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SOUTHERN MICHIGAN TROUT STREAMS

By Virgil S. Pratt

Abstract

The Conservation Department established an Institute for Fisheries Research fellowship in 1949 providing for the investigation of southern Michigan trout streams. Intensive studies on four of the thirteen selected: ~~Point Creek, Calhoun County~~; Paint Creek and North Branch of the Saline River, Washtenaw County; Wilder Creek, Calhoun County; and Spring Brook, Kalamazoo County, are being conducted to secure a better understanding of the factors limiting trout production in this part of the state. Information is being collected by field observations throughout the year on the catch, and other mortality of both naturally reproduced and hatchery-reared trout. The effects of other possible factors being studied include those of water temperatures, water quality, flooding, land-use practices, and competition for food and space by other fish. The extent of spawning area and the success of spawning are being closely followed in those streams having few or no wild trout for comparison with corresponding conditions in streams well populated with wild fish to learn the features of the environment presently limiting trout production and whether these can be altered to the benefit of fishermen.

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Although the first state hatchery was built at Pokagon, Cass County, in 1873 the Michigan Fish Commission did not begin planting trout in streams until 1879. The earliest attempts at stream stocking were confined largely to southern Michigan. The emphasis on stream planting gradually shifted to the north where it has remained to the present. However, during the war years, when travel was curtailed, the numerous requests for trout in some of the southern streams resulted in increased stocking in these areas. A change in policy regarding size of trout planted has occurred rather recently. From 1937 to 1947 the plantings of legal-sized trout have more than doubled while fry and fingerling plantings have been reduced by two-thirds. ↓ These changes in stocking policy resulted in the fact that by 1948 the number of streams south of highway M-46 receiving legal-sized trout had reached 127.

It was hoped that the stocking of these 127 southern streams with legal-sized trout would provide trout fishing for many sportsmen near large industrial centers--sportsmen who cannot afford the time or money for frequent treks to the northern streams in pursuit of their sport. However, the requests are still coming in for plantings in additional southern streams. There are relatively few streams in southern Michigan capable of supporting

↓ The records are published in Biennial Reports of the Conservation Department.

trout, mainly because they become too warm. The soil of southeastern Michigan is largely a mixture of loam and clay. In such soil surface run-off is rapid and few springs are to be found. Furthermore, the land is farmed intensively and many streams are dredged to provide better drainage. Dredging not only destroys pools and cover for the trout but permits the water to warm up rapidly to temperatures beyond the maximum tolerated by trout. In the southwestern part of the state the soil is composed largely of sand and gravel. It retains a large amount of the rainfall and results in numerous cold springs. Those streams which are not dredged and which do not flow entirely through open farmlands are kept quite cool by the springs feeding them. These are suitable for trout, but they are not very numerous.

To date there has been little information concerning the success of the southern plantings. Partial catch records have been secured by the conservation officers and from voluntary returns by fishermen, but these are inadequate, for at best, they come from only a very small and unknown portion of the fishermen. Furthermore, no creel census can explain what happens to the large number of trout which are not caught but which disappear rapidly from many of the streams soon after planting. Earlier research has shown that from five of the better northern trout streams, the Au Sable, Pine, Pigeon, and Little Manistee Rivers, and Canada Creek, only an average of approximately 25 percent of the legal-sized trout planted in the spring and open season are caught by the fishermen. ^{e/} The fate of the other 75 percent of the trout planted each year is still an unsolved riddle.

With the hope of obtaining some of this needed information on southern streams the Conservation Department in the spring of 1949 established a research fellowship in its Institute for Fisheries Research at the University of Michigan,

^{e/} Shetter, D. S. and Albert S. Hazzard, "Results from Plantings of Marked Trout of Legal-size in Streams and Lakes of Michigan," Trans. Amer. Fish. Soc., Vol. 70 (1940), p.451.

providing for a detailed study of trout stream ecology in southern Michigan. Since it was impossible to study all waters that are being stocked yearly, a group of thirteen streams was chosen for investigation. These included, as far as it was possible to determine, good, fair, and marginal trout streams. Because so little information was available on the catch in these streams, this tentative classification was based on periodic observations on the streams themselves. Good streams, such as Spring Brook, Kalamazoo County, do not exceed 60° to 65° F., they have abundant pools and cover, sufficient areas of gravel for spawning, and are not subject to extreme flooding. Streams classified as fair have temperatures below the maximum tolerated by trout but may be poor in one or more of the other features just mentioned. Examples of this group are Paint Creek and the North Branch of the Saline River in Washtenaw County. Marginal streams probably are suitable in cool years, but during normal summers may reach temperatures beyond the maximum tolerated by trout. They may or may not be lacking in some of the other features which go to make a good trout stream. Paint Creek in Oakland County is probably marginal except for very small stretches where springs enter and exert a cooling effect. The approximate location of these study streams can be seen on the accompanying sketch map. ³

These streams were stocked with legal-sized trout each month of the spring and summer of 1949, and the fish of each planting were given a distinctive fin-clip in order that they might be watched throughout the year. Population estimates with the electric fish shocker were made on all streams shortly after the first planting to show the proportion of hatchery trout in the total population. Four of the above thirteen, Paint Creek and the North Branch of the Saline River in Washtenaw County, Wilder Creek in Calhoun County, and Spring Brook in Kalamazoo County, are being followed closely in

³ Map with original copy only.

an attempt to determine which factors are responsible for mortality of trout, both hatchery-reared and wild. The investigation is also aimed at learning why some streams support a large population of wild fish and others which appear suitable do not.

Population estimates are being made periodically on these four streams. Stomach analyses of potential fish predators, studies of the bottom-food organisms and the food habits of the trout are being made. Age and growth studies of wild and carry-over hatchery trout are being conducted to supplement the food studies. Effects of high temperatures, quality of the water, land-use practices, and flooding are also being investigated. Extent and utilization of spawning areas and the success of spawning activities are being closely followed.

The investigation has not been carried to the stage where any definite conclusions may be given, but a few interesting facts have been noticed. First, some of the hatchery brown trout, released in the summer of 1949 were found preparing spawning beds the following November in Spring Brook, Wilder Creek, and the North Branch of the Saline River. Some of the larger trout of the same and earlier plantings were found to be sexually immature. No explanation can be offered at present.

Certain streams which appear to be suitable as far as temperature and cover are concerned have few or no wild fish and very few carry-over hatchery trout. An example is the North Branch of the Saline River which is subject to heavy floods. Examination of the only two completed nests in this stream in January of 1950 showed them to be covered with a 6-inch layer of sand and silt and every egg dug up was dead. Flooding might be the limiting factor in this case. Paint Creek in Washtenaw County has a very small area of gravel suitable for spawning. Several nests were started but as far as it was possible to determine none contained eggs. Population studies with the electric shocker a short time earlier showed clearly that trout were still quite numerous.

On the other hand, Sand Creek in Allegan County has an abundance of wild brook trout, mostly one to four inches long. The fact that there are very few pools and the bottom of the stream is made up of shifting sand, a poor food producer, might explain the abundance of very small trout and the apparent lack of large ones. Close cropping of the larger trout by fishermen may also be involved.

These are only a few of the many situations encountered in the investigation. Such limiting factors as flooding, filling-in of pools and spawning beds with silt and sand, high water temperatures, seem rather obvious, but others such as competition for food and space, predation and disease, while not so obvious, may play a large part in the economy and success of the trout populations.

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