

Original: Fish Division
cc: Institute for Fisheries Research
Education-Game
D. S. Shetter

INSTITUTE FOR FISHERIES RESEARCH J. T. Wilkinson
DIVISION OF FISHERIES Paris District
MICHIGAN DEPARTMENT OF CONSERVATION Mr. Ed. Kelly
COOPERATING WITH THE
UNIVERSITY OF MICHIGAN

ALBERT S. HAZZARD, PH.D.
DIRECTOR

ADDRESS
UNIVERSITY MUSEUMS ANNEX
ANN ARBOR, MICHIGAN

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SURVEY OF CONDITIONS FOR TROUT AND TROUT POP-
ULATION OF LITTLE SOUTH BRANCH OF PERE MARQUETTE
RIVER IN NEWAYGO COUNTY, T. 16 N., R. 12 W., SECTIONS 8 & 9

by

David S. Shetter

The Little South Branch of the Pere Marquette River was visited by O. M. Corbett and D. S. Shetter on June 9 and 10, 1948, at the request of Dr. A. S. Hazzard after Ed Kelly and party of Detroit reported 22 dorsal-clipped (1947 planting) brown trout out of a total catch of 35 brown trout during the opening weekend of the 1948 season. The main purpose of the trip was to attempt to determine why there was such an apparent good "carryover" of 1947 planted brown trout in this particular piece of stream.

The majority of that portion of the stream in Section 8 was cruised by Corbett and Shetter on the afternoon of June 9, starting at the Brown Bridge with the electric shocker and working upstream for approximately 3/4 mile. This is a better-than-average piece of water with excellent shade and bank cover (much of it hardwoods). The majority of the bottom consists of gravel and rubble, except in a few of the pools where it was sandy. The pool classification through this section would be rated as S₁T₂F₁, and many of the connecting riffles were excellent in that there were pockets of relatively deep (approximately 30 inches)

water behind large boulders. (Size, type and frequency are rated as 1, 2 and 3 in descending order). There appears to be an excellent insect food supply on almost all of the gravel and rubble bottom.

The pools were good except for the fact that many of them had no under water cover. Depth provided the only protection. There were only two pools which we could not work in waders at the present water level, but most of the pools were belly deep or deeper. The water temperature on June 9 at 4 P. M. with a hazy sky and a northwest wind was 62°F. with the air temperature at 75°. The stream varies in width between 25 and 60 feet in this section and is quite rapid. Many of the riffles would be "white water" at higher stream levels.

Examination with the shocker of approximately 3/4 mile of the stream in Section 8 turned up the following trout: Brown trout, 16 wild fish ranging in size from 7 inches to 22 inches, also 3 brown trout of less than the legal length of 7 inches; 9 brown trout of the 1948 plantings from State fish hatcheries (adipose fin clipped) ranging in size from 7 inches to 11 inches; 4 wild rainbow trout which varied in size from 7 to 12 inches; 9 wild rainbow trout smaller than the legal length of 7 inches; 9 common suckers varying in total length from 5 to 18 inches. All of the trout were plump and in excellent condition.

The following day the shocker was drifted downstream from Carlson Bridge to a point 200 yards below Pease Creek, and again about 3/4 mile of stream was checked. Conservation Officer C. Randall of Baldwin assisted us. Through this portion of the stream in Section 9 the width ranges from about 25 to 75 feet, and in general is somewhat shallower. The bottom types predominating are gravel, rubble and large boulders. The current is not quite as rapid as in the section immediately below, and there are several long placid stretches where the bottom is silted and sandy. The pool grade through this part of the stream was rated as

S₁T₁F₂ because of the relatively greater distance between pools. They were, however, of better character because of more underwater cover in the form of "down" timber and larger boulders in the pools. This cover difference was reflected in its larger number of fish handled in what was judged to be approximately the same length of stream shocked in the previous day. The air was 68°F., water 55°F. at 8:45 A. M. at Carlson Bridge. The fish taken were as follows: 62 wild brown trout ranging in size from 7 inches to 20 inches; 33 wild brown trout of sizes between 4 and 7 inches; 25 small wild brown trout from 1947 spawning; 9 adipose-clipped brown trout (1948 plantings from hatchery stock) between the lengths of 7 and 12 inches; 9 wild rainbow trout between 7 and 14 inches in total length, 20 smaller wild rainbow trout between the sizes of 4 and 6.9 inches; 21 common suckers ranging in total length between 4 and 20 inches, and 1 northern pike fingerling from this spring's spawning (Officer C. Randall stated that he had observed 3 large northern pike in this same water a few days earlier). Numerous muddlers (Cottus) and black-nosed dace (Rhynchithys) were observed but not counted. One small brook trout 6 inches long also was observed. In neither part of the stream examined were any dorsal-marked trout of any species found (these would be survivors from the 1947 plantings).

According to R. M. Brodrick, foreman of Paris Hatchery, the two sections studied received stockings of the following trout larger than 7 inches during 1947: 225 brook trout (May 13); 900 brown trout (400 fish on June 6, 500 fish on August 12). In Sections 5 and 16 (immediately below and above) a total of 225 catchable brook trout were stocked during 1947, and also 1,600 brown trout and 650 rainbow trout of ready-to-creel size. Pease Creek in Section 9 also was planted with 125 brook trout longer than 7 inches.

Up to June 9, 1948, the 1948 trout stocking of fish longer than 7

inches for the Little South Branch of the Pere Marquette River in Sections 8 and 9 had been as follows: May 13, 1948, 150 adipose-clipped adult brown trout in each section (total, 300 fish).

Our total records of creel-size fish captured were: 78 wild adult brown trout, 18 adipose-clipped adult hatchery-reared brown trout from the 1948 stocking of 300 fish on May 13, and 13 wild adult rainbow trout. Wild adult brown trout appear to be 4.33 times as numerous as the recently-planted adult brown trout according to the observations made on June 9 and 10.

In the light of the proportion of wild fish to hatchery fish noted on June 9 and 10, the early-season observations of Ed Kelly and party are somewhat puzzling, since the report of Kelly and party indicated a ratio of 2.7 dorsal-marked hatchery brown trout to 1 wild brown trout in their opening weekend catch. If there were that many brown trout from the 1947 plantings left at the start of the 1948 trout season, how is one to account for the fact that no dorsal-marked 1947-planted brown trout were observed on June 9 and 10 in a sample almost three times as large with equipment considerably more efficient for taking trout than hook and line. It is not unreasonable to assume that had there been any appreciable number of dorsal-marked brown trout left in this water on June 9 and 10 we should have captured at least one such fish with the shocking equipment.

Questioning of Field Administration personnel and other anglers in Baldwin failed to turn up similar percentages of "carry-over" fish in other early season catches from the Little South Branch.

A review of previous tagging experiments on adult brown trout (Shetter, 1947) in the Pere Marquette drainage indicates that two earlier experiments in Baldwin Creek fall planting yielded recovery percentages of 6.2 and 7.2 per cent. On the basis of average recovery

percentage of 13.0 per cent made from open season plantings of adult brown trout there should have been left from the 1947 plantings in Sections 8 and 9 some 785 adult brown trout (plantings of 400 and 500 fish were released in 1947). If recoveries on these 783 survivors theoretically remaining at the end of the 1947 season were made at the rate of 7.2 per cent (the maximum recovery percentage noted for fall-planted fish), then 56 survivors should theoretically be taken during 1948. Of these, Kelly and party removed 22 marked fish, or 39.2 per cent of the theoretical survivors.

The writer does not believe the percentage of recovery made by Kelly and party is exceptional after reviewing the records of earlier experiments. It is unusual, but no impossible, that a relatively small number of anglers should take such a relatively high proportion of the survivors. This possibly indicates that the party consisted of anglers of better-than-average skill who were well-acquainted with the stream sections fished. The fact that the hatchery brown trout outnumbered the wild brown trout in their catch despite the fact that native fish probably outnumber the introduced variety in the stream is not an unusual circumstance. Although there is no factual data on record, numerous guides and fishermen, particularly on the Au Sable drainage, have told the writer that on certain days only hatchery fish appear to be "on the feed", while on other days in the same water only wild fish will be taken. Kelly and his party may have experienced such a circumstance during their early-season fishing.

After studying the results of the shocking on approximately two-thirds of the water fished by the Kelly party, and the previously recorded percentages of recovery on planted adult brown trout, it is concluded that the "carry-over" noted by him is very likely not of exceptional proportions, since no dorsal-marked fish were found in the shocking of June 9 and 10.

The possibility that some dorsal-marked fish might have been found in the approximate 3/4 mile of stream not examined with the shocker because of lack of time is not excluded.

It would be desirable to acquire the following data:

1. Other angler's catch records from the Little South Branch for the same time that Kelly and party made their heavy catch of dorsal-marked fish.
2. Mid-season and late-season catch records from this part of the Little South Branch.
3. Counts with the shocker on various sections of the Little South Branch in October and again in mid-winter to determine the proportion of marked hatchery fish and wild fish present.

From the relatively short time spent on the stream sections in question it does not appear that this part of the Little South Branch possessed exceptional habitat characteristics which might bring about a high carryover of planted adult trout over the winter. However, the general excellence of this piece of water, plus the spring water supply of Pease Creek (estimated at approximately 5,000 gallons per minute) probably creates winter conditions more favorable than might be expected on the average. At the bridge on Pease Creek on the north line of Section 9 on June 9 at 5:30 P. M. with the air at 78^o F. the water temperature was 60^o; at the Pease Creek mouth on June 10 at 9:15 A. M., the water was 53^o F. with the air at 68^o.

Another factor which possibly mitigates in favor of a relatively good survival of planted adult brown trout in this general stream area is the poor accessibility of the stream to the general angling public. The only points of access are the bridges, and almost every bridge is bordered by a wire fence. Flood marks on the fences indicate that in times of high water that it would be impossible for the average angler

to fish this stream without trespassing on posted land. The banks for the majority of the stream's length in Newaygo County are privately owned. As it is a fast, tricky stream to wade, not many fishermen are going to attempt to fish very far from the bridges. Therefore it appears likely that over much of the trout season the trout population of this stretch is fished over lightly, allowing more than the normal number of summer-planted fish to enter the winter season. Taking all factors and observations into consideration there appears to have been a better-than-average but not an exceptional carry-over of 1947-planted adult brown trout in the stream area under consideration.

Literature Cited

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INSTITUTE FOR FISHERIES RESEARCH

by David S. Shetter
Associate Fisheries Biologist

Report approved by A. S. Hazzard

Report typed by Betty Noble