

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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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.

Forty-six gill nets were examined which had a knot to knot mesh ranging from 4 to 5 inches. They varied in length from 240 to 525 feet with an average length of 500 feet.

Seventy-four rip rap nets were checked which had a knot to knot mesh of 3 to 4 inches. The average length was 315 feet with a range of 90 to 600 feet. The rip rap net was a finely woven straight net much like a gill net, but in addition had heavy twine tied diagonally from the lead line to the float line on both sides of the net. The heavy twine may be tied so that the diagonal on one side runs in the opposite direction from the diagonal on the other side of the net or it may be tied so that the diagonals on the same side of the net run in opposite directions and cross each other.

The 124 trammel nets observed had a mesh ranging from 3 to 3.5 inches. The 96 stationary set trammel nets ranged from 60 to 3,000 feet in length and averaged 508 feet in length. The 28 whip set trammel nets ranged from 240 to 1,350 feet in length and averaged 770 feet in length.

The stationary set trammel net was an ordinary trammel net with outside walls of 14-inch mesh from knot to knot and an inner wall of 3-inch mesh from knot to knot which in these studies was set in a straight line more or less perpendicular to the bank of the river. It remained in one location overnight or longer.

The whip set trammel net was the same type of net as the stationary set trammel net which was set and "whipped". To "whip" a trammel net the helper paddles the boat near and inside the trammel net which has been set in a semicircle in shallow water (4 to 6 feet). The fisherman, standing in the front of the boat, beats or whips the water with a long limber pole. The fish, apparently, swim from the area of the noise and become entangled in the trammel net. As soon as the fisherman was through whipping, the net was raised, the fish were removed, and the net was placed in the boat. The fisherman then moved to a new location and the operation was repeated. The complete operation required 15 minutes to 1 hour depending on the number of fish caught.

Baited lines averaged 190 hooks each. The 25 lines checked had 100 to 800 hooks each.

Snag lines averaged 828 hooks each. The 22 lines checked had 600 to 2,000 hooks per line.

To obtain the data on the fish catches of the various gear the biologist contacted the fishermen without notice either at the fisherman's landing point or on the river while he was in the process of running his gear. The biologist would then accompany the fisherman as he took the fish from his nets and/or lines.

A data sheet has been included to show the method of recording the various data collected (Figure 1).

The fish removed from legal gill nets, rip rap nets, stationary set trammel nets, whip set trammel nets, baited lines, and snag lines are listed by number, weight, and percentage of total weight in Table I. A total catch of 7,666.35 pounds of fish was recorded of which 98.8 percent was commercial species. The catch of game fish was very small for each of the months during the study. The highest percentage of commercial fish, 99.9 percent, was recorded in December, 1954, and the lowest, 96.7 percent, was recorded in January, 1955 (Table II).

STUDIES OF COMMERCIAL FISHING OPERATIONS  
 In the T. V. A. Lakes of Alabama  
 Alabama Department of Conservation and T. V. A. Cooperating

Name of Lake: Wheeler Date: 11-9-54 Time 2 PM  
 Type of Net: Trawl Weather Condition Clear + Warm  
 Type of Bait \_\_\_\_\_ Water elevation: Rising Falling  
 Mesh of Net: 3 inch Color of water: Clear Dingy Muddy  
 Length of Net: 1200 feet Distance below dam: \_\_\_\_\_  
 Name of Creek or Stream: Baulah Bay Distance from bank: 500 feet  
 Water Temp: 54 Air Temp: 60 Distance above mouth: \_\_\_\_\_

Rough Fish	No.	Wt.	Game Fish	No.	Wt.
Catfish			Walleye		
Spoonbill			Sauger		
Buffalo	22	87	L. N. Bass		
Garp	5	22	S. N. Bass		
Drum			Spotted Bass		
Suckers			White Bass		
Sturgeon			Yellow Bass		
Skip jack			Crappie		
Red horse			Bream		
Shad					

Checked by: White, J.  
 Fisherman: Ajax + Walter  
 Remarks: Whip Set

Figure 1. A Sample of the Data recorded in the Field on the Various Types of Commercial Fishing Gear Checked from June, 1954, through January, 1955.

TABLE I  
FISH CATCH TAKEN FROM GILL NETS, RIP RAP NETS, STATIONARY SET  
TRAMMEL NETS, WHIP SET TRAMMEL NETS, BAITED LINES, AND  
SNAG LINES IN T. V. A. LAKES FROM JUNE, 1954,  
THROUGH JANUARY, 1955

<i>Species</i>	<i>Numbers</i>	<i>Pounds</i>	<i>Percentage of Total Weight</i>
<i>Commercial:</i>			
Catfish .....	534	2,029.100	26.4
Spoonbill .....	20	200.000	2.6
Buffalo .....	868	3,355.000	43.7
Carp .....	254	1,133.500	14.8
Drum .....	439	530.725	7.0
Skipjack .....	112	117.400	1.5
Redhorse .....	2	4.000	0.1
Shad .....	18	15.125	0.2
Goldeye .....	1	1.500	tr.*
Gar .....	9	82.000	1.1
Turtle .....	35	104.000	1.4
<i>Game:</i>			
Smallmouth bass .....	1	1.000	tr.
White bass .....	19	39,750	0.5
Crappie .....	33	52.000	0.7
Bream .....	4	1,250	tr.
TOTAL .....	2,349	7,666.350	100.0

\* Trace.

TABLE II  
FISH CATCH TAKEN FROM GILL NETS, RIP RAP NETS, STATIONARY SET  
TRAMMEL NETS, WHIP SET TRAMMEL NETS, BAITED LINES, AND  
SNAG LINES SET AT DISTANCES VARYING FROM 25 FEET  
TO ONE MILE FROM BANK IN T. V. A. LAKES  
FROM JUNE, 1954, THROUGH JANUARY, 1955

<i>Month</i>	<i>No. of Sets</i>	<i>Commercial Fish</i>		<i>Game Fish</i>		<i>Percentage by Wt.</i>	
		<i>No.</i>	<i>Pounds</i>	<i>No.</i>	<i>Pounds</i>	<i>Com. Fish</i>	<i>G. Fish</i>
June .....	5	23	126.00	1	3.00	97.7	2.3
July .....	20	127	639.00	5	12.00	98.2	1.8
August .....	52	713	2,454.50	12	21.00	99.2	0.8
September .....	75	502	1,621.00	4	5.00	99.7	0.3
October .....	27	249	730.50	9	12.75	98.3	1.7
November .....	74	358	889.60	4	6.50	99.3	0.7
December .....	16	74	206.00	1	0.25	99.9	0.1
January .....	22	246	905.75	21	33.50	96.7	3.3
TOTAL .....	291	2,292	7,572.35	57	94.00	98.8	1.2

There were no great catches of game fish attributed to any one type of gear. Commercial fish made up 99.6, 99.3, 98.9, 97.5, 98.6, and 100 percent of the total weight of fish taken from gill nets, rip rap nets, stationary set trammel nets, whip set trammel nets, baited lines, and snag lines, respectively (Table III).

The distance that the net or line was set from the bank did not account for any large catches of game fish. Commercial species made up 98.4, 97.9, and 99.4 percent of the total weight of fish taken from nets and lines set at 25 to 49 feet, 50 to 99 feet, and 100 or more feet from the bank respectively (Table IV).

**TABLE III**  
**FISH CATCH TAKEN WITH THE VARIOUS TYPES OF GEAR USED IN THE T. V. A. LAKES FROM JUNE, 1954, THROUGH JANUARY, 1955**

Species	Gill Nets (46 Sets)		Rip Rap Nets (74 Sets)		Trammel Nets				Baited Lines (25 Sets)		Snag Lines (22 Sets)		Total (291 Sets)								
	No.	Pounds	E*	No.	Pounds	Stationary Sets (96 Sets)		Whip Sets (28 Sets)		No.	Pounds	No.	Pounds	No.	Pounds						
						No.	Pounds	No.	Pounds							E	E				
<i>Commercial:</i>																					
Catfish	2	4.00	1.6	23	95.60	11.7	131	711.000	18.1	40	281.00	22.9	220	475.75	54.3	118	461.75	81.0	534	2029.100	26.4
Spoonbill	2	20.00	8.0	2	21.00	2.6	3	35.000	.9				2	24.00	2.7	11	100.00	17.5	20	200.00	2.6
Buffalo	21	144.00	57.7	132	457.50	55.9	495	2110.500	53.9	219	640.00	52.1	1	3.00	.3				868	3355.000	43.7
Carp	1	7.00	2.8	19	93.50	11.4	115	585.000	14.9	80	226.00	18.4	59	222.00	25.3				254	1133.500	14.8
Drum	37	43.50	17.4	102	50.10	6.1	240	295.875	7.5	2	4.00	.3	48	129.25	14.8	10	8.00	1.4	439	530.725	7.0
Skipjack	19	15.50	6.2	60	65.55	8.0	32	35.850	.9				1	.50	.1				112	117.400	1.5
Redhorse				1	2.00	.2	1	2.000	.1										2	4.000	.1
Shad	1	.75	.3	3	1.50	.2	13	12.375	.3										18	15.125	.2
Goldeye				1	1.50	.2	4	39.000	1.0	4	40.00	3.2							1	1.500	tr.
Gar				1	3.00	.4	4	51.000	1.3	5	8.00	.6	1	10.00	1.1				9	82.000	1.1
Turtle	3	14.00	5.6	12	21.00	2.6	14	51.000	1.3										35	104.000	1.4
																			1	1.000	tr.
<i>Game:</i>																					
Smallmouth bass							1	1.000	tr.†												
White bass	1	1.00	.4	1	2.00	.2	8	20.000	.5	3	7.00	.6	5	9.50	1.1	1	.25	tr.	19	39.750	.5
Crappie				3	4.00	.5	13	23.500	.6	16	23.00	1.9	1	1.30	.2				33	52.000	.7
Bream							2	.750	tr.				2	.50	.1				4	1.250	tr.
TOTAL	87	249.75	100.0	360	818.25	100.0	1072	3922.850	100.0	349	1229.00	100.0	340	876.00	100.0	141	570.50	100.0	2349	7666.350	100.0

\* Percentage of total weight.

† Trace.

The size of the mesh used in stationary set trammel nets and rip rap nets made no appreciable difference in the percentage of game fish caught. Only 1.2 percent of the catch in the eighty-eight 3-inch stationary set trammel nets was game fish while no game fish were caught in the eight 3.5-inch mesh nets (Table V). Of the 74 rip rap nets checked 49 were 3-inch mesh, 17 were 3.5-inch, and 8 were 4-inch mesh. Each caught 0.6, 1.3, and 0.0 percent game fish respectively (Table VI).

The most effective type of gear used for the removal of commercial fish from the Tennessee River appeared to be the trammel net used in either the stationary set or the whip set. An average of 40.39 and 42.82 pounds of commercial fish was taken in each stationary set and whip set trammel net, respectively, as compared to 5.41, 10.92, 34.57, and 25.92 pounds taken in each set of the gill net, the rip rap net, the baited line, and the snag line in the order given (Table VII).

TABLE IV  
FISH CATCH TAKEN WITH GILL NETS, RIP RAP NETS, STATIONARY SET TRAMMEL NETS, WHIP SET TRAMMEL NETS, BAITED LANES, AND SNAG LINES SET AT VARIOUS DISTANCES FROM BANK IN T. V. A. LAKES FROM JUNE, 1954, THROUGH JANUARY, 1955

Distance from Bank in Feet	No. of Sets	Commercial Fish		Game Fish		% by Weight	
		No.	Pounds	No.	Pounds	Com. Fish	Game Fish
100 or More	156	1,293	4,178.175	18	26.25	99.4	0.6
50 to 99	61	631	2,194.975	29	47.75	97.9	2.1
25 to 49	74	368	1,199.200	10	20.00	98.4	1.6

TABLE V  
FISH CATCH TAKEN WITH 3- AND 3.5-INCH MESH STATIONARY SET TRAMMEL NETS IN T. V. A. LAKES FROM JUNE, 1954, THROUGH JANUARY, 1955

Knot to Knot Mesh in Inches	No. of Sets	Commercial Fish		Game Fish		% by Weight	
		No.	Pounds	No.	Pounds	Com. Fish	Game Fish
3.0	88	986	3,698.85	24	45.25	98.8	1.2
3.5	8	62	178.75	0	0.00	100	0.0

TABLE VI  
FISH CATCH TAKEN WITH 3.0-, 3.5- AND 4.0-INCH MESH RIP RAP NETS IN T. V. A. LAKES FROM JUNE, 1954, THROUGH JANUARY, 1955

Knot to Knot Mesh in Inches	No. of Sets	Commercial Fish		Game Fish		% by Weight	
		No.	Pounds	No.	Pounds	Com. Fish	Game Fish
3.0	49	290	625.00	3	4.00	99.4	0.6
3.5	17	47	146.50	1	2.00	98.7	1.3
4.0	8	19	40.75	0	0.00	100	0.0

TABLE VII  
AVERAGE NUMBER OF POUNDS OF FISH TAKEN PER SET IN THE VARIOUS TYPES  
OF GEAR USED IN T. V. A. LAKES FROM JUNE, 1954, THROUGH JANUARY, 1955

Species	Gill Nets (46 Sets)	Rip Rap Nets (74 Sets)	Trammel Nets		Baited Lines (25 Sets)	Snag Lines (22 Sets)
			Stationary Set (96 Sets)	Whip Set (28 Sets)		
<b>Commercial:</b>						
Catfish .....	0.09	1.29	7.41	10.04	19.02	20.99
Spoonbill .....	0.43	0.28	0.36	...	0.96	4.55
Buffalo .....	3.13	6.19	21.98	22.85	0.12	...
Carp .....	0.15	1.26	6.10	8.07	8.88	...
Drum .....	0.95	0.68	3.09	0.14	5.17	0.36
Skipjack .....	0.34	0.89	0.37	...	0.02	...
Redhorse .....	...	0.03	0.02	...	...	...
Shad .....	0.02	0.02	0.12	...	...	0.02
Goldeye .....	...	0.02	...	...	...	...
Gar .....	...	0.04	0.41	1.43	...	...
Turtle .....	0.30	0.28	0.53	0.29	0.40	...
<b>Game:</b>						
Smallmouth bass .....	...	...	0.01	...	...	...
White bass .....	0.02	0.03	0.21	0.25	0.38	0.01
Crappie .....	...	0.05	0.24	0.82	0.06	...
Bream .....	...	...	0.01	...	0.03	...
<b>TOTAL</b> .....	<b>5.43</b>	<b>11.06</b>	<b>40.86</b>	<b>43.89</b>	<b>35.04</b>	<b>25.93</b>

From this data it would appear that gill nets, rip rap nets, trammel nets, baited lines, and snag lines are very selective types of commercial fishing gear when used according to the fisheries laws and regulations in effect during the time of this study.

A brief summary of the commercial fishing laws and regulations in effect during this study is as follows:

1. Each resident commercial fisherman must purchase a \$10.00 license annually. A non-resident commercial fishing license cost \$20.00 annually.
2. Legal commercial fishing gear in the T. V. A. Lakes includes only the following: hoop nets, fyke nets, gill nets, trammel nets, trot lines, set lines, and snag lines.
3. No person shall use a gill net the mesh of which is less than 4 inches from knot to knot with a stretch or spread of not less than 8 inches after said net has been shrunk.
4. No person shall use a trammel net the mesh of which is less than 3 inches from knot to knot with a stretch or spread of not less than 6 inches after said net has been shrunk.
5. No person shall use a hoop net, fyke net, gill net, trammel net closer than 25 feet from the water's edge in T. V. A. Lakes.
6. No person shall place a net in such a way that it extends more than half way across any creek, slough, or stream.
7. No person shall place a net closer than 50 feet to any other net.
8. No person shall remove fish from any net except during the hours from sunrise to sunset.
9. No person shall set or remove any net from any of the public waters except during the hours from sunrise to sunset.
10. All nets set in public waters must be marked by means of buoys or floats upon which must be placed the license number in plain figures. At least one such buoy shall bear the name and address of the owner.
11. Should any species of fish designated as game fish be taken by the use of commercial fishing gear, such fish, without injury shall be immediately returned to the waters from whence they were taken.
12. The following shall be considered as game fish: Large and small mouthed black bass, bream, crappie or perch and all other members of the sunfish family; white bass, yellow bass and all members of the fresh water trout, pickerel and perch families.
13. It shall be unlawful to sell any of the fish designated as game fish.