

# AN ECONOMIC EVALUATION OF THE COMMERCIAL FISHING INDUSTRY IN THE T. V. A. LAKES OF ALABAMA DURING 1956

By PAUL BRYAN

*Fish and Game Branch, Tennessee Valley Authority*  
Decatur, Alabama

and

C. E. WHITE, JR.

*Fish Management Section, Alabama Department of Conservation*  
Montgomery, Alabama

1958

During 1956 an evaluation of the economic importance of the commercial fishing industry in the T. V. A. Lakes of Alabama was made cooperatively by the Alabama Department of Conservation and the Fish and Game Branch of the Tennessee Valley Authority. The T. V. A. Lakes comprise a total of 180,000 acres in Alabama. The need for the study was brought about by the fact that no comprehensive evaluation of the industry was available. There existed extremely divergent opinions as to the importance of the industry to the area. In fact, certain people in the area held a very low opinion of the industry. Research has shown that the industry was and is an extremely important fishery management tool for controlling and harvesting rough fish which compete with game fish. The purposes of this investigation were to determine the number of people dependent for income on commercial fishing, the type of fishing gear used by commercial fishermen, the number of pounds of fish harvested during 1956, and the income derived from commercial fishing.

All information was obtained during personal contacts with the fishermen. After contacting the fishermen the interviewer explained the purpose of the investigation and made it clear that all information would be confidential. Therefore, cooperation was very good and in no case did a fisherman refuse to give pertinent data. Although much of the information was given from memory, in some cases the fishermen had records to which they referred.

The sample was considered to be a random one since it was never certain in advance which fishermen would be contacted. Certain predetermined boat launching sites, fish markets and general areas were visited; however, since commercial fishermen move about considerably in their work, the fisherman that was contacted was left to chance. Since the sample was random it was assumed to be representative of the total fisherman population.

To determine the number of commercial fishermen on the Tennessee River during 1956, a list of those who purchased licenses in the counties adjacent to the river was obtained from records of the Alabama Department of Conservation in Montgomery, Alabama. In the discussion of this investigation, statistics will be given as estimates of the total fisherman population. To project the sample statistics to the total fisherman population a factor was used which could be multiplied by the totals obtained from the sample.

## NUMBER OF PEOPLE DEPENDENT ON COMMERCIAL FISHING

There were 372 licensed commercial fishermen operating in the T. V. A. Lakes of Alabama during 1956, of which 112 or 30 percent were interviewed. Assuming that these 112 fishermen were representative of the total fisherman population, it was estimated that 259, or 70 percent of the 372 licensed fishermen were dependent on commercial fishing for 50 to 100 percent of their income. Of this number, 169 fishermen were 100 percent dependent on commercial fishing. There were an estimated 203 part-time fishermen whose supplementary or major occupations are given in Table I.

TABLE I  
SUPPLEMENTARY OCCUPATIONS OF PART-TIME COMMERCIAL FISHERMEN  
IN THE T.V.A. AREA OF ALABAMA DURING 1956

Type of Occupation	Total No. of Part-Time Commercial Fishermen		Part-Time Fishermen Dependent on Com. Fishing for 50% or More of Their Income	
	Number	Percentage	Number	Percentage
Farming .....	100	49	41	47
Public Works .....	50	25	6	7
Day Labor .....	21	10	19	22
Fish Market .....	6	3	4	4
Service Station .....	6	3	4	4
Boat Livery .....	4	2	4	4
Carpentry .....	4	2	4	4
Relief .....	4	2	4	4
Entertainment .....	4	2	4	4
Mussel Fishing .....	4	2	0	0
<b>TOTAL</b> .....	<b>203</b>	<b>100</b>	<b>90</b>	<b>100</b>

The average fisherman in the Tennessee Valley portion of Alabama had fished commercially for 19 years, 17 of which had been in Alabama. There was an average of 4.8 people in each fisherman's family in the T. V. A. area of Alabama, indicating that 1,800 people were either totally or partially dependent on commercial fishing for their means of livelihood. Each of these people consumed a portion of the harvested fish. It was found that the consumption per individual was 37 pounds or a total of 70,000 pounds of fish during 1956.

TYPES OF NETS AND LINES USED DURING 1956 AND  
THEIR ECONOMIC IMPORTANCE

The legal types of fishing gear used during 1956 included baited lines, snag lines, and gill, hoop, riprap and trammel nets. The estimated values of the fish harvested with 1,778 baited lines of 100 hooks each was \$353,686.00 or 39 percent of the total income; while the catch with 1,199 snag lines of 1,000 hooks each was \$221,258.00 or 25 percent of the total income; the catch with 25,800 yards of gill net, 10,700 yards of riprap net, 21,600 yards of whipped trammel net and 22,400 yards of fixed trammel net was \$208,208.00 or 23 percent of the total income; and the catch with 828 hoop nets was \$116,851.00 or 13 percent of the total income (Table II).

TABLE II  
AMOUNT OF GEAR USED BY 372 FULL- AND PART-TIME FISHERMEN DURING 1956  
IN T.V.A. LAKES OF ALABAMA AND THE VALUE RECEIVED FROM EACH TYPE

Type of Gear	Amount of Gear	Income Earned with Each Type of Gear	
		Dollars	Percentage
<i>Nets:</i>			
Whip Trammel .....	216 *	\$ 66,998	7
Fixed Trammel .....	224 *	70,248	8
Riprap .....	107 *	37,138	4
Gill .....	258 *	33,824	4
Hoop .....	828	116,851	13
<i>Lines:</i>			
Baited .....	1,778 †	353,686	39
Snag .....	1,199 ‡	221,258	25
<b>TOTAL</b> .....		<b>\$900,003</b>	<b>100</b>

\* Times 100 yards.

† Times 100 hooks.

‡ Times 1,000 hooks.

Sixteen of the fishermen preferred to use nets only while 106 preferred to use lines only. The remaining 250 fishermen used both nets and lines (Table III).

Table IV shows the number of fishermen who used each of the various types of fishing gear. Several reasons were given for using one of the other types of gear. They were the initial cost of the gear, the type of fish caught by each type of gear, the price obtained for each type of fish, the amount of labor involved in using the gear and at times for subconscious reasons unknown to the fishermen.

TABLE III  
NUMBER OF FISHERMEN USING NETS, LINES OR BOTH IN T.V.A. LAKES  
OF ALABAMA DURING 1956

	<i>Part-Time Fishermen</i>	<i>Full-Time Fishermen</i>	<i>Total</i>
Nets Only .....	3	13	16
Lines Only .....	73	33	106
Both .....	127	123	250

TABLE IV  
NUMBER OF FISHERMEN USING EACH OF THE VARIOUS TYPES OF NETS  
AND/OR LINES IN T.V.A. LAKES OF ALABAMA DURING 1956

<i>Type of Gear</i>	<i>Part-Time Fishermen</i>	<i>Full-Time Fishermen</i>	<i>Total</i>
<i>Nets:</i>			
Whip Trammel .....	30	43	73
Fixed Trammel .....	23	33	56
Riprap .....	4	23	27
Gill .....	33	40	73
Hoop .....	83	60	143
<i>Lines:</i>			
Baited .....	193	149	342
Snag .....	127	128	256

Commercial fishermen during 1956 had a total capital investment of \$440,766.00 of which \$123,683.00 was invested in nets and lines and \$317,083.00 was invested in trucks, boats, outboard motors, ice chests, deep freezers and miscellaneous items such as paddles, tubs and foul weather suits (Table V). During 1956 trammel nets, riprap nets, gill nets, hoop nets, baited lines, and snag lines cost fishermen an average of \$102.00, \$54.00, \$34.00, \$28.00, \$7.00, and \$14.00, respectively. The average annual repair cost on each item was \$37.00, \$43.00, \$18.00, \$11.00, \$6.00, and \$10.00, respectively. Depreciation on fishing gear was very high since the average life span of all types of gear except hoop nets was 12 months or less. Hoop nets had an average life expectancy of 20 months (Table VI).

TABLE V  
CAPITAL INVESTMENT OF COMMERCIAL FISHERMEN IN T.V.A. LAKES  
OF ALABAMA DURING 1956

	<i>Part-Time Fishermen</i>		<i>Full-Time Fishermen</i>		<i>Total</i>	
	<i>Total</i>	<i>Average</i>	<i>Total</i>	<i>Average</i>	<i>Total</i>	<i>Average</i>
Nets and/or Lines \$	67,407	\$ 332.69	\$ 56,276	\$ 332.23	\$123,683	\$ 332.48
Trucks, Boats, Motors, Ice Chests, Deep Freezers and Miscellaneous ...	136,196	674.18	180,887	1,067.87	317,083	852.37
TOTAL .....	\$203,603	\$1,006.87	\$237,163	\$1,400.10	\$440,766	\$1,184.85

TABLE VI  
AVERAGES OF INITIAL COST, ANNUAL REPAIR COST AND LENGTH OF LIFE OF  
EACH TYPE OF GEAR USED BY COMMERCIAL FISHERMEN IN T.V.A.  
LAKES OF ALABAMA DURING 1956

Type of Gear	Average Cost of Each Type of Gear	Avg. Annual Cost of Repairing Each Type of Gear	Avg. Life Each Type of Gear in Months
<i>Nets:</i>			
Whip Trammel .....	\$102	\$37	12
Fixed Trammel .....	102	37	12
Riprap .....	54	43	8
Gill .....	34	18	11
Hoop .....	28	11	20
<i>Lines:</i>			
Baited .....	7	6	7
Snag .....	14	10	8

NUMBER OF POUNDS OF EACH TYPE OF FISH HARVESTED  
AND THEIR VALUE

During 1956 commercial fishermen harvested 3,911,524 pounds of fish valued at \$900,003.00 (Table VII). Of the total pounds of fish taken 2,062,255 pounds were catfish valued at \$618,646.00; 1,114,132 pounds were buffalo valued at \$189,440.00; 437,686 pounds were carp valued at \$30,637.00; 197,344 pounds were spoonbill valued at \$53,282.00; 53,332 pounds were drum valued at \$5,332.00; and 46,775 pounds were carpsucker valued at \$2,666.00.

TABLE VII  
TOTAL POUNDS AND TOTAL VALUE OF FISH TAKEN BY COMMERCIAL  
FISHERMEN FROM T.V.A. LAKES OF ALABAMA DURING 1956

Type of Fish	Part-Time Fish.		Full-Time Fish.		Total	
	Total Pounds	Total Value	Total Pounds	Total Value	Total Pounds	Total Value
Catfish .....	796,332	\$241,611	1,265,922	\$377,035	2,062,255	\$618,646
Buffalo .....	455,776	78,338	658,356	111,102	1,114,132	189,440
Carp .....	169,516	11,866	268,170	18,771	437,686	30,637
Spoonbill .....	74,644	20,152	122,701	33,130	197,344	53,282
Drum .....	18,293	1,829	35,039	3,503	53,332	5,332
Carpsucker .....	16,042	914	30,733	1,752	46,775	2,666
<b>TOTAL .....</b>	<b>1,530,603</b>	<b>\$354,710</b>	<b>2,380,921</b>	<b>\$545,293</b>	<b>3,911,524</b>	<b>\$900,003</b>

INCOME DERIVED FROM COMMERCIAL FISHING

The commercial fishing industry in the T. V. A. Lakes of Alabama was valued at \$900,003.00 to fishermen from the sale of the rough fish harvested. (Table VIII). Eighty percent of these fish were sold to local commercial fish buyers and 20 percent were sold directly to the consumer.

TABLE VIII  
INCOME AND OPERATING EXPENSES OF COMMERCIAL FISHERMEN IN  
T.V.A. LAKES OF ALABAMA DURING 1956

	Part-Time Fish.		Full-Time Fish.		Total	
	Average	Total	Average	Total	Average	Total
Gross Income .....	\$1,751	\$354,710	\$3,219	\$545,293	\$2,419	\$900,003
Operating Expenses .....	470	95,203	1,228	207,999	815	303,202
<b>NET INCOME .....</b>	<b>\$1,281</b>	<b>\$259,507</b>	<b>\$1,991</b>	<b>\$337,294</b>	<b>\$1,604</b>	<b>\$596,801</b>

The average gross income for all fishermen was \$2,419.00, full-time fishermen had an average gross income of \$3,219.00, while part-time fishermen had an

average gross income of \$1,751.00. After deducting operating expenses which included depreciation, outboard motor fuel and repairs to equipment, the average net income for all fishermen was \$1,604.00; full-time fishermen earned an average net income of \$1,991.00 and part-time fishermen earned an average net income of \$1,281.00 (Table VIII).

## DISCUSSION

Commercial fishing was a large business in the Tennessee Valley Area of Alabama during 1956. Through the harvest of an otherwise unavailable "crop," commercial fishing partially or totally supported 1,800 people living in the Tennessee Valley. Had it not been for commercial fishing 3,912,524 pounds of economical protein food material valued at \$900,003.00 would have been unharvested and wasted. Indications were that the commercial fishery resource was under-exploited due to the fact that there was an insufficient market for the resource. T. V. A. records showed that there were approximately 25,000,000 pounds of harvestable size commercial fish available during 1956. This study indicated that only 15 percent of the harvestable size commercial fish were taken. Commercial fishing is limited by legislation and marketing facilities. Therefore, more liberal regulations and better marketing facilities will be necessary before the commercial fishing industry can reach its maximum potential harvest.

## A PROPOSAL FOR THE MANAGEMENT OF RESERVOIRS FOR FISHERIES \*

By ANDREW H. HULSEY  
*Arkansas Game and Fish Commission*  
Lonoke, Arkansas

### ABSTRACT

A fisheries management plan for reservoirs is proposed which is dependent upon having a fish management pool and provision for drainage incorporated into the basic design. Justification is given to support the cost of having a cleared management pool in the bottom of the reservoir as well as drainage facilities. A plan is also proposed for selective clearing of reservoir basins.

The management program described is based on a philosophy of drastic manipulations of fish populations through fall and winter drawdowns, selective kills, partial kills, intensive sport and commercial fishing and other management practices designed to favor the carnivorous fishes and reduce the total number and pounds of all fish so as to bring about a balance of the predator fishes with their food supply and maintain expanding fish populations.

The drawdown is of paramount importance in the reservoir management scheme and, in the humid Southeastern United States, it should begin immediately after Labor Day. The water level should be lowered to the fish management pool by October 15th or November 1st. According to the size of the watershed, water levels can be allowed to return to normal after January 1st. Cost of carrying out the management techniques in the fish management pool are minimal and most effective.

### INTRODUCTION

We believe that in the past 15 years, the various fishery workers over the country have begun to formulate in their minds certain basic theories concerning the management of the warm-water fisheries in reservoirs. These theories are based on the goal of providing good fishing for the sport fisherman, along with the wise utilization of a renewable natural resource. The objective is not to produce maximum pounds of all fish per acre per year, but rather to increase

\* Paper presented at the Seventh Annual Meeting of the Southern Division of the American Fisheries Society, held in conjunction with the Twelfth Annual Conference of the Southeastern Association of Game and Fish Commissioners, at the Kentucky Hotel, Louisville, Kentucky, October 19th through 22nd, 1958.