Original: Fish Division
cc: Mr. Shust
Mr. Sauheitl
Mr. Ruhl

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INSTITUTE FOR FISHERIES RESEARCH
DIVISION OF FISHERIES
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UNIVERSITY OF MICHIGAN

ALBERT S. HAZZARD, PH.D.
DIRECTOR

ADDRESS
UNIVERSITY MUSEUMS
ANN ARBOR, MICHIGAN

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A CHECK OF THE RESULTS OF EXPERIMENTAL FISH MANAGEMENT OPERATIONS ON BIG TROUT (WILSON) LAKE, MARQUETTE COUNTY

by

A. S. Hazzard

At the suggestion of Louis Sauheitl, Superintendent of the Marquette Fish Hatchery, Big Trout Lake (erroneously named Wilson Lake on the present Master Plan Map) was included in the lake survey program for 1938. The survey showed Big Trout Lake to have all the requirements of trout with one important exception. On August 30, the oxygen ranged from 3.8 to 7.2 ppm. from bottom to top, and temperatures from 53° to 68°F. Food, shelter, and spawning conditions were found to be favorable for trout. However, a heavy population of suckers and yellow perch was indicated by gill net sets.

Plantings since 1926 included 25,000 Montana grayling (1926), 9,000 bluegills (1934 and 1936), and 1,000 nine-months-old brook trout in 1937. None of these plantings were at all successful. Competition and predation on the part of the perch were considered responsible. Removal of all fish by poison, opening the beaver dam at the outlet, and stocking with brook trout were recommended by the survey.

The lake was poisoned with derris (Report 520) September 21-23, 1938 (in less than a month following survey), and results of netting by the survey party were confirmed by a huge kill of suckers and perch and a quantity of forage minnows. Only one brook trout, possibly a survivor of

the planting in 1937, was seen. Mr. Sauheitl reported the removal of the beaver dam later that fall and the planting of 600 brook trout 20 months old (7 to 8 inches) on October 11, 1938. Another planting of 16-months-old brook trout (4 to 7 inches) was made June 19, 1939.

A check on the results of the experimental management was made by Mr. Sauheitl and the writer on September 13 to 14, 1939. Two experimental gill nets were set at 10 a.m. on September 13 and raised at 10 a.m. on September 14. One net was set in water from 4 feet to 12 feet off the point in the southeast corner of the lake; the other in water from 5 feet to 15 feet at the extreme northern end of the lake. The catch totaled 9 brook trout and 2 horned dace (Semotilus atromaculatus) in the southeast set, and 24 brook trout in the northern set. The measurements of each fish are given in the accompanying table.

It will be noted that apparently both plantings of trout are represented in the sample, as the curve of size-frequency distribution (Figure 1) has two peaks--the first around 6.9 inches total length; the second, around 8.2 inches. The smaller size group must have been from the planting of June 19, 1939 inasmuch as all fish planted in the fall of 1938 ranged from 7 to 8 inches; the larger size group was doubtless mainly from the fall planting, which included fish from 4 to 7 inches in length.

The condition factor (average 1.649)--i.e. an expression of the relative fatness of the fish--for the trout from Big Trout Lake is well above the average for stream trout and is probably the equal of that for brook trout in most lakes. The flesh of all the fish was the deep red color so prized by fishermen.

Mr. Sauheitl reports that Big Trout Lake was fished several times during the summer by an individual who came from a nearby wood-cutters camp. Aside from this one man's efforts, the trout plantings made here

were probably little affected by fishing. Since few if any predatory fish were left in the lake after poisoning, the chances are that all or nearly all of the trout planted have survived. If this is the case, at the time our check was made there should have been a population of approximately 4,500 brook trout averaging about 7 1/2 inches in length and about 6 to the pound (total weight 750 pounds) or 167 trout and 28 pounds per acre (Big Trout Lake is 26.7 acres). A rough calculation was made in the field at the time this sample was taken and it was agreed by Mr. Sauheitl and the writer that the lake probably was carrying close to its maximum population and that no more trout should be planted in 1939. However, the recommendation was not put in writing and was apparently forgotten by Mr. Sauheitl, as he recently reported a planting on September 20, 1939, of 475 brook trout from 7 to 9 inches in length (19 months old) weighing 161 pounds.

The absence of any perch or suckers in the nets seems to indicate that these fish were much reduced in numbers and possibly eliminated by the poisoning. The horned dace could have come from the inlet or outlet after the poisoning, as it is dominantly a stream species. Since the horned dace is a natural associate of trout (as is also the sucker) and since it is a stream fish, it is assumed that the chief cause for failure of trout plants prior to poisoning was the presence of perch.

It therefore appears that with the expenditure of about $70 for poison and the time of five men for one day, it has been possible to restore a once famous trout producing lake. We believe this illustrates very well the value of survey work and the results of the application of intelligent fisheries management based upon the results of survey. From reports made by Mr. Sauheitl, there are evidently a fair number of lakes in this region of the Upper Peninsula which have trout possibilities and

which may need to be poisoned out in order to yield the best results from stocking. It is recommended that a survey crew be assigned to the Upper Peninsula next summer to spend at least one month in this area. Mr. Sauheitl has expressed a keen interest in this proposal and we believe the plan would also be approved by District Supervisor Shust.

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Table 1. Fish taken in a 24-hour set of 2 experimental gill nets in Big Trout (Wilson) Lake, Marquette County

Brook Trout	Standard Length mm.	Total Length in Inches	Weight in Grams	Condition Factor	
	130	6.1	39	1.775	(damaged by turtle)
	137	6.4	47	1.828	
	138	6.4	42	1.598	(damaged by turtle)
	138	6.4	50	1.903	
	146	6.7	45	1.446	
	149	6.8	53	1.602	
	150	6.9	50	1.481	
	150	6.9	59	1.748	
	150	6.9	50	1.481	
	150	6.9	51	1.511	
	150	6.9	50	1.481	
	151	6.8	56	1.626	
	154	7.2	62	1.698	
	154	6.9	55	1.506	
	157	7.3	60	1.550	
	163	7.6	70	1.616	(damaged by turtle)
	163	7.5	68	1.570	
	164	7.6	71	1.610	
	169	7.9	84	1.740	
	174	8.0	92	1.746	
	175	8.0	87	1.623	
	176	8.1	92	1.687	
	176	8.1	105	1.926	
	177	8.0	87	1.569	
	178	8.2	96	1.702	
	180	8.2	96	1.646	
	180	8.3	88	1.509	
	185	8.6	110	1.737	
	185	8.5	105	1.658	
	189	8.7	122	1.807	
	191	8.7	124	1.780	
	192	8.8	113	1.596	
	200	9.2	131	1.638	
Average	164.3	7.4	76.1 (2.7 oz.)	1.649	
Horned dace		6.4			
		6.3			

Condition factor = $\frac{100W}{L^3}$

Figure 1

Size-frequency distribution of trout from Big Trout Lake. Total lengths in mm.

Geo. Wahr, Publisher, Ann Arbor, Mich.