A SURVEY OF SPORT FISHING RELATED EXPENDITURES IN A SELECTED PORTION OF THE MISSISSIPPI GULF COAST.

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A SURVEY OF SPORT FISHING RELATED EXPENDITURES IN A SELECTED PORTION OF THE MISSISSIPPI GULF COAST

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by

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PREFACE

This report is based on one phase of a project undertaken jointly by the Gulf Coast Research Laboratory and the University of Southern Mississippi's Bureau of Business Research. The study was sponsored by the Mississippi-Alabama Sea Grant Consortium, the Gulf Coast Research Laboratory and the University of Southern Mississippi and was an effort to gain needed information on Sport fishing in the Gulf waters of Mississippi.

Many people contributed to the completion of this study. The gathering of most of the data for the economic phase and the ongoing biological phase of the study were under the supervision of Mr. Tom McIlwain of the Gulf Coast Research Laboratory. He provided much invaluable assistance in many situations. We wish to acknowledge the many fishermen who took time from their fishing to complete the interviews necessary for the study. The officials of the fishing rodeos on the Coast were most helpful and cooperative. Programming work was done by Steve Stewart.

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INTRODUCTION

Background

Sport fishing activities on the waters along the Mississippi Gulf Coast contribute significantly to the economy of the three Mississippi coastal counties. Sport fishermen purchase bait, tackle, boats and motors, etc., thus contributing to local sales and income. Some of the sport fishermen are not residents of the area, and their expenditures in the area represent an increase in the economic base of the area. Since the expenditures of the nonlocal fishermen result in an increase in the area's basic income, their expenditures are especially significant and important to the area.¹ A sample of fishermen in the field revealed that approximately 12.5 percent of the fishermen in the study area were not residents of the three-county coastal area. Because of the potential and actual importance of this industry, this study was undertaken.

¹The terms economic base and basic income are derived from the literature dealing with economic base theory. See, for example, Charles M. Tiebout, <u>The Community Economic Base Study</u>, (New York: The Committee for Economic Development, 1962).

Purpose

The objective of this study has been to provide some information which could be used to help assess the contribution of sport fishing activities within a selected study area upon the local economy within which the study area is located. It is hoped that knowledge of the economic impact and the relative distribution of the impact will prove helpful to political subdivisions, economic planning and development groups, promotional organizations, as well as groups interested in promoting proper management of the sport fishery.

Specifically, this study attempts to answer such questions as the following:

- 1. What is the average annual fishing expenditure of a fisherman in the study area?
- 2. What is the average expenditure per fishing trip in the study area?
- 3. What is the average composition of fishing related expenditures in the study area?
- 4. In which cities do most fishing related expenditures take place? and,
- 5. How much do the fishing rodeos contribute to the economy of the area?

Hopefully, the answer to these and other questions, along with the biological data being gathered in another phase of the study, will provide some of the input and some of the motivation needed to initiate a program of sound management practices for the sport fishery on the Mississippi Gulf Coast. Two important components of the sport fishing sector of the economy are not included due to time and financial limitations. These are the sport fishing activity connected with the charter boat business and fishing off of piers, bridges, and the shore.

Scope

The study area is comprised of the entire Biloxi Bay Estuary and approximately one-half mile of each of its major fresh water tributaries. Also, included is the adjacent portion of the Mississippi Sound along with Graveline Bayou. Within the Mississippi Sound, the barrier islands of Ship Island and Horn Island were the southern limits of the study area. The western limit was established by an imaginary line extending from the Broadwater Beach Hotel Marina to the east end of Ship Island, while the eastern limit was established by extending an imaginary line from Graveline Bayou to the east end of Horn Island. A map of the study area is shown in Figure 1. A detailed description of the study area and its characteristics can be found in Jackson (1972).²

The bulk of the study covers the time period composed of the last six months of 1973 although some data were gathered for the year 1972. It would have been desirable for the study to cover a complete year, but time and monetary constraints prohibited this.

²Gerry A. Jackson, "A Sport Fishing Survey of Biloxi Bay and the Adjacent Mississippi Sound," Masters Thesis, Mississippi State University, December, 1972. pp. 7-13.

FIGURE 1

STUDY AREA AND ITS BOUNDARIES



Methodology

Data and information needed to achieve the study objective of assessing the economic impact of sport fishing in the study area were obtained by field interviews of fishermen in the study area. (See Appendix A). Interviews were conducted with all fishermen in the study area at random times throughout the study period. Data on average expenditures per fishermen were extrapolated to obtain the estimated total expenditures by all fishermen in the study area.

The information regarding the fishing rodeos was obtained by mailing questionnaires to the registrants of the Ocean Springs and Biloxi Rodeos and by personal interviews of fishermen in the Mississippi Deep Sea Fishing Rodeo. The rodeo results are not confined to the study area as described above, but are applicable to a wider area. This is especially true of the Mississippi Deep Sea Fishing Rodeo results.

The analysis of the results of many of the survey questions are based on certain assumptions. Most of these are enumerated in the text. A key assumption is that the survey results are random or, more specifically, that the expenditures of fishermen who were not surveyed do not differ except by chance from the expenditures of the fishermen surveyed.

SURVEY RESULTS: EXPENDITURES OF SPORT FISHERMEN IN THE STUDY AREA

Based on random interviews with fishermen in the study area, daily average expenditures per fishermen were calculated. The results are shown in Table 1. (See questionnaire in Appendix A). The average daily expenditure per fisherman in the study area during 1973 was \$22.16. The largest item was the cost (on a per fishing day basis) of durable fishing items such as boats, motors, trailers, etc. This involved an average daily expenditure of \$7.00 per fishing day and accounted for 31.6 percent of all sport fishing expenditures. (See Table 1 and Figure 1).

The second largest expense category for the fishermen was bait and tackle which accounted for 24.9 percent of the average daily expenditure--an absolute per-day expenditure of \$5.52. Third in importance was the "food" category which accounted, on the average, for 5.6 percent of the daily expenditures with a dollar amount of \$3.46. The "other" or miscellaneous category, which would include items such as beer or ice, is next in importance with average expenditures per fisherman of \$3.18. This category accounts for roughly 14.3 percent of daily expenditures. The average fisherman only

spent \$.92 per day for lodging. This relatively small amount reflects the local residence of most fishermen. Over 87 percent of the fishermen were local residents. Boat rental, gas, motors, etc., only accounted for \$.68 per day. This reflects the fact that most boats were owned by the fishermen as opposed to being rented.

TABLE 1

AVERAGE DAILY EXPENDITURES AND COMPOSITION OF EXPENDITURES BY FISHERMEN IN THE STUDY AREA, 1973

	<u></u>	Percent
Item	Amount	of Total
Food	\$ 3.46	15.6
Lodging	.92	4.2
Transportation	1.40	6.3
Boat Rental, Gas, Motors, etc.	.68	3.1
Bait, Tackle, etc.	5.52	24.9
Other	3.18	14.3
Purchase of Durable Items (Boats, motors, etc.)	7.00	31.6
	\$22.16	100.0

Estimates of expenditures on durable items were calculated as follows: Each fisherman interviewed was asked to estimate his annual expenditures for durable fishing items during the previous year (1972). While the answers were obviously far from precise in any particular case, much of total error should cancel out as some fishermen will estimate high while others estimate low. Since there is no evidence that the estimates were biased one way or the other, this seems like a reasonable operational assumption. It was also FIGURE 2

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WHERE THE AVERAGE DOLLAR SPENT BY SPORT FISHERMEN GOES



assumed that the proportion of fishermen making large non-annual purchases of items such as boats and motors is constant over time.

Based on the operational assumption that the proportion of fishermen buying new boats, motors, trailers, and other durable fishing equipment is rather constant over time, and that 1972 is a representative year, then the estimated average amount spent per fisherman per day for such durable goods was \$7.00.

TABLE 2

	Estimated
Month	Fishermen
January	379
February	616
March	566
April	480
May	999
June	3,277
July	2,462
August	1,416
September	2,411
October	5,680
November	3,215
December	1,764
Total	23,265

ESTIMATED NUMBER OF SPORT FISHERMEN IN STUDY AREA BY MONTH, 1973

Source: Survey of Fishermen.

The total economic impact of sport fishing within the study area by category of expenditure is shown in Table 3. This table is based on the estimated total number of fishermen in the study area as shown in Table 2 and the average expenditures per fisherman shown in Table 1. Based on the estimate of 23,265 fishermen days, direct fishing related expenditures in the study area were an estimated \$515,553 during 1973. The bulk of these expenditures were for bait, tackle, etc. (\$128,400) and durable fishing equipment (\$163,000). The next largest category was the food category with \$80,500 spent in that category.

TABLE 3

TOTAL ECONOMIC IMPACT OF SPORT FISHING IN THE STUDY AREA BY CATEGORY OF EXPENDITURE

	Estimated Annual
Item	Expenditures
	· · · · · · · · · · · · · · · · · · ·
Food	\$80,497
Lodging	21,404
Transportation	32,571
Boat Rental, Gas, Motors, etc.	15,820
Bait, Tackle, etc.	128, 423
Durable Fishing Equipment Purchases	162,855
Other	73,983
Total	\$515,553

An attempt was made to determine the location of most fishing expenditures. The survey results indicated that most sales were in Biloxi (47.2%) or Ocean Springs (23.5%) with Pascagoula being the recipient of 8.9% of the fishing expenditures. The remaining expenditures were scattered throughout several cities. These results probably reflect the location of the study area and the fact that most fishermen are local residents.

RESULTS: FISHING RODEO SURVEY

The results of the survey of fishing rodeos is summarized in Table 4. The information in Table 4 was derived from questionnaires completed by rodeo participants (See Appendix B) and from information furnished by the respective rodeo committees.

The Mississippi Deep Sea Fishing Rodeo held in Gulfport in July was the biggest in terms of number of fishermen, average number of days fished, expenditures per item, and total expenditures. An estimated 5,400 people fished in this rodeo. Part of the explanation for the greater average expenditures per fishermen in this rodeo is that on the average each fisherman spends a greater number of days fishing in this rodeo. Also, a greater proportion of the fishermen in this rodeo were non-residents of the area (22% were either from out of the state or from a non-coast county as opposed to 11% for the Biloxi Rodeo and 2% for the Ocean Springs Rodeo), and, hence, recorded relatively large expenditures for food and lodging. The greater numbers of fishermen seeking the large trophy fish which are caught out in deeper water resulted in relatively large amounts being spent on boat rental, gas, ice and bait, and tackle. The total estimated expenditures by fishermen in the Mississippi Deep Sea Fishing Rodeo during 1973 is 824,000. Over half (54%) of this total resulted from expenditures for two categories--boat rental, gas, etc. (40%) and bait and tackle (14%).

TABLE 4

EXPENDITURES AND DAYS FISHED, MISSISSIPPI DEEP SEA FISHING RODEO, BILOXI RODEO, AND OCEAN SPRINGS RODEO, 1973

					Mississip	pi Deep
	Ocean Sprin	gs Rodeo	Biloxi B	lodeo	Sea Fishin	ig Rodeo
	Avg. Per	T'tl for	Avg. Per	T'tl for	Avg. Per	T'tl for
Item	Fisherman	Rodeo	Fisherman	Rodeo	Fisherman	Rodeo
	1a	2b	3a	4b	5a	6b
Food	\$ 9.02	\$1,984	\$20.67	\$25,010	\$36.15	\$195,210
Lodging	.16	350	4.34	5,251	7.60	41,040
Transportation	2,18	480	6.76	8,180	11.48	61,992
Boat Rental, Gas etc.	14.97	3,294	28.48	34,460	61.64	332,857
Bait, Tackle, Etc.	9.11	2,004	11.21	13, 564	21.91	1 18, 314
Other	2.11	464	4.41	5,336	13.82	74,623
Total Per Rodeo	\$3 7. 55	\$8,260	\$75. 87	\$91,801	\$152.60	\$824 , 040
Avg. Days Fished	2.2		2.3		3.5	
Estimated No. of Fishermen	220 ^C		1,210 ^C		5,400 ^d	
Percentage of non- residents of Harrison, Han- cock, & Jackson Counties	2%		11%	·	22%	

^aBased on survey of rodeo fishermen.

^bColumn (a) x estimated number of fishermen.

^cEstimated from rodeo registration records.

^dEstimated by multiplying the number of invitations by the proportion of invitees who fished based on a sample of invitees.

The Biloxi Rodeo was the second largest of the three rodeos surveyed, but was considerably smaller than the Mississippi Deep Sea Fishing Rodeo in terms of expenditures by fishermen and the number of fishermen participating in the rodeo. The estimated number of fishermen in the Biloxi Rodeo was 1,210 with the average number of days spent fishing being 2.3. The total amount spent by fishermen during the rodeo was estimated at \$71,800 with the amount spent per fishermen being \$75.87--a figure which is roughly one-half that of the larger rodeo. Again, over half of the expenditures (52%) were for boat rental, gas, bait and tackle, etc.

The smallest of the three rodeos surveyed was the Ocean Springs Rodeo with only 220 estimated fishermen and an average fishing time of 2.2 days. The estimated average expenditures per fisherman was \$37.55 with total expenditures estimated at \$8,300. Since this rodeo was much more "local" in nature, the proportion of expenditures on such items as lodging and transportation is lower than for the other rodeos, and expenditures for bait, tackle, boat, motor, gas, etc., make up a larger proportion (64%) of the total.

The direct expenditures of fishermen in the three rodeos surveyed totaled almost \$960,000. This figure should probably be viewed as the lower limit of the contribution of fishing rodeos to the coast economy. There are several reasons for feeling that this is a conservative estimate. First, there were some other small rodeos on the coast which were not included in the survey. All of them are relatively small, but their total

impact should not be ignored. Second, the data include only the direct expenditures of rodeo participants; sales at concession stands and other expenditures by non-fishing rodeo visitors are not included. The latter expenditures are probably quite large--especially for the Mississippi Deep Sea Fishing Rodeo.

LIMITATIONS OF THIS SURVEY

The usefulness of the results of this study is limited because of shortcomings in the data. These limitations are discussed below. The fact that the study area is an arbitrarily defined area that bears no relevant relation to any existing state, county, or municipal geographic area imposes a severe limitation upon the results. There is no currently existing entity to which one can say that the results apply. The results do not cover all of the Mississippi Gulf Coast area, yet they exceed Harrison County and apply to part of Jackson County. Hancock County waters are not included.

A second limitation involves the exclusion of shore, pier, and bridge fishing. Since the results were confined to boat fishing, a significant portion of the fishing population was excluded. Jackson's study coupled with aerial surveys indicate that non-boat fishing is important, but data are not available on what these fishermen spend or even how many fishermen there are.³

A third and very important limitation is the inability to obtain data on the charterboat business. The charterboat business is significant for

³Ibid.

two reasons: (1) Fishermen utilizing the charterboats have much higher expenditures than those using smaller boats, and (2) It is highly probable that the proportion of non-local fishermen to total fishermen is higher than for the fishing population in the study area. Thus, in terms of <u>basic</u> income generated, the charterboat industry is relatively important.⁴ The fact that most charters operate in water outside the study area makes it unlikely that they were adequately represented in the survey results despite the fact that they generate a large volume of fishing related expenditures in the three coast counties.

Because of the above considerations, it is probable that the results as to the number of fishermen and expenditures per fisherman are conservative, and it is important to remember that the results and conclusions of this study apply strictly to a limited study area and a limited class of fishermen.

⁴The term basic income is used here in economic base theory sense.

SUMMARY AND RECOMMENDATIONS

The survey of fishermen in the Mississippi Sound area revealed that the average fishermen in that area spent just over \$22 per fishing day in his endeavor to catch fish. However, the survey also revealed that over 87 percent of these fishermen were local residents (Hancock, Harrison, or Jackson County). The high proportion of local residents among the fishermen indicates that the contribution of the sport fishing industry to the local economic base may not be very great and is probably much less than is commonly assumed. This conclusion must be made with some reservation due to the limitations of the study. More specifically, because the charterboat business was not included, and because that phase of the industry is probably the primary generator of non-local expenditures, the total impact of sport fishing on the economic base of the community is probably understated considerably.

One recommendation to come out of this study is that a serious attempt to determine the local economic impact of the sport rishing industry should start with and concentrate upon the charterboat business.

The survey of the fishing rodeos indicates that a large fishing rodeo such as the Mississippi Deep Sea Fishing Rodeo has a considerable

economic impact with direct fishing related expenditures of around \$800,000 generated by the event.

Fear has been expressed in some quarters that a decline in the sport fishing industry would severely depress the coastal area economy. However, in view of the findings of this study, these fears appear to be unwarranted. Only 12.5% of the fishermen are non-residents whose expenditures result in new income in the area's income stream. Since the bulk of the industry depends on the expenditure of local residents, a decline in fishing and fishing expenditure will likely be accompanied by an increase in spending in other sectors of the economy as these local residents transfer their sport fishing expenditures to other sectors. It is unlikely that they would withdraw the entire amount from circulation. Thus, while particular businesses catering to the fisherman might suffer, other business will find their sales going up. Hence, the net effect of a decline in the sport fishing industry is likely to be much smaller than one would at first anticipate.

On the other hand, if the fishing industry is to be boosted as a means of improving the local economy, the key is to increase the number of non-local fishermen who now represent only 12.5% of the fishermen in the study area. The potential for this is present since the area is a big tourist center already. However, if more of this tourist trade is to be channeled into the fishing industry, or more important, if the fishing industry is to be used to boost tourist trade,

a concentrated advertising effort will probably be required. As far as can be ascertained, there is little advertising outside the local area by the local charterboat people. If the area is to utilize its sport fishing potential to increase economic activity, it will probably have to advertise available sport fishing opportunities much more so than it currently does. An example of the potential gain from increasing non-local fishing can be found in these survey results.

The data revealed that the average amount spent for lodging was only \$.92. This indicates that the motel-hotel industry on the Coast is not benefiting significantly from the fishing industry. Further, the motelhotel industry will not benefit much from the sport fishing industry unless the number of non-local fishermen can be increased. The small amount spent per day by the average fisherman for lodging is simply a reflection of the fact that the great majority (87%) of the fishermen are local residents. This \$.92 per day average may be contrasted with the \$2.17 per day average spent for lodging by fishermen in the Mississippi Deep Sea Fishing Rodeo where 22 percent of the fishermen were non-local residents.

During the survey, non-resident fishermen were asked why they had chosen this area for fishing. Over 95% said that it was because of previous fishing trips. This has several implications. It implies that the non-resident fishing population is basically made up of former residents (including servicemen stationed at Keesler) who once fished in the area

or the few people who are not now and never have been residents but who have fished in the area. None of the fishermen in the sample were attracted to the area because of TV, radio, newspaper, and magazine advertisements designed to attract fishermen to the area. However, it is probable that very little of this type of advertising has been undertaken. Hence, the reason it hasn't worked may be that it has not been seriously tried. If it has been tried, these survey results do not imply any success, and other methods of attracting non-local fishermen should be sought.

APPENDIX A

Fishermen

- 1) Approximately how many days each year do you fish in the Biloxi Bay area?
- 2) Please estimate your total expenditures for this fishing trip.
- 3) Please allocate your total expenditures among the following items:

Av	erage Expenditures	s City in which most Expenditure
A) General	Per Fishing Trip	on this item take place
Food	<u></u>	
Lodging		
Transportation		
Boat Rental		
Bait & Tackle		
Other		
	How much spent	City in which most Expenditure
 B) Fishing Equipment Rods, Reels, 	last year	on this item take place
Lures, Poles, etc.	·	
Boats, Motors,		
Trailers, etc.		- <u></u>
Other	~	
4) What were your estimat year?	ed <u>total</u> annual exp	penditures for fishing last
Non-Residents		
5) How many days are invo	olved in this trip?_	
6) What motivated you to o the appropriate and Past fishing trip Recommendation Newspaper adver Radio or TV adv	come to the Biloxi H swer) s here s of friends and re rtisement ertisement	Bay area to fish: (check elatives
Magazine advert	isement (name of n	magazine)
State or local par	mphlets	
Passing through		
Other (specify)		

APPENDIX B

BUREAU OF BUSINESS RESEARCH SPORT FISHING SURVEY QUESTIONNAIRE FOR RODEO PARTICIPANTS

This questionnaire is part of a sport fishing survey designed to determine the <u>Economic</u> impact of sport fishing on the Mississippi Gulf Coast. It is funded under the Federal Sea Grant Program. All replies are anonymous and confidential.

Residence

- A. Everybody
 - 1) Estimate your total expenditures in connection with this fishing rodeo.

2) Allocate your total expenditures for this rodeo among the following items:

a)	General	Expenditures	Expenditures on this item took place
	Food		
	Lodging	·	<u></u>
÷	Boat Rental and/or		_
	Gas		
	Bait & Tackle	·	<u></u>
	Other		

City in which most

3) Please describe your catch today at the rodeo.

Type of fish	# Caught	Size (Lbs-est. liveweight)
	· · · · · · · · · · · · · · · · · · ·	
		······································

- 4) Approximately how many days this year will you spend at this fishing rodeo?
- B. For Non-Residents of Mississippi
 - 5) How many days do you plan to devote to this fishing trip?
 - 6) What motivated you to come to the Biloxi Bay area to this fishing rodeo? (check the appropriate answer)

Past fishing trips here

Recommendations of friends and relatives

- Newspaper Advertisement
- Radio or TV advertisement
- Magazine advertisement (name of magazine)

	State of	r local	pamphlets
	Passing	through	n

Other (Specify)

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