

STATISTICS ON THE SPORT FISHERY OF THE
MOBILE DELTA DURING THE PERIOD OF
JULY 1, 1963, TO JUNE 30, 1964

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A Cooperative Project of the Alabama Department of Conservation
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ABSTRACT

The Mobile Delta was described in this study as the water area in Alabama lying between the Mobile Causeway on the south and Highway 84 bridge on the Tombigbee River near Jackson, Alabama and Choctaw Bluff, Alabama on the Alabama River in Clark County on the north. It consisted of 31,549 acres of water lying in a land area approximately 10 by 60 miles. The delta was divided into seven areas for the creel census.

A creel census of the sport fishery was made in the area during July 1, 1963, to June 30, 1964. During this period a total of 49,922 sport fishermen fished the area and caught 294,043 fish weighing 112,325.4 pounds. Each angler spent an average of 4.3 hours to catch 5.9 fish weighing 2.3 pounds or caught 1.4 fish per hour weighing 0.5 pound. At an estimated cost of \$3.41 per fishing trip, the value of this sport fishery in the Mobile Delta was \$170,234 for one year. The catch per acre was 9.3 fish weighing 3.6 pounds. Fishing pressure was 1.6 fisherman trips per acre.

A total of 10 saltwater species, 16 freshwater game species and 15 freshwater non-game species entered the catch. Largemouth bass (*Micropterus salmoides*), bluegill (*Lepomis macrochirus*) and redear sunfish (*L. microlophus*) accounted for 18.6, 23.7, and 16.6 percent by weight of the catch, respectively, while the other 38 species accounted for the remaining 41.1 percent.

INTRODUCTION

On May 24, 1963, the Alabama Department of Conservation entered into a cooperative agreement with the Alabama Water Improvement Commission to conduct a creel census of the sport fishery in the Mobile Delta. The Water Improvement Commission provided partial financial support for this study.

Description of the Mobile Delta and sample areas

For this report the area referred to as the Mobile Delta was the water area in Alabama between the Mobile Causeway and Highway 84 bridge near Jackson, Alabama on the Tombigbee River and Choctaw Bluff, Alabama on the Alabama River. The numerous bays, lakes, creeks, rivers, and bayous that comprised the Mobile Delta were in a land area approximately 60 miles by 10 miles. The southernmost eight miles of this area was a treeless marsh habitat while the remainder of the delta waters were bordered by dense hardwood forest.

There were approximately 31,549 acres of water in the Mobile Delta which consisted of approximately 17,362 acres of major rivers,

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11,831 acres of bays, bayous and natural lakes and 2,356 acres of major and minor creeks. The average depths of the bays and inland lakes ranged from 2 to 11 feet.

The waters of the lower delta were subjected to the influx of saltwater. Salinity ranged from 0.0 to 0.1 ppt (parts per thousand) in the spring and from 3 to 5 ppt in the late summer and fall. Saltwater intrusion has been recorded upstream to mile 21 on the Mobile River.

The average daily tidal fluctuation was approximately 1.6 feet. The tides influenced water depth over nearly the entire delta area. In fact, at mile 41 on the Mobile River during low water stages there was only 0.4 of a foot less fluctuation than at mile 0.0.

Because of the large number of bays, creeks, lakes and rivers, the delta was divided into the following seven areas for this study:

Area I—Township 4 South

Area II—Township 3 South

Area III—Township 2 South

Area IV—Township 1 South

Area V—Township 1 North

Area VI—The Tombigbee River included in T2N and upstream to Highway 84 bridge near Jackson

Area VII—The Alabama River included in T2N and upstream to Choctaw Bluff in Clarke County, plus the Alabama River Cut-off

METHODS

Sport fishermen were interviewed on the rivers by a creel census clerk who was instructed in the identification of the fish of the region. This clerk was equipped with a truck, boat, motor, record forms and scales. The number and weight of fish caught and the location where caught were recorded along with other pertinent data.

The interviews were conducted on the average of 5 days per week during the creel census period of July 1, 1963 to June 30, 1964, with the exception of the months of December, January, and February, when interviews were conducted on the average of 3 days per week. The days of the week that the interviews were made were randomly selected for each week at the beginning of the creel census and the areas randomly allotted to the days.

An area was covered a single time in the course of a day as the linear distance traveled varied from 60 to 120 miles per area. The launching points for each area were systematically allotted and the creel census clerk instructed to vary his route to insure that the same portions of the area would not be traversed at the same hour each sample day. In certain instances it was necessary to retrace portions of the route. In these cases, the creel census clerk interviewed only those who moved into the area after he had previously traversed that portion of the route.

An average of one day per seven sample days was spent at fishing camps to collect data on completed fishing trips for comparison to partial trip data. Data were tabulated daily by the creel census clerk.

RESULTS AND DISCUSSION

A total of 216 calendar days was spent interviewing fishermen (Table 1). Of these, 183 days were spent interviewing 3,644 fishermen while they fished and 33 days were spent interviewing 204 fishermen at camps after their fishing trips were completed. A total of 11 scheduled sample days were lost, primarily due to engine failure of the outboard motor and/or truck.

Of the 3,644 anglers contacted while they were fishing, 2,744 or 75.3 percent were males and 870 or 24.7 percent were females. Of these 3,644 anglers, 644 or 17.7 percent were bank fishermen, 8 or 0.2 percent were wading fishermen and 2,992 or 82.1 percent were boat fishermen. Although the number of fishermen per boat varied from one to five, the average was 2.0.

Of the 3,644 anglers, 2,039 or 55.9 percent held state rod and reel licenses, 706 or 19.4 percent had resident pole and line licenses, 153 or

4.2 percent had lifetime licenses, while 220 had non-resident licenses and 525 had no license. Of the 220 fishermen holding non-resident licenses, 30 had non-resident trip-licenses and 190 had non-resident annual licenses, comprising 0.8 and 5.2 percent, respectively, of the total fishermen. Of the 525 fishermen without licenses, 293 were less than

Table 1. Number of days sampled, fishermen checked and the calculated number of fisherman - trips in the Mobile Delta north of the Mobile Causeway during the period of July 1, 1963 to June 30, 1964.

Area	Number of days sampled		Number of fishermen checked by boat			Average number of fishermen checked per day	Calculated number of fisherman - trips during July, 1963 - June, 1964		
	At camp	By boat	Bank	Boat	Wading				
I	5	29	34	463	1,040	8	1,511	52.1	19,068.6
II	4	24	28	33	691	0	724	30.2	11,042.2
III	7	27	34	21	392	0	413	15.3	5,599.8
IV	4	24	28	6	191	0	197	8.2	3,004.9
V	4	24	28	4	219	0	223	9.3	3,400.1
VI	4	30	34	35	222	0	257	8.6	3,136.6
VII	5	25	30	82	237	0	319	12.8	4,670.2
Total	33	183	216	644	2,992	8	3,644	136.4	49,922.4

16 years of age, 195 were county resident pole and line fishermen not required to purchase licenses, and 38 violators of the licensing regulations, which amounted to 8.0, 5.4 and 1.0 percent, respectively, of the total anglers.

Table 1, in addition to presenting the number of fishermen checked and number of sampling days, gives the average number of fishermen checked per day in each area and the calculated number of fishing trips in each area during the creel census period (July 1, 1963 to June 30, 1964). The number of fisherman-trips was calculated by multiplying the number of calendar days (366-leap year) by the average number of fishermen checked in each area per day and totaling the trips from each area yielding 49,922 fisherman-trips in the Mobile Delta during the one-year study period. This amounted to 1.6 fisherman-trips per acre. These fisherman-trips had a value of \$170,234, based on an estimated value of \$3.41 per trip (computed from the 1955 Survey of Hunters and Fishermen in Alabama which was made by Crossley, S-D Surveys, Inc. of New York, New York).

A breakdown of the yearly catch of the 3,644 fishermen interviewed as they were fishing is presented in Table 2. These fishermen fished 10,730 hours and caught 14,584 fish weighing 5,629.5 pounds. This catch was separated into saltwater fish, freshwater game fish, and freshwater non-game fish (Table 5). The majority of the fishing effort was in Areas I and II with 3,924 and 2,224 hours, respectively. This was undoubtedly because of the relatively short driving distance from Mobile and because of the numerous public access areas along the Mobile Causeway.

The average catch per hour was 1.4 fish weighing 0.5 pound. The catch per fisherman-trip was 5.9 fish weighing 2.3 pounds with the average trip lasting 4.3 hours. The catch per acre was 9.3 fish weighing 3.6 pounds. While the catch per hour and per trip was about average from natural, unmanaged waters (Barkley, 1960; Burress, 1961; Davis and Hughes, 1964), the catch per acre was much below the values given by these authors. The authors felt that this low catch per acre (3.6 pounds) was due primarily to light fishing pressure (1.6 fisherman-trips per acre) resulting from the abundance of natural fishing waters in the immediate vicinity of the study area. In addition to the Mobile Delta as defined in this study, there was an additional 450,000 acres of estuarine water areas in Mobile and Baldwin Counties, including the Gulf Coast.

The fishing success was best in February when 90.5 percent of the anglers were successful. Of the 204 anglers who had completed their trips, 169 anglers or 82.8 percent were successful. Monthly estimates of the number of fisherman trips and the number and weight of fish caught are presented in Table 3. The number of fisherman-trips increased from 3,800 in July to 5,347 in August, dropped to 3,465 in September, rose to 4,123 in October and thereafter steadily declined to a low of 300 in January. Then, the number of fisherman-trips gradually increased each month and reached a peak in June. The heaviest fishing pressure was in May and June with 8,579 and 9,740 fisherman-trips and catches of 24,878.9 and 28,732.4 pounds, respectively.

The number of fish caught per hour ranged from a high of 1.7 fish in December to a low of 0.6 in March (Table 3). The weight of fish caught per hour ranged from a low of 0.3 pound in March to a high of 0.8 pound in January. The average number of fish caught per trip ranged from 1.2 in January to 8.5 in July, while the average pounds of fish caught per trip ranged from 0.9 pound in March to 3.3 pounds in July.

The species composition of the catch of the 3,644 fishermen interviewed as they were fishing and the percentage composition, the computed catch and the average weight of each species caught are presented in Table 4. The scientific names of these species are given in Table 5.

The total computed number of fish was determined by multiplying 49,922, the calculated number of fisherman-trips (Table 1), by 5.9, the average number of fish caught per trip (Table 2) giving a value of 294,043 fish caught during the one-year period in the Mobile Delta.

Table 2. The hours fished and the number and pounds of fish checked in each area of the Mobile Delta during the period of July 1, 1963 to June 30, 1964.

Area	Hours fished	Catch as recorded by creel census clerk						Total fish	
		Saltwater fish		Freshwater game fish		non-game fish		No.	Lbs.
		No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.
I	3,924	916	754.0	3,674	1,243.8	153	80.7	4,743	2,078.5
II	2,224	306	171.7	3,364	1,103.8	106	54.1	3,776	1,329.6
III	1,134	8	6.7	1,325	449.7	60	30.4	1,393	486.8
IV	573	0	0	1,045	329.7	59	28.6	1,104	358.3
V	922	0	0	959	339.9	106	58.4	1,065	398.3
VI	727	2	1.3	658	204.9	240	114.6	900	320.8
VII	1,226	0	0	1,176	464.4	417	192.8	1,593	657.2
Total	10,730	1,232	933.7	12,211	4,136.2	1,141	599.6	14,584	5,629.5

Calculations:

Number of fish caught per hour = $\frac{14,584 \text{ fish}}{10,730 \text{ hours}} = 1.36 \text{ fish per hour.}$

Pounds of fish caught per hour = $\frac{5,629.5 \text{ pounds}}{10,730 \text{ hours}} = 0.52 \text{ pounds per hour.}$

Average number of fish caught per trip = $4.33 \text{ hours/trip} \times 1.36 \text{ fish/hour} = 5.89 \text{ fish per trip.}$
 Average pounds of fish caught per trip = $4.33 \text{ hours/trip} \times 0.52 \text{ pounds/hour} = 2.25 \text{ pounds per trip.}$

Similarly, the weight of these 294,043 fish was determined to be 112,325.4 pounds. The percentage composition figures were used to subdivide this total computed number and weight into the computed number and weight of each species.

Spotted seatrout (*Cynoscion nebulosus*) and mullet (*Mugil spp*) were the principal saltwater species entering the catch. They contributed 2,898.0 and 13,411.6 pounds, respectively, to the total computed catch, while all saltwater species made up 18,634.8 pounds or 19.6 percent of the total computed catch.

Largemouth bass (*Micropterus salmoides*), bluegill (*Lepomis macrochirus*) and redear sunfish (*L. microlophus*) were the principal freshwater game species caught. This accounted for 20,926.2, 26,643.6 and 18,657.2 pounds or 18.6, 23.7 and 16.6 percent, respectively, of the total computed weight. Freshwater game fish of all species made up 73.5 percent of the weight of the total catch. Yellow perch (*Perca*

Table 3. Estimated number of fisherman-trips and catch by month and a comparison of the monthly catch per hour and catch per trip during the period of July 1, 1963 to June 30, 1964 in the Mobile Delta.

Month	Estimated number of fisherman-trips	Estimated catch		Catch per hour		Catch per trip	
		Number	Pounds	Number	Pounds	Number	Pounds
July	3,800	32,300	12,653.9	1.02	0.40	8.50	3.33
August	5,347	35,935	11,764.5	1.19	0.39	6.72	2.20
September	3,465	16,597	6,895.3	1.37	0.57	4.79	1.99
October	4,123	17,688	8,575.8	1.17	0.57	4.29	2.09
November	1,940	9,545	3,434.0	1.39	0.50	4.92	1.77
December	651	5,436	1,269.4	1.67	0.39	8.35	1.95
January	300	354	326.7	0.82	0.76	1.18	1.09
February	1,247	4,801	2,618.7	0.77	0.42	3.85	2.10
March	1,488	2,961	1,294.6	0.61	0.27	1.99	0.87
April	3,390	24,035	7,695.3	1.59	0.51	7.09	2.27
May	8,579	59,060	24,878.9	1.61	0.58	8.05	2.90
June	9,740	69,445	28,732.4	1.38	0.57	7.13	2.95

flavescens) previously unreported from this section of the state entered the catch from Gunnison Creek.

Channel catfish (*Ictalurus punctatus*) were the principal freshwater non-game fish entering the catch. They made up 5,650.0 pounds or 5.0 percent of the total computed weight. All freshwater non-game species accounted for 11,165.1 pounds or 9.9 percent of the weight of the total computed catch.

Saltwater fish averaged 0.75 pound while freshwater game fish and non-game fish averaged 0.34 and 0.49 pound, respectively. The average weights of saltwater fish ranged from 0.24 pound for Atlantic croaker (*Odontoscian dentex*) to 2.49 pounds for sheepshead (*Archosargus probatocepholus*) with spotted seatrout and mullet averaging 0.70 and 0.86 pound, respectively (Table 4).

Freshwater game fish had average weights ranging from 0.15 pound for green sunfish (*Lepomis cyanellus*) to 1.00 pound for spotted bass (*Micropterus punctulatus*) with largemouth bass, bluegill and redear sunfish averaging 0.65, 0.27 and 0.29 pound, respectively. Freshwater non-game fish had average weights which ranged from 0.03 pound for shiners (*Notropis sp.*) to 3.00 pounds for sturgeon (*Acipenseridae*) with channel catfish averaging 0.37.

ACKNOWLEDGMENTS

The authors wish to express their appreciation to Clarence White, Fishery Biologist, Alabama Department of Conservation, for his help in designing this project. Also, Roland Reagan and Hugh Swingle, students in fisheries at Auburn University are commended for their work as creel census clerks.

Table 4. The number, weight, average weight and percentage composition of each species as recorded by the creel census clerk and the computed total number and weight of each species caught in the Mobile Delta during the period of July 1, 1963 to June 30, 1964.

Species of fish	Recorded catch		Percentage composition		Total computed catch		Average weight (Pounds)
	Number	Pounds	By number	By weight	Number	Pounds	
Saltwater fish							
Spotted seatrout	206	145.4	1.41	2.58	4,146	2,898.0	0.70
Silver seatrout	9	3.8	0.06	0.07	176	78.6	0.42
Mullet	786	672.3	5.39	11.94	15,849	13,411.6	0.86
Atlantic Croaker	176	42.6	1.21	0.76	3,558	853.7	0.24
Spot	4	1.0	0.03	0.02	88	22.5	0.25
Red drum	9	11.1	0.06	0.20	176	224.7	1.23
Sheepshead	18	44.8	0.13	0.79	382	887.4	2.49
Flounder	2	1.2	0.01	0.02	30	22.5	0.60
Sea catfish	20	9.5	0.14	0.17	412	190.9	0.47
Gafftopsail catfish	2	2.0	0.01	0.04	30	44.9	1.00
Total	1,232	933.7	8.45	16.59	24,847	18,634.8	0.75
Freshwater game fish							
Largemouth bass	1,617	1,048.6	11.09	18.63	32,609	20,926.2	0.65
Spotted bass	1	1.0	0.01	0.02	30	22.5	1.00
White bass	8	3.3	0.05	0.06	147	67.4	0.41
Yellow bass	35	11.0	0.24	0.20	706	224.7	0.31
Striped bass	1	0.5	0.01	0.01	30	11.2	0.50
Rock bass	1	0.3	0.01	0.00	30	—	0.30
Bluegill	4,972	1,335.6	34.09	23.72	100,239	26,643.6	0.27
Redear sunfish	3,206	934.9	21.98	16.61	64,630	18,657.2	0.29
Spotted sunfish	491	84.7	3.37	1.50	9,909	1,684.9	0.17
Longear sunfish	79	13.6	0.55	0.24	1,617	269.6	0.17
Green sunfish	2	0.3	0.01	0.00	30	—	0.15
Warmouth	618	186.2	4.24	3.31	12,467	3,718.0	0.30
White crappie	409	217.9	2.80	3.87	8,233	4,347.0	0.53
Black crappie	740	271.2	5.07	4.82	14,907	5,414.1	0.37
Chain pickerel	29	26.4	0.20	0.47	588	527.9	0.91
Yellow perch	2	0.7	0.01	0.01	30	11.2	0.35
Total	12,211	4,136.2	83.73	73.47	246,202	82,525.5	0.34
Freshwater non-game fish							
Channel catfish	754	282.7	5.17	5.03	15,202	5,650.0	0.37
Blue catfish	209	122.9	1.43	2.19	4,205	2,459.9	0.59
Flathead catfish	11	7.3	0.08	0.13	235	146.0	0.66
Bullhead	62	45.1	0.43	0.80	1,264	898.6	0.73
Freshwater drum	38	32.5	0.26	0.58	764	651.5	0.86
Smallmouth buffalo	2	0.8	0.01	0.01	30	11.2	0.40
Carp	2	2.3	0.01	0.04	30	44.9	1.15
Sucker	2	4.0	0.01	0.07	30	78.6	2.00
Shiner	3	0.1	0.02	0.00	59	—	0.03
Skipjack herring	13	6.3	0.09	0.11	264	123.5	0.48
American eel	23	14.7	0.16	0.26	470	292.0	0.64
Gar	8	11.2	0.50	0.20	147	224.7	1.40
Bowfin	9	20.4	0.06	0.36	176	404.4	2.27
Sturgeon	1	3.0	0.01	0.05	30	56.2	3.00
Paddlefish	4	6.3	0.03	0.11	88	123.6	1.57
Total	1,141	559.6	7.82	9.94	22,994	11,165.1	0.40
Total all species	14,584	5,629.5	100.00	100.00	294,043	112,325.4	0.38

Table 5. Common and scientific names of fish caught in the Mobile Delta by sport fishermen during the period of July 1, 1963 to June 30, 1964.

Common name	Scientific name
<u>Saltwater</u>	
Spotted seatrout	<i>Cynoscion nebulosus</i>
Silver seatrout	<i>Cynoscion nothus</i>
Mullet	<i>Mugil spp</i>
Atlantic croaker	<i>Odontoscion dentex</i>
Spot	<i>Leiostomus xanthurus</i>
Red drum	<i>Sciaenops ocellata</i>
Sheepshead	<i>Archosargus probatocepholus</i>
Flounder	<i>Pleuronectiformes</i>
Sea catfish	<i>Galeichthys felis</i>
Gafftopsail catfish	<i>Bagre marinus</i>
<u>Freshwater game fish</u>	
Largemouth bass	<i>Micropterus salmoides</i>
Spotted bass	<i>Micropterus punctulatus</i>
White bass	<i>Roccus chrysops</i>
Yellow bass	<i>Roccus mississippiensis</i>
Striped bass	<i>Roccus saxatilis</i>
Rock bass	<i>Ambloplites rupestris</i>
Bluegill	<i>Lepomis macrochirus</i>
Redear sunfish	<i>Lepomis microlophus</i>
Spotted sunfish	<i>Lepomis punctatus</i>
Longear sunfish	<i>Lepomis megalotis</i>
Green sunfish	<i>Lepomis cyanellus</i>
Warmouth	<i>Chaenobryttus gulosus</i>
White crappie	<i>Pomoxis annularis</i>
Black crappie	<i>Pomoxis nigromaculatus</i>
Chain pickerel	<i>Esox niger</i>
Yellow perch	<i>Perca flavescens</i>
<u>Freshwater non - game fish</u>	
Channel catfish	<i>Ictalurus punctatus</i>
Blue catfish	<i>Ictalurus fuscatus</i>
Flathead catfish	<i>Pylodictis olivaris</i>
Bullhead	<i>Ictalurus spp</i>
Freshwater drum	<i>Aplodinotus grunniens</i>
Smallmouth buffalo	<i>Ictiobus bubalus</i>
Carp	<i>Cyprinus carpio</i>
Sucker	<i>Catostomidae</i>
Shiner	<i>Notropis sp.</i>
Skipjack herring	<i>Alosa chrysochloris</i>
American eel	<i>Anguilla rostrata</i>
Gar	<i>Lepisosteus spp</i>
Bowfin	<i>Amia calva</i>
Sturgeon	<i>Acipenseridae</i>
Paddlefish	<i>Polydon spathula</i>

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