Original: Fish Division
cc: Education-Game
Inst. for Fish. Research
E. E. Schultz
C. T. Yoder
D. S. Shetter

INSTITUTE FOR FISHERIES RESEARCH
DIVISION OF FISHERIES
MICHIGAN DEPARTMENT OF CONSERVATION
COOPERATING WITH THE
UNIVERSITY OF MICHIGAN

GERALD P. COOPER PH.D.
DIRECTOR

ADDRESS
UNIVERSITY MUSEUMS ANNEX
ANN ARBOR, MICHIGAN

April 8, 1957

Report No. 1507

TROUT IN THE BOARDMAN RIVER DURING THE SECOND YEAR OF EXPERIMENTAL REGULATIONS[1]

By

Edward E. Schultz[2]

Experimental fishing regulations for trout have been in effect since January 1, 1955, on a part of the Boardman River in Grand Traverse County, by order of the Conservation Commission. These regulations are: a minimum legal size limit of ten inches, a daily creel limit of five trout, and angling restricted to the use of artificial flies only. The restricted part of the Boardman River extends 4.4 miles, more or less, upstream from Scheck's Bridge (T. 26 N., R. 9 W., Section 18) to The Forks Forest Camp Ground (T. 26 N., R. 9 W., Section 4). Selection of this part of the river resulted from a study made during July, 1954 (see I. F. R. Report No. 1459, by Schultz, 1955). The ten-inch minimum size limit was based on studies of age and growth. The flies-only restriction resulted from studies by Shetter and Allison (1955) which showed extensive mortality among sublegal trout caught on bait.

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[1] The biological study of this river, analysis of data and preparation of the report were undertaken with Federal Aid to Fish Restoration Funds under Dingell-Johnson Project Number F-2-R.

[2] Assistants in the field were Fisheries Technicians Donald J. Goyette and Eugene B. Welch. The author was the field party leader.

Trout were collected at six sampling stations once a year during 1954, 1955 and 1956 with a 230-volt, 10.9 ampere direct-current electric shocker. The results of the collecting done in 1955 are given in I. F. R. Report No. 1475 (Schultz, 1956). Three of these stations are in that part of the river where the experimental restrictions apply. Two of the control stations are downstream from the restricted section and one is upstream from that area. These locations and the actual numbers of trout caught are shown in Table 1.

To determine some of the effects of the experimental fishing regulations on trout in the Boardman River, comparison of the populations was made on the basis of the number of trout captured per hour of shocking. The trout were divided into three size groups based on the minimum legal lengths for trout (seven inches in the control water and ten inches in the experimental water). These groups are from 1.0 to 6.9 inches, 7.0 to 9.9 inches, and 10.0 inches and over. Table 2 gives the results for the three years for brook and brown trout. No rainbow trout were captured in this part of the river, although hatchery-reared rainbow trout have been released in some of the upstream tributaries.

After two years of increased restriction, no noticeable change in the trout population is apparent, as shown in Table 2. The catch per hour with the shocker during 1954 was somewhat less than the catches of the following two years partly because a general survey was being made at that time and some of the collecting effort was diverted to pick up fish other than trout. Also, the summer of 1955 was abnormally dry, and the resulting low water level of the river provided better conditions for shocking than the conditions that prevailed in 1954 and 1956. Although the water level returned to normal in 1956, the catch per hour remained about the same as that of 1955, indicating the possibility that trout have increased in number.

Table 1.--Locations of stations, dates, and trout captured at each station in the Boardman River, 1956

Sample area	Station number	Location			Date August, 1956	Stream length shocked (feet)	Time shocked (minutes)	Total trout captured	
		Town (N.)	Range (W.)	Section				Brown	Brook
Control	21	26	10	13	3	1,320	48	146	53
"	22	26	10	13	8	1,140	61	171	68
"	24	26	9	4	9	1,110	50	171	6
Totals						3,570	159	488	127
Experimental	19	26	9	8	2	1,355	64	190	26
"	20	26	9	7	2	1,010	61	178	31
"	23	26	9	18	8	1,030	64	196	86
Totals						3,395	189	564	143

Table 2.--Trout per hour of shocking in the Boardman River, Grand Traverse County, 1954, 1955 and 1956

	Length groups, inches							
	1.0 - 6.9		7.0 - 9.9		10.0 and over		All sizes	
	Control	Experiment	Control	Experiment	Control	Experiment	Control	Experiment
Brown trout								
1954	105.0	63.8	13.4	15.9	6.7	7.3	125.1	87.0
1955	112.3	95.8	51.6	62.8	10.0	14.0	173.9	172.6
1956	135.8	117.9	39.2	46.6	8.7	15.2	183.7	179.7
Brook trout								
1954	15.6	14.8	...	1.0	...	...	15.5	15.4
1955	15.2	23.5	...	2.5	...	...	15.2	26.0
1956	47.9	44.1	...	1.3	...	...	47.9	45.3
All trout								
1954	120.4	78.5	13.4	16.5	6.7	7.3	140.7	102.3
1955	127.4	119.3	51.6	65.3	10.0	14.0	189.0	198.6
1956	183.7	162.0	39.2	47.9	8.7	15.2	231.7	225.1

Each year that collections have been made, all the trout captured were measured and samples of scales were taken from most of them before they were returned to the river. From the scales the age of each trout was determined. The average length for each age group is given in Table 3. So far, growth rates have not shown any appreciable change for either brook or brown trout in either the experimental fishing section or the control areas.

The Conservation Commission order imposed the restrictions for a period of five years, so, the experiment is due to continue for three more years. The six sampling stations will be checked during the summer of each year. If any changes in the population or growth rate of the trout result from the added restrictions, it is assumed that they will be more likely to show up in future collections. This assumption is based largely on the observation that brown trout in Michigan usually spawn for the first time at the end of their second year when they are about ten inches long. The ten-inch limit should protect trout from anglers until they have spawned once. The trout that were less than seven inches long when the restrictions were first put into effect could spawn for the first time in the fall of either 1956 or 1957. If they are successful, the results should be observable by a significant increase in the number of young-of-the-year trout in collections to be made during the summers of 1957 and 1958.

Table 3.--Comparison of age-length relationships of trout in the two experimental sections of the Boardman River for 1954, 1955, and 1956
(Number of trout in parentheses)

Species and year	Age group 0		I		II		III		IV	
	Control	Exp.	Control	Exp.	Control	Exp.	Control	Exp.	Control	Exp.
Brown trout										
1954	2.6 (207)	2.7 (146)	6.5 (61)	6.5 (100)	9.9 (20)	9.8 (50)	11.6 (8)	12.6 (5)	...	...
1955	3.4 (238)	3.5 (198)	7.1 (236)	7.1 (207)	9.8 (48)	9.7 (69)	12.2 (8)	11.4 (6)	...	13.8 (4)
1956	2.8 (258)	2.9 (252)	6.8 (176)	6.7 (201)	9.6 (43)	9.4 (85)	11.7 (6)	11.5 (21)	...	14.6 (3)
Brook trout										
1954	2.6 (33)	2.8 (30)	5.6 (4)	6.0 (22)	...	8.8 (1)	...	...	...	...
1955	3.3 (37)	3.2 (44)	5.7 (10)	6.2 (29)	...	...	...	...	...	...
1956	3.0 (117)	3.1 (124)	5.7 (10)	5.9 (18)	...	8.8 (1)	...	...	...	...

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INSTITUTE FOR FISHERIES RESEARCH

By Edward E. Schultz

Approved by: G. P. Cooper

Typed by: J. M. Lederer