

# THE SELECTIVITY AND EFFECTIVENESS OF CERTAIN TYPES OF COMMERCIAL NETS IN THE T. V. A. LAKES OF ALABAMA

By C. E. WHITE, JR.  
*Alabama Department of Conservation*  
Decatur, Alabama

## ABSTRACT

From November, 1955, through May, 1956, trammel and riprap nets of 3-, 3.5- and 4-inch bar mesh and gill nets of 3- and 4-inch bar mesh were fished by resident commercial fishermen under the supervision of State Fisheries Biologists, in T. V. A. lakes of Alabama.

A total of 10,425 fish which weighed 42,689 pounds was caught, of which 95.4 percent was rough fish. All of the nets were selective in taking rough fish. Whip set trammel nets were the most effective type of net fished, followed by fixed trammel, riprap and gill nets. In general, as the mesh size increased from 3 to 4 inches, the effectiveness of all nets decreased.

## INTRODUCTION

A study was conducted in T. V. A. lakes of Alabama (approximately 180,000 acres) from November, 1955, through May, 1956, to determine the selectivity and effectiveness of trammel and riprap nets of 3-, 3.5- and 4-inch bar mesh and gill nets of 3- and 4-inch bar mesh. Information on selectivity and effectiveness of the nets and mesh sizes mentioned above was needed since commercial fishing, at present, appears to be the only practical means in many large impoundments of harvesting rough fish. The importance of rough fish removal as a management technique to improve sport fishing has been expressed by Dequine (1952) and Hulsey (1957) who reported improved sport fishing following the removal of large poundages of rough fish from large impoundments and lakes. Also, it has been observed that major fish kills of rough fish in power impoundments throughout Alabama have been followed by improved sport fishing. Therefore, it would appear that more effective and selective types of commercial fishing devices must be developed and used in order that commercial fishing will be able to do an adequate job of harvesting rough fish.

## PROCEDURE

During this study, all nets were fished by resident commercial fishermen under the supervision of state fisheries biologists. However, the fishermen determined the manner and location in which the nets were fished, subject to the following state regulations and laws which were in effect during the study. All game fish were returned to the waters from which they were taken with the least injury possible, all nets were fished 25 feet or more from the water's edge and no nets were placed in such a way as to extend more than one-half the distance across any creek, stream or slough. The fishermen received the commercial and non-commercial rough fish taken in the nets as payment for their labor. It was felt that this method would motivate the fishermen to do the best job possible.

Two general types of sets, whip sets and fixed sets (White, 1955), were used during the investigation. Only trammel nets were used in whip sets while riprap, gill and trammel nets were used as fixed sets. In shallow water the whip sets were usually made in the shape of a semi-circle with the concave side of the net toward the bank. Many of the whip sets were made with one-half of the net consisting of 3-inch mesh and the other half of 3.5- or 4-inch bar mesh. These nets were used only when making semi-circle sets in which case the larger mesh webbing was placed from 5 to 20 feet in front of the smaller mesh webbing. The purpose of this type of set was to determine the percentage of fish that would pass through the larger mesh and would be caught in the smaller mesh.

Whip set trammel nets also were used in making "fencerow" and circle sets. The "fencerow set" was made in deeper water usually in an old pre-impoundment channel. The net was set in a "zigzag" fashion from one edge of the channel to the other. The circle set, as the name indicates, was made around an area believed to contain a concentration of fish. A variation of the circle set was used in some cases with the net placed in a spiraled manner. In making a spiral set the operation was begun on the outside with the circles becoming progressively smaller.

The second general type of set used was the fixed set in which the net was fished in a straight line generally perpendicular to the bank. Heavy weights were tied to each end of the net and it remained in one location for 24 hours or longer depending on the poundage of fish it took, weather conditions, etc.

Since similar lengths of netting of each mesh size were not used, the average number of pounds of fish taken per 100 yards of net per day was used to measure the relative effectiveness of each type of net. A 100-yard-net-day for fixed nets was defined as 100 yards of netting fished for a period of 24 hours. When whip sets were used a number of sets usually were made each day. Therefore, a 100-yard-net-day for whip set nets was defined as 100 yards of netting fished an average number of sets per 24-hour period. For example, the total number of sets made with 3-inch bar mesh whip set trammel nets in 48 days was 279 or an average of 5.81 sets per day. Therefore, a 100-yard-net-day for 3-inch bar mesh whip set trammel nets was defined as 5.81 sets of 100 yards each.

## RESULTS

A total of 10,425 fish and turtles which weighed 42,689 pounds was caught in nets from November, 1955, through May, 1956. A list of the species of fish taken during this study is given in Table I. The predominant rough fish were carp, buffalo, catfish, carpsucker and gar which made up 35.1, 30.8, 8.5, 8.3 and 5.7 percent of the total weight, respectively. Turtles constituted 4.4 percent of the total weight. Game fish caught were white crappie, white lake bass and largemouth black bass which made up 3.6, 0.6 and 0.4 percent of the total weight, respectively. Sauger and bluegill were also taken but each comprised less than 0.05 percent of the total weight (Table II). Further discussion of the catches in whip set trammel, fixed trammel, riprap and gill nets will be given under separate headings.

TABLE I

COMMON AND SCIENTIFIC NAMES OF FISHES TAKEN FROM T. V. A. LAKES OF ALABAMA WITH TRAMMEL, RIPRAP AND GILL NETS FROM NOVEMBER, 1955, THROUGH MAY, 1956

Common Name	Scientific Name
Bluegill.....	<i>Lepomis macrochirus</i> Raf.
Buffalo: Bigmouth.....	<i>Megastomatobus cyprinella</i> (Valenciennes)
Black.....	<i>Ictiobus niger</i> (Raf.)
Smallmouth.....	<i>Ictiobus bubalus</i> (Raf.)
Carp.....	<i>Cyprinus carpio</i> Linn.
Carpsucker.....	<i>Carpiodes</i> spp.
Catfish: Blue.....	<i>Ictalurus furcatus</i> (Lesueur)
Brown bullhead.....	<i>Ameiurus nebulosus</i> (Lesueur)
Channel.....	<i>Ictalurus lacustris</i> (Walbaum)
Flathead.....	<i>Pilodictis olivaris</i> (Raf.)
Drum.....	<i>Aplodinotus grunniens</i> Raf.
Gar: Longnose.....	<i>Lepisosteus osseus</i> Raf.
Shortnose.....	<i>Lepisosteus platostomus</i> Raf.
Spotted.....	<i>Lepisosteus productus</i> Cope
Largemouth bass.....	<i>Micropterus salmoides</i> (Lacepede)
Redhorse.....	<i>Moxostoma</i> sp.
Sauger.....	<i>Stizostedion canadense</i> (Smith)
Shad: Gizzard.....	<i>Dorosoma cepedianum</i> (Lesueur)
Threadfin.....	<i>Signalosa petenensis</i> Everman and Kendall
Skipjack.....	<i>Pomolobus chrysochloris</i> (Raf.)
Spoonbill.....	<i>Polyodon spathula</i> (Walbaum)
White crappie.....	<i>Pomoxis annularis</i> Raf.
White lake bass.....	<i>Lepibema chrysops</i> (Raf.)

TABLE II  
THE TOTAL NUMBER AND POUNDS OF FISH TAKEN FROM T. V. A. LAKES IN  
ALABAMA WITH TRAMMEL, RIPRAP AND GILL NETS FROM  
NOVEMBER, 1955, THROUGH MAY, 1956

<i>Kind of Fish</i>	<i>Number</i>	<i>Pounds</i>	<i>% by Weight</i>
<b>Rough Fish:</b>			
<b>Commercial:</b>			
Carp .....	2,934	14,932.5	35.1
Buffalo .....	3,049	13,164.7	30.8
Catfish .....	712	3,615.0	8.5
Carp sucker .....	1,201	3,563.5	8.3
Redhorse .....	124	434.3	1.0
Spoonbill .....	78	390.7	0.9
Drum .....	163	204.2	0.5
<b>Non-Commercial:</b>			
Gar .....	377	2,438.7	5.7
Skipjack .....	38	45.8	0.1
Shad .....	76	32.8	0.1
Turtle .....	594	1,895.5	4.4
<b>Subtotal</b> .....	<b>9,346</b>	<b>40,717.7</b>	<b>95.4</b>
<b>Game Fish:</b>			
White Crappie .....	903	1,526.4	3.6
White Lake Bass .....	113	241.1	0.6
Largemouth Bass .....	50	189.2	0.4
Sauger .....	8	13.3	tr.*
Bluegill .....	5	1.4	tr.
<b>Subtotal</b> .....	<b>1,079</b>	<b>1,971.4</b>	<b>4.6</b>
<b>TOTAL</b> .....	<b>10,425</b>	<b>42,689.1</b>	<b>100.0</b>

\* Trace (less than 0.05 percent by weight).

#### CATCHES WITH WHIP SET TRAMMEL NETS

The catches made with whip set trammel nets indicated that commercial fishermen could greatly increase the harvest of rough fish through the use of this technique of fishing and especially by using the 3-inch bar mesh trammel net. Three-inch bar mesh nets caught an average of 163 pounds or rough fish per 100-yard-net-day which was 114 pounds more than the average for nets of 3.5-inch mesh and 138 pounds more than 4-inch mesh nets (Table III). Carp, buffalo, catfish, carpsucker and gar made up 93, 83, and 89 percent of the total weight of fish caught, respectively, in whip set trammel nets of 3-, 3.5- and 4-inch mesh (Table IV).

Game fish constituted only 3, 1 and 1 percent of the weight of fish, respectively, taken in 3-, 3.5- and 4-inch mesh nets. Therefore, the whip set trammel nets selectively harvested rough fish.

In the whip sets in which the larger mesh net was placed in front of the smaller mesh net, 3,180 fish that weighed 12,708 pounds were taken in the 3- and 4-inch nets and 673 fish that weighed 2,599 pounds were taken in the 3- and 3.5-inch nets. Of the total weights 88 percent passed through the 4-inch mesh nets while 65 percent passed through the 3.5-inch mesh nets and were caught in the 3-inch mesh nets (Tables V and VI). The range of the size groups of each species taken in each mesh size overlapped to such an extent that it was not possible to determine the minimum size of each species which could be taken by 3-, 3.5- and 4-inch mesh trammel nets.

#### CATCHES WITH FIXED TRAMMEL NETS

Three-inch bar mesh fixed trammel nets caught an average of 28 pounds of rough fish per 100-yard-net-day which was 2 pounds less than 3.5-inch mesh nets and 16 pounds more than 4-inch mesh nets. The fact that a greater average weight of fish was caught per 100-yard-net-day in a 3.5-inch mesh than in 3-inch

TABLE III

AVERAGE NUMBER OF POUNDS OF FISH TAKEN PER 100-YARD-NET DAY IN VARIOUS MESH SIZES OF WHIP SET TRAMMEL NETS, FIXED TRAMMEL NETS, RIPRAP NETS AND GILL NETS FROM NOVEMBER, 1955, THROUGH MAY, 1956, IN T. V. A. LAKES OF ALABAMA

Kind of Fish	Kind of Net												
	Whip Set Trammel		Fixed Trammel		Riprap		Gill						
	Bar Mesh in Inches	3.0	3.5	4.0	Bar Mesh in Inches	3.0	3.5	4.0	Bar Mesh in Inches	3.0	3.5	4.0	
Commercial:													
Carp	66.19	18.35	8.84	9.90	11.74	2.70	7.13	7.34	1.71	3.72	0.19		
Buffalo	50.51	10.22	9.26	8.79	10.00	4.89	7.41	4.50	2.25	3.05	1.70		
Catfish	13.29	6.16	3.43	1.95	2.00	1.93	0.56	2.33	2.72	2.74	0.67		
Carp sucker	20.95	1.75	0.58	2.58	1.17	..	2.07	0.16	..	0.48	..		
Redhorse	0.18	..	..	0.62	0.23	0.01	0.57	0.05	..	0.20	..		
Spoonbill	..	..	..	0.34	0.05	0.28	0.04	0.59	1.27	0.24	0.26		
Drum	0.51	0.09	0.37	0.07	0.15	0.30	0.03	0.03	0.08	0.02	..		
Non-Commercial:													
Gar	5.95	4.61	0.48	2.29	1.92	0.60	0.56	1.47	0.49	1.75	0.67		
Skipjack	0.01	..	0.02	0.03	0.04	0.05	..	0.16	0.16	0.04	0.04		
Shad	0.12	..	0.02	0.02	0.01	0.02	0.02	0.03	tr.*	0.02	0.02		
Turtle	5.42	7.89	2.24	0.98	2.60	1.10	0.48	0.27	0.25	..	..		
Subtotal	163.13	49.07	25.22	27.57	29.91	11.88	18.87	17.77	8.93	12.22	3.55		
Game Fish:													
White Crappie	5.25	0.36	0.03	1.62	0.17	0.05	1.51	0.59	0.02	0.41	0.06		
White Lake Bass	0.24	..	..	0.38	0.07	0.01	0.18	..	..	..	..		
Largemouth Bass	0.38	0.05	0.10	0.20	0.01	0.01	0.18	0.60	..	..	..		
Sauger	0.01	..	..	0.02	0.01	tr.	..	..	..	..	..		
Bluegill	tr.	..	..	tr.	tr.	..	..	..	..	..	..		
Subtotal	5.88	0.41	0.13	2.22	0.26	0.07	1.69	1.19	0.02	0.41	0.06		
TOTAL	169.01	49.48	25.35	29.79	30.17	11.95	20.56	17.96	8.95	12.63	3.61		

\* Trace (less than 0.005 pounds per 100-yard-net day).

TABLE IV  
COMPOSITION OF THE CATCHES MADE WITH 3-, 3.5- AND 4-INCH BAR MESH WHIP SET TRAMMEL NETS  
FROM NOVEMBER, 1955, THROUGH MAY, 1956, IN T. V. A. LAKES

Kind of Fish	3-Inch Bar Mesh 84.00		3.5-Inch Bar Mesh 18.24		4-Inch Bar Mesh 62.16	
	Number	Pounds	Number	Pounds	Number	Pounds
<b>Rough Fish:</b>						
Commercial:						
Carp	1,215	5,559.5	59	334.5	94	550.0
Buffalo	1,100	4,243.0	39	186.5	76	576.2
Catfish	269	1,116.0	25	112.3	39	213.0
Carpucker	541	1,759.5	7	32.0	6	36.0
Redhorse	5	15.0				
Drum	55	43.2	3	1.7	13	22.7
<b>Non-Commercial:</b>						
Gar	74	500.0	20	84.0	8	30.0
Skipjack	2	0.9				
Shad	12	10.5			2	1.0
Turtle	149	455.0	47	144.0	38	139.0
Subtotal	3,422	13,702.6	200	895.0	276	1,567.9
<b>Game Fish:</b>						
White Crappie	322	440.9	4	6.6	1	2.0
White Lake Bass	10	20.0				
Largemouth Bass	9	32.3	1	1.0	2	6.0
Sauger	1	1.1				
Bluegill	1	0.2				
Subtotal	343	494.5	5	7.6	3	8.0
<b>TOTAL</b>	<b>3,765</b>	<b>14,197.1</b>	<b>205</b>	<b>902.6</b>	<b>279</b>	<b>1,575.9</b>

\* Percentage of the total weight comprised by each species.

† Trace (less than 0.05 percent by weight)

TABLE V  
THE TOTAL NUMBER AND POUNDS OF FISH TAKEN FROM T. V. A. LAKES OF ALABAMA WITH DOUBLED WHIP SET TRAMMEL NETS OF 3- AND 3.5-INCH BAR MESH FROM NOVEMBER, 1955, THROUGH MAY, 1956

Kind of Fish	No.	3-Inch Bar Mesh			3.5-Inch Bar Mesh		
		Lbs.	E*	C†	No.	Lbs.	E
<b>Rough Fish:</b>							
<b>Commercial:</b>							
Carp .....	160	687	40.5	67.3	59	334	37.2
Buffalo .....	115	410	24.1	68.8	39	186	20.7
Catfish .....	29	130	7.6	53.7	25	112	12.5
Carp sucker .....	45	125	7.3	79.6	7	32	3.6
Redhorse .....	1	3	0.2	100.0	..	..	..
Drum .....	2	5	0.3	62.5	3	3	0.3
<b>Non-Commercial:</b>							
Gar .....	10	70	4.1	45.5	20	84	9.4
Turtle .....	73	191	11.2	57.0	47	144	16.0
<b>Subtotal</b> .....	<b>435</b>	<b>1,621</b>	<b>95.3</b>	<b>74.4</b>	<b>200</b>	<b>895</b>	<b>99.7</b>
<b>Game Fish:</b>							
White Crappie .....	33	66	3.9	95.7	2	3	0.3
White Lake Bass .....	1	3	0.2	100.0	..	..	..
Largemouth Bass ..	2	11	0.6	100.0	..	..	..
<b>Subtotal</b> .....	<b>36</b>	<b>80</b>	<b>4.7</b>	<b>96.4</b>	<b>2</b>	<b>3</b>	<b>0.3</b>
<b>TOTAL</b> .....	<b>471</b>	<b>1,701</b>	<b>100.0</b>	<b>65.4</b>	<b>202</b>	<b>898</b>	<b>100.0</b>

\* Percentage of the total weight comprised by each species.

† Percentage of the total catch by weight of each species which passed through the 4-inch bar mesh and was caught by the 3-inch bar mesh net.

TABLE VI  
THE TOTAL NUMBER OF POUNDS OF FISH TAKEN FROM T. V. A. LAKES OF ALABAMA WITH DOUBLED WHIP SET TRAMMEL NETS OF 3- AND 4-INCH BAR MESH FROM NOVEMBER, 1955, THROUGH MAY, 1956

Kind of Fish	No.	3-Inch Bar Mesh			4-Inch Bar Mesh		
		Lbs.	E*	C†	No.	Lbs.	E
<b>Rough Fish:</b>							
<b>Commercial:</b>							
Carp .....	939	4,282	38.2	88.7	92	543	36.7
Buffalo .....	925	3,643	32.5	87.3	73	531	35.9
Catfish .....	238	981	8.8	83.3	37	197	13.3
Carp sucker .....	470	1,551	13.8	97.7	6	36	2.4
Redhorse .....	1	3	tr.‡	100.0	..	..	..
Drum .....	51	60	0.5	73.2	12	22	1.5
<b>Non-Commercial:</b>							
Gar .....	59	373	3.3	93.7	6	25	1.7
Shad .....	13	14	0.1	87.5	2	2	0.1
Turtle .....	26	69	0.6	36.1	35	122	8.2
<b>Subtotal</b> .....	<b>2,722</b>	<b>10,976</b>	<b>97.8</b>	<b>82.5</b>	<b>263</b>	<b>1,478</b>	<b>99.3</b>
<b>Game Fish:</b>							
White Crappie .....	178	215	1.9	100.0	..	..	..
White Lake Bass .....	9	16	0.1	84.2	2	3	0.2
Largemouth Bass ..	6	20	0.2	100.0	..	..	..
<b>Subtotal</b> .....	<b>193</b>	<b>251</b>	<b>2.2</b>	<b>...</b>	<b>2</b>	<b>3</b>	<b>0.2</b>
<b>TOTAL</b> .....	<b>2,915</b>	<b>11,227</b>	<b>100.0</b>	<b>88.3</b>	<b>265</b>	<b>1,481</b>	<b>100.0</b>

\* Percentage of the total weight comprised by each species.

† Percentage of the total catch by weight of each species which passed through the 4-inch bar mesh and was caught by the 3-inch bar mesh.

‡ Trace (less than 0.05 percent by weight).

TABLE VII

COMPOSITION OF THE CATCHES MADE WITH 3-, 3.5- AND 4-INCH BAR MESH FIXED TRAMMEL NETS  
FROM NOVEMBER, 1955, THROUGH MAY, 1956, IN T. V. A. LAKES

Kind of Fish	3-Inch Bar Mesh 557.2		3.5-Inch Bar Mesh 114.2		4-Inch Bar Mesh 232.1	
	Number	100-Yard-Net-Days Pounds	Number	100-Yard-Net-Days Pounds	Number	100-Yard-Net-Days Pounds
<b>Rough Fish:</b>						
Commercial:						
Carp	1,136	5,515.0	177	1,342.0	75	627.0
Buffalo	1,293	4,899.0	182	1,142.0	143	1,136.0
Catfish	222	1,087.3	40	228.4	54	449.0
Carp sucker	559	1,436.0	25	134.0	..	..
Redhorse	99	343.3	4	26.0	1	2.0
Spoonbill	48	192.0	1	6.0	8	64.0
Drum	41	41.0	12	16.9	25	69.9
<b>Non-Commercial:</b>						
Gar	179	1,275.0	36	219.0	27	138.5
Skipjack	12	18.3	3	4.0	9	10.5
Shad	33	11.9	3	0.7	13	4.9
Turtle	210	543.5	75	297.0	56	255.0
Subtotal	3,832	15,362.3	558	3,416.0	411	2,756.8
<b>Game Fish:</b>						
White Crappie	479	904.9	13	19.0	6	10.5
White Lake Bass	98	209.6	3	8.0	2	3.5
Largemouth Bass	28	108.9	1	1.5	2	4.0
Sauger	5	10.0	1	0.7	1	1.5
Bluegill	3	0.9	1	0.3	..	..
Subtotal	613	1,234.3	19	29.5	11	19.5
<b>TOTAL</b>	<b>4,445</b>	<b>16,596.6</b>	<b>577</b>	<b>3,445.5</b>	<b>422</b>	<b>2,776.3</b>

\* Percentage of the total weight comprised by each species.

† Trace (less than 0.05 percent by weight).

TABLE VIII

COMPOSITION OF THE CATCHES MADE WITH 3-, 3.5- AND 4-INCH BAR MESH RIPRAP NETS  
FROM NOVEMBER, 1955, THROUGH MAY, 1956, IN T. V. A. LAKES

Kind of Fish	3-Inch Bar Mesh 71.5		3.5-Inch Bar Mesh 37.3		4-Inch Bar Mesh 71.5	
	Number	Pounds	Number	Pounds	Number	Pounds
Rough Fish:						
Commercial:						
Carp	100	510.0	42	273.5	13	122.0
Buffalo	141	530.0	26	168.0	22	161.0
Catfish	11	40.0	12	87.0	24	195.0
Carp sucker	55	148.0	3	6.0	..	..
Redhorse	13	41.0	1	2.0	..	..
Spoonbill	2	3.0	3	22.0	14	90.7
Drum	4	1.8	1	1.0	7	5.6
Non-Commercial:						
Gar	8	40.2	7	55.0	8	35.0
Skipjack	..	..	..	..	11	11.1
Shad	6	1.4	1	1.0	2	0.3
Turtle	10	34.0	4	10.0	5	18.0
Subtotal	350	1,349.4	100	625.5	106	638.7
Game Fish:						
White Crappie	58	107.3	11	22.0	2	1.2
Largemouth Bass	3	13.0	4	22.5	..	..
Subtotal	61	120.3	15	44.5	2	1.2
TOTAL	411	1,469.7	115	670.0	108	639.9
						100.0

\* Percentage of the total weight comprised by each species.

† Trace (less than 0.05 percent by weight).



mesh was probably due to chance. There is no doubt, however, that both 3- and 3.5-inch mesh nets were more effective than 4-inch mesh nets.

Carp, buffalo, catfish, carpsucker and gar constituted 86, 89 and 85 percent of the weight of fish taken in nets of 3-, 3.5- and 4-inch mesh, respectively. Game fish made up 7, 1 and 1 percent of the total weight of fish captured, respectively, in 3-, 3.5- and 4-inch mesh nets (Table VII).

#### CATCHES WITH RIPRAP NETS

Carp, buffalo, catfish, carpsucker and gar together constituted 86, 88 and 80 percent of the total weight of fish captured with riprap nets of 3-, 3.5- and 4-inch mesh. Three-inch mesh riprap nets took a greater percentage of game fish than any other type fished during the study. Game fish made up 8, 7 and 0 percent of the weight taken with 3-, 3.5- and 4-inch mesh nets (Table VIII).

An average of 19 pounds of rough fish was taken per 100-yard-net-day in 3-inch mesh nets which was 2 pounds more than 3.5-inch mesh nets and 10 pounds more than 4-inch mesh nets. Therefore, the effectiveness of riprap nets decreased as the mesh size was increased from 3 to 4 inches. The number of pounds taken per 100-yard-net-day indicated that riprap nets were the third most effective for harvesting rough species of fish (Table III).

#### CATCHES WITH GILL NETS

Carp, buffalo, catfish, carpsucker and gar constituted 93 and 90 percent of the total weight taken, respectively, in nets of 3- and 4-inch mesh while game fish made up 3 and 2 percent respectively of the total weight in the same nets (Table IX). An average of only 12 and 4 pounds of rough fish were taken per 100-yard-net-day in 3- and 4-inch mesh nets (Table III). Gill nets though particularly selective for rough fish were the least efficient net of those used. However, even in gill nets it was found that as the mesh size increased from 3 to 4 inches the effectiveness of the net decreased.

TABLE IX  
COMPOSITION OF THE CATCHES MADE WITH 3- AND 4-INCH BAR MESH GILL NETS FROM NOVEMBER, 1955, THROUGH MAY, 1956, IN T. V. A. LAKES

Kind of Fish	3-Inch Bar Mesh			4-Inch Bar Mesh		
	No.	Lbs.	E*	No.	Lbs.	E
Rough Fish:						
Commercial:						
Carp	22	94.0	29.4	1	5.0	5.1
Buffalo	21	77.0	24.2	6	46.0	47.6
Catfish	14	69.0	21.7	2	18.0	18.5
Carpsucker	5	12.0	3.8	..	..	..
Redhorse	1	5.0	1.6	..	..	..
Spoonbill	1	6.0	1.9	1	7.0	7.2
Drum	2	0.4	0.1	..	..	..
Non-Commercial:						
Gar	8	44.0	13.8	2	18.0	18.5
Skipjack	..	..	..	1	1.0	1.0
Shad	1	0.5	0.2	3	0.6	0.6
Subtotal	75	307.9	96.7	16	95.6	98.5
Game Fish:						
White Crappie	6	10.5	3.3	1	1.5	1.5
Subtotal	6	10.5	3.3	1	1.5	1.5
TOTAL	81	318.4	100.0	17	97.1	100.0

\* Percentage of the total weight comprised by each species.

## DISCUSSION AND RECOMMENDATIONS

Although there was a difference in the selectivity of each type of net for rough fish, the difference was not great enough to be significant. Gill and whip set trammel nets took 97 percent rough fish while fixed trammel and riprap nets caught 94 percent rough fish. All types of three-inch mesh nets caught 94 percent rough fish by weight, while 3.5-inch nets took 98 percent rough fish by weight and 4-inch mesh nets caught 99 percent rough fish by weight.

Whip set trammel nets were the most effective type of net fished, followed in decreasing order by fixed trammel, riprap and gill nets. In general, as the mesh size increased the effectiveness of all nets decreased.

Although the selectivity of whip set trammel nets and gill nets was approximately the same the whip set trammel net took an average of 91 pounds more rough fish per 100-yard-net-day than did gill nets. Therefore, when both effectiveness and selectivity were considered, the whip set trammel net was the most efficient net used. Probably, the most important factor that made this net so efficient was that the fishermen carried it to the fish rather than setting it and waiting for the fish to come to the net. The catches made on three experimental sets by Starrett and Barnickol (1955) gave proof of the above theory and of the fact that carp, carpsucker and buffalo tend to congregate in large numbers when spawning, feeding and at other times for unknown reasons. In one set 90 pounds of fish were taken of which 100 percent was buffalo. In two other sets, 554 pounds of fish were taken of which 95 percent was carp. Similar results were observed on several sets during this study. One, in particular, was recorded in which buffalo, carp and carpsucker constituted 99 percent of 1,033 pounds of fish taken in one 400-yard set.

As a result of this study, it was recommended that the Alabama Department of Conservation continue to legalize the use of whip set trammel, fixed trammel, riprap and gill nets for the harvest of rough species of fish. In order that rough fish might be harvested more adequately in the T. V. A. lakes and other public waters of Alabama, it was also recommended and subsequently adapted that the minimum legal bar mesh of all of the above mentioned nets be set at three inches.

### LITERATURE CITED

- Dequine, John F. 1952. Florida's Controlled Seining Program with a Discussion of General Fish Management Principles. Fish Management Bull. No. 1. Florida Game and Fresh Water Fish Commission, Tallahassee, Florida, 1-39.
- Hulsey, Andrew H. 1957. Effects of a Fall and Winter Drawdown on a Flood Control Lake. Proc. 10th Annual Conf. Southeast. Assoc. Game and Fish Comm., pp. 285-290.
- Starrett, William C. and Paul G. Barnickol. 1955. Efficiency and Selectivity of Commercial Fishing Devices Used on the Mississippi River. Ill. Nat. Hist. Surv. Bul., 26(4) :325-366.
- White, Clarence E., Jr. 1955. Fish Catches with Various Types of Commercial Fishing Gear Used in T. V. A. Lakes from June, 1954, through January, 1955. Proc. Southeast. Assoc. Game and Fish Comm., pp. 80-86.

*Question:* What was the main species of rough fish taken in the 4-inch mesh net?

*Answer:* Carp, buffalo and carpsucker.

*Question:* How were the nets placed?

*Answer:* By commercial fishermen.

*Question:* Were all figures based on weight of fish?

*Answer:* Yes.

*Question:* How were the fishermen paid?

*Answer:* They were given the fish which were caught.

*Question:* Were gill nets tested?

*Answer:* No, only trammel nets.

*Question:* Can the expert fishermen use gill nets to select game species?

*Answer:* In areas where crappie were plentiful they did not appear to be able to do so.

*Question:* What was the twine size of the nets used?

*Answer:* Size 139 to 208.