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Report No. 1468

THIRD PROGRESS REPORT ON A TROUT MANAGEMENT STUDY OF THE PINE RIVER,
LAKE COUNTY ✓

By Edward E. Schultz ✓

The third year of study was completed in 1954 on the effect of a ten-inch minimum size limit on trout in the Pine River. The study, started in 1952, concerns the effects of this size limit in a 5.8-mile section of the river. An adjacent 3.5-mile section, where the legal length remains at seven inches, has been used for comparison. As told in the past two reports (Schultz, 1953a and 1953b), there was no noticeable change in production or growth of brook, brown or rainbow trout during the first two years of the experiment.

The control and the experimental sections of the Pine River each have three designated study areas within their boundaries. These areas have remained the same each year. In 1954, fish were again collected here by a three-man crew with a direct-current electric shocker. All trout captured were measured and recorded, and scale samples were taken from those

✓¹The field work, analysis of data, and preparation of the report were undertaken with Federal Aid to Fish Restoration funds under Dingell-Johnson Project No. F-2-R.

✓² Assistants in the field were Fisheries Technicians Alfred M. Beeton and James C. Wiese. The author was the field party leader.

over four inches in length. The fish were released after records and scales were obtained. Field and laboratory techniques remained the same as in the two previous years (see I.F.R. Report No. 1355).

Table 1 of this report gives the locations, dates, measurements and number of brook, brown and rainbow trout shocked at each of the six stations. Each station was examined twice during 1954, as in previous years.

No consistent change in the catch of trout per hour of shocking has been large enough to indicate an influence resulting from the ten-inch minimum size limit. Table 2 gives the figures on catch-per-hour with the shocker for the three size groups of brook, brown and rainbow trout. The two slight increases have been in the size group under seven inches in length and include the brook and brown trout. The experimental water produced 9.8 more small brook trout per hour than the control water. On the other hand, the control section yielded 13.2 more small brown trout per hour than did the experimental area. Small rainbow trout apparently have decreased in both areas over the three-year period. These changes are too small to permit conclusions, and the changes in catch-per-hour figures for the larger size groups are even smaller.

The age and growth of the three species of trout for each of the three years is shown in Table 3. It can be readily seen that there has not been a consistent trend in any direction. It is doubtful that the ten-inch minimum size limit is having any effect on growth rates. The only conclusion that can be drawn is that rates of growth for the three species in the Pine River are better than the state averages.

Table 1

Locations, dates, measurements and numbers of trout captured at each station in the Pine River, 1954

(Location of the experiment is T. 20 N., R. 12 W., Lake County)

Sample area	Station number	Location Section	Month and day, 1954	Length shocked, feet	Time shocked, minutes	Number of trout captured		
						Brook trout	Brown trout	Rainbow trout
Control	124	24	June 17	1,320	65	3	11	2
"	129	"	Sept. 1	"	62	9	27	9
"	125	"	June 17	1,585	56	...	15	...
"	130	"	Sept. 1	"	42	5	25	4
"	127	13	July 7	1,915	64	1	33	...
"	134	"	Sept. 9	"	62	3	58	10
Total				4,820 [√]	351	21	169	25
Experiment	128	12	July 7	1,060	42	4	8	2
"	133	"	Sept. 8	"	41	5	15	4
"	123	2	June 16	1,320	55	16	8	1
"	131	"	Sept. 2	"	57	23	25	2
"	126	3	June 18	1,650	65	14	13	...
"	132	"	Sept. 8	"	58	9	25	11
Total				4,030 [√]	318	71	94	20

[√] There were three stations and each was shocked twice.

Table 2

Catch-per-hour, by D. C. shocker, of trout from the two study sections (control and experimental)
of the Pine River, 1952, 1953, and 1954

Species and year	Size group (i n c h e s)							
	0.0 - 6.9		7.0 - 9.9		10.0 and over		All sizes	
	Control	Exp.	Control	Exp.	Control	Exp.	Control	Exp.
Brook trout								
1952	0.8	6.2	1.0	1.7	0.0	0.2	1.8	8.1
1953	4.7	16.4	0.3	2.1	0.2	0.4	5.2	18.9
1954	1.7	11.5	1.9	1.5	0.0	0.4	3.6	13.4
Brown trout								
1952	3.7	2.3	2.4	1.1	2.6	0.4	8.7	3.8
1953	9.6	14.3	1.0	0.4	1.3	1.7	11.9	16.4
1954	23.4	10.2	3.4	5.8	2.1	1.7	28.9	17.7
Rainbow trout								
1952	18.9	7.9	2.8	1.1	0.0	0.0	21.7	8.9
1953	3.4	5.0	4.2	2.3	0.3	0.0	8.0	7.4
1954	2.2	1.5	1.7	2.1	0.3	0.2	4.3	3.8
Total trout								
1952	23.4	14.9	6.1	3.8	2.6	0.6	32.1	20.9
1953	17.7	35.7	5.5	4.8	1.8	2.1	25.0	42.6
1954	27.4	23.2	7.0	9.4	2.4	2.3	36.8	34.9

Table 3

Comparison of age-length relationships of trout in the two experimental sections of
the Pine River for 1952, 1953, and 1954
(Number of fish in parentheses.)

Species and year	Age group											
	0		I		II		III		IV		V	
	Control	Exp.	Control	Exp.	Control	Exp.	Control	Exp.	Control	Exp.	Control	Exp.
Brook trout												
1952	...	3.8 (12)	7.2 (9)	6.7 (25)	...	11.2 (1)	...	...	...	...	...	...
1953	3.9 (22)	3.7 (60)	6.9 (10)	7.3 (30)	...	...	...	...	...	...	...	...
1954	4.1 (8)	3.1 (48)	7.5 (12)	6.5 (17)	8.0 (1)	9.3 (5)	...	...	...	...	...	...
Brown trout												
1952	4.1 (18)	3.6 (10)	8.4 (12)	8.4 (6)	12.2 (6)	10.3 (1)	15.9 (3)	15.8 (1)	19.3 (3)	...	22.5 (2)	...
1953	4.1 (59)	4.3 (67)	8.9 (8)	9.2 (6)	13.2 (5)	13.3 (4)	15.5 (1)	15.8 (1)	...	...	...	...
1954	3.7 (131)	3.8 (48)	7.9 (25)	8.1 (35)	11.7 (9)	11.6 (8)	15.3 (4)	13.7 (1)	...	23.4 (1)	...	20.5 (1)
Rainbow trout												
1952	3.5 (94)	3.5 (37)	8.0 (15)	8.8 (5)	9.3 (1)	...	...	...	...	...	...	...
1953	4.2 (16)	3.5 (23)	8.2 (33)	8.4 (13)
1954	3.7 (10)	3.7 (5)	7.4 (11)	7.8 (12)	10.7 (3)	9.9 (3)

Literature Cited

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1953a. Progress report on a trout management study of the Pine River, Lake County, Michigan. Institute for Fisheries Research Report No. 1355, 11 pages (unpublished).

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MICHIGAN DEPARTMENT OF CONSERVATION

Summary of (Institute for Fisheries Research Report No. 1468)

THIRD PROGRESS REPORT ON A TROUT MANAGEMENT STUDY OF THE PINE RIVER,

LAKE COUNTY ✓¹

By Edward E. Schultz ✓²

March 20, 1956

On a 5.8-mile experimental section of the Pine River there has been a ten-inch minimum size limit on trout since 1952, while an adjacent 3.5-mile upstream section has retained a seven-inch size limit. Through 1954, three years of study had been completed on these two sections of the Pine River, based on trout collections made with a D. C. shocker.

There has been no appreciable change in the number of trout of various size groups taken per hour of shocking effort. However, a slight change in catch-per-hour of each species has occurred in the size group of less than seven inches. More small brook trout have been captured in the experimental water than in the control, whereas the number of small brown trout collected in the control area has increased. Small rainbow trout have decreased in both sections of the river. These changes are too small to permit conclusions.

The data on age and growth of trout from the Pine River have not shown any consistent or large change in the growth. The study has shown that brook, brown and rainbow trout of the Pine River are growing at rates faster than the state averages for these species.

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