35 percent in the spring to 52.2 percent in the winter. Other offshore species were king mackerel; Spanish mackerel, *Scomberomorus maculatus*; and sharks. Other inshore species were snook, *Centropomus undecimalis*; redfish; seatrout, *Cynoscion* spp.; and sheepshead, *Calamus penna*.

Florida Keys The inshore-offshore fishery in the Keys was different from that in west Florida in that a larger proportion of effort was expended on offshore species. Percent effort expended on offshore species ranged from 55.7 percent in spring to 84.1 percent in winter. Inshore species receiving attention from this fishery were permit, *Trachino-*

tus falcatus; tarpon; and bonefish, *Albula vulpes*. The most important of these was tarpon.

Bluewater species and reef fish received an approximately equal amount of interest and together accounted for about 50 percent of fishing effort by the inshore-offshore fishery in the Florida Keys during all four seasons. Fishing effort for billfish ranged from 10.8 percent in spring to 31.7 percent in summer. Emphasis was on dolphin during the spring and summer and on billfish during the fall and winter. Snapper were more important than grouper during the spring and summer, and effort was approximately evenly divided between the two groups during the fall and winter.

Barracuda and cobia were two wide-ranging fish species of some importance to the inshore-offshore fishery in the Keys. Amberjack, king mackerel, and Spanish mackerel were other species sought by this fishery.

Guide Boats

Species dependence of guide boats is presented in Table 8.



Typical vessel in the inshore-offshore charter fleet.

West Florida The primary target species of guide-boat operators on the west coast of Florida were snook; tarpon; redfish; spotted seatrout, *Cynoscion nebulosus*; and gray snapper, *Lutjanus griseus* (Table 8). Snook was the most important species. In spring, summer, and fall, 35 percent, 47.3 percent, and 29.1 percent of fishing effort was directed at snook. Redfish was the second most important species, being first in the fall and second in winter. Seatrout was a close third, being first in importance in winter and third in summer and fall. The many species in the category "other" include Spanish mackerel; grouper; flounder; pompano, *Trachinotus carolinus*; cobia; and bluefish, *Pomatomus saltatrix*. None of these composed more than 2 percent of mean fishing effort in any season.

Florida Keys Bonefish and tarpon were the two species of major importance in the Florida Keys. Permit and gray snapper also were important. Bonefish was most important in fall and winter, with 50.4 percent and 46.6 percent of mean season fishing effort. Tarpon

led during spring (46.9 percent) and summer (43.0 percent). Other species listed were cobia, grouper, shark, seatrout, barracuda, snook, and redfish, none of which exceeded 5 percent of mean season fishing effort.

Offshore Head Boats

Reliance on reef fish by the offshore head-boat industry was consistent in all three areas, where this group was targeted by 80 to 95 percent of effort. (Table 9).

Northwest Florida In northwest Florida, grouper was the leading fish group sought; snappers were next in importance, followed by a mix of triggerfish (Balistidae) and other reef species. Amberjack was also important to the industry in this area. Mean percent effort directed at each species or species group was approximately the same each season.

West Florida Snapper and grouper accounted for 65-70 percent of effort by this fishery. Grunts (Pomadasyidae) and seabasses were secondarily important

reef fish. Approximately 5-10 percent of effort was expended on mackerel (not specified, but probably king mackerel). Greatest fishing effort was during the spring and summer.

Florida Keys From 88.8 to 95 percent of total effort of the head-boat industry in the Florida Keys was directed toward grouper and snapper. Effort towards snapper predominated, particularly in the fall. King mackerel, dolphin, and sharks were other target species of the offshore head-boat industry in the Florida Keys.

Perceived Problems in the Fishery

Captains were asked to list what they considered to be the major problems facing their industry. Questionnaire returns on this item were analyzed by area and type of operation. Responses from offshore charter, inshore-offshore charter, and head-boat captains are combined. Responses from guide-boat captains are reported separately. Percentages refer to the proportion of reporting captains mentioning the problem. Only those problems mentioned by at least 10 percent of respondents are reported.

Charter- and Head-Boat Problems

The most common problem reported by charter- and head-boat operators in all areas was "declining abundances" of fish, reported by 73 percent of responding captains in northwest Florida, 72 percent in west Florida, and 44 percent in the Florida Keys.

Declining catches (catch-per-unit-effort) of king mackerel in particular were cited as a problem by 50 percent of the captains in northwest Florida, 44 percent in west Florida, and 9 percent in the Florida Keys. The attention given to king mackerel in responses reflected the very low catches of king mackerel in the Gulf of Mexico during the summer and fall migrations of 1976, 1977, and 1978 and also pointed out the great extent to which the charter industry along the Gulf coast has been dependent on king mackerel.

Power-roller-gillnet vessels, which make large catches of king mackerel in south Florida during the winter, were cited as the probable cause of declining



Head boat returning to Whale Harbor.

recreational catches and a serious threat to the king mackerel stock by 15 percent of responding captains in northwest Florida, 20 percent in west Florida, and 12 percent in the Keys. Declining catches of grouper were mentioned as a problem by 16 percent of respondents from west Florida. Red tide outbreaks, which can greatly reduce the abundance of fish on the nearshore reefs, were indicated as a problem of major concern by 24 percent of responding captains on the west coast.

A decrease in baitfish, balao, *Hemiramphus balao*, was cited as a problem by 15 percent of responding captains from the Florida Keys. The decline was attributed to commercial fishing operations directed at balao.

The second most commonly reported problem in all three areas was increasingly high operating costs (mentioned by 68 percent of captains in northwest Florida, 36 percent in west Florida, and 38 percent in the Keys). Fuel-cost increases in particular were cited by 36, 16, and 21 percent of captains in northwest Florida, west Florida, and the Keys, respectively.

Other problems varied with area and often reflected local issues. In northwest Florida, "excessive government controls and regulations" were cited by 14 percent of responding captains. This problem appeared to be related to relatively high percentage of charter vessels in that area which are licensed to carry more than six passengers. Stringent licensing requirements, extra equipment, and Coast Guard inspections required for these vessels were considered to be an annoying addition to a captain's work load and expenses. Weather was considered a problem by 20 percent of west-coast captains. Severe weather during the previous two winter tourist seasons had caused significant loss of income. Pollution and environmental damage were cited as a problem by 16 percent of west-coast captains.

In the Keys, three often reported problems were "increasing use of fish traps," "competition from corporation boats," and "excessive catches by some sport fishermen." Charter-boat captains and others perceive that the use of fish traps by commercial fishermen is thought to have been increasing in the

Keys and fear that overfishing of the reefs will result. Corporation boats are boats owned by a corporation not primarily concerned with charter fishing. These vessels are used partially for entertainment of business clients and by the corporate officers and owners. They employ a professional captain, who operates the vessel as a charter boat when it is not being used for company activities. Capital investment often is much greater than in owner-operated vessels, and corporation boats often are larger and more attractive to the customer, while the charter fee they charge usually is the same as that of owner-operated boats. Owner-captains viewed the corporation boats as unfair competition. The highest percentage of corporation boats were found at Islamorada. Many other problems were listed, but none by more than 10 percent of those responding.

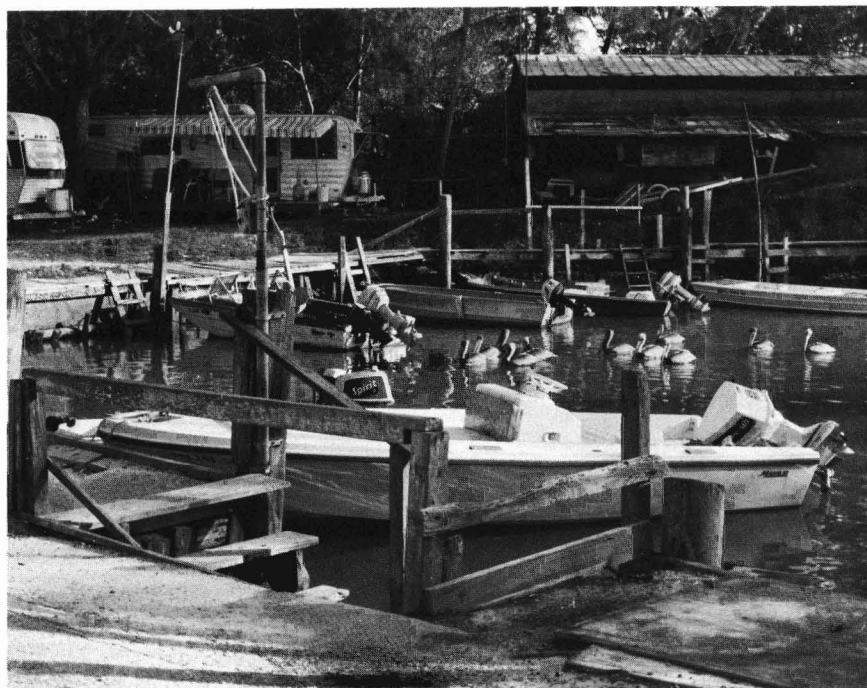
Guide Boat Problems

A lack of fish and high operating costs were the major concerns of guide-boat captains. Thirty-three percent of respondents on the west coast noted shortages of fish in general as a problem, whereas 17 percent mentioned snook specifically. They attributed fish declines to commercial gillnet operators fishing in small boats for mullet, *Mugil cephalus*; seatrout; redfish; and pompano. In particular, they considered this group responsible for declines in catches of seatrout and redfish in Everglades National Park. Thirty-three percent of responding captains viewed pollution and other environmental damages as factors contributing to fish declines.

In the Keys, 63 percent of responding captains cited declining catches (catch-per-unit-effort) as a major problem. They attributed this problem to gillnet fishermen (35 percent), lack of sufficient water flow from the Everglades (38 percent), and pollution (25 percent). High operating costs were a major concern of 33 percent of responding west-coast captains and 19 percent of respondents from the Keys.

Discussion

Changes in paying-passenger recreational fisheries that have occurred since



A typical boat used by guides lies in port at Chokoloska, Fla.

the study by Moe (1963) can possibly be attributed to the declines in catch-per-unit-effort noted by the captains. Changes are of two types: 1) A shift in relative importance of target species and 2) a shift in the relative levels of activity of the three regions.

Moe (1963) determined the three most preferred species in each coastal county in Florida in the early 1960's. For comparison with our data, Moe's data were recompiled to give a picture of the principal target species in the three regions of the study area. We assigned the values 3, 2, and 1, respectively, to the species Moe (1963) had ranked number 1, 2, and 3 in each county, then multiplied these numbers by the number of vessels operating in each county. The rank for each species obtained by this method was divided by the sum of the ranks for all species to get a rough approximation of the regional relative importance of the principal species named by Moe (1963). The results are shown with estimates of percent effort on target species in the present study in Table 10. Due to the differences in the original compiling methods,

small differences in relative importance should be disregarded, but large differences probably are meaningful.

A decline in relative importance of the snappers as target species in northwest Florida waters is suggested by comparison of the two sets of data. According to the Gulf of Mexico Fishery Management Plan¹, a decline in reef fish stocks, probably due to overfishing, has occurred in some areas of the Gulf of Mexico.

King mackerel has decreased sharply in relative importance as a target species in west Florida but not in northwest Florida. The decrease in relative importance of this species in west Florida reflects the very low catches of king mackerel experienced in the eastern Gulf of Mexico since 1975. It is not yet clear whether the lack of availability is due to an actual decline in stock abundances or to unusually cold winters, which may

¹Draft Fishery Management Plan for Reef Fishes. Gulf of Mexico Fishery Management Council, Suite 881, 5401 Kennedy Blvd., Tampa, FL 33609.

Table 10.—Percent species preference in early 1960's¹ and percent effort for target species in 1977 of the offshore charter-boat fishery in the three regions.

Area	1960		1977	
	Species	%	Species	%
N.W. Florida	Red snapper	43	Grouper/ snapper	² 47
	King mackerel	38	King mackerel	35
	Black grouper	14	Amberjack	5
	Common dolphin	4	Billfish	3
	Spanish mackerel	1	Cobia	3
W. Florida ³	King mackerel	51	Grouper	53
	Tarpon	18	King mackerel	19
	Spanish mackerel	15	Snapper	6
	Black grouper	11	Amberjack	5
	Red grouper	2	Spanish mackerel	4
	Sailfish	2	Tarpon	1
Florida Keys ⁴	Sailfish	43	Billfish	27
	King mackerel	29	Common dolphin	23
	Common dolphin	14	King mackerel	11
	Barracuda	14	Tuna	5
			Sharks	4
			Grouper	4
			Snapper	4
		Barracuda	3	
		Amberjack	2	

¹Adapted from Moe (1963).

²Possibly 35 percent was grouper. There was a problem in clarity with the way snapper and grouper were reported, as some respondents had separate categories for the two taxa and others put them together.

³Effort data of inshore-offshore vessels were added to that of offshore vessels in west Florida for 1977 to be more comparable with Moe's (1963) coverage.

⁴Moe (1963) reported only the top four species for Monroe County. Note: Numbers for the two times are not entirely comparable due to differences in the way they were originally compiled.

have caused king mackerel stocks to shift their migration routes farther offshore to avoid cold water².

Spanish mackerel also has decreased in relative importance to west Florida charter-boat fisheries. Amberjack, billfish, and cobia replaced dolphin and Spanish mackerel as principal target species in northwest Florida charter-boat fisheries. Amberjack also has become more important to west Florida fisheries.

The relatively low dependence on tarpon in west Florida in 1977 may be an artifact caused by a low rate of response to the questionnaire from tarpon-boat captains in Boca Grande.

²Draft Fishery Management Plan for Migratory Coastal Pelagics. Gulf of Mexico Fishery Management Council, Suite 881, 5401 Kennedy Blvd., Tampa, FL 33609.



Back-country fishing among mangrove islands near Goodland, Fla.

Recreational effort of offshore-charter boats in the Florida Keys appears to have diversified, with a larger number of important target species today than when Moe (1963) made his survey. The decline in relative importance of sailfish to the fishery is consistent with the general trend toward diversification. Dolphin has increased in relative importance to the fishery since the time of Moe's (1963) study.

Moe (1963) determined the number of charter and head boats operating in each of the coastal counties. His county results, which we have compiled for northwest Florida, west Florida, and the Florida Keys, are given with our estimates for 1977 in Table 11.

The total number of charter boats operating in the study area has increased slightly since the period of Moe's study (1963). The number of head boats operating in the study area has declined considerably in the past 17 years. While the charter boat industry has increased by more than 50 percent in the Florida Keys and expanded slightly in northwest Florida over the past 17 years, activity in west Florida has declined by approximately one-third. Head-boat activity has increased in the Florida Keys but decreased in the other two areas.

Several factors combine to give the Florida Keys a current advantage over west and northwest Florida, with respect to paying-passenger fisheries. The weather is more consistently favorable

Table 11.—Number of offshore-charter and head boats operating in the three regions in the early 1960's and 1977.

Region	Charter boats		Head boats	
	1960 ¹	1977 ²	1960	1977
Northwest Florida	126	138	48	23
West Florida	157	108	28	22
Florida Keys	97	151	9	23
Total	380	397	85	68

¹Based on Moe (1963).

²Inshore-offshore vessels are included with offshore vessels in 1977 numbers.

in this area, and support facilities are increasing to the point where their lack is no longer a serious handicap. Furthermore, dependence on fish stocks is more diversified in the Keys than in the other areas, and declining catch-per-unit-effort of major target species was a problem of the industry cited by fewer captains in the Florida Keys than elsewhere. The decline in number of operators in both west and northwest Florida that has accompanied the loss of dependable target species such as red snapper and king mackerel in these areas, suggest that paying recreational fishermen tend to abandon ports where they perceive a low probability of catching fish, dealing an economic blow to the local paying-passenger fisheries.

The captains have not been silent about their perceived problems and have made some of them major political issues in the state. For instance, legislation placing limited gear restrictions on

king mackerel gillnets and outlawing fish traps in state waters has been enacted. A recent decision by the National Park Service, if not overturned, will exclude commercial fishing from Everglades National Park.

Summary

An estimated 604 active paying-passenger captains operated on the Florida Gulf coast and in the Florida Keys in 1977, approximately 44.2 percent were located in the Keys, 29.1 percent were located in west Florida, and 26.7 percent were located in northwest Florida. An estimated 64.7 percent of the operations were offshore charter boats, 21.4 percent were guide boats, 11.1 percent were head boats, and 2.8 percent were inshore-offshore charter boats.

The total number of offshore and inshore-offshore operations changed little since a previous study (Moe, 1963), but the number of operations increased by more than 50 percent in the Keys, increased slightly in northwest Florida, and decreased by approximately 33 percent in west Florida in the 17-year period between studies. The total number of head-boat vessels declined, although the number of vessels in the Keys almost tripled, the number of vessels in northwest Florida decreased by one-half, and a slight decrease occurred in west Florida.

The number of target species has increased in the offshore fisheries of the Florida Keys. Species dependence has changed in west Florida and northwest Florida, probably reflecting a decline in catch-per-unit-effort of king mackerel and red snapper.

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