

# TECHNICAL FISH SESSION

## A REPORT ON COMMERCIAL FISHING STUDIES CONDUCTED IN THE TIDAL STREAMS OF ALABAMA

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### ABSTRACT

Commercial fishing experiments with 1¼- to 1½-inch-bar mesh trammel nets were conducted in fourteen tidal streams of Alabama during 1953 and 1954. The primary objective of these studies was to determine the percentages of the various species of fish taken with small mesh trammel nets in the tidal streams during the months of October through March. A total of 26 sets with trammel nets were made in the streams studied.

A total of 65,839 fish, turtles and crabs weighing 56,129.01 pounds was caught during the period of the experiments. Freshwater game fish which included crappie, bluegill, shellcracker, largemouth bass, pickerel, warmouth and yellow bass made up 0.75 percent of this total weight. Speckled trout comprised 3.21 percent and all other commercial and rough species made up 96.04 percent of the total weight. The predominant commercial and rough species were mullet, gar, blue catfish, shad and buffalo which made up 67.68, 20.25, 3.23, 1.94 and 0.84 percent of the total weight respectively. None of the other species caught constituted as much as 0.5 percent of the total weight.

### INTRODUCTION

Commercial fishing studies with 1¼- to 1½-inch-bar mesh trammel nets were conducted in fourteen tidal streams of Alabama during the periods of November, 1953, through March, 1954, and October through December, 1954. These experiments were initiated after commercial fishermen requested that they be allowed to fish tidal streams with small mesh trammel nets. In making these requests the commercial fisherman felt that no harm could be done to the game and sports fish populations through the use of small mesh trammel nets. In fact, most commercial fishermen thought that the removal of the commercial or rough species of fish would actually benefit the game fish populations by relieving some of the competition for fish foods. Then, too, the commercial fishermen wanted to fish the tidal streams during the fall and winter months when great numbers of mullet from the Bay and Gulf areas normally migrate into these streams. The commercial fishermen also stated that it was impossible to fish the Bay and Gulf areas, where netting was legalized, on many days during the winter months and especially during the periods when winds prevailed from the Northwest.

Prior to 1936, the tidal streams were opened to commercial fishing with small mesh trammel nets. Between 1936 and 1947 many of the tidal streams or portions of these streams were opened and closed on several different occasions. Since 1947, all tidal streams containing freshwater game fish have been closed to commercial fishing with small mesh nets.

While commercial fishermen thought that they would do no harm to the game fish species, many of the sports fishermen felt that the netting of tidal streams with small mesh nets would be of detriment to the game fish populations. In order to help settle this controversy and arrive at a logical conclusion regarding the use of small mesh trammel nets in tidal streams, officials of the Conservation Department decided that closely supervised and detailed studies should be conducted by departmental fisheries biologists in cooperation with licensed commercial fishermen who were willing to furnish the necessary nets and manpower to conduct the studies. The primary object of these studies was

to determine the percentages of various species of fish taken with small mesh trammel nets in the tidal streams during the months of October through March.

## RESULTS AND DISCUSSION

Streams studied during these experiments including Dog, East Fowl, West Fowl and Little Rivers in Mobile County and Fish River, Bon Secour River, Magnolia River, Hammock Creek, Palmetto Creek, Soldier Creek, Wolf Creek, Graham Creek, Graham Bayou and Stone Quarry in Baldwin County. A total of 426 sets with trammel nets having 1¼- to 1½-inch-bar mesh was made in these streams. The trammel nets used varied in length from 250 to 1,500 feet with an average length of approximately 1,000 feet. Both day and night studies were conducted. Beach, circle and snake sets with and without topnets were made at various depths. A list of the species caught during these studies is shown in Table I.

TABLE I  
LIST OF SPECIES TAKEN FROM TIDAL STREAMS OF ALABAMA WITH  
1¼ TO 1½-INCH-BAR MESH TRAMMEL NETS DURING 1953-54

Striped mullet	<i>Mugil cephalus</i>
White mullet	<i>Mugil curema</i>
Speckled trout	<i>Cynoscion nebulosus</i>
Striped bass	<i>Roccus saxatilis</i>
Spot	<i>Leiostomus xanthurus</i>
Croaker	<i>Micropogon undulatus</i>
Black drum	<i>Pogonias cromis</i>
Freshwater drum	<i>Aplodinotus grunniens</i>
Redfish	<i>Sciaenops ocellata</i>
Flounder	<i>Paralichthys lethostigma</i>
Sheepshead	<i>Archosargus probatocephalus</i>
White trout	<i>Cynoscion nothus</i>
Mangrove	<i>Lutianus griseus</i>
Hardhead catfish	<i>Galeichthys felis</i>
Gafftopsail catfish	<i>Bagre marinus</i>
Silver perch	<i>Bairdella chrysura</i>
Needlefish	<i>Strongylura marinus</i>
Pinfish	<i>Lagodon rhomboides</i>
Hogchoker	<i>Archiurus fasciatus</i>
Sea robin	<i>Prionotus</i> sp.
Menhaden	<i>Brevoortia patronus</i>
Jack crevalle	<i>Caranx hippos</i>
Ribbonfish	<i>Trichiurus lepturus</i>
Buffalo	<i>Ictiobus bubalus</i>
Blue catfish	<i>Ictalurus furcatus</i>
Flathead catfish	<i>Pilodictis olivaris</i>
Channel catfish	<i>Ictalurus lacustris</i>
Paddlefish	<i>Polyodon spathula</i>
Yellow bullhead	<i>Ameiurus natalis</i>
Carp	<i>Cyprinus carpio</i>
Alligator gar	<i>Lepisosteus spatula</i>
Longnose gar	<i>Lepisosteus osseus</i>
Shortnose gar	<i>Lepisosteus platostomus</i>
Spotted gar	<i>Lepisosteus productus</i>
Gizzard shad	<i>Dorosoma cepedianum</i>
Theadfin shad	<i>Signalosa petenensis</i>
Chubsucker	<i>Erimyzon oblongus</i>
Skipjack	<i>Pomolobus chrysochloris</i>
Golden shiner	<i>Notemigonus crysoleucas</i>
White crappie	<i>Pomoxis annularis</i>
Black crappie	<i>Pomoxis nigro-maculatus</i>
Bluegill	<i>Lepomis macrochirus</i>
Shellcracker	<i>Lepomis microlophus</i>
Largemouth bass	<i>Micropterus salmoides</i>
Chain pickerel	<i>Esox niger</i>
Warmouth	<i>Chaenobryttus coronarius</i>
Yellow bass	<i>Morone interruptus</i>

A total of 65,839 fish, turtles and crabs weighing 56,129.01 pounds was caught during the period of the experiments (Table II). Freshwater game fish which included crappie, bluegill, shellcracker, largemouth bass, pickerel, warmouth and yellow bass made up 0.75 percent of this total weight. Speckled trout comprised 3.21 percent and all other commercial and rough species made up 96.04 percent of the total weight. The predominant commercial and rough species were mullet, gar, blue catfish, shad and buffalo which made up 67.68, 20.25, 3.23, 1.94 and 0.84 percent of the total weight respectively. None of the other species caught constituted as much as 0.5 percent of the total weight.

TABLE II  
SUMMARY OF THE NUMBERS, WEIGHTS AND PERCENTAGES OF THE TOTAL CATCH OF FISH, TURTLES AND CRABS TAKEN DURING THE DAY AND AT NIGHT WITH 1¼ TO 1½-INCH-BAR TRAMMEL NETS FROM TIDAL STREAMS OF ALABAMA DURING THE PERIODS OF NOVEMBER, 1953, THROUGH MARCH, 1954, AND OCTOBER THROUGH DECEMBER, 1954

Species	Night Catch			Day Catch			Total Catch		
	No.	Weight (Lbs.)	% (Wt.)	No.	Weight (Lbs.)	% (Wt.)	No.	Weight (Lbs.)	% (Wt.)
Mullet	36,502	25,287.04	65.58	19,777	12,690.48	72.24	56,279	37,977.52	67.68
Speckled trout	993	1,520.40	3.94	237	285.25	1.62	1,230	1,805.65	3.21
Croaker	276	69.60	0.18	314	85.03	0.48	590	154.63	0.28
Striped bass	5	101.00	0.26				5	101.00	0.18
Spot	137	32.90	0.09	147	33.29	0.19	284	66.19	0.12
Drum	56	20.80	0.05	67	25.55	0.15	123	46.35	0.08
Redfish	19	24.00	0.06	13	24.70	0.14	32	48.70	0.09
Flounder	28	26.70	0.07	13	8.70	0.05	41	35.40	0.06
Sheepshead	17	10.70	0.03	23	29.65	0.17	40	40.35	0.07
White trout	4	4.20	0.01	2	0.80	*	6	5.00	0.01
Mangrove	1	0.30	*				1	0.30	*
Blue catfish	607	1,147.06	2.98	290	673.75	3.83	897	1,820.81	3.23
Buffalo	47	387.20	1.01	7	75.00	0.43	54	462.20	0.82
Paddlefish	2	19.00	0.05				2	19.00	0.03
Yellow bullhead	2	1.60	*	4	4.40	0.03	6	6.00	0.01
Channel catfish	2	2.00	0.01				2	2.00	*
Carp	1	0.80	*				1	0.80	*
Flathead catfish				1	30.00	0.17	1	30.00	0.05
Saltwater catfish	41	28.40	0.07	31	22.50	0.13	72	50.90	0.09
Silver perch	3	0.40	*	2	0.25	*	5	0.65	*
Needlefish	1	0.10	*	1	0.10		2	0.20	*
Pinfish	2	0.30	*	3	0.50	*	5	0.80	*
Hogchoker				3	1.40	0.01	5	1.40	*
Gar	549	8,796.80	22.88	285	2,569.50	14.63	834	11,366.30	20.25
Shad †	2,062	585.76	1.52	1,126	501.70	2.86	3,188	1,087.46	1.94
Sucker	77	65.75	0.17	128	124.40	0.71	205	190.15	0.34
Skipjack	5	4.50	0.01				5	4.50	0.01
Shiner				1	0.10	*	1	0.10	*
Sea Robin	3	0.60	*	1	0.30	*	4	0.90	*
Crappie	200	108.33	0.28	32	19.35	0.11	232	127.68	0.23
Bluegill	124	37.23	0.10	219	54.15	0.31	343	91.38	0.17
Shellcracker	79	22.60	0.06	198	59.95	0.34	277	82.55	0.15
Largemouth bass	29	25.50	0.07	52	44.65	0.25	81	70.15	0.13
Pickerel	7	16.10	0.04	10	14.85	0.08	17	30.95	0.06
Warmouth	9	2.10	0.01	3	0.85	*	12	2.95	0.01
Yellow bass	2	1.35	*	1	0.30	*	3	1.65	*
Jack crevalle	3	0.80	*				3	0.80	*
Ribbon fish	1	0.70	*				1	0.70	*
Turtle	31	132.00	0.34	31	109.60	0.62	62	241.60	0.43
Crab	453	74.96	0.19	435	78.38	0.45	888	153.34	0.27
TOTAL	42,380	38,559.58	100.00	23,459	17,569.43	100.00	65,839	56,129.01	100.00

\* Less than 0.01.  
† Includes Menhaden.

Of the 426 sets of the trammel nets made, 240 were conducted at night and 186 during the day (daylight). The total catch for the night sets was 38,559.58 pounds as compared to 17,569.43 for the day sets. This would indicate that the trammel nets are approximately twice as effective for the taking of fish at night as they are during the day. At the same time the percentage of freshwater game fish taken at night was about one-half the percentage of freshwater

game fish taken during day experiments since these species made up 0.56 and 1.09 percent of the total weight of fish netted during the night and day experiments respectively. Speckled trout comprised 3.94 and 1.62 percent of the total night and day fish catches respectively. This showed that the percentage of speckled trout taken during the night was approximately two and one-half times greater than the percentage taken during the day.

On occasions the day netting operations appeared to interfere with sports fishing. Particularly was this true in West Fowl River and some of the other narrow streams where there were large numbers of sports fishermen. Sometimes it was necessary to row a skiff or make a set near the sports fishermen in order to obtain samples from various areas of the streams.

The number of trammel net sets, total weights and percentages of freshwater game fish, speckled trout and commercial and rough fish are given for each stream studied in Table III. The majority of the checks were conducted in Dog, East Fowl, West Fowl and Little Rivers in Mobile County and Fish, Bon Secour and Magnolia Rivers in Baldwin County because of their larger size or importance as sports fishing areas. However, a few checks were made in Hammock, Palmetto, Soldier, Wolf, Graham and Stone Quarry Creeks and Graham Bayou of Baldwin County in an effort to get a cross-section of all types of tidal streams for the test.

The percentage of freshwater game fish caught during the experiments appeared to be insignificant because all freshwater game fish made up less than 1 percent of the total weight taken from all streams. Then, too, there were no freshwater game fish netted in eight of the fourteen streams studied. The total weight caught from each of the remaining six streams—Dog, East Fowl, West Fowl, Fish, Bon Secour, and Magnolia Rivers—consisted of 1.17, 0.53, 0.06, 0.19, 0.74 and 1.50 percent freshwater game fish respectively (Table III). Of course, all freshwater game fish caught during the experiments were immediately returned to the water.

The greatest percentages of speckled trout were recorded from Dog and West Fowl Rivers where they comprised 5.06 and 5.52 percent of the total weight taken from each stream respectively (Table III). Of the minor streams sampled, speckled trout made up 2.95 and 1.93 percent of the total weight recorded for

TABLE III  
A SUMMARY OF THE NUMBER OF SETS WITH TRAMMEL NETS, THE TOTAL CATCH AND THE PERCENTAGES OF FRESHWATER GAME FISH, SPECKLED TROUT AND COMMERCIAL AND ROUGH SPECIES CAUGHT FROM EACH STREAM STUDIED

Stream	Number of Sets			Total Weight (Lbs.)	Percentage of Total Catch by Weight		
	Day	Night	Total		Freshwater Game Fish	Speckled Trout	Commercial* and Rough Species
<b>Rivers:</b>							
Dog .....	59	80	139	23,575.15	1.17	5.06	93.77
East Fowl .....	43	26	69	9,167.53	0.53	0.62	98.85
West Fowl .....	12	53	65	7,782.45	0.00	5.52	94.48
Little .....	8	22	30	2,974.40	0.06	0.70	99.24
Fish .....	11	18	29	3,169.74	0.19	0.71	99.10
Bon Secour .....	18	25	43	4,780.36	0.74	0.84	98.42
Magnolia .....	22	6	28	2,597.38	1.50	0.90	97.60
<b>Creeks:</b>							
Hammock .....	1	0	1	35.90	0.00	0.00	100.00
Palmetto .....	2	1	3	288.10	0.00	2.95	97.05
Soldier .....	2	2	4	574.00	0.00	0.33	99.67
Wolf .....	6	0	6	232.70	0.00	1.93	98.07
Graham .....	2	1	3	654.50	0.00	0.31	99.69
Stone Quarry .....	0	1	1	12.30	0.00	0.00	100.00
<b>Bayou:</b>							
Graham .....	0	5	5	284.50	0.00	0.81	99.19
<b>TOTAL</b> .....	<b>186</b>	<b>240</b>	<b>426</b>	<b>56,129.01</b>	<b>0.75</b>	<b>3.21</b>	<b>96.04</b>

\* Excludes the speckled trout which is actually a commercial species under present Alabama laws and regulations.

Palmetto and Wolf Creeks respectively. In each of the other streams sampled, speckled trout made up less than 1 percent of the total weight.

A summary of the number of sets and the total catch by month is shown in Table IV. The greater catches of freshwater game fish were taken during the months of February and March when they made up 1.02 and 1.06 percent of the total monthly weights respectively. The largest catches of speckled trout were taken in November and December when this species made up 7.73 and 12.31 percent of the total monthly weights respectively.

TABLE IV  
A SUMMARY OF THE NUMBER OF SETS WITH TRAMMEL NETS, THE TOTAL CATCH AND THE PERCENTAGES OF FRESHWATER GAME FISH, SPECKLED TROUT AND COMMERCIAL AND ROUGH SPECIES CAUGHT DURING EACH MONTH FOR ALL THE STREAMS STUDIED

Month	Number of Sets	Total Fish Catch (Lbs.)	Percentage of Total Catch by Weight		
			Freshwater Game Fish	Speckled Trout	Commercial* & Rough Species
November, 1953 .....	5	265.10	0.00	3.21	96.79
December, 1953 .....	4	5,484.68	0.05	0.00	99.95
January, 1954 .....	23	3,961.00	0.66	0.36	98.98
February, 1954 .....	112	10,521.38	1.02	1.14	97.84
March, 1954 .....	106	18,239.00	1.06	1.67	97.27
October, 1954 .....	51	4,058.15	0.98	0.54	98.48
November, 1954 .....	76	7,385.20	0.18	7.73	92.09
December, 1954 .....	49	6,214.50	0.40	12.31	87.29
TOTAL .....	426	55,129.01	0.75	3.21	96.04

\* Excludes the speckled trout which is actually a commercial species under present Alabama laws and regulations.

During most of October, November and December, 1954, the commercial fishermen, particularly in Mobile County, had little demand for mullet taken from the tidal streams because of the abundance of mullet which could be readily caught in the Mobile Bay and Gulf areas. Therefore, quite frequently during October, November and December, 1954, no concentrated effort was made by some of the commercial fishermen to take mullet in the tidal streams during the tests. Instead they concentrated on the taking of freshwater commercial fish which was generally unprofitable. During the latter part of November and the first part of December some commercial fishermen appeared to concentrate on the taking of speckled trout which was much more profitable. During one night's netting in Dog River in December 544.00 pounds of speckled trout were netted. This was 96.75 more pounds of speckled trout than were netted during the entire period of netting in all streams extending from November, 1953, through March, 1954, during which time there was an apparent need for mullet by the commercial fishermen. For comparison, speckled trout comprised 1.16 percent of the total weight of 38,471.16 pounds of fish netted in all streams during the period of November, 1953, through March, 1954, while they made up 7.69 percent of the total weight of 17,657.85 pounds netted during the months of October, November and December, 1954. Therefore, the percentage of speckled trout caught was approximately seven times greater for the latter period.

All freshwater game fish caught during the experiments made up less than 1 percent of the total catch of fish by weight. No great abundance of these fish was caught during any month of the study or from either of the streams studied. Therefore, because of the vast removal of competitive or rough species, the data obtained would indicate that commercial fishing with small mesh trammel nets would possibly be of benefit to the freshwater game fish. The

huge quantities of competitive or rough species of fish present in the tidal streams no doubt suppress the growth of the more desirable freshwater sports fish. Then, too, according to present Alabama Laws and Regulations all freshwater game fish taken with commercial fishing gear must be returned to the water.

Even though the speckled trout is not presently classified as a game fish under Alabama Laws and Regulations, it is probably the most important sports fish found in the tidal streams of South Alabama, particularly during the winter months. Since speckled trout were caught in abundance in certain streams studied during November and December, this would indicate that commercial fishing with small mesh trammel nets could be of detriment to the speckled trout sports fishing in the tidal streams. However, there were several months during the course of the experiments in which the percentage of speckled trout netted appeared to be insignificant. This may have been due to the general lack of speckled trout in the areas caused by climatic or some other condition or conditions. Several factors apparently influence the migration of the speckled trout into the tidal streams. Because these fish are inconsistent in their migrations into the tidal streams during the season and from year to year, it appears impossible to set a season for commercial fishing when the speckled trout are not in the streams and also at a time when commercial fishing for mullet and other commercial species would be profitable to the commercial fisherman.

The data obtained to date indicate that the percentages of speckled trout taken with small mesh trammel nets are very low (approximately 1 percent) when the commercial fishermen concentrate on the taking of mullet. Therefore, it might be feasible to consider classifying speckled trout as game fish when they are taken with commercial gear from the tidal streams and requiring that they be released as the freshwater game fish are under the present laws and regulations of Alabama. Such a regulation might be difficult to enforce. However, an arrangement such as this would certainly seem fair for both the commercial and sports fishermen because the commercial fishermen appear to be primarily interested in fishing the tidal streams for mullet and the sports fishermen are primarily interested in protecting the speckled trout in these tidal streams from nets so they can be taken by hook and line.

## **FISH CATCHES WITH VARIOUS TYPES OF COMMERCIAL FISHING GEAR USED IN T. V. A. LAKES FROM JUNE, 1954 THROUGH JANUARY, 1955**

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March 14, 1955

Commercial fishing studies were conducted in the four main stream reservoirs of the T. V. A. System from June, 1954, through January, 1955, with the cooperation of T. V. A. biologists. The fish catches of gill nets, rip rap nets, stationary set trammel nets, whip set trammel nets, baited lines, and snag lines were recorded to determine their effectiveness as commercial fish gear and the percentage of commercial and game fish taken.

Some sport fishermen and camp operators in the T. V. A. area had expressed the opinion that commercial fishing in their area was depleting the game fish population. Records indicate that during the 1954 fiscal year 2,400,000 pounds of commercial fish were removed from the T. V. A. lakes in Alabama. Probably the game fish were helped considerably more by the removal of such high poundages of commercial fish which compete directly with the game fish for food than they were hurt by the removal of small poundages of game fish by a few disreputable fishermen. T. V. A. records indicate that since 1945, when the use of nets was first permitted, the catch of crappie has been steadily increasing.