

Original: MUCC (Mr. Harry Gaines)
cc: Fish Division ✓
Institute for Fisheries Research
Education-Game
D. S. Shetter

December 11, 1946

REPORT NO. 1077

TROUT MOVEMENTS IN MICHIGAN WATERS

by

David S. Shetter

The movements of fish, as well as animals, have been of more than passing interest to ancient as well as modern man. Witness the marking of the Atlantic Salmon in the early 1600's by the tying of ribbons on the tails as described in Izaak Walton's Compleat Angler. This curiosity concerning matters biological has been healthy, since only through knowledge of the life history and movements of the various food and game fishes throughout their ranges can proper legislative and management procedures be initiated.

Trout migrations have been studied in Michigan waters since 1928, and thousands of brook, brown, and rainbow trout have been marked. The type of mark used in the earlier experiments was not the most efficient and the percentage of recovery was low. Research since that time has improved the mark, and the means of applying it, and also uses wider publicity concerning the experimental work. Recoveries are often obtained by means of fish-traps in the waters concerned, or by electric shocker, or seine, as well as by hook and line.

Brook trout appear to have a relatively small range in Michigan streams. The author studied the wild brook trout population in the North Branch of the Au Sable in the vicinity of Lovells between 1934

and 1937, and was able to demonstrate that the brook trout population was relatively static during the warmer months of the year. Just before the spawning season (late October or November) a spawning movement occurs, often in an upstream direction. However, the direction may be downstream, or there may be no movement. The latter depends on the location of spawning sites with relation to the summer home of the adult trout concerned.

Evidence obtained from marked brook trout tagged one summer and recovered early the next season indicated a downstream migration during mid-winter, presumably to deeper water. The longest migration noted in this work was one fish which moved from the North Branch to Big Creek in Oscoda County, a distance of about 18 miles. In general, during the warmer months of the year the range of the brook trout in this stream does not appear to exceed 1 1/2 miles.

Research with hatchery-reared brook trout which were marked by fin-clipping or jaw-tagging before release in 1938, 1939 and 1941 in several different streams may be summarized as follows: About 43 percent of the planted fish were recovered less than 2 miles from the site of release; about 13 percent were captured from 3-10 miles upstream from the planting locality; about 42 percent were taken from 3-10 miles downstream from the location where planted; and about 2 percent were captured at points more than 10 miles from the planting site. It would appear that movements by brook trout of over 10 miles are rare, and over 25 miles exceptional. This conclusion may or may not apply to the brook trout streams of the Lake Superior drainage where there are populations of brook trout which have developed migratory habits similar to the rainbow trout, and which move out of the Great Lakes into the streams to spawn.

Compared with brook trout and rainbow trout, very few wild brown trout have been marked and recovered. The data at hand on wild fish (also from the North Branch of the Au Sable) suggest that this species is the least migratory of any of the stream-inhabiting trout in Michigan. The few recoveries there indicate movement no farther than 6 miles from the point of tagging. The results of experiments with hatchery-reared brown trout are similar. The 1938-1941 experiments already referred to indicated that about 92 percent of the brown trout planted are caught within 2 miles of the point of release, while the remainder are taken within 10 miles of the planting site. Occasional recoveries, however, are made as far as 25 miles distant. Published results of brown trout migrations observed in researches in other states also indicate the brown trout to be relatively sedentary.

Of the stream trouts, the rainbow trout is the champion wanderer. This species may spawn in the headwaters of the Manistee in April or May and a month or so later be captured off the shore of Wisconsin or Indiana in Lake Michigan. Such records are available from the tagging of adult spawners marked in the process of egg collection during 1931, 1932, and 1933. Several recaptures moved over 125 miles. One recovery had moved 87 miles in 7 days. Other interesting records of wild rainbow trout movement are available from the tagging work at Guiley Pond, a small impoundment on Guiley Creek. This stream in Isco County is a tributary of the East Branch of the Au Gres River which flows into Lake Huron. Rainbow trout tagged at Guiley Pond have been recovered on both shores of north-central Lake Huron, from the St. Clair River, from western Lake Erie, and from Long Point on the north shore of eastern Lake Erie. The latter is the longest recorded migration for a rainbow trout tagged in Michigan waters, approximately 430 miles.

Hatchery-reared rainbow trout have been planted chiefly where they do not have full opportunity to move such great distances, primarily because of their known tendencies to move out of the drainage when they become mature. Apparently if placed in suitable habitat about two-thirds will stay within 2 miles of the release locality, about 23 percent move from 3-10 miles (chiefly downstream), while the remainder will move from 11-75 miles downstream. The record migration noted for hatchery-reared rainbow trout is 260 miles (from the Vanderbilt Road Bridge in the Pigeon River Forest, Otsego County to 5 miles off Sarnia, Ontario in southern Lake Huron).

The lake trout is another species about which not too much is known concerning its migrations. It can be observed in certain localities that it seeks out shallow "honey-comb" reefs in October and November to deposit eggs, but whether or not the spawning population is local in nature or drawn from a wide area is not known. Less than 50 wild adult lake trout have been tagged in Michigan waters, and about 1,400 hatchery-reared two- and three-year old lake trout (from 9 to 13 inches long) have been tagged or fin-clipped.

One of the wild adults, tagged in 1940 after capture on a hand line off Marquette, Michigan, from Lake Superior, was caught off Two Harbors, Minnesota, a straight line migration of 236 miles in 17 months of freedom. Other records from a small group of adult lake trout tagged after capture by gill net in November, 1938, off Seven-Mile Point northwest of Harbor Springs on Lake Michigan indicate smaller ranges of from 5 to 35 miles.

Tagging experiments during the early 1930's by the Smith Brothers, commercial fishermen from Port Washington, Wisconsin, on wild lake trout caught in Lake Michigan indicated that about 71

percent of the lake trout spent much of their life within a 25 mile radius of their home range. However, recoveries of lake trout tagged by the Smith Brothers of Port Washington, Wisconsin were reported from as far away as St. Ignace, Michigan, about 225 miles north.

Recoveries from the 1400 hatchery-reared lake trout planted in 1941 in Lake Superior off Munising and Marquette indicate that about 70 percent were captured within a radius of 50 miles of the point of release. The largest movement recorded from this experiment was 115 miles to the northeast. Apparently, it can be expected that occasional individuals among the lake trout population of any of the Great Lakes may wander throughout the entire lake, but the majority probably stay within 50 miles of where they were born.

All anglers should report the capture of tagged or fin-clipped fish to the Department of Conservation offices in Lansing, or to any of the Department's field representatives. To be of greatest value, the report should include the following: species of fish, tag number (or fin or fin combination missing), location of capture, date of capture, length, and if possible, the weight of the fish. All letters reporting recovery of marked fish received by the Institute for Fisheries Research (University Museums Annex, Ann Arbor, Michigan) will continue to be answered, giving the details of the release, as has been customary in the past. Fishermen can contribute to our scientific knowledge as well as take personal pleasure from their piscatorial fortune by furnishing data on any marked fish caught.

INSTITUTE FOR FISHERIES RESEARCH

By David S. Shetter

Report approved by A. S. Hazzard

Report typed by S. E. Bommer