

## An Analysis of the Charter Boat Fishing Industry on the Texas Gulf Coast

ROBERT B. DITTON, RICHARD N. JARMAN,  
and STEVE A. WOODS

**ABSTRACT**—This paper examines the nature, extent, and characteristics of the Texas Gulf Coast charter boat fishing industry and its implications for fisheries management. Personal interviews were completed with 41 of the 88 Texas Gulf Coast charter operators in business during 1975. Data were obtained regarding charter operators: Characteristics, business structure, charter fishing activities, and economic returns. This study revealed that the Texas charter industry lacks a formal industry organization, is composed of small independent businesses which yield insufficient incomes to keep operators in business full time, involves operators who are primarily concerned with the life-style afforded by charter fishing, and is an integral part of the State's tourism industry.

### INTRODUCTION

Assessing the varied demands on marine fisheries resources is one of the most difficult tasks confronting fisheries managers. Historically, emphasis has been placed on the commercial use of fisheries resources. As a result, much of the available data concerning the biological, economic, and social impacts of fisheries utilization pertain to commercial fishing industries. In recent years, however, increased recognition has been given to the impacts of marine recreational fishing. Deuel (1973) has pointed out that in terms of the number of saltwater sport fishermen and the size of the rec-

reational catch, marine recreational fishing can no longer be considered an inconsequential use of the nation's fisheries resources.

The economic impact of marine recreational fishing has also reached substantial proportions. The total retail sales of goods and services associated with marine recreational fishing were estimated to be \$1,333 million in 1972. These sales generated an estimated \$510 million of value added and \$285 million in wages and salaries in business sectors where direct spending took place. In 1975 sport fishing consumers purchased an estimated \$1,840 million worth of goods and services at the retail level. These sales generated approximately \$699 million of value added and \$343 million in related wages and salaries (Centaur Management Consultants, Inc.<sup>1</sup>).

<sup>1</sup>Centaur Management Consultants, Inc. 1977. Economic activity associated with marine recreational fishing. Draft report. Centaur Management Consultants, Inc., Washington, D.C.

Aside from national and regional trends and averages of sport fishing activity and expenditures, however, decision-makers often lack sufficient information, particularly in state and local situations, for considering the impacts of recreational fishing in the development of marine fisheries management policies and regulations.

Popular arguments contrasting recreational and commercial fishing often portray both fisheries as big business. Recreational fishing is characterized as a social luxury associated with fisheries conservation, while commercial fishing is characterized as an economic necessity associated with fisheries exploitation (Carlton, 1975). Generalized statements concerning either recreational or commercial fishing, however, provide a weak base for making fisheries resource allocation and management decisions. If fisheries management is to reflect economic, social, and resource concerns as directed by the U.S. Fisheries Conservation and Management Act of 1976 (Public Law 94-265), research is needed to develop a comprehensive data base for evaluating both commercial and recreational demands.

Although recreational fishing is often viewed as a homogeneous activity, a number of distinct components or fishing sectors can be identified. Along the Texas Gulf Coast recreational fishing can be grouped into three broad types: Onshore or nearshore fishing, bay fishing, and offshore or Gulf fishing. This paper is concerned with an industry which provides a means for bay and Gulf fishing: the Texas charter fishing industry.

In 1970, an estimated 15 percent of the sport fishermen in the entire Gulf Region used a charter or party boat at least once, spending over \$20 million in charter fees alone (Bureau of Sport Fisheries and Wildlife, 1972). Several area-specific studies indicated charter operations can have substantial economic impact on local communities and contribute substantially to the total recreational economy in an area. In a study of the Wisconsin charter fishing industry, Ditton et al. (1975) found

*Robert B. Ditton, Richard N. Jarman, and Steve A. Woods are with the Recreation and Parks Department, Texas A&M University, College Station, TX 77843. This research was supported by the Texas Agricultural Experiment Station and the Texas A&M Sea Grant Program.*

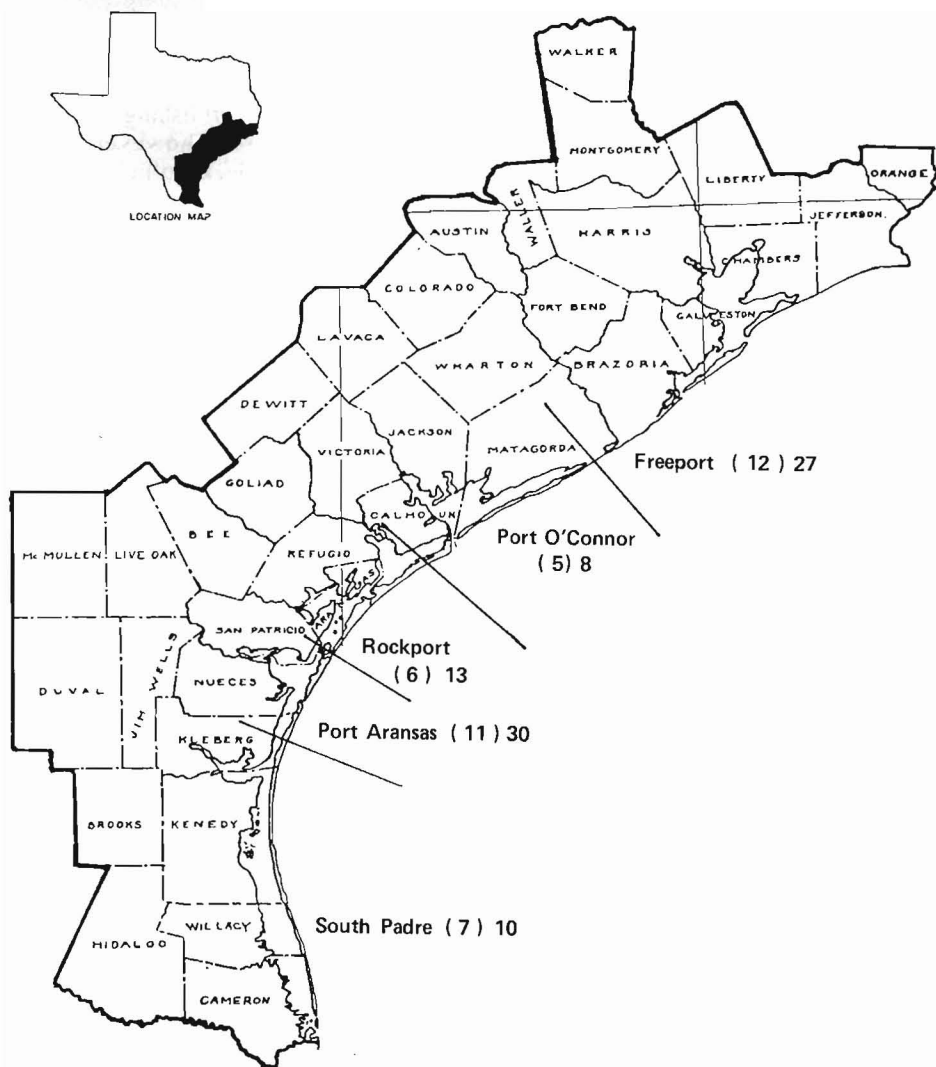


Figure 1.—Regional distribution of Texas Gulf coast charter businesses operating in 1975: Sample and size population.

charter businesses had a sizable economic impact on shoreline communities with a total statewide economic impact of approximately \$4 million. In Choctawhatchee Bay, Fla., and its adjacent Gulf of Mexico waters, charter and party boat fishing accounted for 69 percent of the sport fishing effort and 75 percent of the sport fishing catch during approximately a 1-year period (Irby, 1974).

During the summer of 1974, an extensive literature review and interviews with representatives from various government agencies and private organizations familiar with saltwater sport

fishing in Texas revealed an absence of information concerning the Texas Gulf Coast charter industry (Ditton and Jarman<sup>2</sup>). Even the basic parameters of the Texas charter fishing industry, such as the number and location of charter operations, had not been identified. This paper presents the findings of a study conducted to identify and to understand the Texas charter boat fishing industry

<sup>2</sup>Ditton, R. B., and R. Jarman. 1974. Development of a sport fishing focus in the TAMU Sea Grant Program - a program statement. Proposal prepared for the Texas A&M Sea Grant Program, College Station, 46 p.

and discusses possible management implications.

## METHODS

An inventory of Texas charter boat fishing businesses was compiled from U.S. Coast Guard vessel documentation records, consultation with area marine extension agents, local chambers of commerce, marina operators, telephone books, newspapers, and promotional literature obtained from coastal communities. Owners of Texas coastal charter fishing businesses in operation during all of 1975 were contacted. Operators who had retired from charter fishing before 1975 or had begun charter fishing during 1975 were excluded. A study population of 88 businesses was identified.

Based on the geographic distribution of the 88 businesses, the Texas coast was divided into five regions. A 50 percent random sample of the businesses in each region was drawn. During the data collection period from March through May 1976, efforts were made to contact the charter boat owners to schedule an interview. If an interview could not be scheduled after four attempts, the operator's name was removed from the sample and another one was randomly selected. Using a structured interview schedule adapted from that used by Ditton et al. (1975), 41 personal interviews were completed. Figure 1 shows the distribution of the 88 business operating during 1975 and the number of interviews (in parentheses) completed in each region. Data were collected to describe charter operators, their activities, resources, business structure, business revenue, and expenditures.

## FINDINGS

### Industry Organization

Responses to questions concerning membership in state or local charter fishing organizations revealed that the Texas charter fishing industry is not formally structured. No respondents reported membership in or awareness of a statewide charter fishing association. Only one local charter organiza-

tion, the Port Aransas Boatman's Association, was identified. Eighty-two percent of the operators interviewed in the Port Aransas area belonged to the association. Several of its members indicated a decline in recent years in the effectiveness of the association as a standard setting and enforcing entity.

Only 27 percent of the operators belonged to local chambers of commerce. When asked what services were provided, 64 percent of the operators belonging to a chamber of commerce said they were mentioned in brochures and 36 percent said they received referrals. Eighteen percent of those operators belonging to a chamber of commerce reported they received no support.

Although little formal organization was found, there appears to be a substantial degree of informal inter- and intra-industry organization. Sixty-eight percent of the operators reported other local charter operators and businesses referred customers to them, and 66 percent said they referred customers to other local operators and businesses. Twenty-five percent reported paying commissions for booking, but none reported receiving commissions for referrals.

### **The Texas Charter Boat Operator**

The majority of charter operators interviewed engaged in charter fishing on a part-time basis. Twenty-seven of the 41 fishermen were employed in other occupations either concurrently or during part of the year. Fourteen fishermen said charter fishing was currently their only occupation. Of the 14, 11 were retired from other occupations, one had made a career of charter fishing and two were unemployed and looking for work. Present and past occupations of the charter operators included: Civil servant, auto mechanic, police officer, dentist, oil executive, motel owner, musician, military officer, and commercial fisherman. Only one said he had been involved with charter fishing during his entire working career.

Thirty-nine charter operators responded to the question, "What percent of your income is derived from

charter fishing?" Charter fishing income averaged 41.3 percent of the total income of the responding operators while charter fishing accounted for an average of 61.5 percent of the working time of the 41 operators interviewed. Although there appears to be a substantial difference between the percentage of total income derived from charter fishing compared to the percentage of total working time devoted to charter fishing, the difference is due primarily to the number of operators who were retired from other occupations. Adjusting for the operators who were retired from other occupations results in an average of 39.8 percent of the operators' total income attributable to charter fishing and an average of 41.9 percent of working time.

Although the discrepancy between the amount of income and the amount of working time may suggest the respondents are not following sound business procedures, the majority said they had not entered the charter fishing business for economic reasons. When respondents were asked what led them to become charter operators, only 10 percent said money was the main reason. Thirty-seven percent of the respondents referred to their enjoyment of fishing; 24 percent said their charter fishing business began as a hobby; and the remaining 29 percent referred to the opportunity to live in a particular community, the enjoyment of boating, and the involvement of friends or relatives with charter fishing. Most of the reasons given were noneconomic. Many respondents volunteered that monetary returns of operating a charter boat were often a discouraging rather than an encouraging aspect of the business.

Respondents reported operating a charter fishing business on the Texas coast for an average of 11.5 years. This contrasts sharply with studies of other charter fishing industries. Wisconsin (Lake Michigan) charter operators had been in business an average of only 3.8 years (Ditton et al., 1975) and more than half of the Georgia (Atlantic) charter operators had been in business less than 3 years (Brown and Holemo,

1975). The relatively long history of the respondents' charter fishing involvement suggests charter fishing is a well-established industry on the Texas coast. Also the length of time the respondents operated a charter business indicates they are experienced charter operators and have apparently received sufficient economic and noneconomic benefits to remain in business.

The charter operators have operated from their current home port for an average of 10.5 years. The respondents said they do not shift ports in response to fish migrations or seasonal weather changes. Only one operator reported regularly changing ports during the year in response to customer demand.

### **Business Characteristics**

Of the 41 businesses surveyed, 34 were single proprietorships, 4 were partnerships, and 3 were corporations. Thirty-five of the businesses had only one vessel, three businesses had two vessels, and three businesses had three vessels—making a 50-boat charter fishing fleet.

The average length of the vessels is 30.6 feet with an average gross weight of 8.6 tons. Respondents estimated the current market value of their vessels at an average (single vessel) value of \$16,826. The majority of the vessels were equipped with a fathometer (78 percent) and a VHF or CB radio (96 percent). Twenty-eight percent of the vessels were equipped with a fish finder and 28 percent with loran. Only four percent had no electronic equipment. Even though many of the vessels had some electronic equipment for selecting a fishing site, the majority of the operators said the equipment was used infrequently. Experience was reported as the key factor in selected fishing sites.

There are numerous differences in vessel length, boat market value, and party size when charter operations are viewed on the basis of where they usually take people fishing: bay only, Gulf only, and a bay/Gulf combination. Bay boats averaged 24 feet in length, had a net boat value of \$9,265, and generally

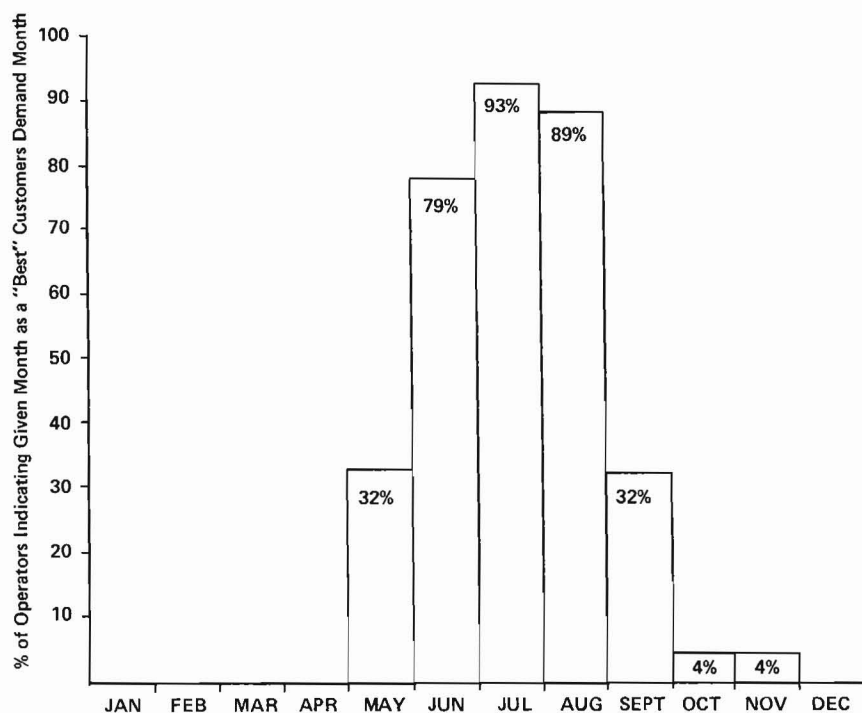


Figure 2.—Distribution of respondents by reported "best" customer demand months.

carried 3-4 customers. Gulf boats averaged 34 feet in length, had a net boat value of \$22,232, and generally carried 4-6 customers. Boats used for fishing both bay and Gulf were more like bay boats with an average length of 27 feet and a net boat value of \$10,331. Thirty of the vessels were each operated by a captain and one crew member (generally Gulf boats), and 20 vessels were each operated with only a captain (generally bay boats).

### Charter Fishing Activities

The price of a charter fishing trip varied considerably among the 41 businesses represented in the study. The factors influencing the price structure were: Number of fishermen in a party, type of vessel, length (in hours) of a trip, and the type of trip (either bay or Gulf fishing). Assuming a four person party, the charter fee ranged from approximately \$25 to \$75 per person with Gulf charters the most costly. The price of a charter trip is intended to

cover the use of the charter vessel and the experience of the vessel's captain. For the majority of the businesses, the owner was also the captain. The fee also included fishing instructions. Sixty percent of the respondents reported the base rate included the provision of bait, and 56 percent reported the provision of tackle.

Sixty-three percent of the respondents said their vessels were available for charter all year. However, May through September were the months of highest demand with July the best month (Fig. 2). The charter operators' season or period of greatest activity corresponds roughly with the ending and beginning of the school year.

Surprisingly few operators used their vessels for activities such as scuba charters, carrying oil rig crews, or private use to increase their earnings.

The 41 respondents reported providing charter services to 16,648 fishermen in 1975. If each of the 50 vessels owned by the respondents was used

equally, the average number of fishermen carried during 1975 would be 333 per boat. However, three of the owners of multiple boat businesses did not have a captain for each vessel. At any one time, only 46 charter vessels could be used. Based on the total of 46 vessels capable of being used, the average number of fishermen carried during 1975 increases to 362 per boat. Although many of the charter vessels were licensed to carry a maximum of six passengers plus the captain and crew-member, operators indicated an average of four fishermen were carried on each charter.

As discussed, the respondents provided charter service to both bay and Gulf waters. To obtain information which may aid in the siting of artificial reefs, operators were asked to indicate the average one-way distances traveled during a bay and Gulf charter. The one-way distance traveled to a fishing site in bay waters ranged from 4 to 26 miles with over 50 percent of the operators traveling less than 10 miles. For Gulf fishing, the one-way distance traveled ranged from 5 to 50 miles with over 50 percent of the operators traveling less than 20 miles. Based on the number of charters in bay and Gulf waters, 24 percent of the operators chartered primarily to bay waters, 56 percent chartered primarily to Gulf waters, and 20 percent chartered approximately equally to bay and Gulf waters.

Respondents were asked to identify the principal target species of their charter fishing efforts (Table 1). Few

Table 1.—"Primary species sought" as reported by operators.

Species	Operators reporting (%)
Kingfish	78
Spotted seatrout	44
Red drum	39
Ling	32
Red snapper	27
Dolphin	15
Warsaw	12
Bonito	12
Sailfish	12
Grouper	7
Flounder	7
Jackfish	7
Tarpon	7
Tuna	5
Marlin	2

operators reported only one target species. Freeport, Tex., operators fished primarily for king mackerel, *Scomberomorus cavalla*, from May to September and red snapper, *Lutjanus campechanus*, during the remaining months. The Rockport and Port O'Connor, Tex., operators fished primarily for spotted seatrout, *Cynoscion nebulosus*, and red drum, *Sciaenops ocellata*. Port Aransas operators fished for king mackerel, *Scomberomorus cavalla*, with some spotted seatrout and red snapper, *Lutjanus campechanus*, fishing in the spring, fall, and winter months. Charter operators in the South Padre region fished for a variety of species including red drum, spotted seatrout, tarpon, *Megalops atlantica*, sailfish, *Istiophorus platypterus*, red snapper, and grouper, *Epinephelus* spp., and *Mycteroperca* spp.

### Charter Fishing Financial Information

Data were obtained on the fixed and variable expenses associated with the operation of charter vessels during 1975. For multiple businesses, expense data was obtained for each vessel. A comprehensive cost accounting form was used to insure the identification of the expenses incurred during 1975 with the exception of interest payments and income taxes. A revenue total for each vessel was calculated based on the number and type of fishing trips taken during 1975 and the cost of these trips based on the average number of customers each operator took fishing.

For the purposes of the financial analysis, three multiple-boat businesses which involved the use of only one boat at a time were considered single vessel operations. In these three cases, all revenue and expenditures associated with each vessel were attributed to a single hypothetical vessel. In essence, the revenues and costs incurred by these businesses were similar to the revenues and costs incurred by a single boat business. The per boat economic analysis was therefore based on 46 rather than 50 boats.

Based on these 46 vessels, the aver-

Table 2.—Pretax profitability per boat (n 46) in dollars.

	A <sup>1</sup>	B <sup>2</sup>	C <sup>3</sup>	D <sup>4</sup>	E <sup>5</sup>
	Total reported by operators	Total divided by no. of respondents	No. of respondents divided by total no. of boats	Total divided by total no. of boats	% of exp. to total exp. in col. D
Total					
Income	\$621,169.00	\$13,503.67	46/46	\$13,503.67	
Expenses					
Fixed					
Insurance	\$ 25,387.00	\$ 875.41	29/46	\$ 551.89	7.2
Advertising	5,791.00	206.82	28/46	125.89	1.6
Dock fees	24,740.00	634.36	39/46	537.83	7.0
Office rent	2,800.00	560.00	5/46	60.87	0.8
Local taxes	1,515.00	252.50	6/46	32.93	0.4
Depreciation	44,364.00	2,464.67	18/46	964.44	12.5
Total		\$ 4,993.76		\$ 2,273.85	29.5
Variable					
Commissions paid	\$ 1,527.00	\$ 305.40	5/46	\$ 33.20	0.4
Repairs	53,277.00	1,566.97	34/46	1,158.20	15.0
Fuel	78,370.00	1,703.70	46/46	1,703.70	22.1
Wages	66,958.00	2,911.22	23/46	1,455.61	18.9
Bait	20,476.00	819.04	25/46	445.13	5.8
Tackle	16,328.00	510.25	32/46	354.96	4.6
Ice	4,795.00	228.33	21/46	104.24	1.4
Other	7,835.00	1,305.83	6/46	170.33	2.2
Total		\$ 9,350.74		\$ 5,425.37	70.4
Total expenses		\$14,344.50		\$ 7,699.22	
Net profit (loss) before interest and taxes		(840.83)		\$ 5,804.45	

<sup>1</sup>Column A is the sum of all responses for each item.

<sup>2</sup>Column B is the total amount for a given item (Column A) divided by the number of boats incurring that expense (numerator of Column C).

<sup>3</sup>Column C is the number of boats incurring an expense divided by the total number of boats. For example, the total insurance expense incurred by all operators was \$25,387. Twenty-nine of the forty-six boats, 65.2 percent, incurred an insurance expense. The average premium for the twenty-nine boats was \$25,387/29 or \$875.41.

<sup>4</sup>Multiplying Column B by Column C gives Column D, the Total Expenditure figure divided by the total number of boats. Subtracting the expenses from the income in Column D gives the average net pretax and interest profit per boat.

<sup>5</sup>Column E shows the percentage an expense item is to the total expenses. This column should be viewed cautiously because charter operators simply approach their business differently. Several operators paid their dockage fees on a commission basis. Others paid higher dock fees but received free bookings, bait, and/or ice. Some value judgments were necessary to determine which category best fit the expense figure given by the operator.

age profit in 1975 was \$5,804 per boat (Column D, Table 2). This represents the average net profit before any interest payments and income taxes. Variable expenses (repairs, fuel, wages, bait, and tackle) accounted for approximately 70 percent of the total expenses associated with the operation of a Texas Gulf Coast charter boat in 1975. If the owner of a hypothetical average charter vessel had incurred the average of each of the expenses reported, he would have lost \$840.84 in 1975 (Column B, Table 2).

More detail on the profitability of operating a charter fishing vessel is shown in Table 3 where the net profits associated with vessels used for bay fishing, Gulf fishing, and a combination of bay/Gulf fishing are compared. In 1975, the 10 vessels used primarily for bay fishing returned an average net

profit of \$5,137 per boat; the 28 Gulf vessels average a net profit of \$4,265 per boat; and the eight vessels used for both bay and Gulf fishing averaged a net profit of \$12,317 per boat. Using the reported value of the charter vessels as a measure of the initial investment needed to begin a given type of charter operation, the initial investment is greatest for Gulf-only operations followed by combination bay/Gulf operations and bay-only operations.

### DISCUSSION

This paper provides a perspective on the dynamics of the Texas charter fishing industry which should be useful to fisheries managers. If the Gulf Regional Fishery Management Council identifies charter fishing as a managerially important fishery, an understanding of the nature and characteristics of

the charter industry throughout the Gulf region will be necessary to determine if and how particular fisheries resources will be allocated to this fishing sector.

Regional differences in charter fishing catch and effort may require that measures like catch quotas or season limits (if considered at all) be specifically designed for particular areas or States within the region. Different solutions may be needed because Texas and Florida charter industries, for example, may be different in terms of the scale of the businesses involved, operating season, and the magnitude and composition of catch.

Practically no information is available on the size and composition of the Texas charter fishing catch. Although a creel survey has been conducted in several Texas bay systems (Heffernan et al., 1976), data specific to charter boats have been collected at only one location, and no catch data have been collected for offshore Gulf charter fishing. Identification of the charter fishing catch, however, is important to determine if catch limits are necessary. Besides harvest concerns, the Fishery Conservation and Management Act directs the Regional Councils to consider economic and social matters.

This study indicates that the Texas charter fishing industry is made up of small independent businesses which operate at moderate to high profit margins but which do not yield sufficient cash to keep a large number of operators in business full time. This may be due in part to the relatively short charter fishing season, as determined by customer demand for charter fishing on the Texas coast. Although the industry lacks formal organization at the State and local level, there is a substantial degree of informal organization in local communities as evidenced by customer referrals among operators and related businesses. It appears that the Texas charter industry has developed more as a result of the life style which charter fishing affords than solely out of any monetary benefits which may accrue to its members.

Although the exact relationship of

Table 3.—Comparative financial data by type of charter fishing operator.

Item	Bay only	Gulf only	Bay/Gulf combination
No. of boats	10	28	8
Income	\$8,454.60	\$14,251.46	\$17,198.13
Expenses			
Fixed			
Insurance	130.20	757.32	210.00
Advertising	41.50	148.21	153.31
Dock fees	270.40	574.21	661.25
Office rent	5.00	98.21	0.00
Local taxes	102.50	14.82	6.25
Depreciation	662.00	1,240.86	375.00
Total	\$1,211.60	\$ 2,833.63	\$ 1,405.81
Variable			
Commissions (pd.)	89.70	0.00	78.75
Repairs	602.30	1,439.43	868.75
Fuel	1,089.10	2,055.32	1,241.25
Wages	71.00	2,366.00	0.00
Bait	109.50	515.39	606.25
Tackle	116.80	384.64	506.25
Ice	23.90	113.39	173.88
Other	3.50	278.57	0.00
Total	\$2,105.80	\$ 7,152.74	\$ 3,475.13
Total (all expenses)	\$3,317.40	\$ 9,986.37	\$ 4,880.94
Net profit before interest and taxes	\$5,137.20	\$ 4,265.09	\$12,317.19
Total boat value	\$9,555.00	\$25,554.00	\$11,112.00
Trips	115.70	68.00	134.12
Pretax profit <sup>1</sup> margin per trip	54.87	104.39	102.32
Trips required to <sup>2</sup> break even per year	22	28	14
Cash flow per year <sup>3</sup>	\$5,799.20	\$ 5,505.95	\$12,692.19
<sup>1</sup> Income—total variable expenses			
trips			

<sup>2</sup> Fixed expenses

Pretax profit margin per trip

<sup>3</sup>Net profit before interest and taxes plus depreciation.

charter fishing and coastal tourism was not specifically determined in this study, the degree of informal cooperation between the charter industry and other tourism elements like hotels, restaurants, and sport shops suggests the charter industry is an integral part of coastal tourism, particularly in small communities.

Study findings suggest several points which will require consideration in the formulation of any management regulations for the Texas charter fishing industry. There is the basic question of

how the charter fishing industry should be viewed in the context of fisheries management. Should charter fishing be managed as a commercial or recreational fishing industry? Since the Texas charter boat operators receive economic benefits from the utilization of common property fisheries resources, the industry may be, and often is in many areas, viewed as a form of commercial fishing. However, the methods and techniques of charter fishing are indistinguishable from those of the recreational fisherman who is able to purchase and use his own vessel. The Texas charter fishing industry can therefore be viewed as a recreational service industry which provides fishermen with a means of access (for a fee) to fisheries resources.

How the charter fishing industry is regulated may have a direct influence on the industry's viability. It is difficult to determine what the impact of catch quotas and other regulations would be on the industry. Since the economic viability of the industry is partially related to customer demand, the imposition of quotas on the number, size, or species of fish which may be taken may or may not act to discourage this demand. Other management measures such as designating a charter fishing season or controlling the number of charters an operator can take are more easily related to the industry's viability. For example, the Texas charter fishing season was found to be essentially 5 months when charter businesses received the bulk of their revenue. Reducing the season or the number of charters an operator could take by regulation could be critical to some operators. The marginal operators would be unable to compete and would be forced out of the industry. Although charter operators indicated monetary benefits were not a primary motive for their involvement in the industry, it is unlikely that most would continue to operate if confronted with no chance of economic gain or certain economic loss.

Another important factor is the magnitude of the variable operating expenses. As noted, approximately 70

percent of the operating expenses incurred by respondents during 1975 were variable costs. Rising fuel costs combined with a limited season again will surely force some operators out of business. This will reduce the economic benefits which accrue to local communities as a result of charter operations.

This study also points to the need for a mechanism for monitoring changes in the size and distribution of the Texas charter boat fishing industry. Due to the absence of a continuous licensing or registration system to identify members of the Texas charter fishing industry, this study was limited to a single study year. To consider the continuing impacts of the charter industry, it is important that managers be able to identify

whether the industry is growing or declining by location. This could be easily achieved by altering the current Texas guide license so that charter fishing operators could be differentiated from the variety of activities presently covered by the guide license.

#### ACKNOWLEDGMENTS

This research was supported by the Texas Agriculture Experiment Station and the Texas A&M Sea Grant Program.

#### LITERATURE CITED

- Brown, E. E., and F. J. Holemo. 1975. An economic analysis of Georgia's marine charter boat fishing industry. *Mar. Fish. Rev.* 37(4):11-12.  
Bureau of Sport Fisheries and Wildlife. 1972.

The 1970 national survey of fishing and hunting. U.S. Fish Wildl. Serv. Resour. Publ. 95, 108 p.

Carlton, F. E. 1975. Recreational fishing interests—conflicts and cooperation. To stem the tide effective State marine fisheries management. *Counc. State Gov., Lexington, Ky.*, p. 72-81.

Deuel, D. G. 1973. The 1970 salt-water angling survey, U.S. Dep. Commer., NOAA, Natl. Mar. Fish. Serv., *Curr. Fish. Stat.* 6200, 54 p.

Ditton, R. B., W. A. Strang, and M. T. Dittrich. 1975. Wisconsin's Lake Michigan charter fishing industry. *Advis. Rep. #11. Univ. Wis. Sea Grant Rep. WIS-SG-75-411, Univ. Wis., Madison.* 21 p.

Heffernan, T. L., A. W. Green, L. W. McEachron, M. G. Weixelman, P. C. Hammer-schmidt, and R. A. Harrington. 1976. Survey of finfish harvest in selected Texas bays. *Coastal Fish. Div., Tex. Parks Wildl. Dep.*, 116 p.

Irby, A. W., Jr. 1974. A fishing survey of Choctawhatchee Bay and adjacent Gulf of Mexico waters. *Fla. Mar. Res. Publ. No. 2, Fla. Dep. Nat. Resour., St. Petersburg.* 26 p.

*MFR Paper 1318. From Marine Fisheries Review, Vol. 40, No. 8, August 1978. Copies of this paper, in limited numbers, are available from D822, User Services Branch, Environmental Science Information Center, NOAA, Rockville, MD 20852. Copies of Marine Fisheries Review are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402 for \$1.10 each.*