

Original: Fish Division
cc: Education - Game
Institute for Fisheries
Research
Dr. D. S. Shetter
Mr. J. T. Wilkinson
Paris District
Mr. Ed. Kelly

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

ALBERT S. HAZZARD, PH.D.
DIRECTOR

May 13, 1949

ADDRESS
UNIVERSITY MUSEUMS ANNEX
ANN ARBOR, MICHIGAN

Report No. 1224

PRE-SEASON INVESTIGATION ON THE PROPORTION OF NATURALLY-REARED AND PLANTED TROUT
IN THE LITTLE SOUTH BRANCH OF THE PERE MARQUETTE RIVER, NEWAYGO COUNTY

By

David S. Shetter

Early in the 1948 trout season Ed Kelly and party of Detroit reported capturing a high percentage of 1947 "carry-over" brown trout from the Little South Branch (22 of 35 fish were dorsal-marked survivors from 1947 brown trout plantings). Investigation with the electric shocker in the stream sections fished by Kelly and party, carried out on June 9 and 10, 1948, failed to reveal any dorsal-marked brown trout (or dorsal-marked brook or rainbow trout) present at that time (see I.F.R. Report No. 1187).

Since all the hatchery-reared trout planted in 1948 were marked by the removal of the adipose fin, there was opportunity to observe the proportion of wild and hatchery-reared trout present in the Little South Branch before the opening of the 1949 season in the same stream sections. Some data on this point were obtained on April 5 and 6, 1949, again using the electric shocker.

The Little South Branch was checked in Section 8 of T16N, R12W on the afternoon of April 5, 1949, by Messrs. David S. Shetter and Neil A. Walker of the Institute for Fisheries Research, District Fisheries Supervisor Walter R. Crowe, Don Gilbert, foreman of the Baldwin Rearing Station, Conservation Officer

(u)

George Barfoot, and Stream Improvement Foreman C. Long and his assistant. Except for the fact that the water was the color of weak coffee, stream conditions were favorable for shocking. The color of the water with the overcast sky made visibility comparatively poor in water over 2 feet deep. Because of the relatively mild winter and early warm weather, most of the snow was gone from the swamps and the water level was little if any above that noted in June of 1948. Air temperature at 4 P.M., April 5, was 52° F.; water temperature was 47° F. with the sky completely overcast and no wind blowing.

The following fish were captured with the aid of the shocker in approximately one mile of stream, working upstream from the Brown Bridge:

Brown trout

30 wild fish, ranging from 8 to 16 inches

3 adipose-clipped survivors of the 1947 planting, 7 to 11 inches long

18 wild fish shorter than 7 inches, 4 to 6 1/2 inches long

Rainbow trout

18 wild adults from Lake Michigan, 18 to 30 inches in length

7 wild immature fish, 8 to 10 inches in length

7 wild immature fish, 4 to 6 inches in length

Northern pike

1 wild fish, 24 inches long

Common sucker

1 fish, 8 inches long

Numerous muddlers also were observed but no attempt was made to enumerate them.

On the morning of April 6, Shetter, Walker and Crowe were accompanied by Miss Lorilla Reed, Department secretary, and Miss Reed's parents to shock the water between Pease Creek and the Carlson Bridge in Section 9. Water level and

visibility conditions were much the same as on the previous day. Air temperature at 10 A.M. was 40° F.; water temperature was 44° F. with a partly overcast sky and a southeast breeze. Fewer fish were encountered in this stretch of water than during the June, 1948, operations. No marked hatchery-reared fish were found in Section 9 during the April, 1949, operations on April 6. The fish captured were as follows:

Brown trout

11 wild adults, ranging in size from 7 to 20 inches

6 wild immature fish, 4 to 6 1/2 inches long

Rainbow trout

5 wild adults from Lake Michigan, 18 to 26 inches long

2 wild immature fish, each 4 inches long

Brook trout

2 wild immature fish, each 5 inches long

Common sucker

1 fish, 18 inches long

The total catch of adult trout from approximately 1 3/4 miles of stream covered with the shocker on the two days from Sections 8 and 9 amounted to 44 adult brown trout, of which 3 were adipose-marked survivors of the 1947 plantings and 41 were wild fish, and 23 wild rainbow trout (16 large lake-run adults, 7 presumably immature).

The 1948 planting records for this part of the Little South Branch of the Pere Marquette are as follows:

Section 8	-- brown trout	- 150 adults	- 5/13/48
	" "	175 "	8/9/48
Section 9	brown trout	150 adults	5/13/48
	" "	150 "	8/9/48
	brook trout	200 adults	8/26/48

Also 100 brown trout adults were released in Section 16 immediately upstream from the Carlson Bridge on May 13, 1948.

Based on the observations of April 5 and 6, 1949, the proportion of 1947-planted brown trout to wild brown trout present is approximately 1 to 13.7. That this proportion of hatchery fish to wild fish can be noticeably altered by hatchery releases becomes obvious when the June, 1948, ratio of hatchery brown trout to wild brown trout is recollected (1 hatchery brown trout to 4.33 wild brown trout). At the time of both investigations the brook trout and rainbow trout populations both appeared to consist entirely of wild fish, as no marked fish of the latter two species were captured with the shocker.

If the adult brown trout released in Sections 8 and 9 only are considered, 625 adipose-marked brown trout were available to the anglers during 1948 in the sections with which we are concerned. From previous tagging experiments (Shetter, 1947), it was noted that an average of 13.0 percent of brown trout plantings made during the open trout season were removed by the anglers during the season of planting. It may be estimated from this that about 81 fish were taken during 1948 from the above mentioned plantings in Sections 8 and 9, leaving theoretically approximately 544 adipose-marked brown trout to enter the winter of 1948-49.

Of the latter only three specimens were encountered in our shocking investigations on April 5 and 6, which would indicate a very low rate of over-winter survival of 1948-planted brown trout. The efficiency of the shocking operation is known to vary with such factors as water temperature, width, depth and speed of the stream, visibility conditions, and experience

of the operating crew. Nevertheless on other streams such as Hunt Creek and Gamble Creek we have usually captured at least 20 percent of the estimated adult trout population on any single trip through a given section. Even if it is assumed that our operations on the Little South Branch were at the level of only 5 percent efficiency it would mean that at the most there would be only 60 adipose-marked survivors of the 1948 brown trout releases present in the stream sections under consideration, or an estimated 9.6 percent of the original planting.

The observations made with the aid of the electric shocker in June, 1948, and April, 1949, give additional support to one of the conclusions reached earlier from numerous tagging experiments; namely, that a relatively small percentage of trout planted in streams survive from one season to the next. The April, 1949, investigations would appear to support the original impressions gained in 1948 that the Little South Branch of the Pere Marquette does not have an exceptional "carry-over" of planted brown trout. Further data on season-to-season survival of planted brown trout of a more detailed nature will be available from the investigations under way at the Rifle River Area and at the newly established Pigeon River Experimental Area.

Literature Cited

Shetter, David S.

1947. Further results from spring and fall plantings of legal-sized, hatchery-reared trout in streams and lakes of Michigan. Trans. Am. Fish. Soc., Vol. 74 (1944) pp. 35-58.

INSTITUTE FOR FISHERIES RESEARCH

David S. Shetter

Approved by A. S. Hazzard

Typed by M. J. Lambert