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October 5, 1955

Report No. 1457

THE TROUT POPULATION IN THE EXPERIMENTAL SECTIONS OF THE
LITTLE SOUTH BRANCH OF THE PERE MARQUETTE RIVER, LAKE AND NEWAYGO
COUNTIES, AFTER ONE YEAR OF RESTRICTIVE REGULATIONS[✓]

By

Edward E. Schultz[✓]

Introduction

As the result of a study made of the Little South Branch of the Pere Marquette River in 1954, it was concluded that the stream was suitable for a management experiment on trout (Schultz, 1954). Therefore, on recommendation by the Institute for Fisheries Research, the Conservation Commission imposed an order, effective January 1, 1955, that restricted lures to artificial flies only, increased the size limit on trout from seven to ten inches, and reduced the daily creel limit from ten to five trout. These regulations cover a section of stream 5.5 miles long, more or less, from Oxbow Bridge in Section 31, T. 17 N., R. 12 W., Lake County, upstream to Carlson Bridge on the section line between Sections 9 and 16., T. 16 N., R. 12 W., Newaygo County. The parts of the Little South Branch of the Pere Marquette River above and below this restricted

[✓]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-4.

[✓]Assistants in the field were Donald C. McNaught and Eugene B. Welch. The author was the field party leader.

fishing area were used as control areas for the experiment. These restrictions are to be in effect for a period of five years. During this time studies will be made to determine the effects of the restrictions on the trout.

Methods

The lower part of the Little South Branch of the Pere Marquette River has been divided into three parts for this study. The center section of this part of the river (from Oxbow Bridge to Carlson Bridge,) is the section with the special regulations. Within the boundaries of this restricted area are three sample stations, located at Oxbow, Brown and Curtis bridges. From Oxbow Bridge, T. 17 N., R. 12 W., Section 31, downstream to the Pere Marquette River, T. 17 N., R. 13 W., Section 22, is a control area that contains two sample stations, one at Kennedy Bridge and the other at Taylor Bridge. Upstream from the restricted area, starting at Carlson Bridge, T. 16 N., R. 12 W., Section 16, is another control area having one sample station. Details of these stations are given in Table 1.

At each sample station three men, using a direct-current electric shocker, caught all the trout they could in the lengths of time given in Table 1. The trout were identified as to species, measured, most of them scale-sampled, and then were returned to the stream alive. Procedures were identical at each of the six stations.

Results

The results of the study made on the Little South Branch of the Pere Marquette River during the period of September 6 - 9, 1955, cannot be considered conclusive in any way. At least three years will be

necessary to indicate a trend, and the full five years completed before any definite conclusions will be possible. Table 2 shows that the number of fish caught per hour of shocker operation was much higher in 1955 than in 1954. Part of the reason for an increase in the catch was the lack of rain during the summer of 1955 that resulted in low water levels which increased shocker efficiency.

Although brook and rainbow trout are included in the tables, the information on these species should be considered only incidental in this study. The number of brook trout captured (eight) is too small to give valid information. The tendency of rainbow trout to migrate downstream before they reach a length of ten inches invalidates any conclusions that might be made regarding the effect of a ten-inch minimum size limit on rainbows.

The Little South Branch of the Pere Marquette River is principally a brown trout stream. Of the 1,533 trout collected in 1955, 1,113 or 72.6 percent were brown trout. The catch per hour of brown trout in 1955 was much higher than in 1954. This applies to both the control and experimental areas. However, the increase was greater in the experimental water. This is shown in Table 2. The difference in catch between the control and experimental areas is not large, but in the size group of ten inches and over there were more fish captured in the restricted water. The number of brown trout taken in that size group was nearly the same in both areas in 1954. In 1955, 2.7 time more browns, over ten inches, were shocked in the restricted water than in the control. However, no conclusions can be made from this information now because one year is not sufficient time to get valid results from fish that on the average require two and one-half years to grow to ten inches in length.

Literature Cited

Schultz, Edward E.

1955. Examination of a part of the Little South Branch of the Pere Marquette River, Lake and Newaygo counties, to determine its suitability for an experiment with restrictive regulations. Institute for Fisheries Research Report, No. 1452, 11 pages (unpublished).

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Table 1. Data on the sample stations and the trout caught at each station in 1955.

Bridge at sample station	Town N	Range W	Section	Day Sept., 1955	Length shocked (feet)	Time shocked (minutes)	Fish Captured					
							Brown trout Number	Max. size (inches)	Rainbow trout Number	Max. size (inches)	Brook trout Number	Max. size (inches)
Control area					4,830	192	482	20.8	180	8.6	6	7.0
Kennedy	17	13	22	6	1,770	65	179	20.8	75	8.6	---	---
Taylor	17	13	20	6	1,480	60	78	18.0	36	8.3	---	---
Carlson	16	12	16	8	1,580	67	225	14.4	69	8.4	6	7.0
Experimental area					4,525	195	631	18.8	232	12.5	2	7.8
Oxbow	17	12	31	7	1,850	71	154	18.0	52	9.2	---	---
Brown	16	12	8	9	1,660	62	266	18.0	152	10.8	1	7.8
Curtis	16	12	9	8	1,015	62	211	18.0	28	12.5	1	3.7

Table 2. Trout per hour of shocking in the Little South Branch of the Pere Marquette River,
1954 and 1955.

	Length groups, inches							
	2.0 - 6.9		7.0 - 9.9		10.0 and over		All sizes	
	Control	Experiment	Control	Experiment	Control	Experiment	Control	Experiment
Brown trout								
1954	46.6	21.3	8.7	10.3	8.7	10.0	63.9	41.6
1955	73.8	72.8	62.9	83.6	16.4	44.2	155.4	200.5
Ratio: '55/'54	1.6	3.4	7.2	8.1	1.9	4.4	2.4	4.8
Rainbow trout								
1954	14.6	5.5	0.3	4.2	---	---	14.9	9.7
1955	53.2	60.0	4.8	12.7	---	1.0	58.0	73.7
Ratio: '55/'54	3.6	10.9	16.0	3.0	---	---	3.9	7.6
Brook trout								
1954	---	---	---	---	---	---	---	---
1955	1.3	0.3	0.6	0.3	---	---	1.9	0.6
All trout								
1954	61.1	27.8	9.0	14.5	8.7	10.0	78.8	51.3
1955	130.6	133.1	68.4	96.6	16.4	45.1	215.4	274.8
Ratio: '55/'54	2.1	4.8	7.6	6.7	1.9	4.6	2.7	5.4