

The only mortality was one chick in the control group. No growth differences were apparent and the volume of solution consumed did not differ significantly between groups. At the end of the 4 week period representative subjects were sacrificed and grossly examined. No evidence of toxicity was noted.

In acute experiments the LD₅₀ for rabbits was found to be 1.7 ml. of Pro-Noxfish per kilogram of body weight, and for chicks 8 ml. per kilogram of body weight. On this basis it would be necessary for a rabbit to consume 900 gallons of treated water per kilogram of body weight in one drinking to obtain a dose of 1.7 ml. Pro-Noxfish. Similarly a chick would need to consume approximately 4,200 gallons per kilogram.

Pro-Noxfish has been tested by the Laboratory of Industrial Hygiene (New York City) for sensitization on Guinea Pigs according to the Draize procedure. A 0.1% suspension of the sample in physiological saline was injected intravenously 3 times a week for a total of 10 injections. Two weeks after the 10th injection, a retest injection was made. 13 animals were used and there was no evidence of sensitization.

Six months ago we began a chronic toxicity on rats. Approximately 100 weanling rats were divided into four groups. The first group was supplied with water containing 1.0 p.p.m. Pro-Noxfish. The second and third groups were given 10.0 and 100.0 p.p.m. Pro-Noxfish respectively. The last group was given distilled water as a control. We plan to continue this experiment for a year or more, but to date there has appeared no evidence of toxicity even at the highest level and there was no significant difference in weight among these animals.

From the evidence that we have obtained it is concluded that Pro-Noxfish is safe for use in water which may be accidentally consumed by farm animals or wildlife.

COMPARISON OF TRAWL SAMPLE RESULTS OF MAY, 1953, AND MAY, 1956, ON LAKE GEORGE, ST. JOHNS RIVER, FLORIDA (Preliminary Report)

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INTRODUCTION

A trawl net program was initiated on Lake George, St. Johns River, Florida, in March, 1953 and continued through June, 1953. In May, 1956, the Lake and Stream Survey team of the Florida Game and Fresh Water Fish Commission, duplicated the program as near as possible over a period of one month. A total of 79 trawl hauls were made in May, 1956 for comparison with the same number made in May, 1953. Due to the limited time available for working up the data, only thirty hauls have been completed and compared with 30 hauls made at corresponding stations in 1953. Therefore, this will be a preliminary report; the final report should be completed within the year.

The 1956 trawl net program was a part of an intensive fishery investigation of Lake George to obtain information pertinent to future management of the lake.

HISTORY AND DESCRIPTION OF LAKE GEORGE

Lake George is the largest lake in the St. Johns River drainage having an area of about 73 square miles or 46,600 acres. The major portion of the lake is 9 to 11 feet in depth; the margins are shallow and heavily vegetated with *Vallisneria* sp., *Potamogeton* sp., and hyacinth. For many years it has produced phenomenal sports and commercial fishing. Until 1946, the sale of all species of fish from the lake except largemouth bass was legal. From 1948 to 1950, a fish population survey involving the use of large haul seines was conducted.

In 1952, a state supervised haul seine program was begun on the lake and lasted about one year. The purpose of the 1953 trawl net program was to determine the effects of these haul seines on the population and reproduction of largemouth bass, gizzard shad, and other fish of economic importance; also to gather information on species composition and length-weight frequency of those fishes below haul seine selectivity.

METHODS

The same otter trawl used in 1953 was repaired and used in 1956. The trawl webbing was $\frac{3}{4}$ inch stretched mesh with a $4\frac{1}{2}$ foot $\frac{3}{8}$ inch stretched mesh bag.

Using a U. S. Coast and Geodetic Survey Chart (No. 687), the lake was divided into six sections, with the demarcation lines running east to west. In each of these sections were five stations, 3 in water over 6 feet deep, and 2 in water 6 feet deep or less along the shoreline. These stations were used only as recognition points, and no two trawling operations were over the exact course from the point of origin. Instead, the trawling tended to radiate from a particular station, thus making for better coverage of the area.

A time limit of ten minutes was set for each trawling operation.

A 19 foot launch was substituted for the outboard boat used in 1953. A test run was made with the launch and outboard, both towing trawls, in order to determine the speed at which launch towing would be comparable to outboard towing.

Fishes collected were preserved in formalin and worked up in the laboratory.

FISH POPULATION ANALYSIS

Data from 30 trawl hauls show that marine fishes increased in percentage composition by numbers from 16% to 62% from May, 1953 to May, 1956. Percentage composition by weight increased in the same period from 5% to 15%. This change may possibly be attributed to the drought conditions in the area during the past year and higher salinity in the lake, but this cannot be verified due to a lack of previous salinity records on the lake.

Of a total of 32 different species collected in the 1956 trawls, 10 were marine species. Several marine fishes, including Ladyfish, *Elops saurus*, Glut Herring, *Alosa aestivalis*, and Spot, *Leiostomus xanthurus* were found in May, 1956 and not in May, 1953.

Although there was a decrease in the total number of game fishes collected, there was a marked increase in the average weight of all the major game species. For instance, the average weight of black crappie increased from 2.2 to 4.9 ounces, and the average weight of bluegill increased from .3 ounce to 1.5 ounces in the samples.

Only 3.2 pounds of catfish were collected in the 1953 hauls, while 60.3 pounds were collected in 1956. One of the most important commercial species, channel catfish, increased from 2 fish weighing 2.7 ounces to 174 fish weighing 42.8 pounds.

It appeared from the results that as the catfishes and marine species increased in numbers and weights there was a noticeable decrease in the game fish.

	May, 1953		May, 1956	
	No.	Wt. (Grams)	No.	Wt. (Grams)
Game Fish.....	60.0	75.4	7.0	21.5
Catfish.....	5.6	15.7	16.0	61.5
Marine Species.....	8.8	4.9	70.9	14.8

TRAWL NET TOTAL CATCH (Thirty Hauls)—Weight in Grams

Species	May, 1953		May, 1956	
	No.	Wt.	No.	Wt.
Florida Largemouth Bass.....	17	21.00	4	144.60
Black Crappie (Speckled Perch)....	80	4,977.16	53	7,362.31
Bluegill.....	65	622.17	32	1,364.00
Redear Sunfish (Shellcracker).....	6	268.59	6	647.7

TRAWL NET TOTAL CATCH—Continued
(Thirty Hauls)—Weight in Grams
May, 1953

Species	May, 1953		May, 1956	
	No.	Wt.	No.	Wt.
Spotted Sunfish (Stump-knocker)	13	338.92	..	..
Redbreast	3	184.44	..	..
Warmouth	6	529.07	1	13.3
Blue-spotted Sunfish	3	5.81	..	..
Channel Cat	2	75.30	174	19,421.90
White Catfish	13	638.11	38	6,015.25
Southern Brown Bullhead	2	686.20	7	1,926.5
Yellow Bullhead	1	50.07	..	..
Gizzard Shad	..	..	1	179.30
Threadfin Shad	..	..	46	310.95
Golden Shiner	12	197.26	14	444.60
Rainwater Killifish	24	9.10	..	..
Red Minnow	2	1.09	4	9.00
Red-finned Killifish	2	.52	..	..
Pugnose Minnow	8	11.16	..	..
Caledonian (Bullhead Minnow)	11	114.85	3	58.90
Freshwater Glass-minnow	19	10.07	17	10.20
American Eel	4	314.18	4	1,289.30
Needlefish	..	..	3	471.60
Croaker	1	31.04	107	1,181.00
Spot	..	..	27	402.00
Anchovy	1	4.86	381	999.78
Ladyfish (Ten Pounder)	..	..	14	15.30
Hogchoker	15	100.30	52	380.27
Glut Herring	..	..	232	127.70
Pipefish	2	1.57	5	7.20
Largemouth Goby	5	3.62	5	4.20
Crawfish	..	..	9	39.40
Freshwater Shrimp	110	40.50
Blue Crab	7	1,564.00
Grapsoid Crab	11	4.90
TOTAL	317	9,196.46	1,367	44,435.66

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Also thanks are due the several Florida fishery technicians who aided in the field work in May, 1956.

Mr. Edward Crittenden, Project Leader of the Lake and Stream Survey is due credit for having worked up much of the data presented here.

**PRELIMINARY EXPERIMENTS ON THE USE OF
SPAGHETTI TAGS**

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So-called "spaghetti" tags of vinylite tubing were first developed and used by the California Department of Fish and Game for tagging tuna (Wilson, 1953). This type of tag appears to offer many advantages over tags presently in use and it was deemed worthwhile to give it a trial on fresh-water fish.

The tag is made from ten-inch sections of one-sixteenth inch diameter white vinylite tubing and pertinent information is written on both sides of the middle section of the tag with a special ink. The tubing designated as No. 20 white XTE-30, was obtained from C. D. LaMoree, 1325 San Julian Street, Los