NAVIGABLE WATERS OF THE UNITED STATES

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Questions frequently arise as to who decides what waters are "navigable waters of the United States" and what criteria is used in making the determination.

There are three methods by which Federal Government can make such determinations.

1. Decision of the U. S. Supreme Court.
2. Act of Congress.
3. Designation by a Federal agency such as the U. S. Army Corps of Engineers, U. S. Coast Guard, and others, having specific authority to make such decisions.

The Coast Guard uses the following criteria for making navigable waters decisions:

"Navigable waters of the United States" shall be construed to mean those waters of the United States, including the territorial seas adjacent thereto, the general character of which is navigable, and which, either by themselves or by uniting with other waters, form a continuous waterway on which boats or vessels may navigate or travel between two or more states, or to or from foreign nations. A stream which otherwise conforms with the above definition would not change its navigable character because of the existence of natural or artificial obstructions such as falls, shallows, rapids, dams, or bridges.

The Federal Boating Act of 1958 delegated to the states with approved numbering systems, concurrent jurisdiction with Federal agencies in small boat law enforcement. However, it should be stressed that neither the Congress nor the Coast Guard intends that such concurrent jurisdiction should be interpreted as abrogation of authority by the Coast Guard. While this Service will, as always, cooperate fully with state boating law enforcement administrators and personnel, it has relinquished none of its long-held authority on the Federal waters.

POLLUTION

The Refuse Act of 1899 prohibits the discharge of refuse of any kind into the navigable waters of the United States or any tributaries of these waters. This Act applies to *small boats* as well as large vessels and before the problem of pollution of our waters becomes even more critical it is felt that a stronger enforcement attitude should be taken against violators operating both types of craft.

The Act applies to not only the discharge of oil but the discharge of any type of refuse.

The Corps of Engineers is the Federal agency charged with the administration of the Refuse Act and the Oil Pollution Acts. The Coast Guard assists the Corps of Engineers in the enforcement by the collection of evidence and reporting such violations when observed.

COMMERCIAL AND SPORT FISHING ON GUNTERSVILLE LAKE DURING THE PERIOD OF MARCH 15-JUNE 13, 1960

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ABSTRACT

A census of sport and commercial fishermen was conducted on Guntersville Lake from March 15 through June 13, 1960. The objectives were to determine species composition of the catches, the types and extent of sport and commercial fishing, the interrelationship of sport

and commercial fishing and the problems of each. The census included data on incomplete fishing trips of sport fishermen and complete fishing trips of commercial fishermen.

Crappie were the fishing choice of 58 percent of the 1,654 sport fishermen and made up 69 percent of the catch by weight. An average of 0.4 pounds of fish per hour were caught by 1,315 boat fishermen while 339 bank fishermen caught an average of 0.2 pounds of fish per hour. Natural bait was used by 75 percent of the fishing parties, artificial bait was used by 10 percent of the fishing parties and both types of bait were used by 15 percent of the fishing parties. Only an average of 42 sport fishermen per day fished Guntersville Lake.

Fifty-nine commercial fishermen caught 3,138 pounds of fish in nets and on lines. Buffalo and carp made up 79 percent of the pounds of fish taken with nets. Catfish made up 85 percent of the pounds of fish taken on lines. Less than one percent of the catch, by weight, taken with each type of commercial fishing gear was game fish.

There appeared to be no conflict between the sport and commercial fishermen in Guntersville Lake. The catch of game fish in nets during the period when crappie were readily caught by sport fishermen indicated that legal mesh nets were not capable of taking a significant number of game fish.

INTRODUCTION

The Alabama Department of Conservation, the Tennessee Game and Fish Commission, and the Fish and Game Branch of the Tennessee Valley Authority cooperatively executed a census of sport and commercial fishermen on Guntersville Lake from March 15, 1960, through June 13, 1960. The objectives were: to determine the species composition of the catch made by sport and commercial fishermen; to determine the types of sport fishing and the sport fishing pressure; to determine the types of commercial fishing and the commercial fishing pressure; and to determine the interrelationship of sport and commercial fishing and the problems of each.

On October 1, 1959, several local legislative laws eliminated all legalized commercial net fishing in Pickwick, Wilson, and Wheeler lakes. This involved about 62 percent of the 182,000 acres of water impounded in the Tennessee Valley of Alabama. Only in Guntersville Lake was it legal to fish commercial nets after October 1, 1959. Some sport fishermen believed that all commercial net fishermen would move their operations to Guntersville Lake producing a concentration of nets so large that it would be impossible to fish the lake with hook and line. They also believed that so many game fish would be removed illegally with nets that sport fishing would be virtually eliminated.

Evidence from past studies indicated that increased commercial netfishing was beneficial to sport fishing since it removed large poundages of commercial species which competed with game fish for the available fish food supply. Also, an increased harvest by nets reduced the larger non-game fish and brought about increased reproduction of all forage species, this provided more small fish which could be used as food by largemouth bass, white bass, crappie, and other predatory game species. Legal commercial nets did not reduce game species since legal mesh sizes were large enough to allow for the escape of all but the very largest specimens. (DeQuine, 1952; Hulsey, 1957; Byrd, 1955; Starrett and Barnickol, 1955; and White, 1955 and 1959.)

Trammel gill and riprap nets having not less than 3-inch bar mesh could be fished legally in the Alabama portion of Guntersville Lake along with 2-inch bar mesh hoop nets, baited lines and snag lines. Trammel, gill and riprap nets could not be legally fished in the Tennessee portion of Guntersville Lake. Three-inch bar mesh hoop nets, baited lines and snag lines could be fished legally in the Tennessee portion of Guntersville Lake.

METHODS

Guntersville Lake which had a surface area of 69,000 acres was divided into four major areas for this investigation as shown in Figure 1. Five access points within each of Areas I, II, and III and three access points in Area IV, were selected as starting points.

The sample period included the days between March 15, 1960, and June 13, 1960. Three sample dates were selected with a table of random numbers (Snedecor, 1950) during each seven-day period beginning on March 15, 1960. The access points within each area were matched at random to the dates making sure that Areas I, II, and II received thirteen days of sampling each and that Area IV which contained one half the surface acreage of Area I, II, or III received seven days of sampling. On a sample day, two teams consisting of one biologist and one conservation officer each, left the landing by boats in opposite directions so that as much of the area (I, II, III, or IV) as possible would be visited.

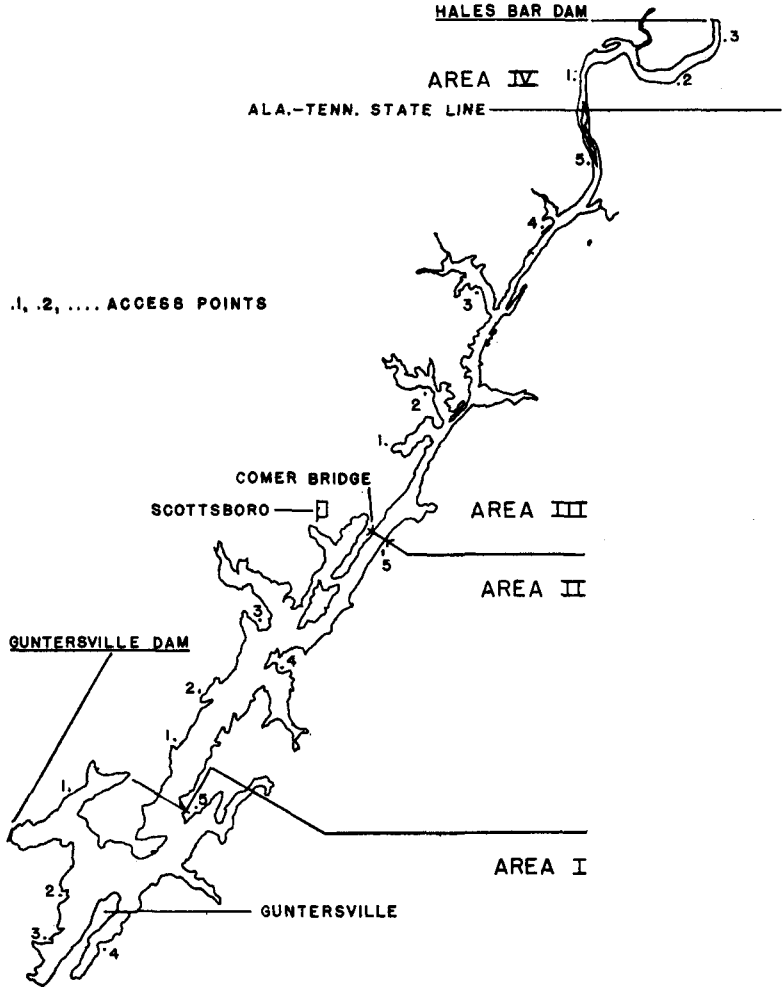

Figure 1. Diagram of Guntersville Lake showing sample areas and access points.

Each team first attempted to make contact with a commercial fisherman and accompanied him until all of his fishing gear had been raised. It was necessary to contact commercial fishermen first because they were usually on the lake early and for only a short period of time. Sport fishermen, although they may have started to fish as early as commercial fishermen, were usually on the lake considerably longer.

During the remainder of the sample day, the teams contacted all sport fishermen in the area. Each team recorded the number of fishermen in each party, the type of baits used, the hour of the contact along with the hour that the party started to fish, the type of license purchased by each fisherman, he the fishing choice of each party, and the number and weight of each species of fish caught. The common and scientific names of the fish taken by sport and commercial fishermen are listed in Table 1.

RESULTS

Sport fishing: A total of 1,315 boat and 339 bank fishermen were interviewed in 39 days of creel census from March 15, through June 13, 1960, on Guntersville Lake. These 1,654 fishermen had fished for 5,059 hours, or an average of 3.1 hours per fishermen when interviewed. They caught 4,056 fish which weighed 2,043 pounds for an average of 0.8 fish or 0.4 pounds per hour (Table 2). Natural baits were used exclusively by 75 percent of the fishing parties while artificial baits were used by 10 percent. The remaining 15 percent used both artificial and natural baits.

Each boat fisherman caught an average of 0.8 fish per hour which weighed 0.4 pounds, while each bank fisherman caught an average of 0.6 fish per hour which weighed 0.2 pounds. White crappie made up 66 percent of the catch by weight taken by boat fishermen and 28 percent of the catch by weight taken by bank fishermen. Bank fishermen also caught bluegill, catfish, and drum, each of which made up 22, 12, and 12 percent of their catch by weight. Only white crappie made up more than 10 percent of the weight of fish caught by boat fishermen (Table 2).

TABLE 1.

FISH TAKEN FROM GUNTERSVILLE LAKE BY SPORT AND COMMERCIAL FISHERMEN FROM MARCH 15, THROUGH JUNE 13, 1960.

Common Name	*Scientific Name*
Game Fish:	
Bass: largemouth	*Micropterus salmoides* (Lacepede)
spotted	*Micropterus punctulatus* (Rafinesque)
white	*Roccus chrysops* (Rafinesque)
yellow	*Roccus mississippiensis* (Jordan and Eigemann)
Bluegill	*Lepomis macrochirus* (Rafinesque)
Crappie: black	*Pomoxis nigromaculatus* (LeSueur)
white	*Pomaxis annularis* (Rafinesque)
Sauger	*Stizostedion canadense* (Smith)
Sunfish: green	*Lepomis cyanellus* (Rafinesque)
longear	*Lepomis megalotis* (Rafinesque)
redear	*Lepomis microlophus* (Gunther)
Warmouth	*Chaenobryttus gulosus* (Cuvier)
Non-game fish:	
Bowfin	*Amia calva* (Linnaeus)
Buffalo	*Ictiobus* spp.
Catfish	*Ictalurus* spp.
Carp	*Cyprinus carpio* (Linnaeus)
Carpsucker	*Carpiodes* sp.
Eel	*Anquilla rostrata* (LeSueur)
Freshwater drum	*Aplodinotus grunniens* (Rafinesque)
Gar	*Lepisosteus* sp.
Paddlefish	*Polyodon spathula* (Walbaum)
Skipjack herring	*Alosa chrysochloris* (Rafinesque)

TABLE 2.

PERCENTAGE BY WEIGHT OF THE CATCH BY SPECIES TAKEN BY SPORT FISHERMEN FROM GUNTERSVILLE LAKE DURING THE PERIOD MARCH 15, THROUGH JUNE 13, 1960.

	Boat	*Bank*	*Total*
Number of fishermen	1,315	339	1,654
Number of hours	4,295.0	764.3	5,059.3
Average number of hours per trip	3.3	2.3	3.1
Average number of fish per hour	0.84	0.61	0.80
Average pounds of fish per hour	0.44	0.23	0.40
	E [1]	E	E
Game fish:			
Bass: largemouth	5.3	1.1	4.9
spotted	0.8	2.0	0.9
white	3.4	7.0	3.7
yellow	0.5	0.8	0.5
Crappie: black	6.1	1.4	5.7
white	66.0	28.0	62.8
Sauger	1.9	4.6	2.1
Sunfish: bluegill	4.2	22.0	5.7
green	0.1	1.0	0.2
longear	tr [2]	0.5	0.1
redear	0.1	0.3	0.1
Warmouth	0.2	0.6	0.2
Subtotal	88.6	69.3	86.9
Non-game fish:			
Bowfin	0.1		0.1
Buffalo	0.6		0.6
Catfish	6.5	12.1	6.9
Carp	0.7	5.9	1.1
Drum	3.3	11.7	4.1
Eel		0.9	0.1
Paddlefish	0.1		0.1
Skipjack herring	tr	0.1	tr
Spotted gar	0.1		0.1
Subtotal	11.4	30.7	13.1
Total	100.0	100.0	100.0
Total number of fish	3,587	469	4,056
Total pounds of fish	1,870.3	173.4	2,043.7

Fishing choice was considered by party groups only, since individuals fishing together either from a boat or on the bank in many cases placed their fish on the same stringer, used the same bait and fished the same habitat. Crappie was the choice of 58 percent of the 803 fishing parties. Sunfish was the choice of 11 percent of the fishing parties. Sixteen percent of the fishermen stated that they were fishing for any species that would take their bait (Table 3).

In the Alabama portion of Guntersville Lake, 13 percent of the 1,542 fishermen interviewed were fishing without a license. Juveniles under 16 years of age made up 6 percent of the fishermen. The remaining 7 percent included persons exempted from licensing who were fishing in their county of residence with natural bait on pole and line as well as persons who were fishing illegally without a license. Twenty-six fishermen were arrested and fined for fishing without a license. This is evidence of good educational law enforcement since only 2 percent of the fishermen interviewed were fishing illegally (Table 4).

Commercial fishing: A total of 1,041 fish weighing 3,138 pounds were caught in 9,321 yards of nets, on 21,870 bait line hooks, in 3 hoop nets, and on 11,300 snagline hooks used by 59 fishermen. Buffalo and

[1] Percentage of the total weight comprised by each species.
[2] Less than 0.05 percent.

carp made up 67 and 12 percent respectively of the 2,379 pounds of fish taken with nets by 16 fishermen, while largemouth bass and white crappie made up 0.4 and 0.1 percent respectively. Catfish made up 86 percent of the 674 pounds of fish taken with baited lines by 39 fishermen, while white bass, white crappie, and spotted bass made up 0.9, 0.5, and 0.2 percent, respectively (Table 5). The catch made by 3 fishermen with snag lines was, by weight, 53 and 36 percent catfish and paddle fish, respectively. Only one hoop net fisherman who caught 10.9 pounds of fish was interviewed . No game fish were caught in the hoop nets (Table 5).

TABLE 3.

FISHING CHOICE OF PARTIES INTERVIEWED ON GUNTERSVILLE LAKE FROM MARCH 15, THROUGH JUNE 13, 1960.

Fishing choice	*Percentage of total*		
	Boat	*Bank*	*Total*
Crappie	66.4	28.1	57.8
Sunfish [1]	8.2	18.1	10.6
Bass [2]	8.4	3.3	7.2
White bass	5.3	6.6	5.6
Catfish	0.8	3.8	1.5
Bait fish	0.2	1.1	0.4
Sauger	..	1.1	0.2
Carp	..	0.5	0.1
Any fish	10.5	35.7	16.2
Total	100.0	100.0	100.0
Number of parties	621	182	803
Fishermen per party	2.1	1.8	2.1

[1] Bluegill, green sunfish, longear sunfish, redear sunfish and warmouth.
[2] Largemouth and spotted bass.

TABLE 4.

TYPE OF LICENSES PURCHASED BY FISHERMEN USING THE ALABAMA PORTION OF GUNTERSVILLE LAKE FROM MARCH 15, THROUGH JUNE 13, 1960.

Type of license	*Cost of license*	*Percentage of total*
Resident		
Rod and reel	$2.15	71.4
Pole and line	$1.15	3.9
Over 65 years of age	$0.15 [1]	4.0
Subtotal	....	79.3
Non-resident		
Annual	$5.00	6.8
Trip (seven days)	$2.00	08.
Subtotal	....	7.6
No license		
Under 16 years of age	$0.00	6.5
Exempted [2]	$0.00	4.9
Illegal [3]	....	1.7
Subtotal	....	13.1
Total	....	100.0
Number of fishermen	....	1,542

[1] Issuance fee for lifetime license.
[2] Persons fishing in their county of residence with live bait on a pole and line.
[3] Persons who should have purchased an appropriate license.

Nets caught an average of 26 pounds of fish per 100 yards each 24 hours, baited lines averaged catching 3 pounds of fish per 100 hooks each 24 hours, snag lines averaged 7 pounds of fish per 1,000 hooks each 24 hours, and hoop nets averaged 4 pounds per net each 24 hours. None of the 3- to 4-inch bar mesh gill or trammel nets, baited lines, snag lines, or hoop nets caught a significant poundage of game species.

CONCLUSIONS

Crappie were the most important species of fish caught from Guntersville Lake by sport fishermen from March 15, through June 13, 1960. They constituted 69 percent of the catch by weight (Table 2).

Seventy-seven percent of the fishermen preferred to fish from a boat and caught an average of 0.8 fish weighing 0.4 pounds per hour while bank fishermen caught an average of 0.6 fish weighing 0.2 pounds per hour. Boat fishermen, therefore, appeared to catch fish more efficiently than did bank fishermen (Table 2).

Natural bait was used exclusively by 75 percent of the fishing parties while artificial bait, only, was used by 10 percent of the parties. Fifteen percent of the fishing parties used both artificial and natural baits. The type of bait used was affected by fishing choice. Crappie were most sought after with minnows as bait.

Licenses were purchased by 87 percent of the fishermen, only 5 percent of the fishermen took advantage of the exemption which allowed persons to fish in their county of residence with pole, line and natural bait without paying for the privilege and the services rendered by the Alabama Department of Conservation. This figure may be too low to apply to the entire state, however, because many fishermen came 100 miles or more to fish Guntersville Lake, and could not legally take advantage of this exemption (Table 4).

Fishing success, which was determined by the number and weight of fish that were caught per hour, could not be directly compared to fishing success discussed in creel census reports prior to 1956. Fishing success before 1956 was stated as the number and weight of fish taken per fisherman trip without regard to the average number of hours per trip. Creel census projects[1] prior to 1960 were designed to collect information on completed fishing trips of boat fishermen only, while the creel census in this report was designed to record data on partial fishing trips of boat and bank fishermen.

Fishing success as determined from data collected at the Mud Creek Fishing Camp in Area III can be compared to previous creel census data[1] since it was obtained over the same period of the year and in a similar manner.

This data indicated that fishing success in Area III was equal to or greater than fishing on Elk River, a tributary of Wheeler Lake, since 1956 and at the Decatur Harbor Area except for 1951.

Fishing pressure or the number of fishermen who used Guntersville Lake was not great enough to realize the possible harvest. It was estimated that 15,000 persons fished Guntersville Lake from March 15 through June 13, 1960. An average of 42 people fished the lake each day. This was equivalent to one fisherman per 1,600 acres of water each day. Fishing pressure was not considered to be normal because of abnormal weather conditions. During this period temperatures were uncomfortably low and the wind was high enough to make fishing difficult.

Commercial fishermen selectively caught non-game fish in trammel, gill and hoop nets as well as on bait and snag lines. Game fish made up less than one percent of the total catch.

Commercial fishermen used more bait lines than any other type of gear. There were 219 bait lines raised as compared to 93 nets, 11 snag lines and 3 hoop nets.

In Alabama sport fishermen can legally set any number of bait and snag lines to catch fish for their own personal use. Sport fishermen constituted 38 percent of the bait line fishermen interviewed. Some sport fishermen tend to abandon or leave lines unattended for long periods of time which causes a nuisance to other sport fishermen and commercial fishermen.

[1] 1961 Annual Report, Fish and Game Branch, Division of Forestry Relations, Tennessee Valley Authority, Norris, Tennessee.

TABLE 5.

CATCHES MADE WITH COMMETCIAL FISHING GEAR IN GUNTERSVILLE LAKE FROM MARCH 15, THROUGH JUNE 13, 1960.

	Nets [1]		*Bait lines*		*Snag lines*		*Hoop nets*		*Total*	
Number of fishermen	16		39		3		1		59	
Number of units	93.21 [2]		218.70 [3]		11.30 [4]		3		326.21	
	Percentage by weight	*Pounds per unit*	*Percentage by weight*	*Pounds per unit*	*Percentage by weight*	*Pounds per unit*	*Percentage by weight*	*Pounds per unit*	*Percentage by weight*	*Pounds per unit*
Non-game fish:										
Bowfin	0.4	0.11	..	...	....	...	....	...	0.3	0.03
Buffalo	66.5	16.96	1.1	0.03	5.9	0.39	22.0	0.80	50.9	4.89
Carp	12.0	3.05	1.9	0.06	5.4	0.35	...	...	9.6	0.92
Carpsucker	4.3	1.11	1.6	0.05	..	...	21.1	0.77	3.7	0.36
Catfish	8.9	2.28	85.7	2.63	52.5	3.46	56.9	2.06	26.6	2.56
Eel	..	...	0.6	0.02	..	...	...	...	0.1	0.01
Freshwater drum	0.7	0.17	2.8	0.09	..	...	...	...	1.1	0.11
Gar	..	...	2.2	0.07	..	...	...	...	0.5	0.05
Paddlefish	4.9	1.50	2.5	0.08	36.2	2.29	...	...	5.9	0.56
Skipjack herring	0.8	0.21	..	...	..	...	...	...	0.6	0.06
Subtotal	99.5	25.29	98.4	23.03	100.0	6.59	100.0	3.63	99.3	9.55
Game fish:										
Bass, largemouth	0.4	0.11	..	...	..	...	...	...	0.3	0.03
spotted	..	...	0.2	0.01	..	...	...	...	tr [5]	tr
white	..	...	0.9	0.03	..	...	...	...	0.2	0.02
White crappie	0.1	0.02	0.5	0.01	..	...	...	...	0.2	0.02
Subtotal	0.5	0.13	1.6	0.05	0.0	0.00	0.0	0.00	0.7	0.07
Total	100.0	25.52	100.0	3.08	100.0	6.59	100.00	3.63	100.0	9.62
Number of fish	518		496	...	24	...	3	...	1,041	...
Pounds of fish	2,378.5		674.0	...	74.5	...	10.9		3.137.9	...

[1] Trammel, riprap and gill.
[2] Times 100 yards.
[3] Times 100 hooks.
[4] Times 1,000 hooks.
[5] Less than 0.05 percent or 0.055 pounds.

Commercial fishing was most successful with nets. The average catch with 100 yards of net fished for 24 hours was 26 pounds of fish valued at about $4.27. Bait lines caught an average of 3 pounds of fish per 100 hooks each 24 hours valued at 83 cents.

As with sport fishing, there were not enough fishermen to realize the possible harvest. There did not appear to be an increase in the number of commercial net fishermen using Guntersville Lake because of the elimination of commercial net fishing in Pickwick, Wilson and Wheeler lakes.

Eleven commercial net fishermen were contacted who had permanent addresses in counties other than those which border Guntersville Lake. Eight of these fishermen stated that they would have been fishing Guntersville Lake even if commercial net fishing had been legal in all TVA lakes. These fishermen moved about as fishing conditions changed.

There were no problems between sport and commercial fishermen exclusive to Guntersville Lake. As in other parts of the state, problems and conflicts came about from time to time because sport fishermen thought the commercial fishing industry had caused poor sport fishing in some areas. The reverse appeared true, however.

The catch of game fish species in nets during this period when crappie were readily available indicated that legal mesh nets were not capable of taking a significant number of game fish and that commercial fishermen, in general, had no interest in game fish species.

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ORGANIZING AN EFFECTIVE SALT WATER FISHING PROMOTION PROGRAM

By HENRY (HAL) LYMAN, *Publisher of The Salt Water Sportsman Magazine, Boston, Mass.*

Salt water sport fishing is growing more rapidly than any other participation sport in the United States. The recently published "National Survey of Hunting and Fishing" based on figures for 1960 and put out by the U.S. Department of the Interior shows an increase of almost 8% a year in this field since 1955. The survey states there are 6,292,000 salt water fishermen who spend an average of about $100 per year on their favorite pastime.

It should be noted that the southeastern coastal states have a higher percentage of fishermen per population unit than do the northeastern or Pacific coastal states, yet the potential in marine angling is compara-