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PRELIMINARY REPORT ON THE BIOLOGICAL AND PHYSICAL SURVEY OF THE PINE RIVER WATERSHED

By

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The Pine River Watershed was surveyed by a three-man crew during the summer of 1952, from June 25 to August 23. Fifty-eight stations were selected and examined throughout the entire watershed so as to give an overall picture of the existing biological and physical conditions of the system. The purpose of the survey was to determine the need for a watershed improvement program and to serve as a guide for this program. For future years the survey report will provide some of the basic information from which to evaluate the effects of the watershed development. Because at this time it is not possible to have the complete report finished, the present conclusions are preliminary in nature.

The majority of the fish were taken with a 110-volt, 60-cycle, AC shocker. When comparing fish collections at the various stations, the fact must be taken into consideration that the efficiency of the apparatus is somewhat limited and varies from station to station. High turbidity and deep and discolored water both tended to reduce the efficiency to less than one percent at some stations. It is also questionable whether or not this device worked as efficiently, in areas having deep pools, on collecting the larger fish as it did on collecting the smaller ones.

Identifications of the majority of fish were verified by W. R. Taylor of the Institute for Fisheries Research and doctoral student in Ichthyology at the University Museums, University of Michigan.

A GENERAL REPORT ON THE PINE RIVER WATERSHED

The purpose of this is to give an over-all picture of the watershed as a basis of comparison with the areas referred to in the Staff Land Policy Committee Case No. 412. This general report includes that part of the river system located within Pickford and Trout Lake townships, Chippewa County.

Physical Features

The Pine River system with few exceptions (Sullivan Cr. and the very upper reaches of Biscuit and Trout creeks) is characterized by colored water which varies from light to dark brown but is predominantly light brown. Turbidity varied from highly turbid water in the majority of streams to clear water in the main Pine River west of Range 4 W. and in the upper reaches of Sullivan, Biscuit, Trout, Bear, Little Bear, Lumpson, and Black creeks. These conditions were reported during and after a period of heavy rainfall when the water was at a high stage, higher than normal summer water levels.

Approximately an acre of land dropped into the North Branch of the Pine in the SE 1/4 of Section 19, T. 45 N., R. 3 W., on May 13, 1952, partially damming the river. This landslide along with the heavy rainfall probably accounted for much of the high turbidity in the Main Pine River.

Six physical features of a stream may be the key to whether or not conditions are favorable or unfavorable as trout habitat: pool classification, trout cover (other than afforded by pools), food supply, abundance of higher aquatic vegetation, bottom soil types, and stream temperatures.

Pools, as based on their length, width, and depth in relation to the length, width, and average depth of the stream surveyed, rate from fair to good in the Pine System. Trout cover generally due to murky water, bank cover, and logs, is good. These two apparently favorable conditions for fish are offset by generally poor bottom soil types and by high water temperatures. Sand is the major soil type in all of the main Pine, and its scouring action along with the shifting nature of the sandy bottom and frequent clay deposits result in many areas of sparse vegetation. Also, natural aquatic fish foods, other than forage fish, are known to be at a minimum in shifting sand bottom. Clay, silt, and gravel constitute the remainder of the stream bottom. Clay and silt are found in approximately equal amounts throughout the system, whereas gravel is located only in certain sections of the main Pine River, the North Branch of the Pine, and Trout, Sullivan, and Bear creeks. A partial temperature survey made on July 6 and 7 at 25 stations indicate that frequent high air temperatures will elevate stream temperatures to where many sections of the river system will be limited to forage and warm-water game fish only.

Although banks along the main Pine River are somewhat high, field observations revealed that they are fairly well stabilized by herbaceous plants, sod, and tag alders. But stream banks along the North Branch of the Pine are not all well stabilized, as was evidenced in the spring by the landslide of a riverbank which carried much clay and silt into the river.

Fish Fauna

It is reputed that at one time many rainbow used the Pine River for spawning purposes, and even now there is an indigenous population of rainbow trout, though probably much diminished in size. There appear to be only five streams which support a population of brook and rainbow trout.

which make fishing worthwhile. These are: Sullivan Creek, Biscuit Creek, Clear Creek, Trout Brook, and the North Branch of the Pine, in order of importance. A large variety of other fishes is found in this watershed. Excluding the trout, there are 23 species, including northern pike, brown bullhead, and American brook and sea lamprey.

DETAILED REPORT ON WATERS REFERRED TO IN THE STAFF LAND POLICY COMMITTEE CASE NO. 412

The following summarizations are based on field stations in close proximity to state owned lands, dedicated or undedicated, so indicated on the Michigan Department of Conservation County Map, of Chippewa County, 1952 Edition. Except for the North Branch of the Pine River the area involved is located in Township 44 N., Ranges 2 and 3 W.

Pine River

Water levels were normal for summer months. Though water temperatures were fairly low, they are subject to warming to within lethal limits for trout in that region of the river below the junction of the North Branch of the Pine. Water current was rapid, turbidity high, and water color a light brown. Pools were classified from poor to fair. Good cover is afforded trout by the muddy water, but vegetation runs from none at all to sparse amounts. Bottom soils are approximately 46% sand, 28% gravel and 26% clay.

Fish collecting was hampered in this area by very poor visibility, and most fish which were caught were those which drifted by chance into the scap nets held in back of the electrodes. Shocking efficiency, with one exception, was estimated at 1% or less. Only at the station where estimated shocker efficiency was more than 1% (10%) were there any trout captured. Three

rainbows ranging from 5.2 to 5.9 inches were caught in the river in the northwest part of T. 44 N., R. 3 W. It appears that the low efficiency of the shocking device materially affected the total catch of both trout and other fish species. Forage fish were fairly abundant and consisted of the following species in decreasing order of abundance: eastern mottled sculpin, longnose dace, northern creek chub, brook stickleback, Johnny darter and log perch. Common suckers and American brook lampreys were common, and a few sea lamprey ammocetes were found.

This area of the Pine (in T. 44 N., R. 2 and 3 W.) is poorly regarded as a fishing stream. Brook trout were caught only in the upper reaches of the Pine River and tributaries. Gravel beds located in an area near state owned land, in NW. 1/4 of NW. 1/4 of T. 44 N., R. 2 W., S. 32, may serve as spawning grounds in the spring for lake-run rainbows.

North Branch of the Pine River

(Located in Townships 44 and 45 N. and Ranges 2 and 3 W.)

Water in the North Branch is similar to that in the main Pine River. Temperatures ran fairly cool and the current was rapid. The muddy water was colored a light brown; this muddiness may have been temporarily caused by clay and silt from the landslide which occurred in the northwest portion of this area (i.e., in T. 45 N., R. 3 W.). Pools are classed as poor to fair, vegetation as none to sparse, and trout cover as good, due to muddy water. Bottom soils are approximately 53% sand, 33% clay, and 14% gravel.

Fish collecting conditions were also similar, with shocking efficiency estimated at 5% or less. Only one trout, a rainbow 5.2 inches long, was caught in this region. Other species of fish in decreasing order of abundance were longnose dace, eastern mottled sculpin, blacknose dace,

common white sucker, log perch, and American brook lamprey. The upstream portion of this area was reputed to be a fair trout stream, and during recent years an occasional rainbow is reportedly caught on hook and line.

Bear Creek and Chub Creek

Bear and Chub creeks are characterized by murky or muddy waters of a light brown color. Both streams are rapid and are situated in rolling farmland. Pools are fair, and trout cover is rated as fair to good, in both streams. Cover is afforded by murky water in the two creeks, along with vegetation in Chub Creek. Vegetation is growing abundantly in Chub Creek, whereas in Bear Creek there is none to moderate amounts. Bottom soil types are more favorable to the production of fish in Chub Creek than in Bear Creek. The bottom type of the former stream is predominantly gravel, with about 25% clay. Soil in Bear Creek is mainly clay, with approximately 25% sand and only traces of gravel.

Shocking conditions in Bear and Chub were more suitable for collecting than in the Pine and North Branch. The estimated efficiency ranged from 5% to 30%. No species of trout was caught in the area near state-owned land, although rainbow and brook trout were caught in the upper reaches of Bear Creek. Bear Creek was reputedly once a good brook trout stream, and a spring run of rainbow trout four or five years ago was reported in Chub Creek.

Other species of fish collected in Bear Creek, in decreasing order of abundance, are: eastern mottled sculpin, brook stickleback, blacknose dace, pearly dace, American brook lamprey, common white sucker, northern fathead minnow, Johnny darter, mudminnow, northern creek chub, sea lamprey ammocetes, longnose dace, brassy minnow, and log perch.

Fishes of Chub Creek, in the same order include: eastern mottled sculpin, northern creek chub, common white sucker, blacknose dace, brook stickleback, log perch, Johnny darter, mudminnow, longnose dace, brassy minnow, northern redbelly dace, pearl dace, common shiner, brown bullhead, American brook lamprey, and sea lamprey.

Conclusions

The area referred to in "Case No. 412, Pine River" appears to be of little value to the sportsmen as far as current fishing quality is concerned. Fishing conditions or other recreational values may not warrant immediate dedication of this land. However, preliminary results of this investigation indicate that this stream might well be rejuvenated by stream improvement structures, and/or by a watershed improvement program. If an extensive improvement program is carried out here, the Pine River may once again become a desirable stream for brook trout and spawning rainbows.

It is anticipated that, upon completion of the study of Pine River survey records, an extensive stream improvement (or watershed development) program will be recommended. State ownership in this region of much privately owned land would then be of considerable importance to the Conservation Department as access for field work, and to the fishermen for public access.

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